

PLAINTIFF'S EXHIBIT

ASM-46

MECHANICAL CATALOG

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INDEX TO MANUFACTURERS
OF INDUSTRIAL EQUIPMENT,
MATERIALS AND SUPPLIES

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INDEX TO CATALOGS

This new type of index is to acquaint you with the background and traditions of American Industry as represented by the firms whose products are described in this issue of *MECHANICAL CATALOG*. An effort has been made to secure from the advertiser institutional copy void of controvertible statements.

You are invited to consult the catalogs for details concerning products, addresses of home and branch offices, engineering service available, etc.

A

Air Preheater Corp'n..... 1

Organized in the year of 1925 to manufacture the Ljungstrom Air Preheater, first introduced in this country in 1923 by the James Howden Co. of Glasgow, Scotland, pioneer manufacturers of air preheaters who made the first installation of air preheaters in the year of 1880. The Ljungstrom regenerative air preheater is very generally used in all modern central station and industrial boiler plant installations and in addition has been successfully applied for the saving of fuel on oil stills, incinerators, metallurgical melting furnaces, and many other industrial applications.

Alemite Corp'n..... 218

Stewart-Warner Corporation, 1826 Diversey Parkway, Chicago, was first organized in 1913. Its activities are devoted largely to the making and marketing of Speedometers and Vacuum Tanks. Today Stewart-Warner Corporation, with its subsidiaries, Alemite Corporation and the Bassick Company, manufactures and sells a diversified line of automotive and household products, chief of which are speedometers, fuel pumps, automobile accessories, power brakes, lubrication systems and lubricants, radios, electric refrigerators, home movie equipment, casters and automobile hardware.

Allis-Chalmers Mfg. Co..... 2, 3, 4, 5

Builders of a large variety of power, electrical, industrial, and agricultural machinery. This company, formed by a consolidation of leading pioneer firms in 1900, has experience extending over eighty years, with installations of engines, turbines, and water-wheels aggregating seventeen million horsepower; pumps of total capacity eight billion gallons per day; and machinery for rock and ore plants, flour, and lumber mills, etc., the world over. Recent acquisitions and developments have greatly widened the diversified line of products enabling Allis-Chalmers to serve many industries; to share in the electrification of industry and railways and to supply tractors, farm, and road machinery.

American Arch Co. (Inc.)..... 6

Industrial Department was established over ten years ago for the development and application of suspended arches, sectionally refractory air cooled walls, as well as insulated sectionally supported walls for all types of furnaces for industrial plants, power plants, steel mills, oil stills, and incinerators. The use of the most suitable materials, as obtained from leading refractory manufacturers, combined with competent and experienced engineering service are the customer's assurance of a successful and economical installation.

American Blower Corp'n..... 7

Has manufactured air conditioning equipment for the past fifty years. Among the more prominent products are the Series 30 and H.S. fans, unit heaters, dust collectors, and all types of air conditioning equipment.

American Brass Co..... 8

Has had more than a century's experience in the production of copper and copper alloys. Its present line includes copper, brass, bronze, nickel silver, and special copper alloys in every combination that can be wrought into sheets, strips, plates, wire, rods, tubes, forgings, extruded and drawn eccentric shapes. The company's technical department is prepared to assist metal users in selecting the most satisfactory copper alloy for any specific purpose.

American District Steam Co..... 9

Manufacturers since 1877 of Expansion Joints, Underground Steam Line Conduit, Condensation and Steam Flow Meters, Water Heaters, Steam Traps, Reducing Valves, Vapor Heating Specialties. Outstanding in the company's growth has been the development of equipment for, and the promotion of, District Steam Heating Systems. An engineer's service department is maintained to cooperate with consulting engineers and architects on any major steam or hot water distribution piping installations.

American Engineering Co..... 10

An organization with over sixty-five years' experience in the engineering, design, and manufacture of high grade machinery. Designers and manufacturers of the Taylor Stoker, ABCO furnace walls, stoker ash hoppers, and ash sluicing systems, Lo-Hed monorail electric hoists. This company was the first builder of hydraulic steering gears for commercial and Navy vessels. Also designers of capstans, windlasses, and other marine equipment. Designers of the Jurvick ammonia compressor used for cooling purposes and air conditioning. ABCO Hydro-Thermal Grids are used for cooling coils with all refrigeration equipment. This company operates foundries making castings for other manufacturers.

American Manganese Bronze Co..... 11

Founders, Engineers, and Metallurgists, was established in 1908. This company operates an extensive, well-equipped bronze foundry, casting non-ferrous metals of practically every commercial kind. They specialize on high test alloys for engineering purposes and corrosion resisting metals for the chemical trade. Some of the largest bronze castings ever made have been products of this foundry, notably those for the New York City Water Supply (Catskill Aqueduct); the Roosevelt Dam and other Reclamation Service hydro-electric installations; the Panama Canal; propellers for the U. S. Navy, and for the largest ships. This company's metals are specified and used in a great variety of industries.

American Metal Hose Co..... 12

Organized and incorporated in 1908. As new fields and uses for metal hose and flexible metallic tubing were developed, the organization grew until, at the present time, it is devoting over 100,000 square feet of floor space exclusively to the manufacture of these products. A technical staff is maintained for the purpose of aiding engineers in the solution of metal hose problems.

American Pulverizer Co..... 13

For nearly twenty-five years this company has been manufacturing American Rolling Ring Crushers, Pulverizers and Shredders. They maintain a complete engineering department and are equipped to solve your crushing and reduction problems. There is available a testing plant for prospective users of their equipment. They will gladly make crushing tests, without obligation, on any material shipped to them f.o.b. their plant.

American Screw Co..... 14

This business was established in 1838 and 1840 by two independent Rhode Island corporations, which united and were incorporated under the present title in 1860. The company is the pioneer, as well as the largest, among the survivors in its industry with large plants in Providence, and a branch, the Reading Screw Company, at Norristown, Pa.

Andale Co..... 15

Anthony Co..... 16

This company, which was established in 1910, is an outgrowth of the American Combustion Co. organized to develop mechanical Nebulizers for combustion purposes. It has continued this development and has succeeded in adapting this form of nebulization for oil fuel in every conceivable kind of industrial process requiring heat. They are manufacturers of most of the equipment items which enter into fuel oil installations and combine this with the manufacture of equipment for gas fuel installations.

Atlantic Metal Hose Co. (Inc.)..... 11

B

Babcock & Wilcox Co..... 18, 19, 20, 21

Since 1867, when the patent was granted for the original Babcock & Wilcox boiler, the history of the company has been one of steady growth and progress. The present company was incorporated in 1881, the year of the birth of the electric generating station. Boiler units are now built in all sizes, complete in every important respect, and other products, of the company and its subsidiaries include process equipment, seamless tubular products, and refractories. The motive of the company has always been, and is, that of giving the best and most satisfactory service; of furnishing the best in ideas, information, material and workmanship; of justifying the faith of its customers.

Badger, E. B., & Sons Co..... 17

One of Boston's oldest concerns was established in 1841 as coppermiths both to the industries and the building trades. As the country developed and process work expanded, Badger expanded its line to include all kinds of processing equipment in which copper and other metals play a part. Most noted in the power plant field are the Badger Self-Equalizing Expansion Joints which have been on the market for many years. The company also maintains engineering departments for developing projects in the chemical process and oil refining industries.

Bailey Meter Co..... 22, 23

Founded by E. G. Bailey in 1916 following his invention of the Bailey Boiler Meter; this company has expanded rapidly. Many new meters, recorders, regulators, and controls have been added to the list of products. Bailey meter equipment is installed in over 90% of the central stations in this country and in hundreds of industrial plants.

Bakelite Corp'n..... 26

This business was established twenty-four years ago and was founded by Dr. L. H. Baekeland. From a small beginning, it has grown to a point where it now has large modern manufacturing plants and representatives in all the major industrial centers of the country, as well as affiliations in the leading industrial countries in the world. The products manufactured cover a wide range of plastic materials, including transparent resins, molding materials, laminating materials, baking type varnishes, lacquers, cements, and enamels, synthetic resins for air-drying finishes, resins for bonding abrasive products, and automobile brake linings, and for waterproofing fabrics.

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Barco Mfg. Co...... 24, 25
Is a pioneer in the manufacture and sale of flexible ball joints and in handling the technical problems relating to their use under all pressures and vacuums. The company was started on Friday, March 13, 1908, and has continued without interruption in this work and in the manufacture and sale of railway locomotives and car specialties.

Barrett-Cravens Co...... 27
Manufacturers of hand operated Lift-Trucks of both the single and multiple lift types in capacities ranging from 2500 to 10,000 lbs.; Skid Platforms—in a standard design so that they can be used with all makes of trucks; Portable Blevators, hand and electrically operated of any specifications, piling height and speed required; also Barrel Trucks and Barrel Storage System.

Barrett, Haentjens & Co...... 28, 29

Bartlett Hayward Co...... 30
Founded in 1832. One hundred years of continuous service to industry. Pioneered the first "Structural" Iron Building (forerunner of present-day skyscraper). First Hot Water Radiator—Elevators—Hot Water Heating—Latrobe Stoves. In 1863, built the famous Winans Locomotives. Since 1876, has led in plant and machinery design, manufacture and construction for production of manufactured gas—largest gas plants and gas holders in the world. Since 1919, holding exclusive patent license, have placed in service over 50,000 Fast's Self-Aligning Couplings, aggregating over 100,000,000 horse-power. Complete engineering, design, fabrication, and construction of gas plants, process plants and special equipment.

Bartlett & Snow Co., C. O...... 31
January 1, 1933, marked the beginning of the forty-eighth year of this company in the building of conveying systems. Among its important work are the conveying systems for the great Chevrolet and Buick foundries of General Motors Corporation. The company's engineering force is well qualified by experience to cooperate with consulting and plant engineers in the construction of conveying systems and equipment for any requirements.

Beach-Russ Co...... 32
Established more than 34 years ago and devoted exclusively to the manufacture and development of Rotary Pumps. Products include: High Vacuum Pumps—delivering the highest known vacuum produced mechanically. Air and Gas Compressors—giving a steady uniform flow of gas under pressure. Rotary Liquid Pumps—all types, handling light and heavy liquids. Special pumps are handling extra heavy cellulose products. Acid Pumps—special engineering design and attention have been given, over a period of years, to their acid resisting centrifugal pumps. All of these pumps are cast solid (not lined), and are manufactured in all known metals and alloys.

Bernitz Furnace Appliance Co...... 33
An organization that has specialized for 17 years in producing and developing protective constructions to better utilize high-grade commercial refractories selected for furnace setting work. They have made available several practical air-cooled wall constructions and water wall coverages for various types of furnaces. These have been instrumental in preventing clinker adhesion to furnace walls.

Bigelow Co...... 34
In 1833 Cyprian Wilcox started a foundry and machine shop in New Haven, Conn., on what was known as the Farmington Canal. The business of the company developed into the manufacture of water wheels, engines, and boilers, and in 1880 this company was established. Gradually the manufacture of boilers became its principal product, and today manufactures are tube and water tube steam boilers up to high pressures and large capacities.

Bigelow-Liptak Corp'n...... 35

Brady Conveyors Corp'n...... 36
Have been manufacturing a complete line of conveying and elevating machinery under this corporate name since 1922. However, its personnel has been engineering and designing this type of equipment since 1910. This corporation is the only conveyor manufacturer that builds every type of conveyor made from pipe line pneumatic systems to belt and bucket conveyor units complete and are in a position to design complete coal and ash handling systems for power houses.

Brassert, H. A., & Co...... 37
Engineers and contractors, includes among its activities, the manufacture, sale, and installation of the Brassert-Askania System of Automatic Control and Metering. This system is nearly universal in its application. It covers a wide range of uses in connection with metallurgical furnaces, steam plants, oil refiners, sewage disposal and water treating plants and a great variety of other industrial installations. It regulates pressure, flows, and temperatures and many combinations of these conditions. It operates by means of a unique principle, that of the jet pipe, which gives it an unusual accuracy combined with simplicity, durability, and elasticity in application. The Brassert-Askania line also includes the Ring Balance and other types of flow meters for air, gas, liquids, and steam.

Bristol Co...... 38
Established in 1889 by William H. Bristol, pioneered the development of the original recording gauge and thermometer, which initiated industry's first attempt to control production. For the first time these early "Bristol" Recorders made it possible by means of continuous chart records to detect any and all variations of pressure or temperature from prescribed standards. They revealed these fluctuations in a form that could be analyzed, filed, and preserved for future reference. From 1889 to 1908 "Bristol's" Instruments were manufactured in one small building. Today the "Bristol's" plant comprises a number of buildings, each equipped with the most modern facilities for turning out a quality product. Branch Offices are maintained in principal cities throughout the country, in four of which complete facilities are available for reconditioning, recalibration, and repair work.

Brown Instrument Co...... 39
Since 1860 this company has manufactured indicating, recording, and controlling instruments for power plant and industrial processes. The company is one of the largest manufacturers of industrial measuring instruments. Chief products are Pyrometers, Flow Meters, Thermometers, Pressure and Vacuum Gauges, CO₂ Meters, Resistance Thermometers, Tachometers, Remote Valve Mechanisms, and Automatic Controllers. In more than 60 different industries Brown Instruments are used extensively throughout the entire world.

Buffalo Forge Co...... 40
Enjoying a reputation for unusual engineering ability for many years, this company, established in 1878, has recently been awarded the contract for 28 enormous fans for ventilating the new Boston Vehicular Tunnel under the Charles River. Another unusual job handled by special Buffalo Fans is the ventilation of motor gondolas on the Akron and the new larger dirigible now being built. While the engineering organization is available for consultation on special problems, the standard lines of Buffalo Unit Heaters, Air Washers, Ventilating, and Mechanical Draft Fans, Cooling Units, and Exhaust Fans of all types developed by this same engineering organization are shipped daily all over this country and to most of the world.

Buffalo Pumps (Inc.)..... 41
One of the oldest pump manufacturers in this country, this company recently introduced the Buffalo Self-Priming Pump. The self-priming feature is licensed to Buffalo Pumps, Inc., by the Nash Engineering Co. Being available on both single and double suction pumps, for general service and specialized jobs such as handling sewage, paper stock, and process plant liquids, there is a wide application of these pumps. All traditional features of Buffalo design are retained in the self-priming models. In a substantial number of installations, Buffalo Pumps have made unusual records for efficiency and long service.

Burt Mfg. Co...... 42
Established more than forty years ago as one of the pioneer builders of oil filters. From a single filter, this company has developed a complete line. Burt has also been very active in other fields, especially as the maker of exhaust heads and roof ventilator developments. A thoroughly experienced engineering department is maintained for the purpose of assisting architectural and industrial engineers in the planning of effective ventilating systems.

Busch-Sulzer Bros.-Diesel Engine Co...... 43
Engaged in designing and building Diesel engines; with adequate technical staff and especially equipped Diesel works; guided in

design, selection of materials, and workmanship by over thirty years of its own experience in building Diesel engines, both 4- and 2-cycle types, heavy duty slow speed, special light weight high speed, including stationary and marine reversing Diesels; under the direction of Dr. Diesel until 1913; by 15 years (1911-1926) of technical collaboration with the Swiss firm, Sulzer Brothers; and, at present, by the engineering research and technical advice of Allgemeine Elektricitäts Gesellschaft, of Germany, builders of the first successful solid injection double-acting 2-cycle Diesel.

Carborundum Co...... 44, 45
In 1891, in Monongahela City, Penna., Dr. Edward Goodrich Acheson created the first silicon carbide crystals in a tiny electric furnace as a result of his searching for a new abrasive material. The new abrasive was given the trade name "Carborundum" by its creator and shortly after this company was organized and chartered under the laws of the State of Pennsylvania. In 1893 the then little plant was moved to Niagara Falls, N. Y. Later on the company began the manufacture of "Aloxite," the aluminum oxide abrasive. In addition to these abrasive products, this company also manufactures a complete line of super-refractory products made from Carborundum Brand Silicon Carbide.

Carver, Fred S...... 27

Chain Belt Co...... 46
Was organized in 1891 with an original capitalization of \$11,000.00 and is now in the forty-second year (1933) of its existence. The first product to be made was Malleable Chain, but the line has since broadened to include practically all types of industrial chains for power transmission and carrying purposes. In 1900 the elevating and conveying line was added and in 1908 concrete mixers. This latter line has since broadened out and today includes many other construction machinery units such as pumps, saw rigs, plaster mixers, and recently the new Pumpcrete, a device for pumping concrete was added. In 1928 the Stearns Conveyor Co. of Cleveland became part of the Chain Belt Co. This unit specializes in belt conveyor idlers.

Chaplin-Fulton Mfg. Co...... 47
"Fulton" Regulators are one of the pioneers of pressure reducing valves and regulators in this country. They were first made by this company in 1887, and they continue to be considered as one of the standards of regulation for steam, gas, oil, water, and all gases and liquids.

Chicago Pump Co...... 48
Established a quarter of a century ago, this company has earned a place foremost in the ranks of centrifugal pump manufacturers by honest manufacture of quality products. They strive to produce long-life pumps and pumping equipment that give the best service and results and to make easy the replacement of parts. Their products include the following: Sewage ejectors, bilge or sump pumps, electric cellar drainers, screw-feed sludge pumps, horizontal centrifugal pumps, hot or cold water and brine circulating pumps, vacuum heating pumps, condensation pumps, pneumatic water systems, "Automatic Alternator" for duplex pumps to transfer the operation from one pump to the other, aerators for aerating sewage, liquid sewage samplers, "Comminutor" or chopper screens, speed screens and water seal pumps.

Chicago Tubing & Braiding Co...... 48
Manufacturers of Flexible Metallic Hose for more than thirty-one years. This concern has pioneered in introducing many different styles of Flexible Metal Tubing and has been instrumental in introducing its use for many commercial and industrial activities. Their leadership in this respect becomes an invitation to industrial engineers to consult with this company whenever their needs seem to indicate this kind of a product.

Chisholm-Moore Hoist Corp'n...... 49
A division of the Columbus-McKinnon Chain Corp'n. This company has a background of many years of progressive experience in the material handling field. The Chisholm-Moore line is kept continuously

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up-to-date, and includes hoisting and conveying equipment for every purpose, in a wide range of capacities. Hand and electric power hoists, trolleys and cranes, and overhead track systems adapted to any particular requirement, are built in many models and designs.

Cleveland Wire Spring Co. 50

The company was established in 1892 and has been one of the foremost in the successful manufacture and research in the mechanical spring industry. It maintains two plants, one of which consists of some three acres of floor space equipped with every modern facility for spring manufacture. An expert Engineering Department is also maintained wherein you may make your spring trouble theirs. Plant Number Two specializes in Steel Factory equipment consisting of Steel Shop Barrels, Boxes, Shelving, Steel Factory Stools, etc.

Cleveland Worm & Gear Co. 51

Organized in 1912—was one of the first companies to manufacture automotive worm gearing in commercial quantities. In 1916 the development of an efficient industrial worm gear drive led to the production of a complete standard line of worm gear speed reduction units which were placed on the market in 1919. Cleveland drive of all sizes have been remarkably successful because they are a combination of sound engineering, accurate workmanship, and intelligent application of the worm gear principle of power transmission. No other type of gearing is manufactured by Cleveland and Cleveland engineers devote their attention to this one product.

Cochrane Corp'n. 52

Is the continuation and successor of the Harrison Safety Boiler Works, founded in 1863. It designs and manufactures high grade steam specialties, including feed water heaters, deaerators, softeners, filters, continuous blow down systems, pipe flow meters for steam, water, and air, V-Notch meters, back pressure valves, boiler blow-off valves, pilot actuated water regulating valves, steam and oil separators, steam purifiers, traps, drainers and dischargers, etc. The Cochrane open feed water heater, of which some 20,000,000 boiler horsepower capacity have been sold in the U. S., has been the leader and model of this type of equipment since 1897.

Combustion Engineering Co. (Inc.) 54, 55

The successor company to the Combustion Engineering Corporation and the American Stoker Company, whose history dates back to the early 1890's. The company's present line of equipment includes all types of mechanical stokers, storage and direct-fired pulverized fuel systems, a complete line of water-tube boilers, water-cooled furnaces, air preheaters, economizers, ash conveyors, and related products. The company pioneered the development of water-cooled furnaces and air preheaters in this country, in addition to pulverized fuel, and has been a principal contributor to the development of design and equipment which have made possible the superheated steam generating units and higher pressures and temperatures characteristic of modern practice.

Connersville Blower Co. (see Roots-Connersville-Wilbraham) 169

Consolidated Ashcroft Hancock Co. (Inc.) 56, 57

This company is an outgrowth of a number of the oldest manufacturers of instruments and steam specialties, dating back to 1850. The present company is the successor to the Ashcroft Mfg. Co., the Consolidated Safety Valve Co., American Steam Gauge and Valve Mfg. Co., the Hancock Inspirator Co., The Hayden & Derby Mfg. Co., the Schaeffer & Budenberg Mfg. Co., and the American Schaeffer & Budenberg Corp'n. Two plants are maintained, one at Bridgeport, and the other at Boston. The Bridgeport plant is used to manufacture Indicating Gages, Safety Valves, Recording Thermometers, Temperature Controllers, Recording Gages, Power Control Valves, Tachometers, Industrial Glass Thermometers, Dial Thermometers, and other instruments. Hancock Valves, H & P Injectors and Ejectors are manufactured in the Boston plant.

Continental Valve & Equipment Co. (Inc.) 53

A Delaware Corporation was formed to succeed the Continental Valve & Equipment Co., an Illinois Corporation, through outright purchase, which company succeeded the

Framingham Manufacturing Co. and the Leonard Machinery & Tool Co. formed during the early part of the World War in 1916 by Olaf B. Oleson, Vice President of the present company, and which companies were pioneers of the product now manufactured by this company. There were no forged steel fittings or forged steel unions made up to that time, and the founder of the above companies, being connected with the utility industry for a number of years, designed forged steel material—valves, fittings, and unions—for the purpose of meeting the approaching conditions of higher pressures and higher temperatures in central stations of the utility corporations and in the cracking processes in the oil fields.

Cooling Tower Co. (Inc.) 58

An engineering organization which has been engaged since 1911 in the design, manufacture, and erection of all types of water cooling equipment and air washers. Water cooling equipment includes, atmospheric cooling towers, mechanical draft towers of the induced and forced draft type, chimney and Bourdon type towers, indoor cooling towers, and spray nozzle cooling systems. Installations have been made throughout the world in connection with refrigeration and air conditioning equipment, steam condensing, oil refining, etc.

Coppus Engineering Corp'n. 59

Has been manufacturing for the past twenty years specialties in the blown and steam turbine field. It was one of the pioneers in the application of steam turbine driven blowers to provide forced draft for steam boilers. It has been continuously active in the field of mine and industrial ventilation, furnishing both propeller and centrifugal blowers with steam or compressed air turbine as well as electric motor drive. Its steam turbines and turbo generators are also well and favorably known. Its engineers have developed numerous blower specialties including boiler and tank ventilators and exhausters, manhole ventilators, man cooling fans, and forced draft blower combustion control for domestic heating systems. During 1932 it brought out a line of dry type air filters for ventilation and industrial purposes.

Cramp Brass & Iron Foundries Co. 60

Originally founded in Philadelphia in 1828 as the main foundry of Levi Morris & Co. It later became the Wm. Cramp & Son Ship and Engine Building Company and has since been purchased by the Baldwin Locomotive Works and is now operating under the name of the Cramp Brass & Iron Foundries Co. at the Baldwin Locomotive Works plant at Eddystone, Pa. In addition to its own developments the company is the sole producer in this country of the famous Parsons' Manganese Bronze and Parsons' White Brass. The largest bronze and iron castings obtainable in the United States are the products of these foundries; the metals being reduced in either oil, coke, or electric furnaces.

Crane Co. 62, 63

Makers of valves, fittings, piping, and specialties—for steam, oil, air, water, and gas—and of plumbing and heating materials for home, commercial, and institutional use. Pioneers in the study and development of metals and designs for piping materials to control high temperatures and pressures. Founded 78 years ago this company has grown from a modest beginning to a globe-girdling organization serving every part of the earth with dispatch.

Crosby Steam Gage & Valve Co. 61

Over sixty years engaged in manufacture of safety and relief valves, indicating and recording gages, engine indicators, steam and air whistles, globe, angle, and check valves, gage testing equipment, etc. One of the more recent Crosby developments is the high capacity nozzle type pop safety and relief valve for high pressures and temperatures. These valves are now considered standard equipment in many of the central stations, manufacturing plants, and in practically all oil refineries.

Dart, E. M., Mfg. Co. 64

This company is generally recognized as the original Ground Joint Union Manufacturer. More than thirty-five years ago, in a village near Providence, the first Dart Union was made. Crude indeed, compared

to its present state, but the idea has never altered. That idea was, and is, to have a union with a joint which cannot deteriorate and thread ends which cannot stretch or alter shape. After long experimenting and testing many styles of construction to obtain the best results, patents were secured and the Dart Union placed on the market. Today there are millions of Dart Unions in use and this company is recognized as one of the leaders in its field.

Davis Regulator Co. 65

Founded by G. M. Davis in 1875, who made one of the first Automatic Pressure Reducing Valves in America; incorporated 1890. George C. Davis, son of the Founder, has devoted his life to the business and has been President since 1908. The company specializes in the design and manufacture of Automatic Pressure and Flow Control Equipment used in public buildings and industrial plants. In 1930 the company moved into their new modern factory building, especially designed and constructed for the efficient manufacture of their product.

Dayton-Dowd Co. 66

From a modest beginning a quarter of a century ago has grown the present extensive line of Dayton-Dowd centrifugal pumps, in single and multi-stage designs, for virtually every pumping service. Dayton-Dowd builds centrifugal pumps exclusively and is a completely integrated plant, having its own engineering department, pattern shops, iron and brass foundries, machine shops, assembly shops, and one of the most up-to-date hydraulic laboratories in the country. The line comprises centrifugal pumps only, from 1/4" to 60" discharge. No other type of pump occupies their attention or facilities.

Dean Bros. Co. 68

Began in Rome, N. Y., in 1867; manufactured steam pumps for railroad water stations. They established their shops permanently in 1869 at Indianapolis. In 1879 they patented a direct acting, single style steam pump with noiseless valve movement; in 1885 an improvement on it. In 1882 they built a new plant; in 1893 another, thrice larger. In 1899 they patented their duplex hydraulic pump having forged steel pump cylinders; originated a design for heavy pressures. In 1906, they patented their "Durable" duplex valve movement, with interchangeable levers which reduced the number of steam cylinder parts.

Dean Hill Pump Co. 69

The present line of Dean Hill Pumps is the result of nearly half a century of progress in designing and building high grade equipment. Experience gained during that time has enabled its engineers to apply centrifugal pumps to practically every industry. New materials together with new developments have opened many new fields of application and now there is a pump for handling any liquid that will flow. The company maintains offices in principal cities, with competent engineers in charge who are glad to assist and advise on pumping problems.

De Laval Steam Turbine Co. 67

Established in 1903 to manufacture impulse steam turbines, both single stage and multi-stage, and double helical speed reducing gears for use with high speed steam turbines in driving medium and slow speed machinery. At the same time, improved centrifugal pumps, showing high mechanical efficiency when delivering against high heads and at high speeds, were introduced. The present line of manufacture includes, in addition to steam turbines and pumps, centrifugal blowers and compressors for pressures up to 100 lb. per sq. in. positive displacement rotary pumps, propeller pumps, worm reduction gears, and water turbines.

Detroit Hoist & Machine Co. 70

In business over 28 years, this company is one of the pioneers in the manufacture of small power hoists. The early years of manufacturing were confined to the Geared Pneumatic type of Hoists, Cranes, etc., many of which are still in successful operation. For over twenty years the line has also included Electric Hoists, Cranes and Overhead Hoisting Appliances, embracing a line of cranes of standard and special design from one to ten tons capacity. This firm has its product widely distributed and has enjoyed a healthy business experience, never having changed its management or policies.

Detroit Stoker Co. 71

Established in 1898 and has had thirty-four years of continuous experience in combustion and in the manufacture of stokers; is one of the oldest and has one of the largest and most modern plants devoted exclusively

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to the manufacture of stokers; started originally with a "V" type inclined grate overfeed stoker. Through constant progressiveness they have designed and are now manufacturing several different types of Underfeed and Overfeed Stokers to meet all conditions of fuel, physical layout of plants and load demands in the heating and power field.

DeWolf Furnace Corp'n..... 72

Divine Bros. Co..... 73

An organization that for 40 years has specialized in the development and improvement of methods and equipment for finishing metals by means of abrasives. In addition to a plant for the manufacture of polishing machines, polishing wheels and buffs, it maintains an engineering department and laboratory. In these, new processes and equipment are constantly under development to meet the special needs of customers, and to advance the state of the art. Most metal finishing problems require special treatment which the combination of factory, laboratory, and engineering is ideally fitted to develop.

Doehler Die Casting Co..... 74

Organized by H. H. Doehler in 1906 with plants at Brooklyn, N. Y., Batavia, N. Y., Toledo, Ohio, Pottstown, Penna., and Los Angeles, Cal. Are the largest producers of Die Castings in Zinc, Aluminum, Brass, Tin, and Lead Alloys. This company introduced Zinc Alloy Die Castings commercially and have since pioneered Aluminum and Brass Die Castings.

Downingtown Iron Works..... 75

Fabricators of Tanks and Special Fabricated Plate Work of Carbon Steel and Alloys such as Chrome-iron, Chrome-nickel, "Everdur," Nickel, Nickel-clad Steel, Aluminum, and "Monel" Metal. Plant is located on main line of P.R.R. near Philadelphia, within short distance of large plate mills producing carbon steel plate and converting alloys from billets to plates. Complete plant equipment for riveting or welding, plus an engineering staff educated to design economical products to meet varied operating conditions, plus the metallurgical advice of T. H. Nelson, the well-known authority in the field of alloys, assures careful consideration of problems and designs submitted.

E

Economy Pumping Machinery Co.... 76

Centrifugal Pumps of all kinds. Vacuum and Condensation Pumps for Heating Systems, Sewage Pumps, Sump Pumps, etc. Founded in 1914 by Richard H. Thomas who had become interested in pumps for use in air conditioning apparatus. Immediately afterward he disposed of his air conditioning patents and henceforth devoted his entire time to pumping equipment. The Economy line has been refined and expanded until it is one of the best known specialty pump manufacturers. Unusual facilities have been developed for serving resale manufacturers and others who require pumps for unusual services. An interesting 148 page catalog of Economy products is available upon request.

Edward Valve & Mfg. Co..... 77

Edward Valves, for a quarter of a century, have been built for high pressures and high temperatures. As pressures and temperatures have increased, new lines have been developed to meet advancing requirements. The company has specialized in feed line stop-check valves, non-return valves, and blow-off valves for boiler service. In addition, an extensive line of globe and angle valves and check valves, forged steel in the smaller sizes and cast steel in the larger sizes, is offered for standard pressures from 300 lb. w.p. up. High strength cast iron valves are offered for service up to 250 lb. w.p. These valves are largely used in central stations and in refinery, industrial, and technological service.

Ellison Draft Gage Co..... 78

Elmes, Charles F., Engrg. Works.... 79

Founded by Carleton D. Elmes in 1881; succeeded by Elmes & Son (Charles F. Elmes) in 1881; incorporated in 1895. The business is still controlled by direct line of descent, viz., Charles W. Elmes, Carleton L. Elmes, and Charles F. Elmes, II. The president and treasurer are two of the original officers of incorporation. The ability of

Charles F. Elmes to design and construct highly complicated machinery resulted in the successful building of all kinds of hydraulic equipment. With this invaluable experience, the corporation made rapid progress in important developments of rapid acting hydraulic valves, and specialized press equipment with automatic attachments for inexpensively modernizing old units to cut production costs.

Evans, F. H., Estate of..... 52

Business established in 1871 by F. H. Evans. Have been making Expansion Bolts since 1875—one of the first makers of Expansion Bolts in the world.

Everlasting Valve Co..... 80

Founded in 1906 by John H. Allen, Franklin M. Patterson, and Alexander B. Scully; incorporated in 1908 as Patterson-Allen Engineering Company. The main business at the start was the development of P-A Joints and Pipe Flanging Machines for attaching flanges to pipe. The manufacture and sale of the Everlasting Valve was at that time a secondary consideration, but by the beginning of the World War in 1914 the use of Everlasting Valves had grown to such magnitude that the entire shop capacity had to be devoted to making Everlasting Valves. In June, 1917, the name was changed to Everlasting Valve Company. In Canada Everlasting Valves have been continuously manufactured and sold by Everlasting Valve Co., Ltd., Toronto. During 1933 Everlasting Valve Co. (Great Britain) Ltd. was established in London to manufacture Everlasting Valves for allotted foreign markets.

F

Fairbanks Co..... 64

Throughout many generations this company has steadfastly maintained its reputation as a manufacturer of quality products. Years of experience in the manufacture and distribution of mechanical specialties contribute to the continued excellence of their product. They operate a modern plant at Binghamton, N. Y., for the manufacture of valves, both Bronze and Iron, and another at Rome, Ga., for the manufacture of Hand Trucks, Wheelbarrows, Drag Scrapers, and Casters.

Fairbanks, Morse & Co..... 81

The industrial activity of this company dates back more than a hundred years to 1830. From the beginning, products in keeping with the industrial development of the times have been produced. In addition to scales, the products developed during the 19th century included windmills, steam engines, power transmission equipment, electric generators and motors, steam and centrifugal pumps, producer gas engines, and other internal combustion engines. The activities of the company now consist chiefly of the manufacture and sale of Diesel engines for both marine and stationary service. Electric motors and generators in sizes from 1/6th to 10,000 hp. steam, power, and centrifugal pumps for every pumping requirement and scales in all capacities from 0.0001 of an ounce to 450 tons for weighing giant locomotives.

Falk Corp'n..... 84

Founded in 1894, pioneered Herringbone Gears in America. They specialize today in Precision Helical Gears of all sizes and are widely known for the manufacture of Reduction Drives for all purposes, Speed Reducers, Motoreducers, Flexible Couplings, and have recently announced the addition to their line of a "Torque Converter." They also operate one of the largest and best equipped Open Hearth Steel Foundries in America—making castings from one to 150,000 pounds. The Falk Machine shops are equipped to build special machinery to specifications and to handle job work requiring speed and precision.

Farrel-Birmingham Co. (Inc.).... 82,83

This combination of two of the oldest and most prominent firms in the Eastern United States, dating back to 1836 and 1848, operates three large plants. The Ansonia and Derby (Connecticut) plants are devoted chiefly to the manufacture of rolls and heavy machinery for five major industries—rubber, plastics, metals, cane sugar, and paper—although heavy machinery for many other uses is also built. The roll shop at Ansonia, where rolls are made for a great variety of purposes, is one of the largest specialty roll manufacturing plants in the world. The output of the Buffalo (New York) plant is principally Farrel-Sykes gears, gear units, and gear generating machinery.

Foot Bros. Gear & Machine Co..... 85

IXL Speed Reducers and Industrial Gears are the product of three quarters of a century of gear designing and manufacturing experience. The recent consolidation of the manufacturing operations of the Gear and Reducer Division at their modern South Western Boulevard plant completes one of the finest machine shops in the Middle West, with every facility for prompt and economical production. Gears of every type and size, a complete line of Spur, Worm, Helical, and Herringbone Speed Reducers and the new line of motorized Worm Gear and Helical Gear Speed Reducers, marketed under the trade name "IXL Powered Gears."

Foster Engineering Co..... 86

Established in 1879, fifty-four years ago and during the past half century specializing in the manufacture (one of the pioneers) of automatic valve specialties. Today, their line of over sixty different types provides for a selection to meet most automatic valve requirements and conditions.

Franklin Machine Co..... 80

Established 1798, and is one of the oldest manufacturers of textile machinery in Rhode Island. Through the acquisition of the Harris-Corliss Steam Engine Company in 1918, and the George H. Corliss Engine Works in 1923, added the manufacture of complete Geo. H. Corliss, Harris-Corliss, and Greene-Wheelock Engines to their line. Operate own foundry. Line of manufacture, in addition to steam engines, cast iron castings, and textile machinery includes printing, skein and package dyeing machinery, transmission machinery, ball winding machines, cotton and silk yarn dressers, power show lace tipping machines for metal and celluloid, yarn and wool top baling presses, spun silk machinery, and special machinery.

Friez, Julien P., & Sons, Inc..... 87

Established in 1876, has been one of the leading American makers of Meteorological and similar instruments for 57 years. The company's products are largely used by U. S. Weather Bureau, Navy and other Government departments and have wide application in water undertakings and many industrial fields. Very fine research laboratories are maintained in Baltimore and more recently a new range of moderately priced hygrometric instruments for automatic control, indication, and recording in air conditioning work, has been placed on the market. The company became a unit of the Bendix Aviation Corporation group in 1930.

G

Garlock Packing Co..... 88

Has been identified since 1887 prominently with the development, manufacture, and sale of high grade mechanical packings and immediately allied products. Garlock materials, sold only under the registered Garlock name, are known in every civilized country. Garlock packings are made complete, from the crude materials to the finished products, in the fully equipped modern Garlock factories at Palmyra. In their production, asbestos, rubber, flax, cotton, many alloys, and metals are used. Constant research and development work is carried on in the Garlock laboratories where, also, are solved the many packing problems of providing special packing materials for difficult or unusual applications.

Gates Rubber Co..... 89

This organization, because of its unusual research and development facilities, is one of the leaders in the field of V-Belt Drives. 1-50 h.p., 2-15 h.p. and 2-5 h.p. Dynamometers are used exclusively for testing single and multiple V-Belt Drives for efficiency, h.p. rating, and life under varying conditions. A Laboratory staff of four experienced engineers is engaged exclusively in testing, designing new drives and developing data for industry. A workshop for everyday observation and study of actual drives is afforded by the Gates plant itself, where 326 separate drives, ranging from 1/4 h.p. to 200 h.p. and with belt speeds varying from 100 ft. to 6,000 ft. per minute, are in daily operation. This company has pioneered a great many new V-Belt Drive applications. Among these are the V-Flat Drive and the Quarter-Turn Drive.

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H

General Electric Co. 90

Forty years ago the Thomson-Houston Electric Co. of Lynn and Boston consolidated with the Edison General Electric Co. of New York and Schenectady, forming the present General Electric Co. At that time the company had three modest manufacturing plants. Today it has five large apparatus works and a number of incandescent lamp factories. Having to its credit the improvement of the incandescent electric lamp, the introduction of the Curtis steam turbine as a primary power unit for electric generating stations, the evolution of the modern electronic tube, the establishment of a renowned scientific research laboratory, General Electric today is one of America's leading electrical manufacturers.

Glover Machine Works. 91

Has, for more than thirty years, manufactured a complete line of industrial steam locomotives and special machinery for domestic and foreign service. It likewise has the distinction of being one of the oldest manufacturers of high pressure cast steel pipe fittings; as it has, since 1918, manufactured a complete line of regular and special cast steel pipe fittings, both flanged and screwed made of carbon and alloy steels produced by the basic electric process. Its subsidiary plant, namely, Glover Steel Company, Cordele, Georgia, was established in 1933 to produce the same high class material according to the most rigid specifications. Both plants are quite modern, and maintain complete pattern shops, foundries, heat treating departments, machine shops, testing and inspecting departments, laboratories, and engineering departments.

Goetze Gasket & Packing Co. (Inc.)... 91

This company has originated many of the accepted standard types of metallic gaskets, has since 1887 concentrated upon problems involving fluid and pressure tightness, and specializes in custom work involving intricate shapes and absolute and lasting tightness under previously baffling conditions. Its facilities include an able engineering staff, long research, fabricating and testing experience, highly skilled operatives, and excellent plant and equipment.

Goulds Pumps (Inc.)..... 92

Iron pumps were made in Seneca Falls as early as 1844. From this beginning grew the "Goulds" pump industry of today, in a plant that covers more than 80 acres, and which produces pumps to handle every liquid that flows. Outstanding in the company's growth has been its development work, its constant efforts to improve its products and keep them thoroughly up-to-date in design and performance.

Granger, A. D., Co. 93

This company was established in 1893 and incorporated in 1900. A firm of contracting engineers, specializing in power plant machinery, including boilers, engines, electric generators, feed water heaters, pumps, steam turbines, cranes, chimneys, breechings, etc., including complete installations with piping and all accessories. Also oil conversion installations, including the oil storage, pumping, and heating units, as well as the remodeling of furnaces. The company represents several old established builders, including the Murray Iron Works of Burlington, Iowa, and also handles the Oswego internally fired water tube boiler exclusively.

Grant Gear Works. 96

Founded in 1877 by George B. Grant, "the pioneer gear man," to manufacture better Gears. The business developed so that in a few years the first stock gear catalog in this country was issued. Today this catalog has 150 pages and contains Gears, Sprockets, Reduction Units, etc., and many useful and interesting tables on horse power, etc.

Gwilliam Co. 94, 95

Incorporated in 1912, by George T. Gwilliam, a pioneer in the Bearing Industry, who early recognized the need for a source of supply for "Hard to Get" and obsolete sizes and unusual types of bearings. Specializing in the design of these and with a set-up that permitted the production of various types and sizes of anti-friction bearings in quantities of "one to one thousand" and backed by careful engineering, the plan proved a success. Today many "standard" types and sizes of bearings are now produced and carried on hand for immediate delivery besides a large stock of "Specials." A similar line is carried in the Philadelphia office.

Hardinge Co. (Inc.)..... 219

Has been manufacturing mining and industrial machinery for approximately twenty years. The business was founded upon the Hardinge Conical Mill for grinding ores. Since that time, the mill has been adapted by means of air classification and other auxiliaries to grind coal, cement, and other materials. In 1920 this company acquired a plant in York, Pa., where the main office is now located, and at the same time acquired the Ruggles-Coles Dryer which is probably the most well-known type of rotary dryer in existence. About 1925 the company began manufacturing equipment for sewage treatment plants with very successful results. With these various lines of machinery, the company has expanded to many times that of the original company.

Hauck Mfg. Co. 97

Have manufactured oil burners and oil burning equipment for the past 33 years. Among the more prominent products are the Venturi high and low pressure air atomizing oil burners for heating and heat treating furnaces; the micro-vernier oil regulating valves for any oil burner; and recently have added a line of gas burners suitable for all kinds of gases including butane, propane, and petroleum gases. It maintains an Engineering Department to meet the special needs of customers.

Hauser-Stander Tank Co. 98

This company is one of the oldest and largest manufacturers of wooden tanks, having been in existence more than sixty years. Early in its career an admirable reputation for quality was established, and as the business has grown in years and size, this enviable reputation has been maintained. Its products have gone into every kind of industry with uniformly gratifying results. This success is attributed to the skill and experience of the organization, which assures the selection of the proper materials for each particular use and the working of same, in their modern factory, into finished products of quality.

Hays Corp'n. 99

Manufacturers of a complete line of Combustion Instruments, was designed by Joseph W. Hays, who designed a flue gas analyzer which was rugged, compact, and accurate, using this first instrument in his own work. From a small manufacturing business which was started as a side line, this business gradually expanded as other combustion instruments such as Automatic CO₂ Recorders, Draft Gages, and complete Portable Combustion Test Sets, were added to the "Hays Line."

Hayward Co. 100

Founded March, 1897. One of the pioneers in the development of the grab bucket, both for digging and rehandling applications, it has perfected a line of equipment that includes every type of bucket for every service. Among the more popular Haywards are the Orange Peel Bucket in Standard, Heavy and Multi-Power designs, also the Three Bladed Orange Peel for handling rock, and the Dwarf Buckets and Midget Digging Machines; the Class "E" Clam Shell, better known as the Hayward Rehandling Bucket, the Class "K," which is the Hayward Digging Clam Shell Bucket; the Electric Motor Clam Shell Bucket for overhead crane service, and the Drag Line Bucket. The Hayward Line also includes Dredges, Traveling Derricks and Coal Handling Machinery, Cable Take-up-Reels and Counterweight Drums.

Homestead Valve Mfg. Co. 101

Founded more than forty years ago, this company originated the now famous Homestead line of Quarter Turn Valves. These plug type valves and their various modifications such as the lubricated and Round Port Valves have since established enviable records in hundreds of industrial and process plants for long, continuous service at negligible maintenance cost. Among other Homestead products are Hovalco Angle Valves, Homestead Protected Seat Hydraulic Operating Valves, Spray Valves, Homestead Lift Type Plug Valves; Air Shut-off Valves and the Hypressure Jenny.

Hunt, Rodney, Machine Co. 102

Since 1840 engaged in the manufacture of Water Wheels, and accessory equipment that together make up a complete Water Power Plant. This has led to the development of many efficient designs, culminating in the modern "Hi-Test" Water Wheels, which in

official Holyoke Test have shown a top record, 93.38% efficiency. Furthermore, these many years of experience have led to the design and manufacture of a complete line of "Testite" Sluice Gates, "Tri-Seal" Gate Hoists, etc., with an "Extra Factory of Safety." Today these Gates and Hoists are widely used throughout the U. S. for Water Works, Sewerage and Irrigation Plants, etc.

Hydraulic Press Mfg. Co. 103

Fifty-seven years ago the first H-P-M Hydraulic Press was built. Since that time the company has pioneered many of the major modern developments that have been responsible for the advancement of hydraulic press performance. One of the most outstanding achievements in this direction is the H-P-M Hydro-Power Press... an economical and efficient production machine that combines hydraulic smoothness and flexibility with the desired speeds for production work. Today, this company is recognized as one of the largest exclusive Hydraulic Press builders in the world, with a corps of hydraulic engineers that are qualified through actual experience to work with a manufacturer faced with a production problem.

Ingersoll-Rand Co. 104

Is a consolidation of firms that have held leading positions in the manufacture of rock drills, air compressors, pumps, engines, and allied equipment for more than 60 years. The list of products has grown to more than a score of different types of machines and these are now used by hundreds of lines of industry in practically every part of the civilized world. They are made in four factories in the United States. Associated companies have manufacturing facilities in Canada and abroad. The company maintains more than 70 branch sales offices which are located in every important mining or industrial country. The home office is located at 11 Broadway, New York, N. Y.

International Nickel Co. (Inc.)..... 105

Is a subsidiary of the International Nickel Co. of Canada, Ltd. From its Canadian mines and its mills at Huntington, West Va., come Monel Metal (an alloy containing approximately two-thirds nickel and one-third copper) and pure Nickel in all commercial forms including sheet, strip, seamless tubing, bar, rod, wire, angles, and special shapes. It maintains an extensive technical service department to aid users and potential users of its products. Products of the company are carried in stock in convenient warehouses located in all sections of the world.

James, D. O., Mfg. Co. 106

This company was established in 1888 manufacturing Gears and Special Machinery and are at the present time producing Gears, Speed Reducers, and Couplings of various types. Planetary Speed Reducers were originated by this company in 1904 and have been used extensively ever since. Besides making all the various type speed Reducers, a new motorized Herringbone Reducer has been fully developed recently.

Jarecki Mfg. Co. 107

Since 1852 Jarecki Valves and Pipe Fittings have been developed to their present standard. Backed by thorough knowledge and long experience Jarecki products deserve their reputation. The main plant built during the late war, and at that time employing 7200 men manufacturing shells and howitzers, covers over 9 1/2 acres of floor space. In this plant are located Malleable, Cast Iron, and Brass Foundries, and the machine shops where Jarecki Valves, Fittings, Pipe Threading Machines, Compressor Governors, and Unloaders, Oil Well Supplies, etc., are finished.

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Jeffrey Mfg. Co..... 108, 109

Founded by J. A. Jeffrey in 1877 and was originally devoted to the manufacture of coal cutting machines. However, during the last half century, it has broadened its product until, in addition to coal cutting machines, electric locomotives, ventilating fans, tipple machinery, and other equipment for coal mines, it produces a complete line of material handling machinery. Today Jeffrey is one of the largest manufacturers of material handling and mining equipment in the world. The present plant covers more than 60 acres of ground.

Jenkins Bros..... 110

Johns-Manville..... 112, 113, 114

The world-wide activity of this corporation includes the manufacture of products from asbestos, magnesite, diatomaceous silica, rock wool, and asphalt. This business was initiated 75 years ago by H. W. Johns in a one-room establishment at 78 William Street, New York City. The Johns organization was joined to the Manville Covering Company in 1901 and to the Asbestos Wood Company in 1907. The Celite Company was added in 1928 and subsequently the Banner Rock Products Company and Weaver-Henry Mfg. Company. Incidental mergers with other smaller companies have taken place almost constantly and mines have been developed and factories built in many parts of the world, so that now the well-known products of this company are readily obtainable anywhere.

Johnston & Jennings Co..... 111

An engineering firm operating successfully for 48 years. Its six acre plant includes a machine shop, forge shop, and iron foundry specializing in high tensile semisteel castings up to 40 tons, also a complete physical testing laboratory. Special machinery is designed and built to order. All departments accept jobbing work. Manufactured products include US Molding Machines and Stowe Stokers for industrial and central station plants. The stoker is neither an underfeed nor conventional chain grate. Its patented "Compensated Feed" produces a fire bed of uniform thickness and blast resistance providing unusual efficiency with both eastern and western coals.

K

Keeler, E., Co..... 116, 117

Keeler Boilers are offered to steam users as the product of sixty-nine years' experience in building boilers. The Keeler shops have been in continual operation building boilers since established in 1846. Keeler has the experience, proven workmanship, design, the tools and machinery required to produce a boiler that is efficient and reliable. All Keeler Boilers are built in strict conformity with the A.S.M.E. Code or State Code.

Kellogg, M. W., Co..... 115

Established by the President, M. W. Kellogg, early in the present century. The business at first consisted of general contracting. Later the fabrication and erection of industrial piping systems became a major part of the business. About 1914 a plant was erected in New Jersey for the fabrication of pressure vessels of various types. In 1918 the company began to specialize in equipment for the petroleum industry. At present, the design and erection of cracking plants forms an important part of the business. Kellogg pressure vessels are fabricated by the "Masterweld" process, a method of coated electrode fusion welding developed and perfected by engineers of this organization.

Kennedy-Van Saun Mfg. & Eng. Corp'n..... 118, 119

The Kennedy line of mining, crushing, cement, elevating, conveying, and screening equipment, pulverized fuel equipment for power plants, pneumatic transport systems, air cooled and shadow water walls is the result of 40 years of experience in the reduction of materials. They specialize in furnishing complete plants.

Kieley & Mueller (Inc.)..... 96

Since 1879, this company has designed and manufactured engineering specialties for pressure and level control. Many of the

world's famous buildings and the largest industrial plants are K. & M. equipped. Simplicity of design and operation are outstanding features of K. & M. products. Factory at Newark, N. J.; General Offices and Warehouse in New York City; branches or representatives in all principal cities. Complete engineering department to co-operate with prospective users of K. & M. equipment.

Kingsbury Machine Works (Inc.)... 120

The principle of tapering oil films was first applied in this country to thrust bearings by Albert Kingsbury. One of the earliest commercial installations was made in 1912 in a hydro-electric unit at the Holtwood Station of the Pennsylvania Water & Power Co., on the Susquehanna River. The marked success of this bearing led to the adoption of Kingsbury Bearings for all ten units at that plant and to the rapid acceptance of Kingsbury Bearings among hydro-electric engineers. In similar manner the use of Kingsbury Bearings spread through the steam turbine field and then through the marine field; and they are now recognized as standard for those and similar duties. They are now available for heavy duty in all classes of machines.

Kirk & Blum Mfg. Co..... 121

This engineering organization designs, fabricates, and installs (1) Suction and Blower Systems of any size and for every purpose including the collecting of shavings and sawdust; buffing, polishing, grinding, sand-blast and foundry dust; grain elevator and mill dust; shoe factory refuse and textile lint. (2) Cooling systems for glass plants; Heat reclamation and drying systems for ceramic plants. (3) Paint spray, fume and heat removal. (4) Ventilating and air-conditioning. (5) Industrial ovens. Also manufacturers of sheet metal parts and stampings such as: pressed steel commercial body and truck cab parts; one piece elbows and stream-line fittings; pickling baskets and crates; lead lined steel tanks and fume exhaust systems.

Kraissl Co. (Inc.)..... 122

This business was founded in April, 1926, by Frederick Kraissl, Jr., as an engineering concern to represent manufacturers of allied engineering equipment. Particular emphasis was given to pumping machinery and the representation of the American Machine & Foundry Co. When this firm decided to withdraw from the pump industry, the Kraissl Company took over their patent rights and entered the manufacturing field. The particular mission of this business has been the searching out and solution of pump problems in specialized quantity markets. The basic theory has been that no one displacing mechanism will meet all requirements and the method of approach has been to employ the right design for each type of service. This has led to the development of a number of new pumps, some of which have become sufficiently widely used to become standardized.

L

Lenape Hydraulic Pressing & Forging Co..... 123

Lincoln Electric Co..... 124

Is one of the leading manufacturers of arc welding equipment. Pioneering in this field the company produced the first variable voltage arc welder, the first automatic arc welder and first inaugurated the shielded arc process of welding. The company engineers redesigned the first casting to be rebuilt of welded construction; were the first to adapt welding to the structural field, to the design of motors, pipe lines, and bridges.

Ludlow Valve Mfg. Co..... 125

Manufacturers of Gate Valves, Fire Hydrants, Multi-type Blow-Off Valves. Pioneer in the Gate Valve industry being established in 1888 by H. C. Ludlow, the original designer and inventor of Gate Valves since which time the company has been furnishing the Water Works trade, Gas Plants, and Oil Industry with Valves and Hydrants. The product has been constantly improved in keeping with modern requirements and is universally known. The Multi-Valve, a new product, is the latest and most modern Boiler Blow-Off Valve.

M

McDermott Water Heaters (Inc.)... 123

Manufacturers of heat exchangers for domestic water, oil and commercial processes. The first coil within a heating boiler known to New York City was installed by this company. This principle of circulating tank contents through the boiler enables all transfer surface to be used, and it has been epochal in water heating, being definitely the reverse of circulating boiler contents through tanks.

McMahon & Co..... 126

McNeill, T. W., Engrg. Equipment. 127

Formerly known as the Boiler Room Improvement Company, have been manufacturers of boiler room economy devices since 1911 and are pioneers in the art of indicating proper combustion by observation of the color of the uptake gases. Smoke Indicating equipment is now standard in all leading steam generating plants burning bituminous coal or oil and has recently been listed as standard equipment by the U. S. Navy and is also in use on many vessels of the merchant marine. They are manufacturers of the Eclipse Smoke & Combustion Indicator. Added to their list of engineering achievements recently, is their remote water level indicator, which brings the boiler water column down to the eye level of the operator, regardless of the height of the boiler or the operating pressure.

Magnetic Mfg. Co..... 128

Established by engineers of more than thirty years' experience in designing and building magnets of all kinds exclusively; this company has grown to the position of one of the leaders in the industry and can be of service wherever magnetic equipment is useful or beneficial; especially qualified on magnetic separation and transmission problems, maintaining what is considered one of the largest and most up-to-date laboratories for experimentation in the industry. Numerous patented devices are manufactured and built, all resulting from the extensive development and research work conducted by this organization; particularly qualified on DC electrical apparatus, although in position to supply some forms or types of equipment for operation on AC electrical current as well.

Mears-Kane-Ofeldt (Inc.)..... 127

This company is one of the pioneer manufacturers of gas-fired steam boilers for process work. Since 1904 when William Kane built the first automatically controlled gas-steam boilers to bear his name, Kane boilers have been constantly improved and are still one of the leaders in their field. A companion boiler, the Ofeldt, is one of the fastest steaming boilers made. Agents in several large cities and local gas companies give wide distribution.

Medart Co..... 129

Nationally recognized as one of the foremost manufacturers of Power Transmission Machinery of all kinds. Established 1879 as the Medart Patent Pulley Co. The shops and foundry now occupy five city blocks in the City of St. Louis, Mo. This company also manufactures turned and polished shafting. Shaft Turning and Polishing Machinery in use in the majority of cold finishing steel mills in the country today has been built by this company. The St. Louis Shafting Mill of this company is one of the oldest in the United States. The products also include special machinery, alloy iron castings, and other specially engineered products for oil, textile, paper, chemical, and other industries. The first steel rim, steel arm pulleys made in the United States were made by this company.

Monarch Mfg. Works (Inc.)..... 130

Moore Steam Turbine Corp'n..... 131

Manufacturers of Steam Turbines and Reduction Gears since 1916. Makes both single stage and multistage turbines of all types up to about 3000 horsepower, with a line of reduction gears for use when necessary to adapt turbines of economical speeds to the correct speed for the driven machines. Special attention is paid to turbines which require consideration of both power and process steam requirements, such as bleeder, mixed-pressure, mixed-pressure-bleeder, high back pressure turbines, etc. A flexible design and manufacturing system is combined with a policy of giving skilled and painstaking engineering attention to each individual turbine. Exceptional testing facilities are available and every turbine large and small is thoroughly tested under load before shipment.

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Morehead Mfg. Co...... 132
For 42 years specialists in the design and manufacture of equipment for steam drainage and boiler feeding, including return, condenser, vacuum, non-return, and variable pressure tilting type steam traps. This company operates on the principle that the conversion of drainage and boiler feeding losses into profits is an engineering problem. It maintains a staff of engineers whose entire time is devoted to the solution of these problems and for consultation with owners and operators of steam plants for processing work of all descriptions.

Murray Iron Works Co...... 133
This company was incorporated in 1870 and has been for 63 years engaged in operating foundries, machine shops, and boiler shops. These plants are situated in Burlington and West Burlington, Iowa, with efficient switching service between and numerous railway sidings. The products of the machine shops are steam engines, steam turbines, and auxiliary machinery. In the boiler shops are built boilers of all types and sizes. The equipment of the foundries and shops is designed for both light and heavy machinery and complete power plants are built and shipped at the same time. An extensive engineering organization is maintained.

N

Nash Engineering Co...... 134, 135
Established in 1905, this engineering organization has, so far, devoted its energies entirely to the perfection and manufacture of improved pumping machinery for handling air, other gases, and liquids. This company started as a manufacturer of the new well-known Nash Hytor, or Hydro-turbine Air Compressors and Vacuum Pumps. The line has been extended whenever a really superior design could be offered to the market. It now includes the Jennings Return Line Heating Pumps, Condensation Pumps, Sump and Sewage Pumps, Sewage Ejectors, and Centrifugal Pumps.

National Meter Co...... 136
Established in 1870, is one of the pioneers in the manufacture of meters for all kinds of liquids. The "Empire" Oscillating Piston Meter, so generally recognized today as the standard positive displacement instrument for measuring liquids, was originated by this company in 1884. Wherever liquids are bought, sold, handled, or stored, this company is prepared to supply meters suitable for every measuring process involved, all of the highest quality, and backed by the experience and reputation of sixty-three years.

National Supply Cos...... 137
Manufacturers and distributors of equipment for the production and refining of petroleum. Manufacturing facilities include factories at Toledo, Ohio, and Torrance, Calif., for the manufacturing of Drilling and Pumping Equipment. Spang, Chaffant & Co., Inc., Pittsburgh, Pa., Pipe; Dayton Pipe Coupling Co., Dayton, Ohio; Couplings, and Pipe Line Fittings; Superior Engine Co., Springfield, Ohio, and Philadelphia, Pa., Diesel, Gas, and Oil Engines. Sales Organization embraces over one hundred stocks of merchandise in the principal oil fields of this country, Roumania, and Venezuela with representatives in every petroleum producing country of the world.

Neptune Meter Co...... 138
Is one of the largest manufacturers of liquid meters in the world, having made and in service over six million measuring devices to handle almost every known liquid. Special designs to meet varying conditions are furnished, and automatic registering devices for measuring oil, gasoline, water, and almost all liquids can be supplied. Service is maintained through Branch Offices and foreign factories. A staff of engineers is available at all times for solving any liquid measurement problem.

New Departure Mfg. Co...... 140, 141
Any American who ever straddled a bicycle has a good word for New Departure Coaster Brakes. It has been a standard, dependable article since 1899. Eight years later New Departure engineers first sensed the approaching era of motor cars and the necessity for anti-friction devices. Production started in 1907 and this division has seen a phenomenal growth because every industry soon became ball bearing minded. So extensive are New Departure's present facilities that 300,000 quality ball bearings is the present daily plant capacity. Your bearing problems get expert attention here.

Mechanical Catalog (1933-34)

Newport News Shipbuilding & Dry Dock Co...... 139
Was incorporated in 1890, and has been in continuous operation, engaged in general shipbuilding and ship repairing; marine boiler, engine, and turbine building. The scope of contracts executed and on order covers all sizes of merchant and Naval ships. In 1922 the building of hydraulic turbines and accessory equipment, including head gates, crest gates, penstocks, butterfly valves, rack gates, etc., was added as a permanent part of the business, and installations of largest sizes and capacities have been made. A large hydraulic laboratory completed in 1933 replaces the original testing flume built about ten years ago, and affords unsurpassed opportunities for research. A large and experienced designing staff and modern shops with ample equipment for handling the largest work assure successful products in the shortest time consistent with high quality.

Norma-Hoffmann Bearings Corp'n. 142
Established in 1911 as the Norma Company of America, this company has from the beginning concentrated upon the manufacture of "Precision" bearings distinguished by high speed-ability, load-ability and service-ability. The present factory at Stamford, Conn., is the third in a series of plants of ever-increasing capacity, made necessary by the demand for these "Precision" units. Equipped with every modern facility for precision production, supplemented by complete engineering and research staffs, its output includes "Precision" Ball, Roller, and Thrust Bearings in a complete range of types and sizes. A number of new types were added to the line in the past year.

Northern Equipment Co...... 143
Manufacturers of the "Copes" System of Boiler Feed Control and allied products. Has specialized in feed water regulation under present management since 1913. Pioneered the continuous-feed-stabilized-water-level principle of boiler feeding, differential pressure control, the use of feed water regulators for pressures greater than 1000 pounds and other important contributions to modern boiler feed control. World-wide experience and a well-trained engineering staff have made the "Copes" Regulator the recognized standard for performance. In recent years, a complete line of liquid level controllers and flow and pressure controllers has been developed around the accurately balanced "Copes" Control Valve.

O

Ohio Grease Co...... 144
More than a quarter century ago this company introduced a successful grease for steam cylinder lubrication and are today recognized by many engine builders and operators as foremost in the field. They also manufacture a variety of high grade industrial and automotive lubricants.

P

Page, Frederick, Contracting Co. 146, 147
Established in 1903 by Frederick Page; incorporated 1909 under the above firm name. Specializes in the installation of complete boiler plants, boiler settings, baffle walls, oil burning, and stoker installations, furnace repairs and incinerators. Its activities are nation-wide. Its engineering and drafting departments are at the disposal of architects and engineers in assisting them on problems of combustion, furnace, and incinerator design.

Palmer Co...... 133
Since 1872 Palmer thermometers have been made to be very accurate and high-grade. Care has been taken to improve these Industrial Thermometers in every way possible. In 1930 the latest new feature "Red-Reading-Mercury" was developed and offered to the trade. Mercury Thermometers were always hard to read, but now that the pure mercury tubes can be made to show a bright red in the reading column, there is nothing that could be finer. Thermometers include also laboratory style, factory wall-type, hygrometers, and also types for special purposes.

Pangborn Corp'n...... 145
American Industry was just entering a new era of foundry problems and dust was scarcely recognized as a formidable factor in industrial processes, when the vision of Thomas W. Pangborn recognized in 1904 that Blast Cleaning and Dust Collecting were indispensable to the progress of manufacturing. The scientific perfection of Blast Cleaning equipment and Dust Collectors became the one objective of his far sighted genius. John C. Pangborn joined him in materializing his dream. The diversification of Pangborn equipment to meet every industrial condition was a feat of inventive resourcefulness and engineering.

Parker Appliance Co...... 148
An engineering and producing company owned and managed by A. L. Parker. Since 1924 the enterprise has developed into one of national scope servicing nearly every industry including power plant, aircraft, marine, railway, Diesel, and steam engine, machine tool, and innumerable other industries. Through extensive engineering and laboratory facilities, new products have been consistently added to the Parker Line so that a most imposing inventory of tube couplings, fittings, and valves in brass, bronze, monel metal, duralumin, steel, stainless steel, and other alloys is available at all times to service industry.

Peabody Engineering Corp'n...... 149
Founded early in 1920 by Ernest H. Peabody, recognized on both sides of the Atlantic, as an authority on combustion problems, particularly in connection with oil fuel and the development of the mechanical atomizer type of oil burner and its introduction into the U. S. Navy, the Merchant Marine, and large power plants on shore. During the past thirteen years the company under Mr. Peabody's direction has built up an organization of young engineers which is carrying on the same sort of progressive pioneer work in combustion. One new development after another has been perfected and the company's equipment for burning fuel, oil, gas, pulverized coal, or any combination of these fuels, is widely and favorably known.

Pennsylvania Flexible Metallic Tubing Co...... 150
In the field of mechanical engineering the trade name "Pendflex" has long been accepted as marking high pressure bronze and steel hose of uniform quality and absolute dependability. The company maintains an engineering department always ready to suggest the type of flexible metallic hose or tubing best suited to meet a specified requirement. In addition, "Pendflex" sales offices with experienced sales engineers in charge are located in a number of cities to assure national service.

Pennsylvania Pump & Compressor Co...... 151
Has continuously maintained reputation for highest standards of design and construction. In Air Compressors and Vacuum Pumps, Air Cushioned Valves and improved methods of control and regulation are outstanding features. In Centrifugal Pumps, thrust troubles virtually eliminated through opposed impellers and differential diameters of stage bushing, in multi-stage types; and by balancing port connecting two suction chambers at impeller inlet, in single stage types. Recent additions to products have been steam booster compressors and close coupled Penn-Motor Pumps, designed to meet varied field of application.

Permutit Co...... 152
About 20 years ago this company originated the zeolite method of water softening. Today, its products cover the broad field of industrial and household water treatment. Through a greatly diversified line of equipment, water can be practically tailor-made for any desired use. Because of an exhaustive record of water conditions, and broad specialized experience in the treatment of water for almost every conceivable use, the Permutit organization has become dominant in its field as a specialist in water treating equipment. Permutit installations are in many lands, and range from equipment to handle millions of gallons daily to the modest requirement of a small home.

Petroleum Heat and Power Co...... 153
Have been manufacturing oil burners and oil burning equipment since 1903. Petro burners for commercial and industrial use were first made in San Francisco in 1903, and NoKoi burners were first made in 1918, and are today recognized as being the first fully automatic domestic oil burner. In 1929 these two companies merged to produce

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the only full line of oil burning equipment to be produced anywhere, and it consists of 8 types, 16 models, and 66 sizes. The staff of engineers at the factory offer you every assistance needed in planning your heating and power needs by means of oil burning equipment.

Philadelphia Gear Works..... 154

Has manufactured Gears for nearly a half century, and were one of the pioneers in the design and construction of Speed Reducing Units for industrial purposes. Their recently constructed plant at Erie Avenue and G Street, Philadelphia, is one of the most modernly designed and equipped Gear Plants. This company's latest contribution to industry is the "Motoreducer," a unified, self-contained, compact, efficient combination of Electric Motor and Speed Reducer. This device requires no base plate or flexible couplings, etc.

Pittsburgh Piping & Equipment Co.. 155

Poole Foundry & Machine Co..... 156

The present company is the successor company of Poole and Hunt, Robert Poole and Son Company and the Poole Engineering and Machine Company. This organization has specialized in the development and improvements of machine moulded and cast tooth gears, having over 16,000 patterns, ranging in size from 3" in diameter to 20" in diameter. This company is also actively engaged in the manufacture of the Poole patented, flexible couplings and the Poole speed reducers. Throughout the entire business existence of this company and its predecessor companies, its products have been recognized and accepted as the outstanding products in their respective lines. Service, quality, and workmanship have enabled this company to maintain its prestige and leadership in its field.

Powers Regulator Co..... 157

Established in 1891 by William Penn Powers, succeeded by his sons, Fred W. Powers and Donald J. Powers, who are now actively engaged in the firm's management. The company has long been recognized as one of the leading manufacturers of control apparatus for regulating Heating, Ventilating, and Air Conditioning Equipment. It is also widely known for its comprehensive line of regulators used to control industrial processes and the automatic mixing of hot and cold water. In addition to these products it also manufactures Dial Indicating Thermometers, Steam Traps, Pressure Reducing Valves, etc.

Prat-Daniel Corp'n..... 158

In 1892 Louis Prat originally designed an evasee stack for a European Government munition plant for evacuating acid fumes. From that beginning to the use of a diffusing form of stack after an induced draft fan, built as a unit, many improvements have been made and the Prat-Daniel "Thermix" stack is the result. Over 18 years ago one of the first air heaters for boilers was developed by Mr. Prat and the "Thermix" modern Type "C" Heater for boilers and oil stills is the result. Seven years ago this company introduced its first dust collector. This sort of background of operating experience, backed by thorough Prat-Daniel research, is invaluable for the successful operation of such products.

Pressed Steel Tank Co..... 159

Are one of the oldest and largest designers and manufacturers of metal containers, for liquids, gases, and solids. For 30 years the trade name "Hackney" has represented metal shapes built only to the highest quality standards. Through the wide experience of this company in serving most of the country's leading industries, many special shapes have been developed, and use made of many different metals in addition to steel. The cold drawing process results in a smooth, seamless construction. The Heat Treating process is an assurance of elimination of all stresses in the metal.

Proctor & Schwartz (Inc.)..... 160

Pulverizing Machinery Co..... 161

One of the younger but now thoroughly established and successful concerns in the field. Executive offices, Research Department, and well equipped manufacturing plant are located at Roselle Park, N. J. Technical Sales representatives are located in large cities throughout the country. Has specialized in difficult grinding problems, in elimination of dust nuisance, etc., and has now some eight hundred of its patented "Mikro-Pulverizers," or special grinders, Disintegrators, Blenders, Dispersers, in use in the Chemical, Food, Mineral, and other industries.

Reliance Gauge Column Co..... 162

Organized in 1884 on the patenting of the Reliance float-operated water column, a whistle alarm for guarding boiler water levels. This company was one of the pioneers in its field and in recent years has been one of the leaders in the development of boiler alarms for high pressure. It now produces safety water columns, gage cocks, and water gages for pressures up to 2000 pounds, its float-sight water gages being particularly notable in surmounting the limitations of glass in such devices. But the most important achievement of Reliance engineers has been the Reliance Monel Float, made by an original process, resulting in extraordinary buoyance and dependability.

Republic Flow Meters Co..... 164, 165

In 1910 Republic engineers, men prominent in the field of industrial engineering, designed and built the first electrically operated flow meter ever placed in industrial service—the flow meter which made remote registration possible. In 1921, J. M. Spitzglass, Vice-President, was awarded the Edward Longstrech Medal of Merit by the Franklin Institute, "in consideration of the novelty of measuring electrically, the flow of fluids in pipes, and the mechanical simplicity and excellence of the measuring apparatus. Pioneering has not ceased. Today this company manufactures a complete line of industrial instruments containing features which only pioneer engineers could produce—features which only experience covering all problems in instrument application could perfect.

Republic Steel Corp'n..... 163

Twenty-six plants making steel and steel products. Twenty-four sales offices in principal cities of America. One of the world's largest producers of alloy steels. America's second largest producer of bar and strip. America's third largest maker of sheet steel and pipe. Makers of Agathon Alloy Steels, Enduro Stainless Steels, Toncan Copper Molybdenum Iron Sheets and Pipe, Republic Electric Weld Pipe, Upon Bolts, Nuts, Rivets, Turnbuckles, and Witherow Die Rolled Products.

Rivett Lathe & Grinder Corp'n..... 166

Established 1923 to take over the business of predecessor Rivett Lathe and Grinder Company, a business established in 1884. For the last eleven years this corporation has specialized in the development of Automatic Lubricating equipment and controls a large number of important patents in the automatic lubrication field. The corporation also continues the business of manufacturing high grade precision bench lathes, internal and external grinders and allied products.

Robertson, John, Co. (Inc.)..... 167

Founded in 1858, this company has been a pioneer builder of hydraulic machinery. Lead pipe extrusion machinery was its specialty until 1885 when the lead cable encasing die-block was invented by John Robertson. The development of lead cable encasing presses and the allied equipment which consists of hydraulic pumps, lead melting furnaces, etc., has continued without interruption and today the outstanding installations of lead presses are Robertson built. Robertson extrusion machinery is the result of over 74 years' experience in the design and manufacture of this equipment. Always pioneers, Robertson engineers have designs ready which are well ahead of the industry's requirements.

Roebbling's, John A., Sons Co..... 168

Wire rope was first made in America by John A. Roebbling in 1840. It was first used on the Portage Railway Incline Planes for raising and lowering boats. This was the beginning of the great wire rope industry, and also the origin of the present John A. Roebbling's Sons Co. Throughout the years, from pioneer days to the present, this company has steadfastly maintained its reputation for the unexcelled quality and performance of the products it manufactures. A most important factor in its superior quality is the steel itself, which is made in their plant at Roebbling, N. J., thus insuring a uniformly pure steel of maximum fatigue resisting qualities.

Roots-Connersville-Wilbraham..... 169

Manufacturers of air, gas, and liquid handling equipment, have collectively served industry for well over a century. In addition to their well-established line of Rotary Positive Blowers, Gas Pumps, Cycloidal Liquid and Vacuum Pumps, and Displacement Meters, R-C-W is now building Cen-

trifugal Pumps and Blowers based on designs perfected during 22 years of active experience in this field. A recent development is the R-C-W Harrison Inert Gas Machine, designed for use in gas works, chemical plants, and oil refineries, and wherever else inert gas, economically produced, is required in quantities.

Ruggles-Klingemann Mfg. Co..... 170

This company is the outgrowth of a selling Agency dating back to 1900. Have manufactured R-K products since 1915. Although young in the manufacturing field, yet old in experience, as their Chief Mechanical Engineer is a man of over forty years' experience in the design of pressure and regulating devices, in which they specialize. They are prepared to furnish R-K Step Action Dampers, Regulators, Temperature Regulators, Chromometer Valves, Pump Governors, Pressure Reducing Valves, Bleeder Checks, Solenoid, Thrustor, and Motor Operated Valves.

S

SKF Industries (Inc.)..... 171

For more than a quarter of a century the SKF Organization has been manufacturing Ball and Roller Bearings. SKF provides a supervision of fifteen factories and over 200 factory offices throughout the world and an international organization for scientific research in engineering, manufacturing and merchandising to assure to the user a full measure of performance in products endorsed with the mark SKF. SKF Bearings are made in a wide variety of types to meet practically every need, and SKF bearing recommendations therefore are unbiased. Wherever shafts turn, SKF Bearings are used. They not only reduce friction's toll to a minimum, but effect considerable savings in maintenance and attention.

Safety Grinding Wheel & Machine Co. 166

This company was established in 1893, and was one of the very early producers of grinding wheels made from either artificial or natural Abrasives. Several important improvements in the application and use of grinding wheels were marketed, but there being no suitable machinery for competently working out these improvements, a Machinery Department was added for this purpose in 1898. The Safety line is complete and up-to-date, both as regards grinding wheels and grinding machinery. The Slogan "A Wheel for Every Purpose" correctly befits our facilities for service to date.

St. Regis Paper Co..... 172

The parent company comprises organizations in all parts of this continent as well as a number of plants abroad. Lumbering is done in Quebec, the Adirondack section of New York, and in northern Vermont and New Hampshire. In upper New York State the company owns Groundwood and Sulphite pulp mills and a number of paper mills producing Newsprint, Groundwood Book and Rotogravure papers as well as Specialties; also Kraft pulp and Rope pulp and paper mills. A wide variety of heavy-duty paper sacks are manufactured and printed by subsidiaries in all parts of the country. At Oswego, an extensive machine shop operation produces automatic equipment for filling and closing paper bags, mainly serving the cement, lime, plaster, stucco, sugar, salt, flour milling, and chemical industries; the Cleveland Friction Clutch (Western Engineering & Manufacturing Division); Bates Wire Ties and Tools; and contract engineering and machine shop service.

Sarco Co. (Inc.)..... 173

Being one of the pioneers in the design and manufacture of thermostatic devices, the high standard of excellence of Sarco Steam Traps and other specialties is the result of more than 21 years' experience in this specialized field. In addition to steam traps, Sarco products also include Temperature Regulators, Strainers, Radiator Traps, Packless Inlet Valves, Air Eliminators, Return Traps, Alternating Receivers, Compound Gages, Pipe Savers, and Recording Thermometers. For the convenience of architects and engineers they maintain a competent force of practical heating engineers who are available for consultation.

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Sraife, Wm. B., & Sons Co. 174

One of the oldest incorporated companies west of the Allegheny Mountains, was founded in Pittsburgh in 1802. They have fabricated steel since the founding of the company and in later years have specialized in the building of pressure tanks of all sizes, types, and designs. They were one of the pioneers in water purification and water filtration in this country, having manufactured water softening and water filtering apparatus since 1881 and now specialize in the manufacture of all sizes and types of water softeners, water filters, and all other types of water purification equipment.

Schubert-Christy Corp'n. 175

For more than a score of years Schubert-Christy Cooling Towers have been serving industry in the cooling of water. They manufacture mill fabricated cooling towers in atmospheric, forced draft, induced draft and combination draft types. This company pioneered the modern type of induced draft cooling tower. Bakelite nozzles and splash plates, copper nails, and heavily cadmium plated bolts are standard equipment. The present line of towers includes capacities from 10 G.P.M. to 40,000 G.P.M. and larger.

Schutte & Koerting Co. 176

Seovill Mfg. Co. 177

This company, established in 1802, is the oldest brass company in America and one of the largest in the world. Its mills produce brass, bronze, and nickel silver, in sheet, rod, wire, and tubing and its manufacturing departments and subsidiary companies turn out a widely diversified line of fabricated products. Metal products for practically every field of industry are included in the list: screw products, forgings, automobile parts and accessories, radio parts, complete metal articles, buttons, common and safety pins, motor driven household appliances, pneumatic valves for tires, plumbing fixtures and so forth.

Seamless Steel Equipment Corp'n. . . 178

Specializes in seamless steel products for high pressure and high temperature requirements. Pressed and Drawn seamless steel tubes in diameters up to 36 inches, forged shells, drums and pressure vessels over wide ranges of diameters, lengths and wall thicknesses, are the principal products of this company. Engineering services utilizing their facilities and experience are offered to produce the best design at the lowest cost.

Shakeproof Lock Washer Co. 179

Over ten years ago, when this company introduced its new patented twisted-tooth principle for the locking of nuts, bolts, screws, etc., it was the first lock washer that differed in its design from the old style split type. Its introduction required comparative tests with all other washers used and its quick acceptance by all types of industry proved that the Shakeproof principle was a definite contribution to industrial progress. Other products are the Shakeproof Tapping Screw and the Shakeproof Self-Locking Set Screw. If you have a locking problem, be sure to ask Shakeproof to send one of their skilled engineers to study your problem—this service is free and without obligation.

Sharples Specialty Co. 180

An engineering organization primarily devoted to the application of centrifugal force to industry. Manufactures a complete line of centrifugal tools such as centrifugal separators, clarifiers, emulsifiers, and extractors. The Sharples Super Centrifuge develops the highest centrifugal force commercially available. The Sharples Rotorotor Centrifugal has the remarkable ability of discharging its solids while running at full speed. Sharples "Centrifugal Headquarters" maintains complete laboratory facilities where samples are tested and centrifugal engineering advice is furnished gratis.

Shaw, Benjamin F., Co. 181

Have been in continuous operation for a period of over forty years. During this time, they have fabricated and installed piping systems for many different types of industrial plants in addition to privately owned power plants and large high pressure central stations. They maintain one of the largest pipe fabricating shops in the United States.

Shepard Niles Crane & Hoist Corp'n. 182

Makes a wide line of cranes and hoists and is one of the largest manufacturers of electric hoists in America. Established over a quarter of a century ago. Plants are located at Montour Falls, N. Y., and Philadelphia, Pa.

Simplex Valve & Meter Co. 183

This company was established by J. W. Ledoux in 1905 for the purpose of manufacturing meters of the differential head type utilizing the Ledoux Bell, a mechanism for translating flows of liquids through primary devices, such as pitot and Venturi tubes, into straight line motion. Since its founding, the company has become one of the most widely recognized manufacturers of water purification, sewage treatment, and metering equipment. Among the many devices now in general use are the Simplex Effluent Rate Controllers, the Simplex Filter Gages, Simplex Air Release and Air and Vacuum Valves.

Skinner Engine Co. 184

Founded in 1888, this company has one of the largest plants in this country devoted exclusively to the building of steam engines. The Skinner "Universal Unaflow" was the first poppet valve Unaflow engine manufactured in this country, and is built under more than fifty patents owned exclusively by this company. These engines are offered in sizes from 75 to 2000 horsepower. Many "Universal Unaflow" engines have been installed to replace purchased central station current, under the "Skinner Guaranteed Saving Contract," and have paid for their entire cost, including the cost of the generators, in the savings against rates as low as 1.1c per kilowatt hour.

Smith, S. Morgan, Co. 185

Founded in 1877 by one of the pioneer builders of hydraulic turbines. By constant efforts the company is improving the efficiency and reliability of its turbines through a continuous program of testing carried on in its own hydraulic laboratory and also at Holyoke and other recognized testing stations. A modern manufacturing plant, manned by experienced workmen, has been developed, with ample facilities for building all types of hydraulic turbines, and a highly trained group of experienced engineers has been assembled for the sole purpose of designing and manufacturing the best equipment possible for the users of water power.

Springfield Boiler Co. 186, 187

Established 1890. For forty-three years engaged in the manufacture of steam boilers of every size and design. For the past fifteen years specializing in the manufacture of Springfield Water Tube Boilers and Water Walls, and have made many of the largest and most prominent boiler installations in the United States. Pioneers in the design and manufacture of water cooled furnaces.

Squires, C. E., Co. 188

Steel and Tubes (Inc.) 189

Established in 1902 as Elyria Iron & Steel Company, later absorbing the Mohegan Tube Company and the Standard Steel Tube Company. Acquired by the Republic Steel Corporation in 1928 to apply the Johnston method of electrical resistance welding to line pipe casing and oil country tubular goods. Over one billion feet of tubing has been produced by the Johnston method since 1921, for countless mechanical and structural purposes. The most recent application of the Johnston method is for "Electrumite" Boiler Tubing, which has received wide acceptance since its introduction.

Stickle Steam Specialties Co. 190

Originally the Open Coil Heater and Purifier Co. of 1907. The name was changed in 1923 to identify the concern and the originator that developed a complete line of steam specialties including deaerating feed water heaters, oil and steam separators, steam traps, reducing valves, blast coil heaters and heating specialties. Patented systems for the automatic control of steam, drainage, and boiler return systems were developed for the paper, textile, canning, laundry and other industrial process steam installations, new and improved heating and ventilating equipment for industrial plants, a heating system automatically changing the temperature of the steam by the weather requirements. Local representatives, traveling sales engineers, and supervising erection engineers assure the correct application of the specialties and systems.

Strong-Scott Mfg. Co. 191

Since 1896 have been engaged in the engineering, design, and production of equipment used in the milling, elevator, and cereal industry generally. Having established an enviable reputation from their accomplishments in fine-grinding of "White" products, it was a natural sequence that they should enter the field of fine-grinding a "Black" product (pulverized fuel) in 1924. Their present prestige in combustion engineering circles may best

be judged by the fact that in the calendar year 1932, the volume of their unit-pulverizer business exceeded that of any previous year in their history.

Sullivan Machinery Co. 192

The foundations of this company go back to a little country blacksmith and machine shop, opened at Claremont, New Hampshire, in 1851: One of those small beginnings, pioneered by Yankee inventiveness and mechanical ingenuity, from which large contributions to industrial efficiency and productivity of granite and marble quarrying machinery. Then came the invention of the Diamond Core Drill for mineral exploration, followed by the development of Compressed Air Rock Drills, Coal Mining Machinery and Air Compressors, which constitute the bulk of Sullivan contributions to industry today.

Sun Oil Co. 193

Founded in 1886, this company has a record of forty seven years' continuous and consistent progress. During this long period, lubricating oils and other petroleum products made by this organization (sold under the trade names "Sunoco" and "Sun Oils") have made for themselves an enviable reputation. For the wide range of other petroleum products as well—such as motor fuel, Diesel fuels and other fuel oils, special process oils, etc., this company has long been regarded as a most dependable source. Through continual process improvements and careful supervision of the various refining steps to insure quality in finished oils, the popularity of this company's products has become widespread. A staff of engineers is maintained. They will gladly co-operate on lubrication and other industrial problems in which petroleum products are concerned.

Superheater Co. 194, 195

This company was organized in 1910 as Locomotive Superheater Co. to extend use of high-degree superheat on American Railroads with Schmidt (now Elesco) superheaters, of which 57,000 have been applied. Activities were broadened to include Elesco superheaters for marine and industrial services, so in 1921, its present name was assumed. Now one of the largest superheater manufacturers, it has also the advantage of over 45 years of cumulative knowledge and experience with steam superheating, through affiliates in Canada, Great Britain, France, Germany, and Australia. Scientifically correct principles give Elesco superheaters unusual flexibility for handling all steam superheating requirements most economically.

Swartwout Co. 196

D. K. Swartwout, President and Founder of this company, invented the first cast iron exhaust head in 1902. Centrifugal separators followed shortly thereafter; then steam traps, rotary ball bearing ventilators, and feed water heaters. During the same period the "S-C" Regulator Mfg. Co. was successfully developing and applying "S-C" Feed Water Regulators and Pump Governors. In 1927 the Swartwout Co. purchased the capital stock of the "S-C" Company, thus bringing together two highly regarded lines of power plant equipment. In the years that followed this enlarged line has been much improved and extended.

Taylor Instrument Cos. 197

Since its beginning in 1851 as a tiny thermometer shop, this company has always specialized in honestly built, high grade instruments. Today, as one of the largest manufacturers of thermometers and allied products, this firm upholds the reputation of Rochester as the home of quality goods. For many years the trade-mark "Tycos" has been used on Taylor Instruments. This is being discontinued to avoid confusion and "Taylor" will henceforth be the trade-mark of all equipment made by this company. These include thermometers, pressure gages, recording instruments, temperature and pressure regulators, cycle controls, time regulators, and humidity indicating and control devices.

Templeton Bros. (Inc.) 198

Organized in 1905 by Wm. E. Templeton for the manufacture of a general line of machinery. In 1906 they placed their first steam trap on the market known as the Sterling Trap and in 1909 their first Return Trap. In 1921 Wm. E. Templeton with his sons started the present company for the exclusive manufacture of Return Traps for pumping boiler return or draining condensers

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Terry Steam Turbine Co. 199

Founded by Edward C. Terry, who began experimenting with a new type of steam turbine engine in the year 1888. Mr. Terry applied for his first turbine patent in 1892, and others followed in 1899 and succeeding years. By 1903, with a shop consisting of an engine lathe, a milling machine, and a planer, he was producing a turbine a month. In 1908 the business was incorporated under the present name. The business grew rapidly and additional designs and types were added, including multi-stage machines for bleeder and mixed pressure operation. Today this company is the only concern in the United States that concentrates its output on steam turbines. Its machines are in use throughout the world.

Timken Roller Bearing Co. 200

In the 35 years that this company has been making tapered roller bearings, exclusively, its field has expanded so broadly that it has become the largest manufacturer of roller bearings. Over 90% of the world's manufacturers of automobiles and motor trucks have standardized on these bearings for the points of hard service and their application to industrial machinery has increased so rapidly over the last decade that there is no type of equipment in which these bearings are not used. These applications range all the way from the precision work on machine tool spindles to heavy duty jobs of steel mill roll neck applications. The company makes its own steel and has become one of the largest alloy steel manufacturers.

Titelux Metal Hose Co. 201

This company was organized in 1916 to develop a flexible all-metal tubing on a radically new principle in which pioneer work was necessary to develop to a satisfactory commercial conclusion the many details encountered. This development work required painstaking and expert engineers of the highest quality who have been in constant attendance since the company's inception. This company created and developed the new art of applying flexible oil and gasoline tubes to the automobile and aeroplane. Titelux tubing is constructed to withstand high internal pressure when carrying liquids or gases.

Troy Engine & Machine Co. 202

This company was organized in 1890 and operates its own foundry, machine shop and power plant. In 1925 Engberg's Electric & Mechanical Works, St. Joseph, Mich., was purchased and moved to Troy where both Troy and Engberg equipment, as previously supplied, is being built. This consists of various types of vertical and horizontal steam engines, direct and alternating current generators, and direct and alternating current steam engine driven generating sets.

Twin Disc Clutch Co. 203

This company was organized in 1917 and first developed a special tractor which was immediately accepted and used by all leading tractor manufacturers. Later, a more complete line of Twin Disc power take-off units and clutches were developed and the company expanded to serve the road building, construction machinery, machine tool, oil field, textile and woodworking industries. Today, over 400 types and sizes of clutches are offered by this company. Today, 95 per cent of the road building, material handling and construction machinery is Twin Disc Clutch equipped.

Union Iron Works 207

Founded in 1890. An engineering and manufacturing organization with forty-three years' specialized experience in building high pressure steel boilers exclusively. An entirely new plant constructed in 1922, ranks as one of the most modern and best equipped in the industry. Both fire and water tubes are manufactured in a wide range of sizes, pressures and types, also auxiliary apparatus such as water walls, air heaters and economizers. Union boilers have many distinct advantages, this company having pioneered in the development of the radiant heat type boiler—an outstanding achievement in boiler practice.

United Conveyor Corp'n. 204, 205

Represents the combined experience of five companies, all specializing in soot and ash handling by air through pipe line conveyors, and dating back to the origination of this

type of system. In the last five years, however, United brought out the "Nuveyor" and the "Steamatic" Ash and Soot Conveyors, which have largely displaced former methods in this field. The reasons for this progress can best be found by visiting jobs where these two new systems are operating—there are now several hundred installations.

United States Hoffman Machinery Corp'n. 206

Manufactures diversified group of machinery products. Known for thirty years as largest manufacturer of garment pressing machines. Hoffman miniature steam boilers lead all others in sales. Hoffman washing machines, high speed centrifugal extractors and drying tumblers widely used in laundry and dry cleaning industries. Long experience with centrifugal blowers and vacuum producers. Recently introduced Hoffman centrifugal blowers and exhausters, Hoffman vacuum sweeping systems for heavy duty industrial service. Most complete range of sizes and capacities. Centrifugal products designed and built in Hoffman factory by engineers with many years of specialized experience in this field.

Vogt, Henry, Machine Co. 208

The initial effort of this fifty-three year old company was devoted to a general machine shop business and the manufacture of tubular boilers. Constantly increasing demands for its products led to expansion into related lines. Today, operating a completely equipped plant occupying nineteen acres, its market for water tube boilers, refrigerating equipment, heat exchangers, drop forged steel valves and fittings and refinery equipment is world-wide.

Westco Pump Corp'n. 206

Westco engineers originated the turbine-type pump which is well known for its ability to produce higher pressures in single stage at standard motor speeds and for its wide operating range characteristic. This company maintains a staff of engineers whose experience covers many years and embraces practically every type of pumping problem. Completely fitted laboratories of the most modern type are at the disposal of these men for development work and for rendering practical and technically reliable assistance to prospects and customers. Products made include: Westco Standard Turbine Pumps, Hot Oil Pumps, Sanitary Pumps, Condensation Pumps and Receivers, Automatic Water Systems, Deep Well Pumps and Underwriters' Laboratories Approved Tank Filling Pumps.

Western Engineering & Mfg. Co. (See St. Regis Paper Co.) 172

Westinghouse Electric & Mfg. Co. 209

Founded in 1886 by George Westinghouse inventor of the airbrake which revolutionized railroad transportation, and developer of the alternating current system which has made electricity a household slave and an invaluable industrial tool. This company gave impetus to motorization of industry by development of the induction motor, introduced the steam turbine, produced and developed the turbine generator. It has 19 works in 17 cities, in 9 states, and normally employs 50,000 people manufacturing almost every kind of electrical product and steam apparatus—more than 30,000 types; more than 300,000 items. Among them are steam turbines, generators, stokers, motors and control, gears, transformers, switchgear, Diesel engines, industrial heating apparatus, commercial and industrial lighting equipment, meters and instruments, panelboards, insulators, surge protection, electric refrigerators, household appliances, lamps, foundry products, elevators, X-ray apparatus and a host of related products.

Westinghouse Traction Brake Co. ... 210

Established in 1901 as a subsidiary of the parent organization, the Westinghouse Air Brake Company (formed in 1869) to handle the manufacture and sale of brake equipment for electric railways and air compressors, together with needed accessories. This company, in addition to complete air brake

equipment, manufactures for industrial plants, such products as air compressors, governors, reservoirs, cut out cocks, operating valves, brake cylinders, air hose, and connection, and "Wabco" packing cups and gaskets.

Whiting Corp'n. 212, 213

For the past half century this company has been engaged in the manufacture of a complete line of equipment for foundries—beginning in the early '80's with the manufacture of the "Whiting" Cupola in Detroit. Since 1894, the company has been located at Harvey, Illinois, and has increased its activities to include a complete line of traveling cranes for all kinds of industrial plants, a separate line of cost-reducing equipment for railroad repair shops, and special machinery of all types. During the last ten years, it has also taken over and operates as a subsidiary, the Swenson Evaporator Co.—who make a complete line of evaporators and chemical machinery; and the Joseph Harrington Co., who make automatic mechanical stokers for firing boilers. This company also has a modern line of pulverized coal equipment for firing boilers, furnaces, kilns, etc.

Wickes Boiler Co. 211

The Wickes interests were established in Saginaw, Michigan, in 1856; it has always been the aim and achievement of this organization to build to the closest possible tolerances and for the best practical results. Hence, users all over the world have come to know that Wickes products fully live up to their slogan "Recognized Quality." Modern shops, skilled workmen, equipment of unusual capacity and character including a complete Class 1 Welding Department are daily turning out boilers and pressure vessels incorporating in them thoroughly tested up to date designs.

Wing, L. J., Mfg. Co. 216

Back in 1903, L. J. Wing, founder of this company originated the idea of combining a propeller fan with the steam turbine rotor for driving it. This was followed by a gradual development of the propeller fan for ventilation and forced draft in all its phases, culminating in the well-known line of Wing-Scruplex Fans and Exhausters. Wing turbine and motor-driven blowers and small turbines. Again in 1922, they took the lead in developing unit heating, finally perfecting a uniquely efficient system which is as effective in heating industrial buildings of even the greatest height.

Worthington Pump & Machinery Corp'n. 220

In 1840, Henry R. Worthington invented the direct-acting steam pump and in 1841 opened his manufacturing plant. From that point, the organization has progressed and expanded until today this company is one of the world's leading manufacturers of construction, water works, and power plant equipment. Included in its extensive line of products are: Diesel and Gas Engines, Meters, Condensers and auxiliaries, Feedwater Heaters, Pumps of all sizes and types, Multi-V-Drives, Rock Drilling Equipment, Contractors' Air Tools, and Air Compressors both Portable and Stationary. This company is responsible for the design and construction of some of the largest pieces of power plant and water works equipment in America today.

Wright Mfg. Division of the American Chain Co. (Inc.) 214, 215

Started as the Wright Mfg. Co. at Liston, Ohio, about 1895, their reputation for precision machinery has brought to them requests for hoisting equipment, and they gradually worked into the chain hoist field, later adding the Spur-Geared and Differential types, together with Hand Traveling Cranes, Jib Cranes, etc. In 1928, they became associated with the American Chain Company, Inc. Their latest developments include a ball-bearing type Differential Hoist and a new Malleable Iron Spur-Geared Hoist.

Yarnall-Waring Co. 25

Established in 1908. For 25 years engaged in the manufacture of Yarnall "Seal-less" Blow-off Valves, during which time a group of other high-quality steam specialties have been introduced—including "Floatless" water columns, water gages, and gage illuminators, water level indicators, expansion joints, spray nozzles, hydraulic valves, industrial valves, steam traps, automatic gas valves, and air valves, etc.

Catalogs of the following firms received late, so appear at end out of alphabetical order.
Alemite Corp'n. Hardinge Co. Worthington Pump & Machinery Corp'n.