

PLAINTIFF'S EXHIBIT

RS-236

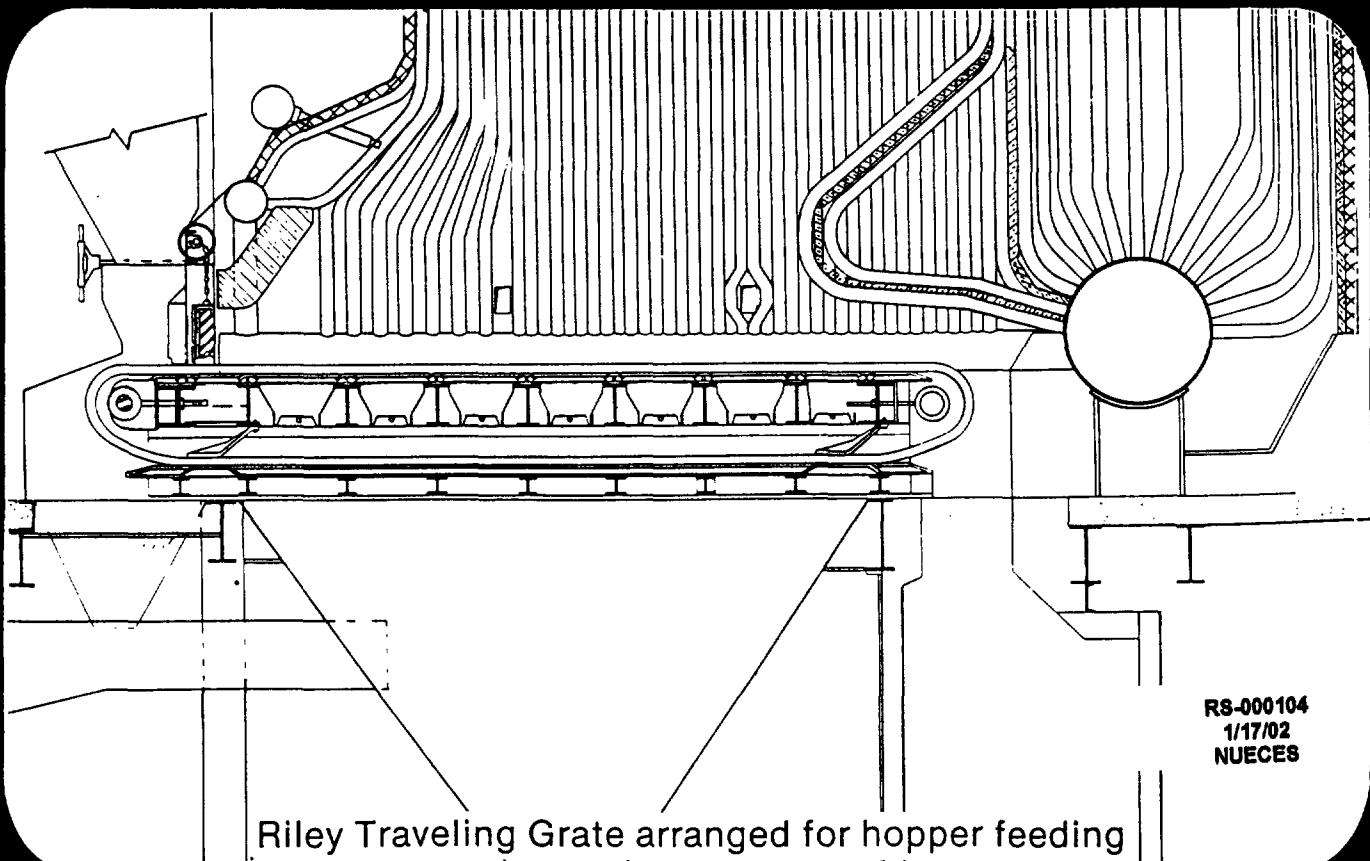
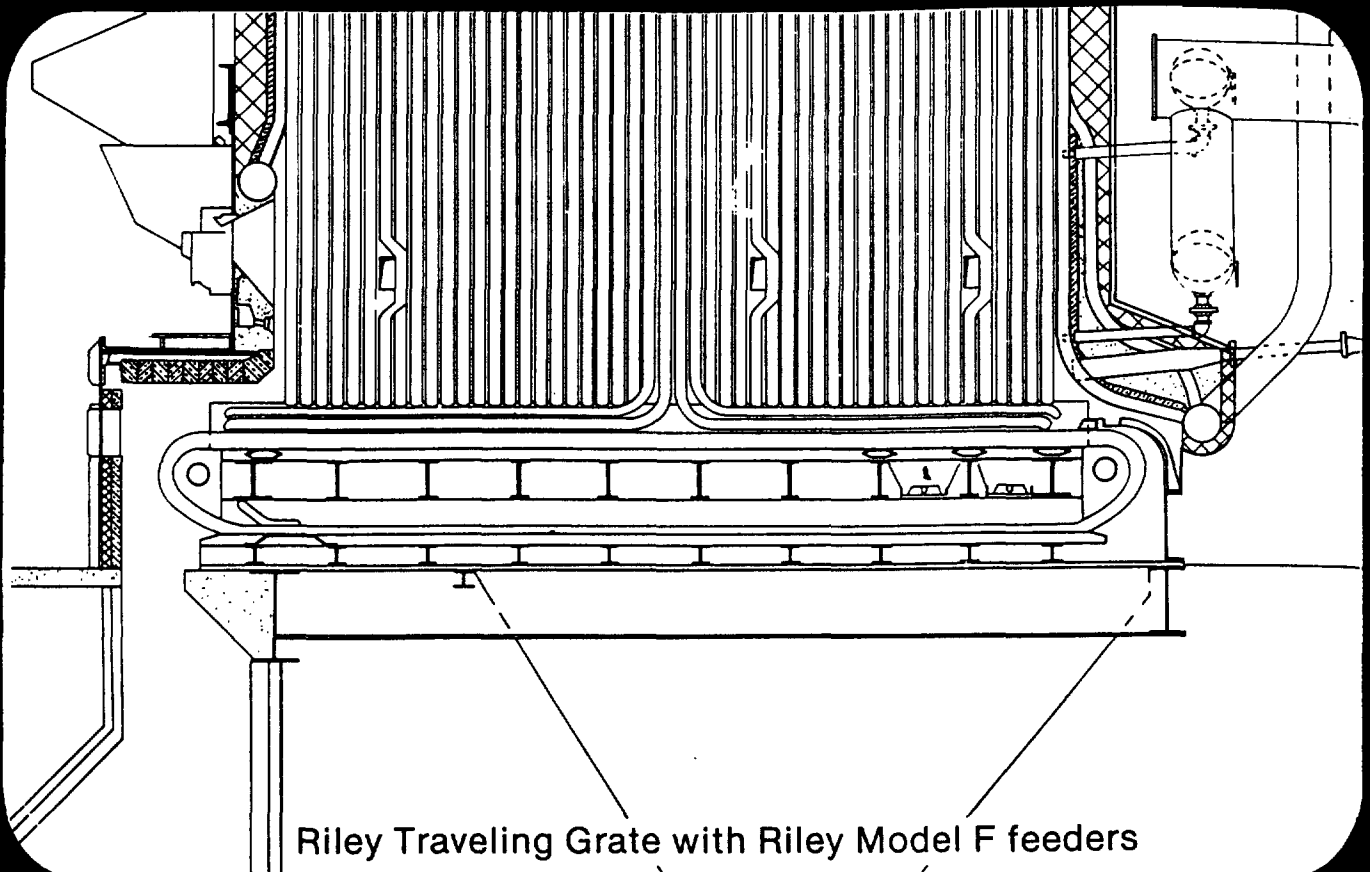
"Providing sensible solutions
to today's energy problems"

RILEY

Traveling
Grates
for Coal
Firing

RILEY STOKER CORPORATION

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• RILEY Traveling Grates for Coal Firing

For over 30 years the Riley Traveling Grate Stoker has been the industry standard for reliable, efficient performance...a track record which has earned its reputation as the Premium of Traveling Grates. Only Riley offers these standard features:

- Modular construction to slash erection cost.
- Extended grate life, provided by the exclusive Riley NARRO-BAR™ grate clips, with self-cleaning air passages, made of special high temperature alloy at no extra cost.
- Exclusive Riley TEEMOUNT™ grate support system which isolates grate clips

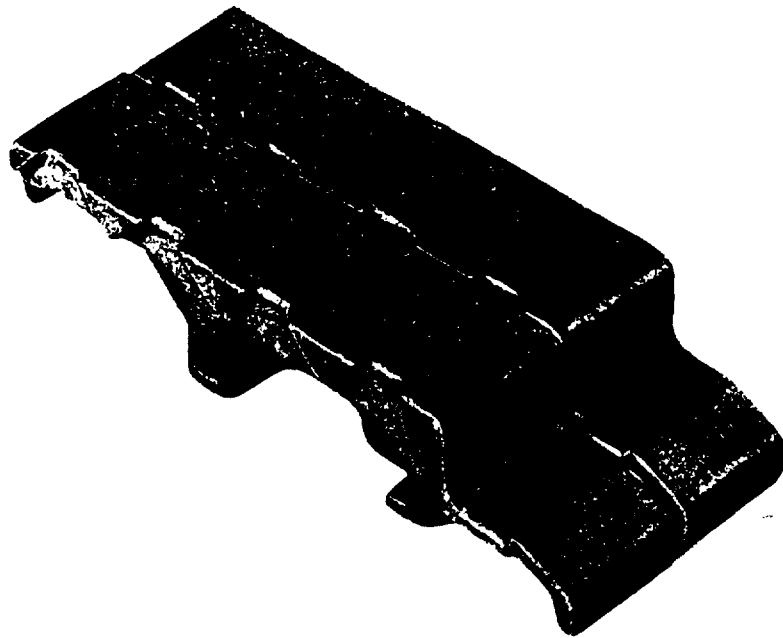
from mechanical stress and permits easy replacement of individual grate clips *while in operation*.

- Heavy duty air sealing system which effectively controls air delivery, thereby reducing excess air levels and increasing efficiency.
- Non-ratcheting, exclusive FYR-MOTOR™ grate drive system which provides continuous, uninterrupted grate movement over a wide range of grate speeds.

Riley has the modern, efficient, reliable Traveling Grate for coal and refuse firing with a full complement of equipment to fit your specific requirements.

Design Features

Constructed of high temperature alloy, Riley NARRO-BAR™ grate clips are designed to increase total clip surface area exposed to cooling air, greatly reducing warpage and overheating of individual clips. Air passages located between clips enable self-cleaning during each grate revolution. The troublesome plugging characteristic of outmoded drilled or cast air hole designs is eliminated.



Sectional view of a Riley Traveling Grate return sprocket illustrates the rugged construction and unique features.

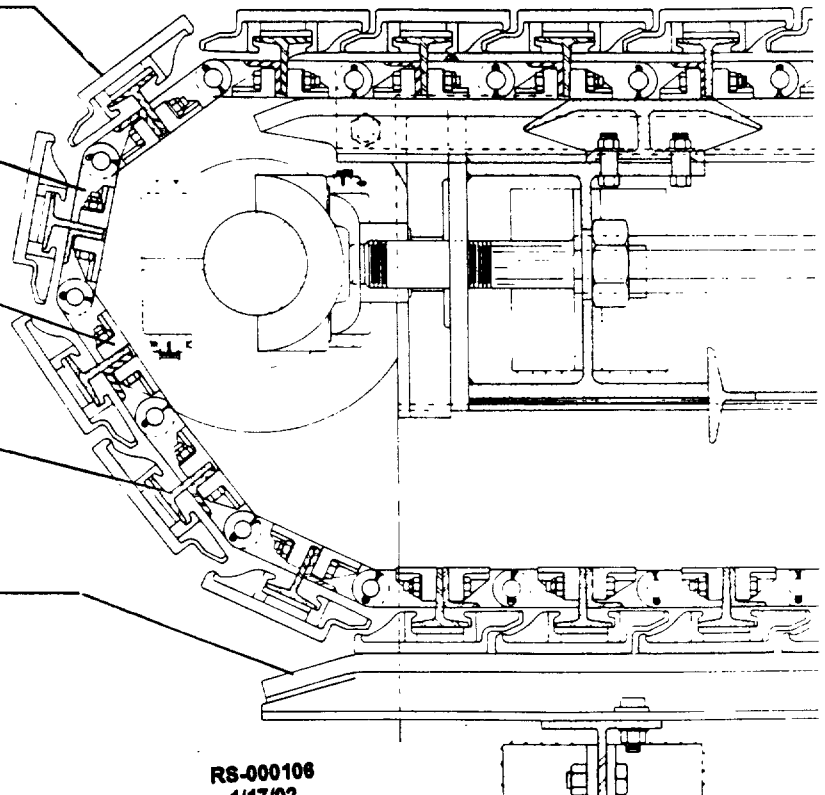
**Riley NARRO-BAR™
Grate Clip**

Chain

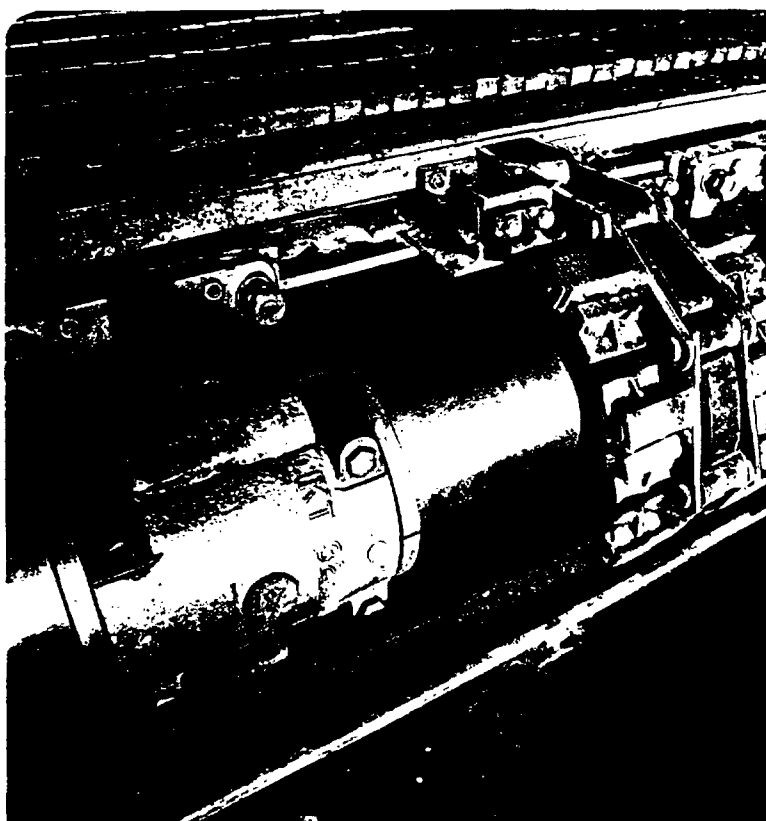
Skid Shoes

**Riley TEEMOUNT™
Grate Supports**

Skid Rail



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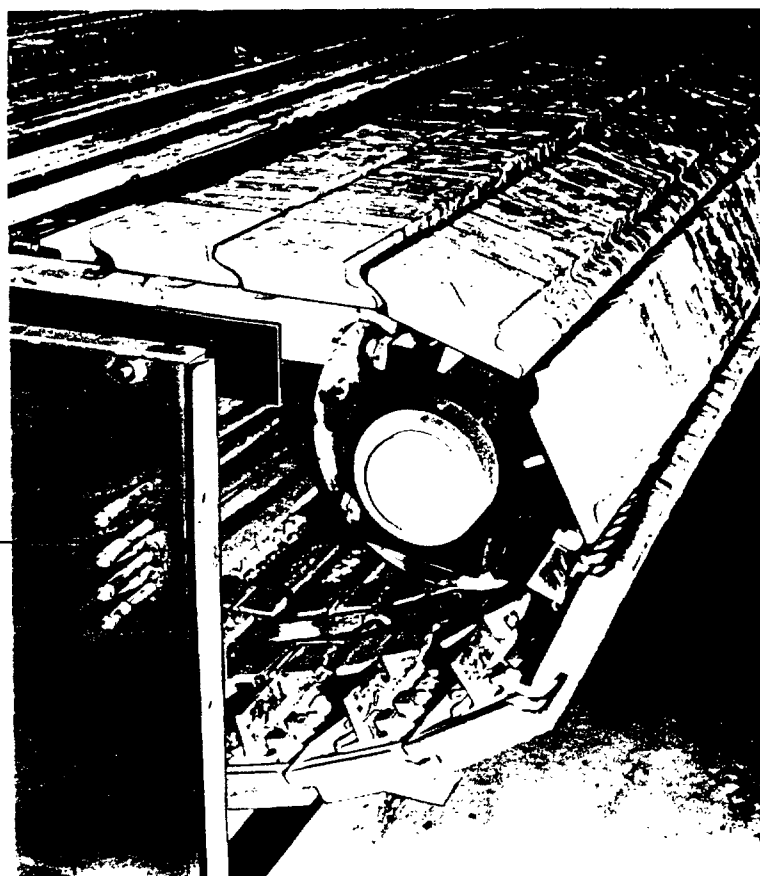


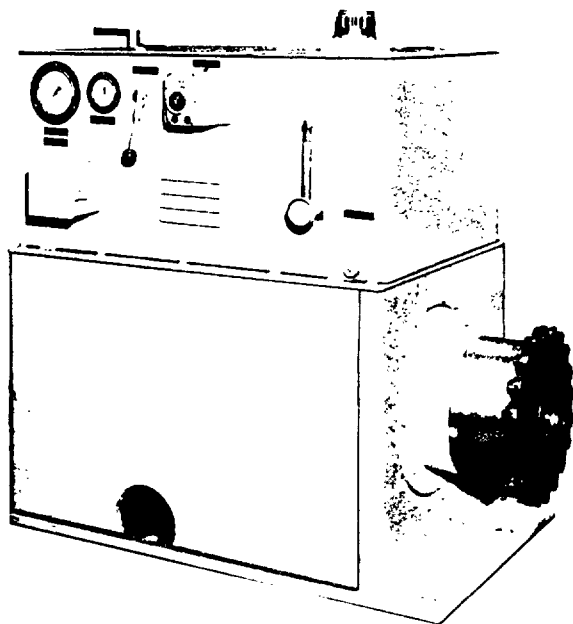
The partially assembled spreader feeder fired Traveling Grate depicted here shows drive sprocket, skid shoes and grate racks. As the clips travel around sprocket ends, they separate to free trapped ash.

Both drive and idler bearings are equipped with split-type graphited bronze sleeves which can be reversed for additional life.

Massive split sleeve bearings which support drive and idler shafts in the Riley Traveling Grate are grease lubricated by means of grease lines illustrated at right. Because of the convenient location of lubrication points outside the furnace enclosure, the grate mechanism can be completely lubricated while the unit is in service with no removal of access plates or covers.

Grease Lines

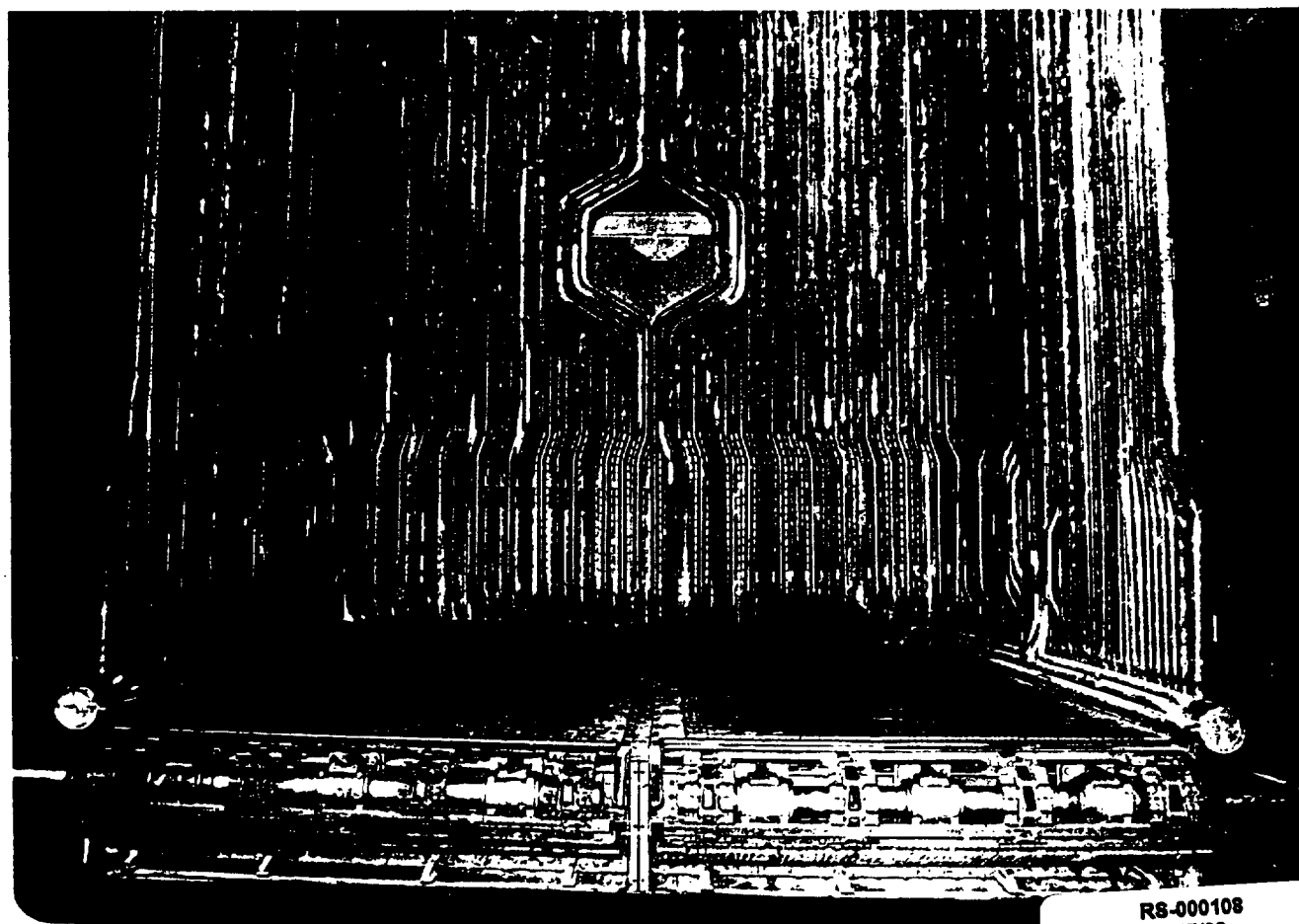




The Riley FYR-MOTOR™ grate drive unit differs from earlier designs because it is a continuous, non-ratcheting drive system. The complete drive is self-contained, with no external hydraulic or lubricating oil connections.

The FYR-MOTOR™ drive is equipped with an integral control panel for convenient local control of start/stop, grate speed and grate direction (forward/reverse) functions. An adjustable overload relief valve is included as protection for the grate in the event of mechanical obstruction.

A 20 foot wide by 18 foot long Riley Traveling Grate for spreader-feeder firing is illustrated here as it is installed under a 200,000 pounds per hour Riley Boiler.



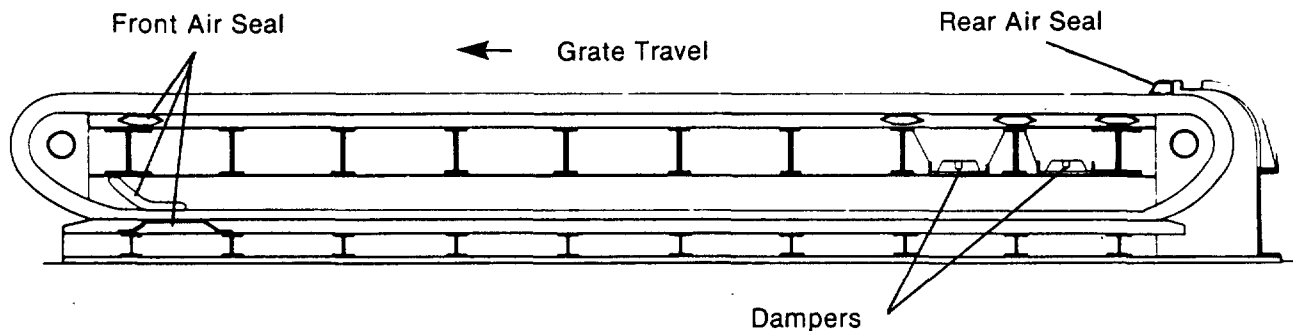
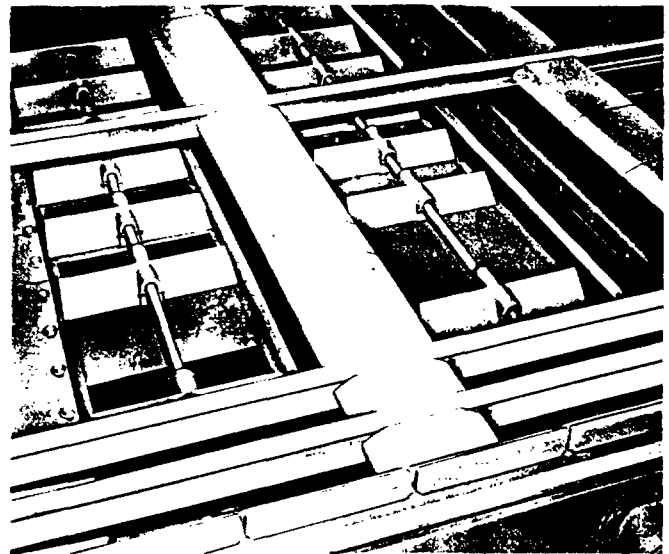
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Air Control

One of the key factors in furnace efficiency is low excess air combustion. The distinctive engineering features of the Riley Traveling Grate include a superior system of air seals combined with damper controlled air zones for precise regulation of combustion air.

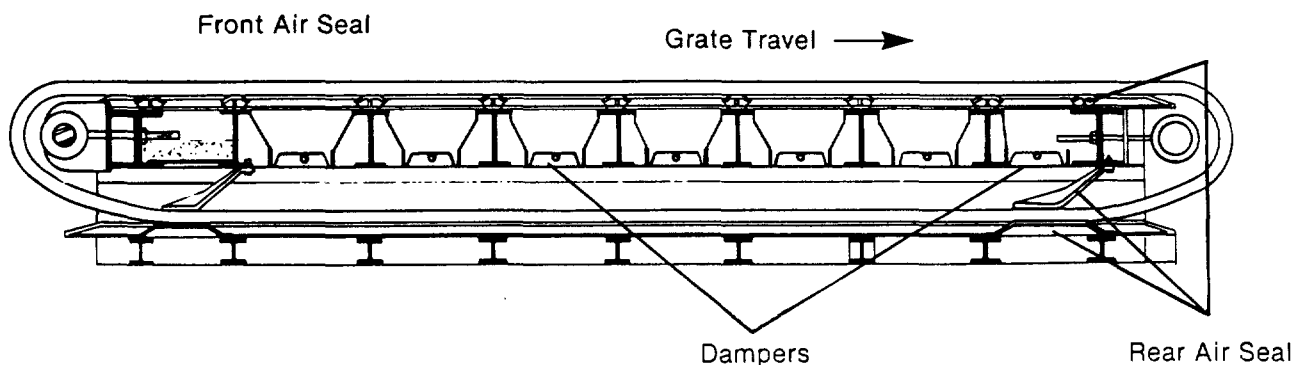
Air seals are located at the front and rear of the grate as shown in the cross-sections below. Grate sealing clips ride on cast iron ledge plates along both sides of the grate side frame to form an air seal, while at the same time providing freedom of expansion.

Riley Traveling Grates have as standard equipment self-cleaning dampers, shown at right, which are located inside the grate assembly.



The illustration above shows a Traveling Grate arranged for spreader firing. Air sealing is provided by a three-section seal along the front and by refractory filled cast iron air seals riding on the grate surface at the rear. Sealing clips, described above, form an air seal along the grate sides.

The fuel is deposited on the grate at the rear, where two sets of zoning dampers are adjusted to keep excess air at a minimum as combustion begins. As the grate travels toward the front, air reaches the fuel bed from the plenum through air passages between the grate clips. The major portion of combustion takes place in the center of the grate, with ash falling from the clips as they travel around the front.

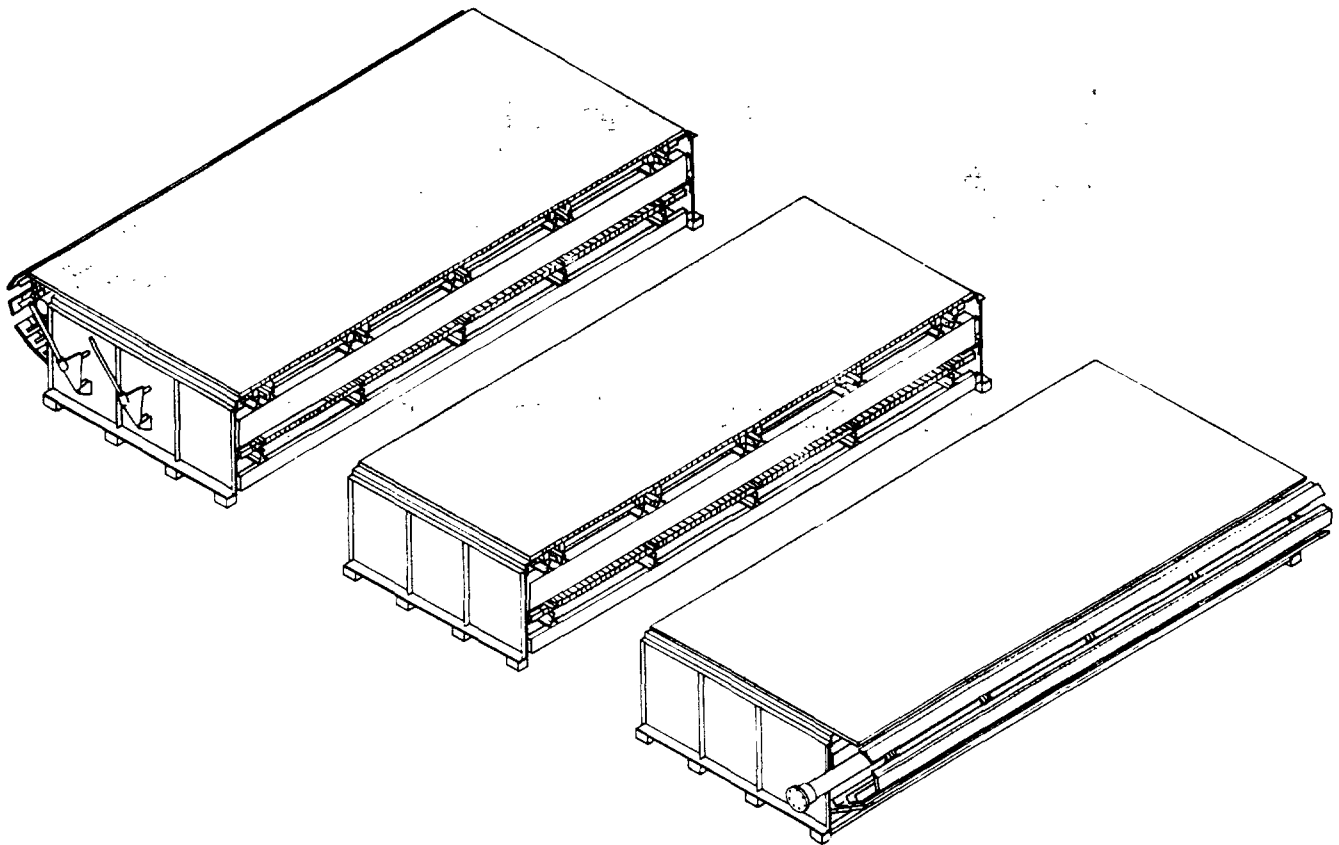


Hopper feeding deposits an even layer of coal on the Traveling Grate. For this type of feeding, the grate is fully zoned with self-cleaning dampers in each zone to maintain a slow, even combustion over the entire grate surface. This Traveling Grate has three-piece air seals on both ends and clips riding on ledge plates at the sides to provide effective sealing.

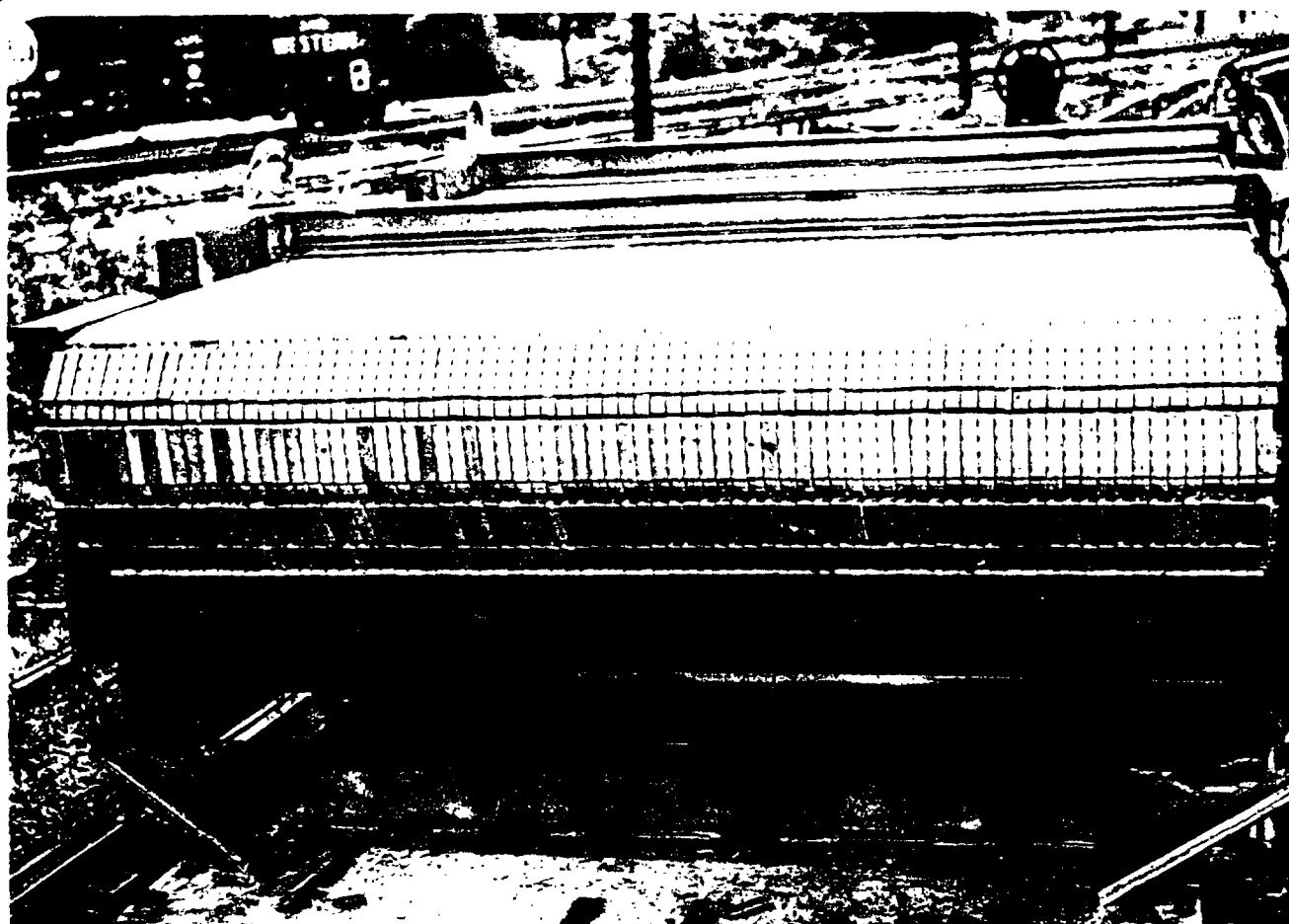
RILEY Modular Construction

Today's construction is expensive by any standard. It simply makes good economic sense to avoid manufacturing mechanical equipment on site.

For this reason, Riley Traveling Grates are furnished in large, easily assembled modules, which are shop assembled and tested prior to shipment. This extra effort pays dividends of greatly reduced erection labor requirements and the assurance of superior operation right from the start.

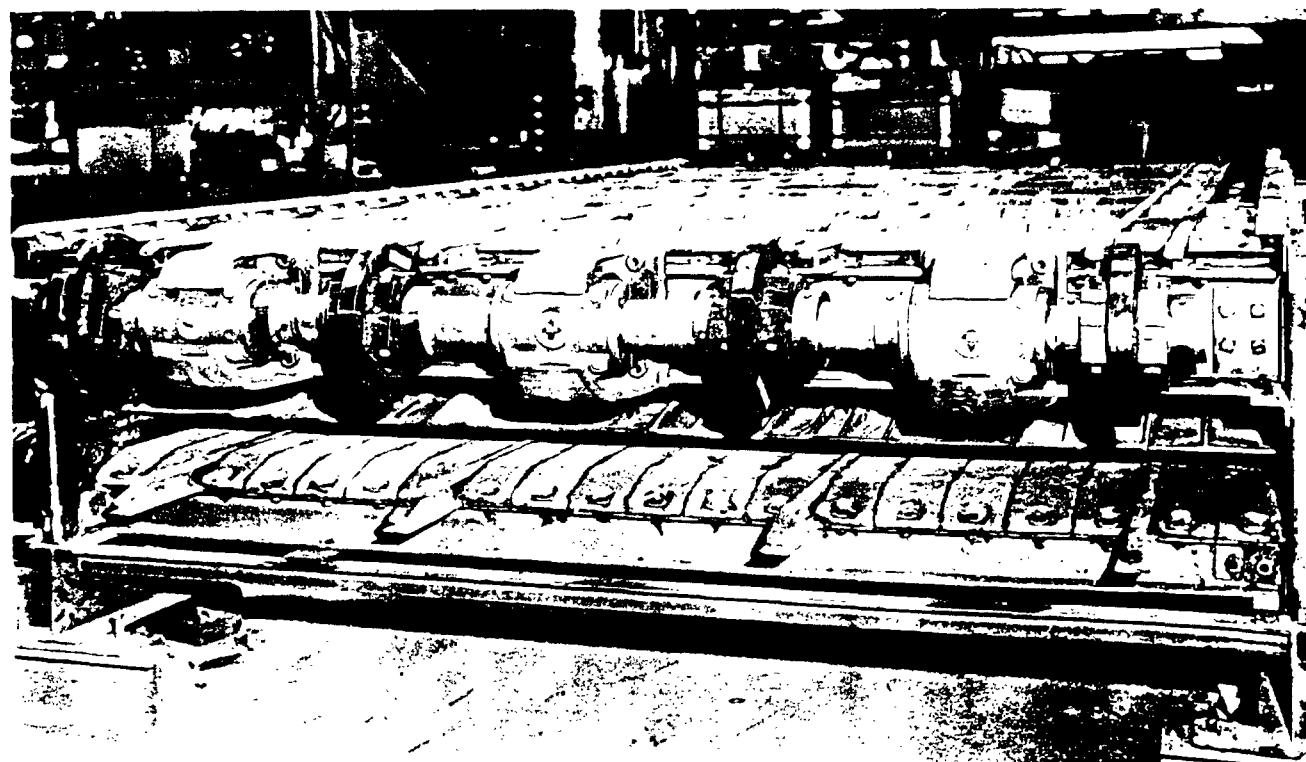


This drawing shows a typical Traveling Grate 16 feet wide by 20 feet long. After the unit has been shop assembled and run in performance tests it is broken into modules as large as can be transported, braced and tied down for shipment.



Riley Modular Traveling Grate on railcar ready for shipment.

Riley Modular Traveling Grate during shop assembly.



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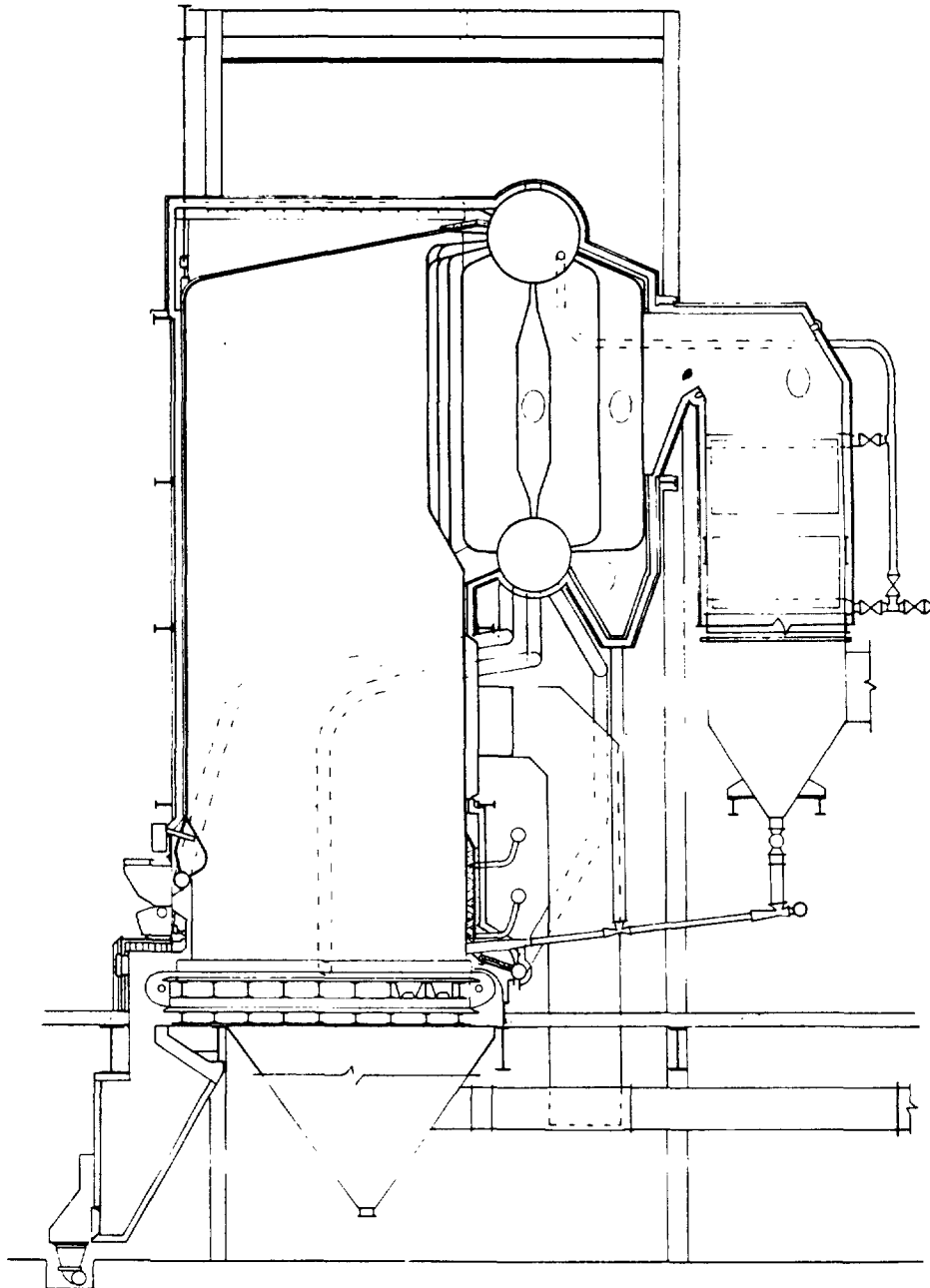
RILEY Experience

In terms of actual applications, Riley Traveling Grates probably represent the most complete range of experience in the industry. From coal to agricultural resi-

dues, to raw municipal trash, to lignite, there is hardly any conceivable solid fuel which has not been burned on a Riley Traveling Grate.

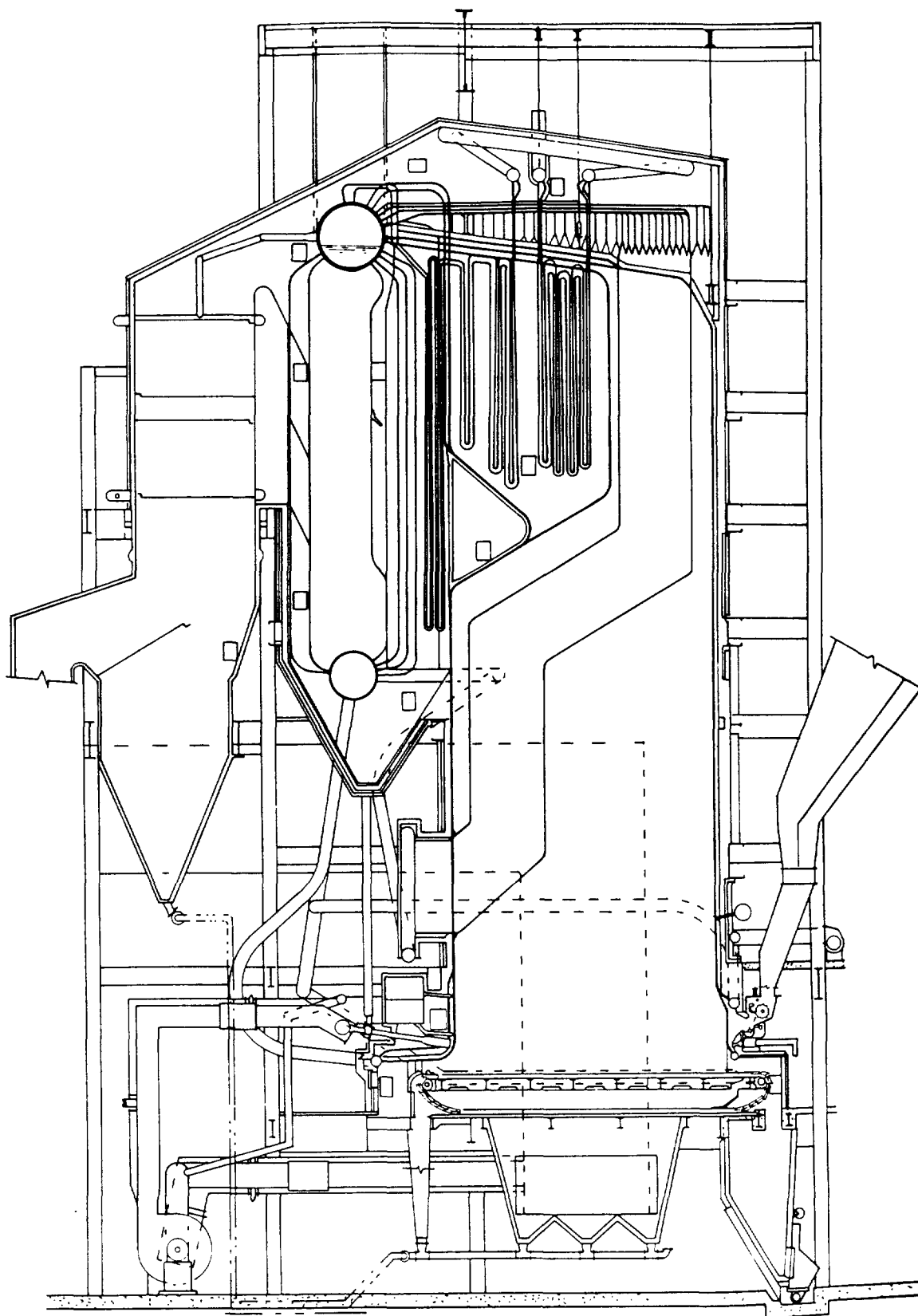
Riley has constructed Traveling Grates which serve boilers of up to 650,000 pounds of steam per hour, many of which fire multiple fuels, including refuse.

A selection of Riley units which feature Riley Traveling Grates are shown here.



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This 150,000 pounds of steam per hour Riley boiler with a 16 by 18 foot Traveling Grate is one of three units at an Oklahoma automotive plant. Burners located in the rear wall can fire either natural gas or oil, and the design of the boiler allows for the burning of refuse with the addition of Riley pneumatic distributors.



The Riley boiler at this utility station in North Dakota is rated at 650,000 pounds of steam per hour, firing lignite on a Riley Traveling Grate. This grate, one of the largest in the world, measures 38 by 27 feet.

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Riley Stoker Corporation Products and Services

Utility and Industrial Water Tube Steam Generators

Shop Assembled Modular Boilers

Field-erected Boilers

Front-, Opposed-fired and TURBO® Furnaces

Fluidized Bed Boiler Systems

Fuel Burning Systems

ATRITA® and Ball Tube Mill Coal Pulverizers

Spreader, Mass Burning and Water Cooled Grate Stokers

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Availability and Inspection Programs

Replacement Parts

Fuel Conversions

Construction Services

Research and Development

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RILEY STOKER CORPORATION
BOX 547, WORCESTER, MASS. 01613

The Company reserves the right to make technical and mechanical changes or revisions resulting from improvements developed by its research and development work, or availability of new materials in connection with the design of its equipment, or improvements in manufacturing and construction procedures and engineering standards.

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