

FILE NAME: Power Generation (POW)

DATE: 1931 May 15

DOC#: POW021

DOCUMENT DESCRIPTION: Excerpt – Trade Journal

POWER PLANT ENGINEERING

Established Over 35 Years

Vol. XXXV

CHICAGO, MAY 15, 1931

No. 10

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Contents of back issues of Power Plant Engineering will be found in
Industrial Arts Index, on file in public libraries.

Published on the 1st and 15th of each Month by the
Technical Publishing Co., 53 West Jackson Blvd., Chicago
New York Office, 171 Madison Avenue

Subscription price \$2.00 a year in the United States and possessions.
Copyright 1931, by Technical Publishing Co.

Entered as second class matter May 1, 1908, at the Post Office at
Chicago, Illinois, under the Act of March 3, 1879.

Member, Associated Business Papers, Audit Bureau of Circulations.



The New Era

TIME WAS WHEN milk was milk and the production of it was left entirely up to the cow, although rumor has it that she sometimes received a little unlooked for assistance from the well.

As time went on, it was realized that in order to do good work it was necessary to have the producing unit contented. Judging from contemporary literature of this early period the cow was contented only when feeding in pastures at a considerable elevation above sea level. With data available at that time, investigations placed this elevation at 5000 ft.

Later scientific investigation proved that with proper care and feeding the elevation of the pastures was immaterial. Rapid growth of the dairy industry during this era made it necessary to pay strict attention to methods of handling, transporting and delivering milk so as to insure purity.

For years the Bowman Dairy Co. has recognized the importance of adequate inspection of dairies, methods of testing to insure the purity of the supply and sanitary facilities for bottling. Their engineers have just completed a plant which the milk industry hails as the World's Finest. It is described on the following pages.

They have gone one step farther, however, and recognizing that a contented customer is just as important a part of the business as a contented cow, they have fitted up a visitors' reception room in the new plant. This room, shown above, is the focal point of the plant and from it visitors can view practically the entire operation of receiving, pasteurizing, cooling and bot-

densate goes through the bypass there will be small chance of scale forming.

Unless the vacuum check valve is operated quite often, dirt will collect behind the seat and hold the valve closed. An inexpensive connection can be installed easily so that water can be blown through the vacuum valve to keep it clear of dirt. Of course if the operation of the pump causes the vacuum valve to open frequently nothing else is necessary. Many cases have been recorded where check valves, safety valves, and the ordinary design of relief valves have proven unreliable when used on hot water tanks using raw water as supply or makeup.

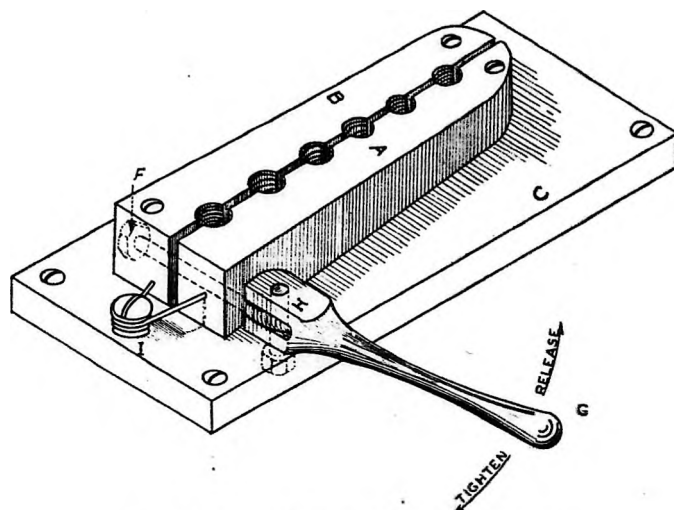
Toronto, Canada

JAMES E. NOBLE.

Screw Vise

FOR THE small amount of effort that it requires to make it, there are few better ways to hold screws and studs than in a regular screw vise that grips them by their threads.

In the illustration is a simple one to make, which will firmly grip the screw or stud while one is sawing a



DETAILS OF SCREW OR STUD VISE

slot in it, drilling a cotter hole or rechasing the threads with a die. It is made by first drilling and tapping a series of holes suitable to the sizes of studs or screws most used and then sawing down through the center of these to make two sections. Next the two pieces A and B are mounted. One marked B is fastened permanently to the base C by several large machine screws and the one marked A is pivoted at E by another large screw drilled and tapped into the base plate. At F an eye bolt passes through the two parts and a clamping lever G with a cam face H produces the gripping pressure. A coiled spring I with an end in each part, is held by a screw and opens the jaws when the lever is released. A longitudinal slot is cut in the plate under the fixture to permit the longer screws to pass through. The whole fixture can be secured to the bench or held in the vise as desired.

Concord, N. H.

CHAS. H. WILLEY.

WHEN WORK is done at the rate of 550 ft. per sec. or (550 $\times$ 60 =) 33,000 ft. min.

Repairing of Leaky Scroll Case

IN A WATER TURBINE PLANT a riveted steel-plate, spiral casing was giving trouble by leaking through the concrete masonry in which the casing was buried. The leakage came out on the downstream wall and followed a construction or pouring joint for part of the way. The scroll case was proved guilty for coloring matter introduced into the pipeline appeared at the downstream point of discharge.

The water turbine had been in service a number of years and had been subjected many times to pressure rises of 40 per cent above normal operating head; these shocks in time loosened the joints. It is hard to understand why these riveted seams loosened inasmuch as the casing was buried in concrete; the deformation, however, was probably circumferential. Not much springing is needed to produce leakage under a head of 225 ft.

In the last year before the case was repaired, the leakage was rapidly increasing and something had to be done about it, as the management feared building cracks in freezing weather. It had been proposed to line the entire scroll casing with cement-sand mixture but the point was raised that the lining might soon be coming out of the draft tube like cracked ice, because of the pressure rises, the idea was hastily abandoned. Then coating with metal, shot on the steel plate from a sort of spray gun, was considered but the final cost was high.

Then a welding contractor was called in and offered to guarantee the job he proposed. The price was much lower than the metal coating process, therefore welding was decided upon. Every seam, where such riveted seams are usually calked, was welded with a gas torch, using the standard round wire rods. A manhole located near the entrance of the steel-plate spiral was left open for ventilation and a cofferdam put in that tailrace bay so that the air coming up through the draft tube and the runner, with the gates open, furnished a ventilating draft.

This repair has to date stopped the leakage. The management at first considered welding around the rivets which might be considered most theoretically to be most highly stressed but this was abandoned on account of the cost, also because of the reduction in passage area that this might cause.

Hanover, Pa.

JOHN S. CARPENTER.

Magnesia Block Dust Prevention

HANDLING of magnesia blocks and shapes is a dirty job, as the blocks give off a cloud of magnesia-dust every time they are moved, or handled.

When I was given the job of covering a large tank with magnesia blocks, yet not mess up a newly completed department, a problem arose.

I found a good way to stop this dust was to paint the blocks with a coating of a solution, one-half water and one-half water glass, allowing the coating to dry thoroughly.

No dust arose from the blocks and shapes unless they were cut or broken.

Springfield, Mass.

BRADFORD JAMIESON.