FILE NAME: . ƨƛfŜℕϒ l·ʅƛyƎ ó . hLLú

DATE: лллл

DOC#: BOLLлло

DOCUMENT DESCRIPTION: ¢ℕl·ŘŜ ₩ƨdzℕyϽ·f ! ℕǔƛǑfŜ

The Boiler Maker



Railway Contract Marine

The Boiler Maker

VOLUME XXXI NUMBER 7

PUBLISHED Monthly by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with Executive Offices at 30 Church Street, New York City.

Edward A. Simmons, President. Henry Lee, Vice-President. C. R. Mills, Vice-President. L. B. Sherman, Vice-President. Samuel O. Dunn, Vice-President. F. H. Thompson, Vice-President. Roy V. Wright, Secretary. John T. De Mott, Treasurer. George Slate, Business Manager.

Chicago: 105 W. Adams Street. Washington, D. C.: 17th and H Streets, N. W. Cleveland: Terminal Tower. San Francisco, Cal.: 215 Market Street.

Subscription Price: United States, Canada and Mexico, $2.00, Foreign Countries, $3.00 a Year. Single Copies, 35 Cents.

Request for change of address should reach us on or before the 15th of the month preceding the issue with which it is to go into effect. It is difficult, and often impossible, to supply back numbers to replace those undelivered through failure to send advance notice. In sending us change of address, please be sure to send us your old address as well as the new one.

THE BOILER MAKER is a member of the Associated Business Papers, Inc. (A. B. P.), and the Audit Bureau of Circulations, (A. B. C.)

EDITORIAL STAFF: H. H. Brown, Editor. L. S. Blodgett, Managing Editor. W. Lumbard, Associate Editor.

Contents

	Page
EDITORIAL COMMENT	173
GENERAL:	
Northern Pacific Rules for Boiler Inspection and Test	174
Combustion Steam Generator	177
Baldwin Locomotive Works Celebrates Its Centennial	178
Work of the Boiler Code Committee	182
Twisting Angles and Straightening Twisted Angles	183
Boiler Steels and Other Soft Steels	184
Locomotive Boiler Strength Formulas	186
Development and Application of Fusion Welding in Pressure Vessels	188
Revisions and Addenda to the Boiler Construction Code	191
Pipe Fittings for Welding	192
Obsolete Shop Equipment	193
New Ball Transfer	193
Campbell Cut-Off Machine	194
Portable Rotary Air Grinder	194
COMMUNICATIONS:	
Crane Bucket Repairs	195
Layout of Camber Line	195
QUESTIONS AND ANSWERS:	
Limit of Hydrostatic Test	196
Layout of Tapered Spiral	196
Development of Firebox Cracks	197
Use of Logarithm Tables	198
ASSOCIATIONS	199
SELECTED BOILER PATENTS	200

Communications

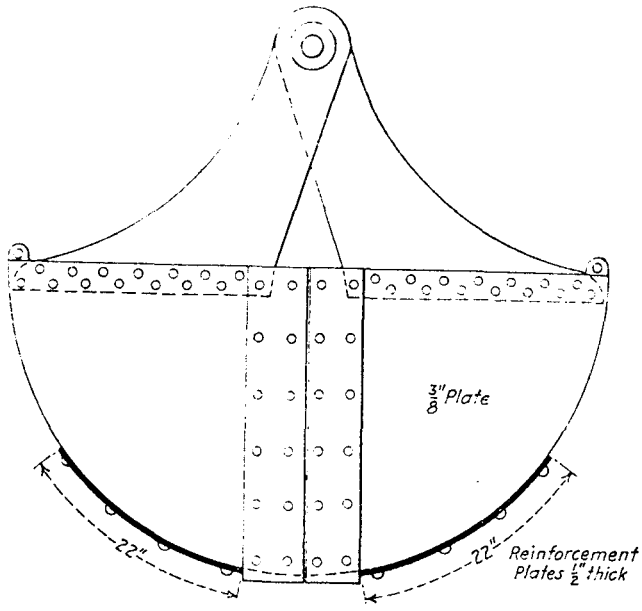
Crane Bucket Repairs

TO THE EDITOR:

At one of the locomotive shops in Florida, we have a locomotive crane equipped with a bucket used to handle coal and other material around the shops. For many years we had experienced difficulty with this bucket due to the fact that it was frequently damaged when dropped on the rails. The bottom of the bucket would be bent out of shape, necessitating its removal from the crane. It then would be taken to the shop, taken apart and straightened.

The accompanying sketch shows the application of reinforcement plates which were applied to the crane bucket about three years ago and since that time the bucket has not been brought into the shop for repairs. In re-inforcing the bucket, ½-inch metal was used, this being rolled into the shape of the bucket and applied as indicated in the sketch. It was so placed that the end of each re-inforcement plate would [illegible] each lip and the outer edge of the plate would butt against the edge of the flange at the sides of the bucket. A suitable number of rivets were then inserted to hold the plates together.

This method of re-inforcement, while it may be considered as expensive at the time of application, has, in this case at least, saved both time and money in the long run.



Reinforcement plates on a crane bucket

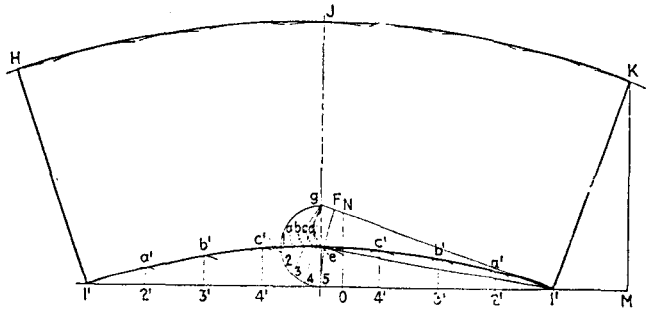
Jacksonville, Fla. CHRIS HANDLEE, JR.

Layout of Camber Line

TO THE EDITOR:

There are many different methods of laying out the camber line on a plate and I am sending one which I hope will be a help to layerouts. This method I have found to be accurate and not very difficult to remember.

First of all, draw a horizontal line *1'-1'* equal in length to the circumference of the small end of the frustum of the cone which you are going to make. Erect line *5-J* perpendicular to it at center. Extend line *5-1'* to *M* to equal half the circumference of the large end. At *M* erect a line at right angles to *5-M*.



Method of laying out a camber line

Next, with *1'* as a center and radius equal to the height of the plate which will be the slope height of the frustum of the cone, draw an arc to intersect the line drawn through *M* at the point *K*. Transfer the angle *M-1'-K* to *1'-N-O* and extend line *1'-H* to line *5-J*. With *1'* as

The interior of the boiler at every washing, by the use of torch and mirror, must be as completely examined as possible, and suitable rods and scrapers employed to detach scale which has not been dislodged by the washing.

In addition to the usual report, the foreman in charge will keep notes on the condition of each boiler under his charge.

The standard pressure for washing out is not less than 90 pounds at a ¾-inch nozzle.

At the roundhouses, flues will be expanded with grooved expander only and flue rollers are not to be used, except when new flues are being put in.

The lighting of a fire in the firebox is positively prohibited except on the personal authority of the roundhouse foreman, assistant roundhouse foreman, boiler foreman, night roundhouse foreman, or hostler. The above mentioned roundhouse men will be held personally responsible for injury to fireboxes due to firing up locomotives without sufficient water in the boiler.

(To be continued)

Combustion Steam Generator

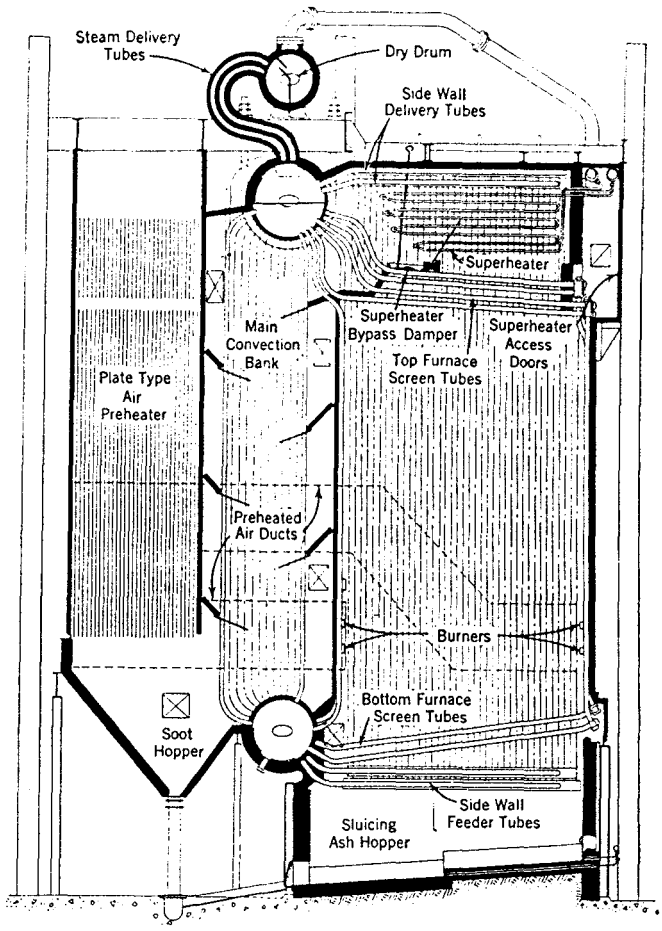
Combustion Engineering Corporation, 200 Madison Avenue, New York, is now offering the Combustion steam generator, a standard steam generating unit built in various sizes and providing a wide range of capacities at any desired conditions of steam temperature and pressure. Detail designs have been completed for eight sizes with capacities ranging from 70,000 to 400,000 pounds of steam per hour, from and at 212 degrees F.

As shown in the accompanying illustration, this design combines in one unit all the elements required for fuel burning, steam generation and superheating, heat recovery and ash disposal. Those familiar with the development of pulverized-fuel firing and the history of steam generating practice will note that there are no novel or radical departures from fundamentals, but rather that the design represents a highly compact and simple arrangement of long and well established elements. They will also note the apparent absence of the maze of pipes, headers, etc., exterior to the boiler casing, with which such construction has become associated in their minds. These pipes and headers essential for completing the circulating system of water walls are located entirely within the casing, where, in addition to performing their normal function as circulators, they also serve as highly effective heat-absorbing surface.

A point of particular interest is the entire absence of openings through the casing. Such openings are ordinarily required for the ingress and egress of wall tubes and headers. They are never perfectly sealed and consequently permit the discharge of dust during soot-blowing operations as well as the inflow of air during normal operation. The Combustion steam generator casing is air-tight and dust-tight throughout.

All four walls of the furnace are water-cooled, each wall being composed of a solid row of tubes with only sufficient space between them for construction requirements. The water-wall feeder and delivery tubes, at the bottom and top of the furnace respectively, complete the heating surface of the furnace proper nearly all of which is exposed to radiant as well as convection heat.

The result of this arrangement of wall tubes and



Sectional side elevation of Combustion steam generator showing the principal parts and arrangement of elements

to the exclusion of exposed refractories and having the maximum attainable quantity of contained water with provision for the highest possible freedom of circulation.

This type of furnace is perfectly adapted to the corner-tangential system of firing which produces intense turbulence with extreme rapidity of combustion and correspondingly high temperatures; these high temperatures being the result (not the cause) of the high rates of combustion.

Another feature of interest is the superheater bypass damper which affords a unique and much needed means of controling superheat temperature. Adequate space is provided for the superheater which is so located in the assembly as to permit of simple supports and a degree of accessibility unusual in boiler construction.

The first unit of this new design to be installed in America has now been in operation for several months in the plant of a leading industrial company. In overall results and ease and dependableness of operation, its performance has set an exceptionally high standard.

R. I. Fretz has been transferred from the Reading district and will assume charge of the Pittsburgh district in place of Wyman Howells who will now direct the activities of the Reading district.

The Babcock & Wilcox Company, New York, has acquired non-exclusive licenses under the automatic arc-welding patents of the Automatic Arc Welding Company, New York. The initial payment for such