

# THE DESIGN AND CONSTRUCTION OF LOCOMOTIVE BOILERS.

## Report of American Railway Master Mechanics' Association's Committee.

Following is the report of the Standing Committee, of which D. R. MacBain, Superintendent, Motive Power, Chicago, Rock Island and Pacific Ry., was chairman, as presented at the association's convention at Atlantic City, N.J., recently:—

Your committee sent out a circular of inquiry to all the members of the association in regard to their experience and recommendations concerning construction of locomotive boilers. We received replies from 21 members, comprising a total of 22,900 locomotives, which is about one-third of the locomotives represented. The intention of the committee is to give the different members the benefit of the experience of the different roads.

**TYPE OF BOILER.**—In no case is a special type of boiler used for any special service. One of the members advises that they use Belpaire boilers of crown bar construction for road locomotives entirely on account of greater ease in maintaining staybolts. Another member advises that they use the Belpaire boiler as well as the radial stay boiler, and their experience with the Belpaire is that it reduces the number of staybolt breakages, which has been proved by the records of staybolt breakages. From the experience that they gained with Belpaire boilers they developed a system of cross-

few roads use it on narrow-type fireboxes. On the crown bar type of boiler it is found to be a hard matter to keep the crown bars free from mud, but in renewing fireboxes on this class of locomotive, beneficial results have been obtained by raising the crown bars and in-

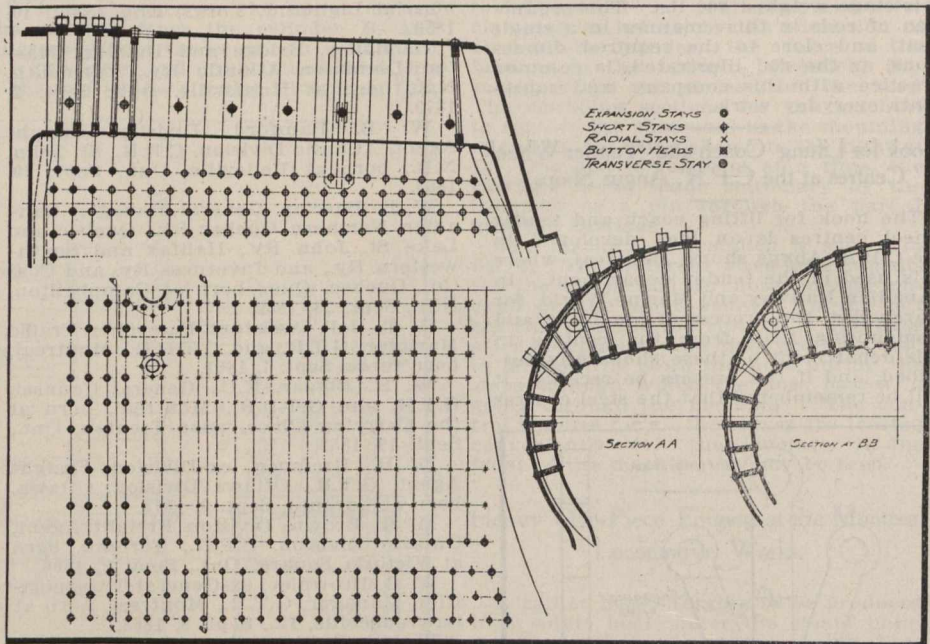


Fig. 1. Boiler Bracing Embodying Advantages of the Belpaire.

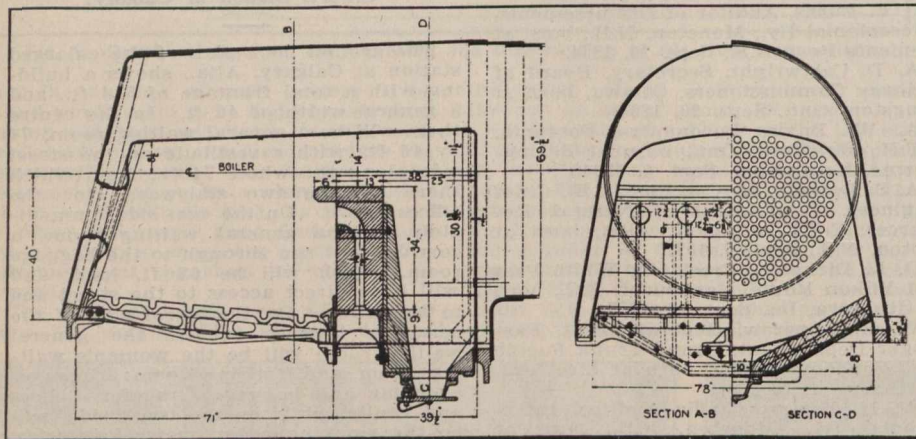


Fig. 2. Firebox Showing Great Economy in Fuel.

setting higher washers—1½ to 2 ins.

The committee was unable to get any data in regard to merits of Belpaire boiler compared with the radial stay boiler, as far as maintenance and boiler performance is concerned.

From the replies received from the different members it is the consensus of opinion that the radial stay type of boiler is preferred, as it is easy to construct, giving more free circulation of water, less deposit of sediment on the crown sheet and easier to wash out; also the dead weight is kept down considerably.

**COMBUSTION CHAMBERS.**—From the replies received the combustion chamber is only favored by five members. One member, who uses the combustion chamber covered by fig. 2, advises that it shows a great economy in fuel, a decrease in the amount of smoke, and cinders and increased mileage. No information was given in regard to mainten-

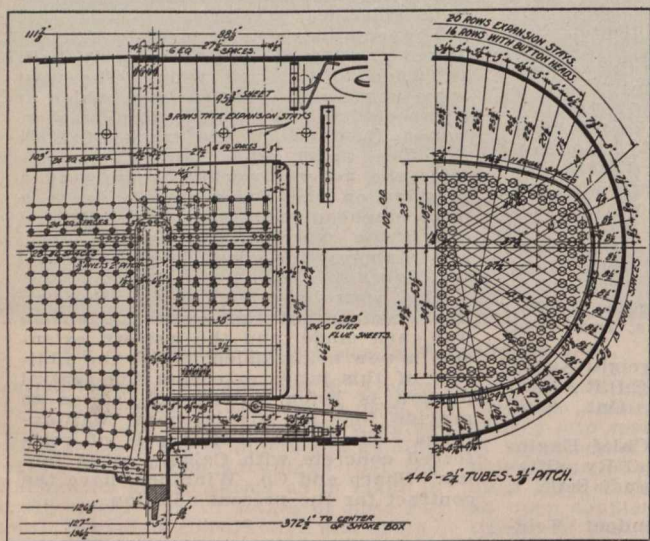


Fig. 3. Combustion Chamber with Low Maintenance Cost.

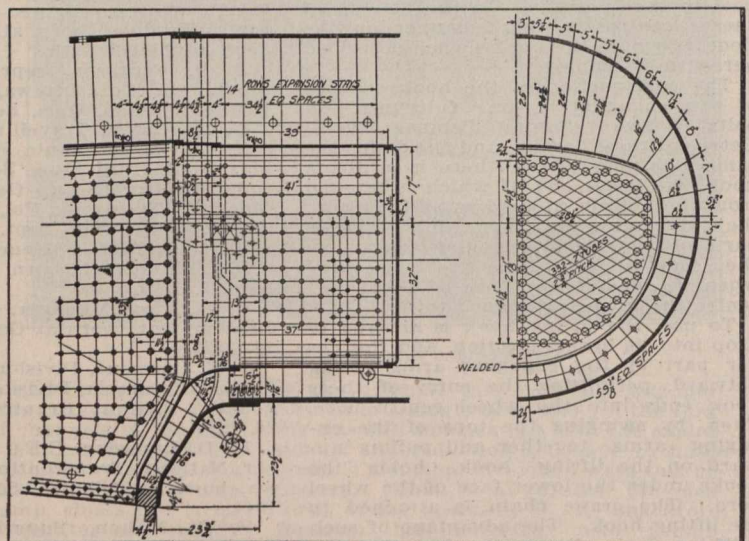


Fig. 6. Combustion Chamber Difficult to Maintain Tight Seams.

bracing, shown by fig. 1, which has practically all the advantages of the Belpaire staying, and in addition it reduces the

dead weight and is cheaper to construct. Crown bar construction is not used to any extent on wide firebox boilers, but a

ance. Another member advises that the reason they favor the combustion chamber in certain types of boilers, such as