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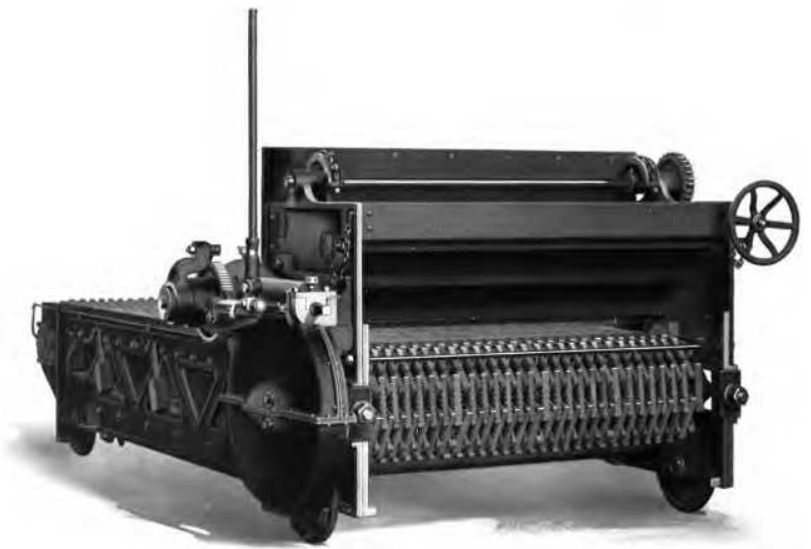

BABCOCK & WILCOX CHAIN GRATE STOKER

AUTOMATIC STOKERS

WITH the modern tendency toward increased overloads, high efficiencies, and smokeless combustion, there has come an enormous increase in the field of usefulness for the automatic stoker.

Inasmuch as the capacity of a properly designed boiler is limited almost entirely by the amount of fuel that may be burned in its furnace, and as combustion rates may be secured with an automatic stoker which cannot be approached by ordinary hand-firing methods, the increased capacity to be obtained from a given amount of heating surface with a stoker-fired over a hand-fired furnace is an obvious advantage.

Increased efficiency is another of the important advantages of the stoker-fired over the hand-fired boiler. With such an apparatus it is possible to make use of a poorer grade of coal with an efficiency as high or higher than that obtained with better grades of fuel in hand-fired furnaces. Such an increase in efficiency is the result of the even and continuous firing of an automatic stoker as against the intermittent firing of the hand-fired furnace, and a constant air supply as against variation in this supply with the changing furnace conditions which cannot be avoided in hand-fired practice. Still another cause for the increase in efficiency is the almost complete absence of the necessity for working the fires. When properly proportioned stokers and furnaces are operated in connection with a well-designed boiler, the capacity obtainable may be increased without the loss of efficiency at the higher ratings which would accompany such an increase with hand-fired furnaces.

The labor saving resulting from the installation of such an apparatus is a large item in a properly designed plant. This is a feature, however, that must be considered from several aspects. It is true that a stoker feeds coal to the fire automatically, but if this coal has to be fed first to the stoker hopper by hand, much of its automatic advantage is lost. This is also true of the handling of the ash from such an installation. When coal and ash-handling apparatus is not installed, there is no saving in labor. In large plants, however, stokers, used in conjunction with the modern methods of coal storage and coal and ash handling, make possible a large labor saving. In small plants the labor saving effected by the use of stokers is negligible, while the expense of the installation is no less proportionately than in large plants.

While the question of smoke and smokeless combustion is largely one of degree, and certain conditions may arise under which any furnace may cause smoke, it may be safely stated that a stoker-fired plant, under ordinary operating conditions, is much more nearly smokeless than one which is hand fired. This is due to the same causes as are given above for the increase in efficiency possible with stoker-fired boilers over hand fired, namely, those features leading to the better combustion that may be secured where stokers are used.