

In the same figure the vibrating or operating grates are up on the right side and down in normal position on the left side.

The grates are of two kinds, stationary and operating, each alternate grate being operated continuously by the driving shaft in front. The vibrating grates leave a slicing vibration forward and backward, preventing clinkers from forming on the grates, and at the same time

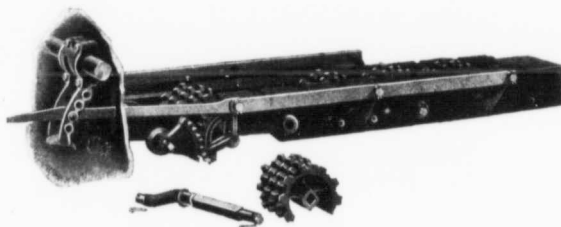


Fig. 10a—Detroit Stoker Clinker Crusher.

moving the bed of fire down towards the centre of the furnace.

The vibrating grates are operated by upper and lower rocker bars connected to the lower driving shaft by links, which can be unhooked during the operation; thereby discontinuing the grate movement entirely when a non-coking coal is used. With this arrangement, either, both or neither end of the vibrating grates may be operated as described.

THE CLINKER CRUSHER.

In the centre of the stoker is a clinker crusher composed of a row of heavy cast iron disks which rotate alternately towards and from each other, crushing the clinkers and depositing them in the ash pit. This clinker crusher is shown in Fig. 9, but more clearly in Fig. 10. This does away with the necessity of cleaning the furnace by hand. In this way coal is fed into the stoker and ashes and clinkers removed without opening furnace door.

In Figures 11 and 12 are suggestions for labor saving methods for the handling of coal and ashes, which can be used in conjunction with this grate.

New Model Roney Mechanical Stoker.

This grate, shown in Fig. 13, the Westinghouse new

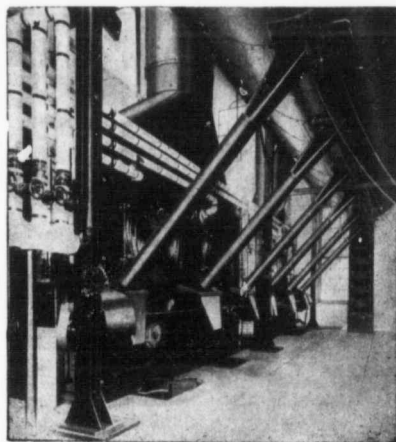


Fig. 10b—Installation of Detroit Automatic Stokers, Showing Method of Feeding the Coal.

model Roney mechanical stoker, is made by the Westinghouse Machine Co., and sold in Canada by the Canadian Westinghouse Co., Hamilton. A general description of the operation is:

OPERATION OF STOKER.

The coal is fed into a hopper extending across the boiler front, usually by gravity from an overhead bin. From this hopper the fuel is automatically supplied to the furnace by a reciprocating pusher operated from the rock shaft by an eccentric. The fuel descends through the throat of the arch on to the upper grate bars where it is subjected to an intense heat radiated from the incandescent fire-brick arch spanning the upper portion of the furnace. This entirely cokes the fuel and drives off all the volatile gases, leaving the coke, or fixed carbon, which is then gradually worked down the inclined surface by the rocking motion of the grate bars, imparted to them from the eccentric on the rock shaft.

The oscillation of the grate bars not only work the fuel slowly down the furnace, but also keeps it constantly agitated, this preventing to a large extent the formation of clinker and bringing the fuel into intimate contact with the incoming air. After the solid combustibles have been totally consumed, the remaining ash is discharged

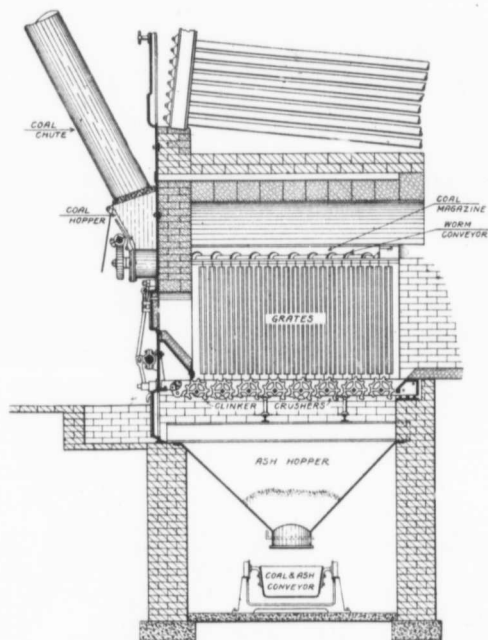


Fig. 11—Suggestion for Labor Saving in Handling Coal and Ashes.

on to the dumping grate at the bottom of the furnace. The operations necessary to clean the fire, will be readily understood by reference to Fig. 13. First the guard is raised, thus preventing the fuel bed from sliding. Next the dumping grate is dropped thus permitting the free descent of ash both front and rear of the axis.