ash pit by simply moving a lever on the outside of the boiler setting.

The firebrick arches, in this design of the chain grate stoker, are so constructed that they ensure proper and smokeless combustion of the most fiercely burning coals, such as "Dominion," etc., and at the same time very few repairs are required.

Jones Underfeed Automatic Mechanical Stoker.

The principle of the Jones underfeed stoker, made by the Jones Underfeed Stoker Co., Montreal, is graphically

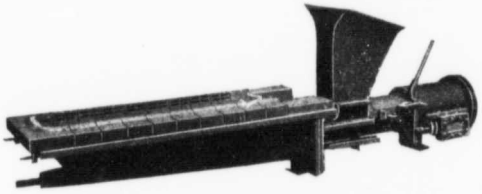

Fig. 4—Jones Underfeed Stoker Ready for Installing.

shown in Fig. 3, which is a cross-section of the boiler showing the shaped retort, dead plates and air inlet. Fig. 4 shows the stoker complete, ready for installation; and Fig. 5 is a complete installation, showing the method of control.

The object with the Jones stoker is to get a steady and uniform supply of fuel and a proper regulation of the air supply.

OPERATION OF STOKER.

The operation of the stoker may be described as follows: Coal in the hopper descends through the opening in the throat of the machine immediately in front of the ram, and upon the forward motion of the steam actuated ram is introduced into the retort imparting an upward and backward movement to the whole body of fuel. Successive charges have the effect of elevating the fuel upward into the fire zone; and so the conformation of the fuel bed may be said to consist of three strata, viz., the green coal just introduced, the coal lying immediately above in process of coking, and the incandescent fuel bed at the top where combustion is completed. It is at the middle stage that the making of smoke is prevented. Here the air from the tuyeres permeates the fuel, uniting with the gases being released because of the great heat of the fires just above, and thus released the gases are burned in seeking an outlet through the uppermost body of incandescent coal. The whole effect is to elevate coke coal only into the fire zone.

The control of the elements affecting combustion is absolutely automatic in this method of stoking, and constitutes one of the distinctive features. As the steam pressure itself automatically proportions the fuel and the air to each other and the varying loads, the operation has the decided advantage of being both simple in application and positive in action.

TYPICAL ILLUSTRATION OF STOKER.

In the typical installation shown in Fig. 5, the engine driving the blower is equipped with a regulating valve, which, as the steam pressure rises above a certain point, throttles the supply of steam, thereby slowing down the engine and the speed of the blower, and consequently diminishing the output of air; and vice versa, should the steam pressure fall. The engine also drives a crank shaft which runs along the front of the boilers, and operates the valve on the stoker cylinder, which regulates the amount of fuel fed into the furnace by means of the same regulating valve which controls the speed of the engine. The immediate effect is to diminish the amount of air and to decrease the quantity of fuel admitted to the furnaces

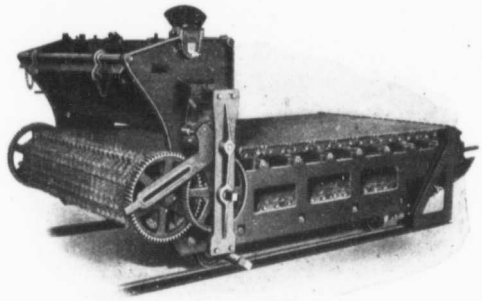

Fig. 6—The Green Travelling Link Grate.

if the steam pressure rises; and on the contrary, to increase the amount of air and to increase the amount of fuel if the steam pressure falls. The operation secures a correct proportioning of fuel and air, producing a clean and perfect combustion and eliminating smoke; limits steam production and burning of fuel to actual requirements; and being so completely automatic, responds immediately to fluctuations in load without attention or effort on the part of the operator.

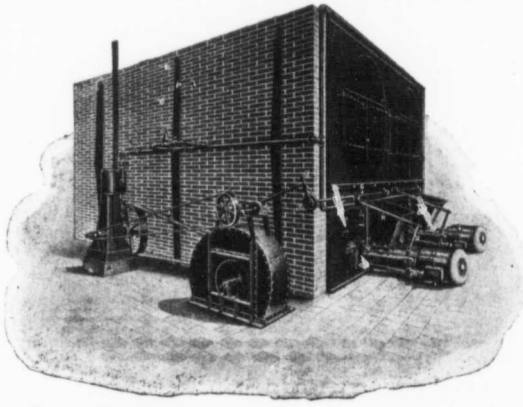

Fig. 5—Typical Installation of Jones Underfeed Stokers and Regulating Apparatus.

The Green Travelling Link Grate.

The Green travelling link grate stoker, made by the Green Engineering Co., Chicago, consists of a rigid cast iron frame supported on truck wheels for the purpose of removing it from the furnace, and carrying thereon an endless chain which forms the grate surface, as in Fig. 6. The chain is caused to move forward by means of a train of steel gears actuated from an eccentric shaft supported on the boiler front. The attendant, if coal, and ash handling machinery is provided, has only to see that the stoker is so adjusted that the fires will be maintained in a uniform condition. The boiler damper being adjusted to the load requirements, the stoker can be easily made to harmonize therewith.