

FIG. 5. UNDERFEED SIDE CLEANING STOKER

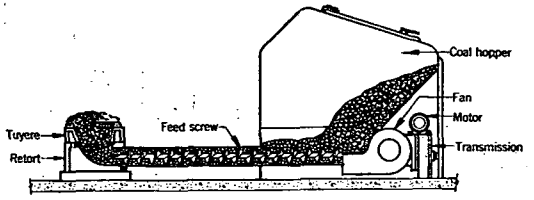


FIG. 6. UNDERFEED STOKER, HOPPER TYPE, CLASS 1

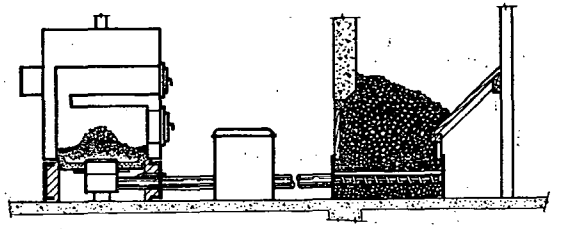


FIG. 7. UNDERFEED STOKER, BIN FEED TYPE, CLASS 1

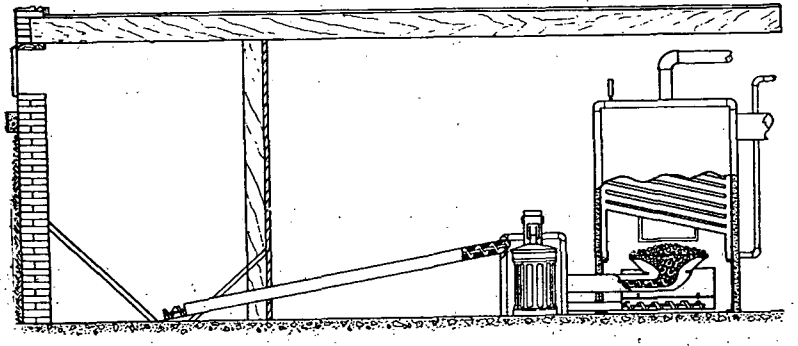


FIG. 8. UNDERFEED ANTHRACITE STOKER WITH AUTOMATIC ASH REMOVAL, BIN TYPE

discharged as in the small stoker or may be accumulated and periodically discharged. This stoker requires no arch as it automatically provides for the combustion of the volatile gases.

Underfeed Rear Cleaning Stokers

This type of stoker accomplishes combustion in much the same manner as the side cleaning type, but consists of several retorts placed side by side and filling up the furnace width, while the ash disposal is at the rear. In principle, its operation is the same as the side cleaning underfeed.

CLASSIFICATION OF STOKERS ACCORDING TO CAPACITY

Stokers may be classified according to their capacity or coal feeding rates. The following classification has been made by the *U. S. Department of Commerce*, in cooperation with the *Stoker Manufacturers Association*.

Class 1. Capacity under 61 lb of coal per hour.
Class 2. Capacity 61 to 100 lb of coal per hour.
Class 3. Capacity 101 to 300 lb of coal per hour.
Class 4. Capacity 300 to 1200 lb of coal per hour.
Class 5. Capacity 1200 lb of coal per hour and over.

Class 1 Stokers

These stokers are used primarily for home heating and are, therefore, designed for quiet, automatic operation. Simple, trouble-free construction and attractive appearance are very desirable characteristics on these small units. Equipment of this capacity is also used extensively for commercial and industrial applications requiring the burning of small quantities of fuel under automatic control.

A common type of stoker in this class (Fig. 6) consists essentially of a coal reservoir or hopper, a screw for conveying the coal from the reservoir to the burner head or retort, a fan which supplies the air for combustion, a transmission for driving the coal feed worm, and an electric motor or motors for supplying the motive power for both coal feed and air supply.

Air for combustion is admitted to the fuel through tuyeres at the top of the retort and in this class, the tuyeres and retort are usually round, although they may be either round or rectangular. Stokers in this class are made for burning anthracite, bituminous, semi-bituminous, and lignite coals and coke. The *U. S. Department of Commerce* has issued commercial standards for household anthracite stokers[1].

Units are available in either the hopper type, as shown in Fig. 6, or in the type as shown in Figs. 7 and 8, which feeds the coal directly to the furnace from the coal bin. Some stokers, particularly those designed for use with anthracite coal, have equipment for automatically removing the ash from the ash pit and depositing it in an ash receptacle outside of the furnace, as shown in Fig. 8. Most of the bituminous models, however, operate on the principle of removing the ash from the fuel bed after it is fused into a clinker at the outer periphery of the tuyere.

Most of the stokers in this class feed coal to the furnace intermittently

[1]Household Anthracite Stoker Standards (*U. S. Department of Commerce, National Bureau of Standards*, Commercial Standard No. CS48-40).