

in accordance with temperature or pressure demands. A small amount of heat is also released from the fuel bed during the inoperative period of the stoker. Through the use of automatic controls (see Chapter 33), it is possible to maintain temperatures or pressures within very close limits when using stoker firing equipment.

Stoker-Fired Boiler and Furnace Units

Boilers, air conditioners, and space heaters especially designed for stokers are now available having certain design features closely coordi-

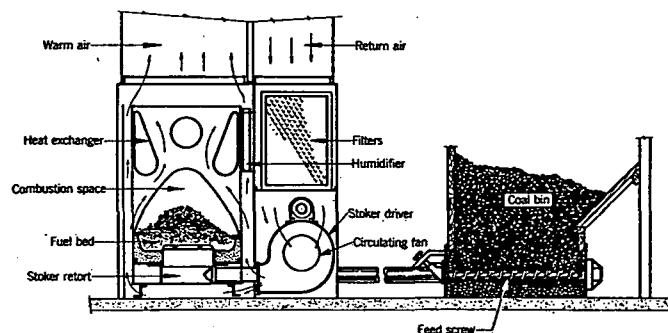


FIG. 9. STOKER-FIRED WINTER AIR CONDITIONING UNIT

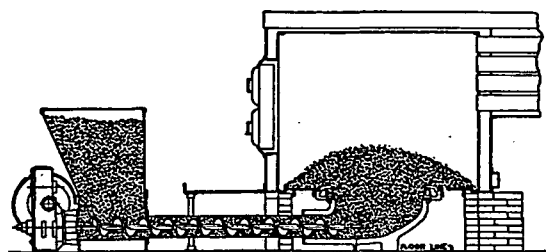


FIG. 10. UNDERFEED SCREW STOKER, HOPPER TYPE, CLASS 2, 3 OR 4

nating the heat absorber and the stoker. Although very efficient and satisfactory performance can be obtained from the application of automatic stokers to existing boilers and furnaces, some of the combination stoker fired units (Fig. 9) are more compact and attractive in appearance in addition to other design features.

Class 2 and 3 Stokers

Stokers in this class are usually of the screw feed type without auxiliary plungers or other means of distributing the coal. They are used extensively for heating plants in apartments and hotels, also, for industrial plants, such as laundries, bakeries, and creameries.

They are primarily of the underfeed type and are available in both the hopper type, as illustrated in Fig. 10, and also, the bin feed type, which

delivers the coal directly to the furnace from the coal bin, as illustrated in Fig. 11. These units are also built in a plunger feed type and the drive for the coal feed may be an electric motor or a steam or hydraulic cylinder.

Stokers in this class are available for burning all types of anthracite, bituminous and lignite coals. The tuyere and retort design varies widely according to the fuel and load conditions. On the bituminous models, the grates are normally of the stationary type and the ash accumulates on the grates surrounding the retort. With the average bituminous coal, the ash then fuses into a clinker which is removed periodically.

The anthracite stokers in this class are normally equipped with moving grates which discharge the ash into a pit below the grate. This ash pit may be located on one or both sides of the grate and on some installations is made of sufficient capacity to hold the ash from several days or weeks operation.

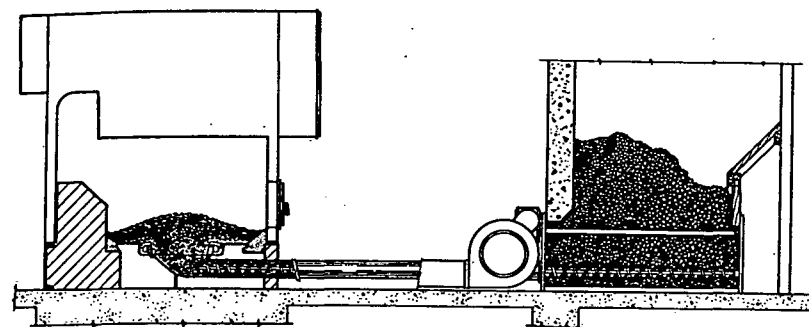


FIG. 11. UNDERFEED SCREW STOKER, BIN TYPE, CLASS 2, 3 OR 4

Class 4 Stokers

Stokers in this group vary widely in details of mechanical design and the several methods of feeding coal previously described are employed. The underfeed stoker is the most widely used, although a number of the overfeed types are also used in the larger sizes of this class. Bin feed, as well as hopper models, are available in both the underfeed and overfeed types.

Class 5 Stokers

The prevalent stokers in this field are: (a) overfeed flat grate, (b) overfeed inclined grate, (c) underfeed side cleaning, and (d) underfeed rear cleaning.

The rear cleaning underfeed stoker is usually of the multiple retort design and is used in some of the largest industrial plants and central power stations. In some instances, zoned air control has been applied on these stokers, both longitudinally and transversely of the grate surface.

Underfeed side cleaning stokers are made in sizes up to approximately 500 boiler horsepower. They are not so varied in design as those in the