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R. J. SLOAN

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FURNACE

Filed March 4, 1930

Fig. 1

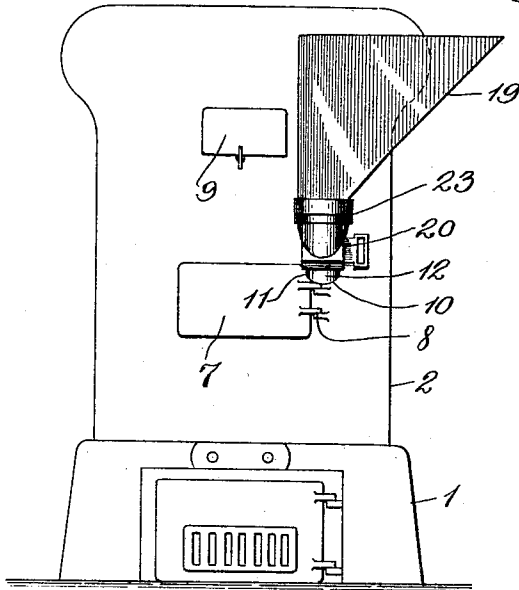


Fig. 3

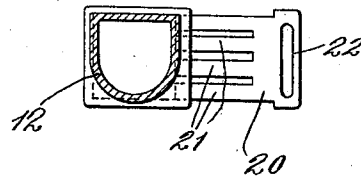
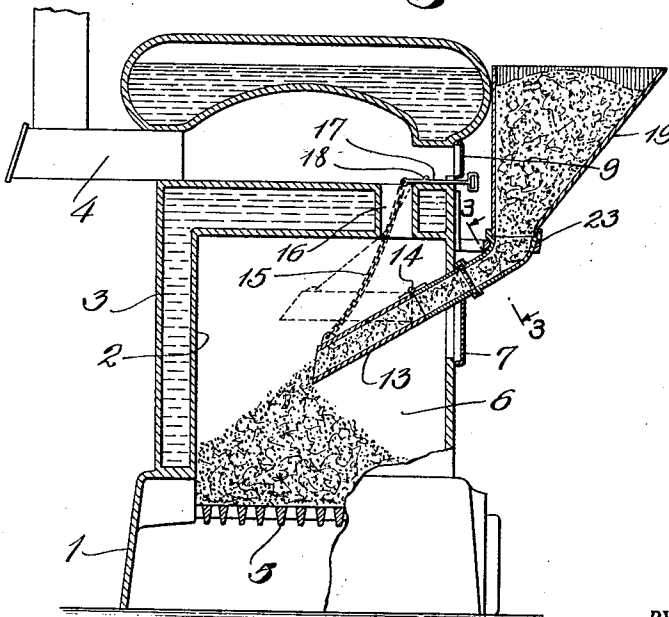


Fig. 2



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FURNACE

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This invention is an improvement in furnaces, and more particularly in the type of furnace having an automatic feed.

In the usual type of furnace for household use, it is necessary to refuel two or more times within twenty-four hours, in order to attain uniform heating of the house or apartment.

One of the primary objects of the present invention is the provision of a furnace of the class described, provided with an automatic feed device, for obtaining a substantially constant supply of fuel throughout a selected period.

Another object is the provision of a type of feeder, which may be attached to existing furnaces, without material change in the same, and without interfering with the functions of the furnace in any way.

Another object is to provide a feeder wherein the fuel is delivered at a suitable point above the grate, and below the level of the fire door, but wherein the delivery mechanism is so constructed that it may be displaced in part, when it is necessary to clean the fire.

Another object is to provide mechanism in connection with the feeder for shutting off the flow of fuel, during the cleaning of the fire, without necessitating the awaiting of a time when the magazine is empty.

Another object is to provide mechanism in the form of an attachment, capable of installation in existing furnaces or boilers, in connection with an opening into the furnace or boiler, constructed by the maker.

With these and other objects in view the invention consists in the construction and novel combination of parts fully described hereinafter, illustrated in the accompanying drawing, and pointed out in the claims appended hereto, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims, may be resorted to without departing from the spirit of the invention.

In the drawing forming a part hereof:—

Fig. 1 is a front view of the improved furnace.

Fig. 2 is a vertical section.

Fig. 3 is a section on the line 3—3 of Fig. 2.

In the present embodiment of the invention, the furnace is of usual construction, having a base 1 which provides an ash-pit, and a body 2 which is jacketed as indicated at 3. The body has the usual smoke outlet 4, and a grate 5, preferably of the revolving type, is arranged between the combustion chamber 6 of the body and the ash-pit. This is a usual type of furnace, having the usual feed door 7, hinged at 8 to the body, and the cleaning door 9 for the flues.

In order to convert this usual type of furnace into an automatic feeder, I provide an opening at one side of the door, preferably at the hinged side, formed by cutting away a part of the door frame, as shown at 10, and an adjacent corner of the door, as shown at 11. Thus a circular opening is provided, the greater part of which is in the door frame. It will be understood that in furnaces of all types, the jacket does not extend entirely to the door opening, as indicated in Fig. 2, and it is in this single wall portion of the body that the opening 10 is provided. The opening may be formed in any suitable manner at the foundry for new furnaces and at the place of installation in old furnaces.

A feed chute composed of a hollow elbow 12 and a tubular extension 13 is supported in the opening 10—11. This chute, which is of a selected cross-section to provide the amount of feed required, slants downwardly and inwardly, and terminates at about the center of and at a selected distance above the grate. The portion 13 is connected to the elbow portion 12 by a hinge 14 arranged at the upper side of the chute, so that the portion 13 may be swung upwardly into the dotted line position of Fig. 2, when cleaning the fire and the like.

Any suitable means may be provided for lifting the free end of the portion 13, and holding it lifted, as indicated in dotted lines in Fig. 2. In the present instance, a chain 15 is connected with the portion 13 near its free end, and extends upwardly through a smoke opening 16 of the furnace to a connection with the inner end of a rod 17, mounted

to slide through the opening normally closed by the door 9. The opening for the rod 17 may be formed by a notch in the edge of the furnace wall at the door opening for the door 9, as shown, and the outer end of the rod has a handle for convenience in manipulating the same.

Any suitable mechanism may be provided in connection with the rod for holding it with the hinged portion of the feed chute lifted. As for instance, the rod is shown as provided with a lug 18, which will pass through the opening for the rod, and will hold the rod when the rod is turned slightly. Any suitable form of hopper 19 may be connected with the upper end of the feed chute, and the hopper should be of a size to contain fuel for at least twenty-four hours. The hopper may be supported by the furnace, or by the building, or in any other suitable manner, and means is provided in the feed chute for shutting off the flow of fuel through the same when desired.

The said means is in the form of a plate 20, (Fig. 3) having a plurality of fingers 21, which are slidably mounted in openings in the side of the chute. The plate has a handle portion 22 as shown. When it is shoved inward, the fingers extend across the chute and stop the flow of fuel. When it is pulled outward, the fuel will flow freely. The feed chute may be supported in any suitable manner, as for instance, by a bracket 23 connected with the stove body.

In operation, the hopper is filled, and as the fuel burns, more slides down the chute. Should the coal clinker, and the fire require cleaning, the slide 20 is pushed into the closed position, the portion 13 of the chute is lifted, and the fire is as accessible as if there were no feed device in place. The portion 13 of the hopper moves by gravity into operative position, when the rod 17 is released. With the improved feeder, the fire requires attention only once a day.

The man of the house may attend to the furnace before the leaves in the morning, and rest satisfied throughout the day that no further attention will be required. No gas can escape through the house, and the arrangement assists in the consumption of the gases first set free, thus utilizing to the greatest advantage the heating qualities of the fuel. The improved feeder takes care of either pea or buckwheat coal, thus making for economy.

The cutout for the chute is made at the door opening because there is but a single wall around the opening, and the cutout can be made without interfering with the water jacket. The upper corner at the hinge side is a convenient place, since here it does not interfere with the opening of the door, nor with access to the door opening. It is apparent, however, that it might be at the other side, or in any other position where it will

not interfere with the water jacket. The door opening offers a convenient starting place for cutting an opening. The top of the chute may be bent laterally somewhat if necessary, to clear the upper flue door.

What is claimed as new is:—

In combination with a coal burning furnace having a fire-door, a fire box and a grate, a feeder attachment adapted to be attached to such furnaces, and comprising a hollow elbow having a downwardly inclined portion projecting through an opening formed partially in the front wall of the furnace and partially in the fire-door and so located that the door may be opened and closed when the feeder is in position, an inclined tubular extension hinged to the inner end of the inclined portion of the elbow, the outlet end of said extension being positioned substantially centrally of the fire-box above the grate, means attached to the hinged extension and operable from outside the furnace for lifting the extension for the purpose specified, a storage hopper for coal having an opening in its bottom communicating with the upper end of the elbow, and means for supporting the elbow and the hopper.

Signed at New York city in the county of New York and State of New York this 15th day of February A. D., 1930.

ROBERT J. SLOAN.