No. 744,644. PATENTED NOV. 17, 1903

F. D. SWANEY.

FURNACE OR STOVE FIRE POT.

APPLICATION FILED APR. 9, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

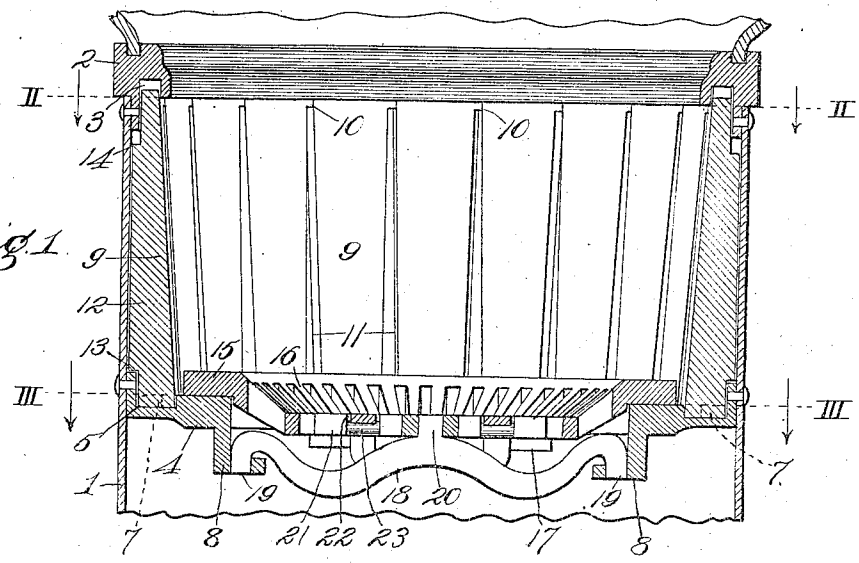
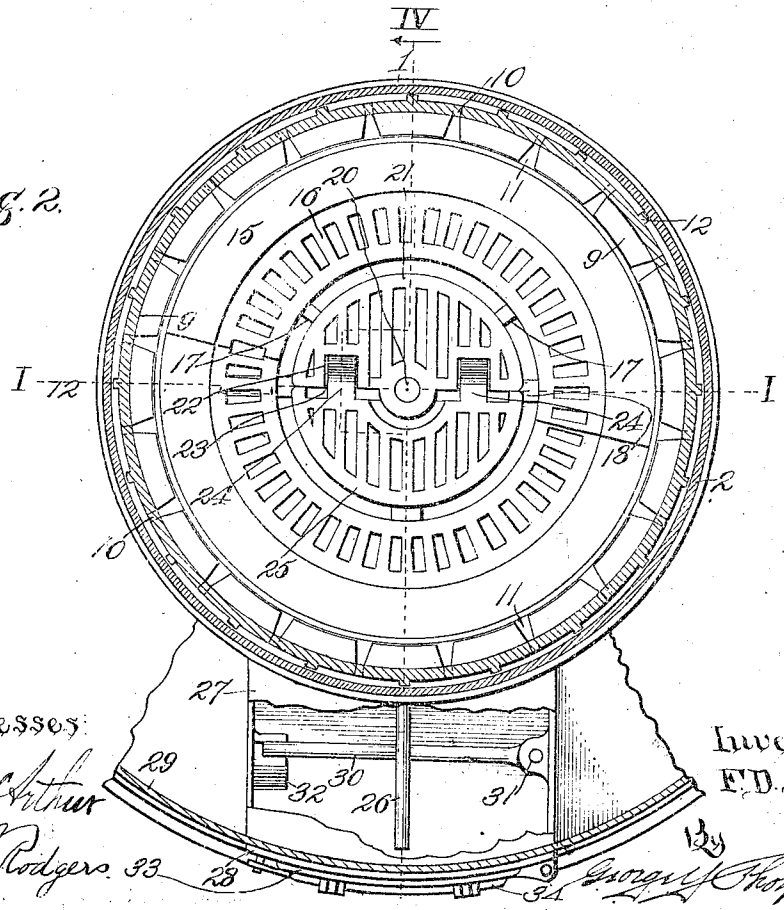


Fig. 2.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

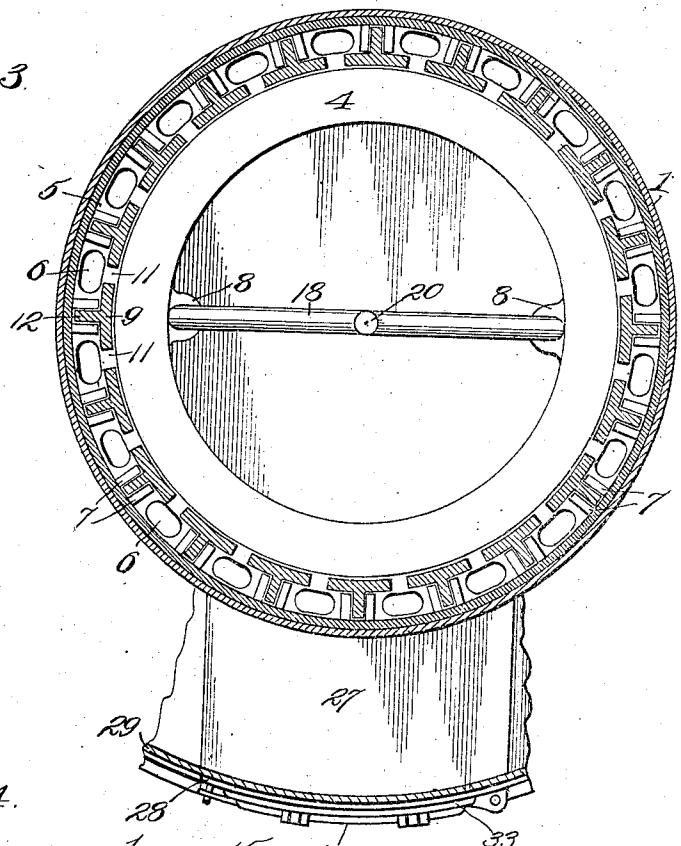
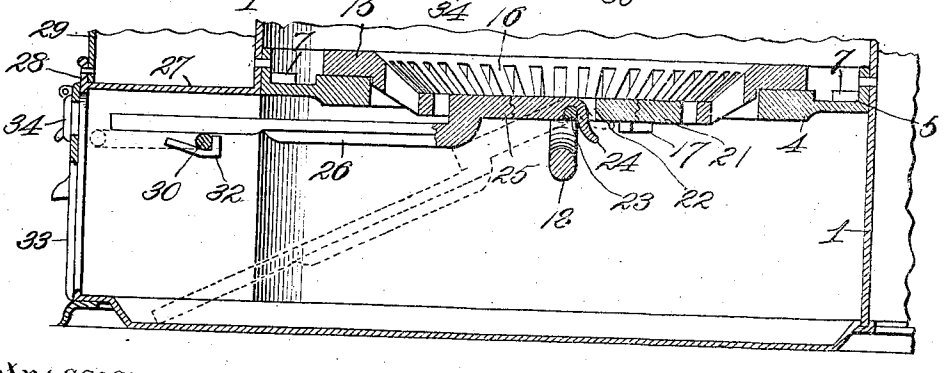


Fig. 4.



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No. 744,644. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

FLETCHER D. SWANEY, OF KANSAS CITY, KANSAS, ASSIGNOR OF ONE-HALF TO HERBERT GALER, OF KANSAS CITY, KANSAS.

FURNACE OR STOVE FIRE-POT.

SPECIFICATION forming part of Letters Patent No. 744,644, dated November 17, 1903.

Application filed April 9, 1903. Serial No. 151,702. (No model.)

To all whom it may concern:

Be it known that I, FLETCHER D. SWANEY, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Furnace or Stove Fire-Pots, of which the following is a specification.

My invention relates to fire-pots for hot-air furnaces and heating-stoves of that class in which air is supplied to the fuel through the wall of the fire-pot for the purpose of effecting a more thorough and complete combustion and thereby economy in the use of fuel, and has for its objects to produce a structure of the character named which can be quickly and easily repaired without the assistance of skilled labor and which is of simple, strong, durable, and comparatively cheap construction.

To these ends the invention consists in certain novel and peculiar features of construction and organization, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a central vertical section of the body of a stove or fire-pot shell of a furnace equipped with a fire-pot embodying my invention, said fire-pot being also shown in section on the line I I of Fig. 2. Fig. 2 is a horizontal section taken on the line II II of Fig. 1. Fig. 3 is a horizontal section on the line III III of Fig. 1 with the grate removed. Fig. 4 is a vertical section taken on the dotted line IV of Fig. 2, but with the sectional wall of the fire-pot omitted.

In the said drawings, 1 designates what would form the shell or body of an ordinary heating-stove, but which in the drawings shown—relating, primarily, to a hot-air furnace—represent the fire-pot shell, the same being surmounted by the cast annulus 2, having in its lower side an annular groove 3 and forming the support at its upper side for the fire-pot hopper.

4 designates a circular casting riveted or otherwise secured in a horizontal position to the shell 1 and provided in its upper side vertically below groove 3 with an annular groove 5 and with a series of equidistant holes 6, opening up communication between groove 5 and the ash-pit chamber below. The base of the groove is also provided between said holes with substantially parallel ribs 7, extending approximately radially of the casting, and depending from the inner margin of the latter at diametrically opposite points are a pair of apertured angle-lugs 8, for a purpose which hereinafter appears.

The wall of the fire-pot is composed of a plurality of sections 9, having their lower ends in groove 5 contiguous to its inner wall and provided at their upper ends with laterally-projecting lugs 10 for the purpose of spacing the upper ends of the sections equidistantly, these spaces by preference growing gradually wider toward their lower ends and constituting slots 11, which admit air to the side of the mass of fuel for the full height of the fire-pot, said air passing up through holes 6 and thence inwardly through the slots between said sections. To provide against warpage of the sections and to hold them more reliably in position, as well as to practically surround the entire fire-pot with an air-chamber to protect the shell 1, each section is formed at its outer side with a longitudinal rib 12, projecting outwardly to the shell and having its lower end between ribs 7, which latter thus coöperate with lugs 10 for the purpose of holding the sections in their proper relative positions. The lower ends of said ribs are recessed, as at 13, to fit over the outer wall of groove 5, and their upper ends are recessed, as at 14, a sufficient distance to enable one grasping a section to raise it in slot 3 until its lower end is above the plane of the inner wall of groove 5, and therefore in such position that said end may be swung inwardly and the section readily withdrawn from the furnace.

15 designates the ring portion of the grate, the same resting upon casting 4 and having a slotted or skeleton portion 16 projecting downward and inward of the casting and provided to the rear of the center of the furnace with two or more inwardly-projecting lugs 17.

18 designates a cross-bar having down-

wardly-disposed hook ends 19 engaging the apertured angle-lugs 8 and with a central upwardly-projecting pivot 20, upon which is loosely mounted the rear section 21 of the rotary portion of the grate, said section being also supported upon lugs 17, hereinbefore mentioned.

At opposite sides of its axis grate-section 21 is provided with openings 22, bridged by cylindrical portions 23, forming hinge-rods for the downwardly-disposed hooks 24 at the rear side of the front section 25 of the rotary portion of the grate, said section being formed centrally with the arm 26, underlying grate portion 16 and projecting radially forward and almost through the tube 27, opening up communication with the ash-pit, said tube being cast by preference with the door-casing 28, to which the outer shell 29 of the air-chamber of the furnace is attached in the usual or any preferred manner.

To support the front half or hinged section of the grate in a horizontal position, I employ a rod 30, extending across tube 27 and pivoted loosely at one end, as at 31, so as to swing in a horizontal plane, but with some vertical play. The free end of said supporting-bar rests in the angle-socket 32, cast with tube 27 by preference and having its inner arm adapted to limit inward movement of said pivoted supporting-bar and its outer arm sloping upwardly and outwardly to compel said bar as swung outwardly to rise, and thereby slightly elevate that portion of the fuel superimposed with reference to the hinge-section of the grate, this elevation resulting obviously in the partial disintegration or loosening of the mass, to the end that when bar 30 is swung from under arm 26 and the latter, with said hinged section, drops to the position shown in dotted lines, Fig. 4, the clinkers or ashes at the bottom of said mass may fall or be easily drawn out by means of a poker through the opening into the ash-pit. In this manipulation of rod 30 it is necessary to open door 33. The latter is provided with a vertically-opening slot-covering door 34, and by opening this door the poker can be inserted and hooked over the free end of rod 30 for the purpose of swinging the same forward to permit the grate to drop. Through said slot the operator also inserts a gas-pipe (not shown) or its equivalent to fit over or otherwise engage the end of arm 26 for the purpose of shaking the grate in the usual manner, bar 30 of course forming the support for the grate during such action.

For the purpose of removing or replacing one or more of the fire-pot wall-sections, as hereinbefore explained, it is first necessary to drop the front half of the grate part way, and then disengaging its hooks 24 from hinge-rods 23 remove it from the furnace. The rear half of the rotary portion of the grate is then removed in an obvious manner and bar 18, too, if necessary. The operator can now reach in—if necessary, crawl in—and remove one or more of the wall-sections 9 and substitute others, or in lieu of removing the grate, as explained, the operator can reach in through the fuel-door opening (not shown) and substitute a good for a defective wall-section.

The ring portion 15 of the grate may be formed in a single piece, but is preferably composed of two sections abutting together at their ends, the weight and character of the ring serving to maintain these parts in proper relation to each other and the remainder of the fire-pot, the ring being made in halves to render it more convenient to be secured in or removed from position and, furthermore, in case of injury to enable the owner to duplicate the defective part at a comparatively small expense.

When all of the parts are properly assembled and the fuel is burning on the grate, it will be apparent that the air has access to the fuel not only up through the grate, but also through openings 6 to the air-chambers between the fire-pot wall and shell and thence through the upright slots or air-spaces 11 into the body of the fuel, the penetration of the air into the fuel at these various points resulting in a more perfect combustion and consequent economy of operation.

From the above description it will be apparent that I have produced a fire-pot of the character mentioned which is of such simple construction and organization that the owner of the furnace can make the necessary repairs about as easily and quickly as an expert, and it is to be understood that while I have illustrated and described the preferred embodiment of the invention it is susceptible of modification in minor particulars without departing from the essential spirit and scope or sacrificing any of its advantages.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A fire-pot, comprising a shell, an annular casting secured therein and provided with holes at intervals, an annulus surmounting the shell, and fire-pot wall-sections resting upon the annular casting and having an up-and-down sliding engagement with the annulus.

2. In a fire-pot, a shell, a casting secured therein, and provided at its upper side with a groove, a casting surmounting the shell and provided in its under side with a groove, and a wall-section fitting in the groove of the first-named casting, and resting thereon, and having its upper end projecting into the groove of the other casting and capable of sliding upwardly therein until its lower end is withdrawn from the groove of the supporting or first-named casting.

3. A fire-pot comprising a shell, an annular casting secured therein, and provided with holes and a pair of upwardly-projecting ribs between each pair of holes, an annulus surmounting the shell, and fire-pot wall-sections resting upon the annular casting and detach-

ably engaging the annulus, and provided with outwardly-projecting ribs fitting between said casting-ribs.

4. A fire-pot, comprising a shell, an annular casting secured therein, having an annular groove in its upper side, and holes leading into said groove, an annulus upon the shell, wall-sections fitting in the groove at their lower ends and having a sliding connection at their upper ends with the annulus, sufficient to permit their lower ends to be lifted out of said groove, and means to space said sections apart.

5. A fire-pot, comprising a shell, an annular casting secured therein, and provided with holes and with a pair of ribs between each pair of holes, an annulus surmounting the shell, and wall-sections resting upon the annular casting and having a sliding connection with the annulus, and provided with ribs fitting between the casting-ribs.

6. A fire-pot, comprising a shell, an annular casting therein, and provided with a groove in its upper side and with holes leading upwardly into said groove, an annulus surmounting the shell and provided with a groove in its under side, wall-sections fitting in the groove of the annular casting and projecting at their upper ends into the groove of the annulus, and capable of upward movement therein, and provided with outwardly-projecting ribs, and means for spacing said sections apart.

7. A fire-pot, comprising a shell, an annular casting therein, a revoluble grate suitably supported centrally of the casting, and comprising a non-tilting rear and a tilting front section said front section having a forwardly-projecting arm, a hinged rod supporting said arm and adapted to operate in substantially a horizontal plane, and a socket supporting the free end of the rod and having an inclined portion to elevate slightly the free end of said rod when the latter is swung forwardly, substantially as and for the purpose described.

8. A fire-pot, comprising a shell, an annular casting therein, having depending diametrically opposite apertured lugs, a circular portion resting upon the casting and provided with inwardly-projecting lugs rearward of said apertured lugs, a cross-bar fitting in and supported by said apertured lugs and provided centrally with an upwardly-projecting pivot, and a circular grate portion pivoted on said pivot and resting on the lugs rearward of said apertured lugs.

9. A fire-pot, comprising a shell, an annular casting therein, having depending diametrically opposite apertured lugs, a circular portion resting upon the casting and provided with inwardly-projecting lugs rearward of said apertured lugs, a cross-bar fitting in and supported by said apertured lugs and provided centrally with an upwardly-projecting pivot, a circular grate portion, comprising a rear portion pivoted to operate horizontally on said pivot, and also resting on the lugs rearward of the apertured lugs, and a front portion hinged to the rear portion and adapted to operate vertically, and provided with a forwardly-projecting arm, and means for supporting said arm or permitting it to swing downwardly with said front grate portion.

In testimony whereof I affix my signature in the presence of two witnesses.

FLETCHER D. SWANEY.

Witnesses:
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G. Y. THORPE.