No. 744,075. PATENTED NOV. 17, 1903.

C. E. HILL.

HEATING STOVE.

APPLICATION FILED APR. 6, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

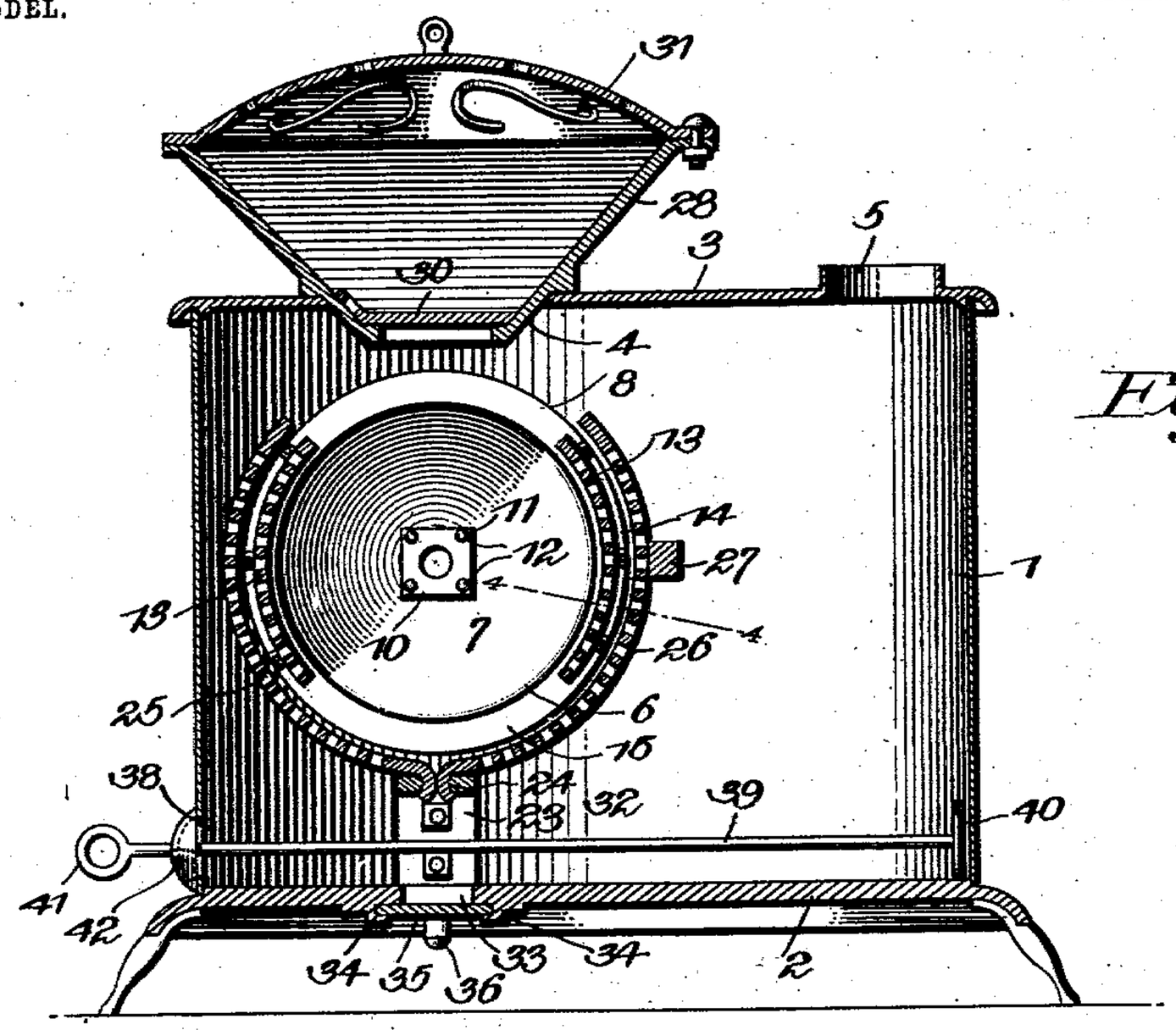

Fig. 1.

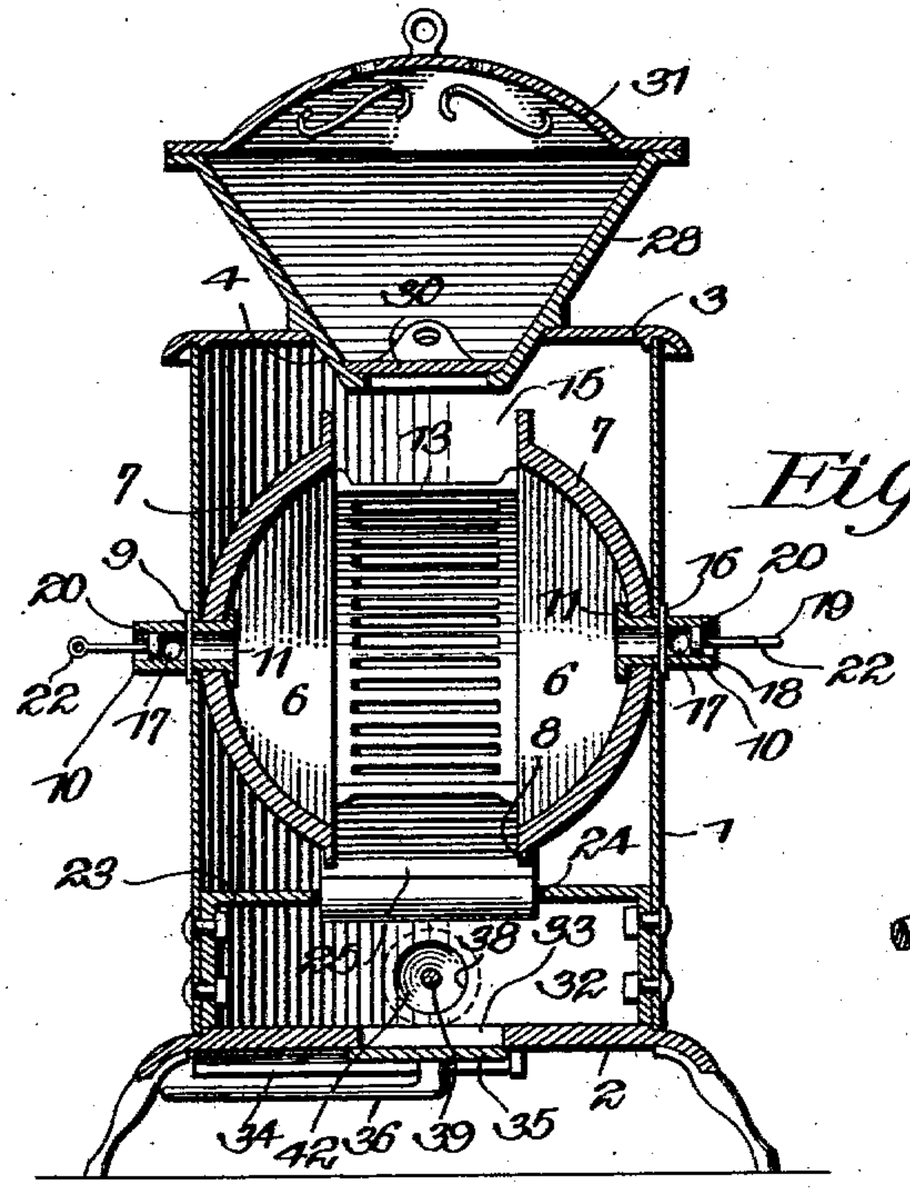

Fig. 2.

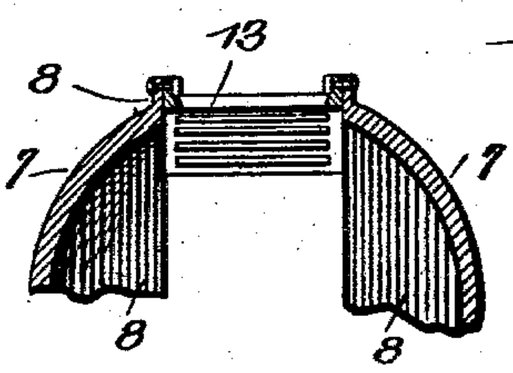

Fig. 4.

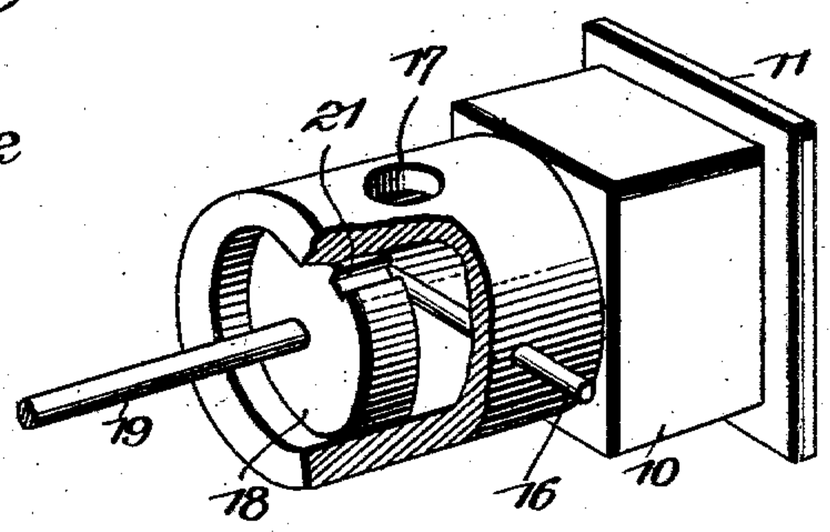

Fig. 3.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

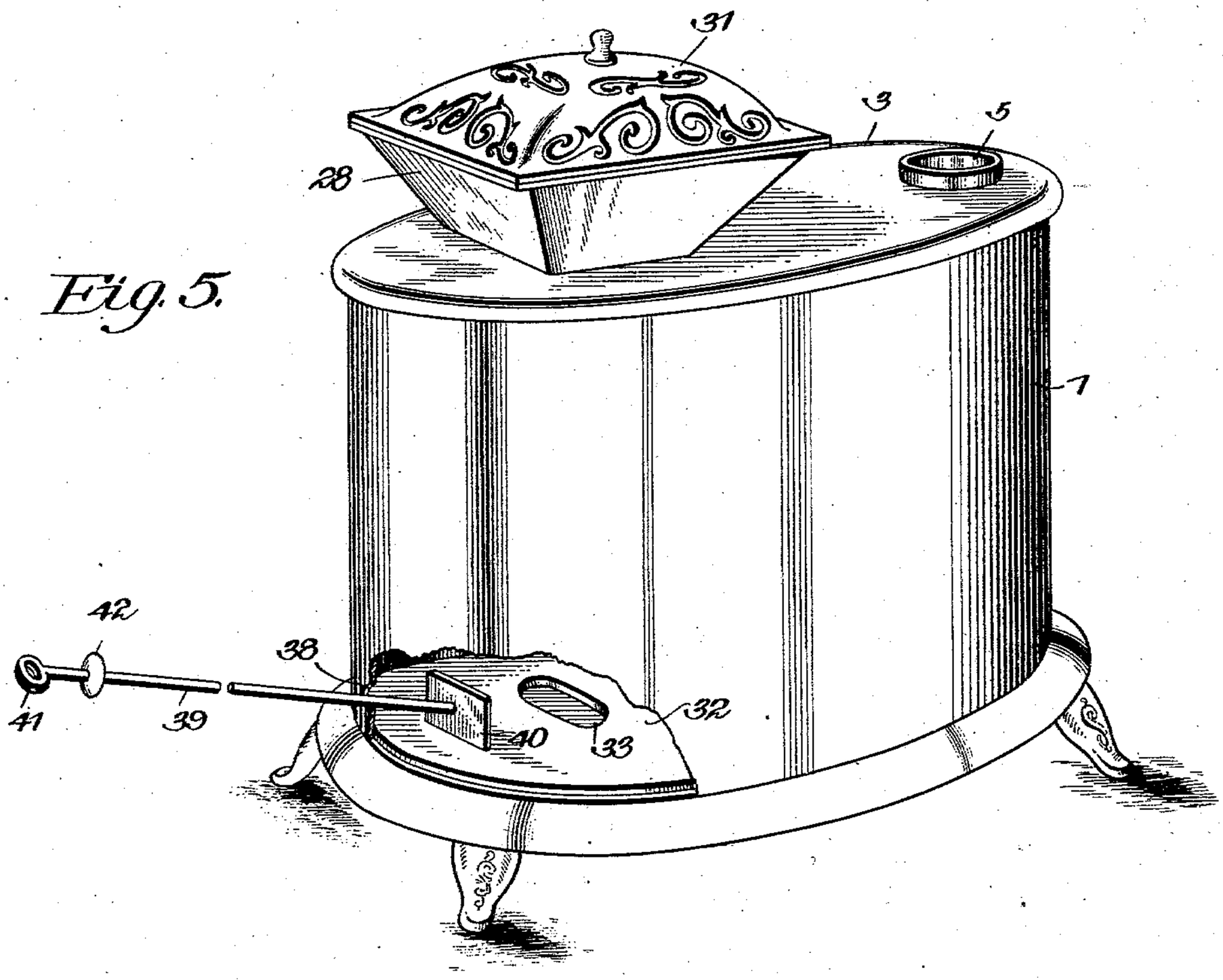
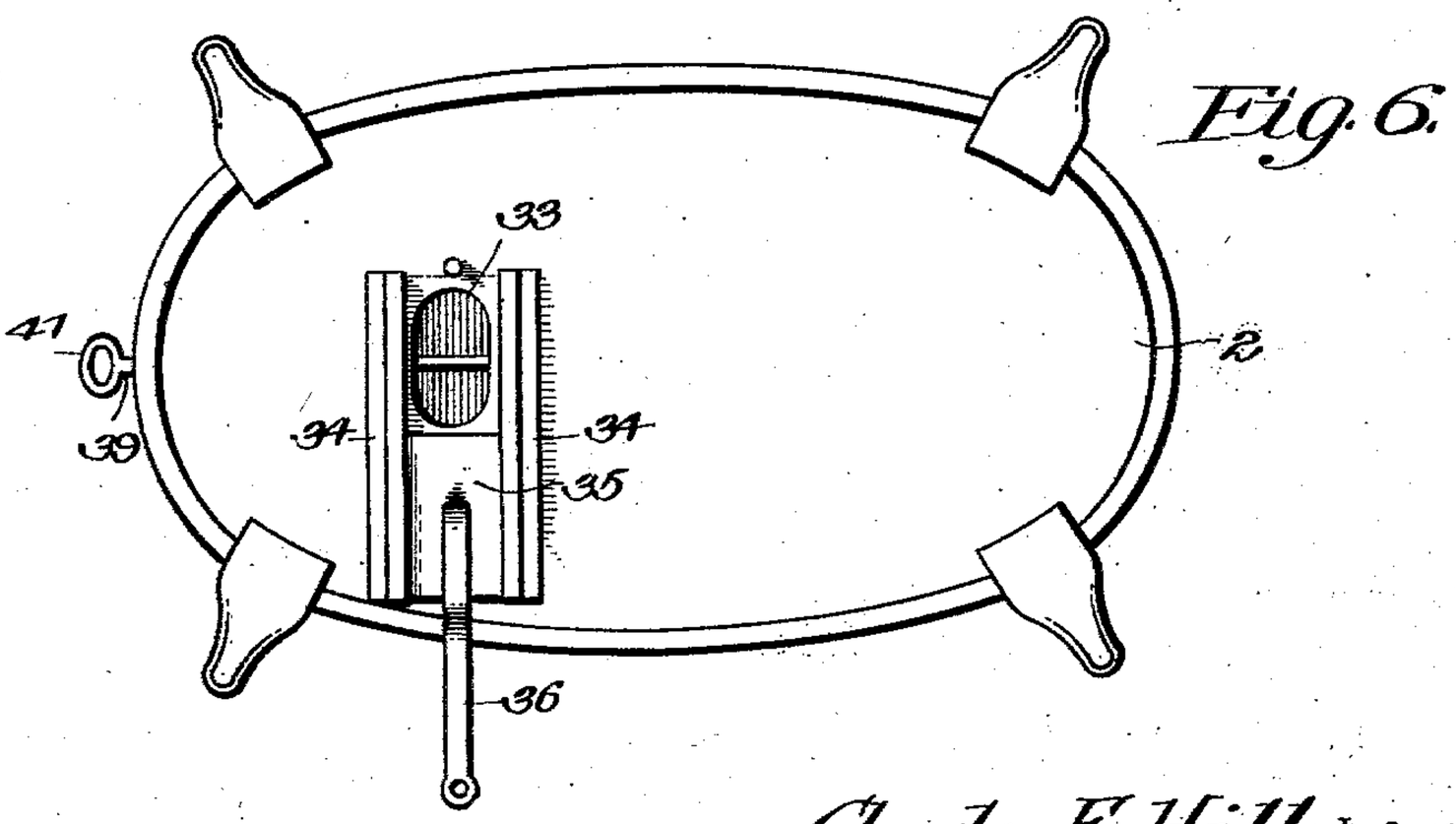


Fig. 6.



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No. 744,075. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

CHARLES E. HILL, OF MILLINGTON, MICHIGAN.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 744,075, dated November 17, 1903.

Application filed April 6, 1903. Serial No. 151,376. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HILL, a citizen of the United States, residing at Millington, in the county of Tuscola and State of Michigan, have invented a new and useful Heating-Stove, of which the following is a specification.

This invention relates to heating-stoves; and it has particular reference to that class of heating-stoves which are especially adapted for burning soft coal, the primary object of the invention being to provide a construction whereby puffs and explosions caused by the sudden ignition of gases developed by the heat shall be prevented.

A further object of my invention is to provide a soft-coal burner which shall be simple in construction, durable, and inexpensive and which may be readily manipulated and fed without the necessity of opening doors, whereby soot and other products of combustion will be allowed to escape into the room, and also to provide means for disposing of the ashes in such a manner as to prevent unnecessary dust and soiling of the floors.

With these and other objects in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of a soft-coal burner constructed in accordance with the principles of my invention. Fig. 2 is a transverse sectional view taken on the line 2 2 in Fig. 1. Fig. 3 is a perspective view, on a larger scale and with parts broken away, of one of the trunnions for supporting the revoluble grate. Fig. 4 is a sectional detail view taken on the line 4 4 in Fig. 1. Fig. 5 is a perspective view of a stove constructed in accordance with my invention, a portion of the casing having been broken away, so as to expose the means for removing the ashes from the ash-pit. Fig. 6 is a bottom plan view of the stove.

Corresponding parts in the several figures are indicated by similar numerals of reference.

My present invention is capable of being applied to stove-casings of almost any desired pattern, either square, round, or elliptical. In the present instance I have illustrated the invention as applied to a flat oval or elliptical stove-casing, which may be constructed of sheet-iron and which has been designated 1. This casing is supported upon a cast-iron base 2, and it has a cast-iron top 3, which latter is provided with an opening 4, which is disposed directly above the revoluble grate, to be hereinafter described. A stovepipe or stack for the escape of the products of combustion may be connected either with the side or back or, as illustrated in the drawings, with the top 5 of the casing, the latter being in this instance provided with a collar 5 around the smoke-exit.

My improved revoluble fire-box, which is generally designated 6, is composed of two semispherical or bowl-shaped end pieces 7 7, each provided at its peripheral edge with an annular outstanding flange 8. Each of the bowls 7 is furthermore provided with a central opening 9, preferably square, for the reception of a correspondingly-shaped trunnion 10, the inner end of which is made square to fit the hole 9. Each trunnion is provided at its inner end with a flange 11, which may be connected by means of bolts 12 with the bowl 7. Connecting means, however, may be omitted when desired, inasmuch as other means are provided for retaining the members 7 of the revoluble fire-box in operative position. The bowl-shaped members 7 7 are connected by means of segmentally-curved grate-sections 13, which are disposed diametrically opposite to each other and which are provided with flanges 14 to receive connecting-bolts, whereby they are securely connected with the flanges 8 of the bowl-shaped end pieces 7. The latter and the grates 13 coöperate to form the revoluble fire-box, which latter may be described as having two door-openings 15 15, disposed intermediately between the grate-sections 13. This entire structure is supported by means of the trunnions 10 in the sides of the stove-casing, which are perforated for the passage of the cylindrical portions of said trunnions, which latter are transversely perforated for the passage of retaining-pins 16, whereby connection is effected between the bowl-shaped sections 7, the trunnions 10, and the stove-casing 1, as will be readily understood.

This connecting means obviously enables the device to be readily dismembered by simply detaching the bolts which connect the bowl-shaped members 7 of the grate-sections 13.

The trunnions 10 are extended laterally beyond the walls of the stove-casing, and each trunnion is provided with transverse openings 17, the draft through which may be regulated by means of a cylindrical valve 18, having a stem 19, which extends through the end of the trunnion. The valve is prevented from being pushed too far in an inward direction by the transverse pin 16. A pin or peg 20, formed upon the inside of each trunnion, limits the outward movement of the valve, which latter, however, is provided with a longitudinal groove 21, which may be brought into alinement with said pin or peg, thus permitting the removal of the valve. This may be easily effected by means of the valve-stem 19, which is preferably provided with a handle 22.

It will be seen from the foregoing description that the openings 17 form draft-openings for the passage of air into the revoluble fire-box. The passage of air may be controlled by the valves 18, and the latter may whenever desired be removed, thus enabling a poker to be inserted through the end of the trunnion for the purpose of loosening up the coals and raking the fire. The openings 17 in addition to serving as draft-inlets also admit of the insertion transversely through the trunnion of an ordinary poker, by means of which the fire-box may be readily revolved upon its axis, a poker of ordinary length giving ample leverage to enable such adjustment to be made without special exertion of force on the part of the operator.

The sides of the stove-casing are connected below the grate by means of a cross-bar 23, having a slot or opening 24, in which are adjusted the hooked lower ends of a pair of grate-sections 25 and 26, which are of a width approximately equal to the width of the grate-sections 13 of the revoluble fire-box. The grate-section 25 extends forwardly and upwardly and is supported upon the forward end of the stove-casing. The grate-section 26, which extends upwardly and rearwardly, is normally supported upon a cross bar or brace 27, whereby it is held in the desired relation to the revoluble fire-box—*i. e.*, sufficiently close to prevent the wasteful escape of coals and sufficiently distant to enable the revoluble fire-box to be rotated without undue frictional resistance.

28 designates a feed-hopper, which is preferably constructed of cast-iron, and it has at its lower edge a flange 29, adapted to rest upon the top plate of the stove-casing, into the opening 4 of which the said feed-hopper extends in such a manner as to bring the discharge-opening in alinement with the rotary fire-box. Bolts or other suitable connecting means may be used for connecting the feed-hopper with the top plate of the stove-casing, although such means may be dispensed with, inasmuch as the weight of said hopper will usually be sufficient to retain it in position. Near the bottom of the hopper 28 is disposed a slide 30 for the purpose of normally closing the discharge-opening of said hopper. I also prefer to mount upon the latter an ornamental top, as shown at 31. This hopper and top I consider desirable elements of my improved stove for the purpose of increasing the radiating-surface, while upon the plate or slide 30 a kettle or cooking utensil may be conveniently placed for the purpose of heating water, &c. The bottom of the stove-casing forms the ash-pit 32.

The bottom plate 2 of the stove is provided with an opening 33, adjacent to which flanges 34 are formed upon the under side of said bottom plate for the purpose of retaining in position a slide 35, having an operating-rod 36, by means of which it may be conveniently manipulated so as to cover or uncover the opening 33, which forms the exit for ashes. The operating-rod 36 extends in the direction of the outer edge of the bottom plate and is provided with a downturned operating knob or handle 37, by means of which it may be conveniently manipulated and which when the slide or cover 35 is closed will rest against the downturned flange or ornamental work at the edge of the base-plate of the stove. The side of the stove-casing has an opening 38, through which extends a rod 39, carrying at its inner end a scraper 40, the outer end of said rod being provided with an ornamental knob 41, forming a handle, by means of which it may be manipulated. Formed integrally with the knob 41 is a cup-shaped cap 42, which when the rod is pushed into the stove-casing surrounds the opening 38, thereby preventing undesired draft. The operation of this part of my invention will be readily understood. When it is desired to remove the ashes from the ash-pit, a bucket or other receiving vessel is pushed under the stove and into alinement with the opening 33. The slide 35 is then withdrawn, when by manipulating the scraper the ashes will be speedily transferred to the receiving vessel. The upward draft through the opening 33 when the slide 35 is open serves to carry off through the smoke-exit such ashes as would be otherwise liable to drop upon the floor or to be carried by air-currents into the room. This, it will be observed, constitutes an exceedingly simple, effectual, and cleanly way of disposing of the ashes.

The operation and advantages of my improved stove will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. In order to feed the stove, the slide 30 in the hopper 28 is displaced and permitted to rest upon one of the side walls of said hopper, while a sufficient quantity of coal is dropped into the latter and through the hopper-shaped recess or opening in the top plate 3 into the revoluble

fire-box, one of the openings 15 of which is normally disposed below said hopper or funnel. After feeding the stove and replacing the slide the fire-box is given a one-half revolution, thus bringing the fresh coals to the bottom and the ignited coals to the top of the fire-box. The slide 30 may be left partly open to furnish a downdraft; but the proper amount of air for supporting combustion will be admitted through the draft-openings in the trunnions, which may be regulated, as hereinbefore described, by means of the valves 18. It is obvious that the downdraft may be regulated and entirely prevented by means of the slide 30, and it is equally obvious that the side draft is capable of absolute regulation by means of the valves or dampers in the trunnions. Said trunnion-dampers will also be removed, as hereinbefore stated, for the purpose of raking the fire. In order to separate the ashes from the fire, it is only necessary to revolve the fire-box two or three times, when the desired result will be quickly and thoroughly effected, the clinkers, slate, and like impurities being readily broken up and permitted to escape through the grate-sections 13 and 25 26. The latter grate-sections cooperate with the grated sections 13 of the fire-box to admit of the escape of the products of combustion, and said grate-sections 25 26 also form a casing or cage for the revoluble fire-box.

I desire it to be understood that while I have in the foregoing described a simple and preferred form of my invention I do not necessarily limit myself with regard to the detailed construction thereof, but reserve the right to any changes, alterations, and modifications which may be resorted to within the scope of my invention and without departing from the spirit or sacrificing the utility of the same.

Having thus described my invention, I claim—

1. A revoluble fire-box having tubular trunnions provided with draft-inlets in the sides thereof and valves for controlling the passage of air through said inlets.

2. A revoluble fire-box having tubular, open-ended trunnions provided with transverse opposite openings, cylindrical valves in said trunnions, and means for limiting the movement of said valves.

3. A revoluble fire-box having tubular, open-ended trunnions provided with side openings, cylindrical valves in said trunnions having longitudinal grooves, means for limiting the inward movement of said valves, and inward projections in said trunnions adapted to aline with the grooves in the valves to permit the withdrawal of the latter.

4. A revoluble fire-box having heads provided with axial openings, tubular trunnions fitted in said openings and having flanges at their inner ends to prevent their displacement in an outward direction, a stove-casing having bearings for the outer ends of said trunnions, and means for preventing the displacement of said trunnions in an inward direction through the stove-casing.

5. The combination of a revoluble fire-box having bowl-shaped end sections provided with openings, flanged tubular trunnions extending through said openings, a stove-casing having bearings for said trunnions, and pins extending transversely through the latter adjacent to the outer side of the stove-casing.

6. A revoluble fire-box comprising bowl-shaped end sections having outwardly-extending peripheral flanges, segmentally-curved, oppositely-disposed grate-sections having flanges connected with the flanges of the end sections, and tubular trunnions connected with the latter and the stove-casing, having bearings for said trunnions.

7. A revoluble fire-box comprising bowl-shaped end sections and grated, oppositely-disposed intermediate sections connecting said end sections, said end sections having outwardly-extending trunnions, in combination with a stove-casing supporting said trunnions, a cross-bar disposed in said stove-casing below the fire-box and having a slot, and curved grate-sections having hooked lower ends engaging said slot and operating to form a cage for the grated portion of the revoluble fire-box.

8. The combination of a revoluble fire-box having a central grated portion and opposite door-openings, trunnions for said fire-box, a stove-casing supporting said trunnions, a cross-bar in said stove-casing having a slot, curved grate-sections having hooked lower ends supported in said slot, and a cross-bar supporting the upper end of the rear grate-section, the front grate-section being supported upon the front of the stove-casing.

9. The combination of a revoluble fire-box, tubular trunnions extending from said fire-box and provided with draft-inlets and controlling-valves, a top plate for the stove-casing having a feed-opening disposed directly above the revoluble fire-box, door-openings in the latter, a grated cage comprising sections loosely connected with a cross-bar below the fire-box, supporting means for said cage-sections, a feed-hopper supported upon the top plate of the stove-casing above the feed-opening, and a slide in the bottom of said hopper forming a damper for the admission of downdraft.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES E. HILL.

Witnesses:
DANIEL HEIMS,
COLONEL O. SWAYZE.