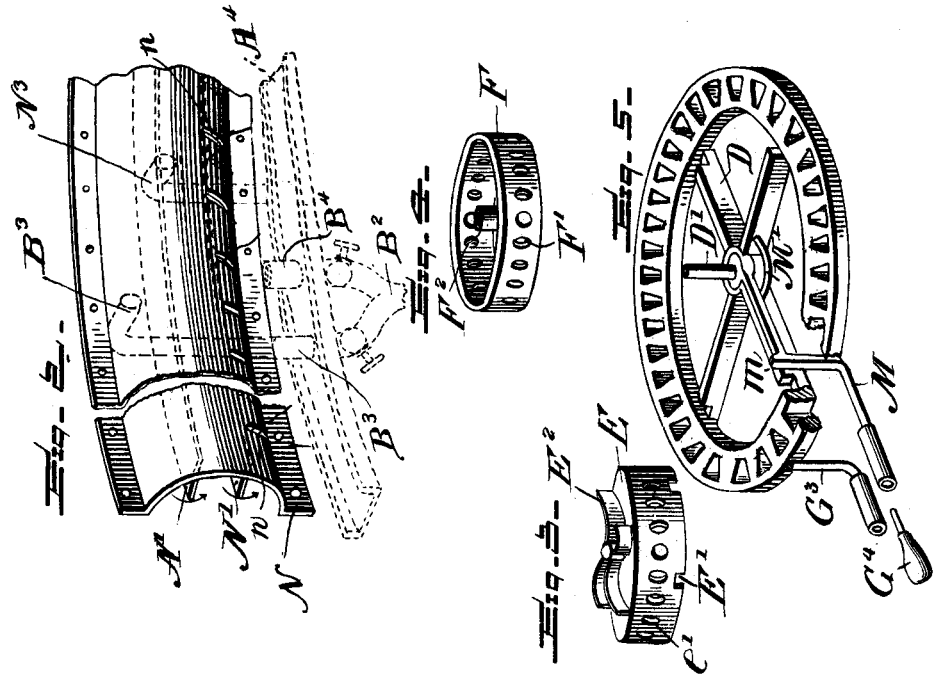
No. 676,064. Patented June 11, 1901.

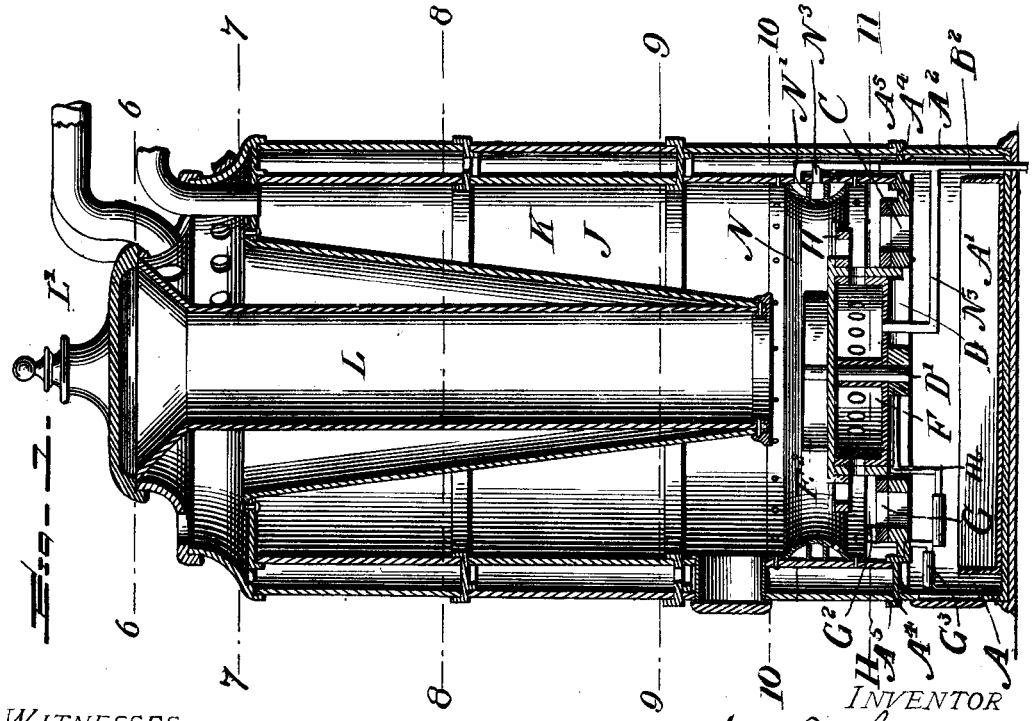
W. D. GOLD.

STOVE.

(Application filed Jan. 22, 1901.)

(No Model.) 2 Sheets—Sheet 1.





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(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

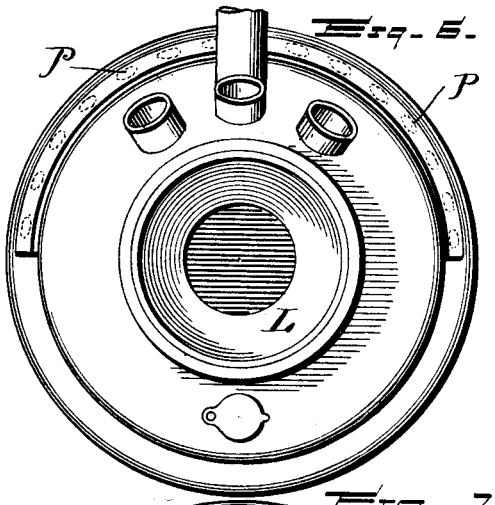


Fig. 9.

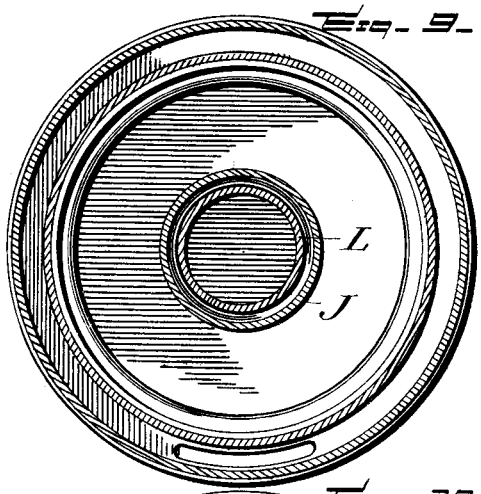


Fig. 7.

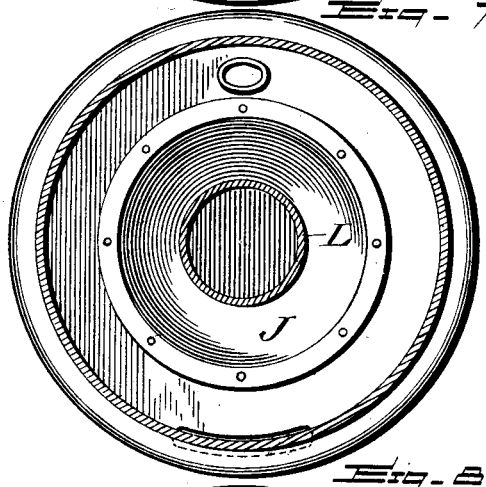


Fig. 10.

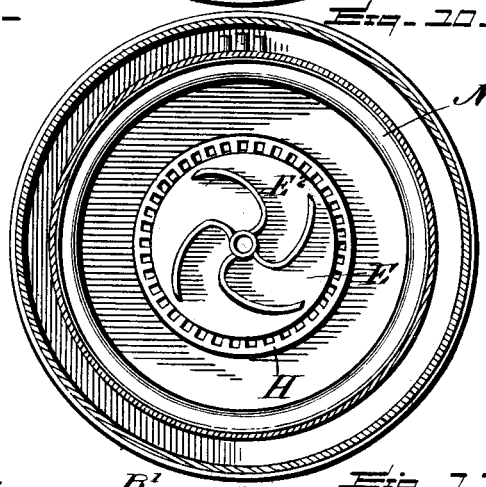


Fig. 8.

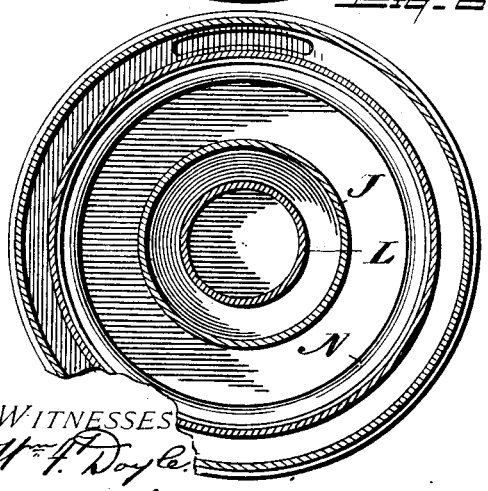
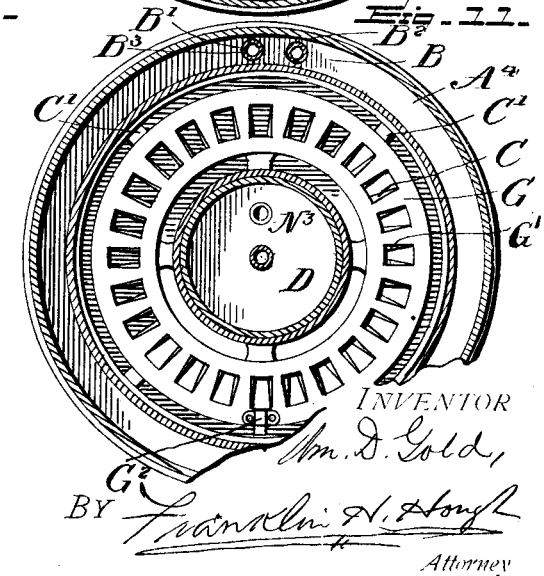


Fig. 11.



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UNITED STATES PATENT OFFICE.

WILLIAM D. GOLD, OF CARTHAGE, TENNESSEE.

STOVE.

SPECIFICATION forming part of Letters Patent No. 676,064, dated June 11, 1901.

Application filed January 22, 1901. Serial No. 44,292. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. GOLD, a citizen of the United States, residing at Carthage, in the county of Smith and State of Tennessee, have invented certain new and useful Improvements in Stoves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in stoves, and especially to a stove or heater with a base-burner and spiral feed, whereby the fuel may be delivered to the grate by being thrown laterally by the feed-disk, means being provided for drying the fuel by its being spread upon a marginal grate, where it is subjected to a hot-air blast before reaching the grate on which the combustion takes place.

The invention relates, further, to a heater for various purposes having various combinations and arrangements of parts, which will be hereinafter more fully described and then specifically defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form part of this application, and in which drawings similar letters of reference indicate like parts throughout the several views, in which—

Figure 1 is a central vertical sectional view through my improved heater. Fig. 2 is a detail perspective of an air-inlet or ventilating portion of the heater. Fig. 3 is a detail perspective of the spiral feeding-disk. Fig. 4 is a perspective view of a hot-air chamber over which the spiral feed-disk telescopes. Fig. 5 is a detail view of the shaking-lever and stationary grate. Fig. 6 is a sectional view on line 6 6 of Fig. 1. Fig. 7 is a cross-sectional view taken on line 7 7 of Fig. 1. Fig. 8 is a cross-sectional view on line 8 8 of Fig. 1. Fig. 9 is a cross-sectional view on line 9 9 of Fig. 1. Fig. 10 is a cross-sectional view on line 10 of Fig. 1; and Fig. 11 is a cross-sectional view on line 11 of Fig. 1.

Reference now being had to the details of the drawings by letter, A designates the base portion of the heater, having a flanged top and containing an ash-pan A′. This base portion is provided with a suitable door, whereby access may be had to the interior of same, and the bottom of said portion is apertured to receive the pipe B^3. At the upper end of the base portion is a flange A^4, which forms a support for the superstructure of the stove, said flange being provided with apertures B and B′, Fig. 11, through which the branching pipes B^2 and B^4 pass. Resting on a shoulder A^5 of said flange A^4 is the grate C. This grate, as shown in Fig. 11 of the drawings, has a series of apertures arranged on the arc of a circle, each aperture having its longitudinal edges coincident with radial lines from the center of the grate, and has, preferably, lugs C′ about its circumference, which lugs are adapted to rest upon said shoulder A^5, on which it remains stationary. At the center of the grate, from which the spokes D radiate, is a pin D′, with a depression around its base, serving as a pivot on which the inner end of the shaking-lever M, also the spiral feed-disk E, turns.

F is a central hot-air box or chamber, a detail of which is shown in Fig. 4 of the drawings. This box or chamber has a circular wall which is perforated, as at F′, and has an open-ended tube F^2, rising about a central aperture in said box. This box is adapted to be seated on the radiating arms D, with the open-ended tube F^2 about the central pin D′, and to substantially fill the space within the inner circular margin of the grate, as shown in Fig. 1 of the drawings.

Resting on the apertured portion of the grate is a grate-cover G, a top plan view of which is shown in the sectional view Fig. 11. This grate-cover has a series of rectangular solid sections and outlined apertures G′ therein, which register with the apertures in the grate, but which cover may be turned so as to close or partially close the apertures in the grate. By having the apertures in the grate C with their longitudinal edges converging toward the center of the grate, and the apertures in the rotatable grate-section G superimposed, being of rectangular shape, it will be observed that when the grate-section G is partially rotated in the act of bringing the two sets of apertures into registra-

tion the outer portion of the apertures will first register, which will cause the draft and heat to be thrown outward or toward the inclosing wall of the fire-chamber. Said grate-cover has a socket G^2, in which one end of the shaker-lever G^3 is held. This lever has an aperture in its outer angled end to receive the handle G^4. Said shaking-lever is bent as shown in Fig. 1 and passes down in the space between the outer margin of the grate and the inner margin of the flange A^5.

The spiral feed E before referred to consists of a box, circular in form, open upon its bottom, and having notches E′ about its lower marginal edge, spaced apart about the circumference of said box, also has a series of apertures e' in its circumference, which may be brought into registration with the apertures in the hot-air box, as shown in Fig. 1 of the drawings, when said feed-disk has been telescoped over the hot-air box. When said feed-disk is adjusted in place, as shown in Fig. 1 of the drawings, the under surface of its top rests upon the upper edge of the hot-air box. On the top of said disk are the spiral feeding-arms E^2, (shown in Figs. 1 and 3 of the drawings,) and surrounding the upper portion of the feed-disk is a marginal grate H, which is shown in Fig. 1 of the drawings, and is provided with perforations through which the fuel is allowed to fall onto the grate below. This marginal grate is provided so as to allow the hot air which issues from the registering apertures in the hot-air box and the feed-disk to pass through said marginal grate, whereby said fuel may become partially dried before it falls upon the grate below where the combustion takes place.

The superstructure of the heater is made up of several compartments superimposed one upon the other, each section, which is made up of two concentric walls, forming closed compartments having apertures, whereby communication is had between one compartment and another. Suspended from the upper edges of the compartment K is a funnel-shaped wall J, to the lower end of which is secured the magazine L, the upper end of which is outwardly flared, and fitted over said upper flaring end is a cover L′, which may be removed when it is desired to fill the magazine. The lower end of said magazine is disposed a slight distance above the upper end of the rotary feed-disk, whereby the coal will fall by gravity upon the top of the feeding-disk, and as said feeding-disk is caused to make a partial revolution the coal will be thrown laterally by means of the spiral flanges on said disk and caused to fall upon the marginal grate and onto the combustion-grate below.

Mounted on the central pin of the stationary grate is one end of a shaking-lever M, which fits into and practically fills a depression about the base of the pin left for the purpose, said lever being made of spring-steel and has a lug or projection m on an angle portion thereof, which projects upward and is designed to engage one of the notches E′ in the feeding-disk. The outer portion of said shaking-lever is angled, as clearly shown in Figs. 1 and 5 of the drawings, and is adapted to receive a handle in its outer apertured end, whereby said lever may be given a lateral swinging motion for the purpose of imparting a rotary movement to the feed-disk when said lug M is seated in a notch E′ of the feeding-disk. Near the end of said lever the steel portion rests on a bar M′, passing from one to the other of the spokes and seated at each end into them, by which means and the elasticity of the lever the lug remains seated in the notch E′ of the feed-disk until the outer end is pressed down by the hand to remove it around to another notch and drawing it back for the purpose of imparting a rotary motion to the feeding-disk. By a succession of similar movements the feeding-disk may be given a complete rotary motion. By means of this lever the feeding-disk may be turned so that the apertures in the hot-air chamber and the feeding-disk will be brought into registration, or said apertures closed, accordingly as it is desired to allow or prevent hot-air passing from the interior of the hot-air chamber through said apertures into the combustion-chamber.

In order to feed air into the space between the walls where it may be heated for conveyance to the rooms, also to feed air into the interior of the stove for combustion purposes, a forked pipe is provided, as shown in Fig. 2 of the drawings. The air enters through the pipe B^2, which is forked, having two branches B^3 and B^4, the former of which branches B^4 opens into the space between the inner cylinder and the outside wall of the heater, said branch passing through an aperture in the flange A^4 and terminating, as shown, a slight distance above said flange. The air which enters the heater through branch B^3 is for the purpose of combustion and passes first into an annular channeled compartment. (Shown on an enlarged scale in Fig. 2.) This channeled chamber is divided longitudinally by two partition-walls N′, making three compartments, into the upper of which the branch pipe B^3 enters. The location at which it enters is at the back of the heater. From its entrance the air passes both ways along the upper one of said channels (which extend all the way around the inner circumference of the inner wall of the second compartment of the heater) until it comes to the closed ends of the channels which meet at the front side of the stove just opposite where the air enters. Here the partitions do not run quite out to the closed end of the channeled compartment N, and the air passes down in the direction of the arrow in Fig. 2 of the drawings, a part of it going into the middle channel and a part into the lower one. It has by this semicircuit of the stove become much heated, and the part that enters the lower

channel issues through the openings or ventilators *n n* into the interior of the stove and helps to support combustion. The portion of the air that enters the middle channel returns along said channel to near the point where it entered the upper channel, whence it is conveyed by pipe N^3 into the interior of the hot-air box very much heated, from which it issues through the apertures therein into the combustion-chamber, drying the fuel and aiding in supporting combustion. The air that enters between the concentric walls in the lowest compartment above the ash-pit through pipe B^4, which is also at the back of the stove, passes around the stove between the walls both ways until it comes to the front, then rises through the aperture in the first horizontal partition into the second compartment or story, whence it returns to the back part of the stove and rises through the aperture in the second horizontal partition into the next story, and thus it sweeps in a current back and forth around the combustion-chamber between the stove-walls, gathering heat as it goes and rising through the apertures in the partitions from compartment to compartment until it reaches the topmost one, whence it may be conveyed to registers in different rooms through pipes leading from said compartment at the top of the heater or emitted into the room where the stove is situated through the apertures *p p*, which register with similar openings in a sliding band that surrounds that part of the stove and which may be closed at pleasure.

As shown in Fig. 1 of the drawings, the stove has a door in the superstructure or stove proper, through which access may be had into the interior of the stove for kindling the fire.

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

1. In a heater, the body portion which comprises double walls, spaced apart and divided into compartments by partitions between said walls, alternately-arranged communicating apertures in said partitions, a channeled air-feeding compartment surrounding the combustion-chamber, air-feeding pipes leading from outside the heater to said channeled chamber, and from the latter to the combustion-chamber, and a ventilating air passage-way leading from outside the heater to the spaces between said partitions, as set forth.

2. In a heater, a series of superimposed compartments, each composed of two concentric walls with a slight space intervening, alternately-arranged communicating apertures between the spaces formed by said compartments, a stationary grate, and rotatable grate-cover therefor, a flexible bar carried by said grate, a magazine, and a feed-disk actuated by said flexible bar, as set forth.

3. In a heater, a series of superimposed compartments with concentric walls with slight space intervening, alternately-arranged communicating apertures between the spaces formed by said compartments, a stationary grate and superimposed rotatable grate-cover, a flexible bar supported on said stationary grate, a magazine, a hot-air chamber and flanged feeding-disk telescoping over the latter, means for supplying air to said chamber, said flexible bar designed to engage and rotate the flange of the feeding-disk, as set forth.

4. A stove or heater comprising a base portion, superimposed compartments each made up of two concentric walls, with a slight space intervening, communicating apertures between the spaces formed by said compartments, a magazine, a stationary grate supporting a pivotal pin, a feed-disk mounted to rotate on said pin, spiral flanges on said disk, a lever pivoted at one end to a portion of the grate, and adapted to engage notches in the circumference of the feed-disk, whereby the latter may be rotated.

5. In a stove or heater, the combination with the base portion and the superimposed compartments, the magazine, a stationary grate mounted on said base portion, a pivotal pin mounted on said grate, a hot-air box mounted on said pin, and provided with apertures about its circumference, a feed-disk having a series of spiral flanges on its upper face, and a series of apertures in its circumference adapted to register with the apertures in said hot-air box, and means for rotating said feed-disk, as set forth.

6. In a stove or heater, the combination with the base portion, the superimposed compartments each having two walls and a central space, the magazine depending in said space, a stationary grate mounted on said base portion, a pivotal pin rising from the center of said grate, a circular hot-air box having a central open-ended tube which is mounted on said pivotal pin, a ventilating-pipe leading to said hot-air box, a feed-disk having spiral flanges on its top and perforations about its circumference, said feed-disk adapted to telescope over the outer circumference of said hot-air box, notches in the edge of the circumference of the feed-disk, and a pivoted flexible lever having a projection adapted to spring into said notches when it is desired to cause a rotary motion to be imparted to the feed-disk, as set forth.

7. In a stove or heater, the base portion with division-wall at its top, the superimposed compartments made up of two concentric walls, the air-inlet pipe passing through said division-wall into the first compartment above the same, a channeled chamber secured above the base portion, and communicating with said air-inlet pipe, the stationary grate, the hot-air box, the pivotal pin on which said box is held, the feed-disk, spiral flanges on the top thereof, a communicating pipe between said channeled chamber and the hot-air chamber, the magazine and means for rotating the feed-disk.

8. In a stove or heater, the combination with the base portion with partition-wall at its top,

an air-inlet pipe passing through the bottom of the base portion, and through said partition-wall, the superimposed compartments having double walls with apertured division-walls between each compartment, said apertures being between the concentric walls, a circular channeled air-chamber about the inner wall of one of the compartments with which said air-inlet pipe communicates, the stationary grate, the pivotal pin carried thereby, hot-air box mounted on said pivot, the feed-disk mounted to rotate on said pivotal pin, spiral flanges on the top of the feed-disk, and apertures in its circumference adapted to be brought into registration with apertures in the circumference of the stationary hot-air box, a pipe communicating between one of the channels of said circular air-chamber and the interior of the hot-air box, the magazine and means for rotating the feed-disk, as set forth.

9. In a stove or heater, the combination with the base having a division-wall at its top, the air-inlet pipe passing through the bottom of the base portion and said partition-wall, superimposed compartments each made up of concentric walls, communicating apertures between the various compartments through the partitions between the walls, the magazine, stationary grate and hot-air chamber, a feed-disk, the channeled air-chamber secured to the inner wall of one of the compartments, communication being had between the channels of said chamber and with the hot-air box, a rotatable grate-cover resting on said grate, and means for rotating the same, as set forth.

10. In a stove or heater, the base portion with division-wall at its upper end, the air-inlet pipe passing through same, the superimposed compartments, the channeled air-chamber, the stationary grate, the rotatable grate-cover, the perforated hot-air box and the feed-grate telescoping thereover, a communicating pipe between said channeled chamber and the hot-air box, a marginal grate about the upper portion of said feed-disk, the spiral flanges on the feed-disk and the magazine, whereby the fuel is fed onto said marginal grate and dried by heat issuing from the hot-air box, before falling upon the combustion or stationary grate, as set forth.

11. In a stove or heater, the combination with the base portion, superimposed compartments, the magazine, a feed-disk, the channeled hot-air chamber, the grate having apertures, the longitudinal edges of which are coincident with radial lines from the center of the grate, a grate-cover mounted on said grate and having apertures with solid sections between, which are rectangular outlined, a hot-air chamber having apertures in its circumference, a communicating pipe between said air-chamber and the channeled air-chamber, and an air-inlet pipe leading from the bottom of the stove and into one of the communicating channels of said channeled chamber, and means for rotating the feed-disk and grate-cover, as set forth.

12. In combination in a stove or heater, the base portion, superimposed compartments, the magazine, a funnel-shaped wall about said magazine, the channeled air-compartment secured to the inner wall of one of said compartments, a grate held on the base portion of the stove, a pivotal pin rising from said grate, the hot-air box mounted on said pin and a feed-disk having perforations in its circumference, and spiral flanges on its top, said feed-disk adapted to telescope over the hot-air box, a grate-cover resting on said grate, a marginal grate secured about the circumference of the feed-disk, a communicating pipe between the hot-air box and said channeled hot-air chamber, and the air-inlet pipe communicating with one of the communicating channels of said channeled air-chamber, as set forth.

13. In a stove or heater, the combination with the base having a flanged partition-wall at its top, the grate having lugs or projections which rest on said flange, a pivotal pin supported by the grate, a hot-air box mounted on said grate, a feed-disk having spiral flanges on its top mounted to rotate on said pivotal pin, a grate-cover rotating over the apertured portion of the grate, means for rotating the feed-disk, a marginal grate supported above the apertures in the feed-disk, and about the circumference of the hot-air box, the magazine depending within the compartments with its lower end adjacent to the spiral flanges on the feed-disk, the circular and longitudinal channeled air-chamber secured to the inner wall of one of the compartments, and provided with communicating apertures between its channels, the air-inlet pipe communicating with one of said channels, and a second pipe communicating between the hot-air box and one of the channels of said chamber, as set forth.

14. In a stove or heater, the combination with the base, superimposed compartments, a stationary apertured grate and grate-cover mounted thereon, a combustion-chamber, a hot-air chamber with hot-air-blast apertures leading from said chamber into the space immediately above said grate, the apertures in said grate being widest adjacent to the wall of the stove, and means for supplying air to said chamber, as set forth.

15. In a stove or heater, the combination with the base portion, the superimposed compartments with concentric walls, the grate and cover therefor, a circular channeled hot-air chamber, a forked air-inlet pipe, one branch of which communicates with one of the channels in said hot-air chamber, the other communicating with the space between the concentric walls of the compartments, a hot-air box and feed-disk and a pipe communicating between the channeled chamber and said hot-air box, as set forth.

16. In a stove, the base portion having a flanged partition-wall at its top, the superimposed compartments having concentric walls, the stationary grate supported on said flange, and having recessed cross-bars, a pin carried at the center of the grate, a hot-air box mounted thereon, a feed-disk having a circular flange which is adapted to rest in said recess in the grate, and means for rotating the disk, as set forth.

17. In a stove, the base portion having a flanged partition-wall at its top, the superimposed compartments having concentric walls, the stationary grate seated on an annular shoulder of said flanged partition, and having recessed cross-bars, a pin carried at the center of the grate, a hot-air box mounted on said pin, and resting on said cross-bars adjacent to said recesses, a feed-disk telescoping over said hot-air box on which it rests, and turning in said recesses, and means for rotating said disk, as set forth.

18. In a stove, the base portion having a flanged partition at its upper end, the superimposed compartments having concentric walls and supported on said partition, a stationary grate seated on an annular shoulder of said flange, and having cross-bars, and a pin rising centrally therefrom, a fire-box mounted on said pin and supported on said cross-bars, the latter being recessed beyond the circumference of said fire-box, a flanged feeding-disk telescoping over said fire-box resting on the rim of the box, and turning in said recesses, and a marginal grate about the circumference of the feed-disk, as set forth.

19. In a stove, an annular channeled hot-air compartment in the fire-box thereof, a stationary grate and a rotatable grate-cover superimposed, which grate and cover have series of apertures which when partially in registration with one another, cause the draft through said apertures to be adjacent to the outer margins of the apertures, and in proximity to said hot-air compartment, as set forth.

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

WILLIAM D. GOLD.

Witnesses:

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BENJAMIN F. SANDERS.