No. 704,470. Patented July 8, 1902.

J. L. BANGLEY.

HEATING STOVE.

(Application filed Oct. 3, 1901.)

(No Model.)

Fig. 1.

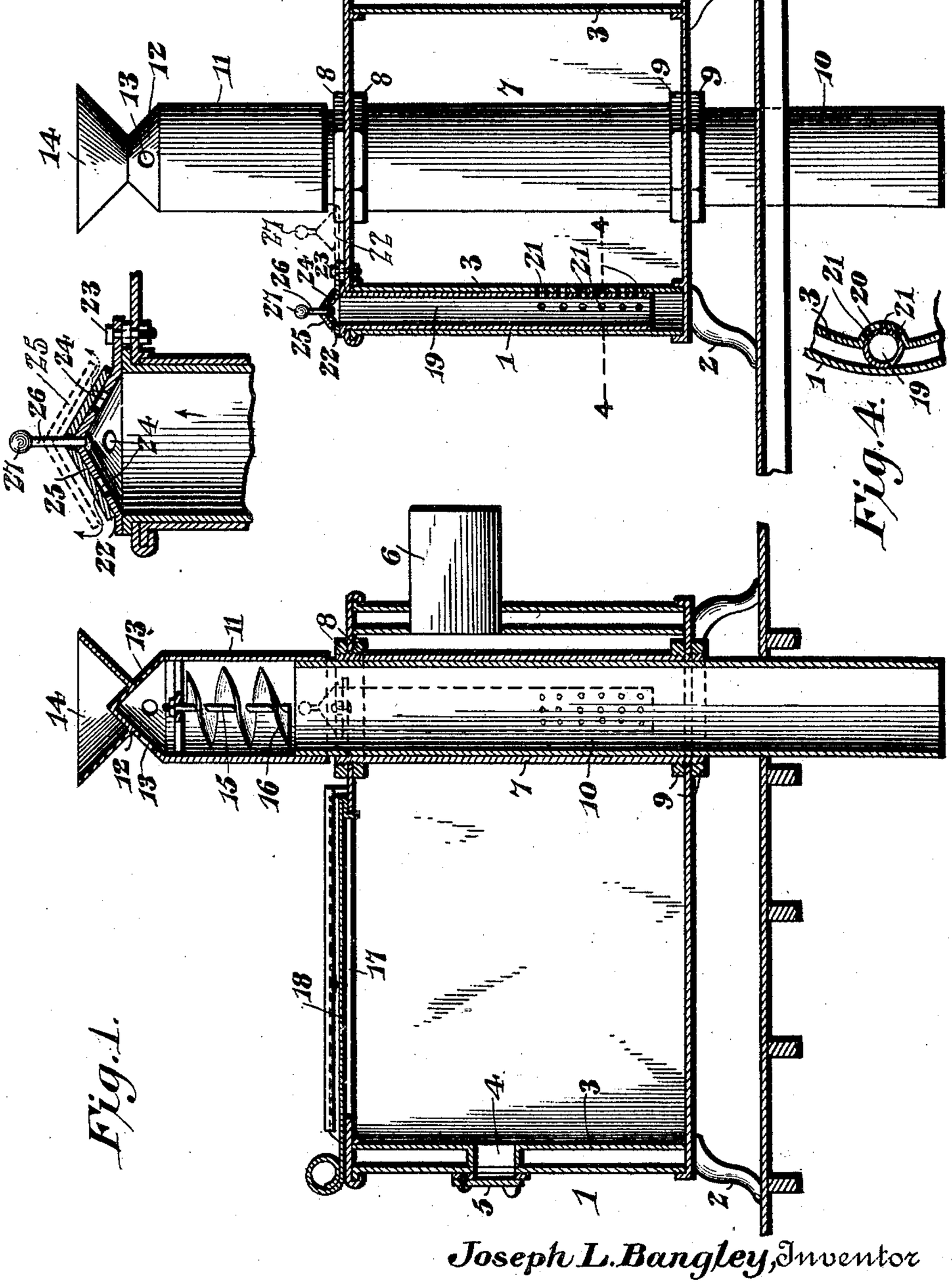

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses
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JOSEPH L. BANGLEY, OF SUFFOLK, VIRGINIA, ASSIGNOR OF ONE-HALF TO THOMAS J. ELEY AND HENRY W. CAMPBELL, OF SUFFOLK, VIRGINIA.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 704,470, dated July 8, 1902.

Application filed October 3, 1901. Serial No. 77,468. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. BANGLEY, a citizen of the United States, residing at Suffolk, in the county of Nansemond and State of Virginia, have invented a new and useful Heating-Stove, of which the following is a specification.

This invention relates to heating-stoves of that class wherein air is drawn through an open-ended drum or tube piercing the body of the stove, so as to heat the air and give it off in a heated state.

The object of the present invention is to provide for insuring a steady current of air through the heating drum or tube and to give off the heated air in all directions to the room in which the stove is situated.

Another object is to provide for the automatic escape of gases from the interior of the stove, so as to insure effective burning of the fuel therein, and to have the gas-exit normally closed and capable of being opened by excess gaseous pressure within the body of the stove, it also being possible to manually open the exit whenever desired.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a central longitudinal sectional view of a heating-stove constructed in accordance with the present invention. Fig. 2 is a transverse sectional view thereof, the heating drum or tube being shown in elevation. Fig. 3 is an enlarged detail sectional view taken through the gas-exit. Fig. 4 is a detail sectional view taken on the line 4 4 of Fig. 2.

Like characters of reference designate corresponding parts in all the figures of the drawings.

Referring to the accompanying drawings, 1 designates the body of the stove, which is supported upon suitable legs 2 and has an inner shell 3, so as to form a dead-air space entirely surrounding the body of the stove. In the front of the stove there is provided a draft-passage 4, passing through the dead-air space, so as to form a communication between the interior of the stove and the external air, said passage being controlled by means of a suitable damper 5. At the opposite rear end of the stove there is a smoke-pipe section 6, piercing the inner and outer shells and designed for carrying off the smoke and other products of combustion.

Extending vertically through the top and bottom of the stove and located centrally adjacent to the rear end thereof there is provided an open-ended heating drum or tube 7, which has its opposite ends screw-threaded and clamped to the top and bottom of the stove by means of the opposite pairs of nuts 8 and 9, which are fitted to the ends of the drum and embrace the respective top and bottom plates of the stove. Within this drum there is slidably mounted an open-ended adjustable hot-air pipe 10, which projects above and below the stove and is capable of endwise adjustment, there being a sufficient frictional engagement between the hot-air pipe and the drum to hold the former against accidental movement after having been adjusted within the drum. The lower end of the hot-air pipe is open, so as to collect the cool exterior air below the stove and carry the same upwardly through the pipe, so as to be heated while passing through the drum and finally given off in a heated state through the open top of the pipe. As clearly indicated in Fig. 1 of the drawings, it will be seen that the adjustable hot-air pipe is designed to be passed through the floor of the room, so as to be in communication with a suitable source of cold fresh air, or, in other words, it is designed to have the adjustable pipe projected into a cellar, it of course being understood that I also contemplate terminating the pipe short of the floor of the adjacent room should it be impossible or inadvisable to project the adjustable pipe through the floor of the room.

At the top of the hot-air pipe there has been provided a tubular casing 11, preferably in the form of a metallic pipe-section, which is

detachably fitted to the upper projected end of the adjustable hot-air pipe 10 and having a conical upper end 12, which is provided with a plurality of perforations 13 for the escape of the heated air, and above these perforations rises an inverted conical deflector 14 to receive the impact of the heated air as it escapes through the perforations 13, and thereby to deflect the same in all directions from the tube and to effectually supply the heated air to the room in which the stove is situated. It is preferable to have the deflector 14 hollow in order that it may form a receptacle for containing water, which, through evaporation, is adapted to impart the desired moisture to the otherwise disagreeably dry air, whereby the part 14 has two functions—viz., first, that of a deflector, and, second, that of a water-receptacle.

Within the tubular case 11 there is provided a rotatable fan consisting of a shaft 15, having a spiral flange 16, which rotatably fits within the casing, the upper end of the shaft being journaled in a spider or grating 16, carried by the upper end of the casing and just below the perforations therein. By this means the heated air passing upwardly through the hot-air pipe strikes the spiral fan and causes the same to rotate, thereby imparting a swirling or centrifugal motion to the heated air, so as to direct the same laterally outward through the perforations 13 in a more effective manner than if the air should merely rise into engagement with the top of the casing 11 and then be deflected outwardly through the perforations 13; also, the air is discharged upwardly through the perforations 13 and against the deflector 14, thereby to deflect the heated air to the extreme corners of the room.

It will of course be understood that the fan-casing is removably applied to the upper end of the pipe, so that it may be detached for the purpose of cleansing the same and also for replacing the fan or for entirely removing the latter should it be desired to use the device without the fan. Moreover, the casing is telescopically adjustable upon the pipe in order that the relative position of the fan may be maintained with respect to the top of the stove, no matter what may be the disposition of the lower end of the pipe—that is to say, should the pipe 10 be raised the casing may be forced downwardly upon the pipe, so that it may be maintained at its predetermined relative position with respect to the stove. It will here be noted that the fan and fan-casing are located externally of the stove, and are thereby not subjected to the same degree of heat as they would be if located within the pipe 10 somewhere between the top and bottom of the stove. Hence the fan is not liable to become warped or otherwise rendered inoperative by excessive heat, and thus effective operation of the fan is insured.

In the top of the stove there is provided a fuel-opening 17, which is of a size to receive large sticks of wood, and a slidable lid or cover 18 is employed to close this fuel-opening.

In this type of stove the body thereof is air-tight, and the gases generated by the combustion within the stove cannot readily escape therefrom, and the combustion is thereby rendered imperfect. It also frequently happens that the gas-pressure within the stove becomes sufficient to blow off the cover or lid thereof and otherwise damage the stove. To overcome these objections, it is designed to relieve the gas-pressure within the stove, and to carry out this object an open-ended gas-escape tube 19 is fitted between the inner and outer shells of the stove, as plainly indicated in Fig. 2 of the drawings, the inner shell of the stove being bowed inwardly to accommodate the tube, as indicated at 20 in Fig. 4, whereby the tube is situated in the marginal dead-air space, and thus protected from the intense heat of the fire. The lower end of this tube terminates adjacent to the bottom of the stove, and the contiguous sides of the tube and the inner shell 3 are provided with registered perforations 21, located at the lower end of the tube, and thereby at or below the fire-level within the stove, so as to insure an efficient draft from the interior of the stove to the escape-pipe 19, whereby the gases may escape through the upper open end of the tube which pierces the top of the stove.

For controlling the escape of gas through the tube 19 there is provided a conical closure-cap 22, which is provided with a laterally-projected ear having a pivotal connection 23 with the top of the stove, so that the cap may be thrown around into the position indicated in dotted lines in Fig. 2 of the drawings to entirely uncover the top of the tube, whereby access may be had to the interior of the latter for removing accumulations of soot therefrom. This cap is provided with a plurality of perforations 24, which are normally closed by means of a vertically-movable conical damper-plate 25, snugly fitting the top of the cap and capable of vertical movement under excess gas-pressure. This damper-plate is held upon the cap by means of the shank 26, rising from the cap and projected through a central perforation in the plate and provided with an upper enlargement or handle 27, which prevents upward displacement of the plate and also forms a handle for swinging the cap upon its pivotal connection with the stove. By this arrangement the tube 19 is normally closed, and in the event of excessive gas-pressure the damper-plate 25 will be elevated thereby, so as to permit of the escape of the gas through the perforations in the cap 22. Moreover, the tube 19 may be entirely opened by swinging the cap 22 entirely free of the open upper end of the tube.

What I claim is—

1. In a heating-stove, the combination with the body thereof, of a heating-pipe piercing

the stove and having a tapered discharge end projected exteriorly thereof and provided with discharge-perforations, an inverted conical deflector carried by the tapered end of the pipe and having its sides flared across the perforations therein to deflect the air escaping therefrom, and means located in the projected portion of the pipe for producing a centrifugal discharge of air through the perforations.

2. In a heating-stove, the combination with the body thereof, of a heating-pipe piercing the stove and having a tapered discharge end projected exteriorly thereof and provided with discharge-perforations, an inverted conical deflector carried by the tapered end of the pipe and having its sides flared across the perforations therein to deflect the air escaping therefrom, and a spiral deflector located within the projected end of the pipe to produce a centrifugal discharge through the perforations thereof.

3. In a heating-stove, the combination with the body thereof, of a heating-pipe piercing the stove and having a tapered discharge end projected exteriorly thereof and provided with discharge-perforations, an inverted conical deflector carried by the tapered end of the pipe and having its sides flared across the perforations therein to deflect the air escaping therefrom, and a rotatable spiral deflector located within the projected end of the pipe to produce a centrifugal discharge of air through the perforations thereof.

4. In a stove, the combination with the stove-body, of a heating-pipe piercing the same and having its discharge end tapered and projected exteriorly of the stove and also provided in its tapered portion with discharge-perforations, a combined deflector and water-receptacle comprising a hollow inverted conical imperforate deflector rising from the top of the pipe at a point between the perforations and overhanging the latter, and a rotatable spiral deflector carried within the projected end of the pipe to produce a centrifugal discharge of air through the perforations.

5. In a heating-stove, the combination with the body thereof, of a heating-pipe piercing the stove and having a tapered discharge end projected exteriorly of the stove and provided with discharge-perforations, and an inverted conical deflector carried by the tapered end of the pipe and having its sides flared across the perforations in the pipe to deflect the air escaping therethrough.

6. In a heating-stove, the combination with the stove-body, of an open-ended heating-pipe piercing the same and in communication with the external air, a removable conical cap at the discharge end of the pipe and provided with perforations in the conical portion thereof, and an inverted conical deflector projected from the outer end of the conical cap and overhanging the perforations thereof.

7. In a heating-stove, the combination with the body thereof, of an open-ended heating-drum piercing the same and in communication with the external air, a tubular casing removably applied to the discharge end of the drum and having an outer conical perforate end, and an inverted hollow conical deflector projected from the outer end of the cap, and overhanging the perforations in the outer end of the casing.

8. In a stove, the combination with the stove-body having a fire-box for burning fuel, of a gas-relief passage communicating between the fire-box and the external air, a perforate movable closure for the outer end of the passage, a stem forming a handle projected therefrom, and an imperforate damper-plate slidably mounted upon the stem exteriorly of the closure to normally close the perforations thereof and capable of yielding under excess gas-pressure to open said perforations.

9. In a stove, the combination with the stove-body having a fire-box for burning fuel, of a gas-relief passage communicating between the fire-box and the external air, a pivotal perforate closure for the outer end of the passage, whereby the latter may be opened, and a yieldable damper-plate carried exteriorly by the closure to normally close the perforations thereof and capable of yielding outward under excess gas-pressure to uncover the perforations.

10. In a stove, the combination with the stove-body having a fire-box for burning fuel, of a gas-relief passage communicating between the fire-box and the external air, a pivotal conical perforate closure for opening and closing the same for the outer end of the passage, a handle projected from the apex of the closure, and a yieldable conical damper-plate slidably mounted upon the handle.

11. In a stove, the combination with the stove-body having a fire-box for burning fuel, of a gas-relief passage piercing the top of the stove and communicating with the fire-box, a perforate closure-cap movably mounted upon the top of the stove to cover and uncover the top of the gas-relief passage to give access to the interior thereof, and a damper-plate fitted upon the top of the perforate closure-cap and capable of yielding under excess gas-pressure to uncover the perforations of the cap and permit escape of the gas.

12. In a stove, the combination with the stove-body, of a gas-relief tube piercing the stove-body and having its inner end portion provided with perforations and its outer end in communication with the external air, and a gas-pressure-actuated controlling device carried by the outer end of the tube.

13. In a stove, the combination with the stove-body having inner and outer shells, of a gas-relief tube piercing the top of the stove and lying between the inner and outer shells, the adjacent portions of the tube and inner shell having registered perforations, and a gas-actuated controlling device for the upper open end of the tube.

14. In a stove, the combination with the body thereof having inner and outer shells, of a vertical gas-escape tube piercing the top of the stove and located between the inner and outer shells, the adjacent portions of the tube and inner shell being provided with registered perforations, a conical perforate closure-cap for the upper open end of the tube and also pivotally connected to the top of the stove, a shank rising from the apex of the cap and terminating in an enlarged handle, and a conical gravity damper-plate normally closing the perforations of the cap and slidably mounted upon the shank.

15. In a stove, the combination with the stove-body, of a heating-pipe piercing the same and having its discharge end projected exteriorly of the stove and provided in its top with discharge-perforations, and a combined deflector and water-receptacle comprising a hollow inverted conical imperforate deflector rising from the top of the pipe at a point between the perforations and overhanging the latter.

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

JOSEPH L. BANGLEY.

Witnesses:
JOHN H. SIGGERS,
T. E. HARRISON.