

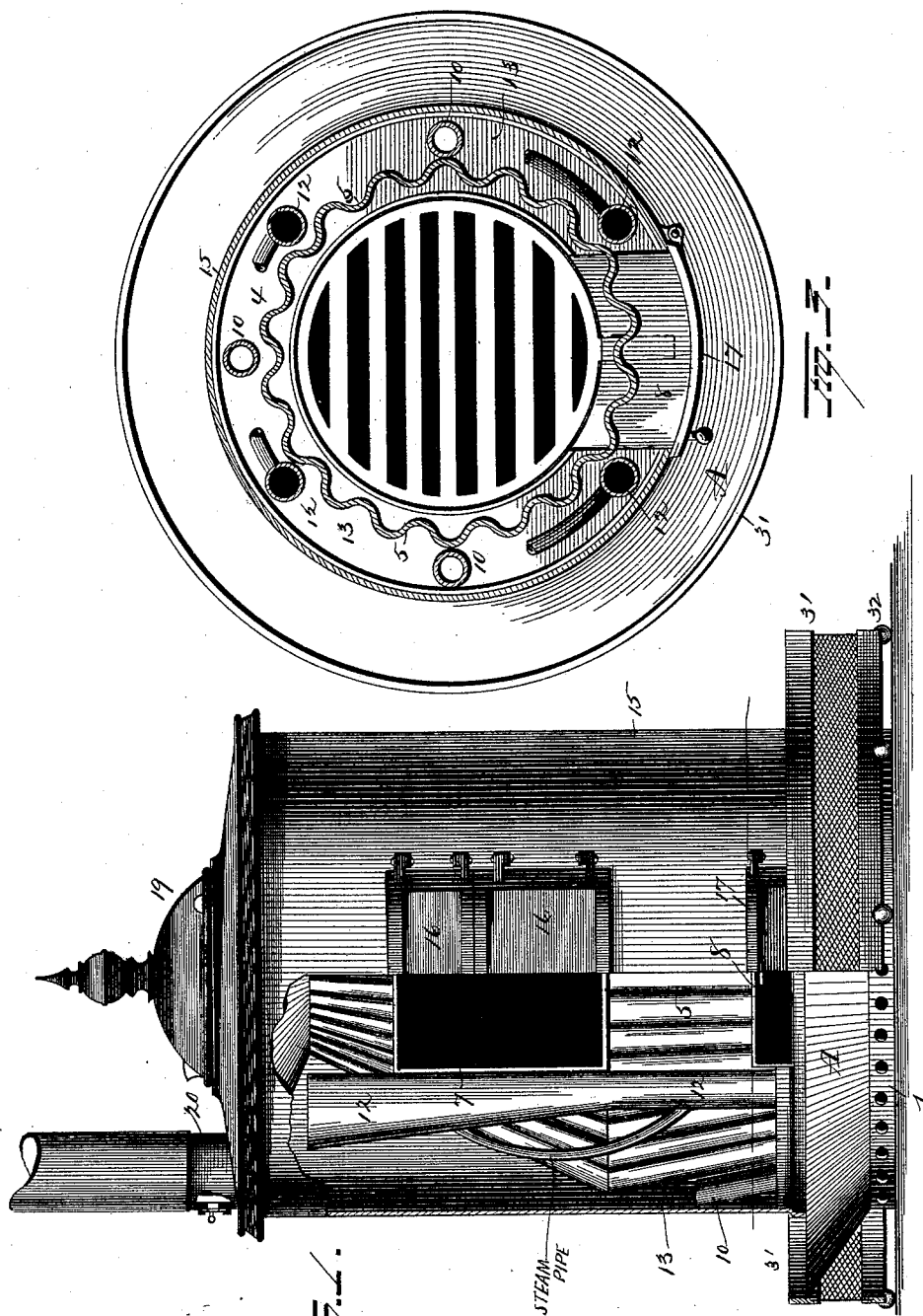
(No Model.)

2 Sheets—Sheet 1.

C. A. RICHARDSON.
HEATING STOVE.

No. 419,796.

Patented Jan. 21, 1890.



Witnesses
E. J. Mingham
G. F. Downing

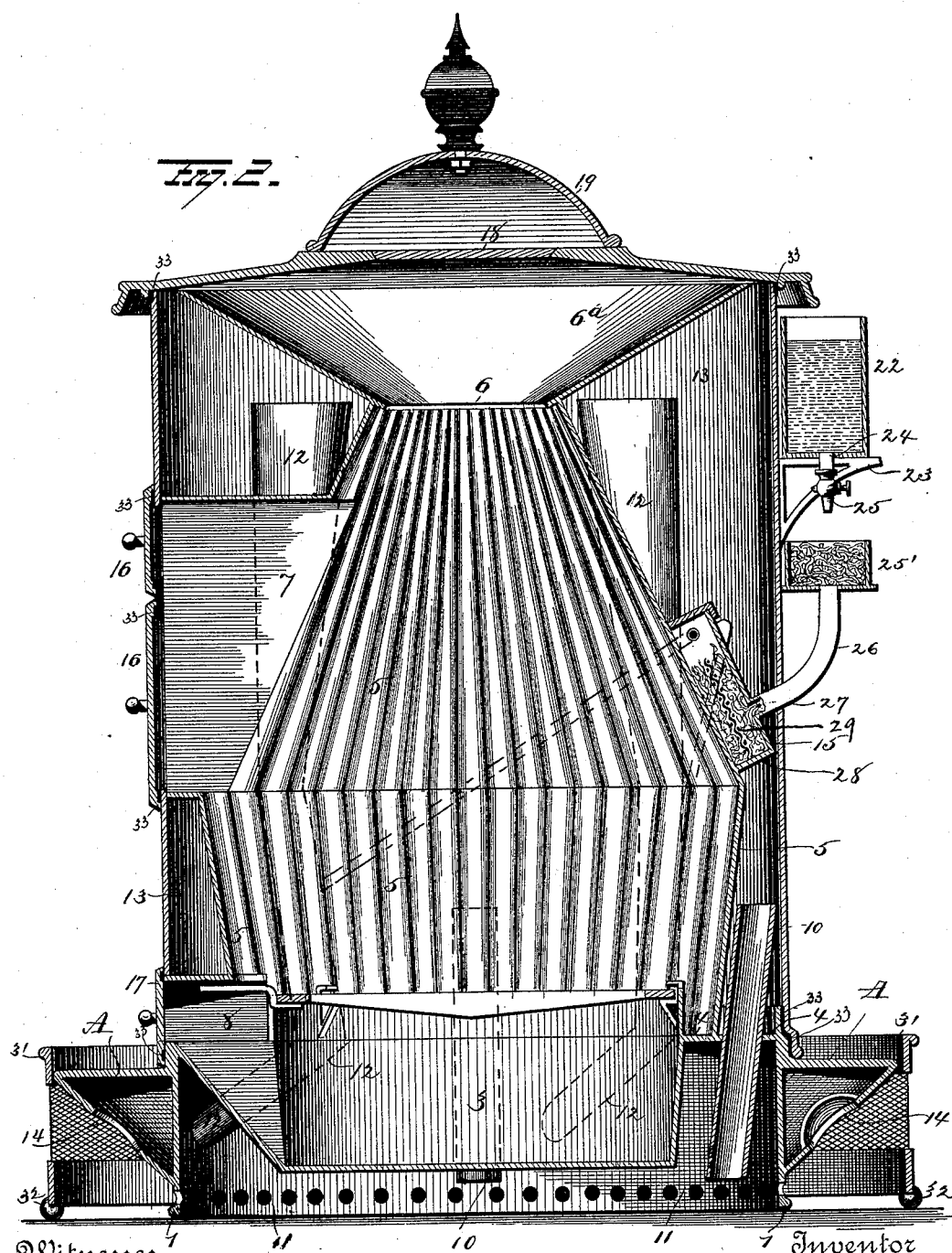
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2 Sheets—Sheet 2.

No. 419,796.

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UNITED STATES PATENT OFFICE.

CHARLES ALLEN RICHARDSON, OF HANNIBAL, MISSOURI.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 419,796, dated January 21, 1890.

Application filed July 22, 1889. Serial No. 318,338. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ALLEN RICHARDSON, of Hannibal, in the county of Marion and State of Missouri, have invented certain new and useful Improvements in Heating-Stoves; and I do hereby 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.

My invention relates to an improvement in heating-stoves.

The object is to take the cold air from the lower portion of a room, and after heating it to discharge it again out of the bottom of the stove, so as to counteract the tendency of cold drafts of air to circulate across the floors of rooms, and, further, to insure a perfect radiation and circulation of heat and healthier atmosphere by generating steam and mixing it with the hot air, making a moist instead of a dry atmosphere.

With these ends in view my invention consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of the stove, a portion of the outer jacket being broken away to show the corrugated radiating lining. Fig. 2 is a vertical section. Fig. 3 is a horizontal section taken through the lower portion of the stove.

A represents the base of the stove. While this may be made in various different shapes, it is preferably round, hollow, or triangular in section, and has a circular perforated rim 1 projecting from its lower edge, which constitutes a support upon which the stove rests. The ash-pit 3 is located within the base, and the upper edge of this pit is connected by a flange 4 to the base. A lining 5 extends upwardly a short distance from the flange 4, to which it is secured, thence is topped off in the form of a cone. This lining is made in corrugated folds in order to increase the heat-radiating surface, and in addition to this the cone-shaped portion is located over the fire, where it receives the direct rays of heat from the fire. The cone-shaped portion of the lin-

ing is open at the top 6, and through the latter the coal is usually fed, and also the gas from the fire passes through it to the stove-pipe and chimney. From this end an outspreading deflector 6^a is attached to confine the heat in the space below it. In the side of the lining the regular opening 7 is made into the inside, and below this opening 7 a second opening or register 8 is formed for the draft.

One or more short pipes or passages 10 extend through the flange 4 to conduct the cold air from the annular air-chamber 11, located beneath the flange and between the base and ash-pit, into the heating-space outside of the corrugated lining. These pipes convey the cold air supplied through the perforated rim 1 into the hot-air space, where it may be heated by radiation from the lining and by contact therewith. Several hot-air pipes 12 are also placed in the hot-air space 13, immediately in contact with or in close proximity to the corrugated lining. These pipes are enlarged at their upper ends and terminate a little below the deflector 6^a, and the heated air, which naturally rises, from the fact that it is lighter than cold air, is accumulated immediately beneath the deflector, from which place it is conducted downward by the hot-air pipes 12. The latter open at their lower ends into the hollow base. The hollow base is provided in its interior with wings or guides placed in different positions, and preferably on an incline, so that the heated air passes some distance through the base before discharging through the openings 14 14.

Jacket 15 encompasses the various parts described—namely, the corrugated lining, the cold and hot air pipes, and the deflector—and it constitutes an outer lining for the hot-air space 13. This jacket is provided with a pair of doors 16 16 opposite the opening 7 and with a single door 17 opposite opening 8. The two doors 16 16, one large and one small, are provided so that the heat in the stove may be regulated by opening one or both, accordingly as required.

An opening in the top of the jacket is provided with a removable lid or cover 18, and the usual removable top 19 is pivotally secured on the jacket. The stove-pipe prefera-

bly leads from the top of the jacket and is fitted on the rigid section 20. Said section is perforated on one side and provided with a slide-damper.

5 At the bottom of the jacket where it joins the base, as well as in other places where there are joints, instead of employing stove-cement or putty to make them air-tight, asbestos packing 33 is used. Asbestos packing
10 will also be used on the edges of doors and registers in order to make them perfectly air-tight.

The parts described are more particularly designed for the radiation, distribution, and
15 circulation of heat; but in addition to this I provide means for facilitating the circulation of the air and for moistening it. The mechanism for accomplishing this will now be described. A water-tank 22 is located in some convenient
20 and accessible place, preferably on a shelf 23 on the back of the jacket. Drip-pipe 24, leading from the bottom of this tank, is furnished with a valve 25, by which the discharge of the water from the tank is controlled. A cup 25', filled with asbestos wick-
25 ing or other fiber, is placed beneath this drip-pipe 24, and this cup also is provided with a pipe 26, through which a wick 27 extends, and the pipe opens inside the jacket. Steam-generator 28 is formed outside the corrugated
30 lining, where the most intense heat is utilized, and preferably within easy reach of the tank and cup, and this steam-generator is divided into two compartments by means of a gauze sheet 29. The asbestos wick or other fiber
35 27 extends into this steam-generator and through the gauze, where it is coiled up to fill the space in the generator next to the corrugated lining. This wick is kept continually
40 wet, just like the wick of a lamp, from the water in the tank, and hence it does not burn by its contact with the hot lining; but steam is generated all the time, which passes into the open steam-space on the other side of and
45 above the gauze partition. Steam-pipes extend from this space to the lower ends of the hot-air pipes, and as fast as the steam is generated it escapes through these steam-pipes
50 into the hot-air pipes, creating suction or a sufficient vacuum into which the hot air from the hot-air space is continually drawn or sucked. This air then passes out through the holes in the base. Besides creating or
55 accelerating circulation, the steam moistens the air and makes it wholesome and refreshing. Thus practically all the heat is discharged at the base, and that part of the room which is generally last heated and
60 most always cold during cold weather is kept as warm as the rest of the room, and consequently the cold drafts from the floors or cracks at the doors in poorly-built houses are entirely prevented. An ornamental fender 31 encircles the base, and this fender is
65 slightly raised and usually rests on feet 32, so as to allow the air to pass freely beneath it. The fender is perforated—made of

gauze, or otherwise open—to allow the hot air to pass through it without undue obstruction and more thoroughly mixes the hot air
70 with the cold air at the floor. It furnishes a convenient foot-rest, and when the feet are placed on it they are quickly warmed without the slightest danger of burning the shoes.

The operation has been from time to time
75 indirectly indicated; but, to sum up, after a fire is built on the grate as customary, the corrugated lining becomes heated. This heats the air outside of it or between it and the jacket, and this air is drawn out through the
80 hot-air pipes and discharged at the base.

By this invention a healthy condition of atmosphere is maintained and every particle of heat is utilized and discharged where it
85 will do the most good.

It is evident that this system might be applied to ranges, furnaces, and other heating apparatus, and that slight changes might be
90 resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the particular construction herein set forth; but,

Having fully described my invention, what I
95 claim as new, and desire to secure by Letters Patent, is—

1. In a heating-stove, the combination, with a hot-air space, of passages for supplying air
100 to the space and for conducting it off when heated, and steam-pipes located in the stove and opening into the hot-air passages at points between their ends for moistening the air and creating suction in the passages to facilitate the passage of the air, substantially
105 as set forth.

2. In a stove, the combination, with a hot-air space, of passages for supplying air to the space and for conducting it off when
110 heated, a steam-generator secured to the stove, and pipes leading from said generator into the hot-air passages for moistening the heated air and facilitating its circulation, substantially as set forth.

3. In a stove, the combination, with a hot-
115 air space, passages for feeding air thereto from the base, and pipes for discharging the heated air at the base, of a steam-generator secured to the stove, and pipes leading therefrom to the hot-air-discharge passages for
120 moistening the air and facilitating its discharge, substantially as set forth.

4. In a stove, the combination, with a hollow base, an inner lining, and a jacket closed
125 at its top and forming a hot-air space between it and the inner lining, of cold-air passages leading into the hot-air space, and hot-air pipes leading from said space into the hollow base, the latter having openings therein for the passage of heated air, substantially as set
130 forth.

5. In a stove, the combination, with a hollow base having a perforated rim or open spaces
thereon, upon which it rests and through

which the air is adapted to circulate freely, an inner lining, and a jacket forming a hot-air space between it and the inner lining, of a steam-generator secured to the stove, means for supplying it with water, and pipes leading from the generator to the hot-air pipes for moistening the air and facilitating circulation, substantially as set forth.

6. In a stove, the combination, with an inner lining and jacket forming a hot-air space between it and the lining, of cold-air inlet and hot-air outlet pipes, a steam-generator secured to the stove, pipes leading therefrom to the hot-air pipes, a water-tank, and wick for supplying the generator with water from said tank, substantially as set forth.

7. In a stove, the combination, with an inner lining and a jacket forming a hot-air space between them, of cold-air inlet and hot-air outlet passages, a steam-generator secured to the stove, steam-pipes connecting the generator and hot-air passages, a water-tank, a drip-pipe projecting therefrom, a valve in said drip-pipe, a cup beneath the drip-pipe, and a wick in said cup and extending to the generator, substantially as set forth.

8. In a heating-stove, the combination, with a hollow base, a corrugated inner lining, and deflector at the top of the latter, of an outer jacket closed at its top, forming a hot-air space between it and the lining, cold-air pipes for supplying this space, and hot-air pipes enlarged at their upper ends and leading into the hollow base at the opposite ends, substantially as set forth.

9. In a stove, the combination, with a hollow base, a corrugated cone-shaped lining, said lining having an opening in its upper end, and a deflector at this end, of a jacket joined to the base and having asbestos packing at the joints, said jacket having an opening in its top and a cover for closing said opening, cold-air pipes or openings leading into the hot-air space, and hot-air pipes for conducting the air away, substantially as set forth.

10. In a stove, the combination, with a hollow base having a perforated rim or conven-

ient openings through which air is supplied, and also having air-holes therein, an ash-pit, and flange connecting it with the base, so that the stove may be lifted from the base for transportation, a corrugated cone-shaped lining open at the top, and a deflector extending from the top, of a jacket encompassing the lining and deflector and forming an air-space between it and the lining, cold-air pipes or openings through the flange into the hot-air space, and hot-air pipes open at the upper end just beneath the deflector and opening into the hollow base, substantially as set forth.

11. In a stove, the combination, with a hollow base having air-openings and wings therein and a lining mounted on the hollow base located inside of jacket, of a jacket, hot and cold air pipes, and a perforated fender located around the hollow base, substantially as set forth.

12. In a stove, the combination, with a hollow base having openings therein for the passage of air and a corrugated lining mounted on said base, of a jacket forming a space between it and the lining, cold-air pipes or openings for feeding air to the space, hot-air pipes for conducting the heated air to the hollow base, means for supplying moisture to the hot air, and an open fender extending around the base, substantially as set forth.

13. In a stove, the combination, with a lining, a jacket having an air-space between it and the lining, and cold and hot air pipes, of a steam-generator having a perforated partition therein and asbestos between the partition and the lining, steam-pipes leading from the generator to the hot-air pipes, and water-tank, valve, and wick for supplying water to the asbestos packing, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES ALLEN RICHARDSON.

Witnesses:

Y. V. BAKER,
JESSIE RAU.