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Patented Sept. 12, 1899.

C. P. CALDWELL.

HEAT REGULATING ATTACHMENT FOR FURNACES.

(Application filed Nov. 14, 1898.)

(No Model.)

Fig. 1.

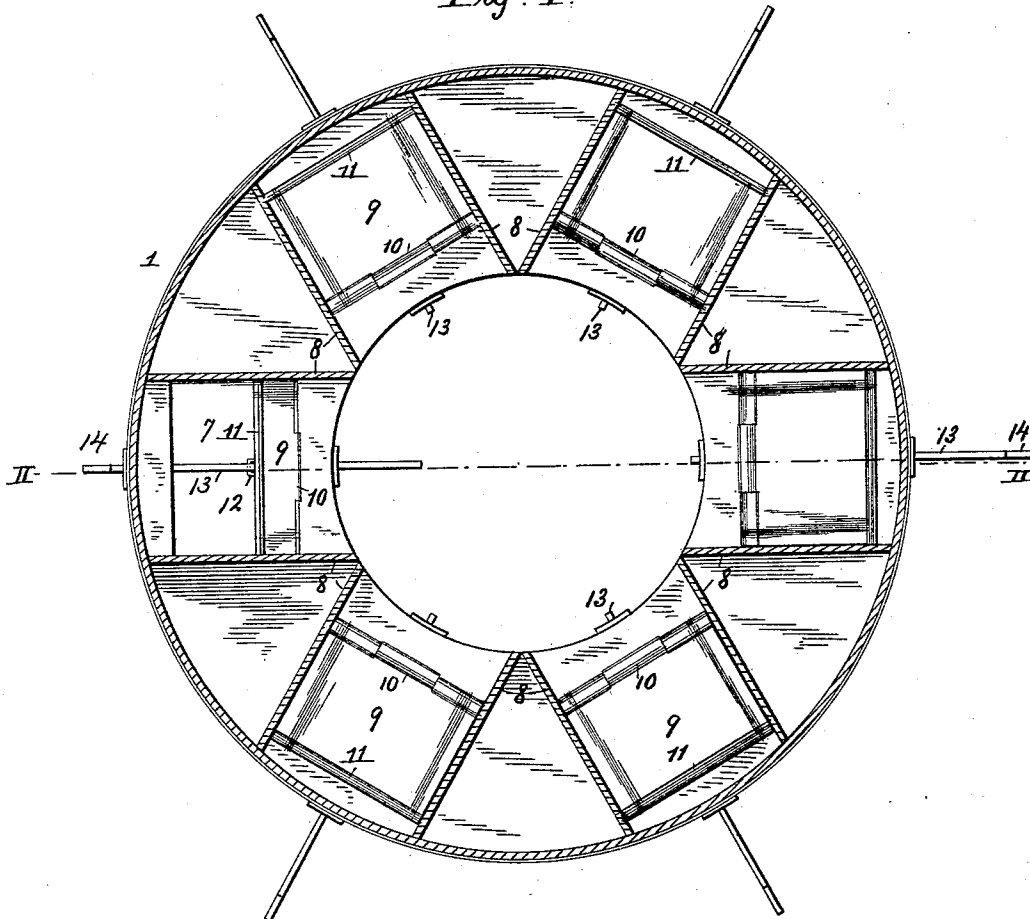
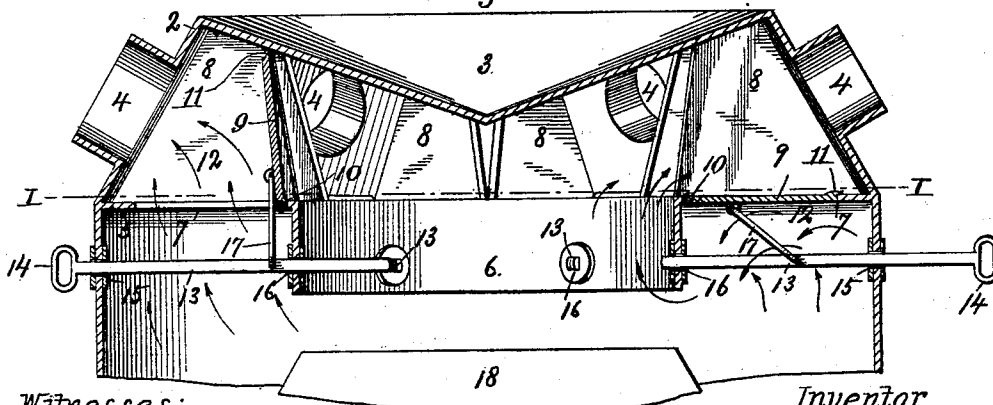


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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HEAT-REGULATING ATTACHMENT FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 632,803, dated September 12, 1899.

Application filed November 14, 1898. Serial No. 696,331. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. CALDWELL, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Heat-Regulating Attachments for Furnaces, of which the following is a specification.

My invention relates to heat-regulating attachments for furnaces, and more especially to that class known as "hot-air" furnaces, for use in heating houses and other buildings.

The object of the invention is to provide an attachment for hot-air furnaces whereby the temperature of any particular room or rooms may be regulated with accuracy, and, furthermore, an attachment which may be easily and cheaply applied to any style of hot-air furnace.

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

Figure 1 is a horizontal section taken on the line I I of Fig. 2. Fig. 2 is a vertical section taken on the line II II of Fig. 1.

In the said drawings, 1 designates a hot-air furnace of the usual or any preferred construction, provided with the customary frustum-shaped cap 2, having its top wall sunken, like an inverted cone, in order to deflect the heat radially outward, and projecting from the said frustum-shaped cap are the usual tubular collars 4 for connection with the hot-air conduits. (Not shown.)

The parts above referred to are common in hot-air furnaces.

5 designates a horizontally-arranged metallic band projecting inward of the furnace just below the tubular projections 4, and 6 a circular flange which depends vertically from the inner edge of said band. The band is provided at points opposite the tubular projections 4 with draft-openings 7 and at opposite sides of the same and said tubular projections with the vertical walls or partitions 8.

9 designates a series of doors or valves which control the passage of air through the openings 7 and are hinged, as at 10, at the

inner edges of said openings to the band 5. Said doors or valves are provided with flanges 11, which are adapted to rest upon the band 55 when the doors or valves are closed, and thus sustain the latter in their closed positions. The doors or valves are also provided with apertured lugs 12 at their under sides.

13 designates a series of slide-bars having 60 handles 14 at their outer ends and extending radially of the furnace through the reinforced openings 15 and 16 of the furnace-wall and flange 6, respectively, said wall and flange being reinforced in order to prevent the slide-rods from enlarging the holes in the furnace-wall and flange by frequent frictional engagement therewith. Said slide-bars are connected pivotally by links 17 with the apertured lugs 70 12 of the doors 11, so that when any particular rod is pushed inward it raises the door or valve through the medium of the link 17 and uncovers the opening 7.

In most hot-air furnaces with which I am familiar the hot air has a free and unobstructed passage from the heating agent, as at 75 18 or its equivalent, to the tubular projections 4, connected to the pipes or conduits, (not shown,) and frequently, due to the direction of the wind or from other cause, most 80 of the heat will pass off through one or more of said pipes or conduits, leaving others to conduct but little heat, which state of affairs it is found impossible to overcome by manipulating the usual valves of the conduits or by 85 closing the registers.

I am also aware of the existence of a hot-air furnace having its heat-chamber provided with radiate partitions, said partitions having openings controlled by valves, so that by 90 opening a partition-valve and closing the conduit-valve of a particular chamber the hot air from said chamber may be deflected into the adjacent chamber and the air of a pair of chambers thus be caused to enter a single 95 room, or by proper manipulation of the valves several of such chambers may be placed in communication with a single room.

I am also aware of the existence of a hot-air furnace of different construction from 100 that provided with the radiate partitions, but by which practically the same results are accomplished—that is to say, by manipulating certain valves one or more hot-air

chambers may be placed in communication with a single room.

I am also aware of the existence of a hot-air furnace of such construction that any one of the conduits may be cut out of communication with the hot-air passage leading thereto that air of said passage be utilized for general distribution—that is to say, it passes off through the open conduits and not to any special one unless the remainder are closed.

My invention differs from all of these in that I can deflect into a single conduit a much larger proportion of hot air than passes through any of the remaining conduits without shutting off or moving the valves of said remaining conduits, the same being accomplished by the manipulation of a single valve, so as to place the desired conduit into more direct communication than it was before said valve was manipulated. To illustrate, supposing all the doors or valves of the hot-air furnace embodying my invention are closed it is obvious that a large volume of the hot air is compelled after striking the under side of band 5 and the closed valves thereof to turn down under and then pass up through the flange 6, (see the arrows at the right-hand side of Fig. 2,) and, striking the inverted conical top wall or canopy 3, is deflected outward between the partitions 8 and through the projection 4 into the conduits. If from any cause it is ascertained that there is insufficient hot air passing through a particular conduit and it is desired to raise the temperature of the room to which said conduit leads, it is only necessary to push the slide-bar 14 inward connected to the door or valve opposite and adjacent to said conduit, and thereby raise said door, and thus afford direct communication between the tubular projection connected to said conduit and the chamber below the band 5, this connection obviously being much more direct than the other, where the air is compelled to double down under the flange 6. As air will always take the shortest and most direct route, it is obvious that a much larger volume of hot air will now pass through the formerly-neglected conduit than before or than passes through any of the other conduits, because to reach the latter it must take the indirect route pointed out. It will thus be noticed in this connection that the deflection of hot air to a particular conduit, as thus described, does not cut out of service any other conduit, and, further, that this result is attained by the manipulation of a single valve. With the structures previously referred to it is necessary in order to materially increase the volume of hot air passing through one conduit to cut out of service some other conduit entirely by the manipulation of a single valve, or to cut it partly out of service by the manipulation of a plurality of valves.

With this heat-regulating attachment it is possible for a person familiar with the working of the furnace to so manipulate these

slide-bars that all the rooms of the house may be brought practically to a uniform heat, a thermometer of course being a necessary adjunct to accomplish this result, as will be readily understood.

From the above description it will be apparent that I have produced an attachment for hot-air furnaces which embodies the features of advantage enumerated in the statement of invention, and it is to be understood, of course, that I reserve the right to make all changes in the form, proportion, detail, construction, or arrangement of the parts which do not involve a departure from the spirit and scope of the invention.

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

1. The combination of a hot-air furnace provided with tubular projections, a band below said projections provided with openings, partitions upon said band and at opposite sides of the tubular projections of the furnace and of the openings of the band, doors or valves controlling said openings and fitting snugly between said partitions, and means for opening or closing said doors or valves, substantially as described.

2. The combination of a hot-air furnace provided with tubular projections, a band below said projections provided with openings, partitions upon said band and at opposite sides of the tubular projections of the furnace and of the openings of the band, doors or valves controlling said openings and fitting snugly between said partitions, and slide-bars linked to said doors or valves, substantially as described.

3. The combination of a hot-air furnace provided with tubular projections, a band below said projections provided with openings, an annular flange depending from the inner edge of said band, partitions upon said band and at opposite sides of the tubular projections of the furnace and of the openings of the band, and doors or valves controlling said openings and adapted to work between said partitions, substantially as described.

4. The combination of a hot-air furnace provided with tubular projections, an annular band projecting inward from the wall of the furnace below said projections, provided with openings opposite said projections, partitions upon said band at opposite sides of said openings, an annular flange depending from the inner edge of said band, doors or valves hinged in and adapted to close or open said openings, slide-bars mounted in the wall of the furnace and in said depending flange, and links pivotally connecting said slide-bars and doors or valves, substantially as described.

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

CHARLES P. CALDWELL.

Witnesses:

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