

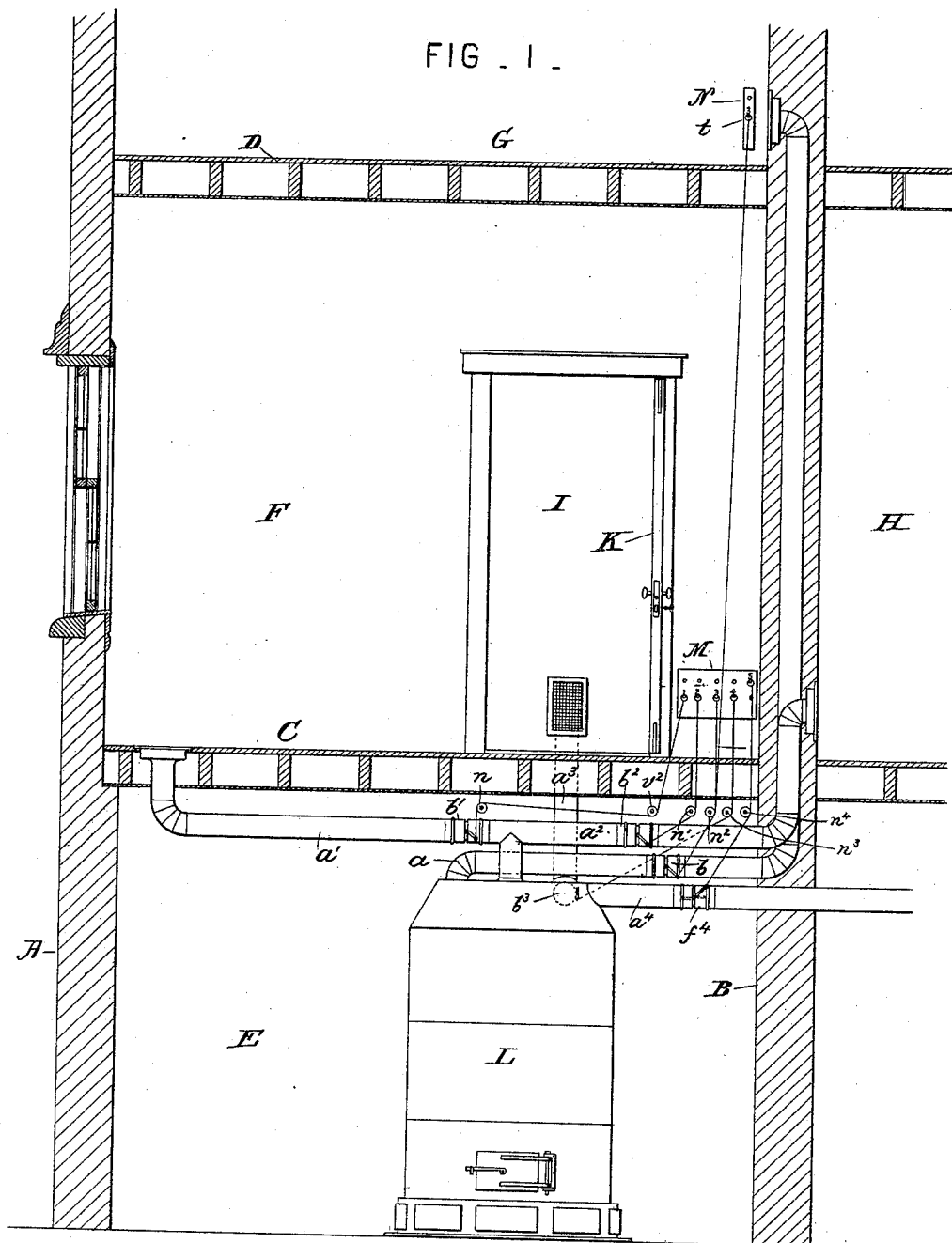
(No Model.)

2 Sheets—Sheet 1.

C. S. & E. HOOD.
AIR HEATING SYSTEM.

No. 465,562.

Patented Dec. 22, 1891.



Attest:

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FIG. 3.

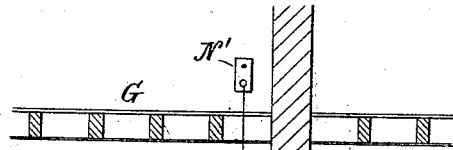
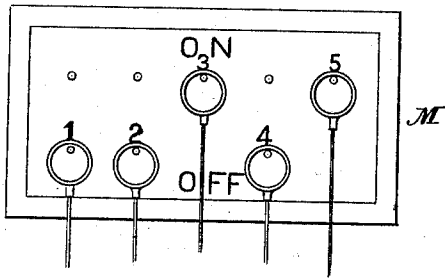


FIG. 2.

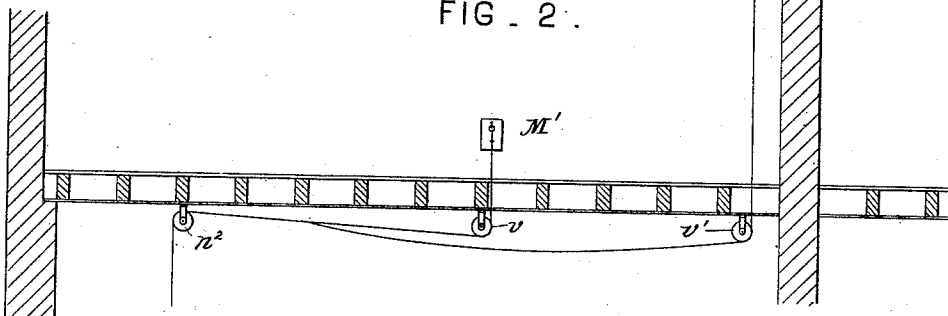


FIG. 4.

FIG. 5.

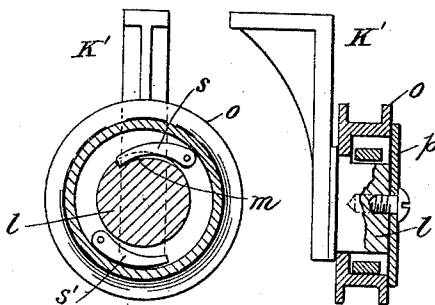
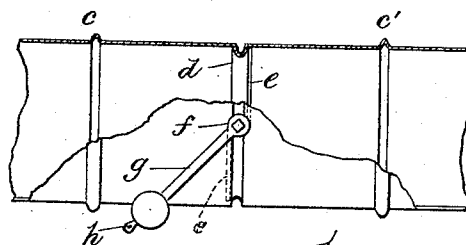


FIG. 6.



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UNITED STATES PATENT OFFICE.

CYRUS S. HOOD AND EDDY HOOD, OF CORNING, NEW YORK.

AIR-HEATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 465,562, dated December 22, 1891.

Application filed March 7, 1891. Serial No. 384,070. (No model.)

To all whom it may concern:

Be it known that we, CYRUS S. HOOD and EDDY HOOD, citizens of the United States, residing at Corning, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Air-Heating Systems; and we 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.

Our invention relates to those systems of air-heating wherein the various rooms of a building are supplied with heated air supplied through conducting-pipes branching upward from a furnace or heater located in the cellar or basement. In such systems the pipes have their outlets into the rooms through openings in the floor or side walls thereof, and it is customary to provide said openings with "registers" consisting of a casing coupled to the pipe and having a grated face-plate, said casing being furthermore provided with a slat-valve whereby the occupant of the room may control directly the amount of air admitted. Serious defects are attendant upon the employment of systems as thus organized. Thus the closing of the slat-valve nevertheless leaves the pipe leading to the room constantly filled with hot air, which air might otherwise be used to advantage for heating the remaining rooms, with a corresponding saving of fuel. Moreover, as the slat-valve is required to move easily, it is not made to fit the casing snugly, so as to absolutely guard against leakage, and as a consequence more or less hot air is admitted despite the closing of the valve, the loss from this cause being aggravated in those instances where the pipe ascends to a considerable height or where the room-ventilation is strong. Another disadvantage is that the registers, by reason of their multiplicity of parts and joints, (which at the same time render them expensive,) serve to catch or collect dust and dirt, in contact with which the air passes or which the air-current, when of increased velocity, takes up and disseminates throughout the room, whereby, although complicated and expensive to manufacture, they are inferior and objectionable for sanitary reasons. Some of the objections noted it has been sought to

obviate by providing the air-conducting pipes with valves or dampers at or near the furnace, said dampers being provided with a stem whereby they could be turned so as to close the pipe. In order to manipulate such dampers, it has been necessary, however, to enter the furnace-room and effect their adjustment, which is a matter of discomfort and inconvenience and is really impracticable in a building containing many rooms supplied by a correspondingly large number of pipes, whose arrangement in the furnace-room is confusing to the ordinary mind. The dampers chosen have also been in general of an unstable character in their construction or arrangement, so as to be incapable of reliable and permanent adjustment, especially after a period of considerable use, or have been too expensive or complicated to warrant their employment in practice.

By the use of the improvements constituting our present invention we are enabled to dispense entirely with the register valve and casing, to insure the absolute closing of the furnace-pipes at or near the furnace itself by means of a damper and casing of inexpensive construction and reliable operation, and to effect the necessary manipulations for this purpose from each of the several rooms, as well as from a common point—as, for instance, in the janitor's room or office of an apartment-house or from the "living-room" of a private residence.

In the accompanying drawings, illustrative of the invention, Figure 1 represents an interior sectional view of a building provided with an air-heating system embodying our improvements. Fig. 2 represents a like view illustrating separately one of the features of the invention. Fig. 3 represents in elevation the common point of manipulation for the various dampers. Figs. 4 and 5 represent, respectively, sections taken at right angles to each other of the damper-controlling device, certain portions being shown in elevation; and Fig. 6 represents a side elevation and partial section of the damper and its casing.

Similar letters of reference indicate similar parts throughout the several views.

Referring to the drawings, A indicates the front wall, and B a partition-wall, of a dwelling having floorings C D, whereby it is di-

vided up into a number of rooms—as, for instance, the furnace-room E, the living-room F, and adjacent rooms G H I.

In the drawings a door K is shown between the rooms F and I.

In the furnace-room is located the hot-air heater L, from which a series of pipes $a\ a'\ a''\ a^3\ a^4$ lead, as usual, to the various rooms for supplying heated air thereto, and in each of these pipes is interposed a damper-casing $b\ b'\ b^2\ b^3\ b^4$ in near proximity to the furnace. The specific construction of this damper-casing is shown more fully in Fig. 6. It consists of sheet metal so wrought as to present beads $c\ c'$ and an intermediate annular damper-seat d , all of which serve to strengthen and stiffen the casing, so as to enable it the better to resist the accidental blows to which furnace pipes and fittings are liable to be subjected. A damper e , consisting of a circular plate bent at its middle portion, as shown, so that each half shall close, as shown, against opposite sides of the seat d , is mounted to turn with respect to the seat, and one of its journals or gudgeons f is squared to receive the weighted arm g , the tendency of said arm being to normally hold the damper in the closed position. (Shown in Fig. 6.) The weighted arm g is provided with a ring h or other means for attachment of a governing-cord. The governing-cord from each damper passes upward and encircles a device $n\ n'\ n^2\ n^3\ n^4$, whose function is to hold the damper open when desired. As shown in the detail views, this device consists, primarily, of a bracket K' , adapted for attachment to the ceiling-beams of the furnace-room and having a fixed hub projection l , provided with a transverse peripheral depression m . Upon the hub projection is mounted the revoluble flanged drum or sheave o , held in place by the retaining-plate p and bearing the gravity-pawls $s\ s'$, adapted to engage with the depression m . After encircling the flanged drum or sheave the governing-cord in each instance passes upward into the living-room or other upper room of central control and terminates in a ring, as shown more clearly in Figs. 1 and 3, or in some other equivalent form of attachment. These rings serve to suspend or connect the cords to a board M, provided with an upper and a lower row of peg projections, as indicated, said rows being preferably marked "On" and "Off," for the convenience of the manipulator, and the rings are also provided with solid outline characters—as, for instance, the numbers, as 1 2 3 4 5—corresponding to the particular rooms to which the damper-pipes lead, so that even in the darkness the right one may be selected for operation without liability of error.

It will be observed by reference to Fig. 1 that from the cord terminating in the ring marked "3" upon the board M an additional cord leads to the room G and terminates thereat in a ring t , adapted to be suspended from an upper or a lower peg projection upon the

board N, located near the pipe-inlet. The purpose of this additional cord, which is attached to the main cord, is to permit the damper located in the pipe a , leading to the room G, to be operated from said room also, as well as from the living-room. It will be understood that for a like purpose similar additional or supplemental cords extend to each of the other rooms from the corresponding main cords connected with the dampers governing the pipes leading to said rooms. To avoid confusion of illustration, we have shown but one of these supplemental cords in Fig. 1, and to better elucidate the relation existing between it and the main cord we have in Fig. 2 represented a slightly different arrangement than that shown in Fig. 1, the principle of operation, however, being identical. In fact, the only essential difference is that to simplify the understanding of the operation we have in Fig. 2 assumed the living-room F to be supplied only with means for governing the damper in the pipe leading to one of the rooms, as G. In said figure, M' indicates the peg-board for the main cord; N' , the peg-board for the supplemental cord; n^2 , the device for holding open the damper, and $v\ v'$ suitable guide-pulleys. In Fig. 1, v^2 indicates a guide-pulley.

From the drawings and the foregoing description of parts the operation will be manifest. When the system is being installed in a building, the main cords are first attached to the weighted arms of the damper-valves, said arms being normally in their lowermost position, and the dampers being therefore closed. Each cord is then passed once entirely around the flanged drum of its corresponding controlling device, and is then continued up into the living room, where it receives its attachment-ring. The supplemental cord for each main cord is then attached to the main cord and led into the appropriate room. If now it be desired to open a damper-valve, (as, for instance, the one governed by the main and supplemental cords shown in Fig. 2,) the main or the supplemental cord, as the case may be, is drawn upward by the operator until the ring is a short distance above the peg-board. The flanged drum is accordingly revolved in the direction of the arrow, Fig. 4, and the weighted arm of the damper is raised somewhat beyond the distance necessary to completely open the damper. The cord is thereupon permitted to descend slowly, and the drum revolves slowly in the opposite direction until one of the pawls enters the notch or depression p of the hub l , thereby locking or holding the damper in the fully-open position. The ring may then be placed upon the corresponding peg projection in the row marked "On." To close the damper it is merely necessary to raise the cord in like manner and let it drop suddenly, whereby the inertia of the revolving flanged drum carries the pawl s past the notch and permits the valve to close, a condition of affairs which is

indicated by then placing the ring on the peg of the "Off" row.

It is characteristic of our invention that the same damper is adapted to be operated from the room whose air-conducting pipe it controls and also from the living-room by cords leading to a single controlling device, which device is located in the furnace-room, where it is accessible for repairs, but out of sight of the occupants of the other rooms, who have before them merely the simple and unobtrusive operating cord or cords, occupying but little space, and which may at slight expense be made sufficiently ornamental.

One of the distinguishing advantages which our improvements possess is that without leaving the living-room the hot air may be admitted into a bedroom in a remote part of the house, so that the bedroom, which has been unoccupied during the day, may be suitably warmed a short period before retiring. Thereupon, when the time for retiring has arrived, the occupant of the bedroom may proceed thereto, and if the room is not at the desired temperature he can permit the hot air to enter for a longer period, finally closing the damper from the bedroom.

It is evident that the solid characters, letters, or numbers for indicating the various rooms may be in some instances attached to the peg-board instead of or in addition to the cords or chains.

Having thus described our invention, what we claim is—

1. In an air-heating system, the combination, with the rooms of a building, of a heater, a damper, a releasable supporting device for holding said damper open, a damper-operating cord leading into one of the rooms and adapted to trip the releasable supporting device, and a supplemental operating-cord leading into another room, substantially as described.

2. In an air-heating system, the combination, with the rooms of a building, of a heater, an air-conducting pipe leading therefrom to one of said rooms, said pipe being provided with a damper, a releasable supporting device for holding said damper open, a damper-operating cord leading into the room into which

the air-conducting pipe enters and adapted to trip the releasable supporting device, and a supplemental operating-cord leading into another room, substantially as described.

3. In an air-heating system, the combination, with the rooms of a building, of a heater, air-conducting pipes leading therefrom to the various rooms, said pipes being provided with dampers, damper-operating cords, each leading into the room into which the corresponding air-conducting pipe enters, supplemental cords leading to a common point of control in one of the rooms, and releasable supporting devices for holding the dampers open, the said releasable supporting devices being adapted to be tripped by the operating-cords, substantially as described.

4. In an air-heating system, the combination, with the rooms of a building, of a heater, air-conducting pipes leading therefrom to the various rooms, said pipes being provided with dampers, operating-cords, each leading into the room into which the corresponding air-conducting pipe discharges, supplemental cords leading to a common point of control in one of the rooms, raised characters corresponding in location to the several cords at the common point of control, and releasable supporting devices for holding the dampers open, the said releasable supporting devices being adapted to be tripped by the cords, substantially as described.

5. In an air-heating system, the combination, with a heater, of an air-conducting pipe leading therefrom, said pipe being provided with a damper-casing formed of sheet metal and having strengthening-beads near its ends and an internal annular bead at its central portion, a damper located within said casing and consisting of a bent plate, as described, and a weighted arm connected to said damper for keeping it normally closed, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

CYRUS S. HOOD.
EDDY HOOD.

Witnesses:

F. A. WILLIAMS,
C. M. GAMMAN.