

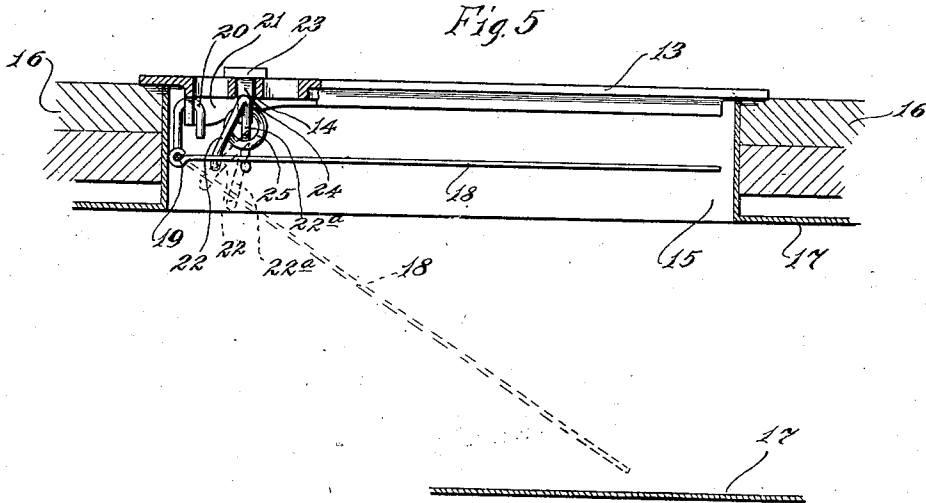
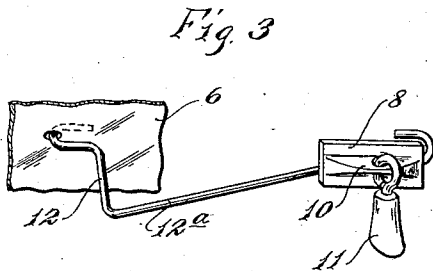
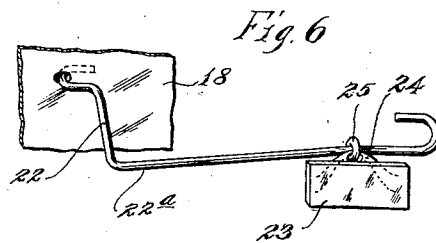
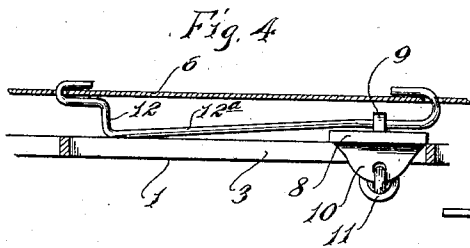
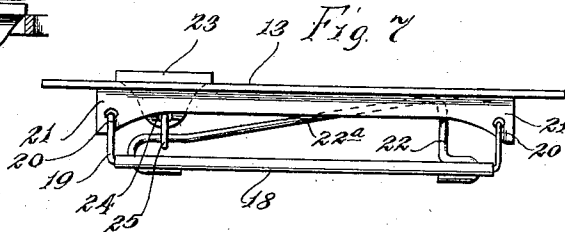
No. 884,023.

PATENTED APR. 7, 1908.

W. R. KNIGHTS.
HOT AIR REGISTER.

APPLICATION FILED AUG. 28, 1907.

2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM R. KNIGHTS, OF MINNEAPOLIS, MINNESOTA.

HOT-AIR REGISTER.

No. 884,023.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed August 28, 1907. Serial No. 390,461.

To all whom it may concern:

Be it known that I, WILLIAM R. KNIGHTS, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Hot-Air Registers; 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 particularly to hot air registers, and has for its object to provide an improved means for opening and closing the same.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view in elevation, looking at the outer face of the skeleton frame or body plate of a wall register. Fig. 2 is a vertical section taken on the line $x^2 x^2$ of Fig. 1 and showing the improved register applied in working position. Fig. 3 is a fragmentary perspective view, illustrating the action of the so-called "cam head" and coöperating cam rod, by means of which the gate or choke plate of the register may be moved to and from a closed position, at will. Fig. 4 is a fragmentary view in section, taken on the line $x^4 x^4$ of Fig. 1. Fig. 5 is a view in vertical section, with some parts shown in full, illustrating my invention applied to a floor register. Fig. 6 is a fragmentary view in perspective, illustrating the action of the cam head and cam rod of the construction illustrated in Fig. 5; and Fig. 7 is an end elevation of the register shown in Fig. 5.

Considering first the construction illustrated in Figs. 1 to 4 inclusive, the numeral 1 indicates the skeleton frame or face plate of the register, the edges of which are flanged and adapted to closely fit and to be suitably secured to the wall 2. This frame or face plate 1 is provided with a horizontally extended guide slot 3.

The numeral 4 indicates a hot air pipe which is extended along the wall 2 and may be either terminated at the opening 5 provided adjacent to the face plate 1, or may be extended further upward, as desired. The

opening 5 is adapted to be closed and opened up, at will, by means of a flat gate or choke plate 6, preferably of sheet metal, which, at its upper edge, is suitably hinged at 7 to the face plate 1 above the guide slot 3 thereof. A so-called "cam head" or block 8 is provided on its inner face with a perforated ear 9, and on its outer face with another perforated ear 10, which latter projects through and works in the guide slot 3, so that said cam head 8 is free to slide horizontally along the inner side of the slot 3. A suitable hand-piece 11 is shown as pivotally attached to the projecting portion of the ear 10. A cam rod 12, at its ends, is loosely pivoted to the gate 6, so that it is free for lateral hinge-like movements, and this cam rod 12 is provided with an oblique cam acting body portion 12^a that is passed through the eye of the ear 9 of the cam head. As shown, the eccentricity of the cam section 12^a increases in a direction from the right hand end toward the left hand end of the said cam rod, directions being taken with respect to Fig. 1.

With this construction, when the cam head 8 is moved to its extreme position at the right, as shown in Fig. 1, the gate or choke plate 6 will be drawn downward and held in a closed position, as shown by full lines in Fig. 2, in which position the cam rod turns approximately into a vertical plane, so that it will clear the inner surface of the skeleton face plate 1. When, however, the cam head 8 is moved to or approximately to its extreme position at the left, the camming action thereof on the cam rod will force the gate or choke plate 6 into an open position, indicated by dotted lines in Fig. 2. Of course, said gate or choke plate may be set in any intermediate position by moving the cam head 8 into an intermediate position.

Directing attention now to the floor register illustrated in Figs. 5, 6 and 7, the numeral 13 indicates a skeleton face plate or frame of the register, the same, as in the previous instance, having a transverse guide slot 14. This register covers an opening 15 in the floor 16, and an air pipe 17 communicates with said opening 15.

The numeral 18 indicates the gate or choke plate which is hinged to the skeleton face plate 13. As shown, this hinge connection is made by a bail 19 having hooked ends 20 that are passed through suitable perforations in a depending flange 21 of the face plate 13, and to the transverse body portion of which

one edge of the said gate or choke plate 18 is loosely pivoted. In this construction also, a cam rod 22 is loosely hinged or connected to the gate or choke plate 18 and is provided
5 with an oblique section 22^a. The cam head 23 in this construction is arranged to slide on the upper surface of the skeleton face plate 13 and is provided with a depending ear 24 that works in the guide slot 14 thereof; and a ring
10 25 which is passed through the depending end of said ear 24 works with a camming action on the oblique portion 22^a of the said rod 22. The operation of this device is very similar to that of the device previously described,
15 but in this arrangement the cam head 23 is exposed where it may be directly engaged by the foot and thereby slid from one end to the other of the guide slot 14.

The device described is of extremely small
20 cost and at the same time is highly efficient for the purposes had in view.

The device above described, while especially designed for application to hot air registers may, of course, also be applied to cold
25 air registers.

The term "skeleton face plate or frame" is herein used in a broad sense to include any

kind of a plate or frame so constructed that the air may pass therethrough or through the air passage in the wall or floor. 30

What I claim is:

1. In a register of the kind described, the combination with a skeleton face plate and a gate hinged thereto, of a cam attached to said gate, and a head slidably mounted on
35 said face plate and having a connection operating on the cam on said gate to open and close the same, under sliding movements of said head, substantially as described.

2. In a register of the kind described, the
40 combination with a skeleton face plate and a gate hinged thereto, of a cam rod connected to said gate with freedom for lateral swinging movements, and a cam head slidably mounted on said face plate and having a cam acting
45 connection with said cam rod, substantially as described.

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

WILLIAM R. KNIGHTS.

Witnesses:

F. D. MERCHANT
H. D. KILGORE.