No. 705,202. Patented July 22, 1902.

J. BUCKMAN.

HOT AIR REGISTER.

(Application filed Mar. 18, 1902.)

(No Model.)

Fig. 1.

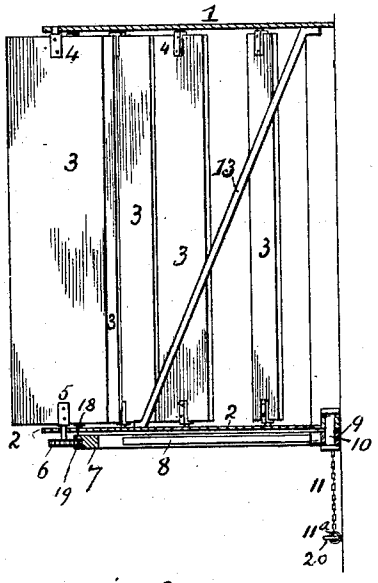


Fig. 4

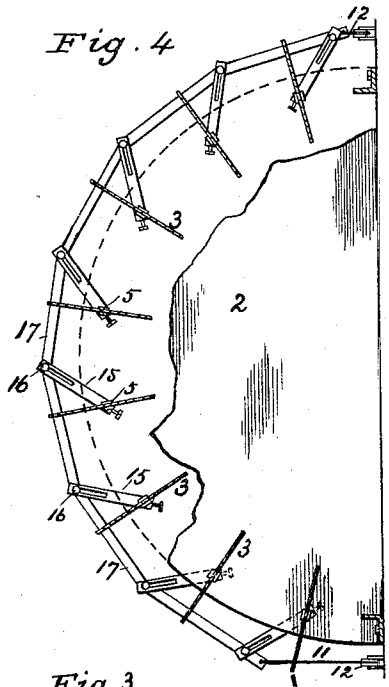


Fig. 2.

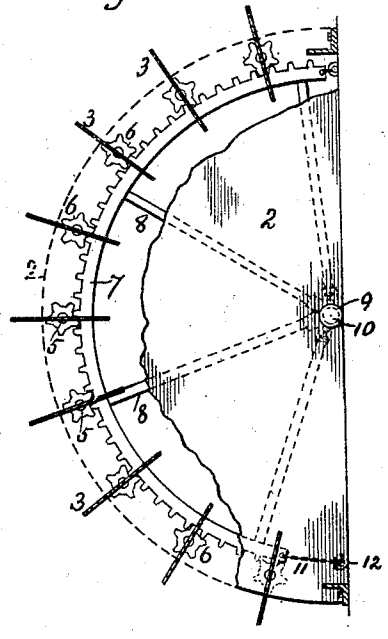
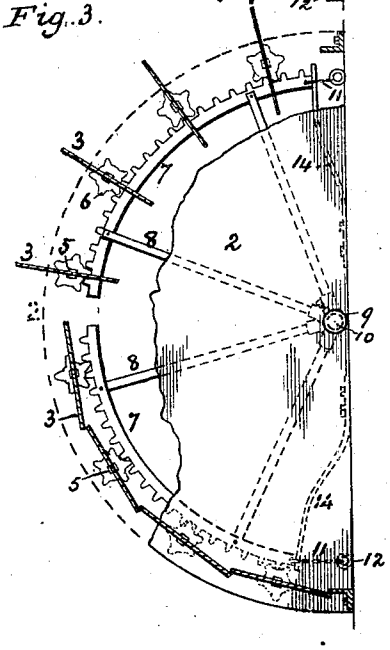


Fig. 3.



WITNESSES

R. H. Storm.

J. J. Masson

INVENTOR

John Buckman

by E. E. Masson,

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN BUCKMAN, OF ST. CLOUD, MINNESOTA.

HOT-AIR REGISTER.

SPECIFICATION forming part of Letters Patent No. 705,202, dated July 22, 1902.

Application filed March 18, 1902. Serial No. 98,789. (No model.)

To all whom it may concern:

Be it known that I, JOHN BUCKMAN, a citizen of the United States, residing at St. Cloud, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Hot-Air Registers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to hot-air registers used to control the admission of air mainly into large rooms or halls or school-rooms to either heat or ventilate them; and the objects of my invention are to conduct the air into said rooms through registers having a series of slats or shutters pivoted around the periphery of a semicylindrical frame, between which slats the current of air is directed by said shutters in as many radial directions as there are shutters, so that even if only one register is used in a room all the portions of said room will be equally well heated or ventilated and the same temperature existing in all parts of the room there will be less danger of discommodating the occupants. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section of a register constructed in accordance with my invention. Fig. 2 is a horizontal section of the same with the bottom plate partly broken away, showing the shutters open and the operating-rack in engagement with a pinion mounted upon the pintle of each shutter. Fig. 3 is a horizontal section of a half-cylindrical register, showing the bottom plate partly broken away and having as a modification the operating-rack in two halves, one half of the shutters being shown open and the other half closed, each rack being partly controlled by a spring. Fig. 4 is a horizontal section of a half-cylindrical register having as another modification each one of the shutters controlled by a slotted crank-arm connected to linked rods acting as a chain.

In said drawings numerals 1 and 2 represent, respectively, the top and the bottom plates of the frame of the register. The outer edge of said plates is convex. It is shown as half-circular, as it is believed to be the best form; but other forms closely approaching the half-circle may be used. Between the plates 1 and 2 are vertically retained a series of metal slats or shutters 3, each one provided at its top with a pintle 4 and at its bottom with a pintle 5, preferably about half-way of the width of said shutters. Said pintles are preferably forked (as a clothes-pin) to straddle the shutters, and their outer ends are received in perforations made in the half-circular row at a very short distance from the curved edge of the plates 1 and 2. The shutters 3 are of such width as to partly overlap each other when closed; but when open they stand radially to the center of the register, and therefore all of them are pointing in different directions, so that even if there is only one register in the room and it is placed about the middle of the length of one of its walls all parts in said room will be equally well heated or ventilated, particularly if the air issues from the register in a rapid current, propelled by a fan. Convex registers of this construction are found to give much more satisfactory results in practice than the ordinary flat-face registers commonly in use.

Various means can be used to open and shut the slats or shutters. As shown in Figs. 1, 2, and 3, each pintle has secured thereto a pinion 6 under the bottom plate 2 of the frame. To give a half-revolution to each pinion, in Figs. 1 and 2 a segmental rack 7, somewhat shorter than a half-circle, is placed under the plate 2, so that its peripheral cogs mesh with each pinion. Said rack 7 is provided with radial arms 8, extended to the hub 9, and said hub receives a pintle 10, projecting from the bottom of the plate 2, adjacent to its inner edge. The periphery of the rack has a top flange 18 and a bottom flange 19 to loosely embrace the top and the bottom of each pinion to insure the meshing of the parts. To pull the rack endwise toward either side of the register, a cord or chain 11 has one end secured to each end of the rack. Said chain is made to pass through an eye or over a pulley 12, suitably secured or mounted upon the frame of the register or upon the wall alongside of it, from which it is pending down to any desired location. The lower end of the chain is generally provided with a ring 11^a for a handle, and by pulling either chain the shutters of the register are turned open or closed. As the register is sometimes of

large size, its lower plate is shown in Fig. 1 supported by a brace 13 in an inclined position within the register, the lower end of said brace being secured to the bottom plate and its upper end to the top plate, or it may be secured to the frame.

In Fig. 3 the shutters 3 are provided with a pintle 5 and pinion 6; but the rack 7 is divided into two halves, each half provided with two radial arms 8 and a hub 9 and both hubs mounted one upon the other upon a pintle 10. Each rack is normally swung inwardly by a flat spring 14, pressing against the outer end of the rack and closing the shutters, as shown in the lower half of said figure; but to the outer end of each rack is also attached one end of a cord or chain 11, by which the rack can be drawn toward the inner face of the register. Said chain is made to pass through an eye 12 and down to any desired location, where its ring or handle may be secured to a nail or peg 20, secured to the wall, so that the shutter will stand radially open, as in the upper half of Fig. 3. This construction allows either half or the whole of the register to be open or closed or more air to be directed toward one side, if desired.

In Fig. 4 the bottom pintle 5 has secured thereto a crank-arm 15. Each crank-arm has its outer end provided with a slot, through which passes a pin or screw 16, which serves as a pivot-hinge for linked rods 17, which act as a chain to operate all the rods and crank-arms. To the outer end of the outer rods 17 is attached a cord or chain 11, which passes around a pulley 12, suitably secured or mounted upon the frame of the register, from which it is pending down to any desired location from which it can be operated. In either construction the register is to be bolted or hooked to the flue-frame or otherwise secured to its supporting-wall.

Having now fully described my invention, I claim—

1. A register consisting of a frame having a horizontal upper and lower plate having a convex edge, a series of shutters pivotally retained by said plates alongside of their convex edge, and means to partly rotate said shutters, substantially as described.

2. A register consisting of a frame, the lower plate of which has a convex edge, a series of shutters pivotally retained by said plate alongside of its convex edge, pinions mounted upon the pivot of said shutters and a rack in engagement with said pinions, substantially as described.

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

JOHN BUCKMAN.

Witnesses:
ANDREW C. ROBERTSON,
LUKE E. BESSETTE.