(No Model.)

J. W. JOHNSON.

HOT AIR REGISTER.

No. 411,990. Patented Oct. 1, 1889.

Fig. 1.

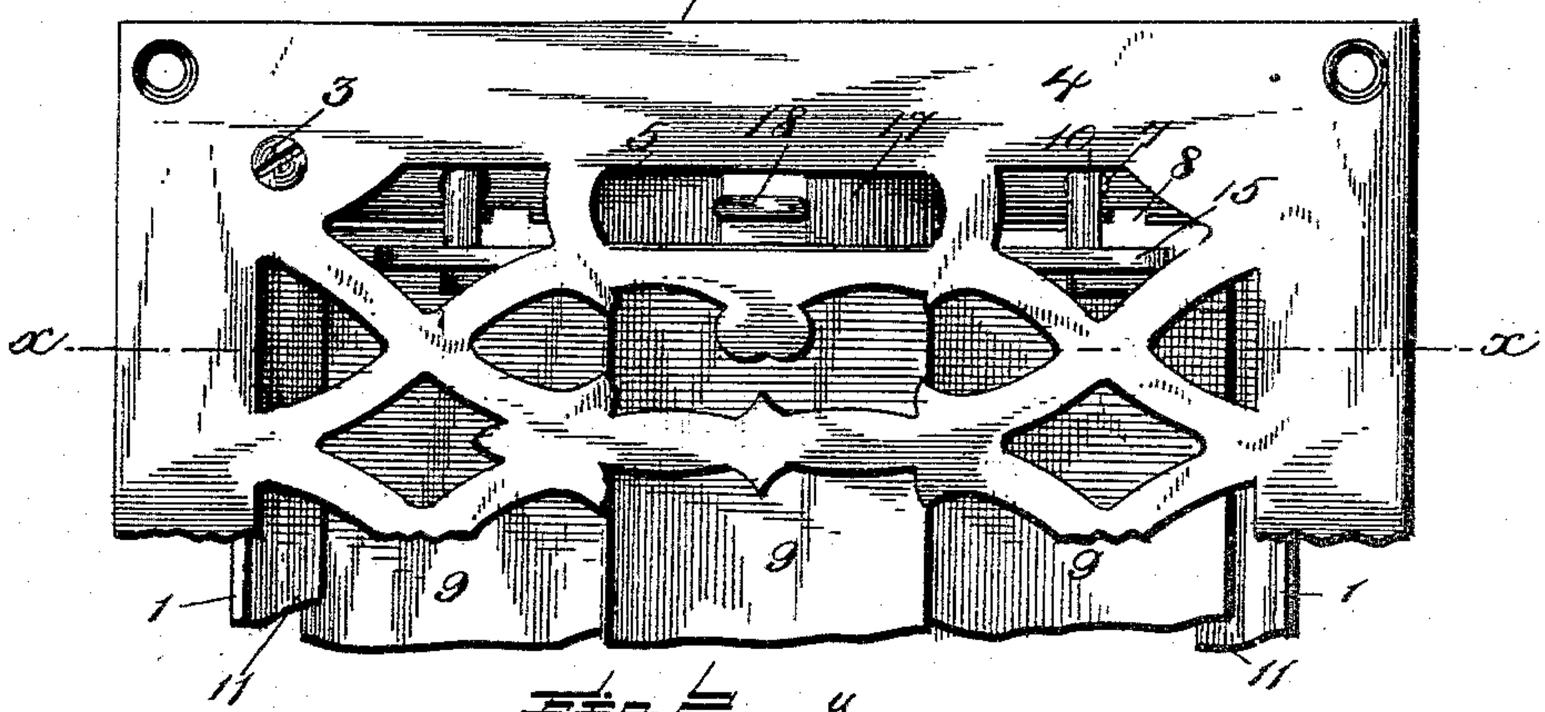

Fig. 2.

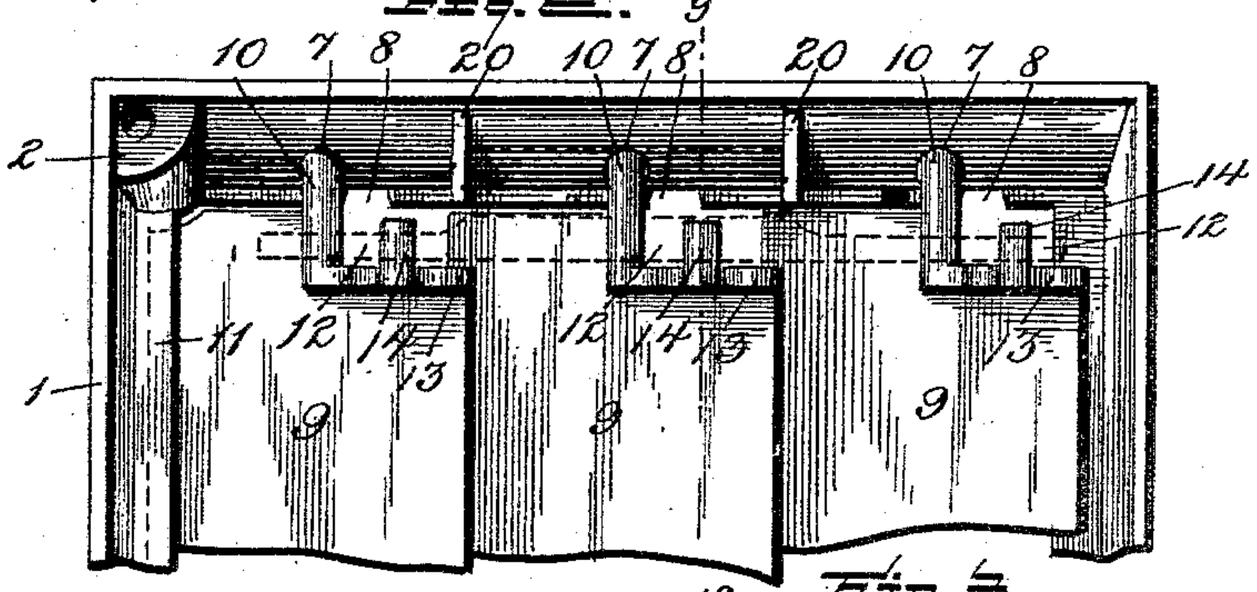

Fig. 3.

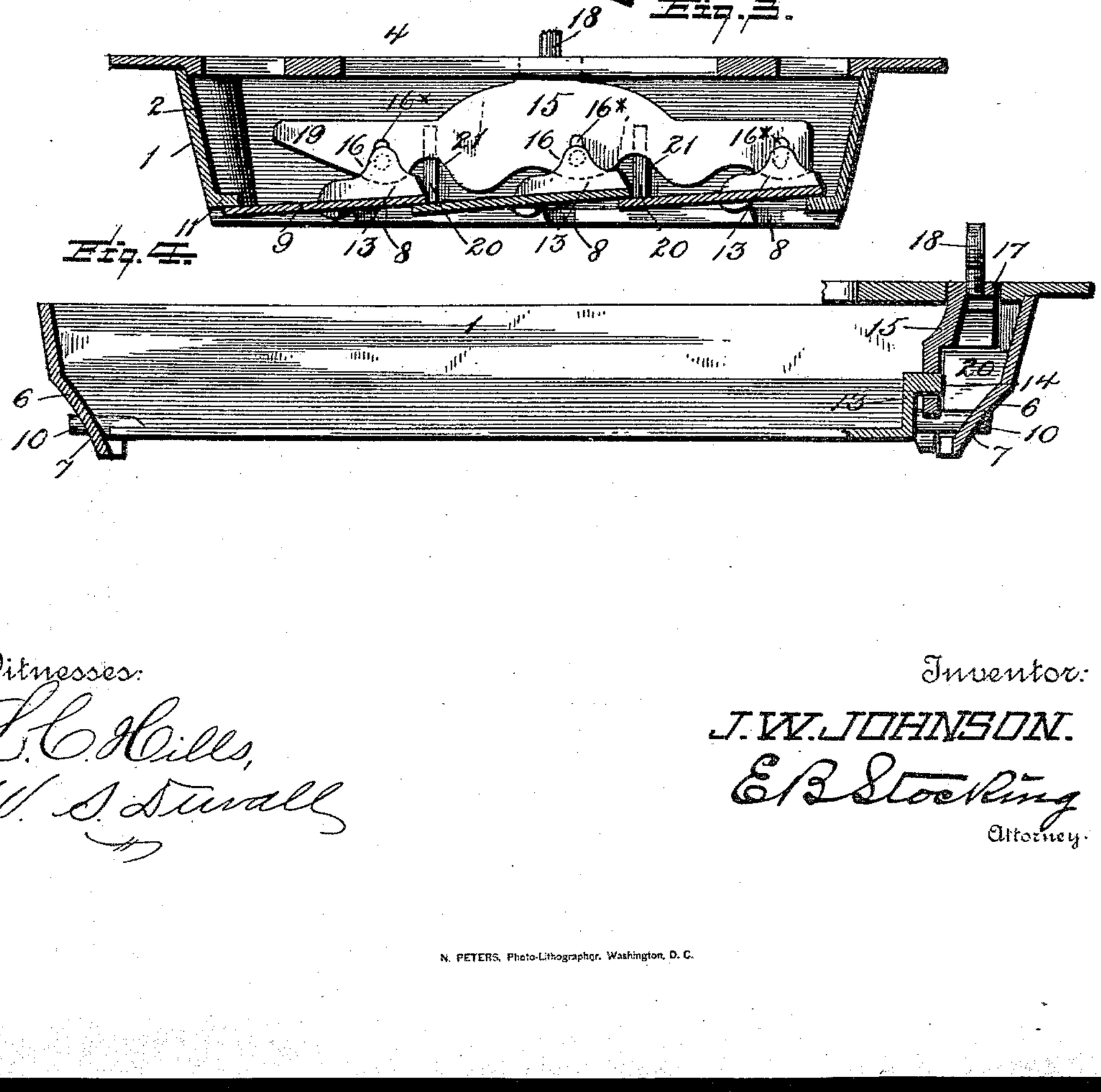

Fig. 4.

Witnesses:
L. C. Hills,
W. S. Turrell

Inventor:
J. W. JOHNSON.
E. B. Stocking
Attorney.

UNITED STATES PATENT OFFICE.

JOSEPH W. JOHNSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE PHILADELPHIA HARDWARE AND MALLEABLE IRON WORKS, OF SAME PLACE.

HOT-AIR REGISTER.

SPECIFICATION forming part of Letters Patent No. 411,990, dated October 1, 1889.

Application filed December 17, 1888. Serial No. 293,793. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. JOHNSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, State of Pennsylvania, 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.

This invention has relation to hot-air registers, and more particularly to the means employed for operating the several leaves for controlling the heat emitted through the register; and among the objects in view are to simplify the construction by reducing the number of parts usually employed, thus effecting a saving in the manufacture, and also to render the construction more substantial and efficient.

The invention consists in connecting each of the leaves or shutters to a single pivotally-connected link and providing said link with a protruding lug or actuating device, whereby the number of parts usually employed for operating the shutters is reduced to a minimum—that is, a single device—which device is easily manufactured and placed in position and maintained in that position and against displacement without the use of screws or other extraneous fastening devices.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 represents a plan of the upper portion of a register constructed in accordance with my invention. Fig. 2 is a similar view with the perforated or scroll face-plate removed, the shutters being illustrated as closed. Fig. 3 is a transverse section on the line *x x* of Fig. 3, and Fig. 4 is longitudinal section on the line *y y* of Fig. 2.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 represents the register-frame, formed with the usually-flared side and end walls and having at two of its diagonally-opposite corners threaded perforated lugs 2, into which screws 3 take after passing through the face-plate 4, by which means the plate and frame are secured in position, said plate being perforated for the free passage of the hot air and formed with a transverse slot 5 near its upper end. The opposite end walls of the frame 1 are more abruptly inclined near their lower ends, as at 6, and each wall near its lower edge is provided with a series (in this instance three) of openings 7, and in the extreme edge of each of said walls and slightly to one side of the openings there is formed a series of recesses 8, the recesses agreeing in number with the openings.

9 represent the leaves or shutters of the register, which are of a length coincident with the distance from one end wall to the other of the frame 1, and are provided at each of their ends with trunnions 10, which project therefrom, and are of a size adapted to loosely fit the perforations or openings 7 and terminate just outside of said perforations.

The register herein illustrated is adapted for the accommodation of but three shutters; but it is apparent that any number may be accommodated by a corresponding enlargement of the proportions.

Each of the shutters of the register is inserted or assembled in the frame 1 in a similar manner as are the others, and therefore a description of the insertion of one shutter will suffice.

In placing the shutter in position within the frame 1 the shutter is introduced edgewise or slightly inclined, so that the end of the shutter registers with and is passed into the recess 8 adjacent thereto, and at the same time that it is inserted in the recess the trunnion at that end of the shutter is passed into the opening 7, formed for its reception, and it then remains to simply insert the opposite trunnion in the opposite opening 7. The shutter is now moved longitudinally to the rear and revolved partly around until, as shown at the left of Fig. 2, it abuts against the flange 11, formed on the lower edges of the side walls of the frame 1. The shutter just inserted, which we will assume to be the one at the left, will now form a stop for the shutter immediately to its right, and so on

throughout the series. From this it is apparent that the shutters are pivotally mounted in the frame 1 without the use of screws, and that the frame and shutter may be simply and easily cast and assembled with no hand-work whatever.

At one end of each of the shutters and to one side of its trunnion there is formed a recess 12, the edge of which is provided with an end wall or flange 13, formed at a right angle to the shutter and provided with a short lug 14, projecting outwardly.

15 represents a transverse link having depending or laterally-projecting lugs 16, having elongated slots 16*, each adapted to take over one of the short lugs 14, formed on the shutters, and thus loosely connect the same. A curved flange 17 surmounts the link 15, and from the same there projects outwardly an operating-lug 18 of a length sufficient to project through the elongated slot 5, formed in the face-plate 2. The link 15 is also provided with a longitudinally-projecting abutting or stop arm 19, designed to come into contact with the side wall of the frame 1, and thereby prevent the further partial rotation of the shutters.

The link 15 is held loosely and removably in position with relation to the shutters by inwardly-projecting flanges 20, formed on the inner surface of that end wall next the link. By this construction it is apparent that by oscillating or moving the link to the left, as illustrated, the shutters will be partially rotated, and consequently opened for the passage of warm air. By a reverse movement it is also apparent that the register will be closed.

It will be noticed that intermediate the openings 16*, formed in the link 15, there are formed on the lower edge of the link inwardly-disposed recesses, which recesses occur opposite the lateral flanges 20, formed on the end wall of the plate 1. The object of these recesses is to permit of the introduction and withdrawal of said link, which is accomplished in the following manner: the link is introduced in a slanting position, so that the recesses 21 receive the flanges 20. When in this position, the openings in the link are directly opposite the short lugs 14 of the shutters, and it only remains to bring the link to a vertical position, whereby the lugs are inserted into said openings. To withdraw the link, it is only necessary to reverse the above operation.

From the above description it is obvious that the parts may be assembled with great facility, that no screws or other extraneous devices are necessary to their operation, and that each of the parts may be easily and cheaply cast and assembled, and this without any hand-work except that necessary to the assemblage of the parts, whereby a great saving of time and labor is accomplished.

Having described my invention and its operation, what I claim is—

1. In a hot-air register, the combination, with a frame having opposite perforations in its end walls and inwardly-projecting flanges intermediate its sides, of shutters having trunnions mounted in the perforations and provided with short lugs at one of their ends, and a link perforated for and mounted on the short lugs, guided by the flanges, and formed with recesses intermediate its perforations, substantially as specified.

2. In a hot-air register, a frame having inclined end walls, opposite perforations formed therein, and having recesses formed in the lower edge of one of the walls adjacent to each of the perforations therein, in combination with shutters having opposite end trunnions mounted in the perforations, substantially as specified.

3. The frame 1, having the inclined end walls 6, perforated, as at 7, and recessed, as at 8, in combination with the shutters 9, having the trunnions 10, inserted in the recesses, and the short lugs 14, and the link 15, perforated, as at 16*, having the intermediate recesses 21 and lug 19, substantially as specified.

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

JOSEPH W. JOHNSON.

Witnesses:

WM. H. KENNEDY,

JOHN H. B. TAYLOR, Jr.