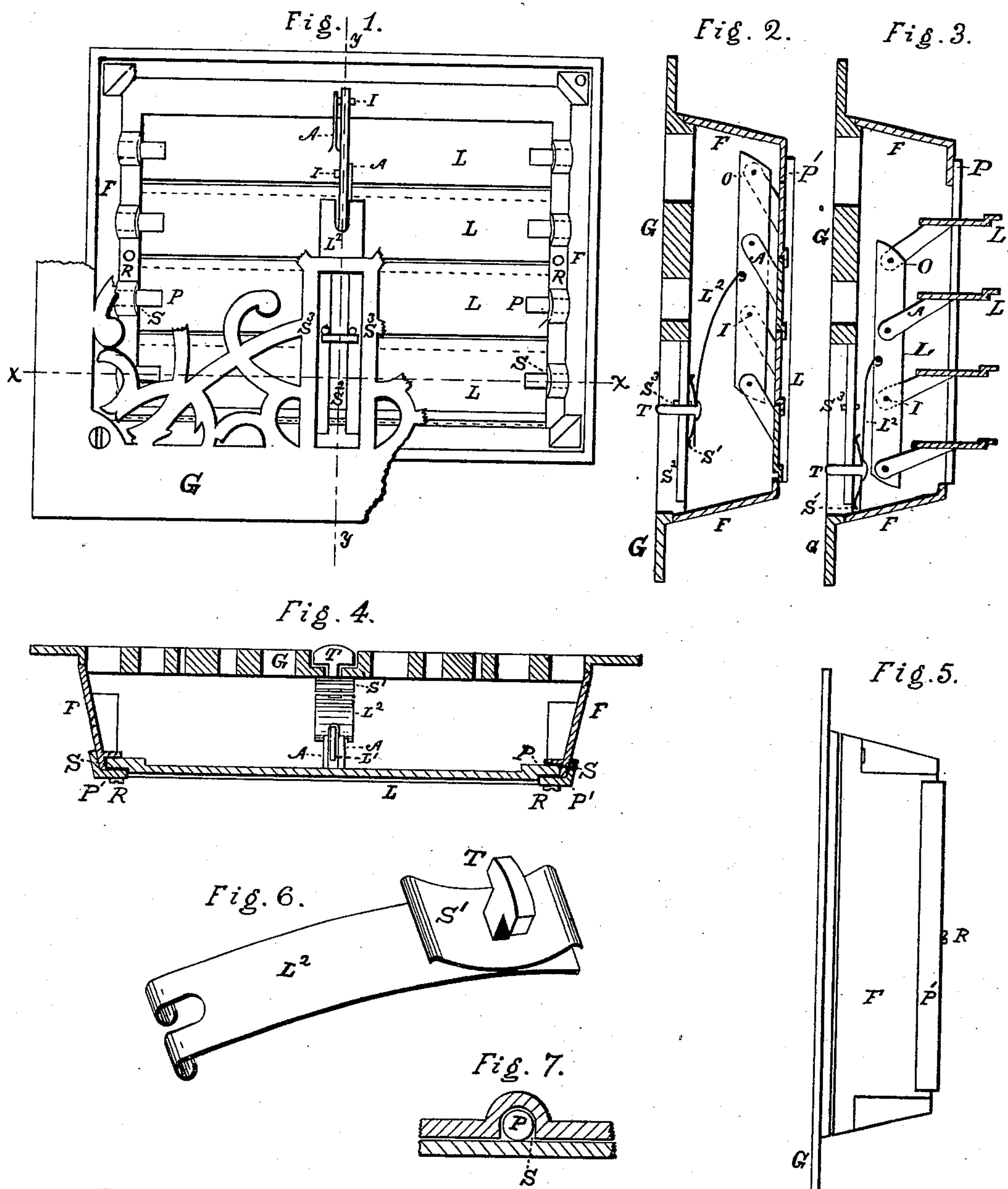


N. K. JOYCE.  
Air-Register.

No. 197,476.

Patented Nov. 27, 1877.



Witnesses:

J. B. Davenport,  
R. S. Hallock.

Inventor:

Norman K. Joyce



# UNITED STATES PATENT OFFICE.

NORMA K. JOYCE, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN AIR-REGISTERS.

Specification forming part of Letters Patent No. **197,476**, dated November 27, 1877; application filed August 20, 1877.

*To all whom it may concern:*

Be it known that I, NORMA K. JOYCE, of No. 513 Green avenue, in the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Air-Registers, which improvement is fully set forth in the following specification and accompanying drawings, forming a part thereof.

My invention relates to the slide for operating and holding the leaves of the register, and to the method of securing the fans or leaves and their pivots in relation to the frame of the register.

This invention consists, first, in the combination of devices for operating and holding the leaves of an air-register; second, in the combination of the same with the leaves or fans and the devices for directly operating and controlling the fans of an air-register; and, third, in the devices employed for securing the leaves in their proper positions efficiently and cheaply, so that they will readily turn as required, all as set forth in the several clauses of claims forming a part of this specification.

Figure 1 is a top view, showing only about one-quarter of the reticulated front plate, the rest being removed to show the interior. Fig. 2 is a vertical sectional view cut on the line *y y*, and showing the leaves closed. Fig. 3 is the same view, but showing the positions of the slide and its spring when the leaves are open. Fig. 4 is a vertical sectional view on the line *x x*, perpendicular to *y y*. Fig. 5 is a side or end view, showing the piece which holds the pivots in their sockets in the frame. Fig. 6 is an isometrical view of the thumb-piece, leaf-spring, and slide-link for operating the leaves. Fig. 7 is a detail cross-sectional view of the leaf-pivot, socket, and detaining-plate.

The register has the usual grating, *G*, and frame *F*. On the inner or under flange of the frame, at the two ends, the frame is provided with round pin-sockets *S S*, which may be either molded and cast or otherwise produced therein cheaply. The pivots *P P* are placed on or projected from the square-cut ends of the leaves, which are so adjusted as to form joints as close and tight as possible with the

edges of the angle or flange plates *P' P'*. These pivots *P P* are received in the sockets *S S*, and held there by the angle-plates *P' P'*, which are secured to the frame *F* by a screw or screws, *R*. A flat plate may be used to hold in the pivots effectually, being itself screwed or otherwise secured to the frame *F*; but I prefer the angle-plates *P' P'*, for the reason that they cover the ends of the pin-sockets *S S*, and so prevent dust from settling in and about them and the pins. These sockets might be made with their outer ends closed; but I prefer to save expense by casting or molding instead of cutting them by machinery or tools, and this I find can be more easily accomplished when they are open at both ends than when they are only open at one end.

The object of this plan of forming the sockets *S S* in the register-frame is to secure greater strength and also greater accuracy in the location of the pivots, and, consequently, in the fitting together of the leaves, than can be secured by placing the sockets elsewhere. If placed in the plate which holds the pivots in the sockets instead, the sockets could not be easily located with the necessary accuracy, since, in a piece of cast-metal of the required shape, there is a constant tendency to unequal shrinkage and warping; and to overcome the latter it would be necessary in some instances to force the plates by means of screws, so as to render them constantly liable to fracture, and thereby to material injury.

Another object of this method of pivoting the leaves is to permit the removing of any leaf, and also the insertion of any new leaf, from the back of the register without removing therefrom the reticulated front plate and the operating devices, as it is necessary to do in the case of all the registers hitherto known to me. Such difficulties my invention avoids.

The leaves of the register are connected and operated together by means of the bar or link *L<sup>1</sup>*, which is provided with holes *O O* to receive the pins *I I* on the arms *A A*, which project from and control the leaves or fans *L L*. To the link *L<sup>1</sup>* I attach a rigid link, *L<sup>2</sup>*, substantially in the manner shown in Figs. 2, 3, 4, and 6, to a pin, pins, or projections on the link *L<sup>1</sup>*.

The link *L<sup>2</sup>* is provided with a thumb-piece,



T, rigidly secured thereto, and shaped like the letter T. This thumb-piece passes through and also secures the leaf-spring S<sup>1</sup> to the link L<sup>2</sup>, and the spring S<sup>1</sup> has its two upward-projecting ends of such a height and shape as to come in contact with the under side of the plate G on each side of the slide-slot S<sup>2</sup>. The action of the spring S<sup>1</sup> is such as to hold the shoulders of the thumb-piece in contact with the slide-slot bearing, and to detain the fans L L in any desired position, at any angle at which they may have been left, against any ordinary pressure of air.

S<sup>3</sup> S<sup>3</sup> are stops for the thumb-piece T, and limit its motion at the point where the fans are closed by its movement, so that the thumb or toe of the boot may be inserted for the purpose of opening the register. Some other form of spring or springs might be substituted, which, being located on the link L<sup>2</sup> at the same point, would operate in a similar manner—as, for instance, a short spiral spring or springs, with a plate perforated in the center for the body or stock of the thumb-piece, up and down on which the plate might be capable of motion in performing its functions, being held and operated by the spring or springs.

The link L<sup>2</sup> is made stiff or rigid, and is a mere link. The spring S<sup>1</sup> is a mere spring, and does not perform any duty as a link. The link and the spring are connected together in fact, but in function as such they act independently, the one as a link only, the other as a spring only. Through their functions thus independently exercised they operate upon and control each other.

The object of this separation of functions is to give a better control of the leaves in registers of various sizes. If the link were also the spring in the case of the large sizes, when made limber enough for the purposes of the latter the part would be too limber for the proper performance of the functions of the link; and in the smaller sizes these difficulties would be likely to be reversed; but in my invention each may be graduated independently, to perform its own function alone in the first instance, and thereafter act upon each other. The spring S is made of tempered steel, and will retain its elasticity.

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

1. The rigid link L<sup>2</sup>, thumb-piece T, independent spring S<sup>1</sup>, and slide-slot S<sup>2</sup>, located in the face of an air-register, in combination, in the manner and for the purposes described.

2. The thumb-piece T, independent spring S<sup>1</sup>, and rigid link L<sup>2</sup>, in combination with the fans L and link L<sup>1</sup> of an air-register, arranged and operating as set forth.

3. The frame F, provided with the pin-sockets S S on the inner edges of two of its sides, the leaves L L, provided with the pivots P P, in combination with the angle-plates P' P', as shown and described.

NORMA K. JOYCE.

Witnesses:

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