2 Sheets—Sheet 1.

J. S. ROBINSON.

REED-ORGAN STOP-ACTIONS.

No. 185,699. Patented Dec. 26, 1876.

Fig. 1.

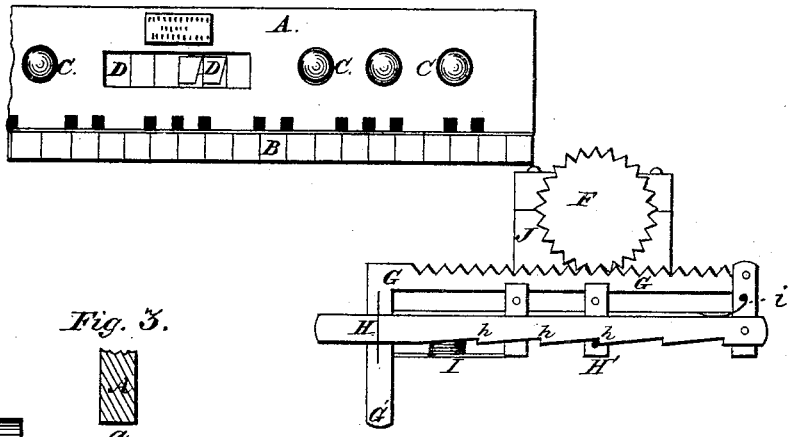


Fig. 3.

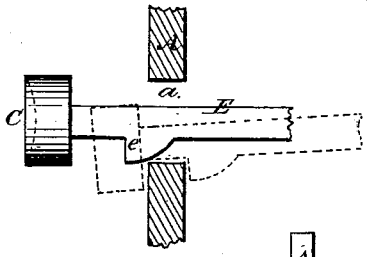
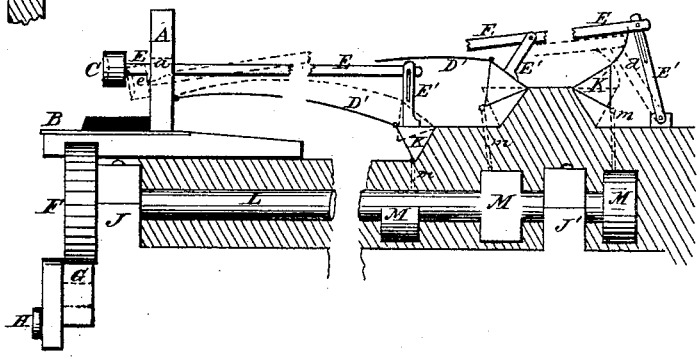


Fig. 2.



Witnesses:
Edwin James.
John R. Jones.

Inventor:
James S. Robinson.
per Thurgeon & Hallock.
Attorneys.

2 Sheets—Sheet 2.

J. S. ROBINSON.

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Fig. 4.

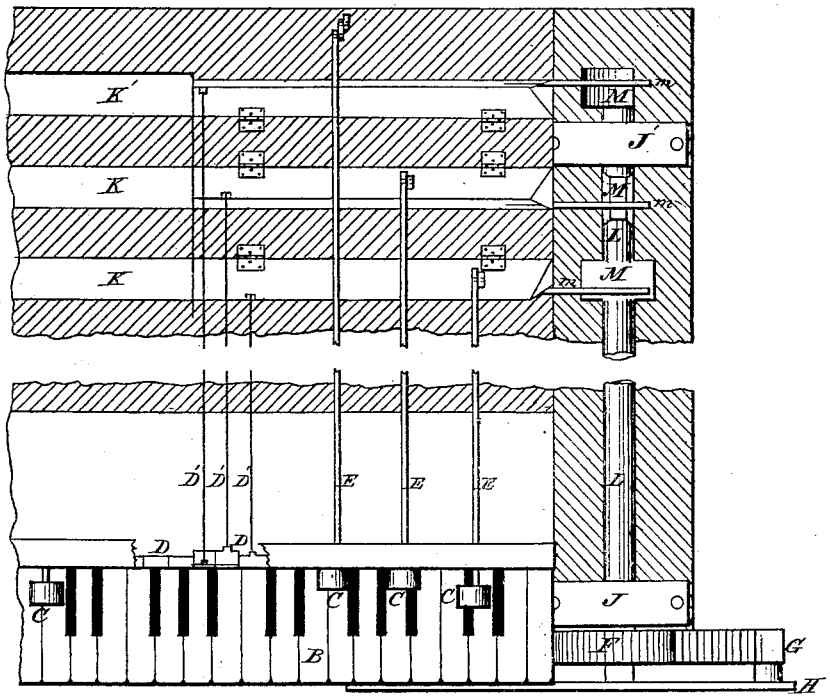
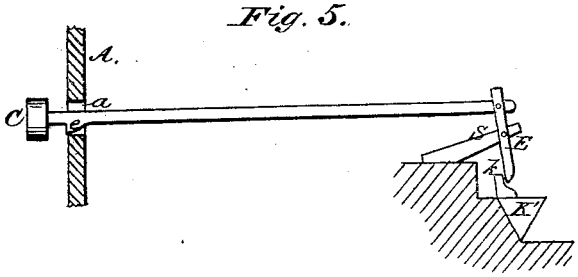


Fig. 5.



Witnesses:
Edwin James.
John H. Jones.

Inventor:
James S. Robinson.
per Burgess & Hallock
Attorneys.

UNITED STATES PATENT OFFICE.

JAMES S. ROBINSON, OF NORTH EAST, PENNSYLVANIA.

IMPROVEMENT IN REED-ORGAN STOP-ACTIONS.

Specification forming part of Letters Patent No. **185,699**, dated December 26, 1876; application filed April 17, 1876.

To all whom it may concern:

Be it known that I, JAMES S. ROBINSON, of North East, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Reed-Organs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to the construction of organ stop-actions; and consists, first, in a mode of operating the same by a knee-lever, (or treadle, if desired;) and, second, in operating the same by a system of finger-knobs, or handles, and connecting-levers.

My invention is shown in the accompanying drawings, of which there are two sheets, and which form a part of this specification, as follows:

Figure 1 is a front elevation of a portion of the key-board and name-board of a reed-organ, and of the knee-lever and part of my device for operating the mutes by said lever. Fig. 2 shows a transverse section of a knee-lever, name-board, mutes, and reed-board, and a front or elevation view of my various mute-actuating devices. Fig. 3 is a section of the name-board, and a detached view of a portion of one of my mute-actuating devices. Fig. 4 is a plan view of a part of an organ-action, and shows the relation of my devices to the same. Fig. 5 is a detached view of the finger-knob action, and shows its method of operation.

In order to enable others skilled in the art to which my invention relates, I present the following general description; and, first, as to my device for operating the stops of an organ by the action of a knee-lever: I am aware that the stops of an organ have been operated by knee-levers, (and by treadles, as my device may be operated.) But I believe in all such cases the action or operation has been such that as the actuating-lever is moved, and a mute is raised by its action, it remains raised until the actuating-lever is returned to its normal condition. By my device the mutes are raised when the actuating device is at certain points, and are lowered as the movement goes on, and perhaps again raised. In other words, one movement of the actuating device may produce sundry and various combinations of stop or mute action. For example, in the execution of music upon a reed-instrument containing numerous sets of reeds which are controlled by mutes, it is necessary, in order to produce certain effects of sound, that certain sets of reeds be operated together; and, further, that certain sets shall never operate together except when all act at once, as in "full organ." Hence, where this action is produced by one actuating device, to be operated by the knee or foot, it is greatly desirable that one movement of that device (I mean by one movement a movement to the full extent of its action) may or shall produce the various combinations above named. Thus, when moved one degree, certain mute or mutes shall be lifted, and their accompanying reeds will act or speak. By moving on farther others will be lifted, while some one may be dropped that was before up; and in going farther others are lifted, and perhaps one before dropped is again lifted, and others still are dropped, and so on during the whole distance of its motion, and the same on its return. To accomplish this object most perfectly, I place alongside of the ends of the mutes a shaft, L, on which are cams M, which, as the shaft revolves, operate upon arms *m*, extending from the mutes.

I am aware that a sliding bar with notched inclines corresponding with the surface of the cams might operate the arms *m* the same way; but I consider the revolving shaft with the cams M the best way to do it. This shaft is journaled at J J′, and is provided at its outer end with a pinion, F, which is operated by a rack, G. These parts are concealed behind the key-slip. The rack is operated by a knee piece, G′, which comes down below the body of the organ far enough to be operated by the knee of the operator.

The return movement of the rack is made by the spring I, and the rack is secured at any point by the ratchet-bar H and pawl-pin H′. This bar is kept down, so as to at all times engage the notches *h* with the pin H′,

by a spring, *i*, and when it is desired to release the notches the bar H is raised at its outer end by the knee of the operator. The shaft L may be provided with as many cams as desired, and these cams may be made so as to lift and retain the mute, connecting as long a time or as short a time in the revolution of the shaft as may be desired. This is regulated by the length of face of the cam, and the arrangement is made in accordance with the rules governing the action of the mutes, as above spoken of.

As illustrated in the drawings, the cams on the shaft are as follows: Beginning at the left and going to the right, the first raises its mute once in a revolution of the shaft, and only retains it raised for a short space. The next is a double cam, and raises, lowers, and again raises the mute, retaining it raised only for a short space each time. The third is a long cam. It raises its mute and retains it raised during nearly the whole revolution of the shaft. Thus such mutes are kept open as should operate together; and when, in the course of a revolution of the shaft, such mutes are raised as do not require certain other mutes in conjunction, those not required are closed. Hence, the player, by shoving with the knee the rack G to a certain point, effects a certain result. By going with it still farther he effects a different result, or by raising on the bar H he can return to an old or former result. So by a proper arrangement of cams on the shaft, and by setting the shaft at certain points, any and every result desired will be effected. To indicate these results or combinations to the eye of the player, I place in the name-board of the organ a series of tablets, D D D, &c., which are properly marked. When the mutes are closed these tablets stand flush; but when the mute is opened they recede, (or they can be made to advance.) Any movement, in fact, will do, so they change their position. Their mode of operation, as shown in the drawing, is as follows: They are hinged at the top to the name-board, and are provided at one end (either top or bottom, according to the direction of movement of the mute) with an arm, which arm is connected directly with the mute by a rod, D′. This arrangement of tablets and rods is applicable no matter how the mutes are operated, but are more desirable when the mutes are operated by mechanism other than pull-knobs, keys, &c., for in those cases the position is indicated by the knob or key itself.

My stop-actuating device above described can be so arranged as to be operated by a treadle, if desired.

I now come to the second part of my invention, which consists in devices for operating the mutes by finger-knobs. The objects aimed at are to provide mechanism whereby the mutes may be operated by finger-knobs placed along in front of the name-board, and that the action shall be direct, or nearly so, and accomplished with as few parts as possible, and that the movement of the knobs shall be as slight as possible; that the same knobs shall be used to put the stop on or off; and, further, that the operator shall not have to remove his hands from the key-board to operate the stops.

And first as to the knobs. These are lettered C C in the drawings, and are arranged along the name-board in such a position as to be touched by the ends of the operator's fingers. They are attached to the ends of levers or rods E, which operate through an opening, *a*, in the name-board A. The bars E are provided with a catch, *e*, and, when pushed in, it engages with the name-board, as seen fully by dotted lines in Fig. 3. Where the reed-board is placed directly in the rear of the key-board, or nearly so, as seen in Fig. 2, the rods or levers E connect directly with the mute by an arm, E′, except with those mutes, like K′, which open toward the key-board, in which case the arm E′ is attached to another point and jointed, forming a toggle-lever arrangement, and a rod, *d*, connects with the mute; or, in place of this device, that shown in Fig. 5 may be used, where a lever, E″, is interposed, which operates upon a lug, *h*, and thus opens the mute.

While the device operated by the knee will operate any of the stops, yet there are certain ones which, in practice, it will be found necessary to operate by the finger action—as, for example, the tremolo, for that effect may be wanted in connection with any set of reeds or combination of sets, and hence it must be so arranged that it may be put on at any place or time; and it may be desirable to use both modes of operating all the stops in the same organ.

I wish to call attention to the catch and let-off mechanism in the knee-push, and further describe the same.

H is a ratcheted bar, and is pivoted at the opposite end from the knee. It is pivoted to and moves with the rack, and its ratchets *h* engage with a stationary pin, H′. To release the ratchet and let the rack back the operator raises the bar by an upward movement of the knee. This arrangement of parts may be used on any knee-push.

Having thus, as I believe, fully described all the parts of my invention, what I wish to claim as new, and secure by Letters Patent, is as follows:

1. The combination of a knee or foot lever and a series of cams, M, arranged together upon one shaft or bar, to operate the stops or mutes of an organ, substantially as described, and for the purpose stated.

2. In combination with the mutes of an organ, the rotating shaft L and cams M, arranged thereon, substantially in the manner and for the purpose described.

3. In combination with the rotating shaft L and cams M, the rack and pinion F G, arranged to operate substantially as described.

4. In combination with the sliding frame G,

with knee-push G′, the jointed ratcheted bar H, when attached to and moving with said frame, substantially as described.

5. In combination with the rack and pinion F G and the stops of an organ, the ratchet-bar H, arranged to operate substantially as shown, and for the purpose specified.

6. In combination with the rack and pinion F G and actuating lever or arm G′, the spring I, for giving a return motion to the parts, substantially as described, and for the purpose specified.

7. The combination of the tablets D, hinged to and forming part of the name-board, and connecting-rods D′, with the mutes of an organ, when arranged to operate substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES S. ROBINSON.

Witnesses:

JNO. K. HALLOCK,

G. D. PRICE.