

J. A. SMITH.
 REED-ORGAN STOP-ACTION.

2 Sheets—Sheet 1.

No. 171,702.

Patented Jan. 4, 1876.

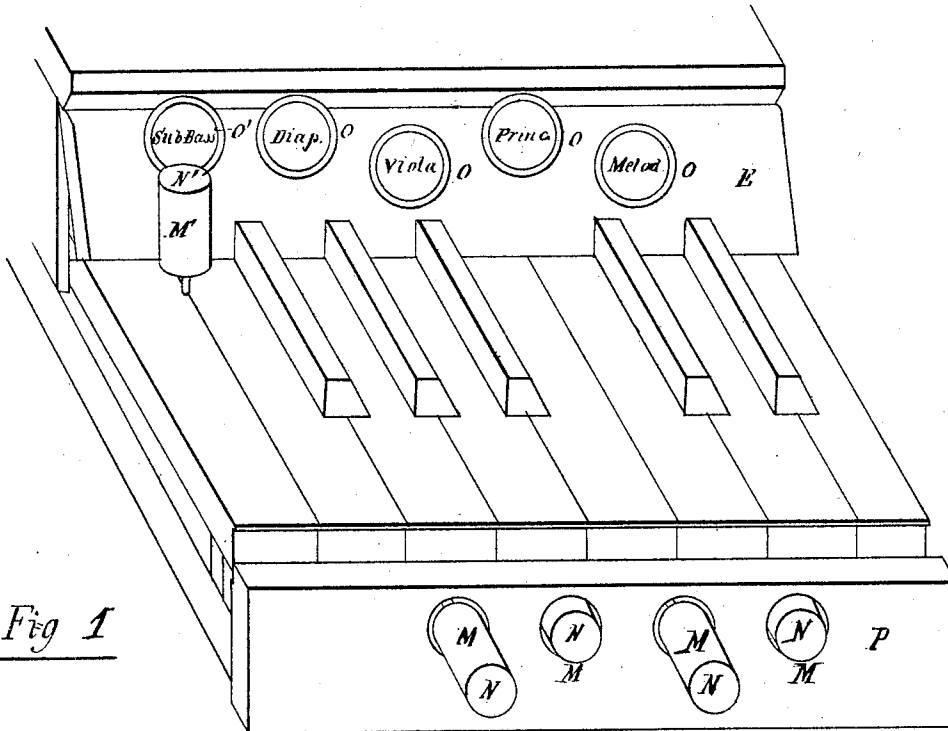


Fig 1

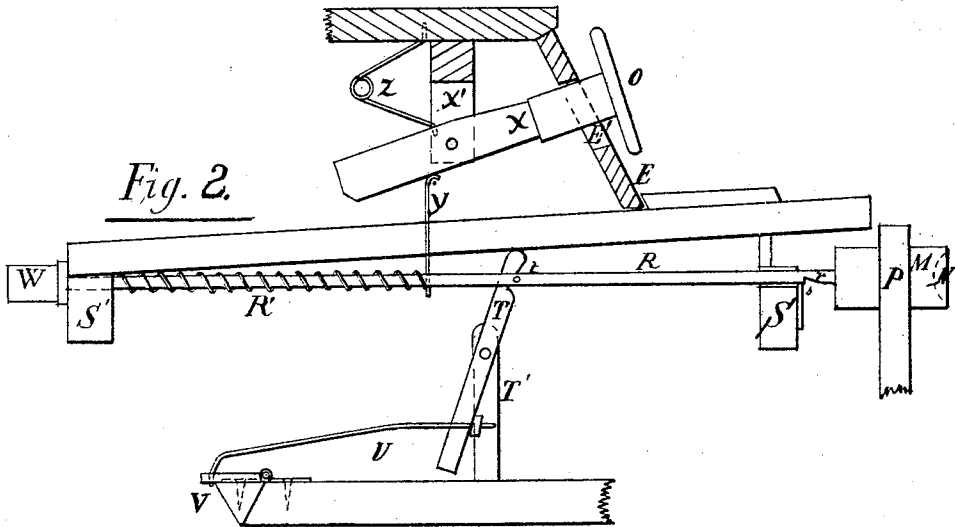


Fig. 2.

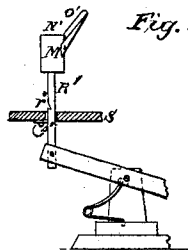


Fig. 3.

Witnesses

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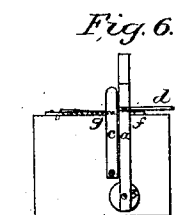
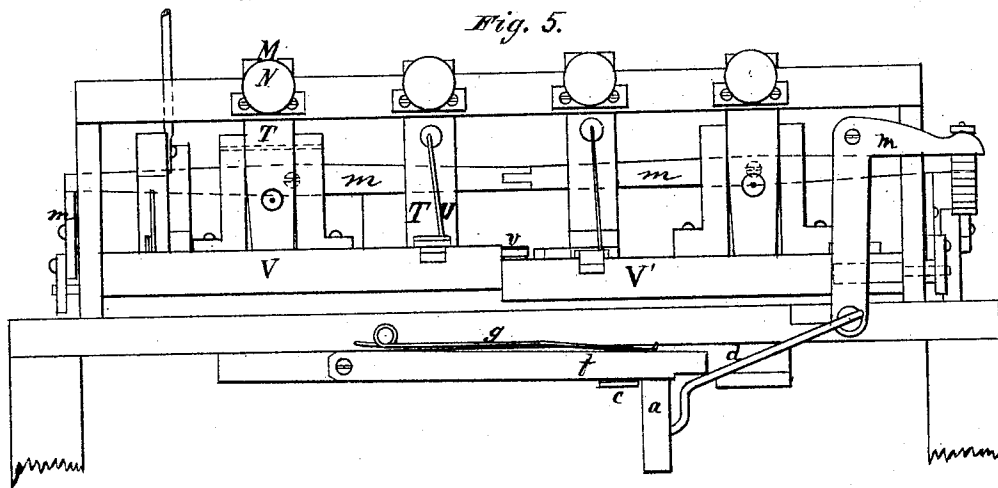
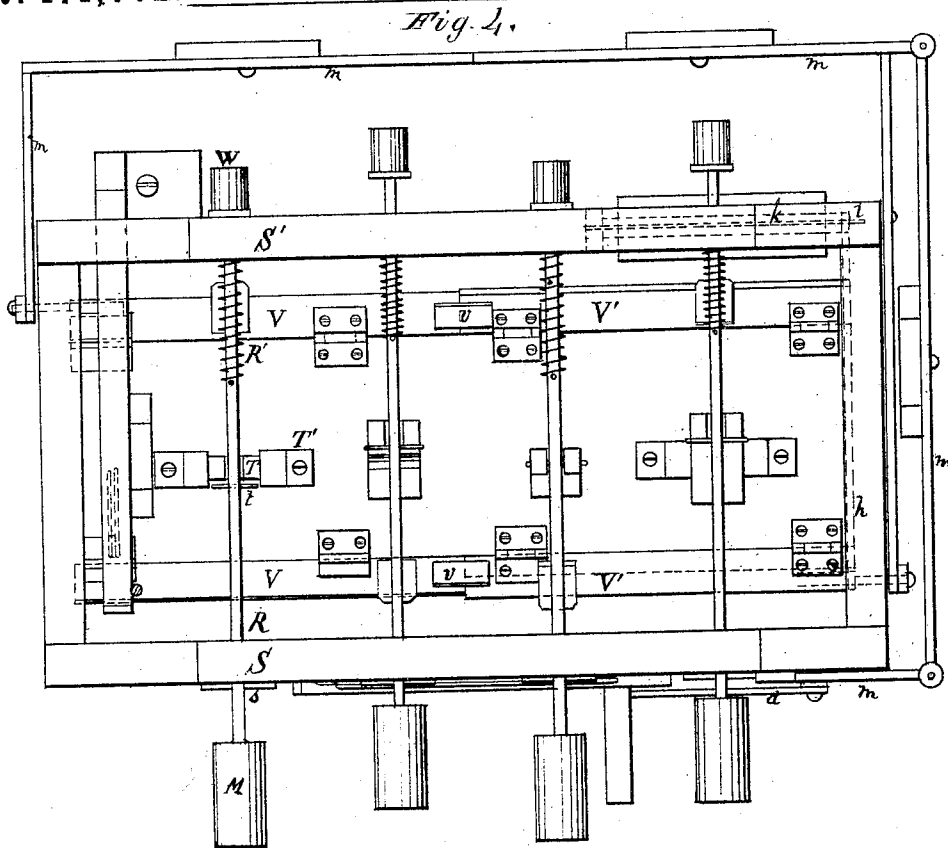
John A. Smith by
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UNITED STATES PATENT OFFICE.

JOHN A. SMITH, OF NORTH EAST, PENNSYLVANIA.

IMPROVEMENT IN REED-ORGAN STOP-ACTIONS.

Specification forming part of Letters Patent No. **171,702**, dated January 4, 1876; application filed July 21, 1874.

CASE A.

To all whom it may concern:

Be it known that I, JOHN A. SMITH, of North East, in the county of Erie and State of Pennsylvania, have invented an Improved Organ, of which the following is a specification:

My invention relates to the construction of organs; and consists in improvements in the construction of the stops, the stop-action, and also in the stop-registers.

My invention is illustrated in the accompanying drawing as follows, said drawings being on two sheets:

Figure 1 is a perspective view of the keyboard of an organ, and shows my mode of placing the stop keys and registers. Fig. 2 is a cross-section of the part shown in Fig. 1, and shows the construction and operation of the stop-action. Fig. 4 is a plan view of the stop-action of an organ, and Fig. 5 is a front elevation of the same. Fig. 6 is a plan view, showing my mode of constructing a knee-swell or full-organ knee-lever and its attachments. Fig. 1, which represents a portion of the keyboard with the name-board and key-slip, shows the outward arrangement and operation of my stop-keys and stop-registers.

Two methods or forms of construction are shown. M represents one form, and M' the other form. The first may be known as the horizontal, and the second as the perpendicular movement. M M represent the stop-keys, which are placed in the key-slip, and are operated by the thumb. Connected with each of the stop-keys is a register, O, which is placed in the name-board. When it is desired to put on a stop, the operator presses the thumb on the stop-key, and shoves it into the position seen in the right-hand key in Fig. 1. This puts on the stop, and it is indicated by the register O, marked "Melod.," dropping down. Thus the drawing, Fig. 1, shows the right and middle, marked, respectively, "Viola" and "Melod.," horizontal stops "on" and the other two "off." The perpendicular stop-key M' is operated by the finger. They are placed between the keys, and ranged along the front of the name-board. They carry their own register, and when the stop is on they are seen be-

low the other stops or registers, and when off they stand up in line with the others; the mode of indicating the position of the mute being, in either style of register, the same—viz., their relation to a line at right angles to their line of oscillation. As stated, the stops are put on by a pressure of the thumb or finger, as the case may be. To put the stop off, a similar movement of the thumb or finger is made. In neither the putting on or off of any of the stops is it necessary to move the hand from the key-board, or in any way interrupt the playing. Fig. 2 is a transverse section of the parts shown in Fig. 1, and shows the construction and operation of what I have denominated the "horizontal stop-action." The position of the parts shown is that existing when the stop is off. P is the key-slip, and M the stop-key operating through it. R is the rod, which passes from the key M through the catch-block S and guide-block S', and terminates in the bumper W. In this rod, near the catch-block S, is a notch, *r*, which engages with the catch *s* on the catch-block S. The rod R passes by (or through, if desired) a stop-lever, T, and at that point is placed a cross-bar, *t*, which engages with the lever T. At a convenient point on the rod R a bar, Y, is attached, which passes up between the keys, and engages with the register-lever X, at such a point as to leave the pivot X' between the bar Y and the register O. The lever X passes through a slot, E', in the name-board E, and to its outer end is attached the register O. The inner end of the lever X is kept depressed by the spring Z. This holds the register O up in line, as before mentioned. The stop-lever T is pivoted on the standard T', or in some other convenient manner, and the rod U connects it to the mute V.

The operation of these parts is as follows: The player, desiring to open the mute V or put on the stop, presses inward and a little downward the key M. This shoves back the rod R. The catch *r* engages with the catch *s*, and the rod is held in the new position. The rod R, in passing in, brings the cross-bar *t* against the lever T, and pushes it back, and by it the mute V has been thrown open. The

movement of the register has been simultaneous, for the bar *Y* has also been pushed against the inner end of the lever *X*, and thus tilted down the register *O* out of line, and thus it is indicated that the stop is on. To return these parts to their former position, or, in other words, to close the mute or put off the stop, all that is required is for the operator to sufficiently raise the thumb-key by a slight upward pressure of the thumb to disengage the catch *r s*. When this is done the coil-spring *R'* will return the parts to their former position. To facilitate the action of the thumb on the thumb-key in disengaging the catch, I make in the end of the key an indentation, *N*.

It will be observed that I have so arranged the movement of the register that it corresponds with the movement of the thumb-key—that is, when the stop is on the register is down, and when the stop goes off the register goes up. Therefore it is a perfectly natural movement for the player to slightly lift the thumb-key when he wishes to take off a stop, for in doing it he is apparently willing for the register to go up.

The perpendicular-acting stop key is shown in Fig. 3. This is composed of the key *M'*, with a register, *O'*, attached thereto. To this is connected the rod *R'*, with catch *r' s'*, and it communicates to the necessary levers, substantially as in the other case. The key is operated by the finger, it being placed by the name-board in such a position as to be easily operated.

Another part of my invention relates to the construction of the knee lever or swell. This part of my invention is seen in Fig. 6, which is a plan view from beneath. It is also seen in elevation in Fig. 5. It consists of the knee-lever *a*, pivot and bracing plate *b*, releasing-lever *c* and catch-bar *f*, spring *g*, and connecting-rod *d*. The lever *a* is of the ordinary form, but it is pivoted on a bracing-plate, *b*, which is a part of the lever. This prevents wrenching the lever at the pivot, and thus causes it to last much longer. To further prevent wrenching the connecting-rod *d* runs from the under side of the lever at a point near the knee, thus making the connecting-rod also a brace.

In connection with the lever *a* is a releasing-lever, *c*, which operates against the catch lever or bar *f*. This is operated by an upward

pressure of the knee, and when thus moved it releases the catch-bar *f* from its engagement with the lever *a*.

Another feature of my invention is to connect with the knee-lever *a* a system of levers, *m m m m m*, which pass around the works, and to which can be connected all of the mutes. These connections can be made directly or by connecting-levers, or by any device whatever, and at almost any point, so it is not too near a fulcrum to give the necessary motion. When thus connected to my system of levers a movement of the knee-lever *a* will actuate all the mutes at once, and thus produce the full organ effect. This system of levers can be seen in Fig. 4.

I believe I have herein fully described my invention, so that those skilled in the art of organ-making can construct one of my improved organs; therefore,

What I claim is as follows:

1. The vertically-oscillating stop-register *O* or *O'*, arranged immediately in front of the name-board, substantially as described and shown, to thereby indicate the position of the stop corresponding therewith.
2. The combination of the stop-key *M* with the catch *r s* and a spring, all arranged to operate substantially as and for the purposes set forth.
3. The combination of the key *M* and rod *R* with the register-lever *X*, or its equivalent, arranged substantially as shown, and for the purposes mentioned.
4. The construction of the knee-lever *a* with the bracing-plate *b*, as shown, and for the purposes mentioned.
5. The catch-lever *f*, in combination with the releasing-lever *c*, as shown, and for the purposes mentioned.
6. The register *O* and register lever *X*, in combination with the slotted name-board *E*, constructed and arranged as shown, and for the purposes mentioned.
7. The quadrangular set of levers *m m m m m*, in conjunction with the knee-lever *a*, all arranged to operate as shown, and for the purposes mentioned.

JOHN A. SMITH.

Witnesses:

JNO. K. HALLOCK,
E. R. BLOOD.