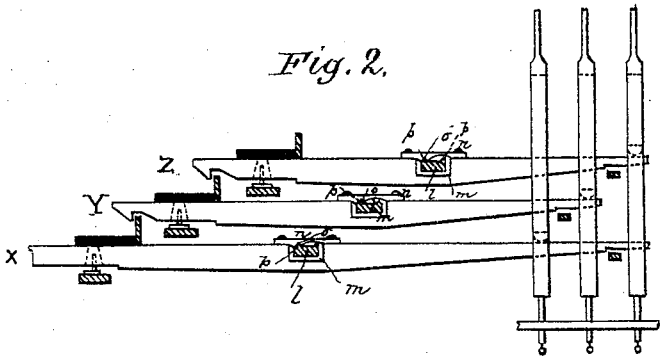
T. WINANS.

ORGANS.

No. 182,260. Patented Sept. 12, 1876.

Fig. 2.



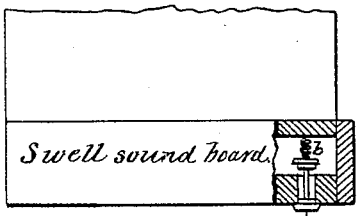
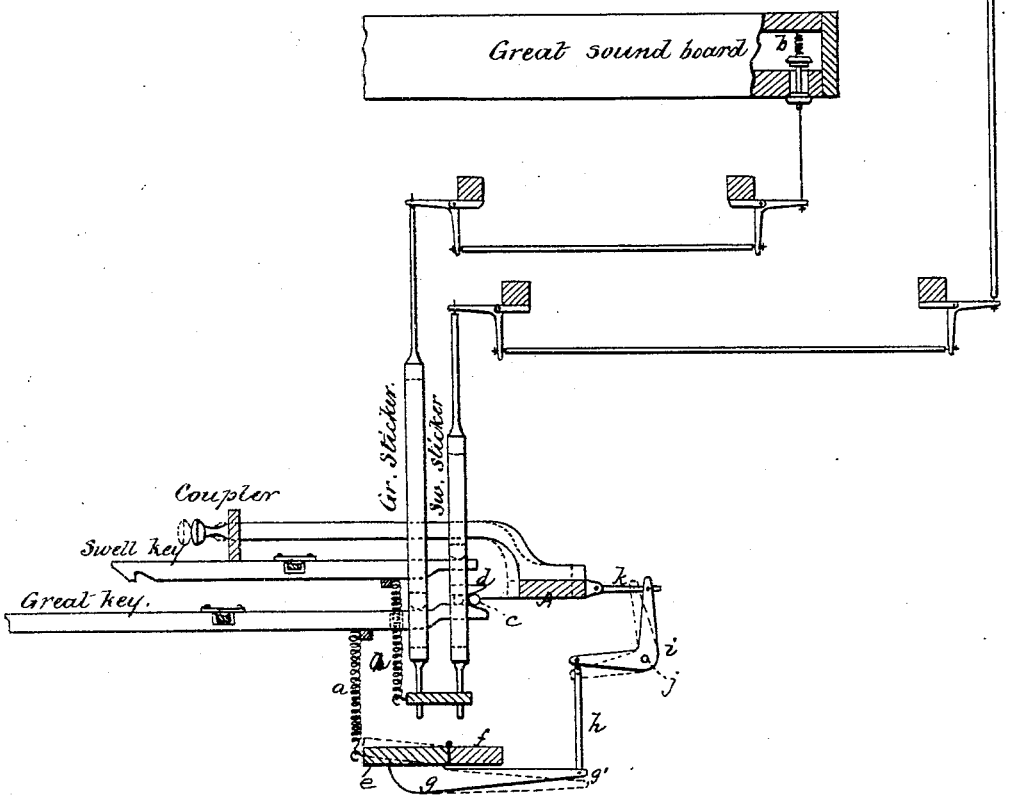


Fig. 1.



Witnesses:
Orrell A. Dick,
Harvey L. Page.

Inventor:
Thomas Winans
by attys Pollok & Bailey

UNITED STATES PATENT OFFICE.

THOMAS WINANS, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN ORGANS.

Specification forming part of Letters Patent No. **182,260**, dated September 12, 1876; application filed August 24, 1876.

To all whom it may concern:

Be it known that I, THOMAS WINANS, of Baltimore, Maryland, have invented certain new and useful Improvements in Organs, of which the following is a specification:

In another application for Letters Patent, now pending in the United States Patent Office, I have described an organ-action in which the resistance required to give the proper touch is divided between the valve and the key, the main resistance being at the key. I have also described the combination with such an action of couplers, which connect the several sub-actions at points intermediate between the key-resistance and valve-resistance, so that the added resistance due to the coupling shall be confined to the valve-resistance.

My present invention relates to an organ-action of this general character, and it is designed to equalize the touch under any and all conditions.

Under the arrangement first above named the act of coupling necessarily increases the resistance, and, although the resistance due to the coupling may, as I have stated, vary within small limits, yet there still must be an increase or decrease of resistance, according as the coupler is used or not. To attain, therefore, as far as practicable, perfect equality of touch under all conditions, I have conceived the idea of combining with a constant valve-resistance a variable key-resistance, connected with and operated by the coupler, so that it shall decrease in proportion as the valve-resistance by the act of coupling is increased. In this manner I can obtain an absolutely constant resistance by a method which possesses material advantages over the variable valve-resistance described in my Letters Patent No. 162,450, of April 20, 1875, in that the strain on the trackers and square is reduced, and the mechanism can be located directly under the keys and entirely out of the sound-board. There is thus more room, and the construction of the mechanism is much cheapened.

I have also made an improvement in supporting or pivoting the organ-keys, which consists in supporting them on a knife-edge, formed on or carried by a bar, which extends through the whole range or bank of keys. By pulling out this bar the keys of any particular rank can be removed for adjustment or any other purpose without disturbing the others.

The nature of my invention and the manner in which the same is or may be carried into effect will be understood by reference to the accompanying drawing, in which—

Figure 1 is a sectional elevation of so much of an organ-action as needed for the purposes of this specification. Fig. 2 is a like elevation of three ranks or tiers of keys on an enlarged scale.

The connection between the keys and the valves is established by mechanism which is fully described in my aforesaid pending application for Letters Patent. It therefore requires no particular description here.

The key-resistance is marked *a*, the valve-resistance *b*. When the great and the swell are coupled, the coupling-knobs *c* on the sliding coupler-bar A move forward and enter and fill the spaces in the swell-stickers between the rear ends of the great keys and the stop-pieces *d* above. Thus, when the great key is depressed, it will act not only on the great sticker, but also on the swell-sticker, and this without moving the swell-key, which remains at rest. When uncoupled, the great key has resistance of, say, six ounces—four and one-half at *a* and one and one-half at *b*. When coupled, there is added the resistance of the swell-valve—say, one and one-half ounce, making seven and one-half ounces in all. To compensate for this increase of resistance is one of the objects I have in view. To this end I hinge the strip *e*, to which the several great-key resistances are attached, to the stationary supporting-bar *f*, and to the under side of the strip *e* I make fast an arm, *g*, which is hinged at *g'* to an upright connecting-rod, *h*, whose upper end is pivoted to one arm of a bell-crank lever, *i*, moving on a fixed pivot, *j*. The other arm of the lever is connected to the coupler-bar A by a rod, *k*, jointed at one end to the lever, and at the other end to the bar.

When the coupler is in its normal position, indicated by the full lines in Fig. 1, then the key-resistance spring *a* is under full tension. When, however, the coupler is pulled forward

to the position indicated by dotted lines, in order to couple the great and the swell, then the hinged strip *e* is moved upward on its hinge, so as to relax the tension of the spring *a*, and consequently reduce the resistance. The parts are so proportioned and positioned that the reduction in key-resistance, as nearly as practicable, equals the addition in valve-resistance.

The above-described mechanism is one simple system of devices for effecting the object I have in view. It is manifest, however, that various arrangements of devices for effecting the same result may be employed.

The manner in which I support the keys is best shown in Fig. 2. The keys of each rank, X, Y, or Z, are supported by a single transverse bar, *l*, of proper size and strength. This bar passes through coinciding receivers or slots *m* formed in the keys, and is preferably in contact with metallic bridge-plates *n*—one for each key—which cover the recesses or slots in the keys, and are formed with indentations *o* to receive the knife-edge or rib *p* on the bar *l*. The bar is inserted from the side of the organ through the slots in the keys, and the latter are thus hung and supported on a knife-edge as a pivot. This arrangement possesses the advantages hereinbefore stated.

Each bar *l* has two knife-edges, as shown, located on the upper face of the bar and parallel with one another. One of these edges is for the white keys, and one for the black keys, which, being shorter than the white keys, require a different position of fulcrum.

By the term "resistance" in this specification I intend the device or instrumentality, such as a spring, which offers the needed resistance to the depression of the key, and serves to return the key to its normal position when relieved from pressure.

Having now described my improvements, and the manner in which the same are or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination, in an organ-action, of a constant valve-resistance and a key-resistance, automatically varied to accord with the increase or decrease of resistance due to coupling or uncoupling, substantially as set forth, whereby the sum of the resistances to be overcome is maintained the same under all circumstances.

2. In an organ-action in which the resistance is divided between the valve and key, as described, the combination, with said valves and keys, of couplers, connecting the sub-actions at points intermediate between the keys and valves, and connected with and arranged to operate the key-resistance at the times and in the manner substantially as set forth.

3. The combination, substantially as described, of the organ-keys and the transverse knife-edge bar, upon which said keys are supported and vibrate, substantially as set forth.

In testimony whereof I have hereunto signed my name this 11th day of August, A. D. 1876.

THOMAS WINANS.

Witnesses:

JOHN HENRY TILLEY,

EWELL A. DICK.