

J. C. BRIGGS.  
Spring for Organ Valves.

No. 229,370.

Patented June 29, 1880.

Fig. 1

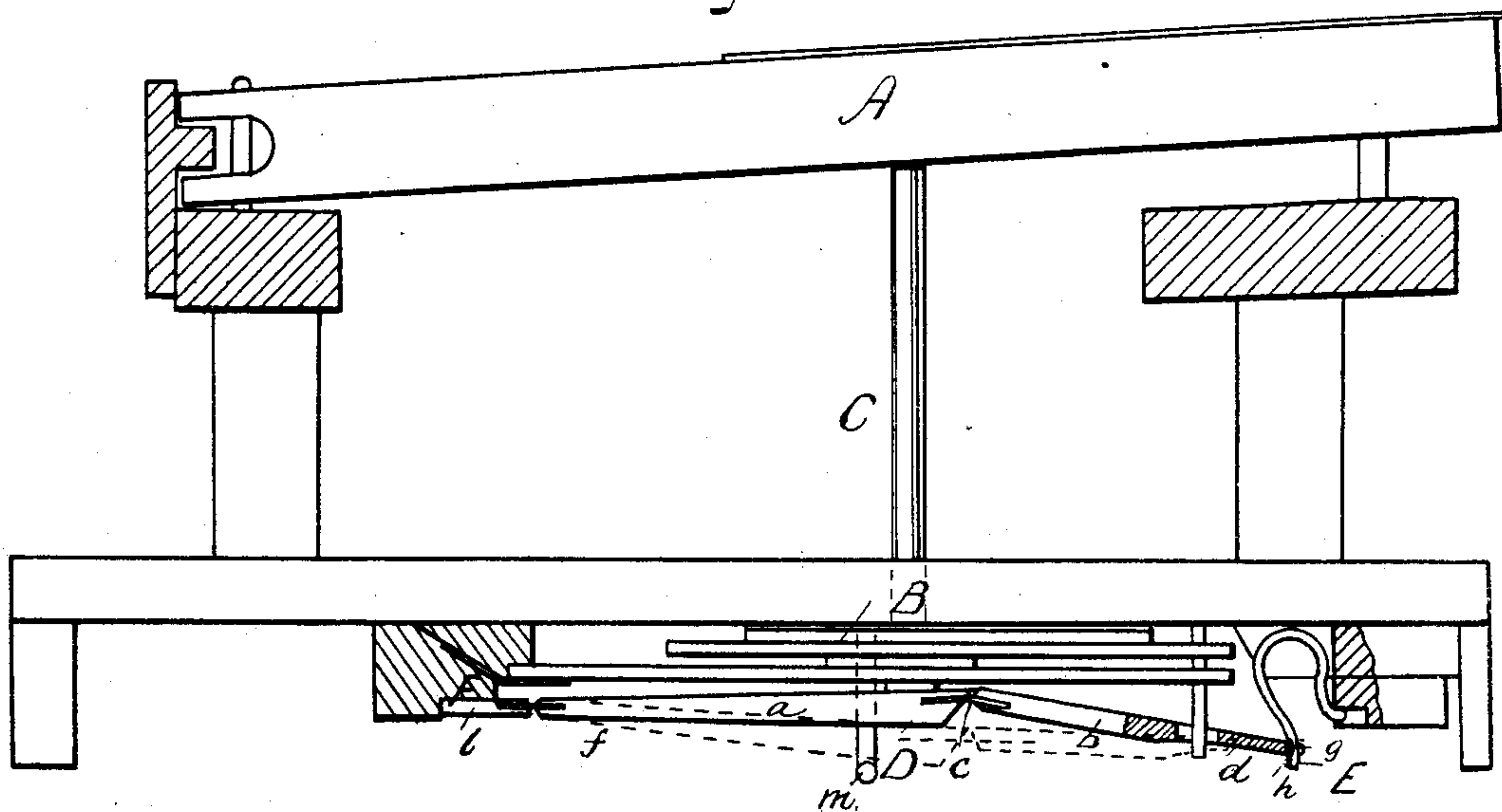
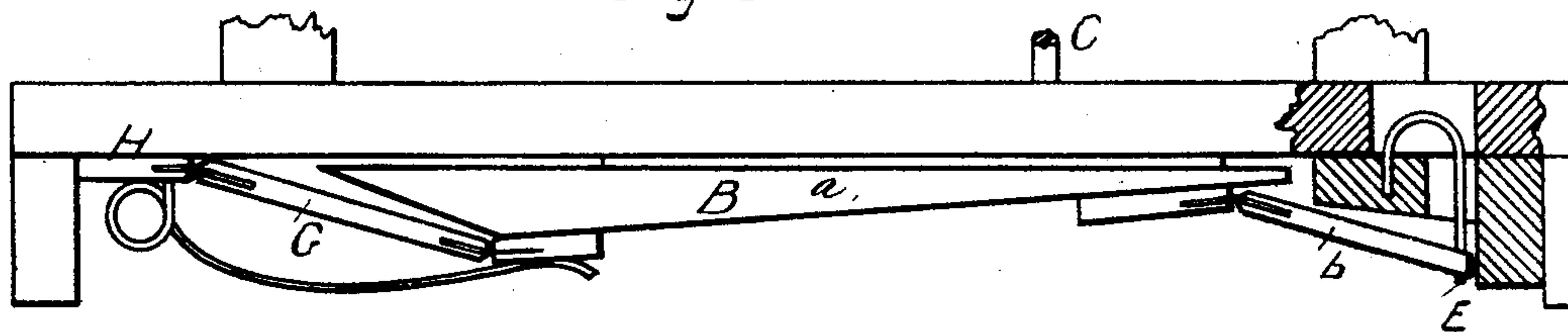


Fig. 2.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## SPRING FOR ORGAN-VALVES.

SPECIFICATION forming part of Letters Patent No. 229,370, dated June 29, 1880.

Application filed December 16, 1879.

*To all whom it may concern:*

Be it known that I, JOHN C. BRIGGS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Organs, of which the following is a full, clear, and exact description.

This invention is more especially designed for the valves of reed-organs, and its description will be confined more particularly to such application and its consequent operation therewith, although, as will be evident, it is applicable, with practically similar advantageous results, to other parts of organs—as, for instance, the bellows, feeders, stop-action, &c.—and therefore it is not intended to limit it in its application and use hereunder to the valve simply.

As is well known, in reed-organs the spring applied to the valve to close and hold it closed acts with the least pressure when the valve is closed and with the greatest pressure when the valve is opened, and as the valve passes from a closed to an open position increases in its resistance to the pressure applied at the finger end of the key to open it, obviously disadvantageous and objectionable in the touch and feeling of the key to the finger of the player. This gradation in the opening of the spring should be reversed—that is, the spring should operate the strongest when the valve is closed and the weakest when the valve is opened, for the reason that when the valve is in its closed position it has the full pressure of the wind to work against it, and that such pressure gradually diminishes as the valve opens, and when the valve is fully opened is entirely removed.

It is thus apparent that the resistance of the spring may be with safety made the greatest when the valve is closed and the least when the valve is opened, gradually decreasing as the valve moves from the one or closed position to the other or open position, and vice versa, and obviously with advantage to the touch or key-action of the instrument.

To this end this invention consists in the application of a spring to the valve in a manner for the spring to act through the lever upon the valve and to hold it closed, except when pressure is brought against it by pressing

down upon the finger end of the key, so as to open the valve, and to act with the greatest pressure when the valve is closed and with the lightest pressure when opened, and in the opening of the valve to decrease as it opens, and vice versa, all substantially as hereinafter described.

In the accompanying plate of drawings this invention is shown in connection with the valve of a reed-organ, Figures 1 and 2 being views, in side elevation, with parts broken out in vertical section, of the key and valve, arranged and connected together as ordinarily, and of a spring bearing on the valve in a direction to close and to keep it closed, except when relieved, and otherwise to act in the manner described, and as will hereinafter fully appear.

In the drawings, A represents an organ-key; B, the valve, and C the push-stem through which to open the valve by pressing down the finger end of the key, all as ordinarily.

D is a toggle-lever composed of two arms, *a* and *b*, jointed end to end at *c*, and disposed below and along the length of the valve B, where, at its end *d*, at the front end of the valve B, it is jointed to a spring-arm, E, and at its end *f*, at the rear end of the valve B, it is jointed to a stationary block, F.

The spring-arm E is fixed in position and is arranged to press along the length of the valve and to confine the arms *a b* of the lever against the valve, holding it to its seat, and in so confining the valve to its seat to have the central articulation or joint of the toggle-lever above a line drawn through the two end articulations, with the end articulation at the spring-arm E below the opposite end articulation, *f*.

The joint between the toggle-lever D and spring-arm consists of a notch, *g*, in the spring-arm and a notch, *h*, in the lever, the two notches interlocking, as it were, with each other, and this construction serves to keep the lever always at one point of articulation with the spring-arm, while at the same time the parts can move or roll on each other.

The joint between the toggle-lever and stationary block F is a simple parchment hinge in a supplementary block, *l*, screwed to the said stationary block F. Under this arrange-



ment of toggle-levers and spring-arm E, in relation to the valve B, the pressure of the spring E against the valve is the greatest when closed and the least when fully opened, as then the three points of articulation of the toggle-lever are substantially in a straight line, as shown by dotted lines in Fig. 1, and it decreases as the valve moves from a closed to an open position, and vice versa.

When the valve is opened it lies by its whole length against the toggle-lever, and so long as the valve is thus held opened the toggle-lever, under the pressure of the spring-arm, cannot bend in a downward direction.

On the release of the downward pressure of the pusher-stem on the valve the toggle-lever bends upward, which forces the valve to its seat and there holds it, and this tendency of the toggle-lever to bend upward, as aforesaid, is secured by regulating its position so that when the valve lies against it, as described, its center point of articulation will be just above a straight line drawn through the two end points of articulation, or by employing an abutment, *m*, for the under side of the toggle-lever D, as it is straightened out, which abutment is capable of adjustment by screwing it in the proper direction therefor.

In the mechanism shown in Fig. 2 the valve itself is made one arm, *a*, of the toggle-lever, which obviously does not substantially or practically differ from the mechanism shown in Fig. 1.

Fig. 2 is a view showing the valve adapted to move in parallel lines from its seat instead of swinging on a hinge, as ordinarily. This adaptation is at the end of the valve, which is usually hinged, and it consists in hinging the valve through a link-piece, G, hinged at one end to the valve and at the other to the reed-board H, and having a bent spring to bear on the end of the valve, all as is obvious; and as it forms no part of the present invention, it is not deemed necessary to herein more particularly describe it.

In lieu of giving the spring-pressure to the toggle-lever by a device separate and distinct therefrom, as herein described, obviously such pressure may be secured by adapting one arm of the toggle-lever—as for instance, the arm *b*—of and in itself to so act—that is, give the spring-pressure.

As to the observations herein made in relation to the action of the spring on the valve of a reed-organ, as heretofore stated, they are as applicable in connection with the bellows-feeders, stop-actions, &c., as with each of them the spring-pressure is the greatest when it should be the least, and vice versa; and a spring of the construction and application herein described, in connection with a valve, is plainly similarly applicable to such other parts, and with practically the same advantages, results, and effects.

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

1. The combination, with a valve or other moving part of an organ operated by the player, of a spring arranged to act upon said valve or other part with its greatest pressure when said valve or other part is closed or in its normal position, and to decrease in pressure upon the said valve or other part as the same is opened or moved from its normal position, and conversely, all substantially as described.

2. The combination, with the valve B, of a lever, D, and a spring, E, arranged together and in relation to each other and to said valve substantially as and for the purpose described.

3. The toggle-lever D, having arms *a b*, and spring-arm E, in combination with a valve, substantially as and for the purpose specified.

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Witnesses:

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