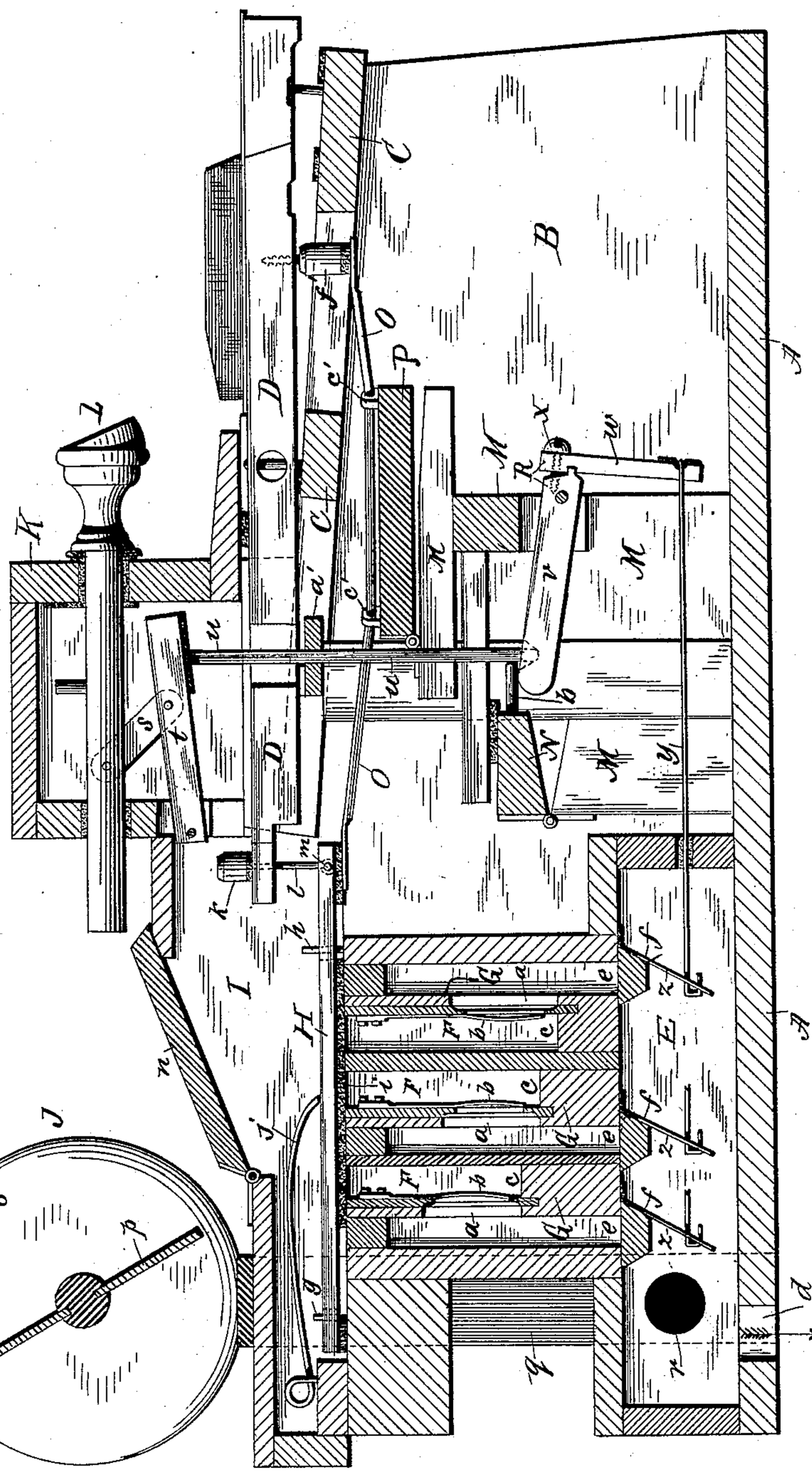
(No Model.)

H. W. METCALF.

ORGAN ACTION.

No. 362,646. Patented May 10, 1887.



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ORGAN-ACTION.

SPECIFICATION forming part of Letters Patent No. 362,646, dated May 10, 1887.

Application filed December 30, 1886. Serial No. 223,064. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. METCALF, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, 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, in connection with the drawing making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to reed-organs: and it consists in certain novel features of construction, arrangement, and combination of the several parts of an organ-action of a reed-organ, as will be hereinafter fully described, and the nature thereof indicated by the claims.

The drawing represents a central vertical section through my improved organ-action detached from the other parts of an organ, as the same form no part of my present invention and are not required to be shown for a clear understanding thereof.

In the accompanying drawing, the part marked A is the base-board or the top of the bellows, upon which are supported the several parts of the organ-action.

B is a frame or stand for supporting the key-frame C, upon which are supported and pivoted at their center or approximate center the keys D.

E is the wind-chest, upon which are supported the reed-chambers F and the reed-boards G, having the openings *a* therein, and provided with reeds *b* in any usual and well-known manner. Open spaces *c* extend upon the outside of the reeds *b*, to allow the passage of air to sound the reeds, drawn in by suction-bellows of any usual construction located directly under the base-board A, in the usual manner. An opening, *d*, connects the wind-chest E with the bellows, and openings *e*, provided with suspended rolling mutes *f*, hinged at one edge, connect said wind-chest E with the reed-chambers F.

I have shown in the drawing three sets of reeds placed in a vertical position at the rear of the key-board, with their upper ends located in a plane below the level of the keys. If preferred, more than three sets of reeds may be used, or less than three sets.

A valve, H, pivoted at its rear end upon a pin, *g*, in the ordinary manner, extends in a horizontal direction over the upper side of the reed-boards to close the upper ends of the air-passages leading to the reeds. The forward end of the reed-valve projects out beyond the reed-chambers, and a pin, *h*, extends through a slot in the end of said valve and prevents any sidewise motion thereof.

Felt or kid *i* may be secured upon the under side of the valve H in the ordinary manner, as is customary, to prevent any leakage or passage of air when the valve is closed. The spring *j*, secured at one end, and with its free end pressing upon the upper side of the reed-valve H, tends to keep it closed. The reed-valve H, as before stated, extends over the reeds in a horizontal direction at the rear of the key-board and in a plane below the level of the keys. The forward end of the valve projects out beyond and below the rear end of the key, and is adapted to engage with the same, to be operated thereby when the forward end thereof is depressed, by means of the regulating-button *k*, bearing upon the top surface of the key at its rear end, and secured upon an upright pin or wire, *l*, extending through a vertical slot in the rear end of the key, and in this instance pivotally connected at its lower end to the free projecting end of the reed-valve H by means of a pin, *m*, passing through an eye formed in the lower end of the wire *l*. Said eye fits in a slot made in the reed-valve, as clearly shown in the drawing. Instead of the pin *l* being pivotally connected at its lower end with the reed-valve, as shown and described, it may be rigidly connected therewith in any suitable manner. Said wire or pin *l* is provided with a thread at its upper end, so that the regulating-button *k*, which bears upon the upper side of the key at its rear end, may be screwed up or down for the purpose of bringing the key pivoted at its center or approximate center to its proper level. The wire or pin *l* plays freely through a vertical slot made in the rear end of the key, so that the reed-valve H may be operated independently of the key, with which it is con-

nected by means of the octave-coupler lever in the manner to be hereinafter fully described—that is, the reed-valve is not rigidly connected to its operating-key, but it may be operated through the intervention of the octave coupler independently of the key with which said valve is connected, and the relative positions of the reed-valve and the key with which it is connected may be adjusted by means of the regulating-button *k*.

The swell-box I, provided with a hinged cover, *n*, is supported and extends over the reed-valves H, inclosing the same and also the rear end of the keys, as shown in the drawing.

Upon the top of the swell-box I, at its rear part, is supported and secured a fan tremolo, J, of any ordinary construction, *o* representing the motor-head, and *p* the fan. The motor-head *o* is connected with the wind-chest E by means of an inclosed passage, *q*, extending down at the rear of the organ-action, and opening at its lower part through the hole *r* into the wind-chest E.

The name-board K, of the ordinary construction, is suitably supported and extends over the rear part of the key-board. The stop-rod L extends through and has its bearing in the name-board K, in the usual manner. Said stop-rod is connected through a system of levers and pivoted arms with the suspended rolling mutes *f*, to open the same at the proper time to sound the reeds. The link *s* is pivotally connected with the stop-rod L and the lever *t*. Said lever *t* is pivoted at its rear end and connected at its forward end, through the intervention of the pitman or rod *u*, with the rear arm, *v*, of the crank-lever R, pivoted in the support M, secured to the frame B.

The pitman or rod *u* moves up and down in a vertical direction through and has its bearing in the cross-piece *a'* of the frame C. The keys D are cut or grooved out at their sides, to allow of the pitman *u* passing freely between them. The upper end of the pitman *u* bears against the under side of the hinged lever *t* at its forward end. The lower end of the pitman *u* fits into and rests in a hole made in the upper side of the crank-lever R at its rear end. The crank-lever R is composed of the two arms *v* and *w*. The arm *w* is adjustably connected at an angle to the arm *v* by means of a projection on the end of the arm *v* fitting into a recess in the arm *w*, and a screw, *x*, extending through a slot in the arm, as indicated in the drawing. Said screw *x* serves to secure said arms *v* and *w* together, and at the same time to furnish means for adjusting the angle of divergence of said arms forming the crank-lever R. The lower end of the crank-lever R is connected with one end of the rod or wire *y*. The other end of said rod or wire extends through the inner wall of the wind-chest E, and is connected with an arm, *z*, secured to and extending down from the rolling mutes *f*.

By my manner of construction of the crank-lever R, as above described, the arms *v* and *w* being adjustably connected together by means of the screw *x*, by turning in or out said screw *x*, I am enabled to compensate for any lost motion between the lever *t* and the rolling mute *f*, with which it is connected.

At the rear of the stand M is hinged a grand-organ roller, N, extending longitudinally under the key-board, and provided with pins *b*, which rest and bear upon the rear upper ends of the crank-levers R of the stop-action, which it is desired to operate by said grand-organ roller N. By means of the grand-organ roller N, connected with the mechanism for operating the mutes *f* in the manner above described, I am enabled to produce a grand organ through the intervention of a lever of ordinary construction (not shown in the drawing) connected with said roller N, for depressing or operating the same at the proper time.

I have illustrated in the drawing the stop-rod L connected with only one of the rolling mutes *f*; but it will be understood that said stop-rod may be connected with two or more mutes to produce different tones of the organ, and that any number of stop-rods may be used, as desired, and each be provided with a similar set of levers, forming a connection with the mutes.

Below the key-board is located a coupler-board, P, extending longitudinally under the key-board and supported and hinged at its rear part in any ordinary manner to the stand or support M.

Upon the coupler-board P are arranged a series of octave-coupler levers, O, extending diagonally across the board and connected therewith to turn thereon, in this instance by staples *c'*. The front ends of the coupler-levers O engage with regulating screws or buttons *f'*, secured upon the under side of the keys D at their forward ends, and the rear ends of said levers engage with the forward free ends of the reed-valves H an octave above or below when the coupler is brought into action, as clearly shown in the drawing.

Any ordinary means may be employed for raising the coupler-board P at its forward or front side to bring the coupler-levers into action. I have not thought it necessary to show and describe any means, as the same form no part of my present invention and are well-known devices.

For a detailed description of the coupling device illustrated in the drawing I refer to my earlier application for a patent, filed December 9, 1886.

It will be understood that I do not limit myself to any special form of octave-coupler attachment when used in connection with my other improvements, as herein set forth, for any well-known form of octave-coupler may be used which is adapted to couple direct from the keys to the octave reed-valves, without the intervention of any pitmen or levers.

The operation of my improvements in organ-actions will be readily understood from the

above description, in connection with the drawing, by those skilled in the art. The great advantages of my improved construction of reed-organ actions will be apparent to those skilled in the art. By simply removing the name-board and swell-box, secured to the action by means of hooks or catches instead of screws, as heretofore, I expose completely all the reed-valves and the key-board, so that the working parts of the organ may be reached without requiring the use of a screw-driver, and any repairs or any alterations be readily made.

By my manner of connecting the free ends of the reed-valves extending under the rear ends of the keys with said keys—that is, by having a pin or wire secured to the free end of said valve and extend up in a vertical direction through a vertical slot cut in the rear end of the key, and provided at its upper end with a regulating-screw bearing upon the upper side of the key at its rear end—I am enabled to easily level the keys and regulate the relative positions of the keys and their reed-valves, without removing the keys or resorting to the use of a file, by simply turning in either direction with the thumb and finger the regulating-screw *k*, fully exposed to view upon the top of the key-board at its rear end, when the name-board and swell-box are removed. The pin *l*, playing freely through a vertical slot made in the rear end of the key, allows of the reed-valve being operated by the octave-coupler lever independently of the key, and also allows of the keys and reed-valves being readily disconnected from each other and removed, if desired, without taking out the pin *l* or removing the regulating-button *k* therefrom.

The details of construction of the several parts of my improved organ-action may be varied somewhat from what is shown and described, if desired, without departing from the principle of my invention. For example, the pin *l*, connecting the rear end of the key with the projecting end of its reed-valve, may be made with a screw-thread upon its lower end to be screwed into the end of the valve, and with a screw-head or nut upon its upper end in lieu of the separate regulating-button *k*, and operate substantially the same.

I make no claim herein to a system of key-levers in combination with horizontal reed-valves located in a plane above said key-levers and a series of buttons, vertically adjustable, supported on said key-levers and interposed between the rear upper ends of the same and the under side of the forward-projecting ends of the valves, as the same is set forth and claimed in my earlier application for a patent, filed July 19, 1886, and numbered 208,385.

Having thus described my improvements in organ-actions, what I claim as new, and desire to secure by Letters Patent, is—

1. In an organ-action, the combination, with keys pivoted at their center or approximate center, of horizontal reed-valves located in a plane below the level of the keys and hinged at their rear ends, with their forward ends adjustably connected with the rear ends of said keys, substantially as set forth.

2. The combination, with keys pivoted at their center or approximate center and provided with vertical slots in their rear ends, of horizontal reed-valves hinged at their rear ends and located in a plane below the level of the keys, with their forward free ends extending out below the rear ends of said keys and connected therewith by upright pins extending through vertical slots therein, and having regulating-buttons upon their upper ends, which bear upon the top surface of the keys and are adapted to level the same, substantially as set forth.

3. The combination, with a horizontal reed-valve located in a plane below the key-board, with its forward free end projecting out below the rear end of the key-lever, of an upright pin pivotally connected at its lower end with the forward free end of said valve, and carrying a regulating-button upon its upper end adapted to bear upon the top surface of the key-lever at its rear end, for the purpose stated, substantially as set forth.

4. The combination, with keys pivoted at their center or approximate center, and horizontal reed-valves located at the rear of the key-board and hinged at their rear ends, with their forward free ends adjustably connected with the rear ends of said keys, of octave-coupler levers coupling direct from the keys to the octave reed-valves, substantially as described.

5. The combination, with the stop-rod L, supported in the name-board, and the suspended rolling mute *f*, of the connecting mechanism, consisting of link *s*, pivoted lever *t*, pitman *u*, adjustable crank-lever R, and rod *y*, constructed and operated substantially as shown and described.

6. The combination, with grand-organ roller N, suitably supported, and the suspended rolling mutes *f*, of the connecting mechanism, consisting of adjustable crank-lever R and rod *y*, substantially as shown and described.

7. The combination, with name-board K and swell-box I, extending over and inclosing the horizontal reed-valves and the rear ends of the key-levers, and adapted to be removed therefrom without removing any screws, of key-levers D, pivoted at their center or approximate center, and horizontal reed-valves H, located at the rear of said keys and adjustably connected with their rear ends, substantially as set forth.

8. In an organ-action, the combination, with a key-lever pivoted at its center or approximate center, and its octave horizontal reed-valve located at the rear of the key-board, of an octave-coupler lever coupling direct from the key-lever to its octave reed-valve, substantially as described.

9. The combination, with the key-levers and horizontal reed-valves located at the rear of

the key-board and loosely connected with the ends of said key-levers, so that said valves can move independently of said key-levers, of the coupler-levers, each having one arm for making contact with a key-lever and the other arm for contact with the octave-valve of said key, substantially as described.

10. The combination of the key-levers pivoted at their centers or approximate centers, and the horizontal reed-valves located at the rear of the key-board and loosely connected with the rear ends of said key-levers, and the octave-coupler levers coupling direct from the keys to the octave reed-valves, substantially as described.

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