L. D. MORRIS.

ORGAN ACTION.

APPLICATION FILED JUNE 8, 1918.

1,286,059. Patented Nov. 26, 1918.

Fig. 1.

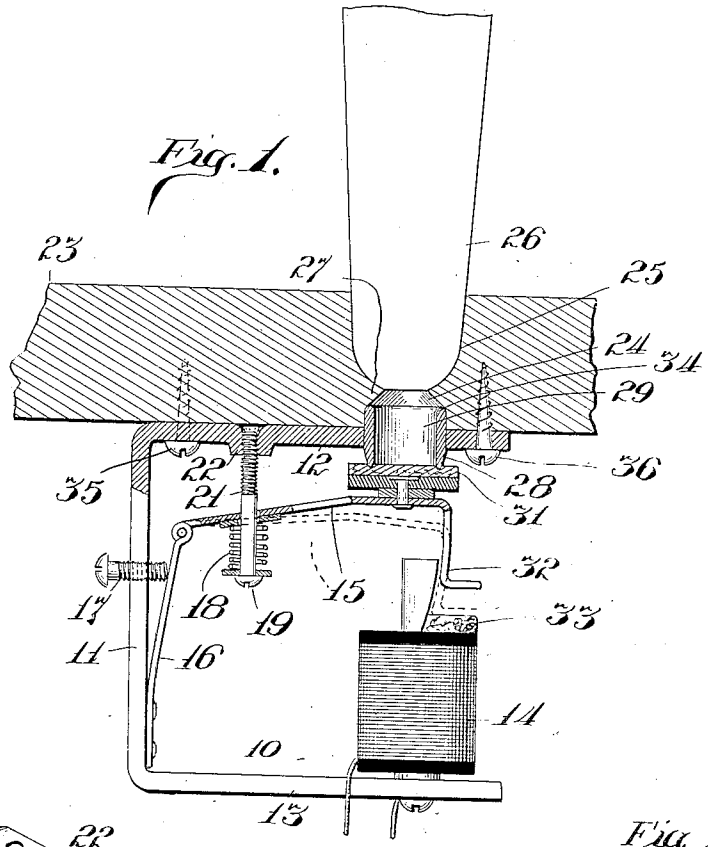


Fig. 2

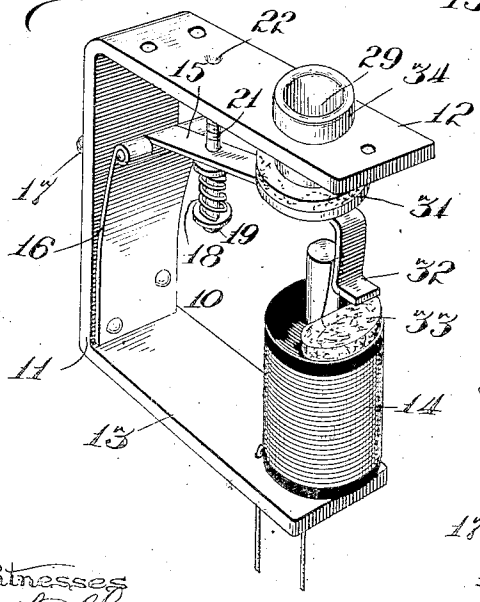


Fig. 4.

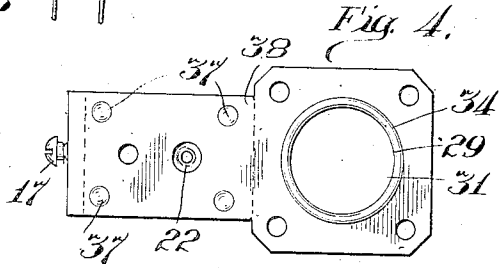
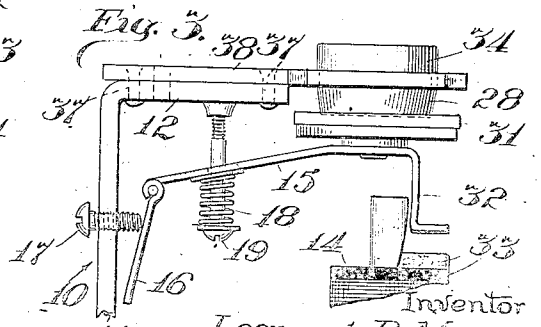


Fig. 3.



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ORGAN-ACTION.

1,286,059. Specification of Letters Patent. Patented Nov. 26, 1918.

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To all whom it may concern:

Be it known that I, LEONARD D. MORRIS, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Organ-Actions, of which the following is a specification.

My invention relates to organ actions and has for its primary object the provision of a unitary structure of improved type wherein the valve is carried as a part of the unit as is also the valve seat, and wherein both are operatively related to each other before the action is placed in the organ where it is to be used.

A second object is the provision with a unitary organ action of the type just described of improved means whereby the action may be accurately located with great facility in the organ in proper relation to the pipe which it is to control.

A third object is the provision of an improved form of organ actions wherein the force necessary to unseat the valve from its closed position is reduced to a minimum and whereby maximum speed in the action is attained.

Other objects and advantages of my invention will appear from the following description, taken in conjunction with the accompanying drawings which form a part of this specification and illustrate the preferred embodiment of the invention.

In the drawings:

Figure 1 is a side elevation of an organ action embodying the present invention, showing the same partially sectioned approximately on the vertical center of the valve passageway and operatively related to its pipe and the wind chest supporting and supplying air to the pipe.

Fig. 2 is a perspective view of my improved action.

Fig. 3 is a fragmentary side elevation of a modified construction illustrating one way of providing a valve seat of large diameter.

Fig. 4 is a top plan view of Fig. 3.

Reference numeral 10 indicates generally the frame of my invention comprising a strip of iron bent to a U shape to form an upright portion 11, a top 12, and a bottom 13. As described in my co-pending application Serial No. 191,855 I secure an electromagnet 14 to the bottom 13, and, in operative relation thereto, pivot an armature 15 to a leaf spring 16 adjustable by means of a set screw 17 toward or from the magnet, the armature being normally upheld in the full line position shown by a spring 18 compressed between the head 19 of a machine screw 21 threaded into a boss 22 formed on the top 12 and the lower surface of the armature through which the screw 21 passes. The present construction, however, differs from my co-pending applications 191,274 and 191,855 in that the screw 21 herein is threaded into a portion of frame 10 and thus adjustably carried thereby, instead of passing loosely through a hole formed in the frame and being threaded into the wood of the windchest 23. By this construction I make the screw 21 a unitary part of the organ action.

The wind chest 23 is provided with an aperture 24 of standard diameter for given kinds of pipes, cylindrical in its lower end where it intersects the lower surface of the wood, and contracted at its upper end to form a rest 27 for an organ pipe 26 which has its lower end bearing on the rest 27 and seated in a recess 25 formed in the wind chest just above the rest. Aperture 24 and recess 25 are, of course, in communication with each other for passage of air from the wind chest into the lower end of pipe 26. Heretofore it has been common practice to place the valve for an organ pipe in flat contact with the lower flat surface of the windchest so that, about the aperture 24, there was a large annular area of flat surface contact between the valve and the windchest wall or a flat surfaced valve seat secured to the windchest. Of course, there being air under greater than atmospheric pressure within the windchest, the valve must always exert sufficient force to overcome the wind pressure exerted within the windchest against the valve over an area of valve equal to the cross-sectional area of the aperture 24. But heretofore organ actions have, because of the above mentioned flat surface contact, had to exert an additional force to open the valve; namely, that force necessary to quickly separate the valve and windchest surfaces in flat contact over an area annular in contour and equaling in extent the difference between the whole area of the flat top of the valve and the cross-sectional area of aperture 24. As a means of removing the necessity for exertion of this additional force by the action, I provide a circular flange 28 about the air

passage 29 of the top 12 of the frame, the outer or lower edge of this flange being sharpened to form a valve seat which contacts with the valve 31 in, practically, a circular line. Preferably the edge of the valve seat is rounded and the valve surface engaging it formed of soft, tough leather to prevent cutting of the valve under constant use. The valve 31 is carried on the armature 15 and drawn from its seat against the pressure in the windchest by the energization of magnet 14 until the down-turned free end 32 of the armature strikes and is stopped by a layer of felt 33 held on the top of the magnet. Because of the negligible area of contact between valve 31 and seat 28 the opening of the valve is facilitated.

As a means of instantly and simply locating the organ action, with its valve and valve seat, in accurate operative relation to the pipe which it is to control, I form about the passageway 29 an upstanding guide-rib 34 of an external diameter fitting snugly in air tight joint within aperture 24 in the cylindrical portion of the latter; the internal diameter of the guide-rib being sufficiently large to provide ample flow of air for the proper sounding of pipe 26. Thus the complete organ action may, as a unit, be located in proper position by insertion of guide-rib 34 in aperture 24 and the setting of wood screws 35 and 36 to hold it in place.

I contemplate the manufacture of my improved organ actions as an independent industry in the art of organ building, and to that end have invented an action wherein all parts are carried by the frame 10 and can be manufactured, shipped and positioned in an organ as a unit and with the minimum of expense and labor. In manufacturing this action I prefer to make the flange 28 and guide-rib 34 of a single short length of metal tubing brazed or soldered into the air passageway 29 punched in the top 12 of frame 10.

In Figs. 3 and 4 is illustrated a modified form of action adapted to supplying large quantities of air from the windchest to the larger pipes of an organ for sounding the large pipes of the pedal stops. These pipes require air passages of great diameter. To provide such passages I shorten the top 12 of frame 10 and upon its upper surface rivet, as at 37, a plate 38 of metal having an outer or forward end of larger diameter than frame 10 to accommodate the formation through it of an air passageway 29 of the required size. About the edge of this large passageway I position the annular valve seat 28 and guide-rib 31 as heretofore described. By this construction a lighter gage of metal may be used for plate 38 than for frame 10.

While I have illustrated and described the preferred embodiment of my invention I contemplate the use of any and all modifications thereof that fall within the purview of the appended claims.

I claim:

1. An organ action comprising, a valve, a valve seat, valve actuating elements, and a frame independent of the windchest of an organ on which all of said parts are carried.

2. An organ action comprising, a valve seat, a valve operatively related and adjustable with respect thereto, valve operating elements adjustable to vary the force with which the valve is actuated, and a frame, independent of the windchest of an organ on which all of said parts are carried.

3. A unitary, electro-magnetic organ action comprising, a frame independent of and attachable to the windchest of an organ, a valve seat carried thereby, an electro-magnet fixed to the frame, an armature pivotally supported on the frame, traversing an end of the magnet and adjustable with respect thereto, a valve mounted on the armature and operatively related to said valve seat, and means adjustably carried by the frame for normally holding the valve against its seat.

4. A unitary organ action comprising, a frame independent of the windchest of an organ, a valve seat carried thereby, an electro-magnet fixed to the frame, an armature for the magnet movably supported in the frame, a valve mounted on the armature and operatively related to the valve seat, and means carried by the frame for normally holding the armature and valve in a given position relative to said magnet and valve seat.

5. In an organ action, the combination with a frame, of a circular guiding rib fixed to the frame and projecting outwardly thereof.

6. In an organ action, the combination with a frame independent of the windchest of an organ, and a valve seat, a valve, and valve operating elements carried by the frame, of means for locating the action in a windchest in alinement with the air outlet aperture which it is to control, comprising an annular guide-rib concentric with said valve seat projecting outwardly of the frame in rigid relation thereto and fitting snugly within the inner end of said aperture.

7. A unitary organ action comprising, a frame independent of the windchest of an organ, a valve seat carried thereby, an electro-magnet fixed to the frame, an armature for the magnet movably supported in the frame, a valve mounted on the armature and operatively related to the valve seat, means carried by the frame for normally holding the valve in a given position relative to its seat, and an annular rib concentric with said

valve seat projecting outwardly of the frame in rigid relation thereto and shaped to fit within the air outlet aperture of an organ windchest.

8. In an organ action, the combination with a frame which is independent of the windchest of an organ and is formed with an air passageway, of an annular flange about the passageway fixed to the frame and projecting therefrom, the free edge of the flange lying in a plane at right angles to the axis of the passageway and remote from the frame, and a flat surfaced valve for contact with the flange edge to close the passageway, said valve being pivoted to the frame on an axis at right angles to that of said passageway.

9. As an article of manufacture, a metal strip forming an organ action frame independent of and attachable to the windchest of an organ and apertured to provide an air passageway, and a metal cylinder fixed to the strip within said aperture and projecting from both sides of the strip.

10. A frame piece for organ actions comprising, a flat strip independent of and attachable to the windchest of an organ and apertured to provide an air passageway, a cylindrical valve seat surrounding the aperture and projecting inwardly of the strip, and a cylindrical guide rib concentric with said seat, surrounding the aperture and projecting outwardly of the strip.

11. In an organ action, the combination with a frame independent of the windchest of an organ, of a valve seat, and an electro-magnet both fixed upon the frame, an armature for the electro-magnet, a valve fixedly carried thereby, an adjustable device carried by the frame for mounting the armature in operative position in the frame whereby the distance of the armature from the core of the magnet may be varied, and a spring adjustably supported from the frame and opposing the force exerted by the magnet on the armature.

LEONARD D. MORRIS.