

(No Model.)

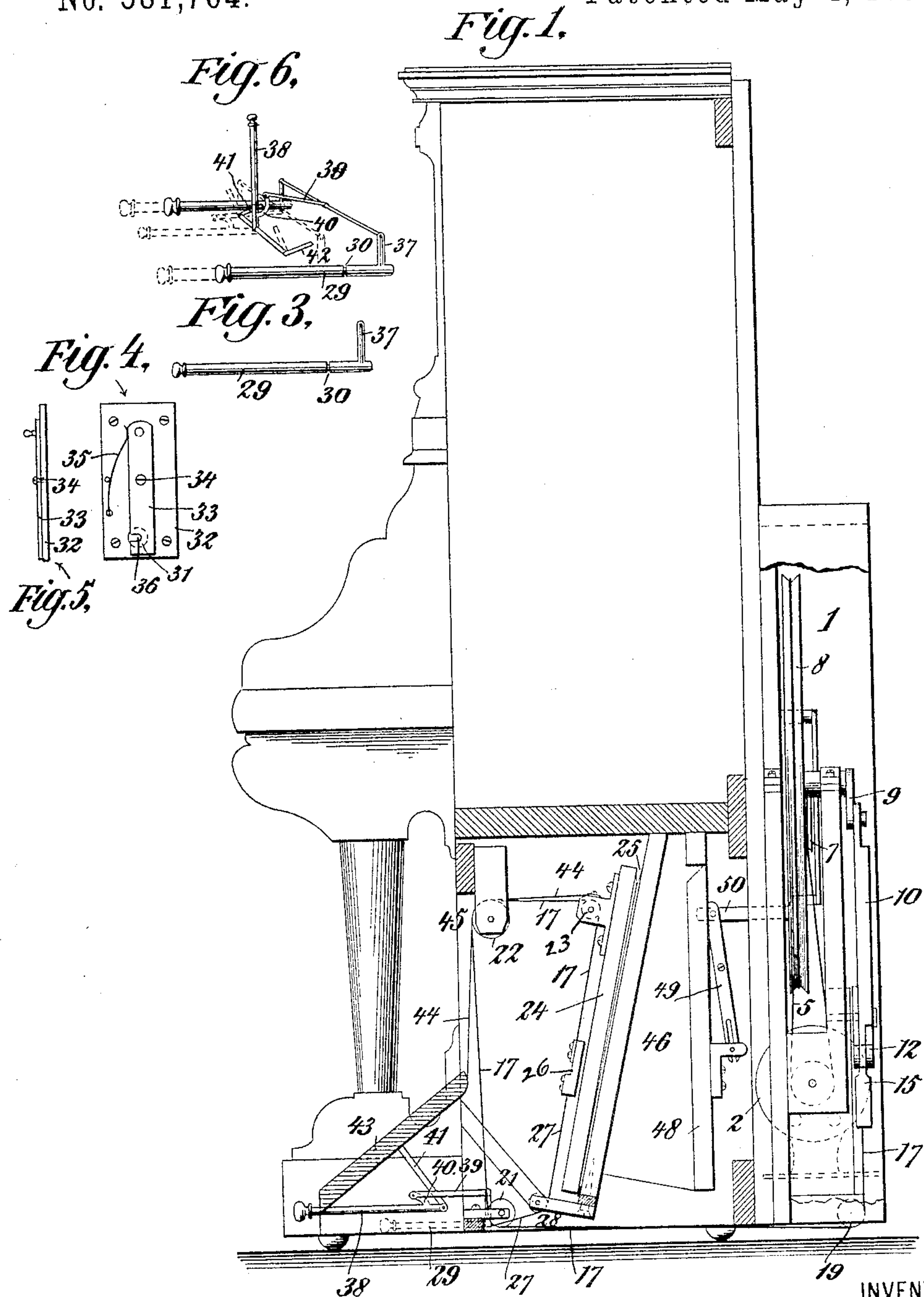
2 Sheets—Sheet 1.

R. W. PAIN.

BLOWING DEVICE FOR MUSICAL INSTRUMENTS.

No. 581,764.

Patented May 4, 1897.



WITNESSES:

*R. H. Raymond*  
*H. H. Davis*

INVENTOR

*R. W. Pain*  
BY *Davis & Co*  
ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

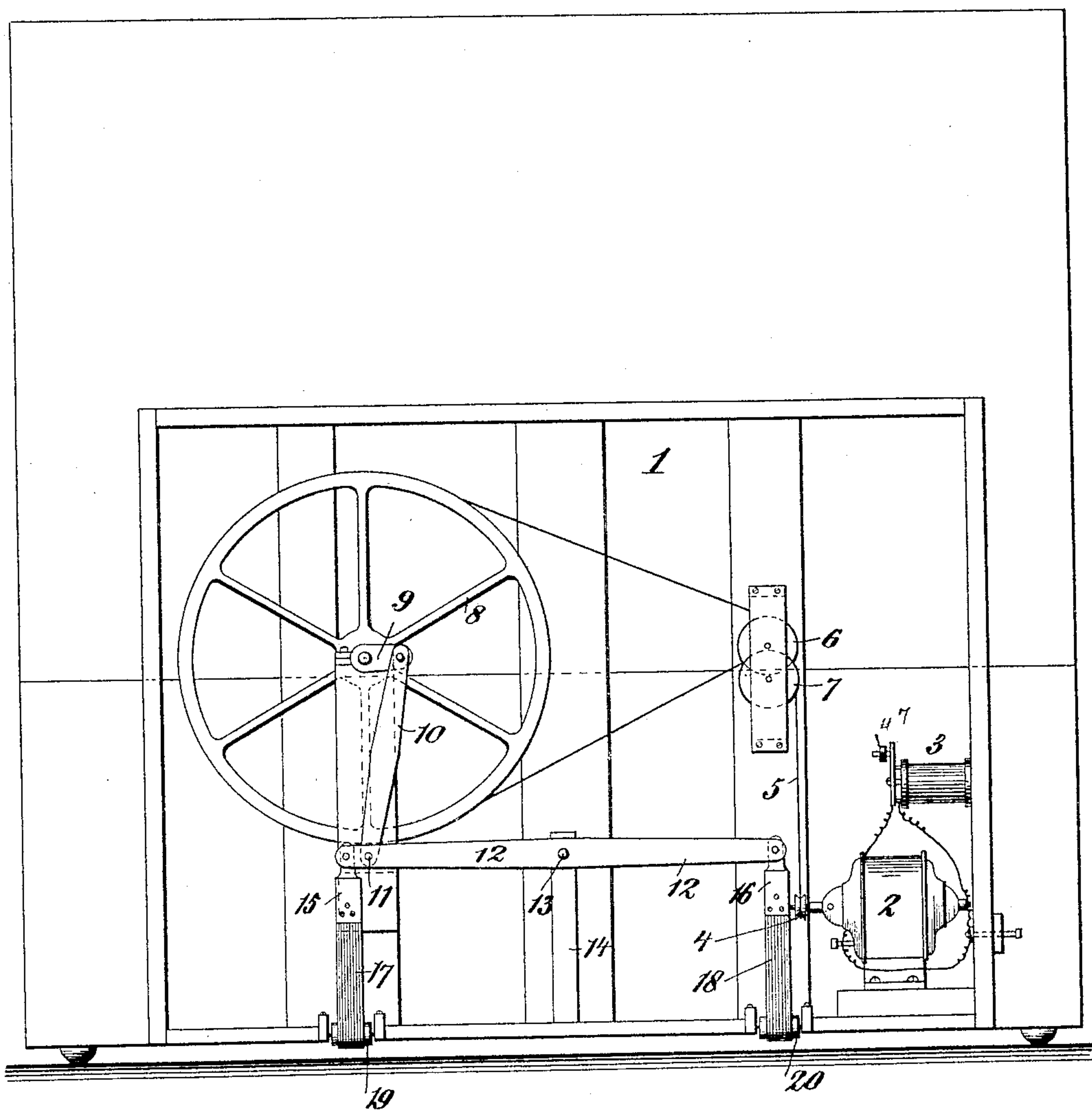
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*Fig. 2,*



WITNESSES:

*W. H. Haywood*  
*H. H. Davis*

INVENTOR

*R. W. Pain.*  
BY *Davis & Co.*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

ROBERT W. PAIN, OF NEW YORK, N. Y., ASSIGNOR TO THE AEOLIAN COMPANY, OF SAME PLACE.

## BLOWING DEVICE FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 581,764, dated May 4, 1897.

Application filed July 29, 1896. Serial No. 600,930. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. PAIN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new, useful, and valuable Improvement in Blowing Devices for Musical Instruments, of which the following is a full, clear, and exact description.

This my present invention relates to an improved blowing device for musical instruments, and is applicable to either organs or pneumatically-operated pianos and like instruments, whether employing the pressure or exhaust-air system.

Heretofore such instruments have generally been operated either by crank, by foot-power, or by more or less complicated air-exhausters or pressure systems arranged at a distance from the instrument and conveyed thereto through pipes.

The main objection to the first method is its crudeness, to the second the labor involved in operating the pedals continuously for any length of time, which often exceeds the strength of a delicate person, and to the third method the comparative great expense involved.

The object of this invention is to obviate the several objections above mentioned, first, by providing an apparatus which employs the most modern agencies and mechanism; second, by providing automatic means for supplying air to operate the instrument, thus relieving the performer of all laborious work, and yet allow the instrument to be operated in the ordinary way; third, by providing a simple, practical, and economical apparatus which is readily applicable to nearly all forms of pneumatically-operated organs and pianos now in use, including semiautomatic organs, such as the "Aeolian," and when so applied my mechanism extends very slightly, if at all, beyond the original lines of the instrument. I attain these ends by the combination and arrangement of parts shown in the accompanying drawings, and in which—

Figure 1 is a transverse vertical section of an organ having my improvements applied thereto and showing the several parts in operative positions. Fig. 2 is a rear view of my

apparatus alone. Fig. 3 is an enlarged detailed view of a draw-bolt employed. Fig. 4 is a detailed plan view of the retaining device for said draw-bolt, and Fig. 5 is a side view of said device. Fig. 6 is a perspective view of the rests for the foot-pedals.

Proceeding with a detailed description of my mechanism, in which I shall employ like numerals of reference to indicate the numerous parts, which are correspondingly indicated upon the accompanying drawings, I would first invite attention to the fact that, as illustrated in said drawings, a part of my apparatus is contained in a casing 1, attached to the back of the instrument and slightly projecting therefrom, this being necessary only when my improvements are applied to instruments already in use, as I contemplate providing room for them within the regular case in future instruments.

The initial power is preferably derived from an electric motor, such as 2, connected to any source of electric supply, a regulable resistance 3 being connected in series therewith, especially when employing commercial circuits of a high potential. From the motor-pulley 4 the endless belt 5 is extended upward and around the two idler-pulleys 6 7 and from thence around the large driving-wheel 8, having the crank 9. The pitman-rod 10 extends downwardly from said crank 9, and is pivotally connected at the point 11 to the walking-beam 12, itself pivoted or fulcrumed at the point 13 upon the support 14. At either end of said walking-beam 12 are connected, through the medium of the connecting-clamps 15 16, the belts 17 18, which first pass downwardly and around the idler-pulleys 19 20 and from thence (tracing belt 17 upon Fig. 1) we find it extends inward and around idler-pulley 21, then upward and around idler 22, then across and around idler 23, located upon the movable board 24 of one of the pumps or feeders 25, and the belt is then connected by the connecting-clamp 26 to the cord 27, which latter, after passing around the bottom idler 28, is made fast to the inner end of the draw-bolt 29. Said draw-bolt 29 has an annular notch 30 near its rear end and the body of the bolt works through a circular opening 31 in the plate 32, having the spring-latch 33 pivoted



at point 34, the spring 35 acting upon the upper end of the latch and tending to throw its lower end inward and cause its recess 36 to engage and lock in the notch 30 of the draw-bolt whenever it is pulled out to its full extent, as shown in the drawings. At the extreme rear end of said draw-bolt is provided an upwardly-extending arm 37, which is connected to the rest-lever 38 through the rod 39 and the arm 40, all so connected and arranged that when the draw-bolt 29 is pushed in the said lever or handle 38 is thereby raised, as shown in Fig. 6, and its two prongs 41 42 thrown back and withdrawn as supports for the foot-pedals 43, which latter are then free to be used in the ordinary way. The said foot-pedals 43 have a strap or cord 44 attached to their rear ends, and each of these two straps connects with one of the belts 17 18 at the point 45, so that when the draw-bolt 29 is pushed in the cord 27 and belt 17, beyond point 45, are slackened up in practice about four inches, which allows the pedals 43 to be slightly lowered at their rear ends at the same time that the prop-arms or rests 41 42 are thrown back, thus allowing the instrument to be operated by the foot-pedals without interference in any way from the power mechanism, which is again thrown into operation by simply pulling out the draw-bolt and turning on the electric current. In order to provide against a waste of the said electric current and at the same time to provide for a uniform pressure or exhaust of air within the main bellows 46, which of course is fed or exhausted by the feeders 25 in practically the same way as when operated by the pedals 43, I connect the arm 47 of the resistance or rheostat 3 with the movable board 48 of the main bellows 46 through the lever 49 and rod 50, so that when the said bellows 46 is empty the arm 47 is in such position that no resistance whatever is in series with the electric motor 2, but when the main bellows 46 becomes exhausted and its movable board 48 collapses or moves inward its movement is conveyed through the said lever 49, rod 50, and arm 47 and gradually cuts more resistance into the motor-circuit and slows it up, and thus decreases the amount of air exhausted from the main bellows. Otherwise without this system of automatic regulation the motor would continue to work and exhaust with its full power even after it had sufficiently exhausted the bellows for operative purposes, and would thereafter consume a needless amount of cur-

rent and strain and possibly break the bellows or the operative parts.

As substitutes for the electric motor I may employ a water-motor, a gas-engine, or any other suitable motive power to operate the walking-beam 12 and its coöperating parts.

Many other modifications may be made without avoiding the spirit of my invention, as

What I claim is—

1. The combination with the pumps or feeders of a musical instrument, of the foot-pedals for operating said feeders, a pivoted walking-beam and means for operating the same, a flexible connection or connections between the walking-beam and feeders, and a flexible connection or connections between the foot-pedals and aforesaid flexible connections of the feeders, substantially as and for the purpose described.

2. The combination with the pumps or feeders of a musical instrument, of the foot-pedals having connection with said feeders for operating the same, pedal-supports 41, 42, arranged to bear upon the under side of the pedals, and a draw-bolt 29, for shifting the pedal-supports, substantially as described.

3. The combination with the pumps or feeders of a musical instrument, of the foot-pedals for operating said feeders, a pivoted walking-beam, and means for operating the same, a flexible connection between each end of the walking-beam and feeders, a flexible connection between each foot-pedal and each flexible feeder connection, and means for producing and retaining a slack in the latter-named flexible connections, whereby the foot-pedals may be operated without interference by the flexible connection leading from the walking-beam, substantially as described.

4. The combination with the pumps or feeders of a musical instrument, of the foot-pedals having a connection with the feeders for operating the same, pedal-supports 41, 42 arranged to bear upon the under side of the pedals, a draw-bolt 29 having a connection with the said pedal-supports, and a lock acting to hold said draw-bolt when pulled outward to its full extent, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT W. PAIN.

Witnesses:

JAMES MORGAN,  
OWEN WARD.