

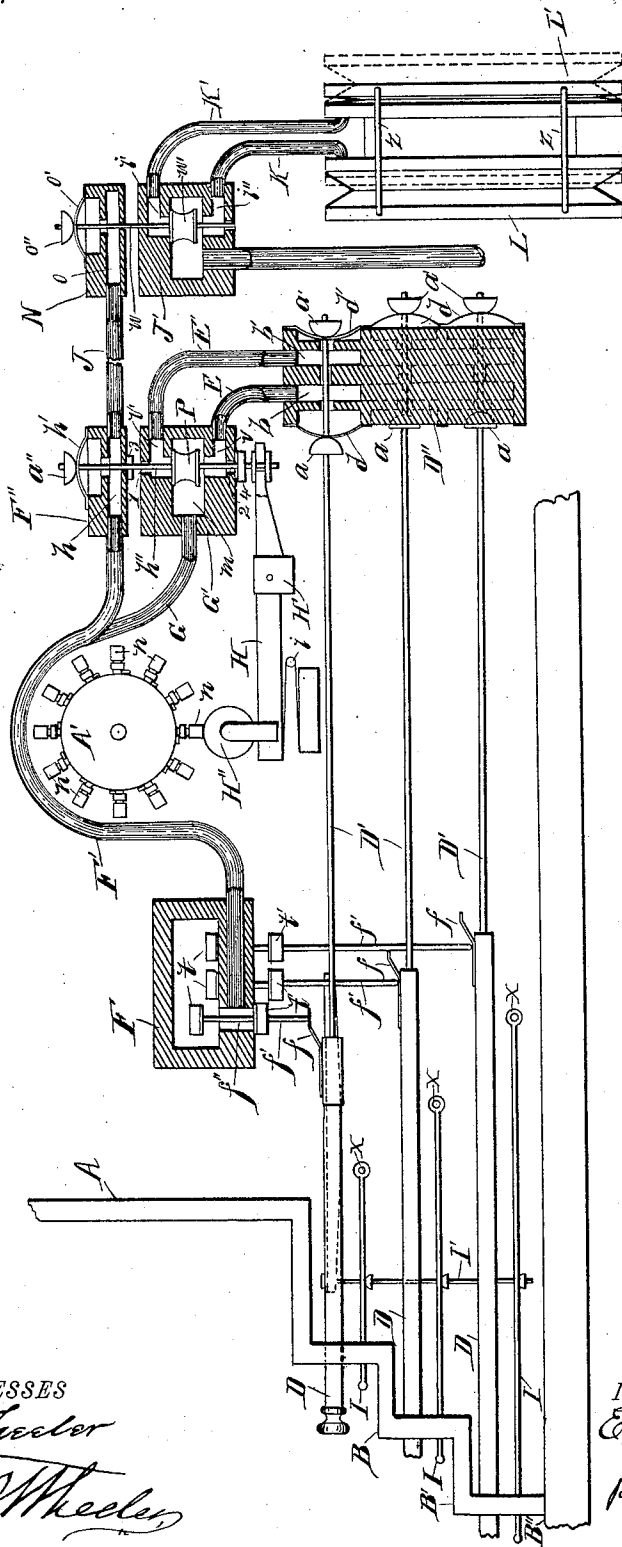
(No Model.)

3 Sheets—Sheet 1.

E. S. VOTEY.
PIPE ORGAN.

No. 468,509.

Patented Feb. 9, 1892.



WITNESSES
R. Wheeler
E. J. Wheeler

INVENTOR
E. S. Votey
Roscoe B. Wheeler
Attorney.

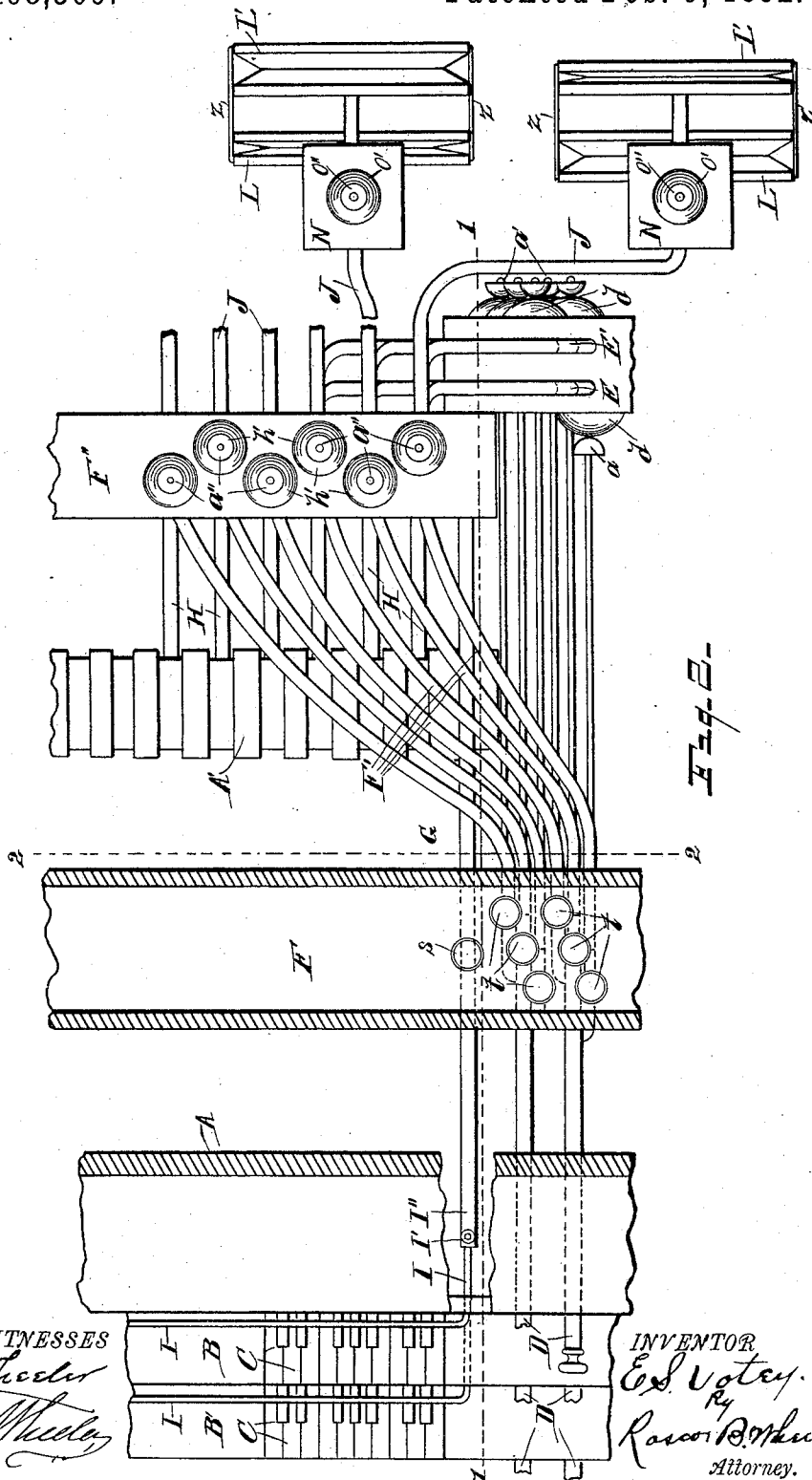
(No Model.)

3 Sheets—Sheet 2.

E. S. VOTEY.
PIPE ORGAN.

No. 468,509.

Patented Feb. 9, 1892.



WITNESSES
R. A. Theodor
E. S. Votey

INVENTOR
E. S. Votey
R. A. Theodor
Attorney.

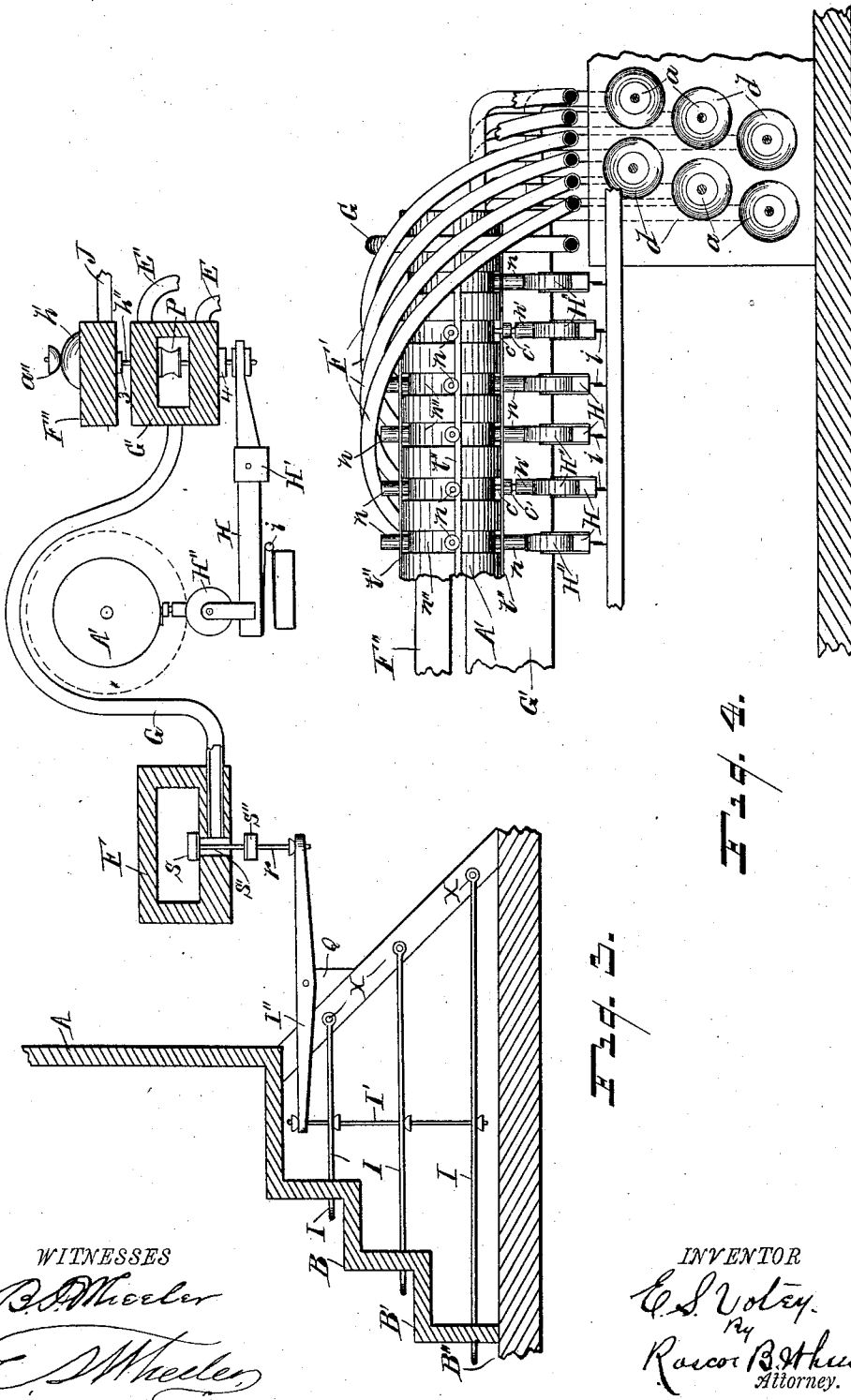
(No Model.)

3 Sheets—Sheet 3.

E. S. VOTEY.
PIPE ORGAN.

No. 468,509.

Patented Feb. 9, 1892.



UNITED STATES PATENT OFFICE.

EDWIN SCOTT VOTEY, OF DETROIT, MICHIGAN.

PIPE-ORGAN.

SPECIFICATION forming part of Letters Patent No. 468,509, dated February 9, 1892.

Application filed December 6, 1890. Serial No. 373,731. (No model.)

To all whom it may concern:

Be it known that I, EDWIN SCOTT VOTEY, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Pipe-Organs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in pipe-organs; and it consists in a novel arrangement of parts operated by and in conjunction with the stops of the organ, whereby a corresponding series of levers may be pneumatically actuated to set a series of plungers in a cylinder or revolving agent for the purpose of arranging them in such manner as will enable the operator, when subsequently executing the music, to readily and easily produce any desired combination of registers or any number of consecutive combinations of registers, according to the music-score, by a manipulation of the finger-rail, and a further arrangement of parts operating in concert therewith whereby during the execution of the music the stops that correspond with each consecutive combination of registers are pneumatically adjusted when said combination is produced and locked in their respective positions, and at the same time operating mechanism that actuates the slides to produce the register or combination of registers desired.

The object of the invention is to provide means for setting the series of plungers in the cylinder to produce a certain combination of registers by pneumatic action, and to further provide for pneumatically actuating and locking the corresponding stops when said combination is produced, at the same time operating the slides that control the several registers to be used to do away with the intricate and complicated mechanism usually employed for this purpose and obviate the noise incident to its operation, which is in some cases so great as to seriously impair the tone of the instrument. This object is at-

tained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section through that portion of an organ containing my improved features. Fig. 2 is a plan view of the parts shown in Fig. 1. Fig. 3 is a longitudinal section on dotted line 1 1 of Fig. 2. Fig. 4 is a transverse section on dotted line 2 2 of Fig. 2, looking to the right.

The drawings illustrate my improved features as applied to a three-manual organ; but they may be adapted to an organ of any number of manuals.

Referring to the letters and figures of reference, A indicates the ordinary frame of the organ, having on the front thereof the key-boards B B' B'', provided with the keys C, that are connected to operate in the usual manner.

A' indicates a cylinder mounted to rotate in the frame of the organ, and by suitable mechanism (not shown) is placed under the control of the operator. Said cylinder is provided with a series of plungers *n*, mounted to slide on pins *c*, set in the circumferential grooves *n''* in the periphery of the cylinder and arranged in longitudinal rows therein, which is common. The plungers *n* are adapted to slide out and in on their respective pins *c* and are provided with a peripheral groove *c'*, adapted to receive a longitudinally-working slide *t''* to lock said plungers in their innermost position, said plungers being locked in their outermost position by the slides *t''* passing between their inner shoulder and the periphery of the cylinder A'. This arrangement permits all of the plungers in any of the longitudinal rows to be locked by a single slide, either in their outer or inner position, or with part of them out and part of them in, as shown by the lower line of plungers in Fig. 4. It is by the previous arrangement of these plungers in the cylinder A', according to the music-score, that the operator is enabled to readily and easily produce any desired combination of registers when executing the music, as hereinafter set forth.

The setting of said plungers in the cylinder is accomplished in the following manner: Extending through the front of the organ, on each side of the key-boards, are a series of stops D, that are adapted to slide horizontally.

A continuation of said stops D is effected by coupling the rods D' thereto, the rear end of each of said rods passing through air-chambers *b b'*, formed in the case D'', as shown in Fig. 1, said rods having on the end thereof the convexed buttons *a a'*, that bear against the outer faces of the flexible diaphragms *d d'* of the respective air-chambers *b b'*. By this arrangement, when air under pressure is admitted alternately to the chambers *b b'* through the pipes E E', the respective diaphragms *d d'* of said chambers will be alternately blown out, and said diaphragms bearing against the buttons *a a'* of the rods D' will cause said rods to reciprocate longitudinally and move the stops D out and in for purposes hereinafter described.

Mounted on the rear ends of each of the stops D is an inclined arm *f*, adapted to engage the lower ends, respectively, of the vertical stems *f'*, carrying on their upper ends the valves *t*, adapted to close their respective ports *f''* in the wind-chest F, said stems *f'* also carrying the disk *t'*, adapted to close the outer opening of the port *f''* when the valves *t* are raised, whereby by drawing outward on the stops D the arm *f* thereon will operate the stem *f'* to raise the valve *t* in the wind-chest F from the port *f''*, when the wind will pass through said port into the pipe F', communicating therewith, and through said pipe into the air-chamber *h* in the chest F''. Said air-chamber communicates with a flexible diaphragm *h'*, that bears against the button *a''* on the upper end of the vertical rod *h''*, said rod passing through the air-chamber *h* and the air-chamber *m* of the case G', and, extending through said case, is coupled at its lower end to one end of the horizontal lever H, which is fulcrumed near its longitudinal center to a support H', the opposite end of said lever carrying a friction-wheel H'' and being held up by a spring *i*, which causes said wheel to normally bear against its corresponding plunger *n* when said plunger is in its innermost position in the cylinder A', by which arrangement, when wind is admitted to the air-chamber *h* through the pipe F', as before described, the diaphragm *h'* will be blown out, actuating the rod *h''* and raising that end of the lever H to which its lower end is attached, depressing the opposite end of said lever upon the spring *i*, and carrying the wheel H'' down, when its corresponding plunger *n* will fall to its outermost position in the cylinder A', as shown in Fig. 1 and at *n'* in Fig. 4. It will be understood that the number of plungers *n* in the longitudinal rows on the cylinder A' correspond with the number of stops D of the organ and that each stop operates a separate lever H to set its corresponding plunger, which enables the operator, by drawing out the respective stops D, to set their corresponding plungers *n* in the cylinder A' to produce the first desired combination of registers. When said series of plungers are so set, the locking-bar or slide

t'' is actuated to lock said plungers in their respective positions. The stops D that were drawn out to set said combination are then shoved in, when the valve *t* will close the upper end of the port *f''*, cutting off the wind from the air-chamber *h*, the wind therein being permitted to escape through the lower end of the port *f''*, opened by the dropping of the disk *t'*, thereby relieving the lever H. The cylinder A' is then revolved by suitable means to bring the succeeding row of plungers *n* directly over the series of wheels carried by the levers H, when by again drawing out the stops said row of plungers may be set for the next combination of registers, according to the music-score, when said plungers are locked, as before described, and the cylinder A' again revolved to bring another row of plungers in position to be operated on by the levers H, and so on until all of the horizontal rows of plungers in the cylinder have been set, or as many of them as is necessary to produce consecutively the different combinations of registers in the music to be executed. The cylinder A' is then revolved until the row of plungers *n* set for the first combination shall stand directly over the wheels H'' of the levers H. The music may then be executed in the ordinary manner, and when it is desired to produce the first combination of registers set the operator strikes upon any one of the finger-rails I, that extend along each manual of the organ, conveniently above the key-boards thereof, (see Fig. 2,) and the inner ends of which are pivoted at *x* to the organ-frame and which are connected by the coupling-rod I' to the outer end of the lever I'', that is fulcrumed at its longitudinal center to the post Q, (see Fig. 3,) the inner end of said lever I'' being coupled to the vertical stem *r*, carrying on its upper end the valve *s*, adapted to close the port *s'* in the wind-chest F, said stem also carrying near its center the disk *s''*, adapted to close the outer end of said port when the valve *s* is raised, whereby, when the operator strikes the finger-rails I, the lever I'' is operated to raise the valve *s* in the wind-chest F, when the wind will pass through the port *s'* into the pipe G, communicating therewith, and through said pipe to the air-chamber *m* in the case G', in which is located a two-way valve P, controlling the ports *v v'*, that communicate, respectively, with the pipes E E'. This air-chamber *m* is common to all the valves P of the series of levers H, the position of said valves being determined by the position of the plungers *n* in the cylinder A'. For instance, those plungers that have been set in their outermost position will bear upon the wheels H'' of the levers H, thereby depressing that end of said lever and raising the valve P, connected with the opposite end thereof, as shown in Fig. 1, which will open the port *v*, permitting the wind to pass through the pipe E to the air-chamber *b* and expand the diaphragm *d*, which will blow out its corresponding stop D and raise the valve *t* in the

wind-chest F, when the wind will blow through the pipe F' into the air-chamber *h* and raise the diaphragm *h'*, thus drawing upward on the rod *h''* and locking the valve P and lever H in their respective positions. At the same time the wind will pass from the chamber *h*, through the pipe J, into the air-chamber *o* of the case N and raise the flexible diaphragm *o'*, which bears against the button *o''* of the rod *w*, on which is mounted the two-way valve *w'*, controlling the ports *i' i''* in the wind-chest J', through which said rod passes, thereby lifting said rod and raising said valve from the port *i''*, when the wind will pass through the pipe K and expand the bellows L, which, being connected to the twin bellows L' by the rods *z*, will cause said bellows L' to collapse and actuate the slides that control their respective registers, (which construction is not shown, as it will be readily understood.) The operator may then perform upon the keys corresponding to the stops that have been blown out, when the desired register or combination of registers will be produced, according to the previous arrangement of the plungers *n* on the cylinder A'. After the first combination has been used the cylinder A' (by suitable mechanism, not shown) is revolved so as to bring the succeeding rows of plungers *n* directly over the wheels H'', carried by the series of levers H, when the plungers *n* that are set in their outermost position will bear upon the wheels H'' and depress that end of the lever H on which they are mounted, actuating the opposite end of said lever to raise the valve P to open the port *v*, as shown in Fig. 1, and the spring *i* will force the wheels H'' up against the plungers *n*, that are set in their innermost position, as shown at *n* in Fig. 4, thereby drawing downward on the rod *h''* and actuating the valve P to close the port *v* and open the port *v'*, the parts being then in position to produce the next combination, the operation continuing in the same manner until all the combinations set have been used in their consecutive order. When the wheel H'' is resting against a plunger in its innermost position, the valve P will close the port *v* and open the port *v'*, so that when the finger-rail is struck wind will be admitted through the pipe E' to the air-chamber *b'*, which will blow out the diaphragm *d'*, drawing in its corresponding stop D, which is thereby locked in that position while that combination is being used, it being understood that it is the plungers set in their outer positions only from which any effect is obtained.

It will be observed that the ports *v v'* in the wind-chest G' are provided, respectively, with the vents 1 2, adapted to be closed by the disks 3 4, mounted on the rod *h''*, the position of parts being such that when the valve P is raised to admit wind to the chamber to blow out the diaphragm *d* the disk 3 will be raised from the vent 1, which permits the air to escape from the chamber *b'* through the

pipe E' as the diaphragm *d'* is drawn in, (shown in Fig. 1,) and when the valve P is down, opening the port *v'* to permit the wind to pass through the pipe E' and blow out the diaphragm *d'*, the disk 4 will be carried away from the vent 2, permitting the air to escape from the chamber *b* through the pipe E as the diaphragm *d* is drawn in. It will also be observed that when the valve *t* is closed the disk *t'* is moved away from the outer end of the port *f''*, which affords a vent for the air-chambers *h* and *o* through the pipes F' and J, permitting the diaphragm *o'* to collapse and the valve *w'* to fall, opening the port *i'*, when the wind will pass through the pipe K' to the bellows L', expanding said bellows and collapsing the bellows L, as shown by dotted lines in Fig. 1, when said parts are in position to again actuate the slides to produce the register controlled by its corresponding stop.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an organ, and in combination, the finger-rail, the wind-chest F, the series of valves therein, and the devices connecting said valves to the finger-rail, whereby said valves are actuated by the movement of said rail.

2. The combination, in an organ, with a revolving agent, of plungers having endwise adjustment mounted thereon, a series of levers pivotally mounted and carrying in their free ends wheels mounted to revolve and adapted to have engagement with said plungers, a series of draw-stops, and means connecting said draw-stops with the series of levers pneumatically.

3. In an organ, the combination, with a revolving agent carrying a series of plungers, said plungers being capable of adjustment thereon, of a series of independent levers pivotally mounted and carrying at their free ends wheels, said wheels adapted to engage with said plungers, a finger-rail along the key-board, and means pneumatically connecting the finger-rail with the series of pivoted levers, substantially as specified.

4. The combination, with the revolving agent carrying a series of plungers, said plungers being capable of adjustment thereon, of a series of levers pivotally mounted below the revolving agent and carrying at their free ends revolving disks, said disks adapted to engage with the plungers, a finger-rail along the key-board, a series of draw-stops, and mechanism pneumatically connecting the finger-rail and draw-stops with the series of pivoted levers, substantially as set forth.

5. In an organ, the following elements, in combination: the revolving agent, the series of plungers adjustably mounted thereon, a series of levers carrying rotating disks or wheels, said wheels adapted to engage with the plungers along the front of the organ, the series of draw-stops, the series of twin bellows, and mechanism pneumatically connecting the fin-

ger-rails and draw-stops with the series of levers, and means for pneumatically and simultaneously operating the twin bellows with the draw-stop.

5 6. In an organ, and in combination, the finger-rail, the wind-chest F, the valve in said chest, said valve having actuating means connecting it to the finger-rail, the revolving agent having a movable plunger therein, the
10 pivoted lever adapted to have engagement

with said plunger, the wind - chest G', the valve therein, said valve having engagement with said pivoted lever, and the pneumatic-tube communication with said wind-chests.

In testimony whereof I affix my signature in 15 presence of two witnesses.

EDWIN SCOTT VOTEY.

Witnesses:

E. S. WHEELER,

B. F. WHEELER.