

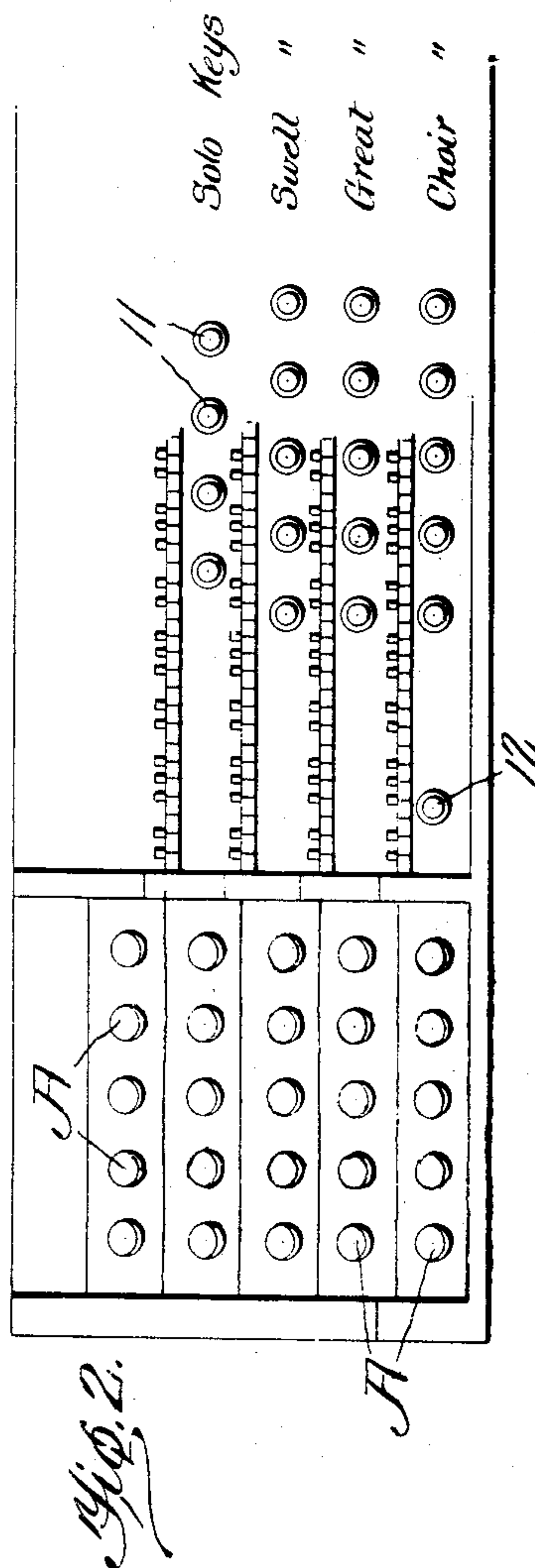
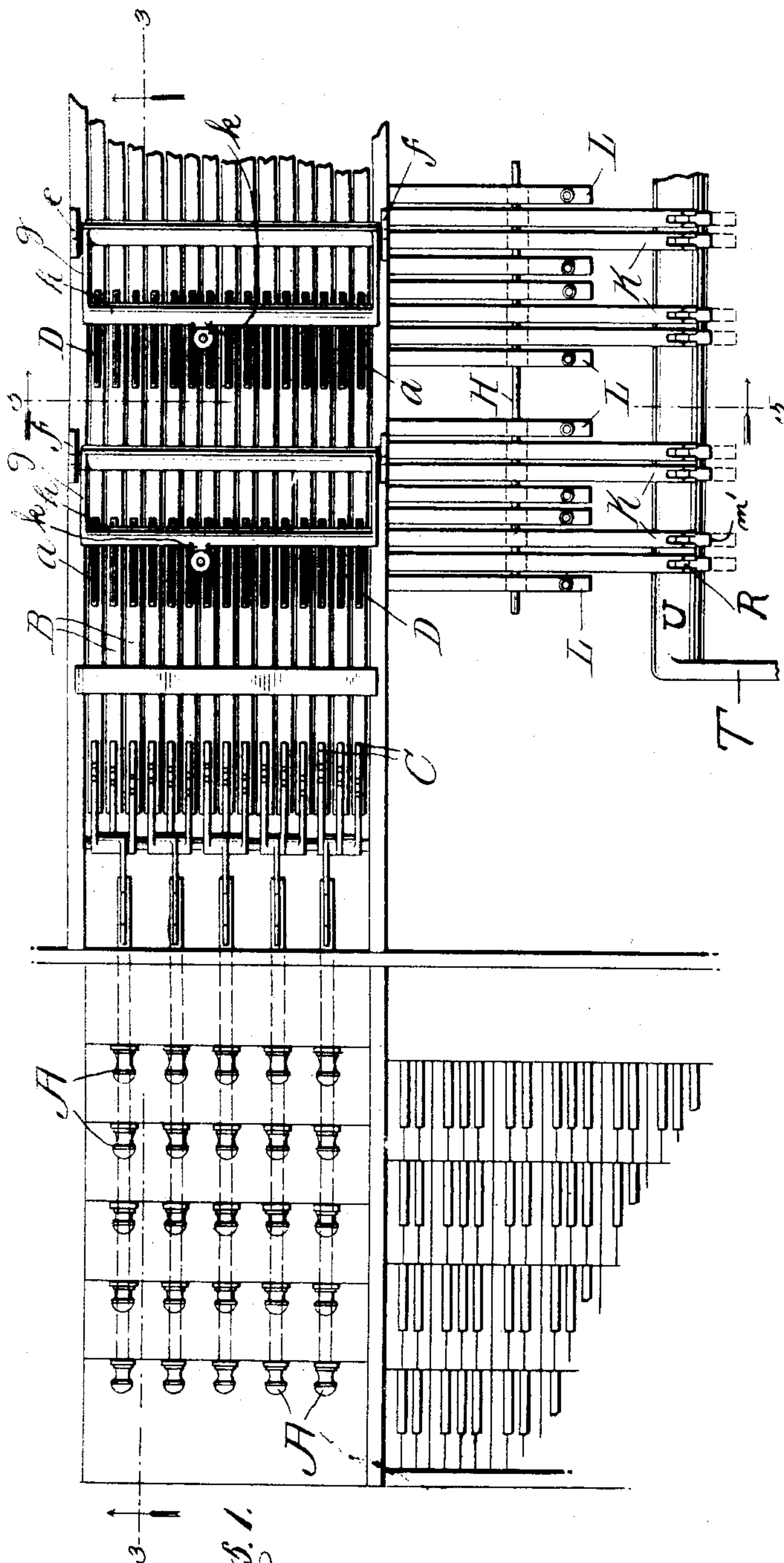
No. 867,751.

PATENTED OCT. 8, 1907.

J. E. PHILIE.  
COMBINATION ORGAN STOP ACTION.

APPLICATION FILED SEPT. 26, 1906.

3 SHEETS—SHEET 1.



Witnesses

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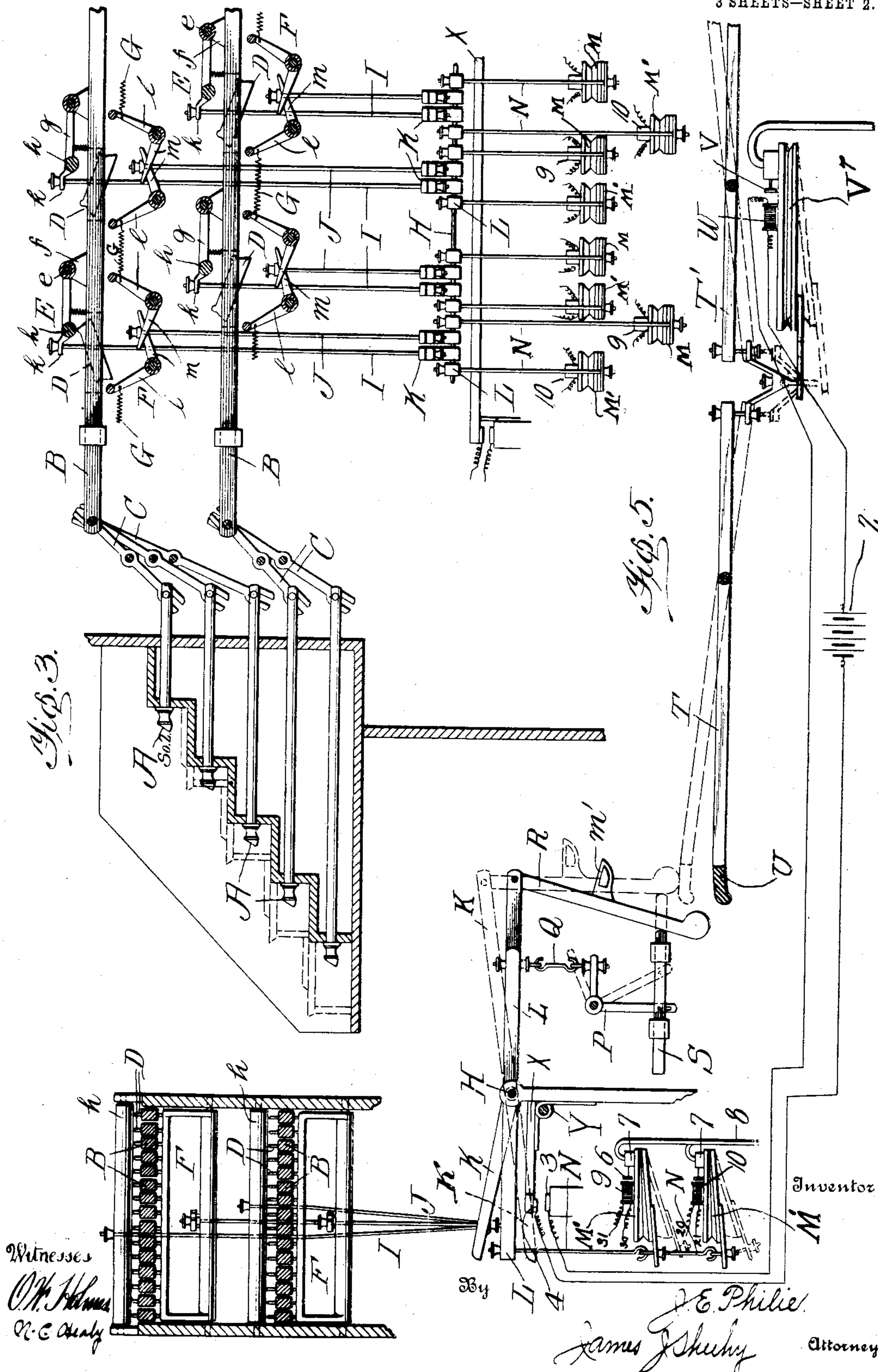
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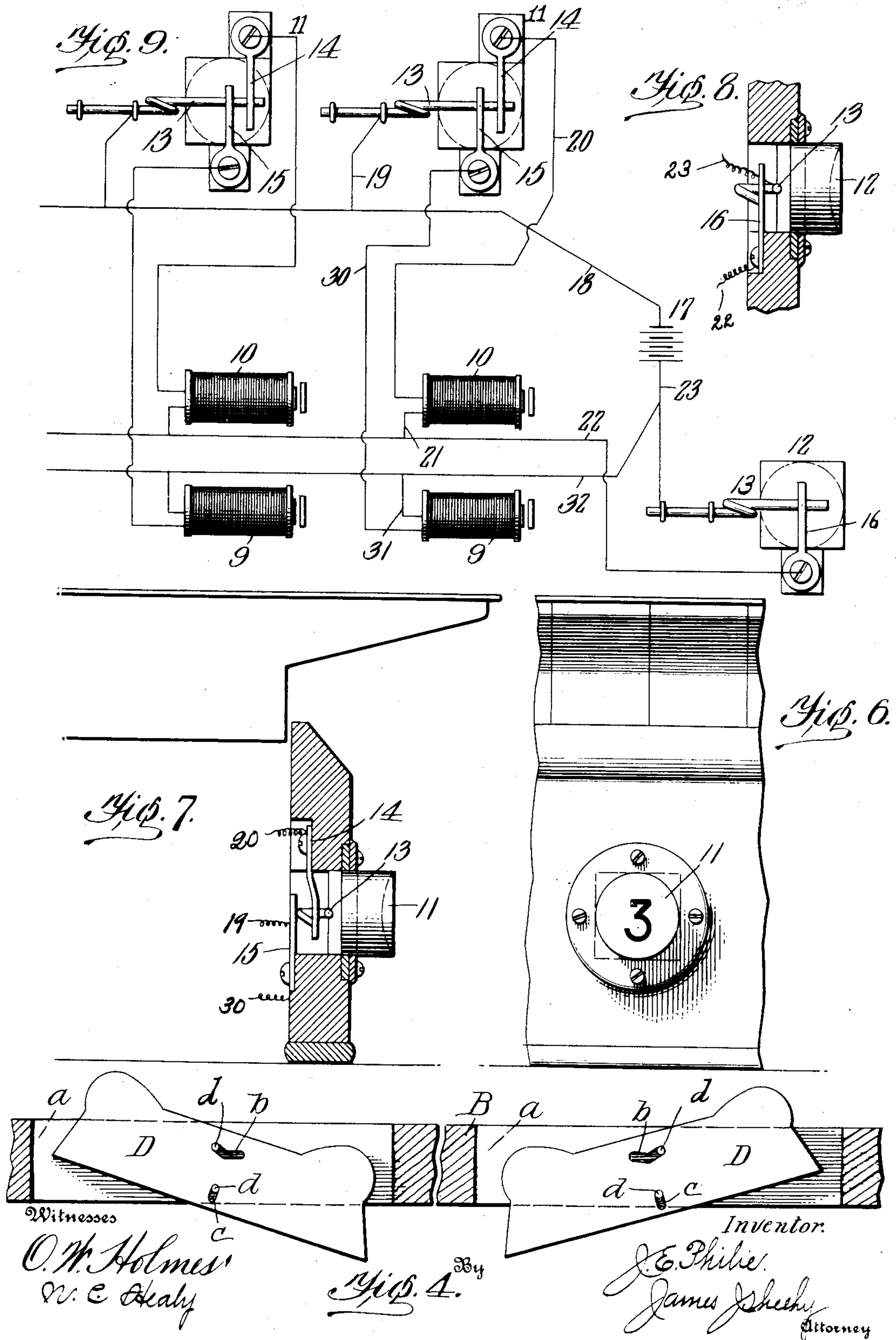
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3 SHEETS—SHEET 3.





# UNITED STATES PATENT OFFICE.

JOSEPH ERNEST PHILIE, OF WOONSOCKET, RHODE ISLAND.

## COMBINATION ORGAN STOP-ACTION.

No. 867,751.

Specification of Letters Patent.

Patented Oct. 8, 1907.

Application filed September 26, 1906. Serial No. 336,345.

To all whom it may concern,

Be it known that I, JOSEPH ERNEST PHILIE, a citizen of the United States, residing at Woonsocket, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in a Combination Organ Stop-Action, of which the following is a specification.

My invention pertains to organ stop actions of the combination type; and it has for its object to provide an improved stop action, whereby various previously selected and adjusted combinations of stops may be expeditiously and easily put into effect by an organist at various times, as needed, incident to the rendition of a piece of music.

Other objects and advantageous features of my invention will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which:

Figure 1 is a plan view of the left hand side of a combination organ stop action constructed in accordance with my invention. Fig. 2 is a front elevation illustrating the arrangement of the stop knobs, the combination finger buttons and the adjuster finger button of the action, relative to several banks of keys. Fig. 3 is a vertical section taken in the plane indicated by the line 3—3 of Fig. 1, looking in the direction indicated by arrow. Fig. 4 is an enlarged, broken longitudinal section of one of the stop rods of the action, showing the vertically swinging rockers carried by said rod. Fig. 5 is a detail, vertical section taken at a right angle to Fig. 3, and in the plane indicated by the line 5—5 of Fig. 1. Fig. 6 is an enlarged, detail front elevation of one of the combination finger buttons comprised in the action. Fig. 7 is an enlarged detail view, partly in section and partly in elevation, illustrating said combination finger button and the parts adjacent thereto. Fig. 8 is a similar view of the adjuster finger button and adjacent parts. Fig. 9 is a diagrammatic view illustrative of electrical connections hereinafter referred to in detail.

Similar letters and numerals of reference designate corresponding parts in all of the views of the drawings, referring to which:

A A are stop knobs, and B B are stop rods which are connected through levers C or other suitable means with the stop knobs, and are designed to be connected in the organ with the proper mechanism (not shown) which they operate. The knobs A and rods B are, by preference, relatively arranged and connected after the manner shown in Figs. 1 and 3; and each rod B is provided, as best shown in Fig. 4, with vertically swinging, independently movable rockers D which are preferably, though not necessarily, made of sheet-metal in the shape illustrated. These rockers D are arranged in longitudinal vertical slots a in the rods B,

and are respectively provided with an obtuse angle slot b and a straight slot c which receive transverse pins d by which the rockers are connected to the rod in such manner that they are susceptible of movement from the position shown at the left of Fig. 4 to the position shown at the right of said figure, and vice versa for a purpose presently set forth. It will be apparent by reference to Fig. 4 that when one end of either rocker D is struck and impelled downward, the vertex of the slot b in the rocker will be moved to and past the pin d in the slot, and then the said end of the rocker will fall of its own weight to its lowermost position.

E E are devices for adjusting the rockers D in the stop rods B. The devices shown respectively comprise a rock-shaft e journaled in fixed bearings f, arms g extending at right angles to the rock-shaft, and a cross-bar h connecting the outer portions of the arms g; the cross-bars h of the several devices E being positioned above the groups of rockers D and being provided with lateral arms k, for a purpose presently set forth.

F F are devices for cooperating with the rockers D in moving the stop rods B in the direction of their length. These stop-rod-moving devices F respectively comprise a bail-shaped swinging frame l having an arm m; and they are arranged in pairs below the groups of stop rods B and so that the arms m of the members of a pair intersect each other, while the outer portions or cross-bars of the frames l of said pair rest adjacent to the opposite ends of the rockers D of one group. Springs G arranged as shown in Fig. 3 are employed to return the devices F to and normally hold the same in the position shown in Fig. 3.

In arranging the devices described for a certain combination, one involving the drawing out of the stop knob marked "So. 2" in Fig. 3 for instance, the organist first draws out the specified stop knob and thereby moves the rod B connected therewith rearward so as to position the forward end of the forward rocker D in the rod under the cross-bar h of the upper and forward lever-adjusting device E. Now when the said device E is moved downward, by means hereinafter set forth, its cross-bar h will not change the position of said rocker D, this because of the rocker having been previously set in the position shown. If, however, the stop knob marked "So. 2" is not required out in the said combination that is being arranged, said stop knob is left in the position shown, and then when the mentioned rocker-adjusting device E is moved downward, it will change the mentioned rocker D, relative to its stop rod B, from the position shown at the right of Fig. 4 to that shown at the left in said figure, and in that way avoid rearward movement of the rod B carrying the mentioned rocker D and outward movement of the stop knob marked "So. 2" when the pair of rod-moving devices F of the said combination—i. e., the pair below the upper and forward group of rockers



D, are actuated. In the event of the organist desiring to have the said stop knob marked "So. 2" out in a second combination or a combination other than that described in the foregoing, the said stop-knob is drawn out in the arrangement of the combination so that when the upper rear rocker-adjusting device E is depressed, it will change the rear rocker D of the stop rod B connected with the said stop knob marked "So. 2" from the position shown in Fig. 3 to its other position, this in order to enable the upper rear pair of rod-adjusting devices F, which is the pair of the second combination, to effect, when actuated, rearward movement of the mentioned rod B and outward movement of the said stop-knob marked "So. 2".

As will be gathered from the drawings and the foregoing description, the upper forward rocker-adjusting device E controls and the upper forward pair of rod-adjusting devices F cooperate with the rockers D of the upper forward group, the upper rear rocker-adjusting device E controls and the upper rear pair of rod-adjusting devices F cooperate with the rockers D of the upper rear group, the lower forward rocker-adjusting device E controls and the lower forward pair of rod-adjusting devices F cooperate with the rockers D of the lower, forward group, and the lower rear rocker-adjusting device E controls and the lower rear pair of rod-adjusting devices F cooperate with the rockers D of the lower rear group. With this understanding and the further understanding that there are provided for each combination of stops that it is desired to make, a group of rockers D, a rocker-adjusting device E and a rod-adjusting device F, a full understanding of the remainder of my invention may be readily obtained from the following description and the drawings.

H is a fixed shaft extending in the same direction as the stop-rods B and disposed below the same.

I I are rods connected to the arms *k* of the rocker-adjusting devices E and depending from the same.

J J are rods connected to and depending from the pairs of rod-adjusting devices F.

K K are vertically-swinging levers fulcrumed at points intermediate their ends on the shaft H and each connected at one end to one of the depending rods I or J.

L L are vertically-swinging levers corresponding in number to the levers K and fulcrumed at points intermediate their ends on the shaft H and arranged, by preference, as illustrated, relative to said levers K.

M M' are bellows corresponding in number to the levers L and each connected through a rod N with one end of one lever L. The arms of the levers K to which rods I or J are connected are preferably extended above the adjacent arms of the levers L, as shown, in order to prevent said arms of levers K when depressed from striking the bar X and in that way closing the electric circuit and interfering with the proper working of the action. The bellows M of the series shown are connected through the rods N with the levers L which cooperate with those levers K that are connected through rods J with the pairs of rod-adjusting devices F, while the bellows M' are similarly connected with the levers L which cooperate with those levers K that are connected through rods I with the rocker-adjusting devices E.

P P are bell-cranks corresponding in number to and

located below the levers L and having their upper arms connected through links Q with the opposite ends of said levers, with reference to the rods N.

R R are pendent arms pivoted to the opposite ends of the levers K, with reference to the rods I and J, and having weights *m'*, and S S are bars connected to the lower arms of the bell-cranks P and arranged to bear against the arms R, and also arranged to return to the position shown by full lines in Fig. 5 or to be returned to such position by springs or other expedients (not shown). There is a bar S connected in the manner stated with each lever L and arranged to move, from the position shown in full lines in Fig. 5 to that shown in dotted lines, the pendent arm R connected to a lever K at one side of the mentioned lever L.

T is a lever fulcrumed at an intermediate point of its length and having a lateral bar U, Figs. 1 and 5, normally arranged as shown by full lines in Fig. 5 relative to the pendent arms R.

T' is a lever similar to the lever T and designed for a purpose hereinafter set forth.

V is an armature connected with the inlet valve of a bellows V' which in turn is connected with the inner arms of the levers T T'. W is an electro-magnet for attracting said armature and arranged in a normally open electric circuit with a source of electric energy 2, Fig. 5, and contact pieces 3 and 4, and X, Figs. 3 and 5, is a vertically movable bar, extending under all of the levers L so as to be depressed by any one of said levers when the same is actuated, and carrying the contact piece 4, and designed to be normally retained in and returned to the position shown in Fig. 5 by one or more springs Y.

In virtue of the construction described, it will be apparent that when that arm of any one of the levers L above the bar X is moved downward, the bell crank P connected to the other arm of said lever L will move the rod S which it carries and through the medium of said rod S will cause the pendent arm R of the adjacent lever K to assume a position above the bar U of the lever T; and it will also be apparent that the described movement of the lever L will depress the bar X, and by so doing will close the electric circuit in which the electro-magnet W is contained so as to energize said magnet and enable the bellows V' to draw the inner arms of the levers T T' downward and thereby move the outer arms of said levers upward, when, as is obvious, one end of the adjacent lever K will be moved upward while the opposite end thereof—i. e., the end to which one of the rods I or J is connected, will be moved downward. See dotted lines in Fig. 5. Each lever K is connected with either a rocker-adjusting device E or a rod-adjusting device F, and when the lever is rocked as just stated, it will be seen that the device with which it is connected will be actuated.

The right hand end of lever T' is constructed similarly to the left hand end of lever T, and parts similar to those cooperating with the lever T are provided at the right hand side of the organ for cooperation with the lever T'. From this it follows that a single bellows V' when inflated, is enabled through the medium of the levers T T' to rock those of the levers K at opposite sides of the organs whose pendent arms R are positioned above the lateral bars U of the levers T T', after the manner shown by dotted lines in Fig. 5.



Each of the bellows M and M' is provided with an electro-magnet 9 or 10, an armature 6, and a valve 7 connected with the armature 6 and controlling communication between the bellows and a pipe 8 leading from a large bellows or other source of air supply (not shown). The electro-magnets on the bellows M are numbered 9 while those on the bellows M' are numbered 10.

11, 11 are the combination finger-buttons of my novel action, which are preferably arranged as shown in Fig. 2, relative to their respective banks of keys, and 12 is the adjuster finger button. These buttons 11 and 12 are connected at their backs to springs 13, designed to normally retain the finger buttons in and return the same to the position shown in Figs. 7 and 8. The combination finger buttons 11 are equipped with contact pieces 14 and 15 which normally rest away from each other and from the spring 13 as shown in Fig. 7, while the adjuster finger button 12 is equipped with a single contact piece 16 which normally is not engaged by the adjacent spring 13, Fig. 8. In the diagrammatic view, Fig. 9, I have shown two of the electro-magnets 9 of bellows M, two of the electro-magnets 10 of bellows M', the two proper combination finger-buttons 11 and the adjuster finger-button 12 as electrically connected with each other and a source of electrical energy 17, and by reading the said Fig. 9 in connection with Fig. 5, the relation of the parts will be readily seen.

In the operation of my improvements the organist first arranges the stops he desires to use in a certain combination, and then pushes the combination finger button upon which he elects to set the arranged combination, the button 11 at the right of Fig. 9 for instance, part of the way in, this in order to make contact between the spring 13 of the button and the adjacent contact piece 14. When this is done, the electric circuit is incomplete, and no operation takes place. When, however, the organist holds the mentioned combination finger button part of the way in, as stated in the foregoing, and at the same time presses the adjusting finger button 12 inward, the electric circuit is completed, and the current will pass from one pole of the source of energy 17 through wire 18, the wire 19, the spring 13 of the mentioned combination button 11, the contact piece 14 adjacent thereto, the wire 20, the upper magnet 10 at the right of Fig. 9, to energize the same and operate the upper left hand rocker-adjusting device E in Fig. 3, the wires 21 and 22, the contact piece 16 complementary to the adjuster button 12, the spring 13, thereof, and the wire 23, back to the opposite pole of the source of electric energy 17.

In the practical operation of my improvements, the organist, preparatory to the rendition of a piece of music, elects the combination of stops necessary to obtain a certain effect, and he draws out the knobs A of those stops, and leaves in or pushes in those not needed. He then presses part of the way in the combination finger-button No. 1 under and complementary to the bank of keys affected by the said combination of stops, and then presses the adjusting finger-button 12 so as to operate the proper rocker-adjusting device E—i. e., the upper left-hand one in Fig. 3, and in that way assure all of the outer rockers D of the upper group of stop-rods B being in proper position for the first combination. After the first combination of stops is set as stated, the organist pushes in all of the

stop knobs that were previously drawn out. It is not, however, necessary for him to do this. The organist then decides upon the stops to be used in the next or second combination, and if the said combination affects but the upper bank of keys, he has but to draw the stop knobs A for the combination out, and then press partly in the No. 2 combination finger-button so as to operate the upper rocker-adjusting device E at the right of Fig. 3, and thereby assure the rear rockers D of the upper group of stop-rods B resting in proper position for the combination, and so on consecutively, but if the combinations are to be made of stops complementary to different banks of keys, the organist operates the combination finger-buttons under those keys together with the adjusting finger-button 12, as in the first instance.

With all of the combinations required, set in the manner described, it will be apparent that incident to the rendition of a piece of music, all that the organist has to do in order to put one of the combinations into effect, is to press in to the full extent the combination button 11 upon which said combination is set, when by virtue of the operation of the proper pair of stop-rod-moving devices F, the combination of stops will be forced out, and simultaneously all other stops affecting the same bank of keys and not belonging to the combination will be moved in, this latter being due to the fact that one device F of each pair coöperates with one group of rockers D to move the stop-rods in one direction while the other device F of the pair coöperates with the said group of rockers D to move the stop-rods in the opposite direction. To put in effect the next combination, the organist presses the proper combination finger-button 11, when the stops of that combination will be moved outward and all other stops will be moved inward. If the organist desires to put a certain combination into effect at different times incident to the rendition of a piece of music, it will be seen that he is at liberty to do so; and it will also be appreciated that there is nothing in my improved stop-action to prevent the organist drawing out or pushing in one or more stops by the direct application of his hand, when he desires so to do.

I prefer to employ the novel mechanism herein shown and described for working the rocker adjusting devices E and the stop-rod-moving devices F, because said mechanisms afford ample power, take up but little room, and make no noise, and for such reasons are superior to individual pneumatics or bellows used for each action. I do not desire, however, to be understood as confining myself to the said mechanisms as any means compatible with my invention may be employed for actuating the devices E and F without involving departure from the scope of my invention as claimed.

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

1. In a combination organ stop action, the combination of a stop rod, a rocker having a straight slot and an obtuse angle slot, pins on the rod and entering the slots through which the rocker is connected to the rod, means for engaging the rocker to adjust the same, and means for engaging the rocker to move the rod.

2. In a combination organ stop action, the combination of a stop rod having a vertical slot, a rocker located in said slot and having a straight slot and an obtuse angle slot,



pins on the rod and entering the slots through which the rocker is connected to the rod, means for engaging the rocker to adjust the same, and means for engaging the rocker to move the rod.

5 3. In a combination organ stop action, the combination of a group of horizontal stop rods, vertically-movable rockers carried thereby, a vertically swinging device for adjusting the rockers having a cross-bar and arms thereon pivoted above the group of rods, vertically swinging devices located below the group of rods and arranged to cooperate with the rockers to move the rods in opposite directions, and having inwardly extending arms a rod connected to and depending from the rocker adjusting device, a rod connected to and depending from the arms of the rod-moving devices and means connected to said rods for actuating them and thereby the rocker adjusting device and the rod moving devices.

10 4. In a combination organ stop action, the combination of a group of horizontal stop rods, vertically movable rockers having straight slots and obtuse-angle slots pins on the rods and entering the slots by which the rockers are connected to the rods, a vertically swinging rocker-adjusting device pivoted at a point above the rods and having a cross-bar extending above all of the rockers, and vertically-swinging rod-moving devices located below the group of rods and having cross-bars for engaging all of the rockers.

15 5. In a combination organ stop action, the combination of a group of stop rods, adjustable devices carried by said rods, a device for adjusting the adjustable devices, devices for cooperating with the adjustable devices to move the rods; an adjuster finger-button, a combination finger-button; a lever and bar thereon, a bellows, operating mechanism connected with the adjusting device and comprising an element movable into and out of the path of the bar and controlled by the said bellows, electric means controlled by the adjuster finger-button for letting fluid under pressure into said bellows; a second bellows, operating mechanism connected with the rod-moving devices and comprising an element movable into and out of the path of the bar and controlled by the second mentioned bellows, electric means controlled by the combination finger-button for letting fluid under pressure into the second mentioned bellows; a third bellows connected with the lever, and electric means controlled by the first and second mentioned operating mechanisms for letting fluid under pressure into said bellows.

20 6. In a combination organ stop action, the combination of stop rods, adjustable devices carried by said rods, a device for adjusting the adjustable devices, devices for cooperating with the adjustable devices to move the rods; an adjuster finger-button, a combination finger-button; a bellows, electric means controlled by the adjuster finger-button for letting fluid under pressure into said bellows; a second bellows, electric means controlled by the combination finger-button for letting fluid under pressure into the second mentioned bellows; a third bellows, means movable by said third bellows, operating mechanism connected with the adjusting device and comprising an element controlled by the first mentioned bellows and movable into and out of the path of the means that is movable by the third mentioned bellows; and operating mechanism connected with the rod-moving devices, comprising an element controlled by the second mentioned bellows and movable into and out of the path of the means that is movable by the third mentioned bellows.

25 7. In a combination organ stop action, the combination of a group of stop rods, adjustable devices carried by said rods, a device for adjusting the adjustable devices, devices for cooperating with the adjustable devices to move the rods; an adjuster finger-button, a combination finger-button; two bellows; electric means controlled by the adjuster finger-button for letting fluid under pressure into one bellows, electric means controlled by the combination finger-button for letting fluid under pressure into the other bellows; levers K each connected with one adjusting device or rod-moving device; pendent arms R connected to said levers K and arranged to normally assume oblique po-

sitions; a lever L connected with the bellows controlled by the adjuster finger-button, a bell-crank connected to said lever L and provided with means for moving to an upright position the pendent arm R of the lever K that is connected with the adjusting device; a lever L connected with the bellows controlled by the combination finger-button; a bell-crank connected to said lever L and provided with means for moving to an upright position the pendent arm R of the lever K that is connected with the rod-moving devices; a lever having a bar located below the pendent arms R when the latter are upright; and means for moving the latter lever when any one of the levers L is swung downward.

8. In a combination organ stop action, the combination of a group of stop rods, adjustable devices carried by said rods, a device for adjusting the adjustable devices, devices for cooperating with the adjustable devices to move the rods; an adjuster finger-button, a combination finger-button; two bellows, electric means controlled by the adjuster finger-button for letting fluid under pressure into one bellows, electric means controlled by the combination finger-button for letting fluid under pressure into the other bellows, levers K connected with the adjusting device and the rod-moving devices, respectively, pendent arms R connected to said levers K and arranged to normally assume oblique positions, a lever L connected with the bellows controlled by the adjuster finger-button, a bell-crank connected to said lever L and provided with means for moving to an upright position the pendent arm R of the lever K that is connected with the adjusting device; a lever L connected with the bellows controlled by the combination finger-button, a bell crank connected to said lever L and provided with means for moving to an upright position the pendent arm R of the lever K that is connected with the rod-moving devices, a lever having a bar located below the pendent arms R when the latter are upright, a third bellows connected with the latter lever, and electric means controlled by the levers L for letting fluid under pressure into said third bellows.

9. In a combination organ stop action, the combination of stop rods, adjustable devices carried by said rods, a device for adjusting the adjustable devices, devices for cooperating with the adjustable devices to move the rods; an adjuster device arranged to be moved by a performer, a combination device arranged to be moved by a performer; operating means, operating mechanism connected with the said adjusting device and comprising means movable into and out of the path of the operating means and controlled by the said adjuster device, and operating mechanism connected with the rod moving devices and comprising means movable into and out of the path of the operating means and controlled by the said combination device.

10. In a combination organ stop action, the combination of stop rods, adjustable devices carried by said rods, a device for adjusting the adjustable devices, devices for cooperating with the adjustable devices to move the rods; an adjuster device arranged to be moved by a performer, a combination device arranged to be moved by a performer, a movable device for operating the device for adjusting the adjustable devices and for also operating the devices for cooperating with the adjustable devices to move the rods; operating mechanism connected with the said adjusting device and comprising means movable into and out of the path of the said movable operating device and controlled by the said adjuster device, operating mechanism connected with the said rod moving devices and comprising means controlled by the said combination device and movable into and out of the path of the said movable operating device, and means controlled by the said operating mechanisms, for moving the said movable operating device.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH ERNEST PHILLIE.

Witnesses:

EDGAR L. SPAULDING,  
ISABELLE SMITH.