

W. KAISLING.

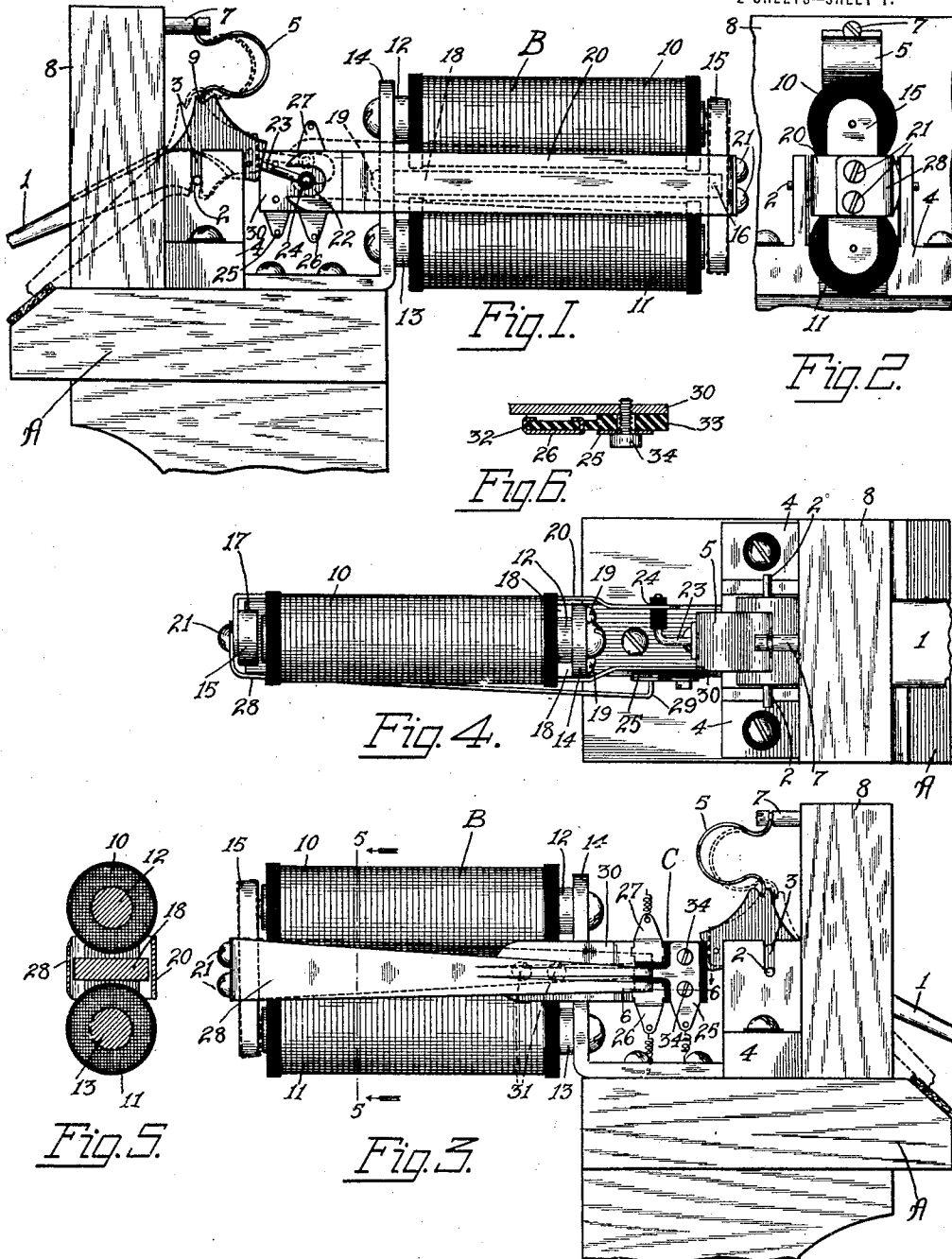
COMBINED ELECTROMAGNETICALLY AND MANUALLY OPERABLE ORGAN STOP.

APPLICATION FILED JAN. 14, 1915.

1,353,594.

Patented Sept. 21, 1920.

2 SHEETS—SHEET 1.



Witnesses:

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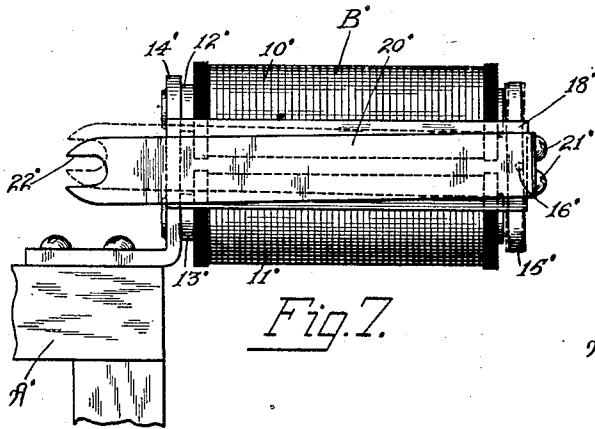


Fig. 7.

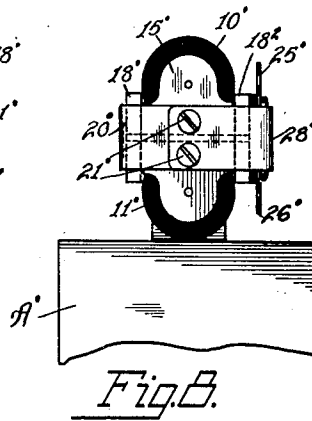


Fig. 8.

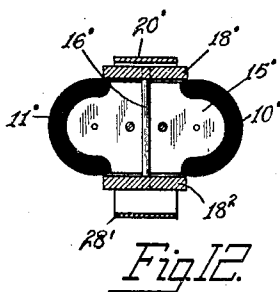


Fig. 9.

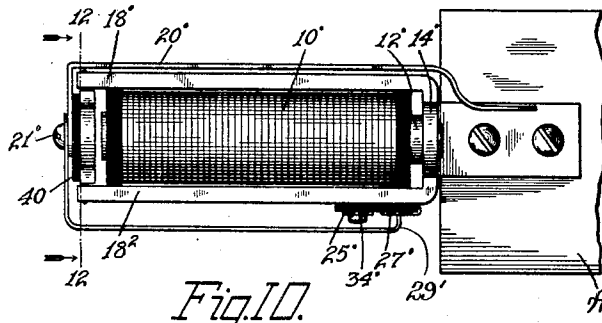


Fig. 10.

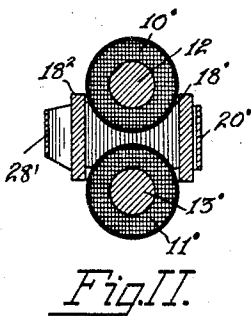


Fig. 11.

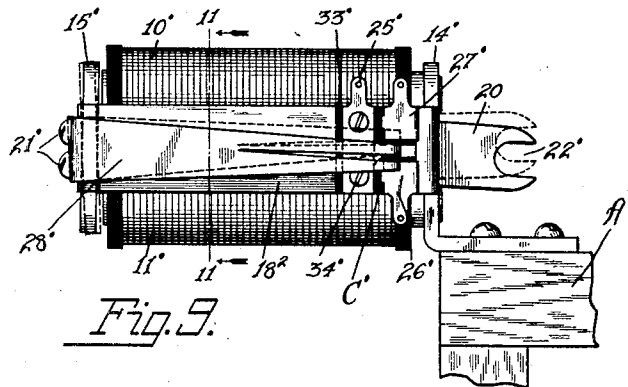


Fig. 12.

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UNITED STATES PATENT OFFICE.

WILLIAM KAISLING, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

COMBINED ELECTROMAGNETICALLY AND MANUALLY OPERABLE ORGAN-STOP.

1,353,594.

Specification of Letters Patent.

Patented Sept. 21, 1920.

Application filed January 14, 1915. Serial No. 2,102.

To all whom it may concern:

Be it known that I, WILLIAM KAISLING, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Combined Electromagnetically and Manually Operable Organ-Stops, of which the following is a specification.

My invention relates to stop key devices for organs, and has to do more particularly with keys which may either be manually or electromagnetically controlled, an object of my invention being to provide an improved arrangement of parts whereby an effective and efficient control is secured. Certain features of my invention reside in the combined structure including key and electromagnet.

For an understanding of my invention reference is to be had to the accompanying drawing in which like parts are indicated by like reference characters, and in which

Figure 1 is a side view of the preferred embodiment of my invention;

Fig. 2 is an end view of Fig. 1;

Fig. 3 is a right side view of Fig. 2;

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

Fig. 5 is a sectional view along the line of 5, 5 of Fig. 3 in the direction of the arrows indicated thereat;

Fig. 6 is a sectional view on the line 6 of Fig. 3;

Fig. 7 is a side view of a modified form of the electromagnet of my invention;

Fig. 8 is a right end view of Fig. 7;

Fig. 9 is a right side view of Fig. 8;

Fig. 10 is a top view of Fig. 9;

Fig. 11 is a sectional view of Fig. 9, along the line 11, 11 and in the direction of the arrows indicated thereat; and

Fig. 12 is a sectional view along the line 12, 12 of Fig. 10.

Referring now more particularly to the preferred embodiment of my invention as shown in Figs. 1 to 6 inclusive. A stop key 1 is provided pivotally supported by a shaft 2 resting in grooves 3 of bracket 4. A snap spring 5 is provided slotted at its upper end and resting in a groove in screw 7, which screw is threaded into the face board 8 of the organ frame A and may be adjusted. The lower end of the spring 5 rests in a groove 9 in key 1, said groove being so positioned that when the key is in the normal position shown by the full lines in Fig. 1 the

bearing portion of the spring 5 is to the right of a line drawn from the pivot 2 to the slot in the screw and thus tends to hold the key in its said position. If the key is pressed downwardly at its forward end as soon as the slot 9 has advanced to a position on the opposite side of the previously referred to line between pivot 2 and the slot in screw 7, said spring 5 acts to quickly move the key to its alternate or dotted position. Likewise when the key is moved upwardly, spring 5 tends to snap it into its normal position. In this way the key is moved into its positions by quick movement and then held thereat.

As above referred to, the key may be either manually or electromagnetically operated and for the latter purpose I provide an electromagnetic structure B comprising electromagnets 10, 11, having their cores 12, 13 fastened to a bracket 14 preferably of a material capable of magnetization. An armature 15 is provided and is pivoted by a pin 16 passing through a slotted end 17 of a pole piece 18, said pole piece being shown by dotted lines in Fig. 1 and extending between the spools 10 and 11 and secured to the bracket 14 by screws 19. This pole piece 18 is of magnetizable material so that either electromagnet spool when independently energized attracts the armature 15 thereto.

A member 20 connects armature 15 to the stop key, being fastened to the armature by screws 21 and having a slot 22 at its free end which slot coöperates with a key extension 23 supporting a buffer 24 preferably of soft rubber tubing.

The electromagnetic structure B also controls the set of contacts C comprising an intermediate or common contact 25 and coöperating contacts 26, 27. A coöperating arm 28 is carried by armature 15. The arm 28 has its free extremity slotted thus forming contact ends of fingers 29 for coöperation with the stationary or passive contacts 25, 26 and 27. The contact ends of fingers 29 are bent back at right angles to the arm 28 to bring them into position to wipe over said passive contacts 25, 26 and 27. When arm 28 is in the position shown (in full line) in Fig. 3, contact 26 is electrically connected to common contact 25 through the wiper fingers 29 of the arm 28, and when the arm 28 is in the position shown (dotted) in Fig. 3, contact 27 is electrically connected to common contact 25 through the wiper fingers 29

of the arm 28. The stationary contacts 25, 26, 27 are mounted upon an extension 30 preferably fastened to the pole piece 18 by screws 31. As shown in Fig. 3, contacts 26 and 27 are insulated from the extension 30, said contacts having prongs 32 bent under the insulating strip 33 to hold the contacts firmly thereto. The common contact 25 is preferably in electrical contact with the extension 30 being secured thereto by screws 34. Thus the frame of the electromagnet is connected to the common contact 25.

Assuming the parts are in the position shown by the full lines of the different figures, should the key 1 be depressed, as soon as slot 9 on the key passes its center, that is a point on the line between pivot 2 and the slot in screw 7, key 1 is snapped downwardly and the buffer 24 carried by the key engages the upper side of the slot 22 of arm 20 whereby the arm is moved upwardly into its dotted position thereby carrying armature 15 and contact arm 28 into their dotted position and thus connecting contacts 25 and 27. These contacts may be used for various purposes and as my invention is confined to the structure I do not believe it necessary to go into the control circuits.

I have referred to the method of moving the parts from their full to their dotted positions by a manual actuation of the stop key but these parts may be actuated by an energization of one of the electromagnets. Therefore, if the parts are to be moved from their full line to their dotted line positions, an energization of coil 11 of the electromagnet draws the armature 15 to its dotted position whereby contact arm 28 carried thereby crosses or connects contacts 25, 27. The consequent movement of arm 20 causes the lower edge of its slot 22 to engage the key buffer 24 moving said buffer upward until the pivot point 9 has passed its center at which time the key 1 is moved downwardly with a snap movement into its dotted position.

With the parts in their dotted position it will be apparent they may be restored to their normal or full line position either manually or by the electromagnet coil 10. This operation will be apparent from the previous description.

Referring now to the modification shown in Figs. 7 to 12, inclusive, although I have shown only the electromagnetic structure B¹ and contacts controlled thereby, it is to be understood that this device may be used in place of the device B of the preferred form of my invention as will be apparent from a comparison of the drawings. The principal difference in the construction of electromagnetic structure B and B¹ lies in the pole piece which connects the armature and bracket, the pole piece in the modified form consisting of the U-shaped element compris-

ing pole extensions 18¹ and 18² through the free ends of which the pivot pin 16¹ extends. This pin 16¹ lies in a slot transversely cut into the armature 15¹, said pin being clamped by a plate 40, (Fig. 10), which is positioned between the arm 20¹, 28¹ and the armature. Thus the pin is rigidly secured to the armature but pivotal in the extensions 18¹, 18². The fingers 29¹ of arm 28¹ engage contacts 25¹, 26¹ and 27¹ which are secured to an insulating plate 33¹ in a manner similar to that shown in Fig. 6. In the present form of my invention the contacts and insulating plate are secured directly to the pole extension 18².

The operation of the electromagnet of the modified form of my invention is the same as that of the preferred form, and it is thought this operation will be readily understood in view of the previous description.

Although the electromagnets of my invention are adapted for coöperation with the stop key, it is to be understood that I contemplate employing them in other ways as it is evident the electromagnet may be used in other ways than that shown. For instance, it may be employed by itself for controlling its contacts and thus be used as a relay. It will also be apparent that changes and modifications of my invention may occur to others, this depending upon the use to which the device is put. Therefore, I do not desire to be limited to the exact structures as shown and described, but aim to cover all that which comes within the spirit and scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described including a two-position stop key for use in controlling the apparatus of a pneumatically operated instrument and adapted to be moved manually from its normal position to its actuated position and vice versa, a pair of electromagnets, an armature for said electromagnets adapted to directly move said stop key from its actuated to its normal position when one of said electromagnets is energized, and to move said key from its normal to its actuated position when the other of said electromagnets is energized.

2. A device of the character described including a stop key for use in controlling the apparatus of an organ or the like and having normal and actuated positions, said key adapted to be moved manually from either of its positions to the other and to remain in the position to which it was moved, a pair of electromagnets, a mounting member to which the cores of said electromagnets are secured, a pivotally secured armature extending across and in front of the free ends of said electromagnets, an arm

for said armature adapted to directly move said key from its normal to its actuated position when one of said electromagnets is energized and to move said key from its actuated to its normal position when the other of said electromagnets is energized and mechanism controlled by said stop key.

3. A device of the character described including a two-position stop key adapted to be moved manually from its normal position to its actuated position and vice versa, a pair of electromagnets provided with parallel cores attached to an angular member adapted to be included in the magnetic path of each of said electromagnets, an armature for said electromagnets adapted to directly move said stop key from its actuated to its normal position when one of said electromagnets is energized, and to move said key from its normal to its actuated position when the other of said electromagnets is energized, and spring means for yieldingly holding said key in either of its positions when moved thereto.

4. A device of the character described comprising a two-position stop key provided with a movable lever adapted to be grasped by the hand of the operator of a pneumatically operated instrument and moved manually from either of its positions to the other, a pair of electromagnets, an armature for said electromagnets, an arm secured to said armature and provided with a bifurcated end portion, a pin secured to said key and extending between the bifurcated end portions of said arm, said armature being so related to said electromagnets that when one of them is energized said armature moves said arm to cause it to engage said pin to move said key from an actuated position to a normal position and when the other of said electromagnets is energized to move said key from its normal position to its actuated position.

5. A device of the character described including a pivotally secured stop key having a normal and an actuated position for use in controlling the apparatus of a pneumatic instrument, said key being adapted to be moved manually from either position to the other, an electromagnetic structure provided with a pair of energizing windings, a pivoted movable member operated by such structure and directly connected to said stop key whereby when one of said windings is energized said stop key is moved from its actuated to its normal position and when the other of said windings is energized said stop key is moved from its normal to its actuated position, and a member supporting said pivoted member adapted to be included in the magnetic path of either of said magnets.

6. A device of the character described including a two-position pivotally secured

stop key for use in controlling the apparatus of an organ or the like, a manually controlled lever for moving said key from either of its positions to the other, an electromagnetic structure provided with a pair of energizing windings, an operating member for said electromagnetic structure actuated thereby, a mechanical link directly connecting said member to said pivotally secured key whereby when one of said windings is energized said key is moved from one of its positions to the other, and when the other of said windings is energized said key is moved from its other position back to its first position, said key being adapted to remain in either of its positions when moved thereto either manually or electromagnetically.

7. A device of the character described including a pivotally secured stop key for use in controlling the mechanism of a pneumatically played instrument and having a normal and an actuated position, said key being adapted to be moved manually from either position to the other, an electromagnetic structure provided with a pair of energizing windings, a movable member operated by said structure and directly connected to said stop key whereby when one of said windings is energized said stop key is moved from its actuated to its normal position and when the other of said windings is energized said stop key is moved from its normal to its actuated position, and spring means for holding said key in either of its positions when moved thereto.

8. A device of the character described including a two-position stop key having normal and actuated positions, means for pivotally supporting said key at an intermediate point, manually controlled means for moving said key from either of its positions to the other, a spring for yieldingly holding said key in either of its positions, an electromagnetic structure provided with a pair of energizing windings, a movable member controlled by said structure loosely connected to said stop key but adapted to directly move the same from either of its positions to the other depending upon which of said energizing windings is energized, and an electrical contact maker controllable by said stop key.

9. A device of the character described including a stop key provided with a lever having a normal and an actuated position and adapted to be moved manually from either of its positions to the other, an electromagnetic device provided with a pair of energizing windings, a mounting member to which said electromagnetic device is attached, a movable member for said device loosely connected to but adapted to directly move said stop key from its normal to its actuated position when one of said wind-

ings is energized and from its actuated to its normal position when the other of said windings is energized, and a supporting member for said movable member secured to said mounting member.

10. A device of the character described including a two-position stop key adapted to be moved manually from an alternate to a normal position and vice versa for use in controlling the apparatus of a pneumatically actuated instrument, an electromagnetic structure provided with a pair of magnetic core pieces and with a pair of energizing windings, a mounting member to which said cores are attached, an armature for said structure, a supporting member for said armature attached to said mounting member and included in the magnetic path of each of said cores, a member secured to said armature at its one end and loosely connected to said key at its other end but adapted to directly move the key from its actuated position to its normal position when one of said windings is energized and from its normal position to its actuated position when the other of said windings is energized.

11. A device of the character described including a stop key having a normal and an actuated position and adapted to be moved manually from either of its positions to the other, a spring member for yieldingly holding said key in either of its positions, an electromagnetic structure provided with a pair of energizing windings, an operating member for said electromagnetic structure

movable in either one of two directions depending upon which of said windings is energized, and mechanical means loosely connected to but directly connecting said key to said operating member to cause said key to be moved to its different positions by said electromagnetic structure when its windings are energized.

12. A device of the character described including a stop key for controlling the mechanism of a pneumatically actuated instrument and having normal and actuated positions and adapted to be moved manually from either position to the other, a spring member for yieldingly holding said key in both of its positions, an electromagnetic device provided with a pair of energizing windings, a mechanical link directly connecting said electromagnetic device to said stop key whereby when one of said windings is energized if said stop key is in its actuated position it will be moved to its normal position, and whereby if said stop key is in its normal position and the other of said windings is energized it will be moved from its normal to its actuated position, and an electrical switch controllable by said stop key.

Signed by me at Chicago, in the county of Cook and State of Illinois, in the presence of two witnesses.

WILLIAM KAISLING.

Witnesses:

GEORGE E. MUELLER,
M. R. ROCHFORD.