

F. SCHOENWOLF.
 COMBINED ELECTROMAGNETICALLY AND MANUALLY OPERABLE ORGAN STOP KEY.
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1,275,766.

Patented Aug. 13, 1918.

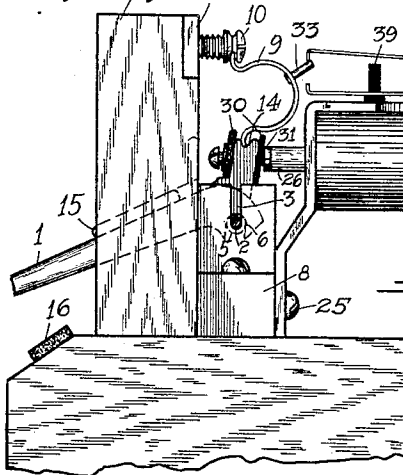


Fig. 1.

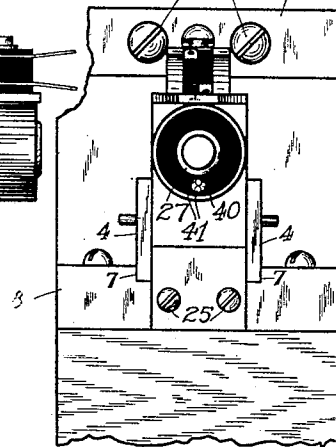


Fig. 2.

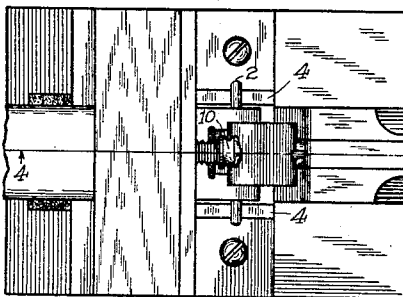


Fig. 3.

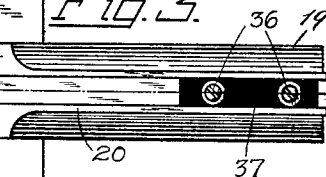


Fig. 4.

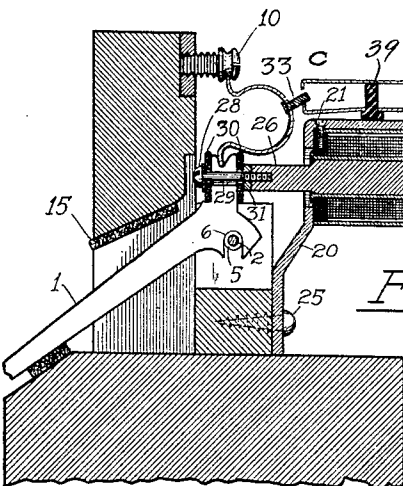
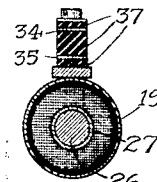


Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

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COMBINED ELECTROMAGNETICALLY AND MANUALLY OPERABLE ORGAN STOP-KEY.

1,275,766.

Specification of Letters Patent.

Patented Aug. 13, 1918.

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To all whom it may concern:

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

My invention relates to stop key devices for wind instruments, such as organs, and has to do more particularly with keys which may either be manually or electromagnetically operated. A feature of my invention resides in the provision of a combined structure including a manually operated stop key which may be operated by means of a solenoid electromagnet. The object of my invention is to produce a device of the class described, which embodies desirable features and advantages all in a simple, efficient, and economical manner; and to the accomplishment of this object and such others as may hereinafter appear, my invention consists in the novel details of construction, parts and combination of parts particularly described in the ensuing specification and more particularly pointed out in the appended claims, reference being had to the accompanying drawings, forming a part hereof, in which the same reference characters indicate like parts throughout the several views, and in which—

Figure 1 is a side view of the combined stop key of my invention showing the parts in their normal position;

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

Fig. 3 is a top view of Fig. 1;

Fig. 4 is a sectional view of Fig. 3 taken along the line 4, 4 of Fig. 3;

Fig. 5 is a sectional view taken along the line 5, 5 of Fig. 4.

Referring to the accompanying drawings, a stop key 1 is pivotally supported by a shaft 2 resting in grooves 3 of the supports 4. The shaft 2 is provided with a sleeve 5 which is adapted to fit into a recess 6 cut in the lever 1. The supports 4 securely fit in grooves 7 cut in the member 8. A snap spring 9 is provided and slotted at its upper end and rests in a groove in screw 10, which screw is threaded into the strip 11 which is secured to the face of the organ frame 12 by means of screws 13. The lower end of the spring 9 rests in a groove 14 cut

in lever 1, the said groove being so positioned that when the stop key is in a normal position the bearing portion of the spring 9 is such as to force the stop key to the right of a line drawn from the shaft 2 to the slot in the screw, and thus tends to hold the stop key in said normal position. If the lever 1 is pressed downwardly at its forward end as soon as the slot 14 has advanced to a position on the opposite side of the previously referred to line, by the said spring 9, it will be quickly moved to its alternate position as shown in Fig. 4. Likewise when the lever 1 is moved upwardly from its actuated position, the spring 9 tends to snap it into its normal position. In this way the stop key is moved into its normal and actuated positions by a quick movement and then held thereat. I provide a pad of felt 15, or some other suitable material for arresting the lever 1 when it moves from its actuated to its normal position and a similar pad 16 for arresting the said lever when it moves from its normal to its actuated position.

As above mentioned the stop key may be either manually or electromagnetically operated and for the latter purpose I provide a double wound electromagnetic solenoid 18 which is inclosed in a shell 19 that in turn is secured to an angularly shaped iron by means of screws 21 and 22. The angularly shaped iron 20 is secured to the member 8 by means of screws 25 and holds the plunger 26 of the said solenoid 18 in position to actuate the lever 1. The solenoid comprises a double wound hollow spool which is held in place in the sleeve 19 by means of the screws 21 and 22 that hold the said sleeve 19 to the said angularly shaped iron 20. I provide a screw 28 for mechanically fastening the lever 1 to the plunger 26 of the solenoid. A pair of felt washers 30 are also provided, one mounted intermediate the head of the screw 28 and the lever 1 and the other mounted between the lever 1 and the lock nut 31, which is provided for securely holding the screw 28 in its adjusted position. The solenoid 18 is so arranged that when one of its windings is energized the plunger 26 is forced forward and operates to move the lever 1 about its pivot point causing it to be moved to its normal position, while if the other of said windings is energized, and the lever 1 is in its normal position, the plunger 26 is drawn into the

hollow of the spool 27, thus causing the lever 1 to be turned about its pivot point and to be moved to its actuated position. The solenoid 18 also controls a set of contacts comprising an intermediate contact 33 and cooperating contacts 34 and 35. The intermediate contact 33 is carried by the spring 9 and is adapted to contact with either the spring 34 or the spring 35, depending upon the position of lever 1. The cooperating contacts 34 and 35 are mounted upon the angularly shaped arm 20 by means of screws 36, the said springs being insulated from each other and from the said iron 20 by means of blocks of insulation 37. A bushing 39 passes through a hole in the lower spring 35 into engagement with upper spring 34 for holding the said latter spring in its normal position. A recess 40 is cut in the end plate 27 to permit the wires 41 to extend through to the windings of the said solenoid.

Assuming now that the parts are in normal position, should the lever 1 be operated, as soon as slot 14 of the stop key passes its center, that is a point on the line between the pivot 2 and the slot in screw 10, lever 1 is snapped downwardly to its actuated position and the contact 33 carried by the spring 9 is moved from engagement with spring 35 into engagement with spring 34. These contacts may be used for various purposes and as my invention relates 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 one position to another by the manual actuation of the stop key. These parts may also be operated by the solenoid. If the parts are to be moved from their normal to their actuated position, a circuit is closed through one of the windings of the solenoid, thus causing it to energize and operate the plunger 26, thereby moving the lever 1 from its normal to its alternate position and at the same time operating the intermediate contact 33, causing it to move from its normal to its actuated position. With the parts in their actuated position, it will be apparent that they may be restored to their normal position either manually or by means of the double wound solenoid, this operation being apparent from the foregoing description. The contact 33 is conductively connected to the strip 11 through the medium of the actuating spring 9 and the adjustable screw 10.

While I have illustrated a certain arrangement of parts, I do not wish to be limited to the same as many changes and modifications may readily suggest themselves to one skilled in the art. Therefore I wish to cover all such changes and modifications as come within the spirit and scope of the appended claims.

Having described my invention, what I

claim as new and desire to secure by United States Letters Patent, is:

1. A device of the character described comprising a stop key having normal and actuated positions and adapted to be manually moved from either position to the other, a double wound solenoid, operating means connecting said stop key with said solenoid, one of said windings operating to move said stop key from its normal to its actuated position when energized, and the other of said windings operating to move said stop key from its actuated to its normal position when energized, and a spring for effecting a continued relative movement of said stop key when being operated manually and for yieldingly holding said stop key in either of its positions when moved thereto.

2. A device of the character described comprising a stop key having normal and actuated positions and adapted to be manually moved from either of its positions to the other, an electromagnetic solenoid, an adjustable mechanical link connecting said stop key with said solenoid, said mechanical link operating to move said stop key from one of its positions to the other when said solenoid is actuated, and said stop key operating to move said mechanical link from one of its positions to the other when said stop key is actuated manually.

3. A device of the character described comprising a two-position stop key, a double wound solenoid provided with a plunger operatively connected to said stop key, one winding of said solenoid operating to move said stop key from one of its positions to the other when energized through the medium of said plunger, said stop key operating to move said plunger from one of its positions to the other when said stop key is manually operated, a spring for yieldingly holding said stop key in either of its positions, a pair of contact springs, and a contact carried by said first spring for contacting with said contact springs.

4. A device of the character described including a two-position stop key, an electromagnetic solenoid provided with a plunger for moving said stop key from one of its positions to the other, a spring for yieldingly holding said stop key in either of its positions, said spring operating to snap said stop key from one of its positions to the other when manually actuated, a pair of contact springs, and a contact carried by said first spring for contacting with said springs when said stop key is moved from one of its positions to the other.

5. A stop key of the character described comprising an actuating lever having a normal and an actuated position, a spring for yieldingly holding said lever in either of its positions, a solenoid provided with a plunger for moving said lever from either of its

positions to the other, a pair of contact springs secured to said solenoid for coöperation with a contact carried by said first spring, and an adjustable mechanical link connecting said solenoid to said actuating lever.

6. A device of the character described comprising a pivoted stop key having an extended lever for manually moving said stop key to either of two positions, a double wound solenoid, an adjustable mechanical link connecting said stop key with said solenoid, one winding of said solenoid operating when energized to move said stop key from one of its positions to the other, and the other winding of said solenoid operating when energized to move said lever from said last mentioned position to the other of said positions, and a spring operating upon said lever for effecting the further movement of said stop key when once having been moved manually a predetermined distance and for holding said stop key in either of its positions, and adjustable means for determining the point at which said spring will have such effect upon said stop key.

7. A device of the character described comprising a pivoted stop key having an extended lever for manually moving said stop key to either of two positions, a double wound solenoid, an adjustable mechanical link connecting said stop key with said solenoid, one winding of said solenoid operating when energized to move said stop key from one of its positions to the other, and the other winding of said solenoid operating when energized to move said lever from said last mentioned position to the other of said positions, and a spring operating upon said lever for effecting the further movement of said stop key when once having been moved manually a predetermined distance and for holding said stop key in either of its positions.

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

FRED SCHOENWOLF.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."