

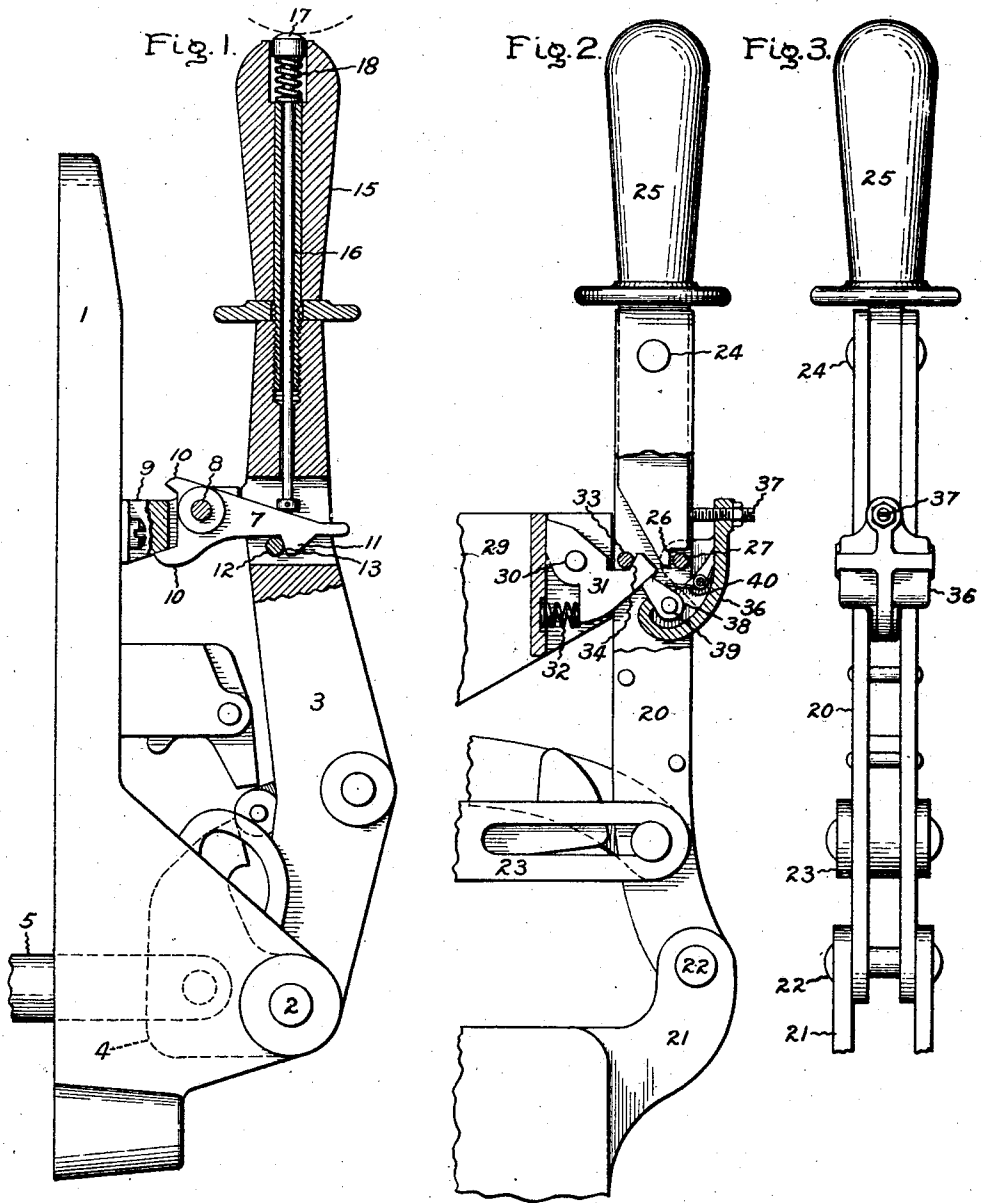
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J. M. JENSEN

SWITCH OPERATING MECHANISM

Filed July 13, 1925



Inventor:  
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# UNITED STATES PATENT OFFICE.

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## SWITCH-OPERATING MECHANISM.

Application filed July 13, 1925. Serial No. 43,068.

*To all whom it may concern:*

Be it known that I, JENS M. JENSEN, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Switch-Operating Mechanism, of which the following is a specification.

My invention relates to electric switches, particularly to the operating mechanism for switches employed for the starting of motors by the use of compensators. An object of my invention is the provision of an improved switch operating mechanism which after being moved to closed circuit position requires a slight but continuous effort on the part of the operator in order to maintain it in that position.

My invention will be better understood from the following description taken in connection with the accompanying drawing, and its scope will be pointed out in the appended claims.

Referring to the drawing, Fig. 1 is a side elevation partly in section of one embodiment of my invention; Fig. 2 is a similar view of another embodiment thereof; and Fig. 3 is a front view of the same.

In the drawing, a base plate 1, which is adapted to be secured to a panel board supports the pivotal mounting 2 of the switch lever 3. By suitable mechanism including the member 4, also pivoted at 2, movement of the lever to the position illustrated in Fig. 1 produces a thrust in the switch operating rod 5 to close the switch (not shown). When the handle is in the position shown, the switch is closed, and where a compensator is used for starting purposes the motor is being brought up to operating speed by being connected to the line through the compensator.

As is well known to those familiar with the operation of this form of electrical machinery, compensators for motor starting purposes are not designed to be connected in the circuit except for the brief time ordinarily required for the motor to come up to proper speed. If the compensator is not soon disconnected from the circuit there is danger of its being seriously injured. When a latch is provided for positively holding the switch lever in its closed circuit position the operator must be relied upon to release the switch when the motor

has reached such a speed that it can be thrown directly in the line and the compensator cut out of the circuit. He may, however, be called away suddenly while the switch is closed and inadvertently leave the compensator in circuit until it is burned out.

In accordance with my invention I provide a latching means for the lever which is so constructed that it will retain the lever in closed circuit position only so long as the operator exerts a slight effort thereon. This means comprises a latch 7 pivoted at 8 to the bracket 9 on the base 1 and having stop lugs 10. The nose 11 of the latch engages the pin 12 in the lever 3, the engaging face 13 being inclined at such an angle that the latch nearly retains the lever in its closed circuit position.

Extending through the handle 15 of the lever is the rod 16, whose enlarged lower end is adapted to engage the latch 7 and whose upper end terminates in the thumb button 17 beneath which is the compression spring 18. The lever is operated in the usual manner to close the switch and may easily be maintained in that position by the operator applying a light pressure on the button 17. Release of this pressure permits the switch to open.

In the modification illustrated by Figs. 2 and 3, the switch lever 20 is pivoted to the supporting structure 21 at 22, and is connected to the switch through link and toggle mechanism, a portion of which is shown at 23. The lever 20 is shown as comprising two parallel plates and pivoted at one end of which by pin 24 and lying between the plates is the handle 25. The lower end of the handle is notched at 26 to receive pin 27 of the lever whereby pivotal movement of the handle relative to the lever is limited in the counterclockwise direction. Bracket 29 on the switch board panel has pivoted to it at 30 the latch 31, which is resiliently maintained in the position illustrated by the spring 32. Pin 33 on the lever is engaged by the latch when the lever is in the closed circuit position to retain the lever in that position. The pin engaging face 34 of the latch is inclined as in the latch of Fig. 1, the angle of inclination being such that the force of the spring 32 is not quite sufficient to retain the latch in the position illustrated, that is, in the position holding the switch closed. For the purpose of applying a small

additional force to supplement the spring 32 in retaining the latch, I have provided a lever 36 mounted on the pin 27. The upper end of this lever carries a set screw 37 in a position to be engaged by the lower portion of the handle 25 and the opposite end of the lever has a short arm 38 pivoted thereto at 39 and resiliently held by spring 40 against a portion of the lever which acts as a stop. Arm 38 contacts with the under side of the latch 31 when the switch is closed and transmits pressure thereto from the handle 25. The arm 38 being pivoted to the lever 36 is rotated slightly against the spring 40 when it encounters the end of the latch during the closing movement of the switch lever 20. As soon as the pin 33 has ridden over the nose of the latch to the position illustrated the arm 38 is returned by its spring to the operative position shown.

In this form of my invention, the operator after throwing the switch lever to closed circuit position may hold the switch closed by the application of slight pressure only on the handle, the applied pressure being transmitted from the handle to the latch through the lever 36 and arm 38. Release of pressure on the handle permits the automatic release of the latch and the consequent opening of the switch.

While I have described certain embodiments of my invention, I do not wish to be limited to the particular forms shown and described as it will be apparent that other modifications therein may be made without departing from the scope of my invention as set forth in the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. Switch operating mechanism comprising a hand operated switch lever, means con-

structed to retain the lever in a predetermined position only when pressure is applied to said means, and means whereby the hand of the operator supplies the required pressure.

2. Switch operating mechanism comprising a switch operating lever, a latching device therefor constructed to require slight pressure thereon to hold the lever in closed circuit position and means for manually applying said pressure.

3. Switch operating mechanism comprising a hand operated switch lever, a latch for retaining the lever in closed circuit position, said latch having an inclined engaging face whereby pressure must be applied thereto to cause it to retain the lever and means actuated by the hand of the operator for applying pressure to the latch.

4. Switch operating mechanism comprising a hand operated switch lever, a handle pivotally connected thereto, a latch for retaining the lever in closed circuit position, said latch having an engaging face inclined normally to throw the latch out of engagement, and a connection between the handle and the latch whereby pressure applied by the operator holds the latch in engaging position.

5. Switch operating mechanism comprising a hand operated switch lever, a handle pivoted thereto, a latch having an inclined face for engaging the switch lever, a lever pivoted to the switch lever and arranged to be rocked by contact with a portion of the handle, and a spring pressed arm pivoted to the last mentioned lever for engaging the latch.

In witness whereof, I have hereunto set my hand this 10th day of July, 1925.

JENS M. JENSEN.