

No. 803,898.

PATENTED NOV. 7, 1905.

A. E. HANDY.
ELECTRIC SWITCH.
APPLICATION FILED OCT. 20, 1904.

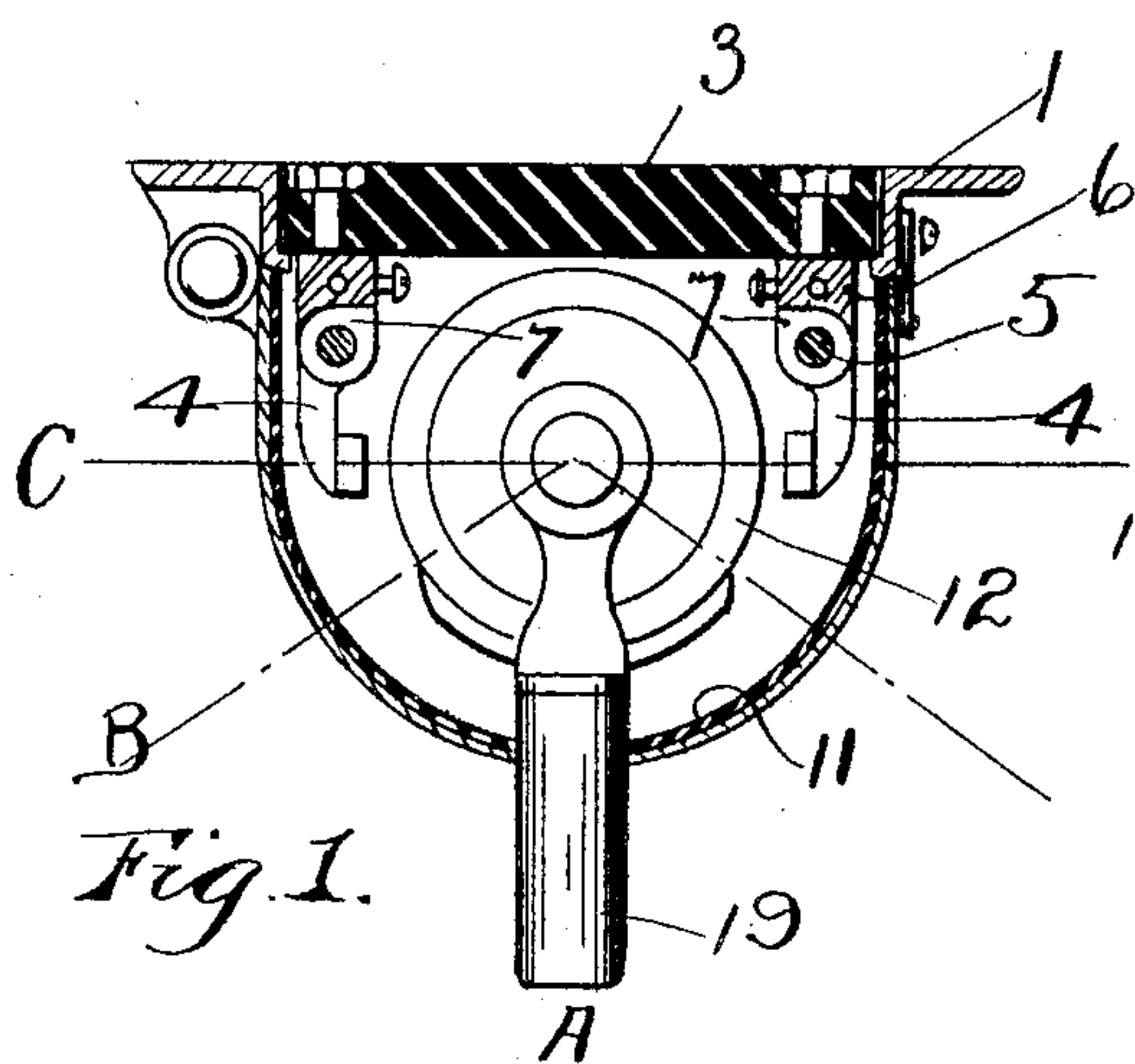


Fig. 1.

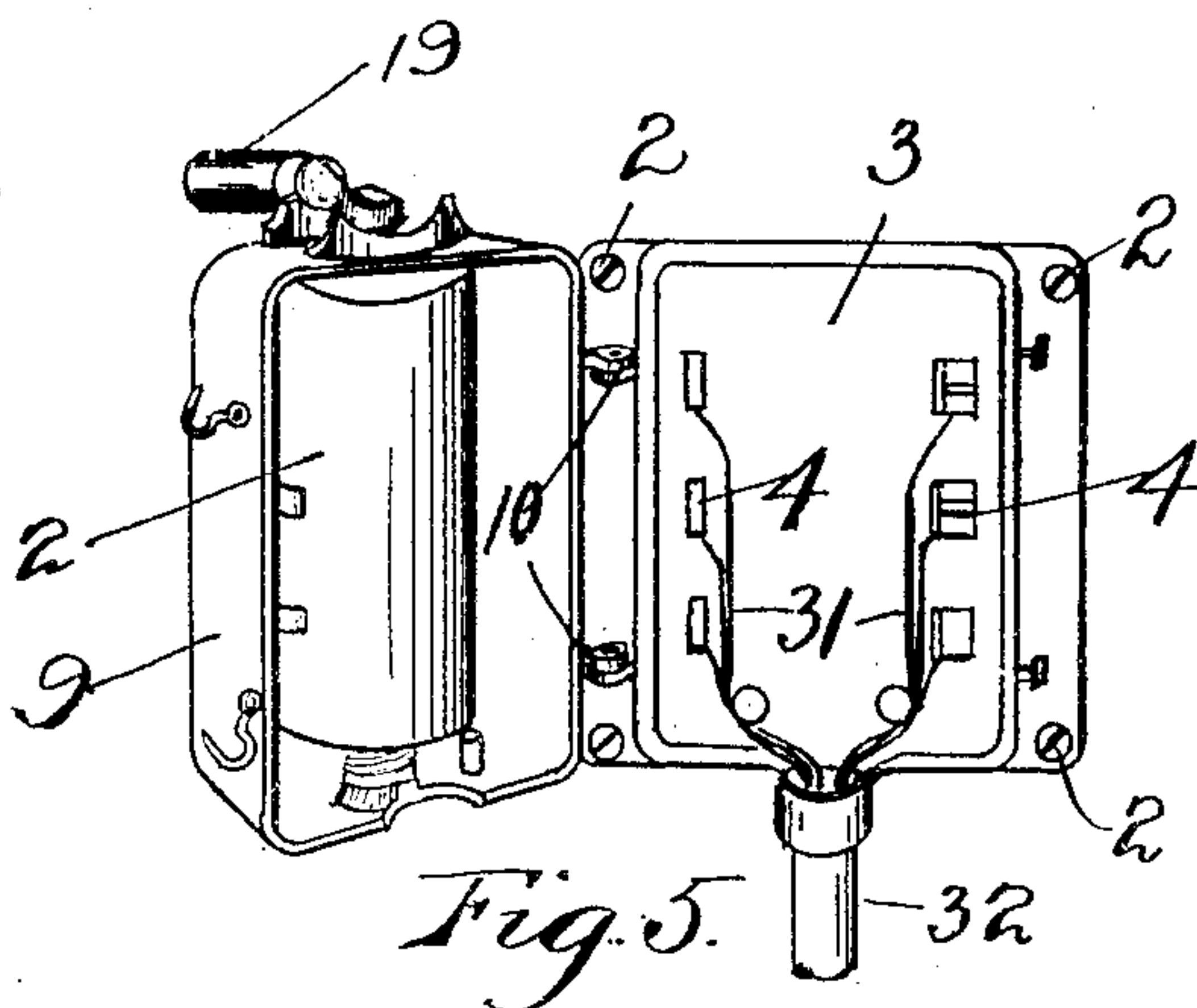


Fig. 5.

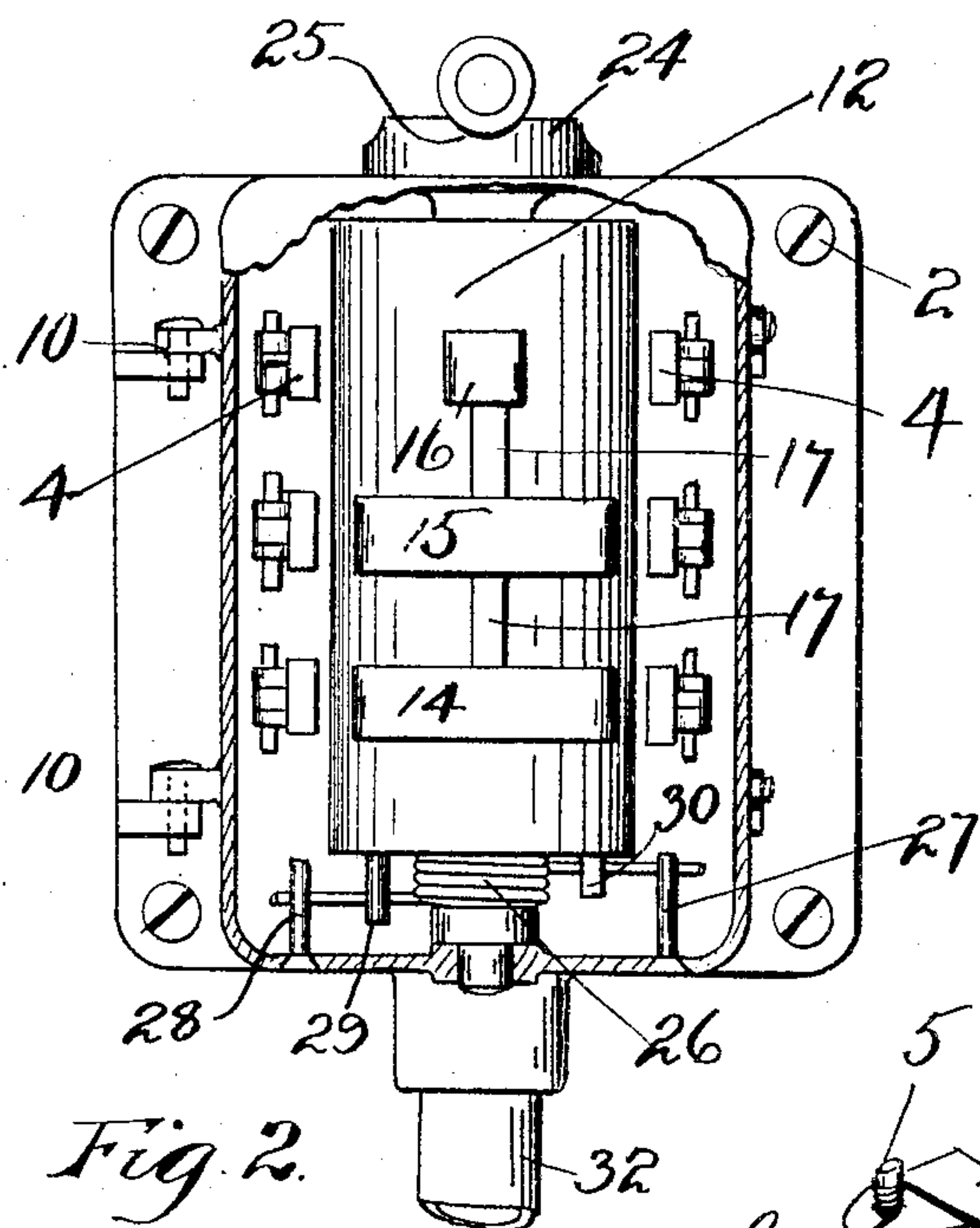


Fig. 2.

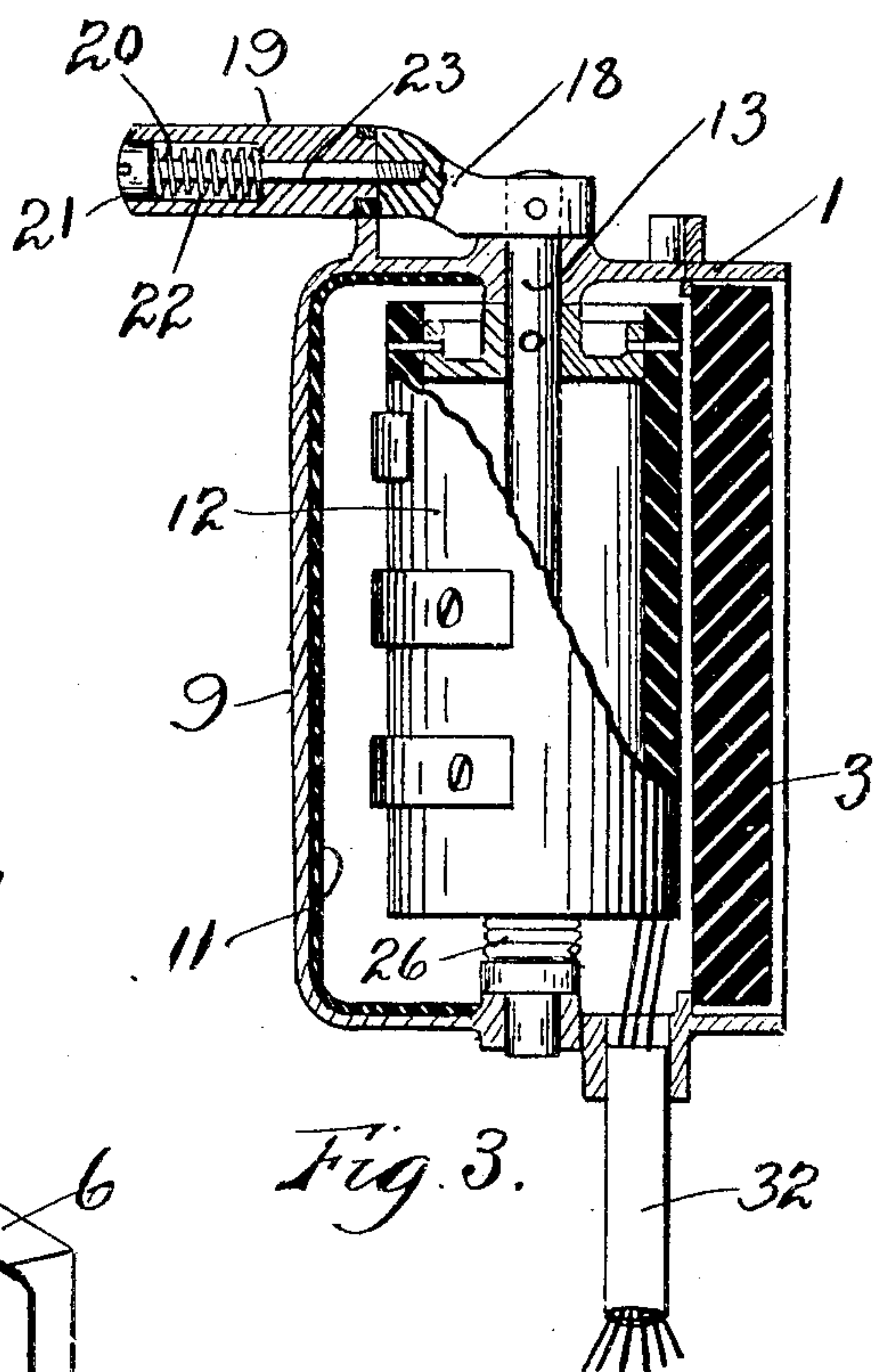


Fig. 3.

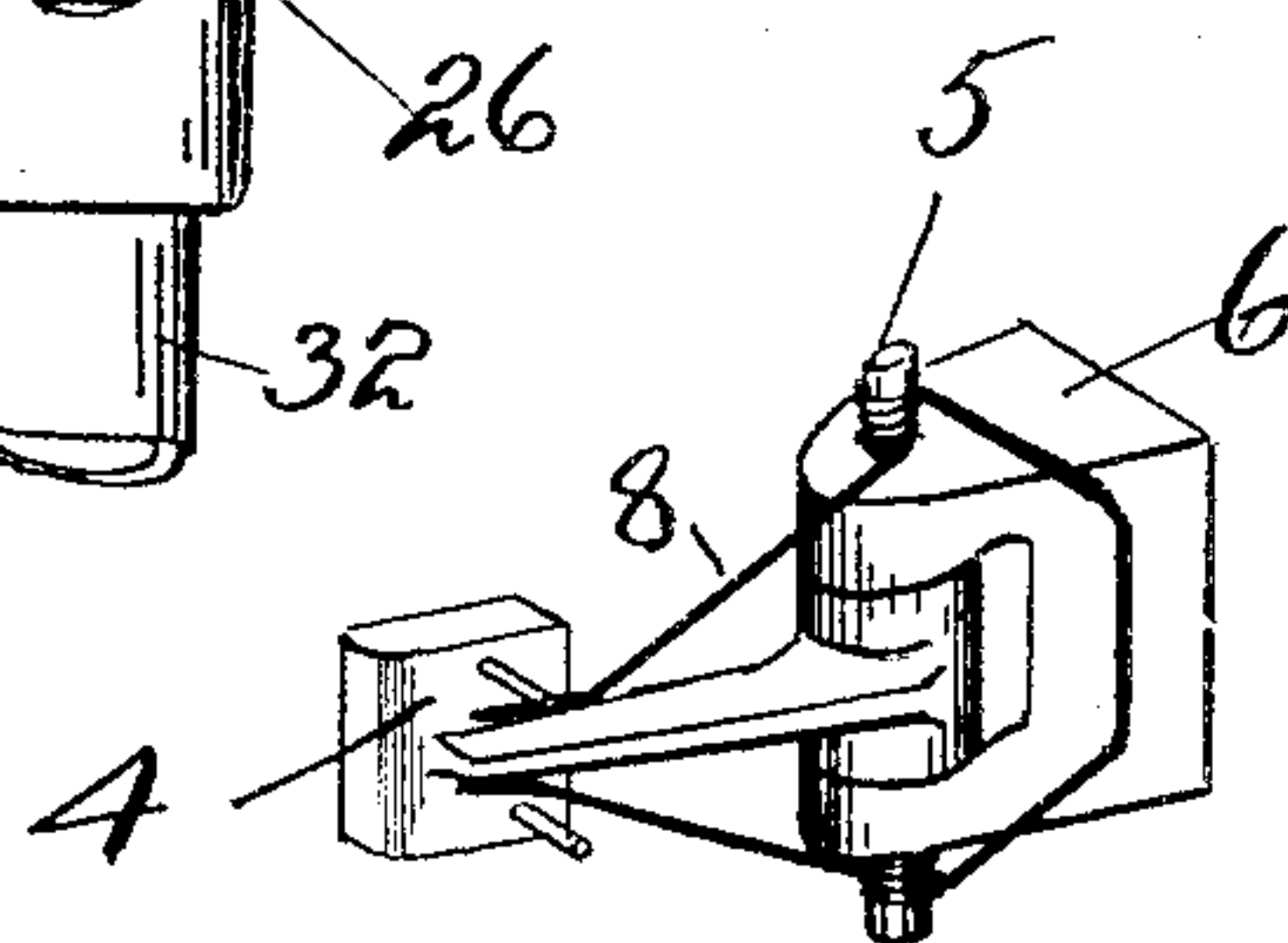


Fig. 4.

Witnesses

Frank A. Foster
E. J. Ogden

Inventor

Arthur E. Handy.

By

Howard E. Barlow

Attorney

UNITED STATES PATENT OFFICE.

ARTHUR E. HANDY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO
RHODE ISLAND ELEVATOR AND MACHINE COMPANY, OF PROVIDENCE,
RHODE ISLAND, A CORPORATION OF RHODE ISLAND.

ELECTRIC SWITCH.

No. 803,898.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed October 20, 1904. Serial No. 229,260.

To all whom it may concern:

Be it known that I, ARTHUR E. HANDY, a resident of the city of Providence, in the county of Providence and State of Rhode Island, have
5 invented certain new and useful Improvements in Electric Switches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the
10 characters of reference marked thereon, which form a part of this specification.

This invention relates to switches for making and breaking an electric circuit, and has for its object to produce a switch more particularly adapted for use in electrically-operated elevator-cars. By the use of this switch
15 the attendant may readily control the current to the motor to stop and start the car at will.

A further object of the invention is to so
20 construct the mechanism that by moving the operating-handle from the center to the extreme side position in one direction an auxiliary switch is first operated to close the circuit, and then the main switch is closed to
25 allow the current to flow through this circuit to the motor and start the car. When the handle is carried back to the center to stop the car, the reverse action takes place. The current is first shut off and then the auxiliary
30 switch is opened. When it is desired to run the car in the opposite direction, the handle is thrown on the opposite side of the center and the same action is repeated; but the motor is operated in the reverse direction.

35 An essential feature of this invention is its practicability, simplicity of construction, and of the accessibility of the working parts.

With these and other objects in view the invention consists of certain novel features of
40 construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a top plan view showing the case and some of
45 the parts in section. Fig. 2 is a front elevation showing the hinged case partly broken away. Fig. 3 is a side elevation partly in section. Fig. 4 is an enlarged perspective view of one of the contact-fingers. Fig. 5
50 shows the improved car-switch with the case swung open on its hinges in position to be inspected.

Referring to the drawings, at 1 is the base-

casing of the switch, that may be secured by screws 2 2 to any convenient place in the elevator-car. (Not shown.) Mounted in this
55 base is a plate of slate 3 or other suitable non-conducting material, on which the contact-fingers 4 4 are mounted. Each of these contact-fingers, as shown in Fig. 1, is pivotally
60 mounted at 5 in a bracket 6, said brackets being connected to the insulated base-plate 3 by screws or other suitable means. On the pivoted end of the finger 4 is a projection 7, that rests against the bracket, thereby limiting
65 the forward movement of said finger when acted on by the spring 8. (See Fig. 4.)

At 9 is the hinged case, hung at 10 10 to be swung open into the position shown in Fig. 5. This case is lined at 11 with non-conducting
70 material to prevent any liability of short-circuiting therethrough. Within this case is a cylinder of non-conducting material 12, mounted on an upright shaft 13. On the face of this cylinder are three contact-strips 14, 15, 75
and 16. These contacts are all connected together electrically by the strips 17 17. On the upper end of the cylinder-shaft 13 is pinned the hub portion 18 of the operating-handle 19. The handle portion is made of wood or of
80 other suitable material and is recessed out at 20 at its outer end for the reception of the bolt-head 21 and the spring 22. At 23 is the bolt that extends through the handle into the hub portion and on which the handle 19 is
85 loosely mounted to be drawn outward against the spring 22. On the upper portion of the case is the retaining-lug 24, that has a recess 25 for the reception of the said handle to hold it in the central position. Each edge of this
90 lug also forms a stop, against which the handle may rest when it is only desired to stop the car and start it again in the same direction. The handle is unlocked and free to turn from the central position by simply drawing
95 it outward. Mounted on the central shaft at the lower end of the cylinder is the coil-spring 26, the ends of which project out and engage stop-pins 27 and 28, projecting upward from the bottom of the case. Projecting downward
100 from the lower end of the cylinder are pins 29 and 30. The operation of this spring is as follows: When the cylinder is turned to the right, the pin 29 leaves the wire, while the pin 30 engages the opposite outwardly-extending
105 end of the coil and carries it back,

putting it under tension, which of course acts to throw the cylinder back to its central position as soon as the handle is released. The reverse action takes place when the cylinder
 5 is thrown to the left or in the opposite direction. The spring contact-fingers mounted on the fixed base are connected by wires 31 to the different parts of the mechanism (not shown) that is controlled by the operation of
 10 the switch, which wires are led down through the car in the tube 32 to make the necessary connections.

The operation of the invention is further described as follows: This switch may be at-
 15 tached to the elevator-car in any convenient place, the object of the switch being to open and close the circuit and to send the current in the desired direction to the motor to drive the car either up or down. Contact-strips 14,
 20 15, and 16 are secured on a heavy fiber cylinder, which cylinder is mounted to turn in the hinged cover 9, considering the handle as being on the center or in position A, as shown in Fig. 1, and the car at rest. To start the
 25 car upward, the handle is drawn outward to unlock it and then swung to the left until it reaches the edge of the lug 24 or position B. This movement of the handle rotates the cylinder and brings the contact-strips 14 and 15
 30 into connection with their respective spring-fingers, and the current is allowed to flow from the main through the lower left-hand finger up through the middle finger and to an auxiliary switch (not shown) that closes the circuit
 35 to the motor. Then by carrying the handle farther to the extreme left, or position C, the short contact-strip 16 is brought into connection with the upper finger and the circuit is completed that operates to close the main
 40 switch and the current is allowed to flow through to the motor. The object and advantages of a main and auxiliary switch in this class of work is more fully described in my patent No. 767,052, dated August 9, 1904,
 45 for electric switches. When it is desired to stop the car at one of the floors during a trip up, the handle may be released by the operator and by the action of the spring 26 is automatically brought back to the position
 50 B, which opens the main switch and stops the motor. The handle need be brought to the center or position A only when the direction of travel of the car is to be reversed or when said car is to be stopped permanently. When
 55 it is desired to run the car in the opposite direction, the handle is carried to the right and operated in the same manner as above described.

The contact-fingers are entirely separate
 60 one from the other and are arranged to automatically adjust themselves to the wear or irregularity of the rotary contact-surfaces on the cylinder.

An essential feature of the invention is the
 65 construction that enables the cover of the

switch-box to be thrown open and thereby separate the fingers from the contact-strips during repairs and inspection.

It is customary in other devices of this character to insulate the contacts by means
 70 of thin bushing and washers, which insulation is soon broken down by the accumulation of copper-dust, moisture, or the like, and short-circuiting follows. In my improved construction the contact-fingers are mounted
 75 on a heavy base of insulating material, while the contact-plates are mounted on a rotatable cylinder of heavy insulating material, thereby obviating any possibility of short-circuiting or grounding through the metallic case. 80

The device is extremely neat and compact, and by its construction, as described above, the working parts are very accessible.

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

1. A device of the character described comprising a cylinder provided with main contact-strips and a smaller auxiliary contact-strip, means for rotating said cylinder, piv-
 90 oted contact-fingers intercepting the path of movement of said strips, and means for automatically disengaging said auxiliary contact-strip from its contact-finger.

2. A device of the character described comprising a casing, a cylinder mounted therein and provided with main contact-strips and an auxiliary contact-strip, means for rotating
 95 said cylinder, pivoted contact-fingers intercepting the path of movement of said strips, a coil-spring having projecting ends, and pins carried by said cylinder and adapted to engage the projecting ends of said spring, where-
 100 by said auxiliary strip is automatically disengaged from its contact-finger. 105

3. A device of the character described comprising a casing, a cylinder provided with main contact-strips and a smaller auxiliary contact-strip, means for rotating said cylinder, lugs
 110 mounted in said casing in juxtaposition with said strips, contact-fingers pivotally mounted in said lugs, and means for automatically disengaging said auxiliary contact-strip from its contact-finger.

4. A device of the character described comprising a casing, a cylinder provided with main contact-strips and a smaller auxiliary contact-strip, means for rotating said cylinder, lugs
 115 mounted in said casing in juxtaposition with said strips, spring-pressed contact-fingers pivotally mounted in said lugs, means for limiting the movement of said contact-fingers, and means for automatically disengaging said aux-
 120 iliary contact-strip from its contact-finger.

5. A device of the character described comprising a casing, a cylinder provided with main contact-strips and a smaller auxiliary contact-strip, means for rotating said cylinder, piv-
 125 oted contact-fingers intercepting the path of movement of said strips, means for limiting
 130

the movement of said fingers, and means for automatically disengaging said auxiliary contact-strip from its contact-finger.

6. A device of the character described comprising a casing provided with a locking-lug, a cylinder mounted in said casing and provided with main contact-strips and a smaller auxiliary contact-strip, a spring-pressed handle secured to said cylinder and adapted to engage
10 said lug, pivoted contact-fingers intercepting

the path of movement of said strips, and means for automatically disengaging said auxiliary contact-strip from its contact-finger.

In testimony whereof I have hereunto set my hand this 19th day of October, A. D. 1904. 15

ARTHUR E. HANDY.

In presence of—

HOWARD E. BARLOW,
E. I. OGDEN.