

O. B. THOMPSON & W. G. MIDGLEY.

CIRCUIT CLOSING DEVICE.

APPLICATION FILED JUNE 22, 1901.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 3.

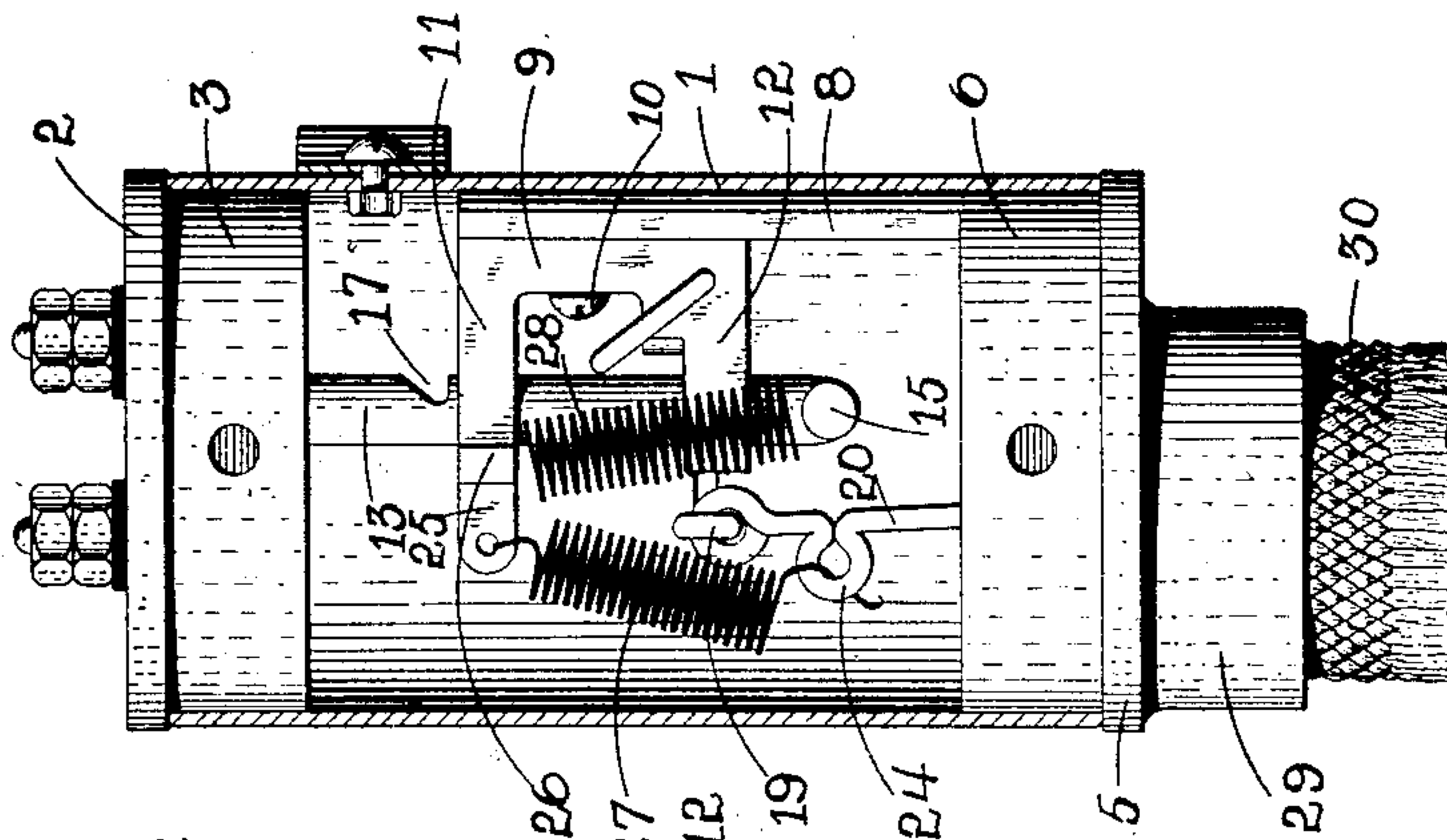


Fig. 2.

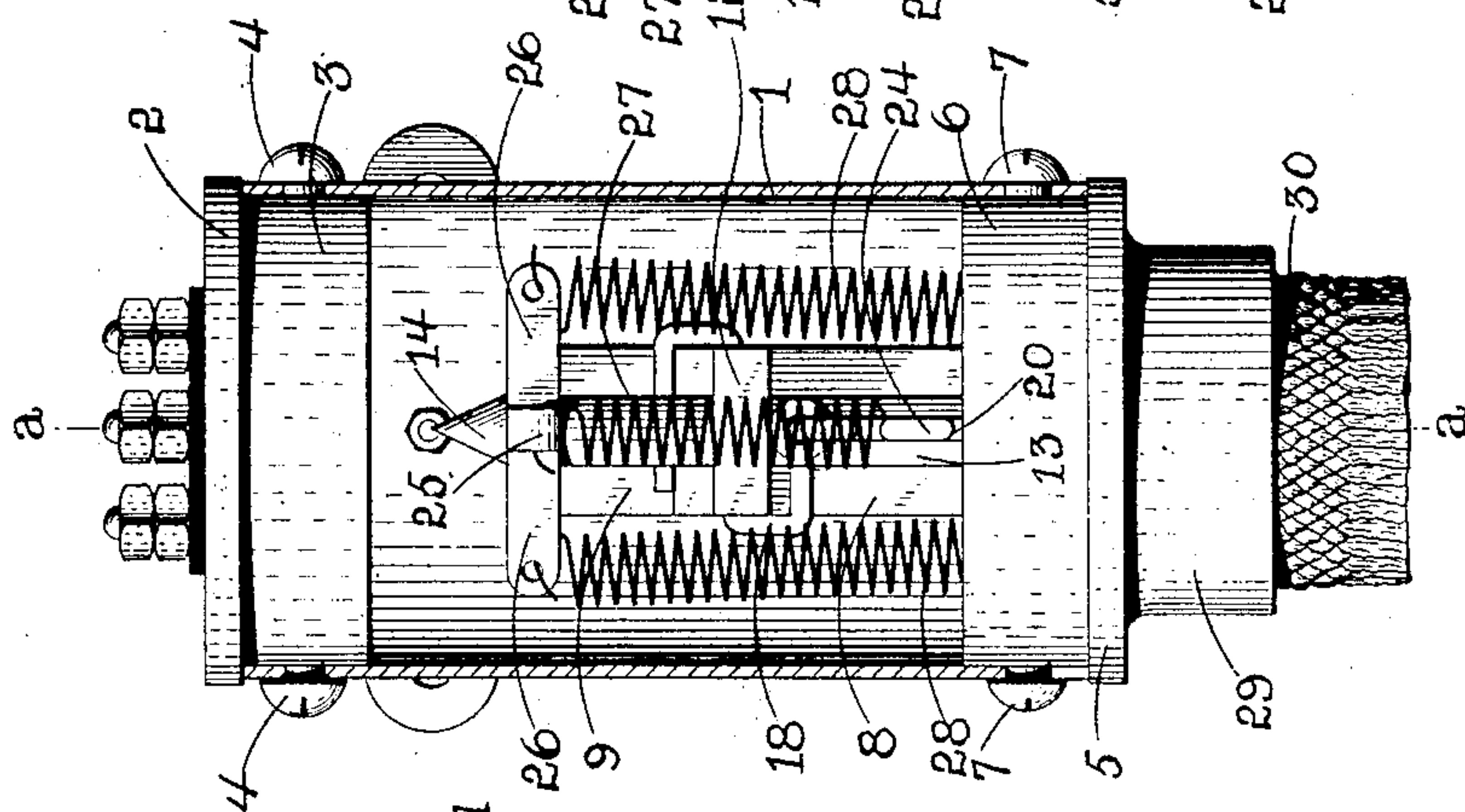
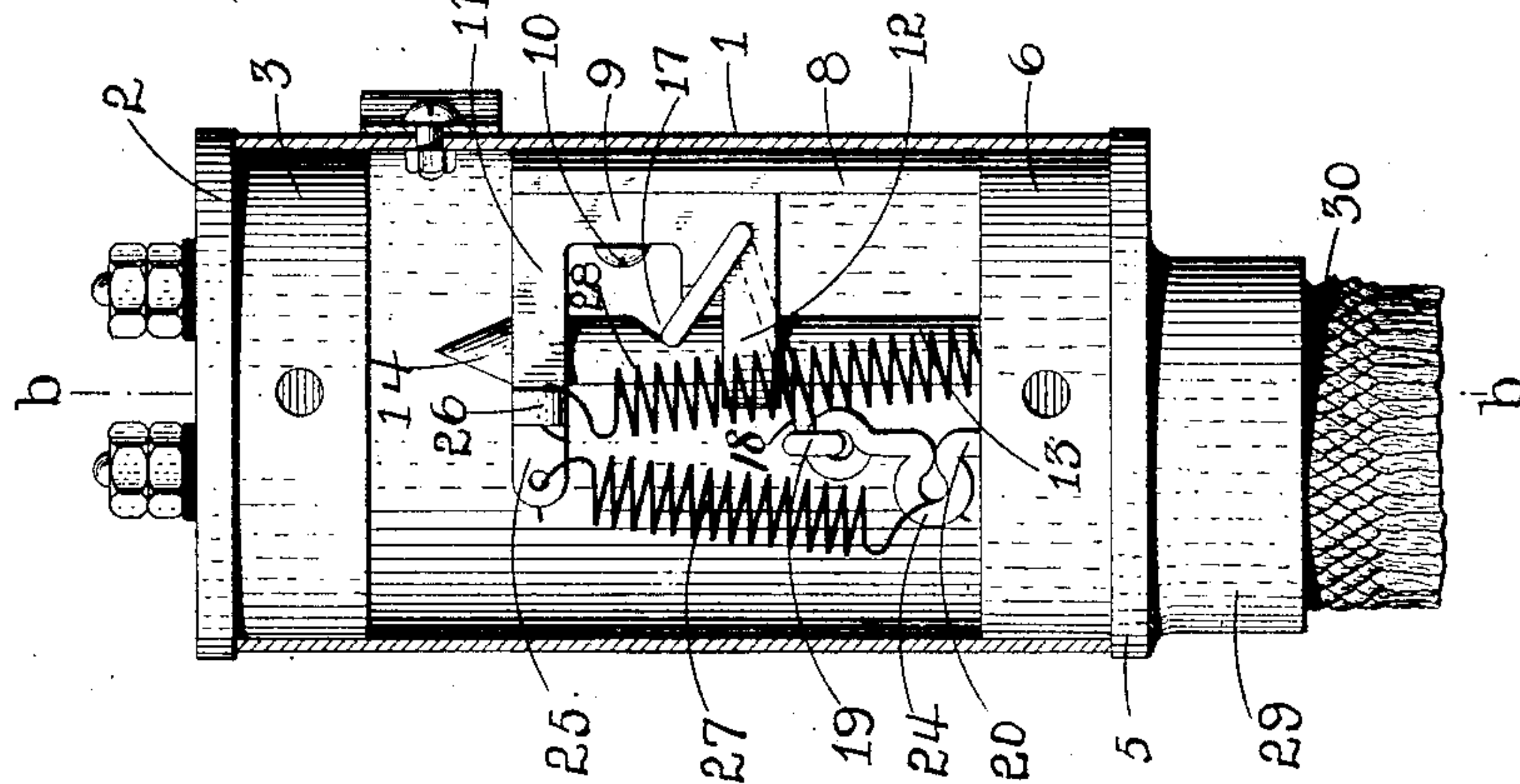


Fig. 1.



Witnesses.

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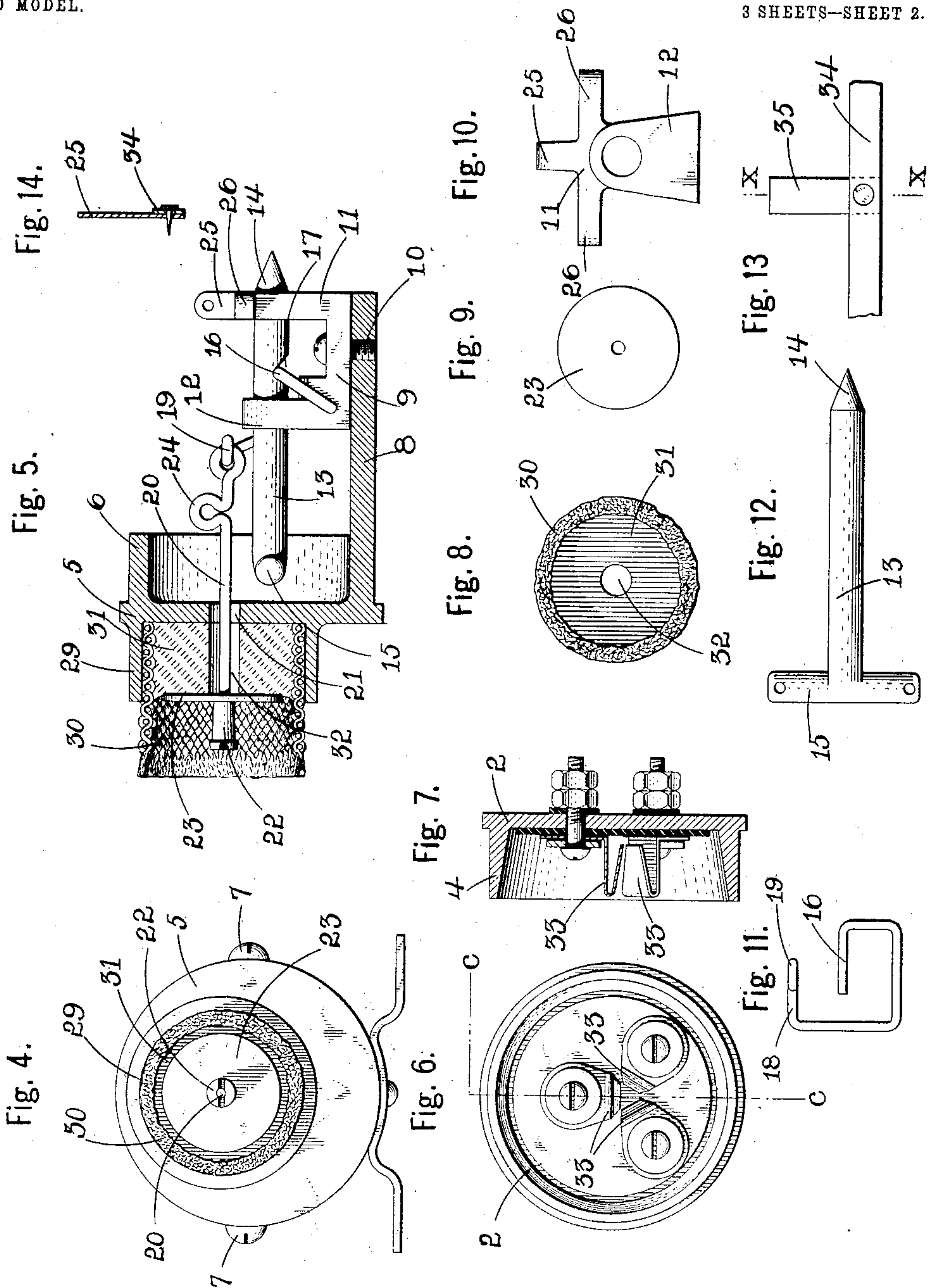
PATENTED DEC. 8, 1903.

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3 SHEETS—SHEET 2.



Witnesses.

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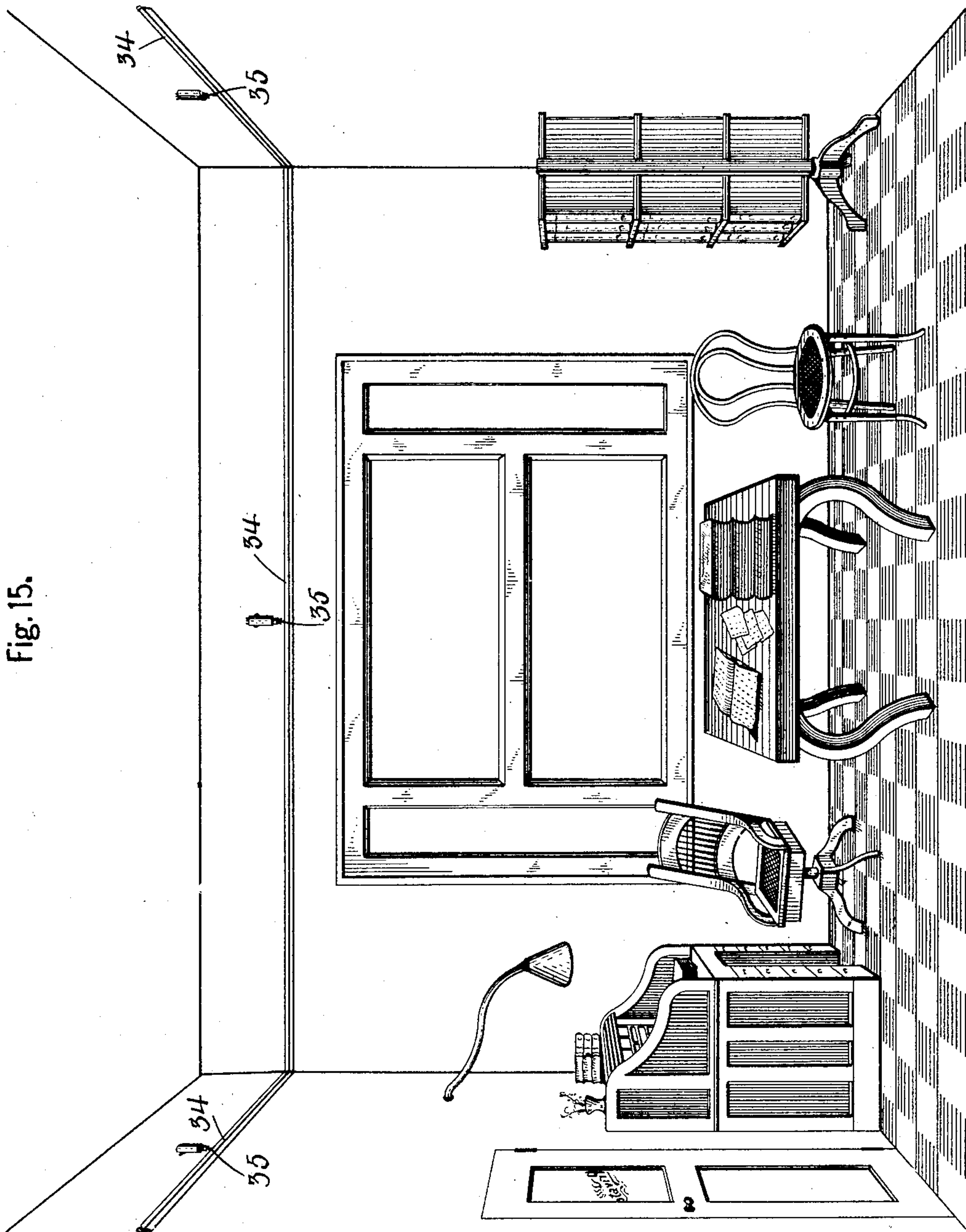
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3 SHEETS—SHEET 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

OLIVER B. THOMPSON AND WILLIAM G. MIDGLEY, OF BUFFALO, NEW YORK.

CIRCUIT-CLOSING DEVICE.

SPECIFICATION forming part of Letters Patent No. 746,604, dated December 8, 1903.

Application filed June 22, 1901. Serial No. 65,669. (No model.)

To all whom it may concern:

Be it known that we, OLIVER B. THOMPSON, a citizen of the United States, and WILLIAM G. MIDGLEY, a subject of the King of Great Britain, both residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Circuit-Closing Devices, of which the following is a specification.

This invention relates to an improved circuit-closing device chiefly adapted for electric fire-alarms; and the main object of the invention is to provide a circuit-closing device of improved construction which will be almost instantly operated either by excessive heat or by flame.

One of the features of the invention relates to the detachability of the operating mechanism and its support from the casing.

Another feature relates to the improved means for retaining the device in inoperative position whereby it may be released either by excessive heat or flame, one part of the retaining means being adapted to melt upon exposure to excessive heat and another part to instantly ignite upon contact with fire.

Another feature relates to the arrangement of the connecting-strip of quick-igniting material, such as celluloid, upon the walls of a room to carry the flame to and release the device.

It also relates to certain details of construction, all of which will be fully and clearly hereinafter described and claimed; reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal central section through the casing of my improved circuit-closer on line *a a*, Fig. 2. Fig. 2 is a section on line *b b*, Fig. 1. Fig. 3 is a section on line *a a*, Fig. 2, the device being in its circuit-closing position. Fig. 4 is a bottom plan view of the device. Fig. 5 is a longitudinal central section through the operating mechanism and its support, the springs being omitted. Fig. 6 represents a bottom plan view of the top cap of the device. Fig. 7 is a section on line *c c*, Fig. 6, through the top cap. Fig. 8 is a detached view of the wick and filling. Fig. 9 is a detached view of the celluloid disk. Fig. 10 is a detached end elevation of the supporting-blocks. Fig. 11 is a detached view of

the wire latching device. Fig. 12 is a detached view of the circuit-closing pin. Fig. 13 is a fragment of a celluloid strip with its extension which projects to the celluloid disk of the circuit-closing device. Fig. 14 is a section on line *x x*, Fig. 13. Fig. 15 is a view of a room or apartment having circuit-closing devices in position on the wall and a strip of material extending across said walls.

In referring to the drawings for the details of construction like numerals designate like parts.

The circuit-closing device consists of a housing or casing 1, preferably circular in form, an upper cap 2, having a circular rim 3, adapted to be inserted in the upper end of the casing and secured in place by set-screws 4, and a bottom cap 5, which has a rim 6, adapted to be inserted and secured in the lower end of the casing by set-screws 7. The rim 6 has an extension 8 at one side, which forms a support for the circuit-closing pin and its operating mechanism. A block 9 is secured to the extension 8 by a screw 10 and has two uprights 11 and 12, through openings in which the circuit-closing pin 13 slides.

The circuit-closing pin is provided with a sharpened upper end 14 and has a transverse bar 15 at its lower end.

A wire latching device, bent to substantially the form shown in Fig. 11, is pivoted in an opening in the block 9 and has a locking part 16, adapted to seat in a depression 17, cut in the pin 13, and a crank-arm 18, having a hook end 19 inserted in a loop in the upper end of a rod 20. This rod 20 extends through a central opening 21 in the lower cap and has a screw-threaded lower end, upon which a nipple 22 is secured. A circular disk 23, of quick-igniting material, such as celluloid, is retained in place by the nipple.

The rod 20 has an intermediate upwardly-extending loop 24, and the upper upright 11 of the block 9 has a central vertical-extending lug 25 and two lateral lugs 26, and a spring 27 has its ends passed through openings in the loop 24 and the lug 25. Two additional springs 28 are also arranged one on each side of the pin 13 and are connected at their ends to the ends of the bar 15 and the lateral lugs 26.

The lower cap is provided with a depend-

ing portion 29 of annular form, and a wick 30 of similar annular form is detachably fitted in this portion and has a filling of easily-melted material 31, such as paraffin.

5 The advantage of having the wick detachable is that it can be easily replaced when damaged or burned.

The filling has a central opening 32, substantially as shown in Fig. 5, for the passage
10 of the rod 20, which is considerably larger in circumference than the rod and of sufficient size to permit the passage of the nipple 22 when the disk 23 is burned. The upper cap has three contact-strips 33, of thin flexible
15 material, which are arranged in the form of a triangle, each strip being bent upon itself and having the inner bent parts gradually converging toward each other in an upward direction. These contact-strips are connect-
20 ed in the usual and well-known way to the proper wires of the electric system, of which they form a part.

The advantage of employing a celluloid disk to retain the locking-rod in position in
25 connection with a wick and easily-melted material is that the disk will be almost instantly consumed when ignited by flame, thereby permitting the closer to operate, and the easily-melted material furnishes an ad-
30 ditional precaution, as the material might in an exceptional case be melted before the disk was ignited. A strip of celluloid 34 is also preferably placed around the walls of the rooms in which the device is employed to fa-
35 cilitate and provide means for the operation of the device by a fire in any portion of the room. This strip is connected directly to the disk or by a short supplementary strip of cel-
luloid 35.

40 When fire starts in the room, it ignites the celluloid strip, which carries the flame to the disk, which burns and releases the rod, permitting it to operate the closer.

The principal advantages of this invention
45 are the easy manner in which the pin and its operating mechanism can be removed for repair, the detachability of the wick and its filling of paraffin, the almost instantaneous action of the circuit-closing mechanism upon
50 the ignition of the celluloid disk or melting of the paraffin, and the arrangement of the operating mechanism, with the exception of the wick and disk, within a practically dust-proof casing.

55 Another great advantage resides in the arrangement of the strip of celluloid around the room or apartment, as fire in any part of the apartment will follow to the circuit-closer and operate the same.

60 The circuit-closing pin in this improved device is held in inoperative position by an easily-melted part and a quick-igniting part, so that it will be released either by flame or
65 by excessive heat, thereby providing two dif-

ferent means for closing the circuit and greatly increasing the efficiency and reliability of the device.

We claim as our invention—

1. A circuit-closing device having a circuit-closing pin, a celluloid part secured to said
70 pin and a wick having a paraffin part through which the pin passes and against which the celluloid part bears.

2. A circuit-closing device having a circuit-closing mechanism including a removable
75 wick containing paraffin, a pin passing through the paraffin and a celluloid disk on the pin.

3. A circuit-closing device having circuit-closing mechanism including a removable
80 wick carrying a filling of easily-melted material.

4. A circuit-closing device having a circuit-closing pin, and means for retaining the cir-
85 cuit-closing pin in inoperative position having a celluloid part seating against a filling of paraffin.

5. A circuit-closing mechanism having one or more circuit-closing devices provided with a spring-tensioned circuit-closing pin, a cel-
90 luloid part on said pin, a wick having a paraffin part through which the pin passes and against which the celluloid part bears and a strip of celluloid on the wall of a room operatively arranged with respect to the celluloid
95 part of the circuit-closing devices, whereby a circuit-closing device may be operated by melting the paraffin through excessive heat or by ignition of the celluloid strip.

6. A circuit-closing device having a casing,
100 a cap secured to said casing, a block having support from said cap, a circuit-closing pin slidably mounted in the block and having a depression, a latching device pivotally mounted in the block and having a locking part seat-
105 ing in the depression in the pin and an arm, a locking-rod having connection with the arm of the latching device, a spring connected to the block and locking-rod and springs connected to the circuit-closing pin and block,
110 substantially as set forth.

7. A circuit-closing device having a casing, a cap detachably secured to said casing hav-
115 ing an extension, a block on said extension, a circuit-closing pin slidably mounted in the block and having a depression, a latching device pivotally mounted in the block and hav-
120 ing a locking part seating in the depression in the pin and an arm, a locking-rod having connection with the arm of the latching device, a disk of celluloid mounted on said rod, a spring connected to the block and locking-rod and springs connected to the circuit-closing pin and block, substantially as set forth.

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