

No. 632,868.

Patented Sept. 12, 1899.

J. R. FRANCIS.  
ELECTRIC LOCK.

(Application filed June 11, 1898.)

(No Model.)

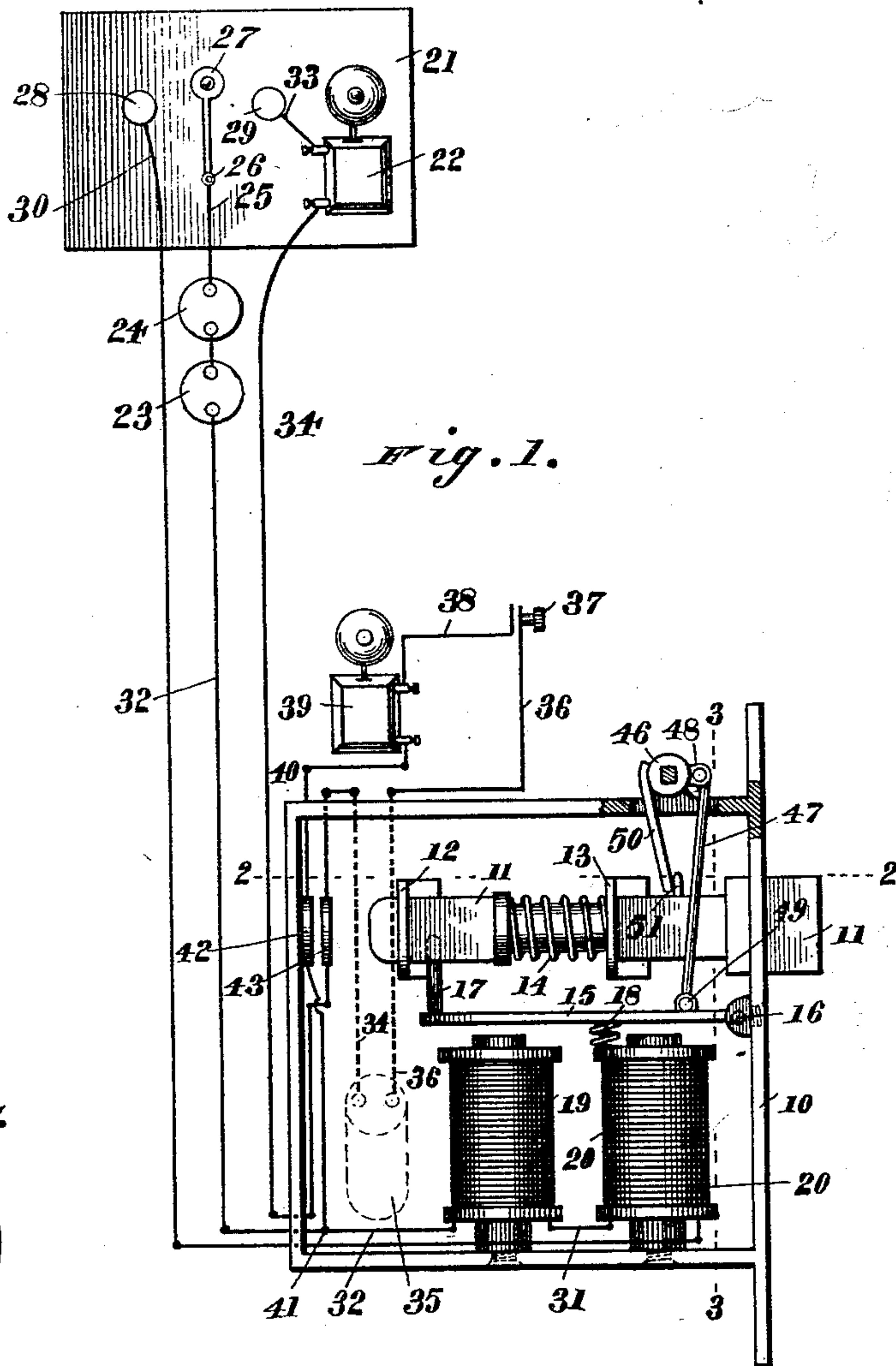


Fig. 1.

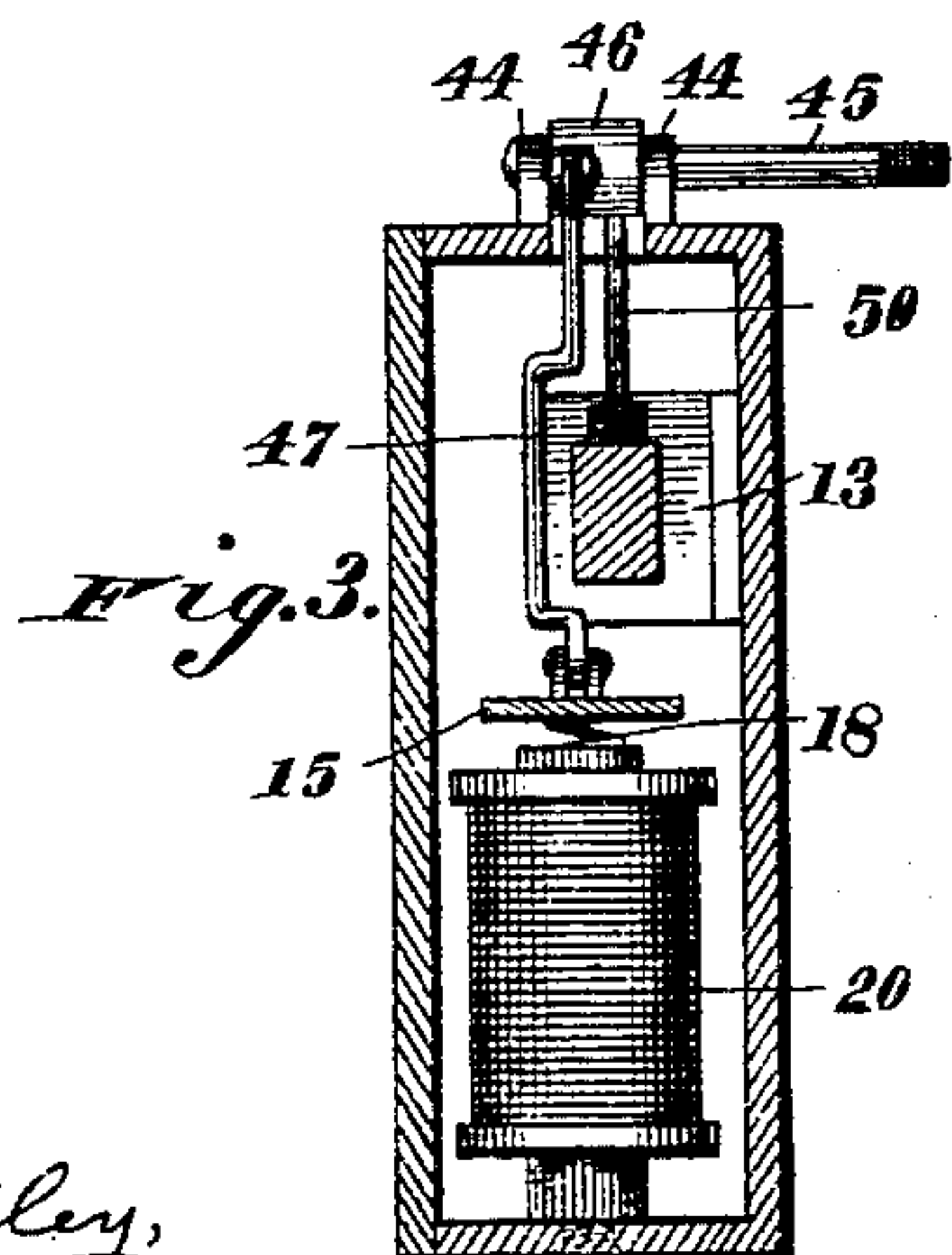
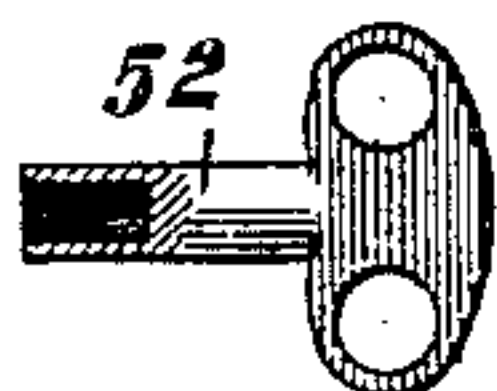


Fig. 3.

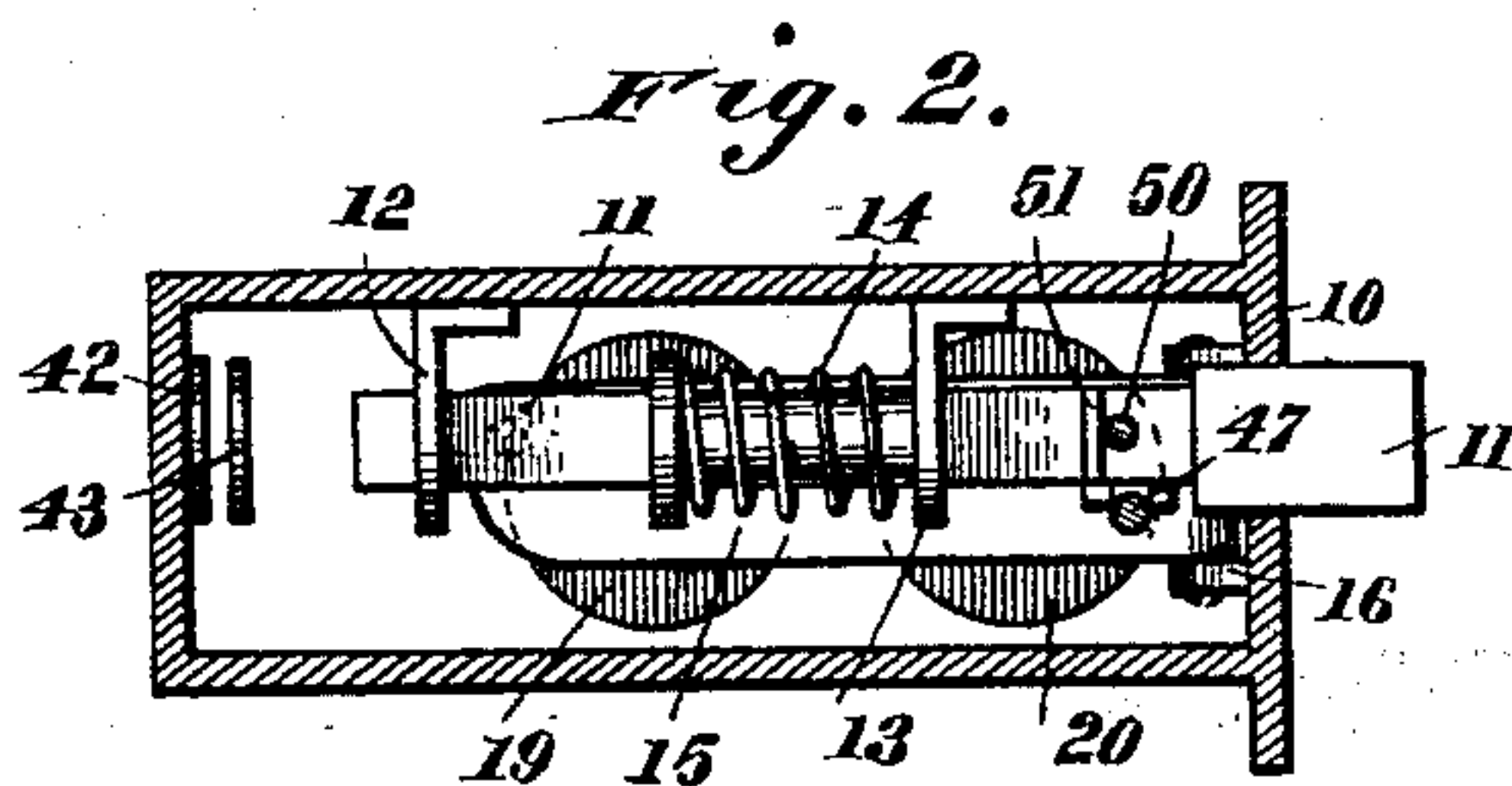


Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC LOCK.

SPECIFICATION forming part of Letters Patent No. 632,868, dated September 12, 1899.

Application filed June 11, 1898. Serial No. 683,228. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH R. FRANCIS, a citizen of the United States, residing at Monroe, in the county of Randolph and State of West Virginia, have invented a new and useful Electric Lock, of which the following is a specification:

My invention relates to certain improvements in electrically-operated door-bolts and signal or alarm apparatus.

The object of my invention is to provide means for transmitting a signal from the door upon which a bolt is placed to a distant room, said signal to be operated by the throwing of the bolt, and to provide means whereby in the room so signaled a person may unlock the bolt without leaving the room.

With these objects in view, my invention consists in the improved construction, arrangement, and combination of parts hereinafter fully described and afterward specifically pointed out in the appended claims.

In order to enable others skilled in the art to which my invention most nearly appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view illustrating, diagrammatically, a bolt and its operating mechanism, the distant-signaling apparatus, the batteries, and the connecting-circuits. Fig. 2 is a horizontal section on the line 2 2 of Fig. 1. Fig. 3 is a vertical section on the line 3 3 of Fig. 1. Fig. 4 is a view, partly in elevation and partly in section, of the key.

Like numerals of reference mark the same parts wherever they occur in the different figures of the drawings.

Referring to the drawings by numerals, 10 indicates the case, in which a bolt 11 is slidably mounted, the bolt passing through the front of the case and through brackets 12 and 13.

14 indicates a spring which normally holds the bolt in its unlocked position.

15 indicates an armature-lever pivoted at 16 to the lock-case and provided near its outer end with a pin 17, which is held normally in a socket in the bolt to hold it in its locked position by means of a spring 18.

19 and 20 indicate electromagnets which, when energized as hereinafter described, attract the armature-lever 15 and withdraw the pin 17 from its socket in the bolt, thus permitting the bolt to be thrown or unlocked by the spring 14.

21 indicates a switchboard at a distant station or in a distant room, upon which is mounted an electric alarm-bell 22.

23 and 24 are cells of a battery, of which any required number may be used. A wire 25 passes from the battery to the switchboard and is connected behind the switchboard with a pin 26, to which is connected a switch-lever 27, adapted to alternately contact with pins 28 and 29. A line of wire extends from the pin 28, as at 30, to the electromagnet 20, which is connected by the wire 31 with the electromagnet 19, from which extends a wire 32 to the battery-cells 23 and 24. A wire 33 connects the pin 29 with the bell 22, and a wire 34 extends from the bell to a battery-cell 35 in or adjacent to the lock-case. A wire 36 extends from the battery 35 to a door push-button 37. From under the push-button 37 a wire 38 extends to an electric bell 39, placed inside the door. From this bell a wire 40 extends and is connected with the wire 32 at 41. Adjacent flat plates of metal 42 and 43 are carried by the wires 40 and 34 parallel with each other and in line with and in the rear of the bolt 11. The bolt when in its unlocked position will press against the plate 43 and hold it in contact with the plate 42. Normally the switch 27 will be open, breaking the circuit through the electromagnets and permitting the spring 18 to press the armature-lever away from the magnets and hold the pin 17 in engagement with the bolt, thus preventing the bolt from being thrown inward by the spring 14.

Pivoted in lugs 44 on top of the case 10 is a square-ended rod 45, a block 46 being secured upon it between the lugs. A rod 47 is pivotally connected at its upper end to an eye 48, projecting from one side of the block 46, and at its lower end in an eye 49, secured on the top of the armature-lever 15. Projecting from the block 46 downward into the case is a spring-arm 50, which engages on the left of lug 51, projecting upward from the



bolt 11. A key 52 may be fitted upon the square end of the shaft 45, whereby it may be turned. When (the bolt being in its locked position) the block is turned to carry its upper side to the right, as illustrated in Fig. 1, the spring-arm 50 will be pressed toward the left away from the lug 51 and the rod 47 simultaneously pressed downward, moving the armature-lever 15 downward against the action of the spring 18 and withdrawing the pin 17 from its socket in the bolt and permitting the bolt to be thrown back into its unlocked position by spring 14. When the bolt is in its normal unlocked position and the block 46 is turned to the left, the spring-arm will be moved to the right to throw the bolt into its locked position and the rod 47 simultaneously raised, carrying with it the armature-lever and causing the pin 17 to engage in the socket in the bolt and hold the bolt locked. When the switch 27 contacts with the pin 29 and the door-bolt thrown into its unlocked position, pressing and holding the plates 42 and 43 together, the current from the battery 23 24 will pass through the wire 32, plate 42, plate 43, wire 34, bell 22, and wire 33, thus sounding the alarm on the bell 22. The person at the distant station or room where the switchboard 21 is located will then break the circuit just described by moving the switch 27 off the pin 29 and will thus stop the alarm.

Should the bolt be thrown into its locked position, as shown in Fig. 1, a person approaching the door and finding it locked (the switch 27 being on pin) will press the push-button 37, which will close a circuit through the wire 38, bell 39, wire 40, wire 32, battery 23 24, wire 33, bell 22, wire 34, battery 35, and wire 36, causing both bells 22 and 39 to ring. A person near the door may then attend the alarm and unlock the door by throwing the bolt by means of the key, as before described. There being no one in attendance upon the door, the person at the switchboard 21 will turn the switch 27 upon pin 28, which will close the circuit through the elec-

tromagnets, energizing them so that they will attract the armature-lever, withdraw the pin 17 from the bolt, and permit the bolt to be thrown by the spring 14 into its unlocked position.

While I have illustrated and described what I now consider efficient means for carrying out my invention, I do not wish to be understood as limiting myself to the exact details of construction shown and described, but hold that such slight changes and variations as might suggest themselves to the ordinary mechanic would properly fall within the limit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a bolt and a spring tending to hold it normally in its inner position, of electromagnets, a pivoted armature-lever, a pin thereon adapted to engage in a socket in the bolt when thrown, a spring pressing the lever away from the magnets to maintain the pin in the socket, lugs projecting from the top of the bolt-case, a stem or shaft with angular end pivoted in said lugs, a block on said shaft, a radial spring-arm projecting from said block and engaging a lug on the bolt, and a rod pivoted at its upper end to an eye on the side of the block, and at its lower end to an eye on top of the armature-lever, substantially as described.

2. The combination with a bolt, of a pair of parallel adjacent contact-plates in line with and in rear of the bolt within the limit of its throw, a spring for forcing the bolt against said contact-plates, a pivoted armature-lever engaging the bolt for holding it in forward position against the action of the spring, and an electric magnet for withdrawing the armature from the bolt and releasing it, substantially as described.

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