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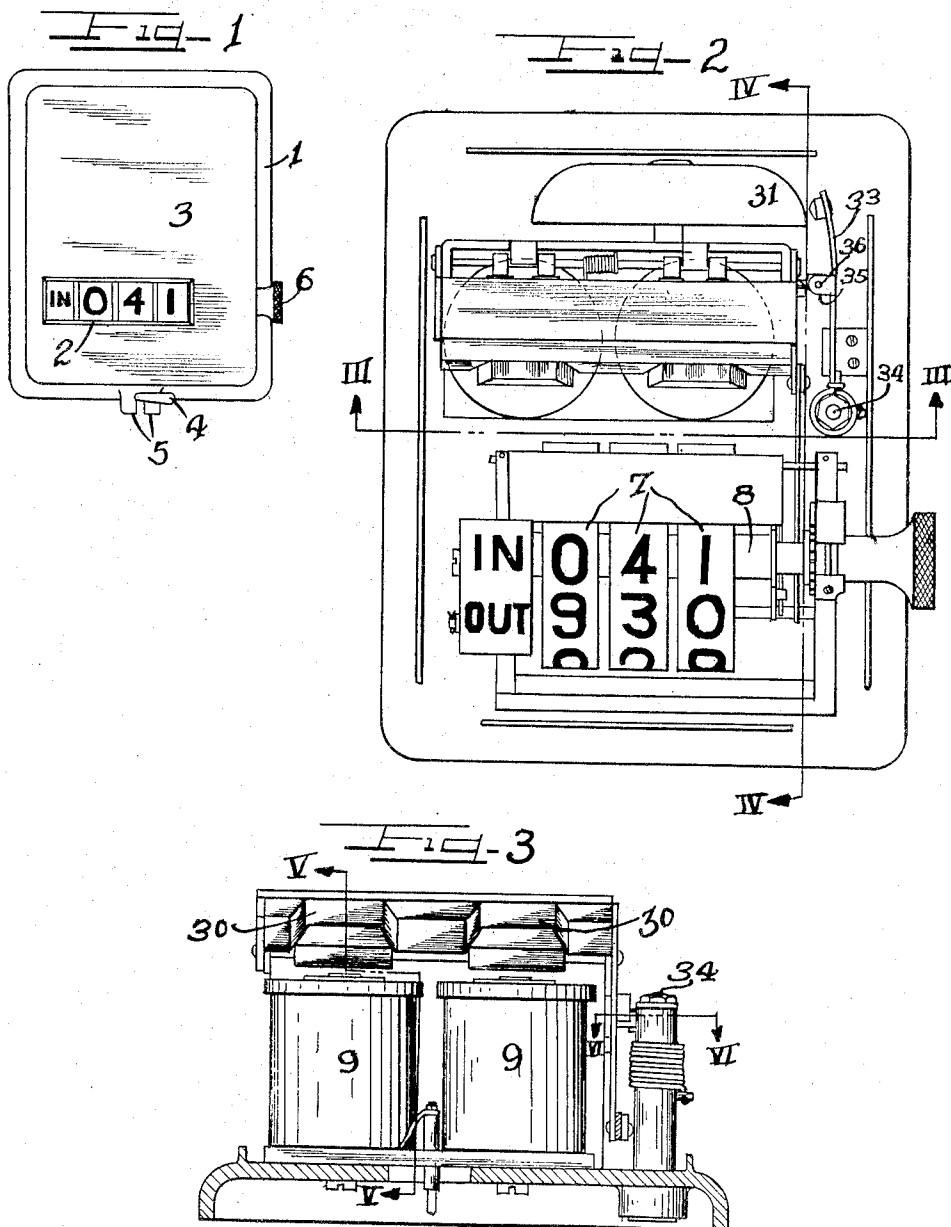
E. H. THOMPSON

1,706,989

OPERATING MECHANISM FOR FARE REGISTERS

Filed Feb. 21, 1925

2 Sheets-Sheet 1



INVENTOR
Ernest H. Thompson.
Charles H. Hills
Attys.

by

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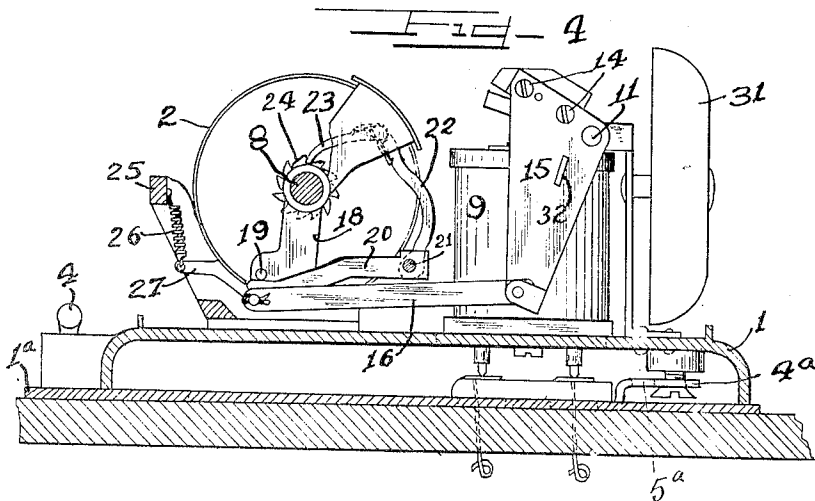
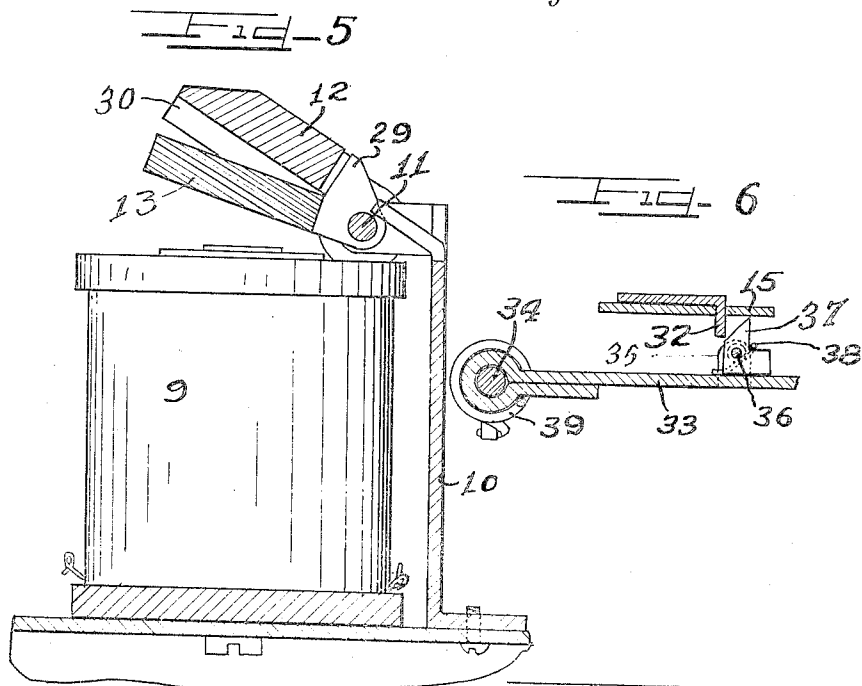
E. H. THOMPSON

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OPERATING MECHANISM FOR FARE REGISTERS

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2 Sheets-Sheet 2



INVENTOR
Ernest H. Thompson.

by *Charles H. Thompson*
ATTY

Patented Mar. 26, 1929.

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UNITED STATES PATENT OFFICE.

ERNEST H. THOMPSON, OF EVANSTON, ILLINOIS, ASSIGNOR TO JOHNSON FARE BOX COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW YORK.

OPERATING MECHANISM FOR FARE REGISTERS.

Application filed February 21, 1925. Serial No. 10,805.

This invention relates to operating mechanisms in general and more particularly to such mechanisms as are adapted to operate a fare register. It has been found desirable to provide a means whereby a comparatively small electro-magnet may operate a comparatively large register. It is accordingly an object of this invention to provide an operating mechanism whereby an electro-magnet of minimum size may be used in the operation of a register.

It is further an object of this invention to provide a means for enabling an electro-magnet to exert sufficient force upon an object to actuate the same when it is a maximum distance away.

It is also an object of this invention to provide a fare register and operating means therefor which occupies a minimum of space, which is compact and rugged and may be conveniently and economically manufactured.

It is also an object of this invention to provide a means whereby a comparatively small electro-magnet may cause a comparatively large movement.

It is further an important object of this invention to provide an operating mechanism which operates a fare register and simultaneously therewith operates an audible signal.

With the above and other objects in view, as will be apparent, this invention consists in the construction, combination and arrangement of parts, all as hereinafter more fully described, claimed and illustrated in the accompanying drawings.

On the drawings:

Figure 1 represents a fare register embodying this invention.

Figure 2 represents the same with the cover removed therefrom.

Figure 3 is a section along the line 3—3 of Figure 2.

Figure 4 is a section along the line 4—4 of Figure 2.

Figure 5 is a section along the line 5—5 of Figure 3.

Figure 6 is a section along the line 6—6 of Figure 3.

As shown on the drawings:

N numeral 1 represents a metallic mount on which is supported the fare register 2 and operating mechanism therefor. A cover 3 is adapted to enclose the register 2 and operating mechanism therefor upon the mount 1. Said cover 3 is rectangularly apertured as

shown in Figure 1 to permit a view there-through of the register 2. A clamp member 4 is provided on a base plate 1^a engaging with lugs 5 on the mount for securing the same on said base. Forked members 4^a on the base plate 1^a are adapted to engage with screws 5^a on the mount 1 for securing the other end of said mount to the base plate. A knob 6 extends through the cover 3 at the side thereof for permitting the resetting of the register. The register 2 is of a standard type having a plurality of counting wheels 7 mounted on the shaft 8, said counting wheels being adapted to register the number of fares in accordance with the impulses given to said register by the operating mechanism which will now be described.

A pair of electromagnets 9 are suitably secured to the mount 1 as shown. Supported above the magnets 9 on a bracket 10 which is also secured to the mount 1 is a shaft 11. Pivotaly mounted upon the shaft 11 is an armature 12 which is of iron and extends above the cores of the electromagnets 9 and is adapted to be attracted downwardly thereby when said magnets 9 are energized. A secondary armature 13 is also pivoted to the shaft 11. Rigidly attached to the armature 12 by means of the screws 14 is a triangular member 15 which of course also pivots on the shaft 11. The member 15 acts as a bell crank lever and has pivotally secured on its lower end a lever 16. The lever 16 is pivotally secured to a lever 18 freely mounted on the counter shaft 8. The lever 18 has mounted thereon a pin 19 which when said lever 18 is actuated in a counter-clockwise manner will engage the upper surface of a cam lever 20 mounted on a shaft 21 to cause said cam lever and shaft 21 to be actuated. A lever 22 rigidly secured on the shaft 21 and having a pawl 23 pivotally mounted thereon and normally spring pressed in downward position to engage with a ratchet 24 rigidly secured on the shaft 8 is adapted to cause said shaft 8 to rotate a predetermined amount when said lever 18 is actuated as previously stated. Each actuation of the lever 18 is thereby adapted to step the register 2 one step. A bracket 25 secured on the base 1 is connected to the lever 18 by means of a spring 26 which is attached at one end to the bracket 25 and the other end to a lever 27 integral with said lever 18. The spring 26 is adapted to normally hold the

operating mechanism in the position shown in Figure 4 when the magnets 9 are not energized to actuate said mechanism. The secondary armature 13 is adapted by means of the lugs 29 thereon engaging with the armature 12 to be suspended intermediate of the space between the upper end of the magnets 9 and the armature 12. When both the armatures 12 and 13 are in downward position, the secondary armature 13 is adapted to fit into recesses 30 in the armature 12. When the magnets 9 are energized, they will first exert their maximum force upon the secondary armature 13 and move the same downwardly past its intermediate position. It will be seen that when the secondary armature 13 moves past its intermediate position, it will by means of the lugs 29 thereon cause the armature 12 to move downward so as to be within range of the magnetic field of the magnets 9. Without this provision of the secondary armature 13 the magnets 9 would not be of sufficient strength to impart initial movement to the armature 12. In order to overcome this, it would be necessary to provide a much larger pair of magnets 9, but this is not desirable as will readily be apparent. I provide a means whereby each time the register is actuated to register a fare, gong 31 suitably mounted on the bracket 10 is rung. This means comprises a lug member 32 extending through the member 15 and a clapper 33 pivotally mounted on the shaft 34 secured on the base 1. The clapper 33 has secured thereon supports 35 for a pin 36 on which is pivotally mounted a dog 37. The dog 37 is normally spring pressed in the position shown in Figure 6 by means of a spring 38 surrounding the pin 36. The clapper 33 is normally spring pressed in position shown in Figures 2 and 6 by means of a spring 39 surrounding the shaft 34. When the electromagnets 9 lower the armature 12, the member 15 is actuated so that the lug 32 thereon will engage with the dog 37. The dog 37 is so shaped that when the lug 32 engages therewith, the clapper 33 will be forced outwardly against the action of the spring 39 so that when the lug 32 passes the dog 37 the clapper 33 will be returned by said spring 39 to ring the bell 31. When the lug 32 moves back to normal position past the dog 37, the latter will pivot about the small shaft 36 against the action of the spring 38 permitting such

movement. The operation of the device will be apparent from the description. The advantages of providing this means for operating the register will also be apparent from the foregoing.

I am aware that many changes may be made, and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

I claim as my invention:

1. In a device of the class described, an electromagnet, a relatively light armature responsive to the energization of said magnet, a relatively heavy armature having a recess therein to receive said light armature, both armatures being pivoted to the same shaft, means on said light armature to pivot said heavy armature into the field of said magnet after said light armature has moved a predetermined distance, a member connected to said heavy armature and pivotal on said shaft, and means associated with said member for actuating a plurality of mechanisms.

2. In a device of the class described, an electromagnet, a relatively light armature in the field of said magnet and responsive to the energization thereof, a relatively heavy armature angularly disposed with respect to said light armature and in a weaker portion of said field, and means whereby said light armature will pull said heavy armature into the full strength of said field after said light armature has moved a predetermined distance.

3. In a device of the class described, an electromagnet, a relatively light armature positioned so as to be in a strong portion of the field of said magnet when the same is energized, a relatively heavy armature in a weak portion of said field and recessed to receive said light armature therein, and means on said light armature to pull said heavy armature into the full strength of said field after said light armature has moved a predetermined distance, whereby said heavy armature will respond to said magnet and close down thereon embracing said light armature.

In testimony whereof I have hereunto subscribed my name.

ERNEST H. THOMPSON.