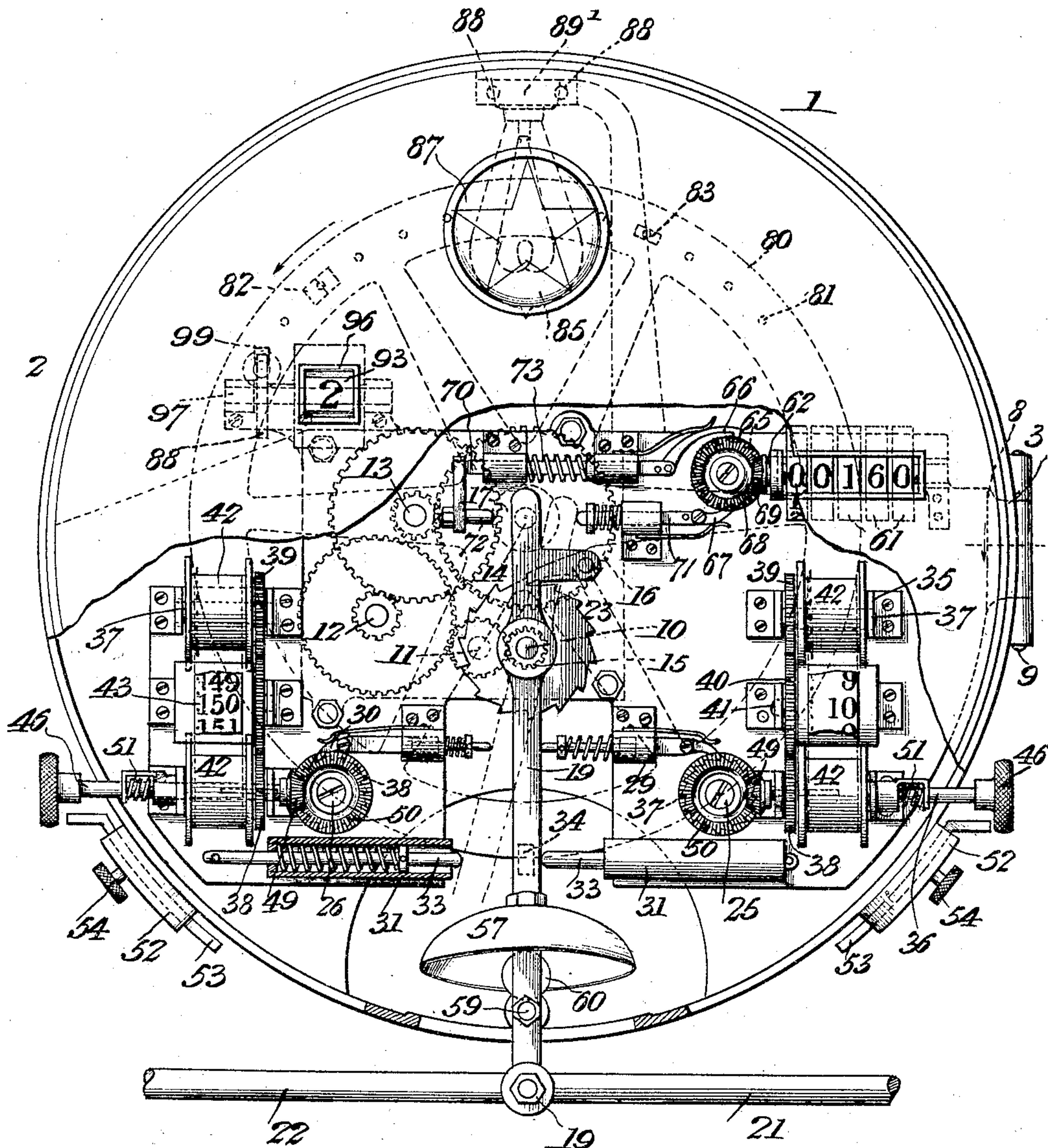


PATENTED NOV. 1, 1904.

APPLICATION FILED SEPT. 24, 1903.

2 SHEETS—SHEET 1.

Fig. 1.



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No. 773,806.

PATENTED NOV. 1, 1904.

J. O. MORRIS.
REGISTER.

APPLICATION FILED SEPT. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2.

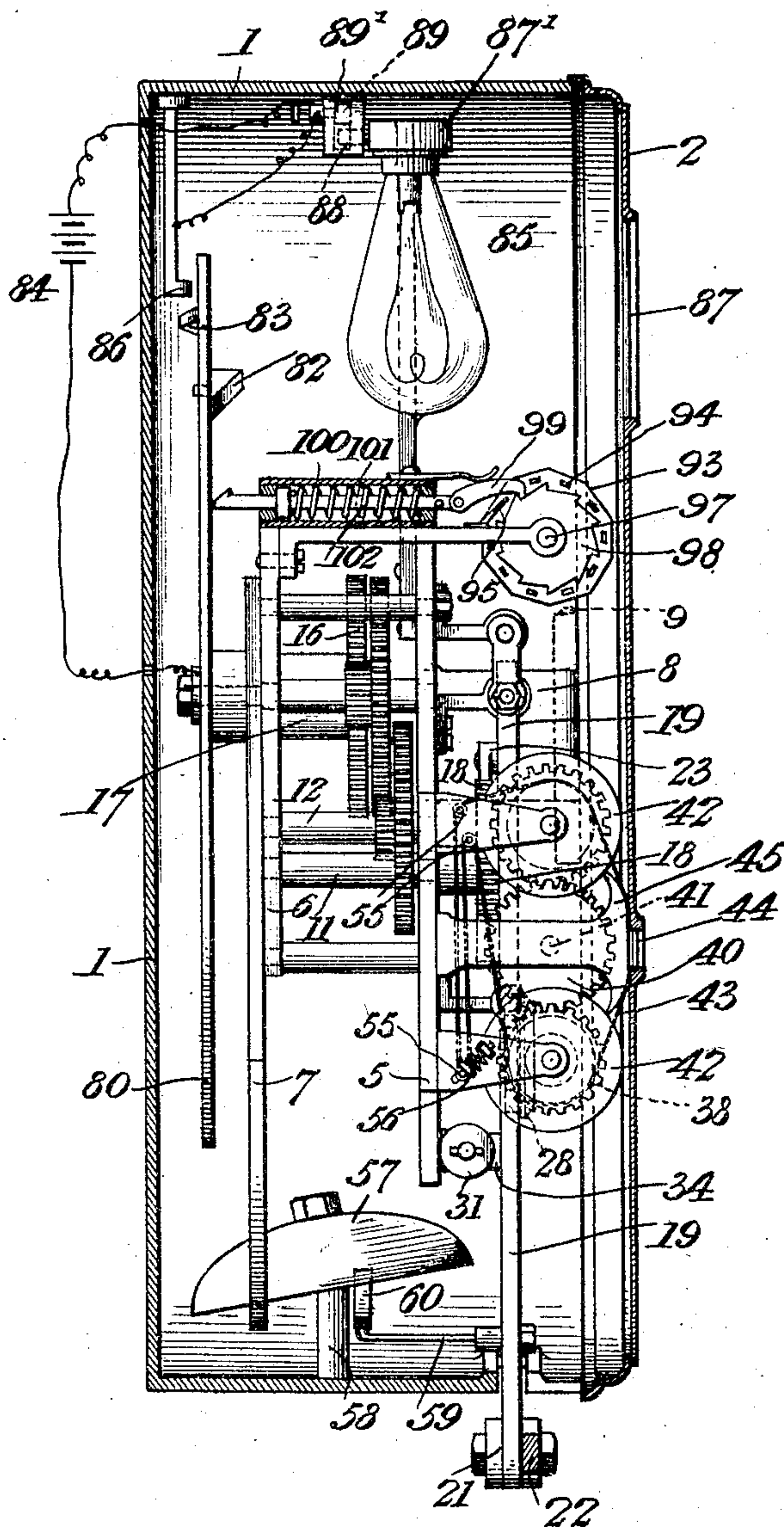


Fig. 3.

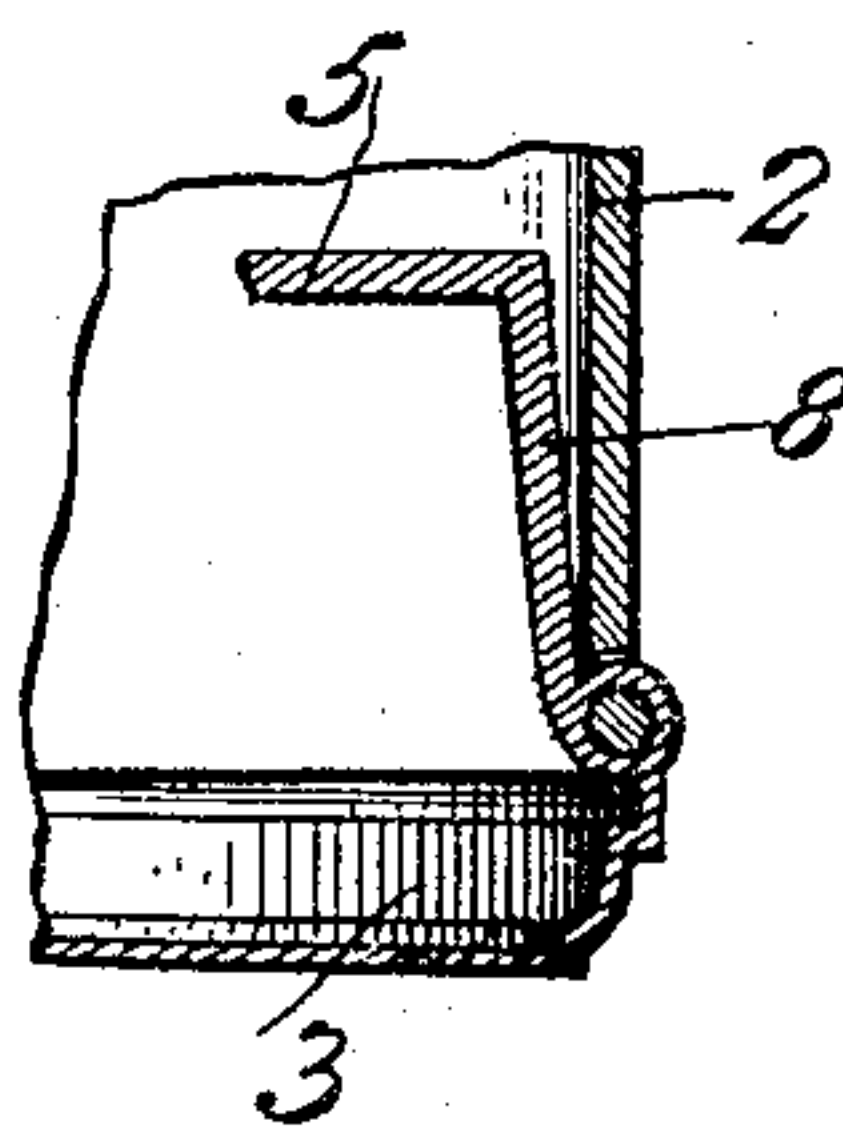
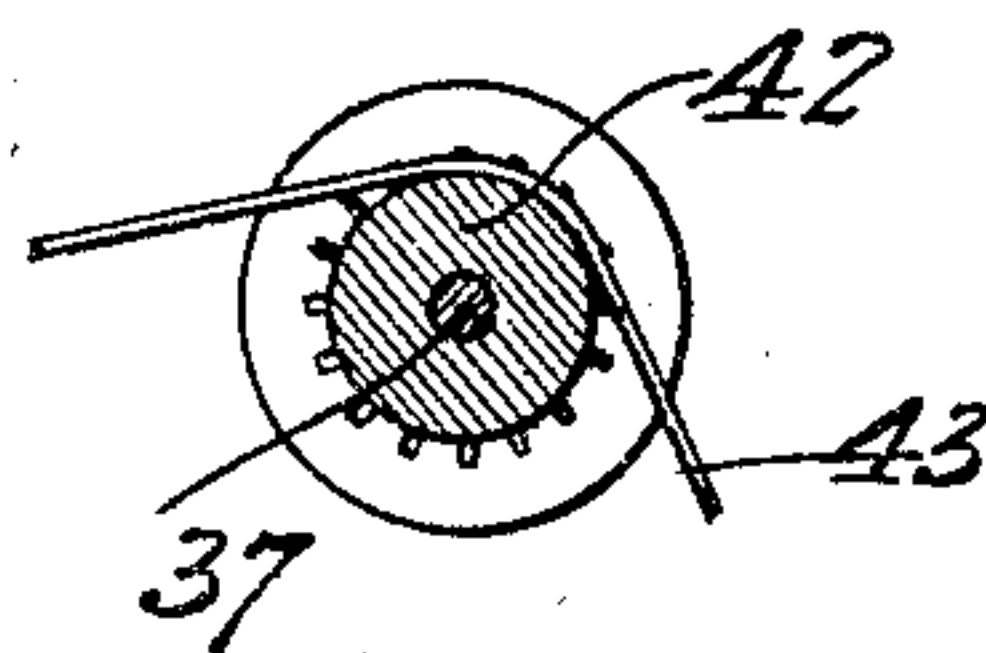


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN O. MORRIS, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-THIRD TO
JOHN A. TRAYLOR, OF RICHMOND, VIRGINIA.

REGISTER.

SPECIFICATION forming part of Letters Patent No. 773,806, dated November 1, 1904.

Application filed September 24, 1903. Serial No. 174,518. (No model.)

To all whom it may concern:

Be it known that I, JOHN O. MORRIS, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented a new and useful Register, of which the following is a specification.

This invention relates to registering and signaling mechanism.

The principal object of the invention is to provide a device which will attract the attention of street-car passengers or persons making purchases in stores to the registering device for indicating or recording sales, and thus render more certain the registration of amounts, tickets, checks, or other tokens received and supposed to be registered or indicated by a conductor or salesman.

A further object of the invention is to provide a suitable form of register capable of registering receipts of two different classes, such as cash and tickets received for fare, the two registering mechanisms being operable by the same lever.

A further object of the invention is to provide a signaling mechanism including an adjustable means for closing an electric circuit after a predetermined number of operations of the fare or cash register, the person paying the amount registered at the time the circuit is closed being notified by the energizing of the signal that he is entitled to a rebate or reward, such as a predetermined sum of money or a number of tickets on a car or cash, discount, or merchandise in a store.

A still further object of the invention is to provide a mechanism of this character in which the operating parts and their supporting-frame are connected to and movable with the front cover of the casing, the latter being hinged or pivoted, so that all of the operating parts may be exposed in order to permit any necessary adjustment of the parts.

With these and other objects in view, as will hereinafter appear more fully, the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various

changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation of a register constructed in accordance with my invention, a portion of the hinged front or cover being broken away in order to more clearly illustrate the construction and operation of the mechanism. Fig. 2 is a transverse section of the device on the line 2 2 of Fig. 1. Fig. 3 is a sectional plan view through a portion of the hinged connection between the casing and cover. Fig. 4 is a detail sectional view of one of the tape-winding rollers.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The device forming the subject of the present invention is designed more especially for the registration of cash fares and tickets received by a street-car conductor, and the register is so arranged and constructed that after a predetermined number of fares have been received a signal will be energized and notify the person paying the last fare immediately preceding the energizing of the signal that there is due him a prize in the form of cash or tickets. With a device of this character the attention of the passengers will be constantly directed to the register, and the conductor will be compelled to register each fare received.

In the drawings, 1 indicates a suitable frame or casing, preferably circular in form and provided with a cover 2, hinged or pivoted to the casing, as indicated at 3, and this cover carries all of the operating parts of the mechanism, so that by opening the cover access may be had to all of the parts for adjustment, repairs, or for the purpose of applying lubricant.

The supporting-frame comprises three parallel plates 5, 6, and 7, of which the plates 5 and 6 are connected together in the manner commonly practiced in clockwork, while the plate 6 is riveted or otherwise secured to a rear plate 7, that forms one of the principal

supports for the mechanism when the parts are in proper position within the casing. The plate 5 is provided at one edge with an arm 8, that extends to the hinge 3 and forms the central socket member thereof, and to this central socket member is also secured the edge of the cover 2, while the upper and lower socket members are carried by the stationary portion of the casing, and all three are connected in the usual manner by a pin-
 10 tle 9. In the frame are suitable bearings for the reception of a number of transversely-extending studs or shafts 10, 11, 12, 13, and 14, of which the shaft 10 carries the initial
 15 gear 15 of the reducing-train, the final gear of which, 16, is secured to a sleeve 17 on the shaft 14.

The pinion 15 is secured to or formed integral with a ratchet-wheel 18, and both are
 20 free to revolve on the shaft 10. The shaft 10 forms a pivotal support for an actuating-lever 19, the lower end of which extends through a suitable slot in the bottom of the casing and is connected to cords or rods 21 and 22, that
 25 in turn are connected to operating devices running along each side of the car within convenient reach of the conductor. This lever carries a pawl 23 in engagement with the teeth of the ratchet-wheel 18, and on each opera-
 30 tive movement in either direction of the lever the ratchet-wheel will be rotated to the extent of a single tooth, and this movement will be transmitted through the reducing-train to the sleeve 17.

The frame carries bearings for the support of two shafts 25 and 26, carrying ratchet-wheels 27 and 28, respectively. The ratchet-wheel 27 is engaged by a spring-retained
 40 pawl 29 and the ratchet-wheel 28 by a similar pawl 30, and the tails of the pawls are disposed, respectively, on opposite sides of the actuating-lever 19, so that when moved in one direction the pawl 29 will transmit the movement to its ratchet-wheel 27, and when
 45 moved in the opposite direction the pawl 30 will transmit operative movement to the ratchet-wheel 28. These ratchet-wheels form the initial members of registering devices, of which one registers the number of cash fares
 50 received, while the other in similar manner registers the number of tickets received, and on the release of the lever the pawls are restored to initial position by means of their springs. Near the lower portion of the front
 55 plate 5 of the frame are cylindrical spring-casings 31, containing springs 32, that serve to force pins 33 into engagement with a lug 34, projecting from the operating-lever, and thus maintain the lever in a central position.
 60 One of these springs further serves, in restoring the lever to initial position, to impart operative movement to the ratchet-wheel 18 through the medium of a pawl 23. In the opposite direction the engagement is
 65 more direct and positive.

The ticket and cash-fare registering mechanisms are of exactly the same construction, and a description of one will therefore serve to a full understanding of this portion of the invention.

The front portion of the frame is provided with three sets of brackets 35, of which the lower set carries a longitudinally-adjustable spindle 36 and the upper set a transverse shaft 37, and these two shafts carry, respectively,
 75 gears 38 and 39, that are connected for mutual movement by an idler 40, carried by a suitable shaft or spindle 41, that is held in bearings in the intermediate set of brackets. The two spindles 36 and 37 carry reels or
 80 flanged rollers 42, on which is wound a registering-tape 43, bearing numerals arranged in consecutive order and adapted to be consecutively displayed through a suitable opening
 85 44, formed in the front of the casing, the tape being held outward at the display-point by a suitable arm 45, carried by the frame.

The lower spindle 36 is keyed to its gear 38 in such manner as to permit longitudinal adjustment of the spindle without disconnecting
 90 it from the gear, and the outer end of the spindle extends through a suitable slot in the main casing and is provided with an operating-rod 46, which may be turned to restore the tape to zero position. The inner end of the spin-
 95 dle is provided with a bevel-pinion 49, engaging the bevel-gear 50, carried by the shaft 25, and the two gears are normally held in mesh by means of a spring 51, tending to move the spindle 36 inward. In the operation of this
 100 particular portion of the mechanism the operative movement of the lever 19 is imparted, through the pawl 29, to the ratchet-wheel 27 and bevel-gear 50. From thence the move-
 105 ment is transmitted, through the bevel-pinion 49 and spindle 36, to a train of gears 38, 40, and 39 to the roller 42, and the latter is rotated to an extent sufficient to move the tape and expose the next numeral at the opening 44.

In order to restore the parts to the zero position, a process which is carried on at the station or car-barn, the knob 46 is pulled outward against the stress of spring 51 until the pinion 49 is moved out of mesh with the gear
 110 50. The turning of the knob will then re-
 115 wind the tape on the lower roller. As the re-winding operation may be somewhat lengthy, it is preferred to employ some means for holding the knob outward, and for this purpose the casing is provided with a lug 52, having
 120 an opening in which is mounted a freely-slidable pin 53, the head of which may be engaged against the rear face of the knob, and thus hold the latter out during the restoring operation. The pin may be clamped in position by means of a set-screw 54, adapted to a
 125 threaded opening formed in the lug 52.

It will be observed that the registering-tape is provided at one edge with a row of perforations and that the main winding-roller is pro-
 130

vided with teeth for engaging in said perforations, and thus imparting a positive movement to the tape. In order to permit the use of a tape of sufficient length, I employ a number of auxiliary rollers 55, held in suitable bearings at a point to the rear of the main rollers, and one of these rollers is provided with a spring-pressed bearing 56 in order to hold the tape under proper tension. Any number of rollers may be used and the length of the tape increased to any desired extent, three rollers only being shown in the present instance in order to avoid confusion.

Owing to the fact that the tape always remains at the same distance from the center of rotation of the upper roller and the extent of movement of the operating mechanism is uniform, the tape will receive precisely the same movement at each operation and the numerals which it bears will be displayed consecutively at the opening of the casing.

In resetting the tape the rollers may be turned in either direction in accordance with the position of the tape, so that if only a few fares are registered the tape may be turned backward to zero position, or if more than half of the numbers on the tape have been displayed the tape is turned in the registering direction until zero again appears at the opening 44.

In order to attract the attention of the passenger and to give an audible alarm each time a fare is registered, I employ a gong 57, disposed on a standard 58, carried by the stationary casing, and to the lever 19 is secured a clapper-rod 59, bearing a clapper 60, which engages one or other side of the gong when the lever is operated.

In mechanisms of this class it is desirable to provide a means for registering the total number of fares received—*i. e.*, both cash and tickets—and for this purpose there is employed a registering device comprising a plurality of disks 61, arranged on the spindle 62, and each bearing numerals from "0" to "9" inclusive, the disks being provided with transfer mechanism of any construction in common use, so that movement may be imparted in successive order from the units to tens, tens to hundreds, and hundreds to thousands disk, and so on, any number of disks being employed. The disks are each provided with notches or depressions 63, formed in one side and adapted to receive a detent 64, that serves to hold the disks in any position to which they may be adjusted. The preliminary actuating means of the units-disk comprises a ratchet-wheel 65, with which engages a pawl 66 and a second pawl, 67. The ratchet-wheel 65 is secured to a bevel-wheel 68, intermeshing with the bevel-pinion 69 on the spindle 62, and operative movement imparted to one or other of the pawls will turn the ratchet-wheel, and this movement will be transmitted first

to the units-disks and then through the transfer mechanism to the remaining disks.

The frame is provided with suitable brackets forming bearings for a pair of parallel rods 70 and 71, which respectively serve as supports for the spring-pressed pawls 66 and 67. The rod 70 has a depending arm from which extends a pin 72, disposed in the path of movement of the upper portion of the operating-lever 19, and when said lever engages the pin it moves the pawl 66 and turns the ratchet-wheel 65 to the extent of a single tooth. This movement takes place against the stress of a spring 73, which spring serves to restore the pawl and rod to initial position when released from the influence of the operating-lever. One end of the rod 71 is disposed directly in the path of movement of the lever 19, and movement of the latter in the opposite direction will cause operative movement of the pawl 67, so that the registering movement of the lever in both directions will be transmitted to the totals-disks 61.

Secured to the sleeve 17, which is freely mounted on the spindle 14, is the final gear 16 of a reducing-train, and said sleeve also carries a wheel or disk 80, having a plurality of openings 81 for the reception of a pair of adjustable blocks 82 and 83, that may be fitted to any of the openings in order to adjust the operative movement of the signal-actuating means, so that a conductor on taking a car out from the barn cannot have previous knowledge of the time at which a signal mechanism will operate.

The block 83 forms one terminal of an electric circuit, including a battery or other source of electrical energy, as indicated at 84, and a lamp 85, the latter being arranged within the casing. The opposite terminal of the circuit is formed by a stationary contact 86, carried by and insulated from the casing and disposed in the path of movement of the block 83, so that when the two terminals come into engagement the lamp will glow. In the front of the lamp the cover is provided with a suitable lens or transparent panel, as indicated at 87, and this may be of any desired shape or size and ornamented in any desired manner, but preferably is of such a distinctive character as to instantly attract attention.

As it is desirable that the lamp should move with the rest of the mechanism, the lamp-socket 87' is provided with a pair of projecting lugs 88, connected to the lamp-terminals, and so disposed as to enter sockets or jacks 89, forming the terminals of the battery-circuit and carried by the block 89', insulated from the casing, so that when the cover is open and the lamp withdrawn the circuit will be opened, and when said cover is closed this particular portion of the circuit will be closed.

The block 82 serves as the operative member of a mechanism for registering the number of times the signal is energized, and to effect this registration there is employed a disk 93, having a plurality of notches 94 formed on one side for the reception of a spring-detent 95, that serves to hold the disk in adjusted position. This disk is provided with peripherally-disposed numerals arranged in consecutive order and movable into alignment with a display-opening 96, formed in the cover, and said disk is supported on an arbor 97, adapted to suitable bearings in the frame. The arbor 97 also carries a ratchet-wheel 98, with which engages a pawl 99, carried by a spring-pressed rod 100, held within a casing 101, and normally projected in the direction of the wheel 80 by means of a helical compression-spring 102. The rear end of the rod is provided with an inclined head to be engaged by the inclined block 82 at about the time the contact 83 is moved into engagement with the contact 86. This forces the rod outward until the pawl 99 engages a tooth of the ratchet, and after the passage of the block the spring serves to retract the pawl and rotate the registering-disk to the extent of a single tooth.

With a registering device of the character described it is possible to gain access to all of the operating parts without dismantling the register and to permit of the adjustment of the signal-actuating device, so that the conductor or other person cannot have advance information as to the time at which the signal will operate.

Having thus described the invention, what is claimed is—

1. In a registering device, registering means including a frame and a train of gears, a casing inclosing the same, a front cover hinged to the casing and forming a support for all of the operating mechanism, a revoluble wheel operatively connected to the train of gearing, adjustable blocks carried by the wheel, one of said blocks forming the terminal of an electric circuit, a lamp, a source of electrical energy included in the circuit, a stationary terminal disposed in the path of movement of the adjustable block, and means actuated by the second block for registering the number of times the circuit is closed.

2. In a register, a casing, a cover hinged to the casing, a frame connected to the cover and the cover-hinge member, a train of gears carried by the frame, an electric circuit including a source of electrical energy and a lamp, a revoluble circuit-closer operable by the train of gearing, a preliminary operating-lever carried by the frame, a pair of mechanisms for registering different classes of receipts, a totals-registering mechanism, and means disposed in the path of movement of the lever for operating one or other of the initial mechanisms in accordance with the direction of

movement of the lever and means for transmitting movement to the totals-registering mechanism on movement of the lever in either direction.

3. In a register, an operating-lever, a pawl disposed in the path of movement thereof, a ratchet-wheel engaged by the pawl, a longitudinally-adjustable spindle having gearing connection with one end of the ratchet-wheel and provided at its opposite end with a knob disposed externally of the casing, a pair of winding-rollers of which one is carried by the spindle, a second spindle carrying the second roller, gearing connecting the two spindles, and a registering-tape carried by the roller and bearing numerals arranged in consecutive order.

4. In a registering device, a pair of spindles of which one is longitudinally adjustable, gearing connecting the spindles, a registering-tape, rollers carried by the spindles and supporting the tape, a ratchet-wheel, a bevel-gear carried thereby, a bevel-gear carried by the adjustable spindle and normally meshing with said gear, a pawl engaging the ratchet-wheel, a spring for holding the bevel-gears in engagement, an externally-disposed knob carried by the spindle and serving as a means for disengaging the bevel-gears and for restoring the tape to zero position, and means for holding the spindle in the gear-disengaging position, substantially as specified.

5. In a register, a pair of initial register mechanisms for registering different classes of receipts, a pivoted operating-lever for said mechanisms, a gong, a clapper carried by the lever and engaging with the gong in either direction of movement, a totals-registering means including an initial ratchet-wheel, a pair of pawls engaging said ratchet-wheel, and spring-pressed rods having terminal portions disposed respectively on opposite sides of the lever for effecting movement of the registering device on the operation of the lever in either direction.

6. In a device of the class specified, a casing having a hinged cover, a registering mechanism carried by the cover, a bracket secured to the cover, a lamp-socket carried by the bracket, a lamp secured within the socket, a pair of metallic plugs projecting from the socket and forming lamp-terminals, a block secured to the casing and provided with metal sockets or jacks, an electric circuit having connection with the socket members, a revoluble circuit-closer connected to the train of gears, a block carried thereby and forming one terminal of the circuit, and a stationary contact carried by the casing and forming the opposite terminal, said stationary block being disposed in the path of movement of the movable block.

7. In mechanism of the class described, a registering mechanism including a train of gears and registering devices, a revoluble cir-

5 cuit-closer connected to the train of gears, an electric circuit, a signal connected in the circuit, an inclined block carried by the circuit-closer and adjustable thereon, a registering-disk, a ratchet-wheel connected thereto, a pawl engaging the ratchet-wheel, a spring-pressed rod carrying the pawl, and an inclined head forming a part of the rod and disposed in the path of movement of said inclined
10 block, substantially as specified.

8. In mechanism of the class described, a registering device including a pair of rollers, gearing connection between the rollers, teeth on one of said rollers, a plurality of auxiliary
15 tape-guiding rollers, a registering-tape ex-

tending over the several rollers and provided with perforations for the reception of the teeth, said tape bearing numerals in consecutive order, an operating means for imparting registering movement to the tape, and means 20 for disconnecting the rollers from the operating means and restoring the tape to zero position.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 25 the presence of two witnesses.

JOHN O. MORRIS.

Witnesses:

J. H. JOCHUM, Jr.,

JOHN A. TRAYLOR.