O. H. HARRISON & E. A. PETERSON.

STROKE REGULATOR FOR PLUNGERS.

APPLICATION FILED JULY 24, 1908.

928,193.

Patented July 13, 1909.

Fig. 1.

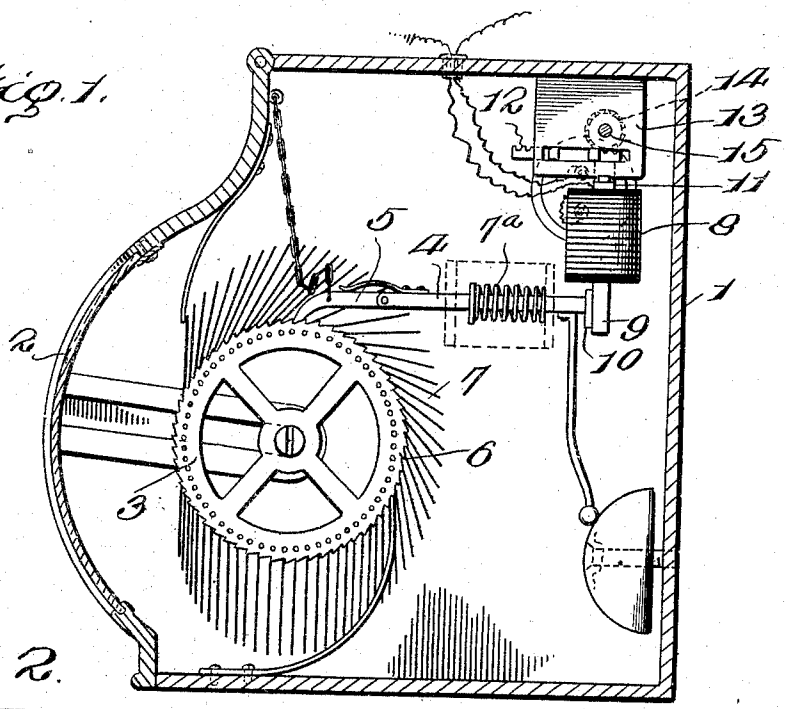


Fig. 2.

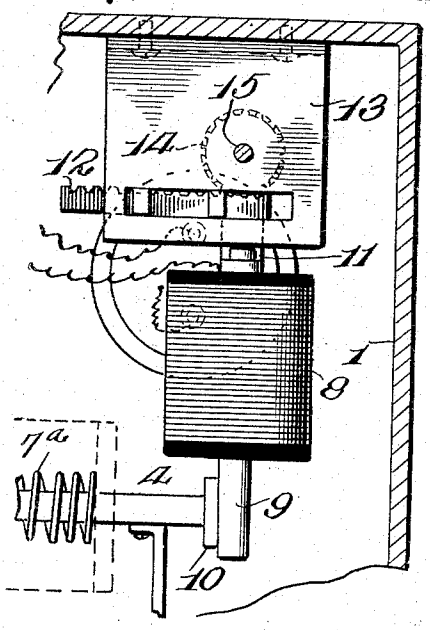


Fig. 3.

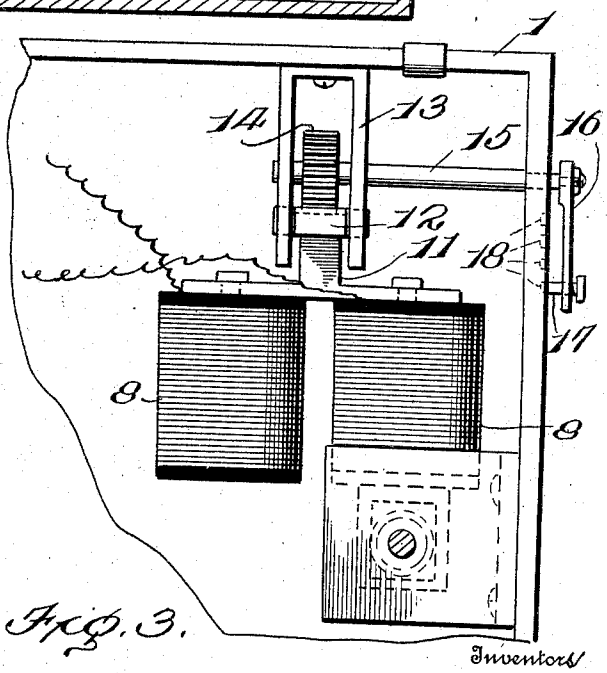
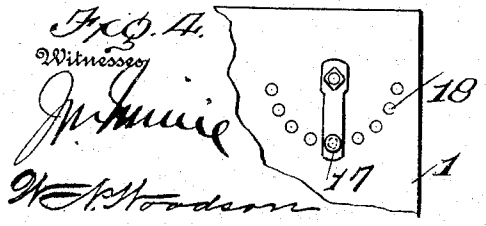


Fig. 4.



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UNITED STATES PATENT OFFICE.

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STROKE-REGULATOR FOR PLUNGERS.

No. 928,193. Specification of Letters Patent. Patented July 13, 1909.

Application filed July 24, 1908. Serial No. 445,267.

To all whom it may concern:

Be it known that we, OSCAR H. HARRISON and EDWARD A. PETERSON, citizens of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Stroke-Regulators for Plungers, of which the following is a specification.

This invention comprehends certain new and useful improvements in magnetically operated plunger mechanism, and relates particularly to means for regulating the stroke of the plunger for the intermittent actuation of a display drum in a certain street or station indicator and advertising apparatus for which we have made application for Letters Patent of the United States, filed of even date herewith, Serial No. 445,266, although it is to be understood that this present invention is equally applicable to signaling mechanism generally and wherever the lengthening or shortening of the stroke of a magnetically operated plunger would be advantageous.

The invention has for its object an improved means for shifting an electro-magnet used in connection with a plunger, as above noted, and the invention consists in the constructions, arrangements and combination of the parts that we will hereinafter fully describe and then point out in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a transverse sectional view through an indicating apparatus embodying the improvements of our invention. Fig. 2 is a similar view, on an enlarged scale, illustrating particularly the present improvements; Fig. 3 is a view thereof at right angles to Fig. 2, and Fig. 4 is a view of one corner of the case or cabinet of the device illustrating details hereinafter mentioned.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In the present instance, this invention is shown as incorporated in a street or station indicator which comprises a casing 1 provided with a sight opening 2 in its front, a revoluble display drum 3 journaled within the casing, and a plunger 4 mounted to reciprocate within the casing and carrying a pawl 5 designed for engagement with a ratchet 6 of the display drum so that every time the plunger is moved forwardly it will turn the drum so as to shift the display plates 7 embodied therein. The plunger 4 is automatically moved forward by means of an expansion spring 7^a and is drawn rearwardly by means of an electro-magnet 8 with the mounting of which this invention has most to do. It is to be understood that when the magnet 8 is energized, its core 9 will attract the head 10 that is formed on the rear end of the plunger 4 and that as soon as the magnet 8 is then de-energized the spring 7^a will be permitted to act to move the plunger 4 forwardly so as to effect a partial rotary movement to the display drum 3.

As an example of the necessity for regulating the stroke of the plunger 4, let it be assumed that the indicating apparatus above generally described, is installed in a street car for the purpose of indicating the names of the street crossings or stations as the car approaches the same. If, for instance, the display drum represents a route which has one hundred streets or stations to be indicated before returning to the starting point, it will have one hundred ratchet teeth 6, thereby necessitating a comparatively short stroke of the plunger 4. But if the drum with one hundred ratchet teeth 6 is removed and another drum substituted therefor for a route having, say, fifty cross streets or stops, the display drum would be provided with only fifty ratchet teeth, and consequently the same plunger 4 should have a longer stroke so as to carry the drum around to a greater extent at each actuation. Now in carrying out our invention to accomplish this result, the electro-magnet 8 is provided at its top with a yoke 11 which is connected to, although insulated from, a rack bar 12 mounted for longitudinal movement in slots or grooves formed in the walls of a box-like hanger 13 secured to the top of the casing 1. A spur pinion 14 is contained within the hanger 13 and meshes with the upwardly facing teeth of the rack 12 and the said pinion is carried on a transversely extending shaft 15 which is journaled in the hanger and in the adjacent side wall of the casing, through which it projects. On its outer projecting end, the shaft 15 carries a spring latch 16 which is provided at its free end

with a pin 17 designed to be entered into any one of a series of sockets or openings 18 formed in the outer wall of the casing.

From the foregoing description in connection with the accompanying drawings, it will be seen that in order to lengthen or shorten the stroke of the plunger 4, it is only necessary to shift the electro-magnet 8 forwardly or rearwardly so that its core 9 will attract the head 10 of the plunger at a greater or less distance therefrom in the deënergized condition of the magnet, and that the magnet may be easily shifted by merely pulling the latch 16 outwardly so that its pin 17 will be retracted from one of the openings 18 and then swinging said latch in one direction or the other so as to turn the shaft and pinion 14 and slide the rack 12 in one direction or the reverse. Preferably the openings 18 have designating characters imprinted or otherwise displayed in juxtaposition thereto so as to indicate the different routes of a street car system, for instance, so that the operator may shift the pin to the proper opening according to the particular drum which is slipped into the casing for the route on which the car is to go.

Having thus described the invention, what is claimed as new is:

1. The combination with a magnetically operated plunger and the part act ated thereby, of a magnet arranged to attract said plunger, a rack to which said magnet is connected, a hanger in which said rack is mounted to move, a pinion meshing with said rack, and means for turning said pinion.

2. The combination with a magnetically operated plunger and the part actuated thereby, of a magnet arranged to attract said plunger, a rack secured to said magnet, a hanger in which said rack is mounted to move, a shaft journaled in said hanger, a pinion mounted on said shaft and meshing with said rack, and a latch or handle for turning said shaft.

3. The combination with a casing, a magnetically operated plunger mounted therein, and the part actuated by said plunger, of a magnet arranged to attract said plunger and mounted within the casing, a hanger within the casing and from which said magnet is suspended, and means for shifting said magnet in relation to the hanger, said shifting means including a shaft extending out through the casing, and a spring latch secured on the projecting end of said shaft and provided with a lock pin, the casing being formed with a series of openings designed to receive said pin.

In testimony whereof we affix our signatures in presence of two witnesses.

OSCAR H. HARRISON. [L. S.]
EDWARD A. PETERSON. [L. S.]

Witnesses:
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