

(No Model.)

3 Sheets—Sheet 1.

J. W. WARHURST.

STATION INDICATOR FOR RAILWAY CARS.

No. 379,428.

Patented Mar. 13, 1888.

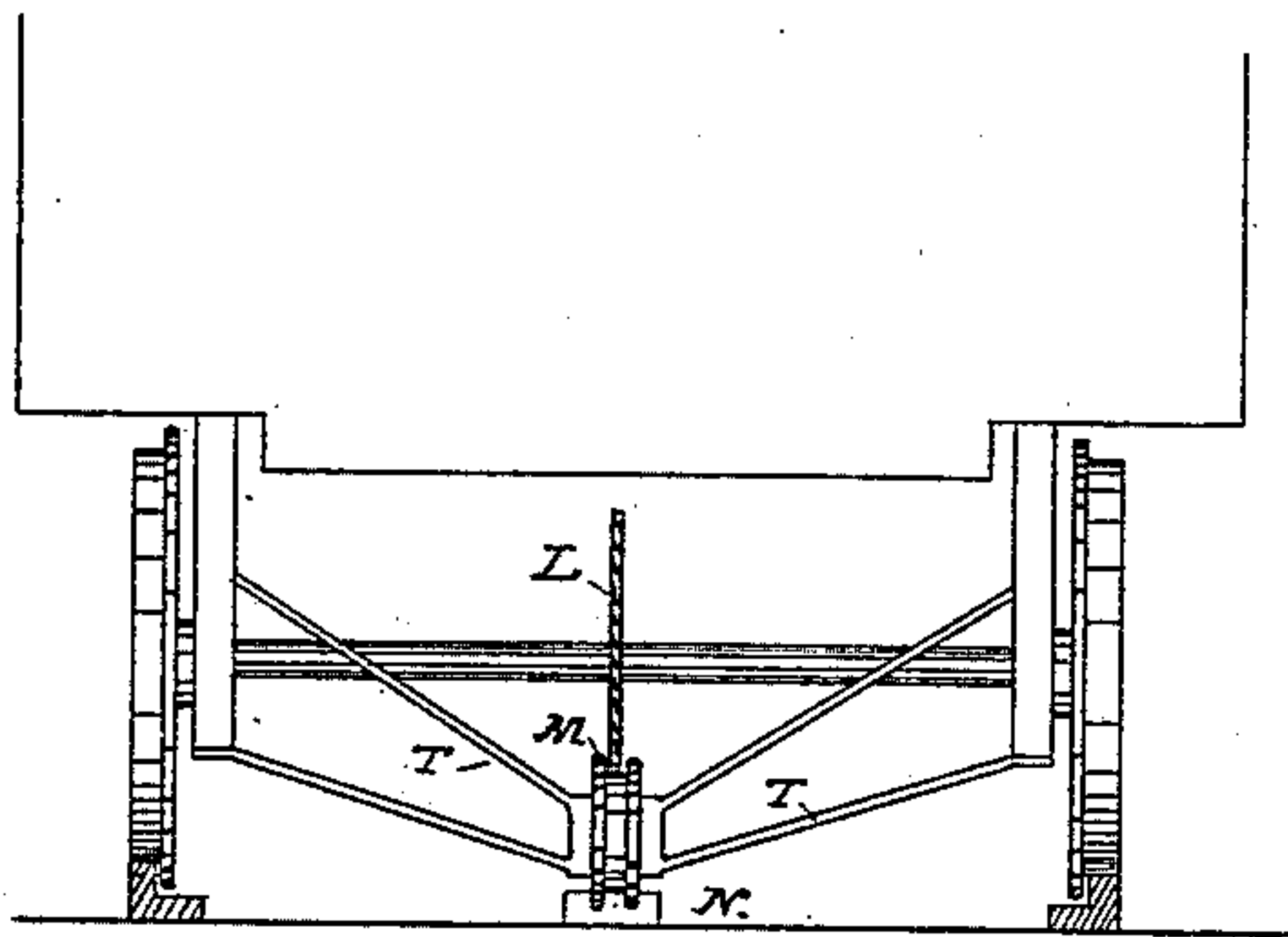


Fig. 2.

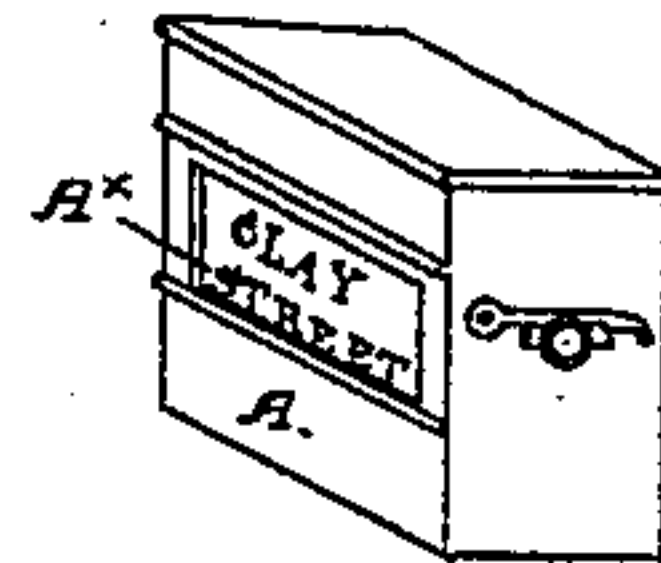


Fig. 1.

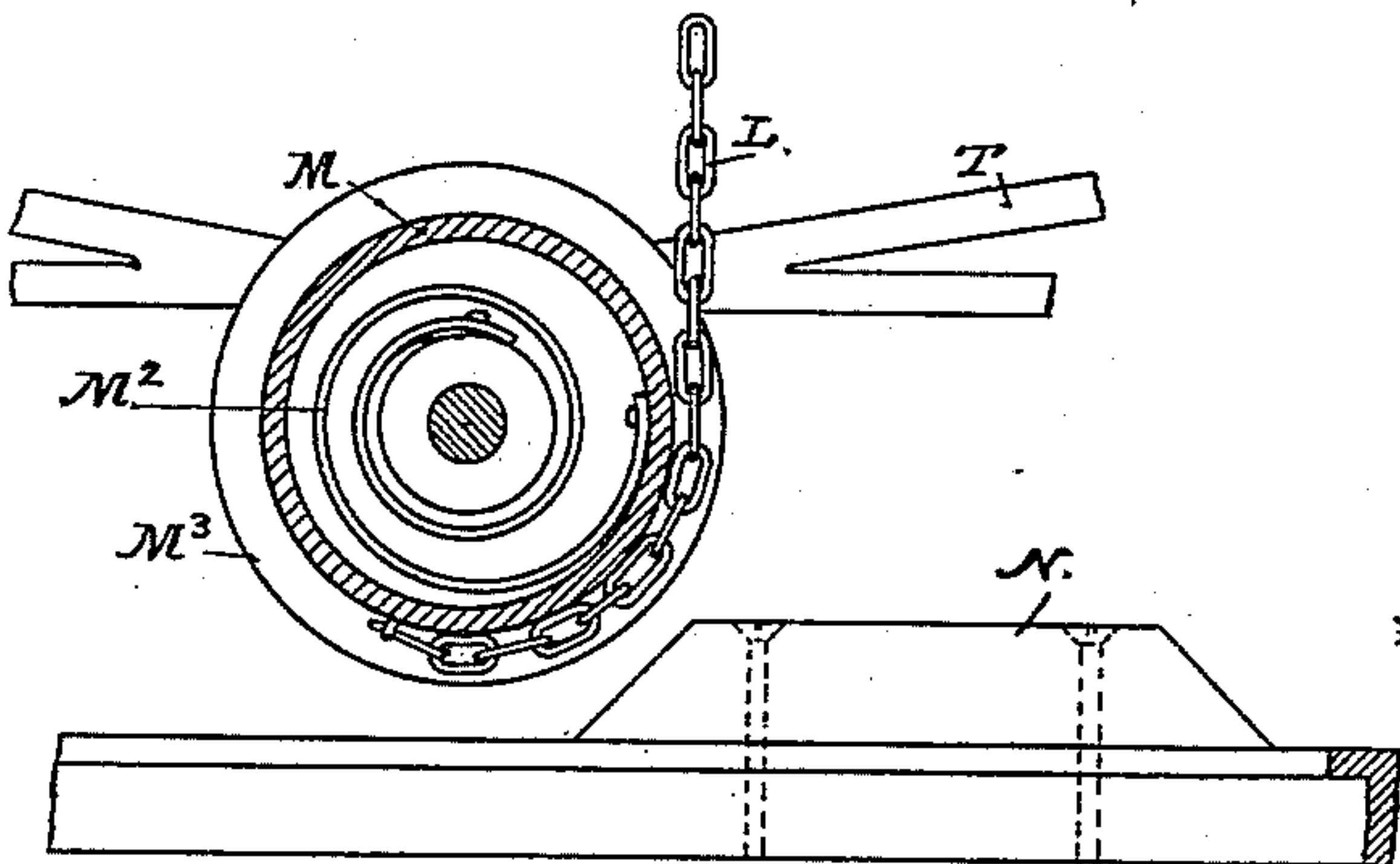
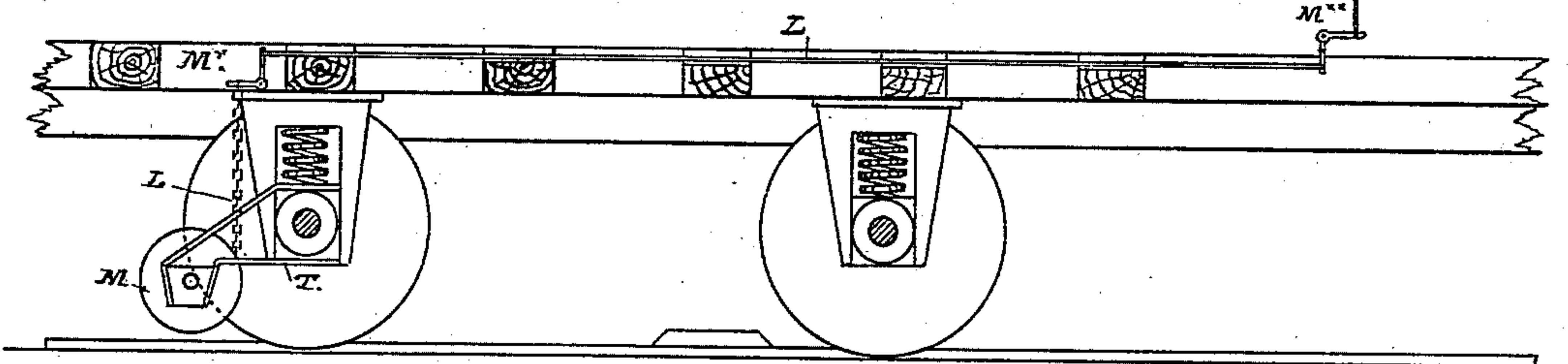


Fig. 3.

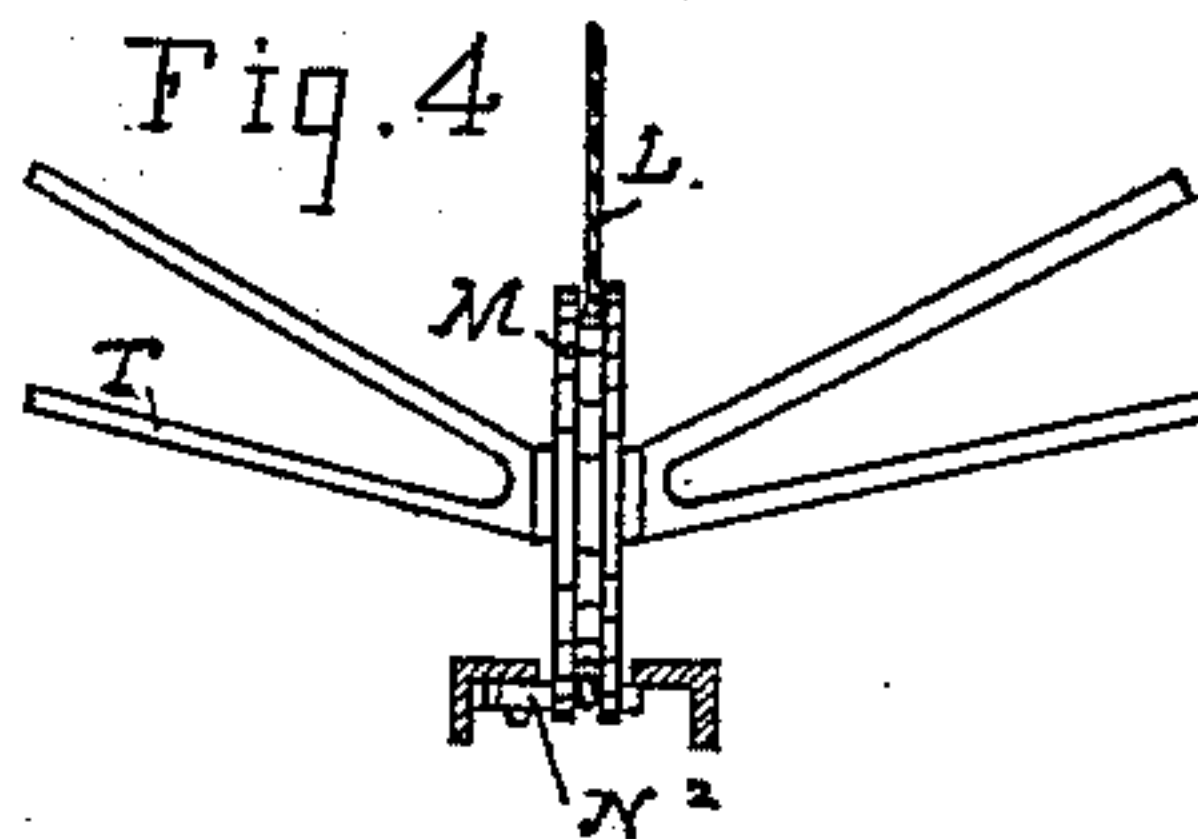


Fig. 5.

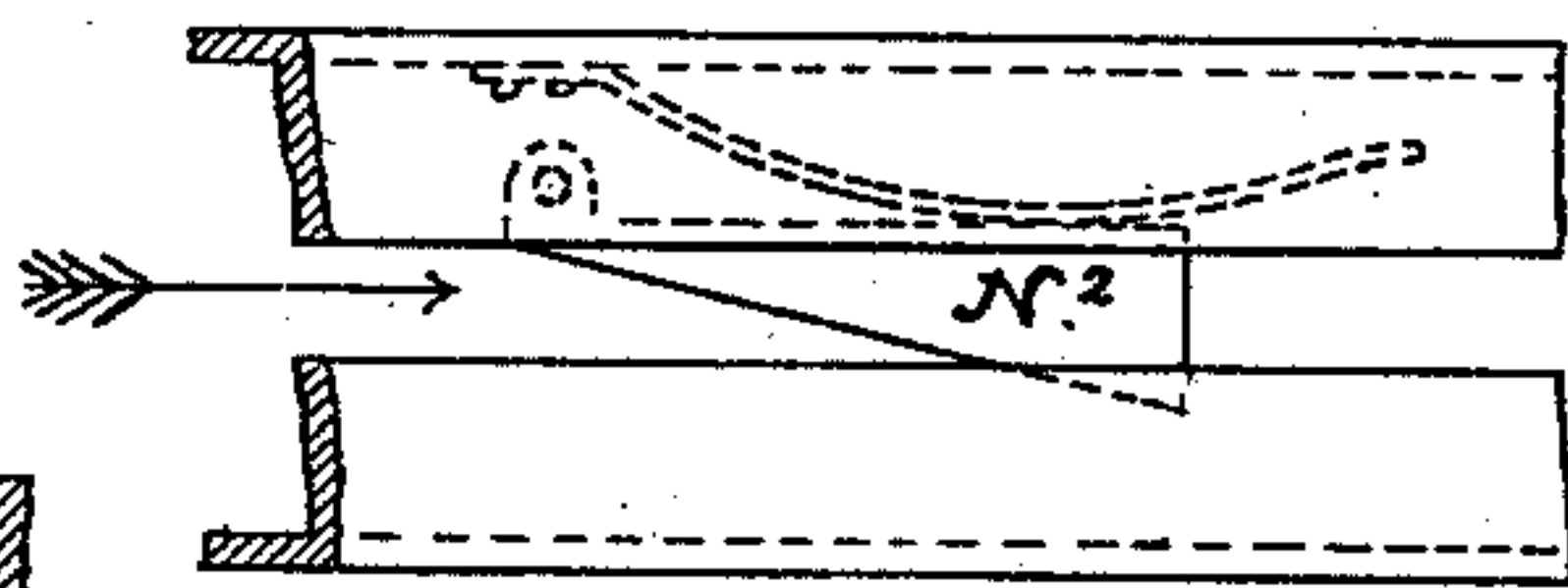


Fig. 3^a.

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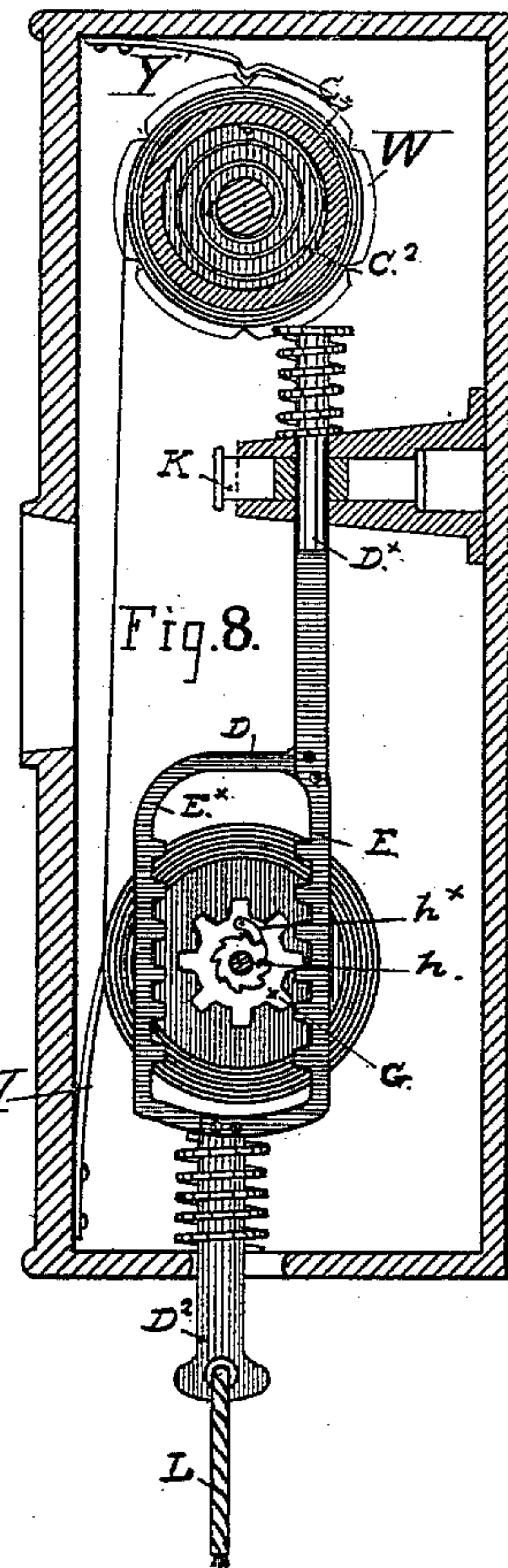
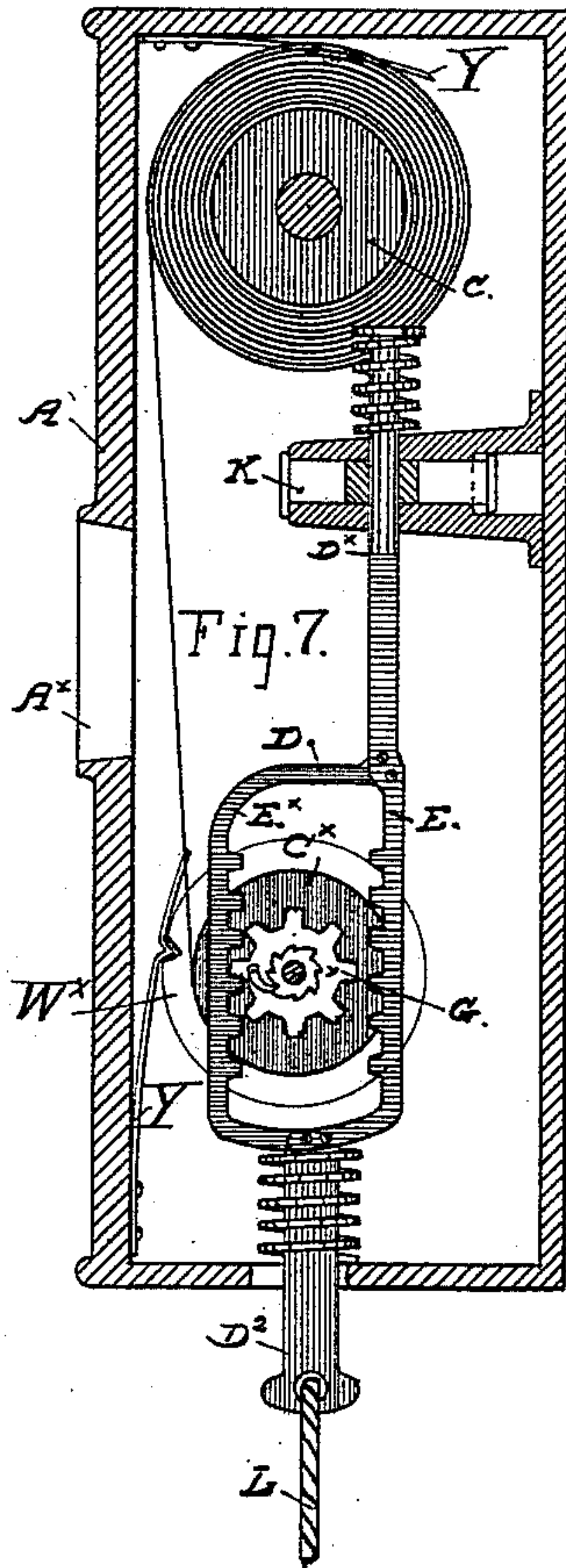
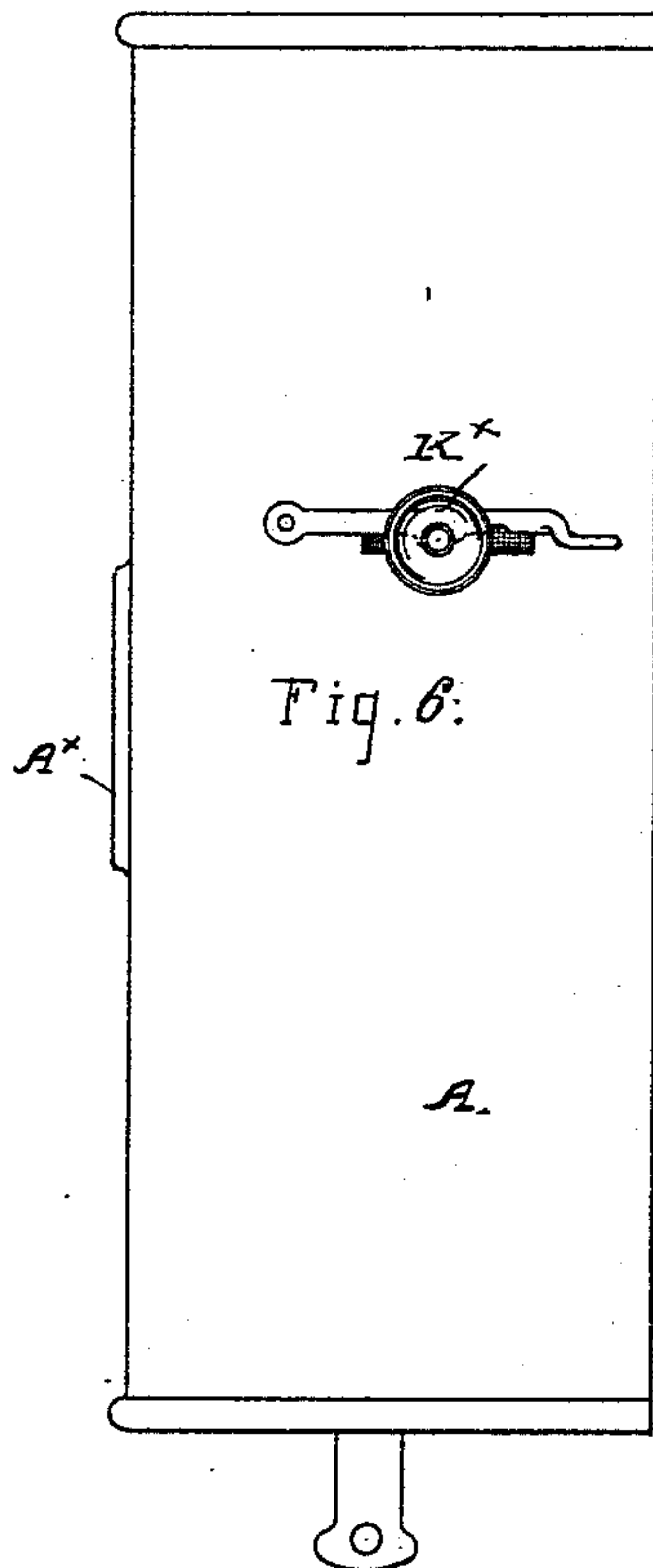
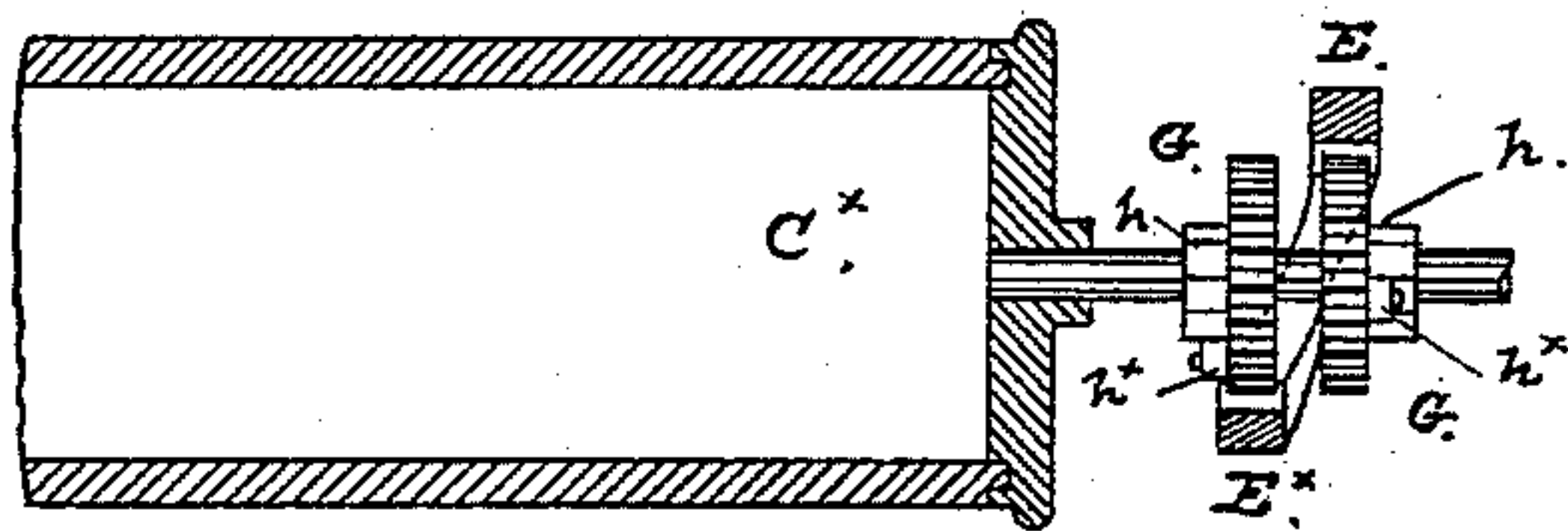


Fig. 9.



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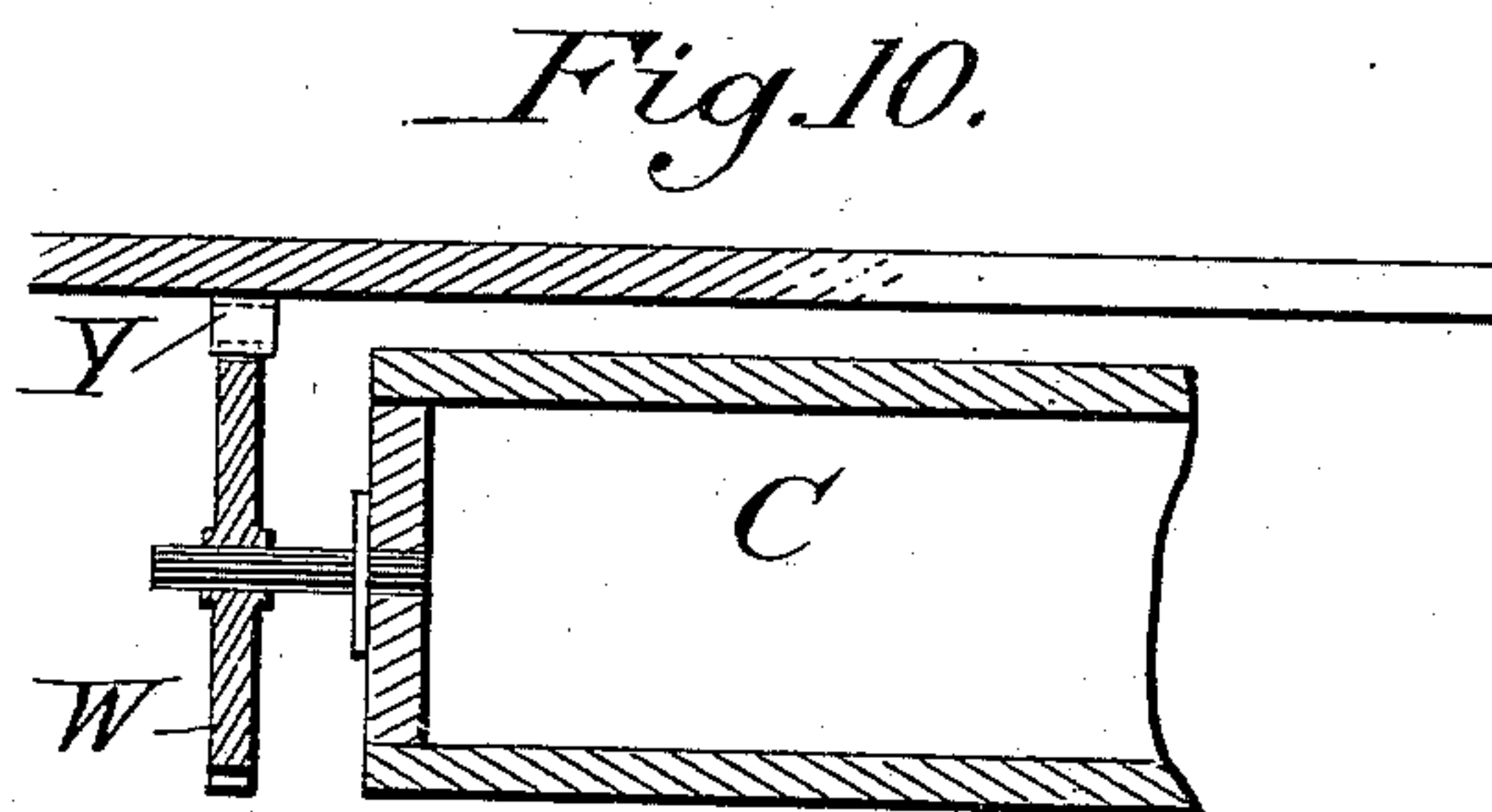
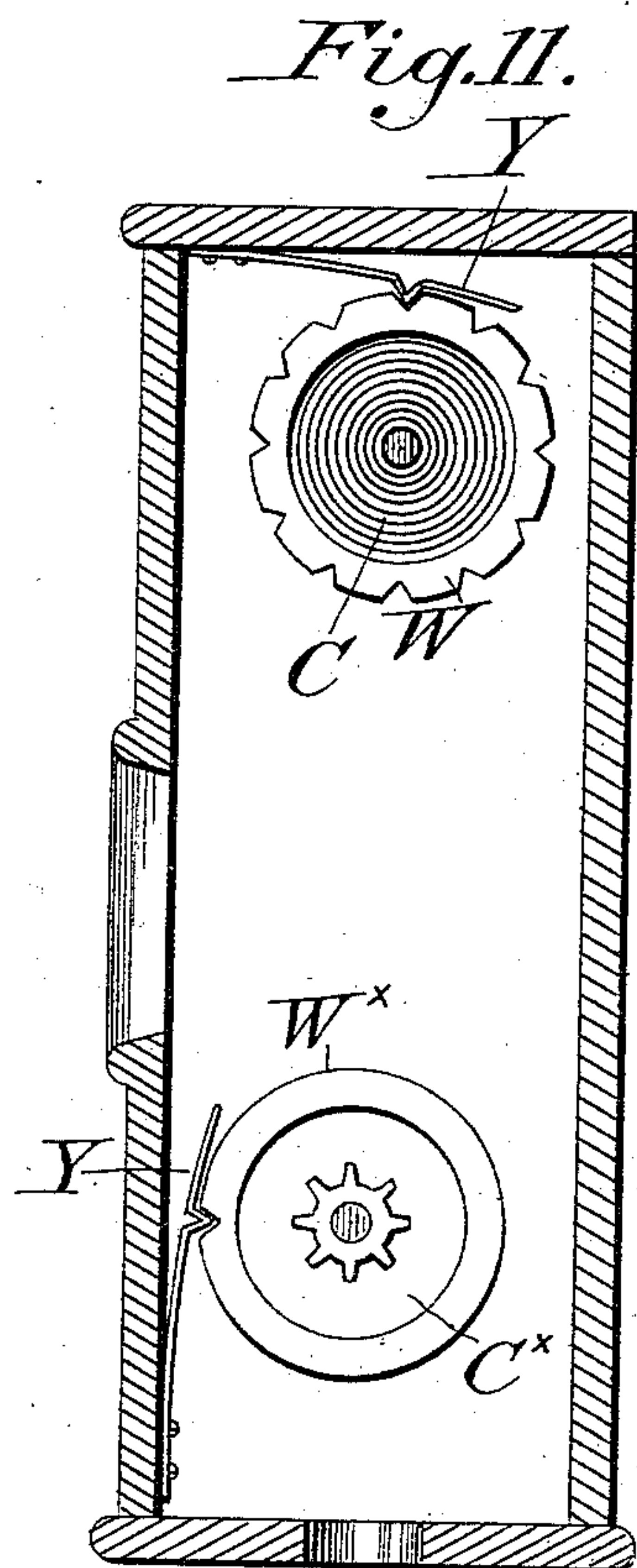
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J. W. WARHURST.

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No. 379,428.

Patented Mar. 13, 1888.



Witnesses,

H. H. Schott.
C. E. Taster.

Inventor,

John W. Warhurst.
By *his Attorney, John C. Taster.*

UNITED STATES PATENT OFFICE.

JOHN W. WARHURST, OF SAN FRANCISCO, CALIFORNIA.

STATION-INDICATOR FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 379,428, dated March 13, 1888.

Application filed June 11, 1887. Serial No. 241,072. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. WARHURST, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Station-Indicators for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the drawings that accompany and form part of this specification.

My invention relates to improvements in the operating mechanism of street or station indicators for railway-cars; and it consists in certain novel construction and combination of web or apron actuating mechanism reversible at will to move the apron at intervals in one direction or the other, and automatic operating mechanism for producing such step-by-step movements at required intervals of time in the travel of the car along the track.

I proceed to construct and apply my said improvements in indicator-operating mechanism substantially after the following manner, the said drawings being referred to by figures and letters.

Figure 1 shows the arrangement and relative position of the parts for operation. Fig. 2 is a view taken from the left-hand side of Fig. 1. Figs. 3 and 3^a are detail views on a larger scale of the spring-drum. Figs. 4 and 5 illustrate a modified construction and arrangement of the stops in the roadway to operate the drum. Figs. 6, 7, 8, and 11 are views of the indicator-box and the mechanism by which the indicator-apron is operated. Figs. 9 and 10 are detail views of the rollers and connecting mechanism.

A represents a suitable box with an opening, A^x, in the front to display the matter arranged on the apron B in the usual manner.

C C^x are the rollers upon which the apron is wound. The upper roller, C, is a spring-barrel containing a coil-spring, C², the power of which should be great enough to wind up the apron as it is let off from the lower roller. This spring is coiled up as the lower roller takes up the apron, and by its reaction takes up the apron in turn when the rotation of the lower roller is reversed. Such movements of the lower roller are effected and controlled by

reciprocating racks and pinions, the construction and arrangement of which are shown in Figs. 7 and 8. These racks are formed on opposite sides of a rack-frame that is moved in one direction by the automatic mechanism underneath the car, with which it is connected by cords or wires and bell-crank levers, and in the opposite direction by the reaction of a spring. The downward movement of the rack-frame turns the roller in both cases of its adjustment, while the spring sets it in position for the next action. This is accomplished by making the frame D with two sets of teeth, E E^x, to engage two pinions, G G, on the journal of the roller C^x, and providing suitable lateral shifting movement of the frame for the purpose of throwing one or its other toothed portions into engagement with its pinion. These toothed portions are set out of line with each other for the purpose of bringing them opposite to their respective pinions, and the lateral movement of the frame from the upper end to throw one rack portion into action also disengages the other from its pinion. One pinion is connected with the roller-shaft by a ratchet-wheel, h, fast on the shaft, and a pawl, h^x, on the pinion to engage with the teeth of the wheel, and the other pinion is locked to the shaft by similar means, which is made to act in the opposite direction. As the two pinions are therefore loose on the shaft and only locked to it by their pawls and ratchets, it will be seen that one pinion, as G, will turn the roller forward and the other pinion when in action will produce rotation in the contrary direction or backward. Therefore, by throwing the rack-frame to one pinion or the other the rotary movement of the roller C^x can be changed accordingly. To set the rack in this manner I use a sliding bearing, in which the upper end of the rack-frame is held. The form in which I have constructed this slide is clearly shown in Figs. 6, 7, and 8.

The cylindrical end of the rod or upright bar D^x of the rack is set in a guide, K, in which it has free vertical movement, and by means of a knob or handle, K^x, on this slide, projecting through the end of the casing or box, the guide or bearing is moved to one side or the other of a vertical center line in which it has free vertical movement. One or the other of

the said racks is thus brought into action, and the apron is caused to move in one direction or the other at will by such adjustment.

To lock the rollers and prevent the spring from running down when the racks are at rest, I fix on the end of each roller or on its axle a disk, W or W^x , which rotates to engage the tooth of a spring-catch, Y , as shown in Figs. 7, 8, and 10, one end of the spring being fixed to the side of the case, leaving the outer end free to ride on the edge of the disk.

The automatic mechanism is constructed and applied substantially as follows: The bar D^2 on the lower end of the reciprocating rack-frame extends through the bottom of the indicator-case, and is connected by cords or wires L with a spring drum or barrel, M , on the truck. This drum is set in close relation to the surface of the roadway between the rails to engage with fixed stops N , that are placed at intervals of space apart in its path for rotary movement.

The drum is mounted in brackets on a frame, T , fastened to the running-gear of the car and detached from the car-body, and, as it meets and is struck by the stop, a partial rotation is produced, and the chain that connects the drum with the bell-crank M^x , directly above on the car-body, is partially wound up. This movement is sufficient to draw down the rack-frame in the indicator-box above and operate the apron.

The drum M is provided with a coil-spring, M^2 , which is applied for the purpose of taking up slack and keeping the chain L taut at all times during the rise and fall of the car-body on its springs, and it has an elastic tire formed of a rubber ring, M^3 ; but, instead of following this construction exactly, the spring barrel or drum may be formed separately and the disk or wheel portion to engage and run over the stops on the roadway may be a rubber disk, secured in any suitable manner, as by flanges and bolts, to the side of the drum. The tire has sufficient elasticity to be compressed as it strikes the fixed stops and thereby produce rotation of the drum. This dispenses with the use of yielding bearings for the shaft of the drum.

It should be mentioned that by using elastic or yielding stops in place of rigid ones the elastic tire or rim on the drum could be dispensed with. A stop of this kind could be produced by setting the block N upon an elastic cushion; but such character of stop would be more liable to injury from the wheels of vehicles, and is therefore not so practical as the other rigid stop. Its operation will be readily understood from Fig. 3 of the drawings.

Two modes of setting and arranging the stops to move the drum are shown in the drawings, of which the stop N is a block secured upon the surface of the roadway with suitable projection to catch and turn the drum, while the stop intended for roads that employ underground cables as a means of propulsion, in

a plate or block, N^2 , set directly under and in line with the slot or opening in the roadway that is provided for the bar or frame of the cable-grip to run in. This plate is pivoted at one end and has movement to one side as the grip-bar strikes it, but is returned by a spring placed behind it. When set in position, it extends across the slot and forms an abutment or stop, against which the drum will strike as it travels along the slot, but under the greater pressure of the grip-bar the plate, when struck by it, is pressed to one side to allow the grip to pass it. The drum in such case requires to run upon the line of and into the grip-slot sufficiently to meet and be turned by the stop.

Figs. 4 and 5 show the manner in which I apply the stop and spring drum in this case. The connecting-wires from the drum to the rack of the indicator-actuating mechanism are laid under the bottom of the car and thence up to the box, suitable bell-crank levers being used to turn the line of operation.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a station-indicator for railway-cars, the combination of the spring-roller C , the roller C^x , having loose pinions G G , the ratchet-wheels h , adapted to lock said pinions to their shaft in contrary directions of rotation, and the reciprocating rack-frame having racks E E^x set in line with said pinions on opposite sides of the shaft, the spring for producing movement in one direction, and means, substantially as described, for moving and setting the rack-frame to engage one or the other of its pinions.

2. In a station-indicator, the combination, with an apron-carrying drum or roller which requires to be rotated intermittently and also to have its direction of rotation reversed, of the loose pinions G , carried on the shaft of said roller, a pawl pivoted to the pinion, and ratchet-wheel fast to the roller-journal and engaged by said pawl to lock each pinion to the shaft in one direction and allow it to turn on the shaft in the opposite direction, the reciprocating frame having racks E E^x , adapted to engage the said pinions separately when thrown laterally into gear, and the shifting-bearing K , in which the upright bar D^x on the reciprocating frame has a free vertical movement, substantially as described.

3. In a station-indicator for railway-cars, the combination, with the apron-moving rollers in the indicator-box carrying a web or apron on which matter for display is arranged at suitable intervals of space, of the loose pinions locked to the shaft of the roller in contrary directions, the reciprocating and laterally-adjustable rack-frame D , the spring M^2 in the spring-drum M , the cords or connections L between the bar D^2 of the reciprocating rack-frame and the spring-drum M , and the spring-drum on the car-truck or running-gear of the car in close relation to the

surface of the roadway to engage with and be partly rotated by a line of fixed stops thereon in its path.

4. In a station-indicator for railway-cars,
5 the herein-described automatic mechanism, consisting of the spring drum or barrel on the car-truck, with elastic tire or rim, fixed stops or projections in the roadway, cord or chain L, connecting the automatic mechanism

with the spring-drum M, bell-crank levers M^x 10 on the car-body, and connecting-cord to the indicator-box.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

JOHN W. WARHURST. [L. S.]

Witnesses:

CHAS. E. KELLY,
C. W. M. SMITH.