

(No Model.)

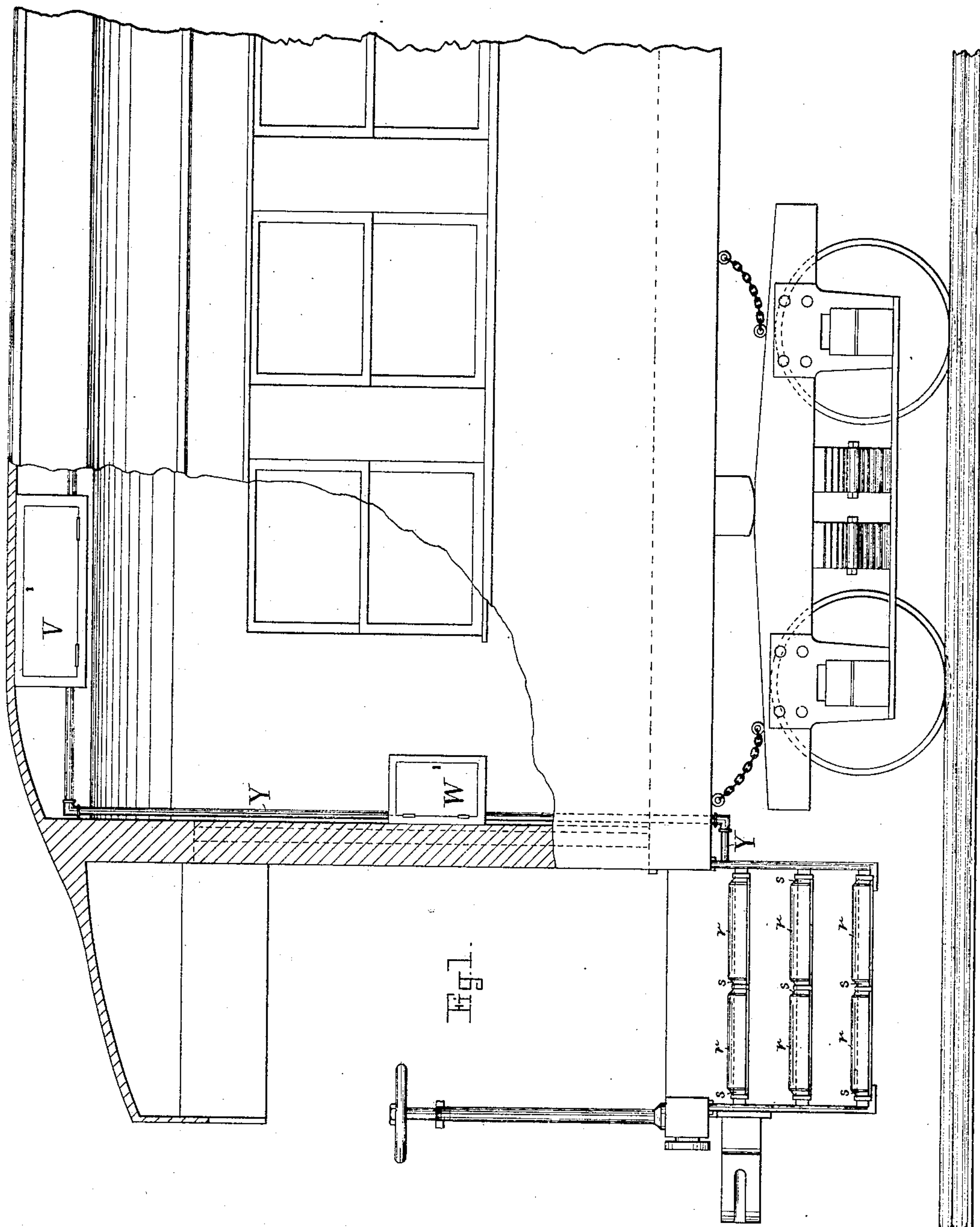
4 Sheets—Sheet 1.

A. TORREY & D. J. CASEY.

PASSENGER RECORDER.

No. 315,355.

Patented Apr. 7, 1885.



Witnesses

Henry Chadbourne.  
Sarah M. Goodrich.

Inventors

Augustus Torrey  
and Dennis J. Casey  
by *Alvan Andrew* their atty

(No Model.)

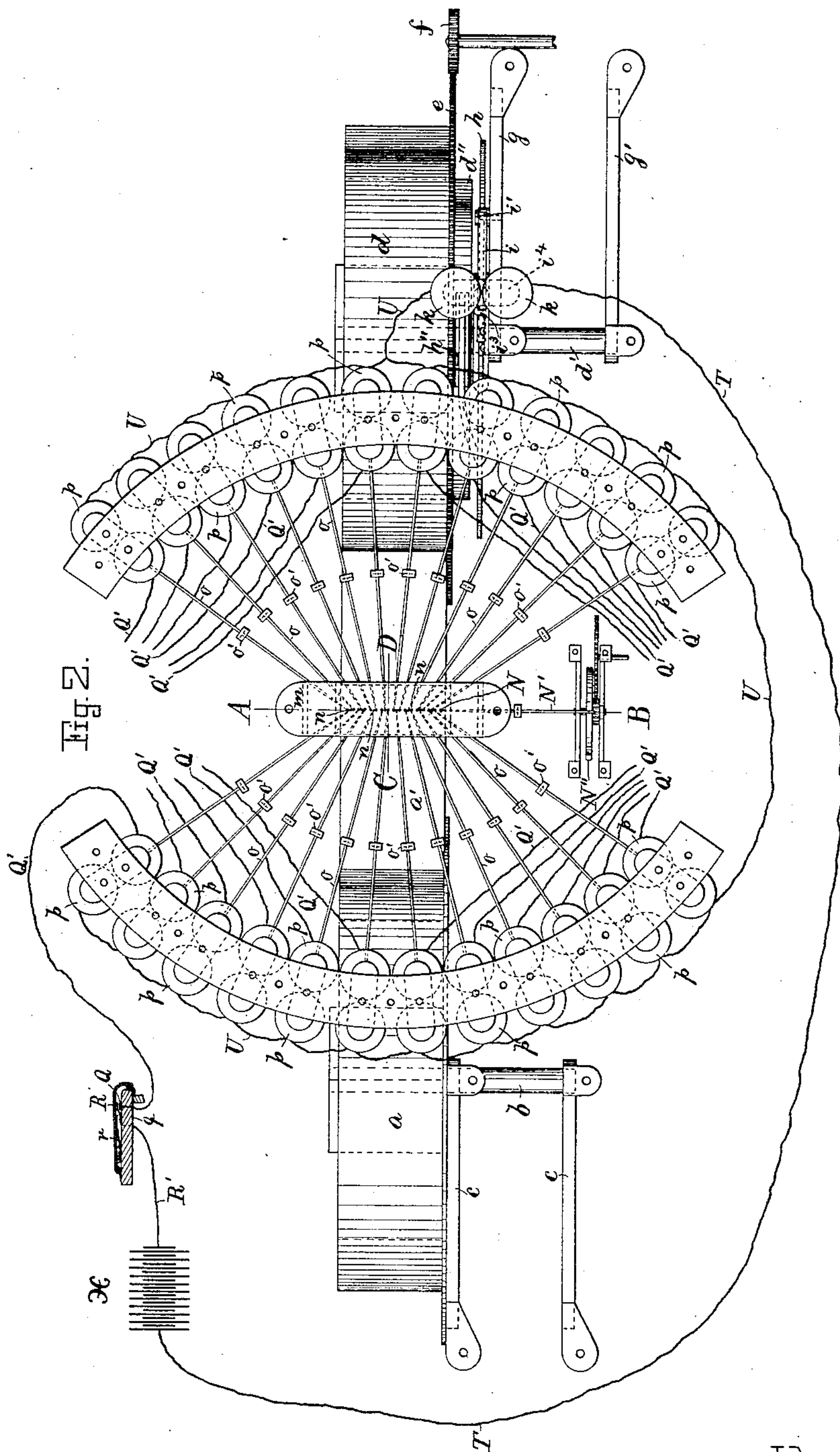
4 Sheets—Sheet 2.

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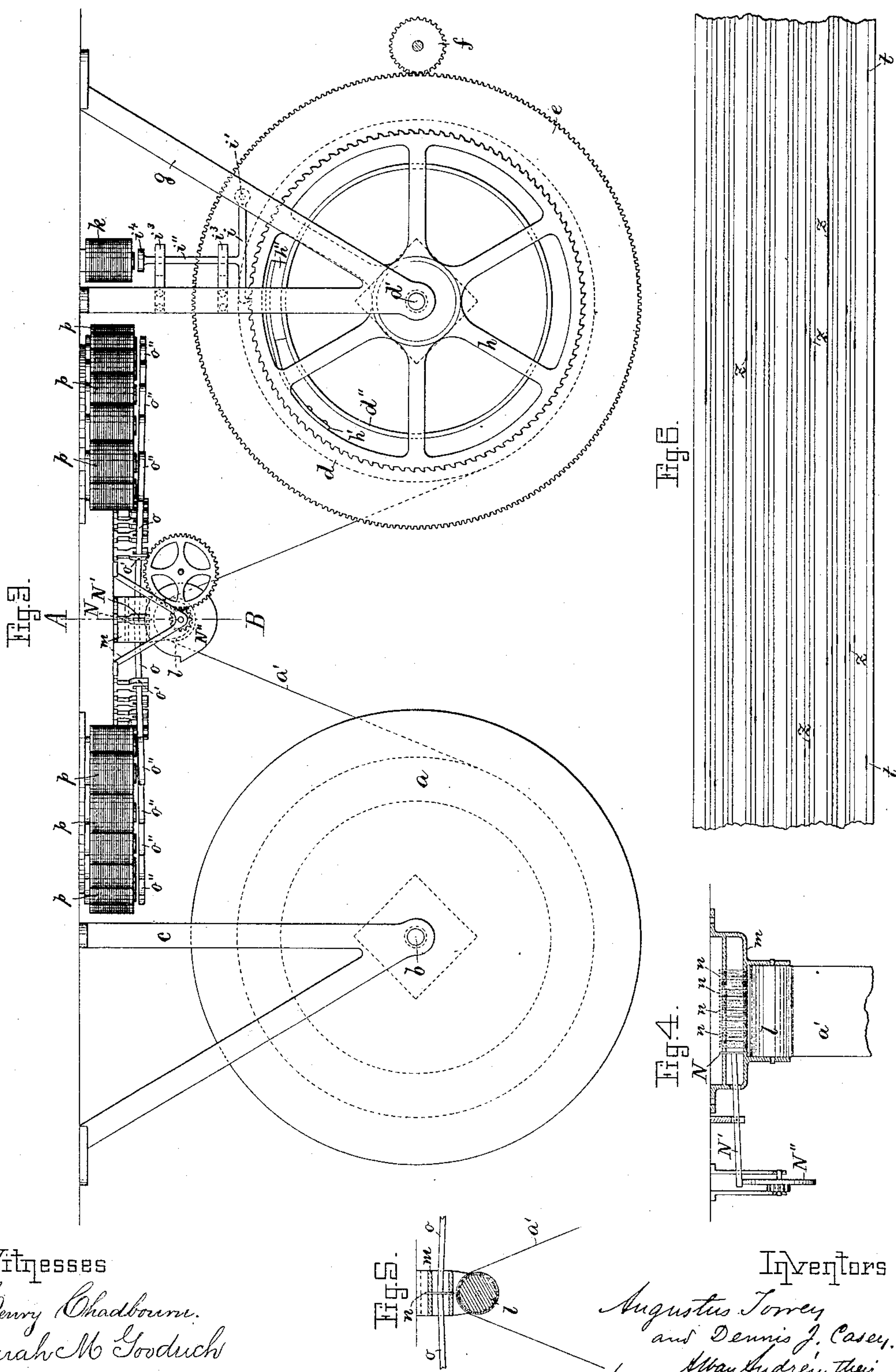
4 Sheets—Sheet 3.

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Fig 7.

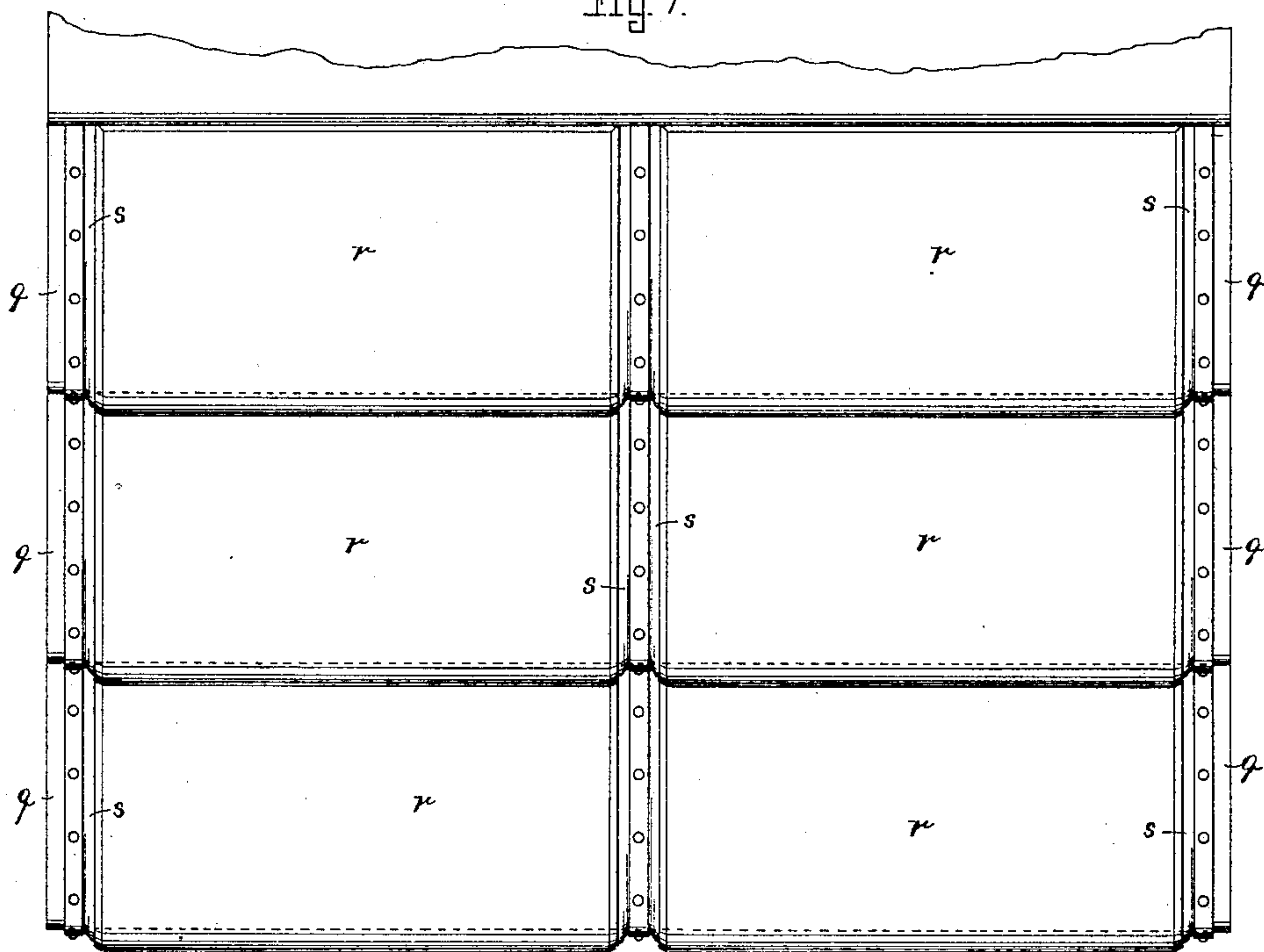


Fig 8.

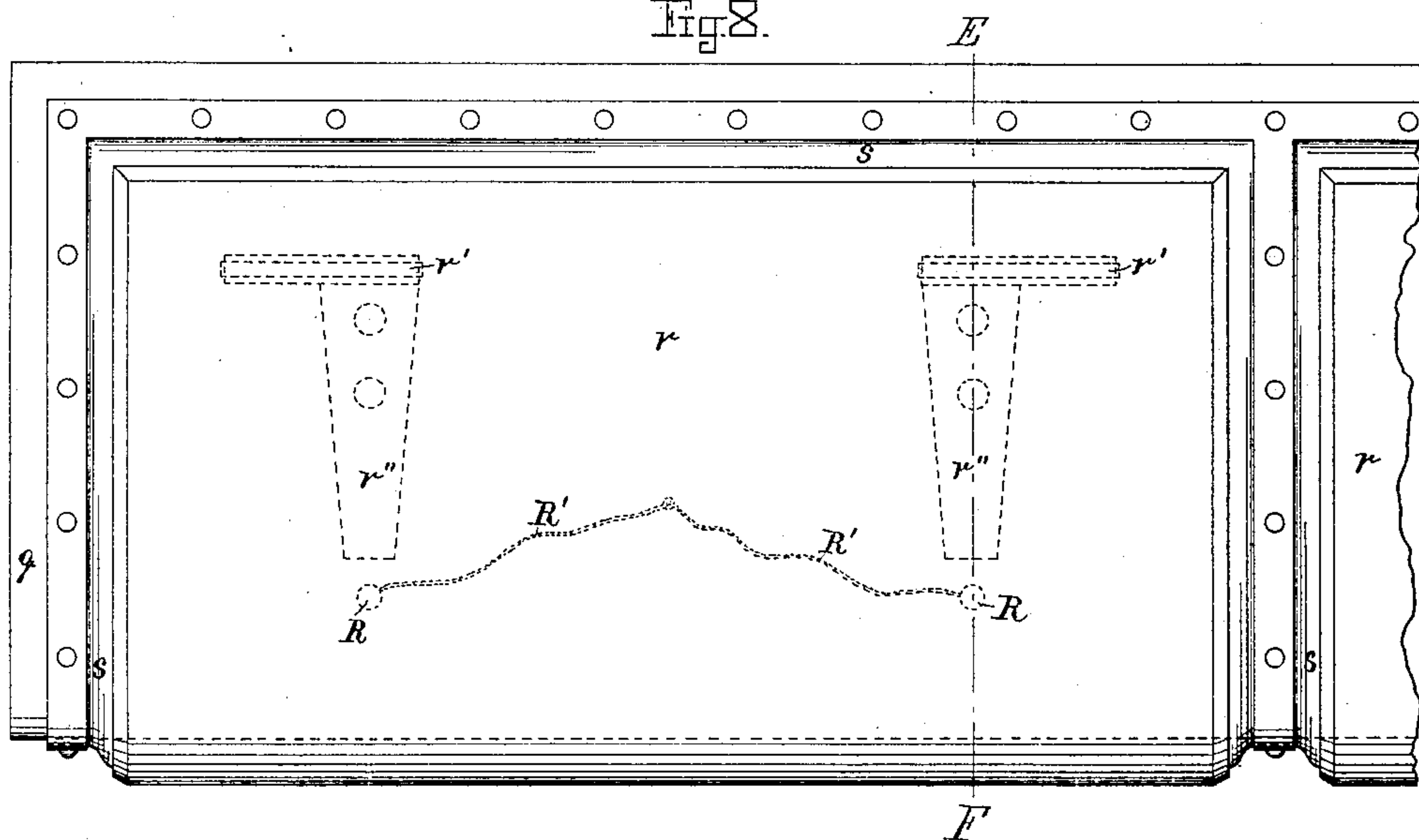
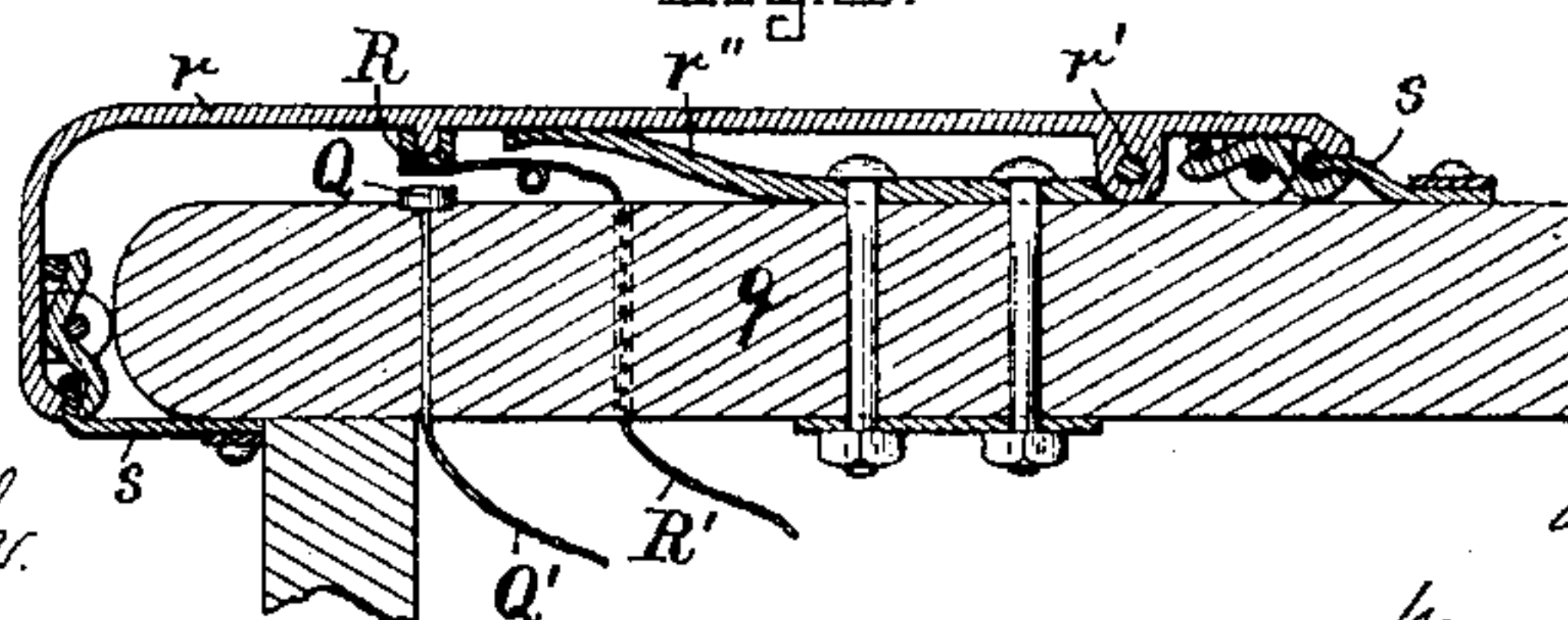


Fig 9.



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# UNITED STATES PATENT OFFICE.

AUGUSTUS TORREY, OF DETROIT, MICHIGAN, AND DENNIS J. CASEY, OF  
CYLON, WISCONSIN.

## PASSENGER-RECORDER.

SPECIFICATION forming part of Letters Patent No. 315,355, dated April 7, 1885.

Application filed June 25, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, AUGUSTUS TORREY, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, and DENNIS J. CASEY, a citizen of the United States, residing at Cylon, in the county of St. Croix, State of Wisconsin, have jointly invented certain new and useful Improvements in Passenger-Recorders; and we do hereby declare that the same are fully described in the following specification, and illustrated in the accompanying drawings.

This invention relates to improvements in passenger-registers for the purpose of automatically recording the number of passengers both in going to and from railroad-cars, as well as automatically recording the number of miles that the passengers have traveled in such conveyances.

The invention is particularly designed and constructed for use on railroad-cars; but with a slight modification it is equally well adapted for any other land or water conveyance, as well as for entrances to theaters, halls, public grounds, &c., where it is desirable to automatically record and keep account of the number of persons going in or out at such places. In this our passenger-recorder we use movable plates or covers on the steps; or the latter may be yielding, and when a passenger goes up or down the steps the pressure thereon will cause the electrodes in an electrical circuit to meet in metallic connection, by which the circuit is closed, and a marker attached to a movable lever (one for each step) is attracted by means of an electro-magnet, so as to make a mark or indenture upon a ribbon drawn over a roll by means of suitable clock-work, and thus record on such ribbon that a passenger has gone off or on the car. By means of a separate clock mechanism a lever having attached to it a marker is mechanically operated so as to indicate upon the paper ribbon (that is fed forward by means of the main clock mechanism) the number of miles that the car or vehicle has traveled, or the time that the car has been running from and to the ends of its route, such time or mile marks to be made at constant intervals upon the movable ribbon. In connection with this our passenger-

register we employ a brake electro-magnet which is thrown in the electrical circuit whenever any one of the steps is depressed, and thereby releases a brake mechanism applied to the roll on which the paper ribbon is being wound, so as to cause the latter to move with less velocity when no one is going up or down the steps, as compared with the feed of the paper ribbon during the time passengers are going up or down the steps.

We do not wish to confine ourselves to any particular kind of clock mechanism for feeding the paper ribbon or for marking time or mile distances thereon in a mechanical manner, as this may be done by well-known mechanical means; nor to the exact electrical means for operating the recorder-levers, as shown in the drawings, as this may be modified and varied according to circumstances without departing from the essence of our invention.

On the accompanying drawings, Figure 1 represents a sectional side elevation of an ordinary passenger-car provided with our improved passenger-register. Fig. 2 represents a plan view of the paper-reel, mechanically-operated paper-feed drum, the brake electro-magnet, and armature-levers and electro-magnets for marking the paper ribbon. Fig. 3 represents a side elevation of the registering apparatus as shown in Fig. 2. Fig. 4 represents a cross-section on the line A B shown in Figs. 2 and 3. Fig. 5 represents a cross-section on the line C D shown in Fig. 2. Fig. 6 represents a plan view of the paper ribbon, showing the marks or indentures caused by the markers and their intermediate connecting mechanism to the steps of the car. Fig. 7 represents a plan view of the steps with their yielding plates. Fig. 8 represents an enlarged plan view of one of the treadles, showing the springs and electrodes in dotted lines; and Fig. 9 represents a cross-section on the line E F shown in Fig. 8.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

*a* in Figs. 2 and 3 is the paper-reel, placed on a roller having a spindle, *b*, supported in suitable bearings, *c c*, so that the paper reel



and roller may be freely rotated as the paper  $a'$  is drawn from it by the rotary roller  $d$ , having attached to it the gear-wheel  $e$ , that is rotated by means of pinion  $f$  and clock mechanism actuating it, such clock mechanism being, however, not shown in the drawings. The roller  $d$  is attached to a central spindle,  $d'$ , loosely journaled in the bearing-brackets  $g g'$ , as shown, or in any other equivalent manner; and attached to such roller  $d$  is the brake-drum  $d''$ , which moves with the said roller  $d$  and its gear-wheel  $e$ . Loosely journaled on spindle  $d'$  is the toothed ratchet-wheel  $h$ , having secured to it a spring-bar,  $h'$ , provided in its free end with a brake-block,  $h''$ , bearing on the brake-drum  $d''$ , as shown in Fig. 3, so as to cause the paper  $a'$  to be drawn onto the drum or roll  $d$  with greater frictional resistance when the ratchet-wheel  $h$  is held stationary by means of the pawl  $i$ , as compared with its motion when said pawl  $i$  is released from the said ratchet-wheel  $h$ . The pawl  $i$  is hinged at  $i'$  to the bracket  $g$ , and is provided with a stem,  $i''$ , loosely guided in suitable bearings,  $i^3$ , as shown in Fig. 3, and terminating in its upper end as an armature,  $i^4$ , which is attracted to the cores of the electro-magnets  $k$ , when the latter are in the electrical circuit, by which the pawl  $i$  is released from the ratchet-wheel  $h$ ; but as soon as the electric current is broken the pawl  $i$  drops down into locking position on ratchet-wheel  $h$ , as shown in Fig. 3. The electro-magnets  $k$  we term the "brake-magnets," and such magnets are to be in the electrical circuit whenever any one of the steps is pressed down, as will be further described, the object being to retard the motion of roller  $d$  and the paper  $a'$  when no registering takes place, and to increase such motion during the time the registering takes place, and thereby to save unnecessary waste of paper. In its passage from the reel  $a$  to the rotary roller  $d$  the paper ribbon  $a'$  is carried over the guide-roller  $l$ , (shown in Figs. 4 and 5 and in dotted lines in Fig. 3,) such guide-roller having its spindle loosely supported in the bearing bracket or frame  $m$ , as shown in said Figs. 3, 4, and 5.

In suitable guides or perforations in the upper part of bracket  $m$  are located the recording pins or markers  $n n$ , such pins being free to move up and down in such guides when actuated by the respective armature register-levers  $o o o$ , to the inner ends of which they are respectively attached, as shown in Figs. 2 and 5. The markers  $n n$  are arranged in a row above the guide-roller  $l$  and parallel to its axis, as shown. The levers  $o o$  are hinged to the respective fulcrum  $o' o'$ , and are provided in their outer ends with the armatures  $o'' o''$ , as shown in Fig. 3, such armatures being located directly below the cores of the respective electro-magnets  $p p$ .

$q$  in Figs. 7, 8, and 9 represents one of the ordinary stationary steps of a railway-carriage, to the upper side of which is hinged the vertically-movable plates  $r r$ , two for each step, as shown in Figs. 1, 7, and 8. Each such

movable plate  $r$  is hinged to the step  $q$  at  $r'$ , and is normally held upward to the position shown in Fig. 9 by means of the springs  $r'' r''$ , interposed between step  $q$  and plates  $r r$ , as shown in Fig. 9.

To prevent dust, snow, and rain from getting in between the plates  $r r$  and step  $q$ , as well as to prevent anybody from maliciously inserting a wedge or obstruction between such parts, we unite the outer edge of the plate  $r$  to the step  $q$  by means of a flexible rubber or other guards and packing,  $s$ , secured in any suitable manner to such parts, for the purpose set forth.

$R$  is an insulated electrode (one or more) secured to the under side of the movable plate  $r$ , and  $Q$  is a similarly-insulated electrode (one or more) secured to the top of stationary step  $q$ , as shown in Fig. 9.

From the electrode  $R$  on each plate  $r$  in the series leads a wire,  $R'$ , to the negative pole of the battery  $X$ , (shown in Fig. 2,) and from the electrode  $Q$  on each step leads a wire,  $Q'$ , to its corresponding electro-magnet,  $p$ , as shown in said Fig. 2.

From the positive pole of the battery  $I$  leads a wire,  $T$ , to the brake electro-magnets  $k$ , and from the latter leads a wire,  $U$ , to the electro-magnets  $p p$ , as shown in Fig. 2.

In practice the recording device, with its paper-rolls, clock-work, electro-magnets, and markers, &c., may be inclosed in a suitable box,  $V$ , (shown in Fig. 1,) and the battery may be inclosed in a suitable box,  $W$ , (also shown in Fig. 1,) and the connecting-wires from the steps to the battery and registering apparatus may be concealed by being inclosed within a suitable pipe,  $Y$ , (shown in said Fig. 1;) but this is not important, as said parts may be located within the car or conveyance in any room or closet that will be found most practical and adapted for the purpose.

For the purpose of marking upon the paper  $a'$  the time consumed in running the train between its termini, we employ a separate marker,  $N$ , (shown in Fig. 4,) located in a line with the markers  $n n$ , and having attached to it the inner end of the rock-lever  $N'$ , the outer end of which is raised once during the revolution of the cam-disk  $N''$ , that is kept in a constant rotation around its axis by means of suitable clock mechanism applied to its shaft, by which arrangement the time-marks  $t t$  are produced near one edge of paper ribbon  $a'$ , as shown in Fig. 6.

The operation of the automatic electric recording apparatus is as follows: By means of the clock mechanism applied to pinion  $f$  the paper  $a'$  is drawn from reel  $a$  onto roller  $d$ , and passes over the guide-roller  $l$  directly beneath the lower ends of the markers  $n n$  without coming in contact therewith when no one is going up or down on the steps. As soon as a person commences to depress a step-plate,  $r$ , by going out of or into the car, the electrodes  $Q R$  of such step are brought in metallic contact, causing the current to be closed and



passed through the electro-magnet *p* corresponding to such step, by which the armature-lever *o* of said electro-magnet is rocked by the attractive force of the magnet, causing the inner end of such lever to depress its marker *n* onto the paper ribbon *a'* and to make a mark or dent thereon, as shown at *z* in Fig. 6. If the person passes up the three steps quickly, three short marks will be made in a corresponding place on the paper *a'*, as shown in the upper left-hand corner of Fig. 6. If a person in going out of the car remains longer on the upper step than on the other two lower ones, one long mark and two short ones will be produced on the paper, as shown at the right hand of the upper part of Fig. 6, and so on. The apparatus will accurately indicate if a person should go part way up or down the steps without going into or out of the car, and, in connection with the time-marker, will indicate at what time such exits and entrances were made. At the same time as the current is closed for any particular electro-magnet *p* it also passes to the brake electro-magnet *k*, causing the pawl *i* to be released from the ratchet *h*, and thus permit the paper *a'* to move forward with an increased velocity. The moment a person relieves the pressure on any particular step the current is broken at such place, and its corresponding armature-lever is moved by its own gravity to its normal position, and no marking is effected for such step until it is again depressed, and so on.

Having thus fully described the nature, construction, and operation of our invention, we wish to secure by Letters Patent and claim—

1. In a passenger-recording device, the combination of the following instrumentalities: steps *q*, yielding plate *r*, electrodes *Q R*, an armature-lever and markers, a battery and electro-magnets, and wires leading thereto for electrically operating said armature-lever and markers, as described, the ribbon *a'*, and mechanically-operated roller *d* for feeding it, and the mechanically-operated lever *N'*, provided with its marker *N*, to indicate upon the ribbon

*a'* the time that the conveyance has been running, as well as the time at which the recording-marks have been made, substantially as described.

2. In a passenger-recording device, a stationary step, *q*, and yielding plate *r*, with their electrodes *Q R*, an armature-lever, a marker, a battery, and electro-magnets and wires leading thereto for operating electrically said armature and lever, as described, combined with the brake, electro-magnet *R* in the circuit and its armature, means applied to roller *d* regulating its speed by said brake, ribbon *a'*, and independent mechanical means applied to roller *d* to feed the ribbon *a'*, substantially as described.

3. In a passenger-recording device, a reel carrying the ribbon *a'*, a guide roller or support, *l*, and a mechanically-operated roller, *d*, combined with the series of electro-magnets *p p*, armature-levers *o o*, and markers *n n*—one for each of the treadles *q*—and battery *x*, connected by means of wires to electro-magnets *p p*, and brake-magnet *k* in the main circuit, as and for the purpose set forth.

4. In a passenger-recording device for the purpose set forth, the mechanically-operated roller *d* and its brake-drum *d''*, in combination with the ratchet or gear wheel *h*, its brake *h''*, and electrically-operated locking and releasing pawl *i*, as and for the purpose set forth.

5. In a recording device for the purpose set forth, the stationary step *q*, having hinged to it the yielding plate *r*, and the interposed springs *r'' r'''*, in combination with the flexible guards and packings *s* at the junction of the outer edges of said step and yielding plate, as described.

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

AUGUSTUS TORREY.  
DENNIS J. CASEY.

Witnesses:

GEO. L. NADOLLECK,  
WM. B. STILSON.