

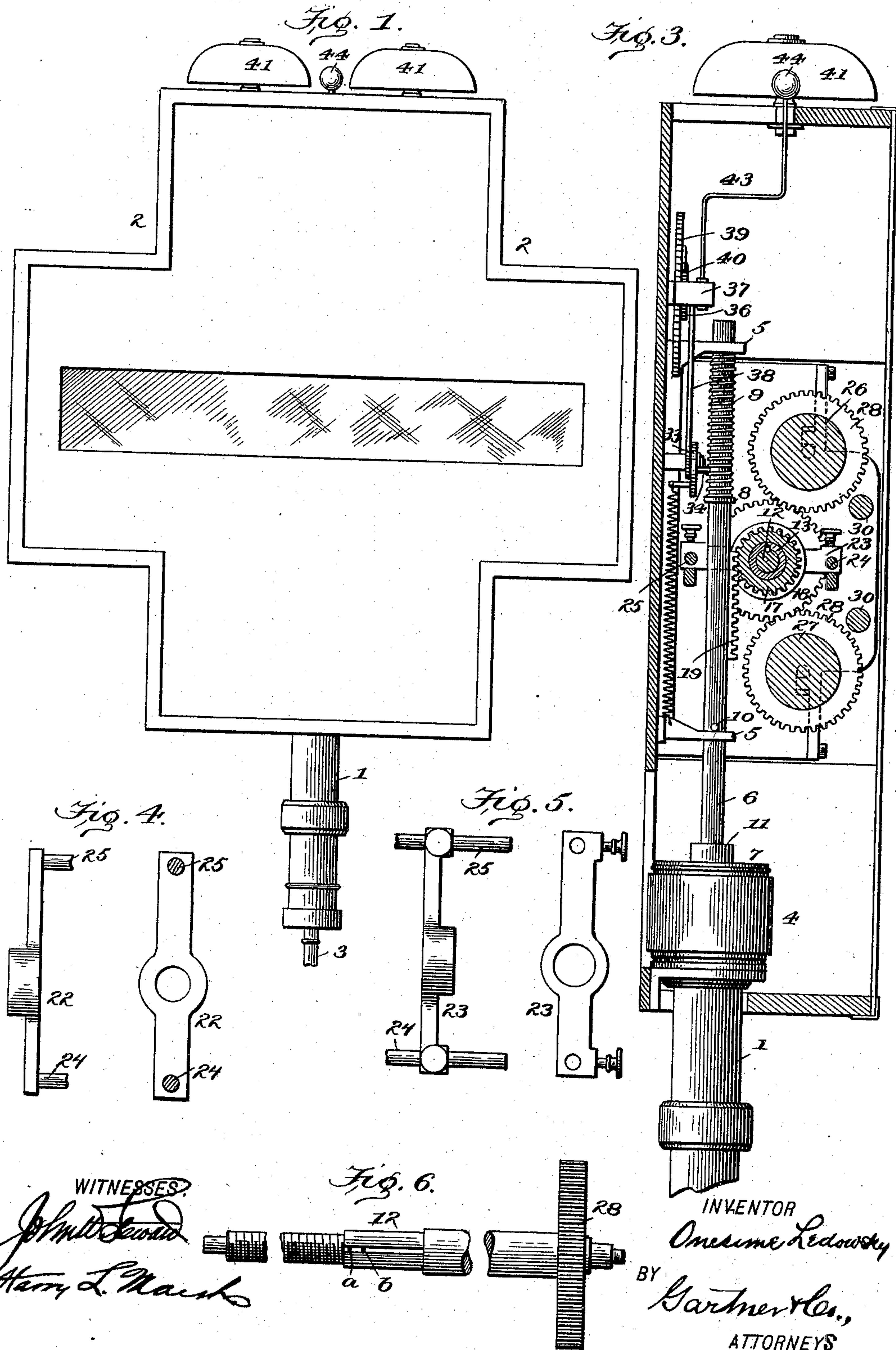
(No Model.)

2 Sheets—Sheet 1.

O. LEDOWSKY.  
STATION INDICATOR.

No. 605,318.

Patented June 7, 1898.



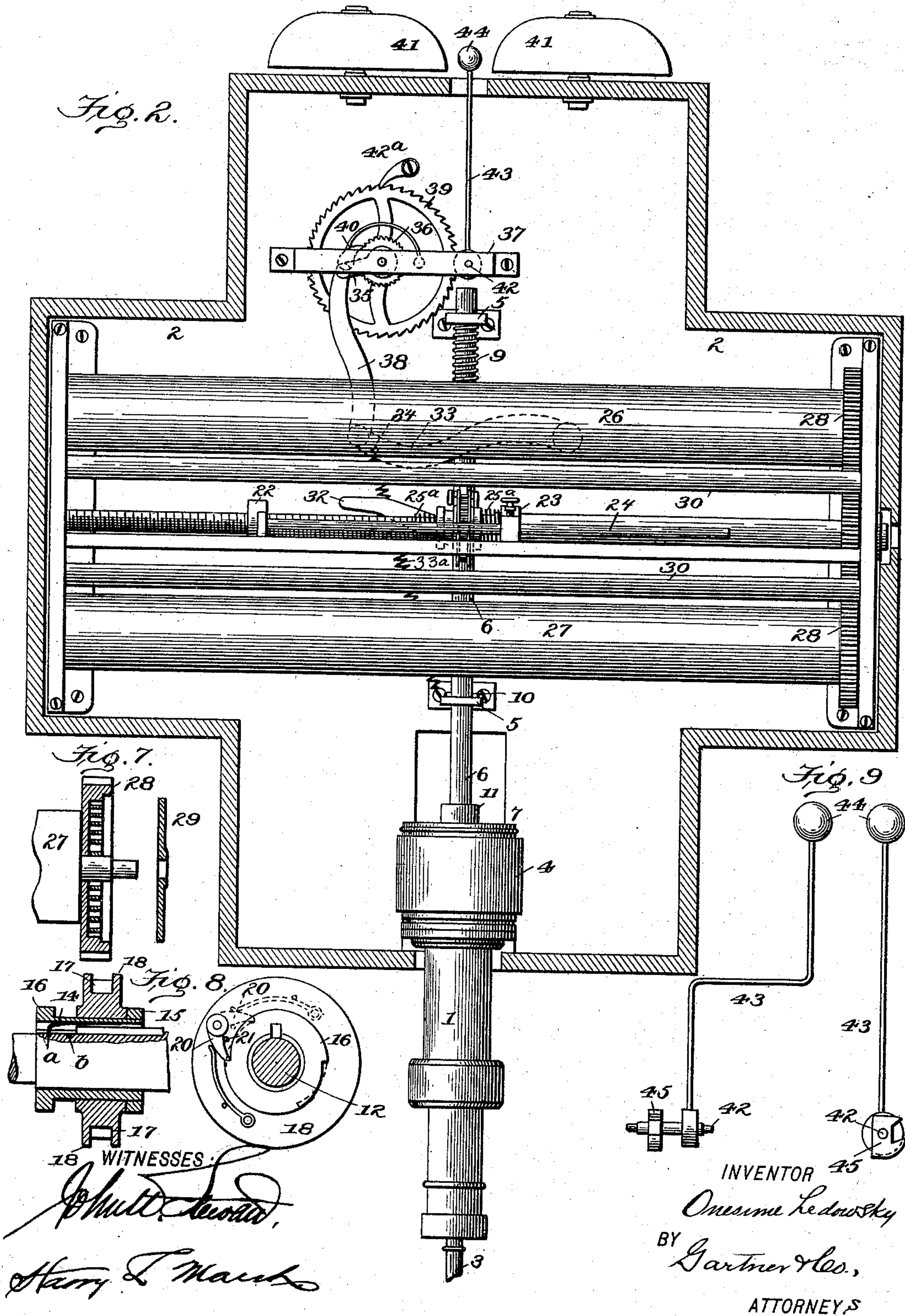
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# UNITED STATES PATENT OFFICE.

ONESIME LEDOWSKY, OF ST. PETERSBURG, RUSSIA.

## STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 605,318, dated June 7, 1898.

Application filed October 21, 1897. Serial No. 656,112. (No model.)

*To all whom it may concern:*

Be it known that I, ONESIME LEDOWSKY, a citizen of Russia, residing in the city of St. Petersburg, Empire of Russia, have invented certain new and useful Improvements in Indicators for Railroad - Carriages; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and figures of reference marked thereon, which form a part of this specification.

My invention relates to indicating devices, and it has reference particularly to a device of this nature to be used in railroad service for indicating in each car of a train each station as it is approached, the duration of the stop there, whether refreshments can be obtained, &c.

I propose to employ several indicating devices, one conveniently placed in each car, to operate them simultaneously by pneumatic power derived from an air-reservoir supplied from the air-brake air-compressors of the train, and to this end to connect them in series by a system of tubing leading to and communicating with such air-reservoir.

My invention therefore consists in each individual indicating device, in the combination and arrangement of the parts thereof, and in operating said indicating devices in series by pneumatic power.

Referring to the accompanying drawings, Figure 1 is a view in elevation of one of the indicating devices. Fig. 2 is also a view in elevation of one of said indicating devices, but showing the interior mechanism thereof. Fig. 3 is a vertical sectional view of one of said indicating devices, and Figs. 4 to 9 are views of certain details of the mechanism of said indicating devices.

In said drawings the numeral 1 indicates a metal cylinder projecting downwardly through and secured to the bottom of the casing 2 of one of the individual indicating devices. This cylinder forms a guide-passage for a flexible tube 3, suitably connected with the main pipe connecting the series of indicators and the air-reservoir, which is situated on the last car of the train and is suitably connected with the service-pipe that connects

the air-compressors of the train with the individual air-reservoirs of the air-brake apparatus. The supply of air from this reservoir (for the series of indicators) may be controlled by any suitable means—as, for instance, a button.

The cylinder 1 is surmounted by a chamber 4, which has an opening in its bottom wall through which communication between the tube 3 and the chamber is afforded. Said chamber also has a somewhat larger opening in its top wall. Directly above the said chamber 4 and the opening in the top wall therein is arranged in guide-brackets 5, secured to the back wall of the casing 2, a vertically-reciprocating rod 6, carrying at its lower end a cap 7, adapted to seat upon the top of and tightly close the top opening in the chamber 4. Between the upper bracket 5 and an integral annulus 8 on said rod is situated a helical spring 9, that normally holds the rod downward, with its cap 7 seated on the chamber 4. The rod is limited in its reciprocations by a stud 10 and an enlargement 11, situated on each side of and adapted to abut against the lower bracket 5.

12 is a horizontal revoluble shaft journaled at its ends in the side walls of the case 2 and carrying a sleeve 13, keyed thereto and held at either limit of its movement by an elongated toothed spring 14, that is carried by said sleeve between the same and the shaft and engages with its tooth the notches *a b*, situated in the slot (of the key) in said shaft, said sleeve being further provided with reversely-disposed ratchet-wheels 15 16, situated at each end of the sleeve and each provided with but two diametrically-opposed teeth. Said sleeve constitutes the journal for a pinion 17, provided with peripheral guide-flanges 18 and operated by a rack-bar 19, carried on the vertically-movable rod 6, and with the teeth of which its own teeth intermesh. Said pinion carries on its opposite faces reversely-disposed spring-actuated pawls 20, which are adapted to engage one of the teeth of and to rotate the ratchet-wheels 15 16, respectively, as well as the sleeve, provided the particular wheel is in operative contiguity to the pinion and one of said pawls.

The pawls 20 must obviously not be pushed



by their springs beneath the base-line of the ratchet-wheel teeth, else they will stand between and thus hinder the proper operative engagement of the pinion and either of said ratchet-wheels. For this reason suitably-arranged stops 21 for said pawls are provided on the sides of the pinions.

The distance which the rod 7 may travel is defined by the distance between the stud 10 and the enlargement 11 and is approximately equal to the semicircumference of the pinion.

It will be manifest from the foregoing that revolution is imparted to the shaft 12 from the rod 6 through the rack, the pinion and the sleeve keyed on said shaft 12 and adapted to be rotated by the pawls carried by said pinion engaging its ratchet-teeth. It will be manifest also that one of the ratchet-wheels 15 communicates its motion to the horizontal shaft 12 when the vertical rod 6 ascends and that the other of the ratchet-wheels 16 communicates motion to said horizontal shaft when the vertical rod descends, owing to the reverse arrangement of the teeth of the ratchet-wheels and the pawls.

As will be seen later, the shaft 12 must at definite periods be rotated in a reverse direction, and for this reason means for automatically reciprocating the sleeve, and thus alternately throwing the respective pawls and ratchet-wheels into operative engagement, must be provided. The means which I have provided to this end consists of the following mechanism: The shaft 12 carries two brackets 22 23, adapted to reciprocate thereon, the one, 22, by means of internal screw-threading, which engages corresponding screw-threading formed on approximately one-half of the shaft, and the other loosely. These brackets are connected by two parallel arms 24 25, which are rigidly secured at one of their ends to the bracket 22 and which penetrate and loosely slide in the bracket 23, subject to the manipulation of set-screws mounted in the bracket 23 for regulating the distance between the two brackets. The brackets are prevented from rotating with the shaft 12 by means of cross-bars 24, secured in the side walls of the case beneath said brackets. A spiral spring 25<sup>a</sup> is loosely carried on the shaft on each side of the sleeve. By this arrangement when the vertical rod has been reciprocated a given and desired number of times the motion imparted to the horizontal shaft from said vertical rod produces a lateral movement of the connected brackets until the approaching one abuts against the sleeve and finally displaces the farther ratchet-wheel thereof from its corresponding pawl and throws the nearer ratchet-wheel into engagement with its pawl.

The shaft 12 is adapted to drive two cylinders or rolls 26 27, respectively, placed above and below the shaft and having the ends of their axes journaled in the side walls of the casing 2. Motion is imparted to the cylinders through intermeshing gears 28 of the same size and

carried near the corresponding ends of said shaft and the cylinders. These cylinders carry the ribbon upon which is inscribed the information to be advertised and which is seen through an elongated aperture suitably arranged in the front wall of the casing. In order to keep the ribbon taut, I arrange the lowest gear (for the roll 27) loosely upon its axis and connect the rim of said gear to said axis by means of a watch-spring coiled in said gear and held in position by a removable disk 29, constituting the outer wall of said gear. The tension on the ribbon is further increased by the fact that it is passed over two small revoluble rods 30, mounted at their ends in the side walls of the casing and situated in planes between the rolls and the shaft 12.

It may be desirable to rotate the rolls reversely at will. This can be done by means of a key, which may be inserted through the side wall of the casing and fitted to the end of either axis of the rolls, (according to the direction in which they are to be rotated,) which for this purpose I make square.

I have provided an alarm mechanism to be used auxiliary to and to be operated by the indicator. This mechanism consists of a substantially horizontal arm 32, projecting from the rod 6, a lever 33, provided with a stud adapted to be engaged by said arm, an integral lever 35 and ratchet-wheel 36, journaled in a bracket 37, secured to the rear wall of the casing, a connecting-rod 38 between the free ends of said levers 33 and 35, a toothed wheel 39, journaled in said bracket concentrically with said ratchet-wheel and carrying a spring-actuated pawl 40, adapted to engage the teeth of said ratchet-wheel, a pair of bells 41, mounted on the top of the casing, and a hammer 44 therefor balanced on trunnions 42, that are journaled in the bracket and adapted to be operatively engaged by the toothed wheel. A pawl 42<sup>a</sup> prevents backward rotation of the toothed wheel and a helical spring 33<sup>a</sup> holds the lever 33 and the parts connected thereto normally downward. The hammer for the bells consists of a vertical elastic rod 43, carrying a ball 44 at its upper end, situated between said bells and carrying on one of its trunnions a toothed block 45, that is adapted to be struck by the inclined faces of the teeth of the toothed wheel, so as to rock the hammer.

The operation of the device is as follows: If, for instance, the ratchet-wheel 15 is in operative engagement with one of the pawls of the pinion carried on the horizontal shaft 12, the upward movement of the vertical rod produced by the admission of air to the chamber 4 will cause the shaft 12 to rotate a half-revolution and at the same time revolve the cylinders carrying the ribbon, which will be caused to thereby present a new indication. Each of such upward movements of the vertical rod therefore causes the brackets 22 23 to move laterally until that one which is ap-



proaching the ratchet-wheel comes into contact with its respective ratchet-wheel and moves it into engagement with the pawl on the other side of the pinion, disengaging the other pawl and the ratchet-wheel 15. The engagement of the ratchet-wheel 16 with its pawl being effected, further reciprocations of the vertical rod will produce similar operations of all the parts when the rod descends.

The horizontal shaft and cylinders, however, now rotate in a reverse direction. The necessity of reversing the direction of rotation of the cylinders of course arises out of the fact that the indicating matter on the ribbon will become exhausted when the last station of the route has been reached. In order that the operation may be accordingly reversed at the proper moment by the automatic means, the distance between the two brackets 22 23 should be adjusted according to the number of the stations which it is to indicate, and for this reason a graduated scale indicating just how far to separate the brackets for a given distance traveled by the train may be marked on the connecting-arm 24. At each upward movement of the rod 6 the arm 32 transmits motion through the lever 33 and the connecting-rod 38 to the lever 35, which latter turns the ratchet-wheel with which it is formed and whose teeth slip past the spring-actuated pawl carried by the toothed wheel 39. When the vertically-movable rod again descends, the system of levers is permitted to fall, carrying with it the ratchet-wheel formed with lever 35, whose teeth engage the point of the pawl on the toothed wheel, and thus rotate the latter. The rotation of the wheel causes the hammer to vibrate, owing to the fact that its toothed block is successively struck by the teeth of the toothed wheel.

As before stated, an indicating device similar to the one just described is provided in and for each car in the train. The flexible tube 3 connects with a main flexible pipe, connecting all the indicators in series with the air-reservoir for the series. A suitable push-button arrangement permits the escape of the air from the reservoir, so that a practical simultaneous operation of the whole series of indicators may be secured. If desired, however, each indicator may be directly connected to an individual air-reservoir and individually operated.

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

1. In an indicating device, the combination with the casing and with a revoluble roll or rolls journaled therein and carrying the matter of indication, of a revoluble horizontal shaft journaled in said casing and operatively connected with said roll or rolls, a longitudinally-reciprocatory vertical rack-carrying rod also mounted in said casing, means for operating said reciprocatory rod, a pinion loosely mounted on said shaft and engaging the rack on said rod, a pair of reversely-disposed lat-

erally-movable ratchet-wheels arranged one on each side of said pinion and keyed on the shaft, pawls carried by said pinion and adapted to alternately engage said ratchet-wheels, and automatic means for throwing said pawls into engagement with said ratchet-wheels, substantially as described.

2. In an indicating device, the combination with the casing and with a revoluble roll or rolls journaled therein and carrying the matter of indication, of a revoluble horizontal screw-threaded shaft journaled in said casing, intermeshing gears mounted on said rolls and the shaft, a longitudinally-reciprocatory vertical rack-carrying rod also mounted in said casing, means for operating said reciprocatory rod, a pinion engaging the rack of said shaft, a pawl carried on each face of said pinion, a laterally-movable sleeve keyed on the shaft, constituting the journal for said pinion and provided at its ends with reversely-disposed ratchet-wheels, and a pair of adjustably-connected brackets mounted on said shaft, the one loosely and the other provided with internal screw-threading engaging the threading of said shaft, substantially as described.

3. In an indicating device, the combination with the casing and with a revoluble roll or rolls journaled therein and carrying the matter of indication, of a revoluble shaft journaled in said casing and operatively connected with said roll or rolls, a longitudinally-reciprocatory rod mounted in said casing, means for operating said reciprocatory rod, means for transmitting motion from said rod to said shaft, automatic means for reversing the direction of rotation of said shaft, an arm carried by said reciprocatory rod, a pair of bells mounted on said casing, a hammer for said bells trunnioned in said casing and gravity-actuated means for operating said hammer operatively connected with said arm, substantially as described.

4. In an indicating device, the combination with the casing and with a revoluble roll or rolls journaled therein and carrying the matter of indication, of a revoluble shaft journaled in said casing and operatively connected with said roll or rolls, a longitudinally-reciprocatory rod mounted in said casing, means for operating said reciprocatory rod, means for transmitting motion from said rod to said shaft, automatic means for reversing the direction of rotation of said shaft, an arm carried by said reciprocatory rod, a pair of bells mounted on said casing, a vertical elastic hammer trunnioned in said casing and situated between the bells, a toothed wheel journaled in the casing and engaging said hammer and operative connection between said toothed wheel and the arm, substantially as described.

5. In an indicating device, the combination with the casing and with a revoluble roll or rolls journaled therein and carrying the matter of indication, of a revoluble shaft journaled in



said casing and operatively connected with said roll or rolls, a longitudinally-reciprocatory rod mounted in said casing, means for operating said reciprocatory rod, means for transmitting motion from said rod to said shaft, automatic means for reversing the direction of rotation of said shaft, an arm carried by said reciprocatory rod, a pair of bells mounted on said casing, a vertical elastic hammer trunnioned in said casing and situated between the bells, a toothed block mounted on the trunnion for said hammer, a toothed wheel journaled in the casing and engaging the toothed block of said hammer, a ratchet-wheel journaled concentrically with said toothed wheel, a spring-actuated pawl carried by said toothed wheel and engaging the ratchet-wheel, and a system of gravity-actuated levers connected to said ratchet-wheel and adapted to be engaged by said arm, substantially as described.

6. In an alarm mechanism for an indicating device, the combination with the case for said device and with a vertically-reciprocatory rod mounted therein, of an arm carried by said rod, a pair of bells mounted on said casing, a vertical elastic hammer trunnioned in said casing and situated between the bells,

a toothed wheel journaled in the casing and engaging said hammer and operative connection between said toothed wheel and the arm, substantially as described.

7. In an alarm mechanism for an indicating device the combination with the case for said device and with a vertically-reciprocatory rod mounted therein, of an arm carried by said rod, a pair of bells mounted on said casing, a vertical elastic hammer trunnioned in said casing and situated between the bells, a toothed block mounted on the trunnion for said hammer, a toothed wheel journaled in the casing and engaging the toothed block of said hammer, a ratchet-wheel journaled concentrically with said toothed wheel, a spring-actuated pawl carried by said toothed wheel and engaging the ratchet-wheel, and a system of gravity-actuated levers connected to said ratchet-wheel and adapted to be engaged by said arm, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ONESIME LEDOWSKY.

Witnesses:

M. DIXON,

P. NARISCHKIN.