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PATENTED MAR. 10, 1908.

T. TIGHE & C. S. CROSS.
AUTOMATIC STREET INDICATOR.

APPLICATION FILED MAY 31, 1906.

2 SHEETS—SHEET 1.

FIG. 2.

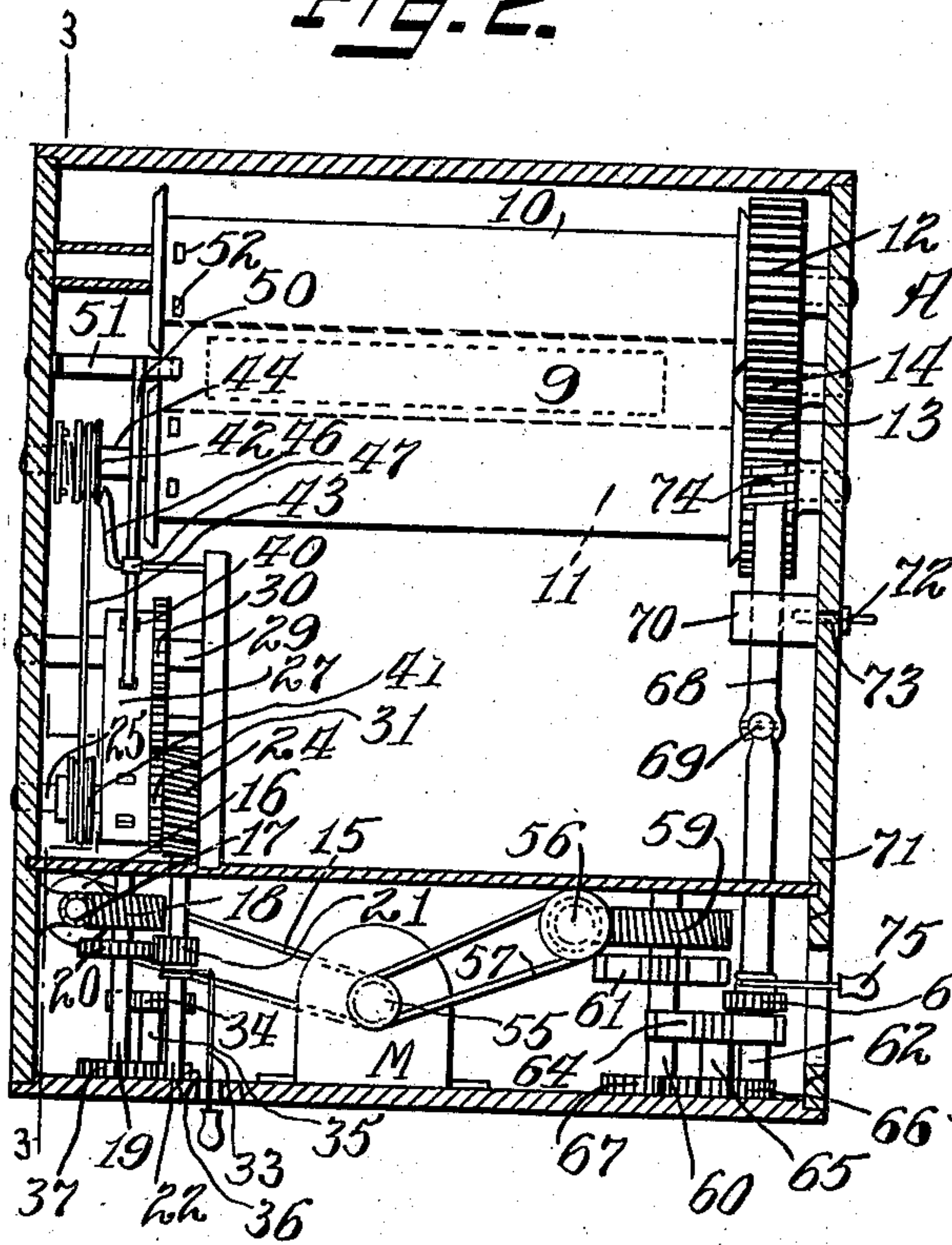


FIG. 3.

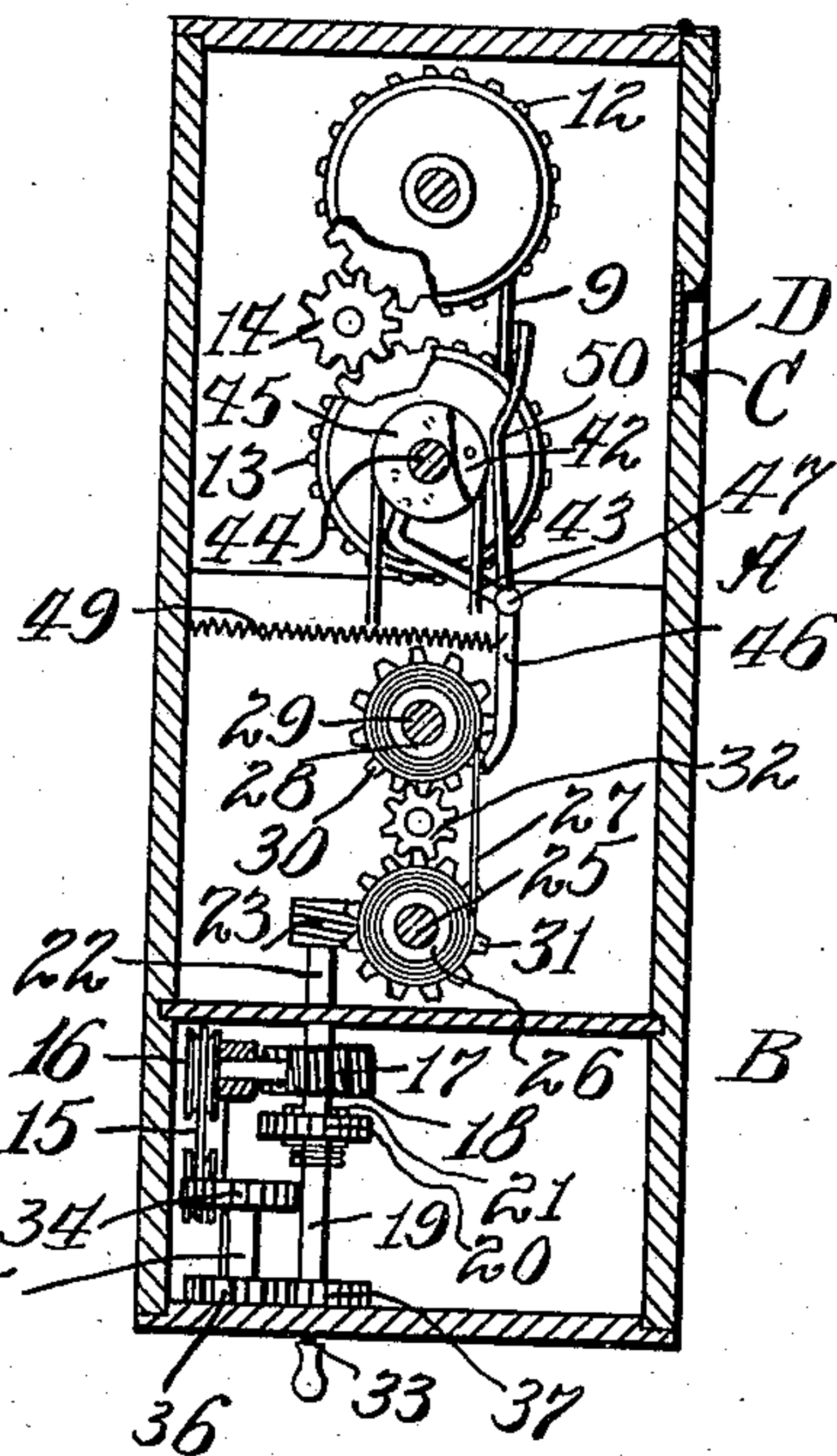


FIG. 4.

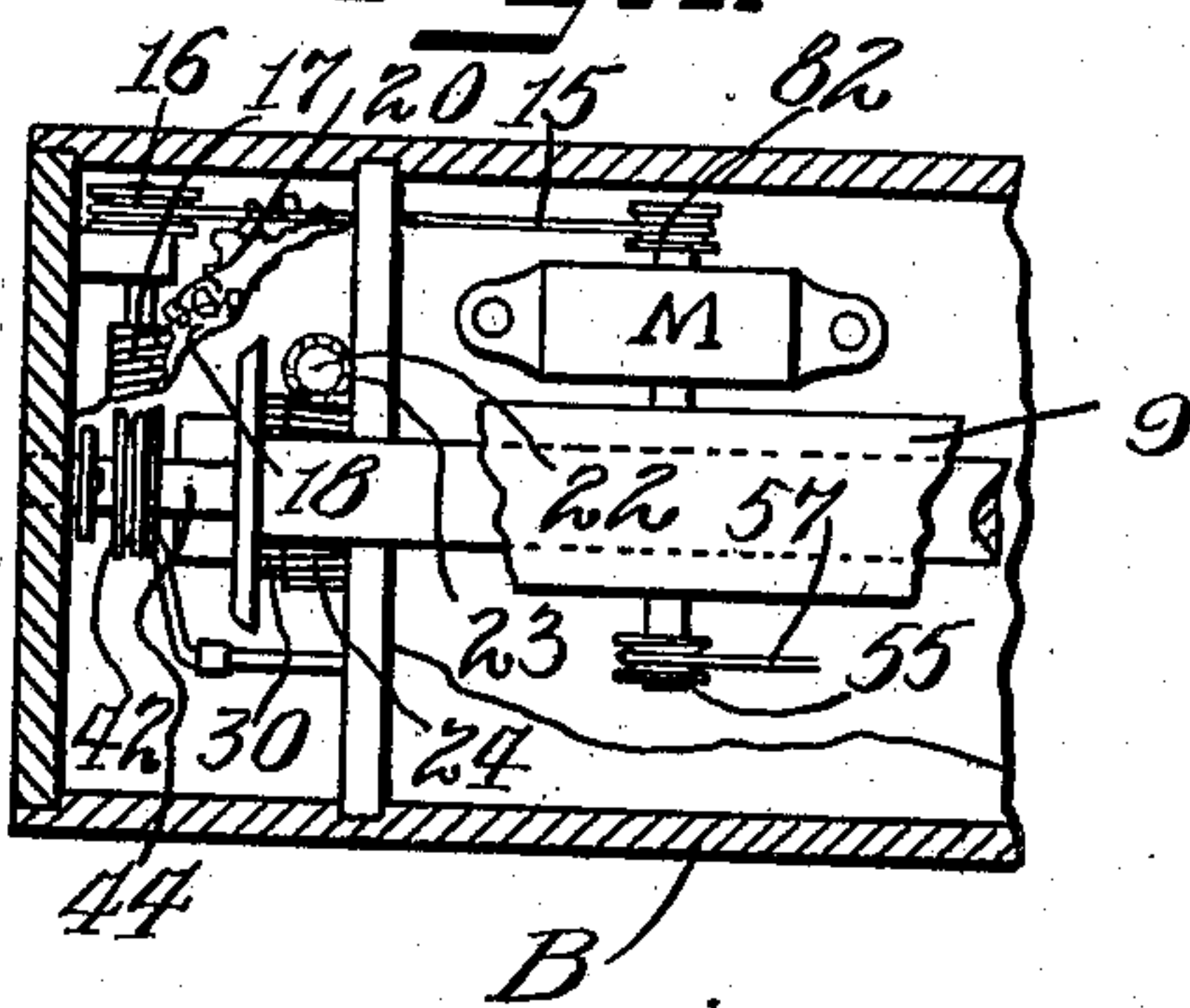
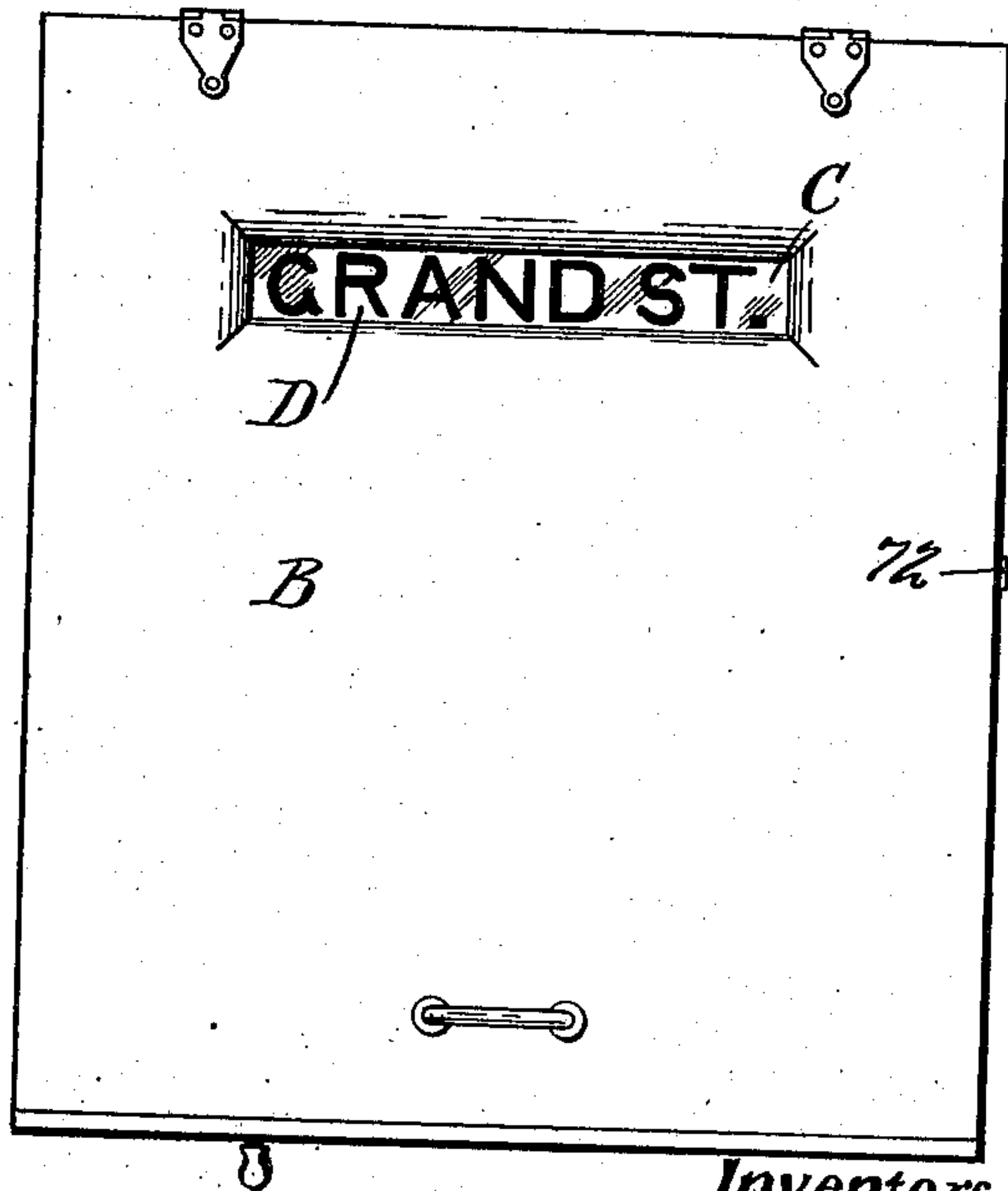


FIG. 1.



Witnesses:

W. B. Furr.
H. D. Penney

Inventors

Thomas Tighe;
Charles S. Cross;
F. A. Richards.

By their Attorney;

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2 SHEETS—SHEET 2.

FIG. 5.

FIG. 6.

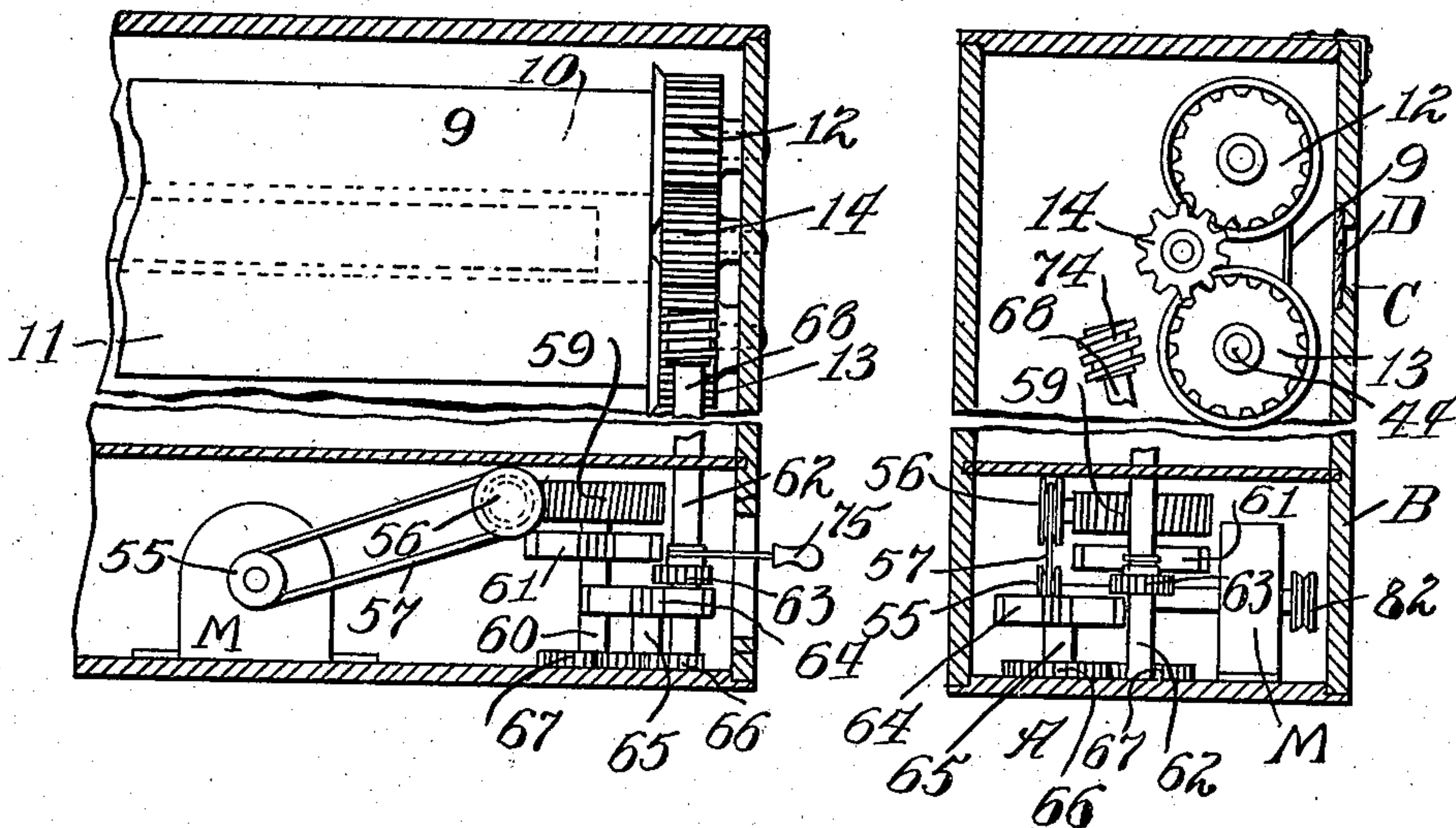
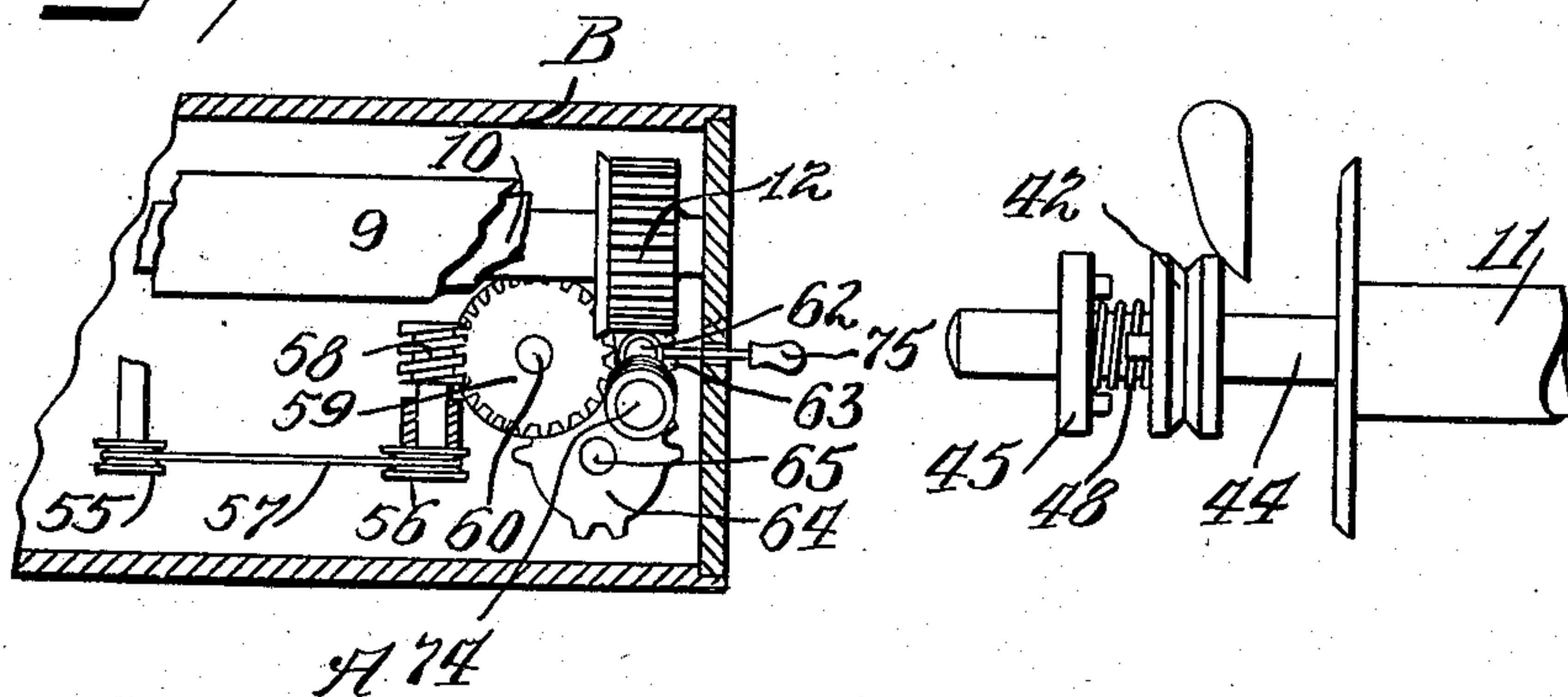


FIG. 7.

FIG. 8.



Witnesses:

H. D. Penny

Inventors:

Thomas Tighe;
Charles S. Cross;

By their Attorney;

F. H. Richards.

UNITED STATES PATENT OFFICE.

THOMAS TIGHE AND CHARLES S. CROSS, OF NEW YORK, N. Y.

AUTOMATIC STREET-INDICATOR.

No. 881,503.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed May 31, 1906. Serial No. 319,438.

To all whom it may concern:

Be it known that we, THOMAS TIGHE, a citizen of the United States, residing at New York city, in the county of New York and State of New York, and CHARLES S. CROSS, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Automatic Street-Indicators, of which the following is a specification.

This invention relates to means for indicating the streets, stations or stopping places of cars that is automatically operated from the propelling mechanism of the car, whereby as the successive stops or streets are reached, the next succeeding one will be exhibited at the indicator.

A further object of the invention is to provide in an electrical car, a mechanism electrically operated by the current passing from the controller to the car motor and which will be thereby operated to automatically indicate the streets or stations.

A further object is to provide mechanism whereby the indicating device can be readily reversed when the car reaches the end of the route.

Another object of the invention is to provide additional means for operating the web from the motor whereby upon shifting the handle or lever the web can be caused to advance the distance of one station and then be thrown out of operation.

In the accompanying drawings representing an apparatus embodying my invention, Figure 1 is a front view of the mechanism with the front closed. Fig. 2 is a similar view with the front removed. Fig. 3 is a section on line 3—3, Fig. 2. Fig. 4 is a partial plan view of a certain part of the mechanism shown in Figs. 2 and 3 below a partition. Fig. 5 is a fragmentary view similar to Fig. 2. Fig. 6 is an end view of the parts as shown in Fig. 5 with the end of the casing removed. Fig. 7 is a fragmentary plan view of certain parts; and Fig. 8 shows separately the clutch mechanism for automatically throwing the indicator rolls into and out of engagement with the driving mechanism.

The device is mounted in a suitable casing A provided with a hinged front B that has a slot or opening C through which the indication is exhibited which slot may be closed by a glass plate D if desired to exclude the dust.

A web or flexible material 9 is wound around two rollers 10 and 11 mounted in suitable bearings. These rollers carry sprockets 12 and 13 that both mesh with a pinion 14 rotatably mounted in the side of the frame; whereby simultaneous and uniform rotation of the rolls is effected to wind up on one roll and unwind from the other. The portion of the web between the rolls is exhibited at the opening C, and suitable inscriptions on the web will be visible at such place successively appearing as the web is transferred from one roll to the other.

The operation of the rolls to transfer the web and bring names of streets or stations thereon to the opening, is effected by a suitable motor denoted generally by M. This motor is operated by being connected with the leads running from the controller of the electric car to the motor on the car. By this arrangement the speed or power of the motor M will correspond to that of the car motor. When the car is started and stopped the motor M will be likewise affected. As the car runs, the motor will be given the desired operation and hence cause a certain amount of web to be transferred. If the distance between the streets increases, the motor M will operate a greater distance because the car motor is operative for a greater length of time. Therefore as the car moves from street to street, the corresponding streets will be exhibited at the window for observation. The names on the web are spaced an equal distance apart, but in the driving mechanism between the motor M and the web rolls, is included a mechanism whereby as successive stations are different distances apart the intermittent advancement of the web is effected at different intervals of time.

In the construction shown a belt 15 operates a pulley 16 from a pulley 82 on the motor shaft. A worm 17 is fixed on the shaft of the pulley 16 and operates a worm wheel 18 fast on shaft 19. The shaft 19 carries a gear 20 meshing with a gear 21 fast on a shaft 22; which latter shaft carries a worm wheel 23 engaging the gear 24 fast on a shaft 25. The latter shaft carries a roll 26 on which is wound a web 27, whose other end is wound on a roll 28 fast on a shaft 29. The shafts 25 and 29 carry gears 31 and 30 respectively that both engage a gear 32, causing uniform rotation of the two rolls, whereby the web 27 is wound from one roll to the

other according to the direction of rotation. When it is desired to reverse the direction of the rolls 26 and 28, the gear 21 is moved out of engagement with the gear 20 by means of an arm 33 and into engagement with a gear 34 fast on a short shaft 35. On the latter shaft is a gear 36 meshing with a gear 37 fast on the driving shaft 19. Through these intermediate gears it will be seen the shaft 22 is rotated in the opposite direction, and hence the rolls 26 and 28 are operated in reverse direction. By placing the gear 21 in an intermediate position, the motor will rotate without actuating the web 27.

The web 27 is provided with a number of openings 40 that are spaced apart a distance proportional to the distance apart of the several stations. Now the web 27 will be actuated proportional to the speed of the motor M and as stated this motor will operate correspondingly to the motor of the car. Therefore the travel of the web 27 will correspond to the travel of the motor M. As each opening in the web is brought to a certain fixed position, means are provided for causing the indicating web 9 to be advanced the distance of the stations thereon apart. On the shaft 25 is also fixed a pulley 41 that rotates a pulley 42 by means of a belt 43 the pulley 42 being loose on the shaft 44 on which the roller 11 is secured. On this shaft 44 is secured a clutch member 45, and one side of the pulley 42 constitutes the other clutch member which when the pulley is moved engages the clutch member 45, whereupon the shaft 44 will rotate with the pulley 42. This engagement of the clutch members is caused by means of a lever 46 pivoted on a bracket 47. One end of the lever is arranged to be pressed into the openings 40 in the web and the other arm of the lever engages the loose pulley 42.

A coil spring 48 between the pulley and the clutch member 45 serves to force the pulley over and disengage the clutch. A coil 49 extending between the lever 46 and the back of the casing serves to rock the lever as soon as its end reaches one of the openings thereby bringing the two clutch members into engagement for a short time; which time is sufficient to operate the web to bring the next consecutive street or station opposite the window. The further movement of the web 27 will again shift the lever 46, and the clutch members will disengage causing the web to rest with the next station in view. It is also desirable to have means for retaining the web 9 in the proper position to exhibit the station or street thereon, and this is done by means of an arm 50 fast on the lever 46, that has its extremity in engagement with a spring plate 51. This latter plate has its end bent to normally engage suitable notches 52 in the web 9, and the swinging of the lever 46 will move the arm 50 out of en-

gagement with said notches permitting the web to travel. But should such mechanism become deranged or inoperative, means are provided whereby the conductor can cause the indicator to advance and present a new station to the window as each street or station is reached. A second pulley 55 on the shaft of the motor runs a pulley 56 by means of a belt 57. The pulley 56 is arranged to operate a worm 58 engaging a gear 59 on a shaft 60. On the latter shaft is a gear 61 preferably mutilated for intermittent driving. On a shaft 62 is splined a gear 63 that can be shifted into engagement with the gear 61 to cause the shaft 62 to be rotated from the motor. But upon shifting the gear 63 in the opposite direction it will mesh with a mutilated gear 64 fast on a short shaft 65. The latter shaft carries a gear 66 meshing with a gear 67 fast on the shaft 60. By this means the shaft 62 will be intermittently rotated in the opposite direction from the motor M.

The upright shaft 62 is connected with a shaft 68 by means of a swivel joint 69 and the shaft 68 can be swung to extend out of alinement with the shaft 62 by means of a bearing block 70 that is adjustably connected with the side member 71 by means of a bolt 72 screwing into the bearing block 70 which bolt passes through a slot 73 in the side member 71. The upper end of the shaft 68 carries a worm 74 that normally engages the gear 13 fast on the shaft 44 of the roll 11. By this means when the worm is in engagement with the gear 13 the web 9 will be intermittently operated. This intermittent operation is caused by the temporary shifting of the gear 63 by a handle 75, and as soon as the web advances for the distance of one station, the handle is again shifted to throw the gears out of engagement.

Having thus described our invention, we claim:

1. In a station indicator, the combination of an indicating device arranged to be shifted to bring characters thereon successively to view, an electric motor, a clutch member driven from said motor, a cooperating clutch member having means for actuating the indicator device when said members are caused to engage, and a controlling means including a web and means operated thereby and actuated from the said motor to intermittently cause engagement of the clutch members to actuate the indicator a sufficient distance to bring the next consecutive character to view.

2. In an indicating device for electric cars, the combination with the car motor and the leads connecting the controller with the motor, an indicating device arranged to be shifted to bring characters thereon successively to view, an electric motor in electrical connection with the car motor, a clutch mem-

ber driven from said electric motor, a co-operating clutch member having means for actuating the indicator device when said members are caused to engage, and controlling means including a web and means operated thereby and actuated from the said electric motor to intermittently cause engagement of the clutch members to actuate the indicator a sufficient distance to bring the next consecutive character to view.

3. In an indicator for electric cars, the combination of an indicating device arranged to be operated to bring the successive characters thereon to a view point, a clutch member connected with the indicator for operating it, an electric motor, a coöperating clutch member driven from the motor, a web device driven from said motor and provided with openings therein that are spaced apart distances corresponding to the actual distances apart of the successive stations on the indicator, and mechanism arranged to be engaged successively by the openings in the web to temporarily cause engagement of the clutch members and actuate the indicator to bring the next indication to the view point.

4. In an indicating device for electric cars, the combination with the car motor and the leads connecting the controller with the motor, an electric motor in electrical connection with the car motor, a clutch member driven from said electric motor, a coöperating clutch member having means for actuating the indicator device when said members are caused to engage, controlling means including a web and means operated thereby and actuated from the said electric motor and arranged to intermittently cause engagement of the clutch members and actuate the indicator a sufficient distance to bring the next consecutive character to view, and means for reversing the direction of movement of the indicator and controlling mechanism.

5. In an indicator for electric cars, the combination of an indicating device arranged to be operated to bring the successive characters thereon to a view point, a clutch member connected with the indicator for operating it, an electric motor, a coöperating clutch member driven from the motor, a web device driven from said motor and provided with openings therein that are spaced apart distances corresponding to the actual distances apart of the successive stations on the indicator, mechanism arranged to be engaged successively by the openings in the web to cause temporarily engagement of the clutch members and actuate the indicator to bring the next indication to the view point, and means for reversing the direction of movement of the indicator and also of the web device from the motor.

6. In an indicating device for electric cars, the combination with the car motor and the

leads connecting the controller with the motor, an electric motor in electrical connection with the car motor, a clutch member driven from said electric motor, a coöperating clutch member having means for actuating the indicator device when said members are caused to engage, a controlling member actuated from the said electric motor and arranged to intermittently cause engagement of the clutch members to actuate the indicator a sufficient distance to bring consecutive characters thereon to the view point, and a shiftable member arranged to throw the indicator device out of connection with the motor.

7. In an indicator for electric cars, the combination of an indicating device arranged to be operated to bring the successive characters thereon to a view point, a clutch member connected with the indicator for operating it, an electric motor, a coöperating clutch member driven from the motor, a web device driven from said motor and provided with openings therein that are spaced apart distances corresponding to the actual distances apart of the successive stations on the indicator, mechanism arranged to be engaged successively by the openings in the web to temporarily cause engagement of the clutch members and actuate the indicator to bring the next indication to the view point, and a shiftable device arranged to throw the indicator device and the web device out of connection with the motor.

8. In an indicating device for electric cars, the combination of a pair of rolls, a web having its ends secured to the rolls respectively to be wound thereon, means for causing simultaneous rotation of the rolls, an electric motor, a shaft driven from the electric motor and carrying a worm, a second shaft having a worm wheel operated by said worm, a third shaft, a worm on the third shaft, gears driving the third shaft from the second shaft, a second pair of rolls operated in unison by said second worm, a web having its ends secured to said latter rolls respectively and provided with openings therein, a lever having one end arranged to engage said web, a spring connected with said lever arranged to rock the lever when its end registers with the openings in the web, a clutch member driven from said motor and loose on the shaft of one of said first mentioned rollers, a second clutch member fast on the shaft of said roller to be engaged by said clutch member upon the latter being shifted said lever having an extension arranged to shift said loose clutch member upon its other end being rocked by said spring, thereby causing the clutch members to engage and operate the rolls.

9. In an indicating device for electric cars, the combination of a pair of rolls, a web having its ends secured to the rolls respectively to be wound thereon, means for causing si-

multaneous rotation of the rolls, an electric motor, a shaft driven from the electric motor and carrying a worm, a second shaft having a worm wheel operated by said worm, a third
5 shaft, a worm on the third shaft, gears driving the third shaft from the second shaft, a second pair of rolls operated in unison by said second worm, a web having its ends secured to said latter rolls respectively and
10 provided with openings therein, a lever having one end arranged to engage said web, a spring connected with said lever arranged to rock the lever when its end registers with the openings in the web, a clutch member driven
15 from said motor and loose on the shaft of one of said first mentioned rollers, a second clutch member fast on the shaft of said roller to be engaged by said clutch member upon the latter being shifted said lever having an
20 extension arranged to shift said loose clutch member upon its other end being rocked by said spring, thereby causing the clutch members to engage and operate the rolls, said indicating web being provided with aper-
25 tures along one edge, a device having its end arranged to engage said apertures when swung, said lever having an arm arranged to engage said device to move it out of engagement with said web when the lever is oper-
30 ated by said spring.

10. In an indicating device for electric cars, the combination of a pair of rolls, a web having its ends secured to the rolls respectively

to be wound thereon, means for causing simultaneous rotation of the rolls, an electric 35 motor, a shaft driven from the electric motor and carrying a worm, a second shaft having a worm wheel operated by said worm, a third shaft, a worm on the third shaft, gearing connecting the second shaft and third shaft, 40 means for reversing such gearing, a second pair of rolls operated in unison by said second worm, a web having its ends secured to said latter rolls respectively and provided with openings therein, a lever having one end 45 arranged to engage said web, a spring connected with said lever arranged to rock the lever when its end registers with the openings in the web, a clutch member driven from said motor and loose on the shaft of one of 50 said first mentioned rollers, a second clutch member fast on the shaft of said roller to be engaged by said clutch member upon the latter being shifted said lever having an extension arranged to shift said loose clutch 55 member upon its other end being rocked by said spring, thereby causing the clutch members to engage and operate the rolls.

Signed at Nos. 9 to 15 Murray street, New York, N. Y., on this 28th day of May, 1906. 60

THOMAS TIGHE.
CHARLES S. CROSS.

Witnesses:

FRANCIS E. BOYCE,
JOHN O. SEIFERT.