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APPLICATION FILED APR. 24, 1908.

Patented Aug. 16, 1910.

3 SHEETS—SHEET 1.

967,833.

Fig. 1.

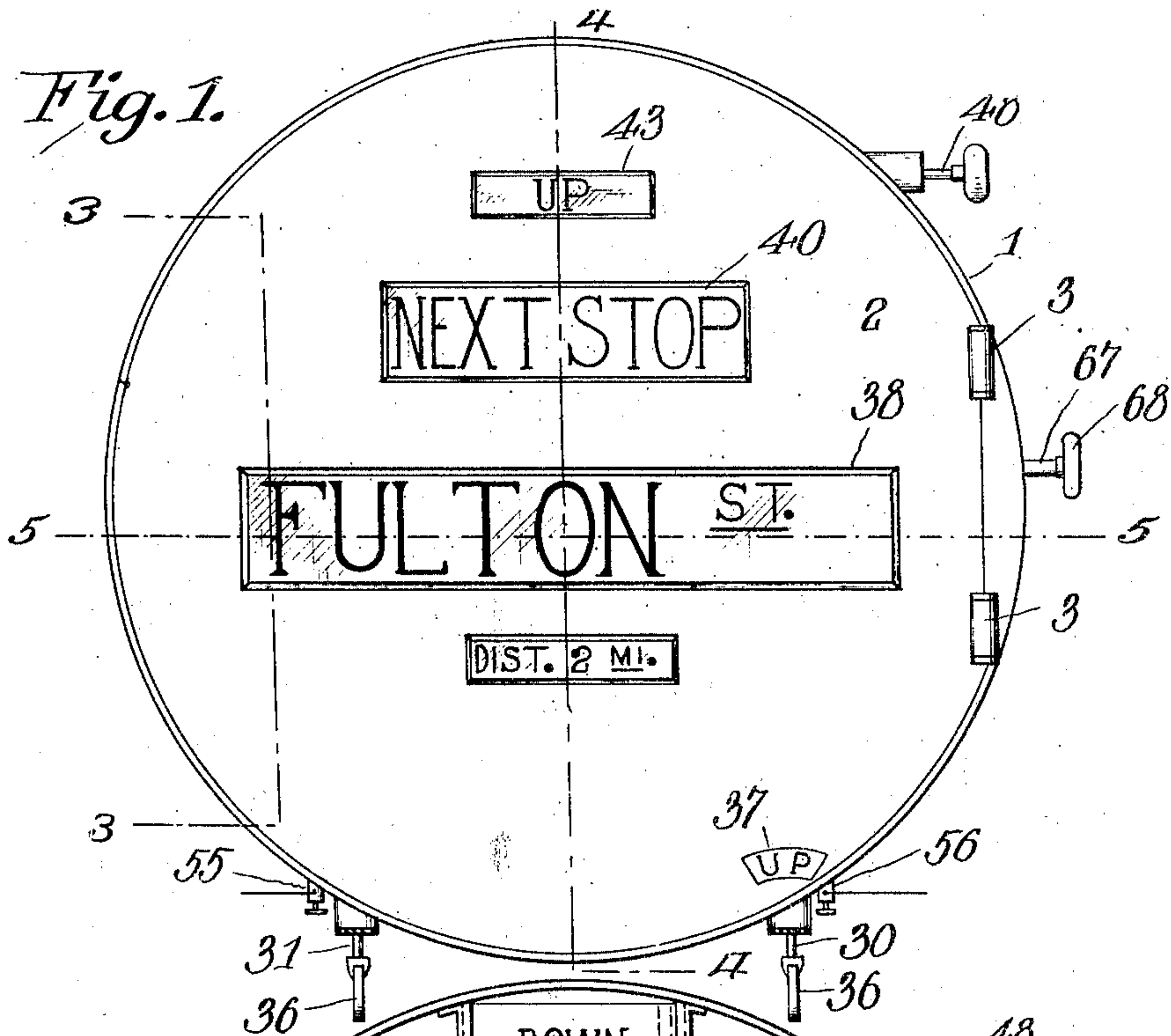
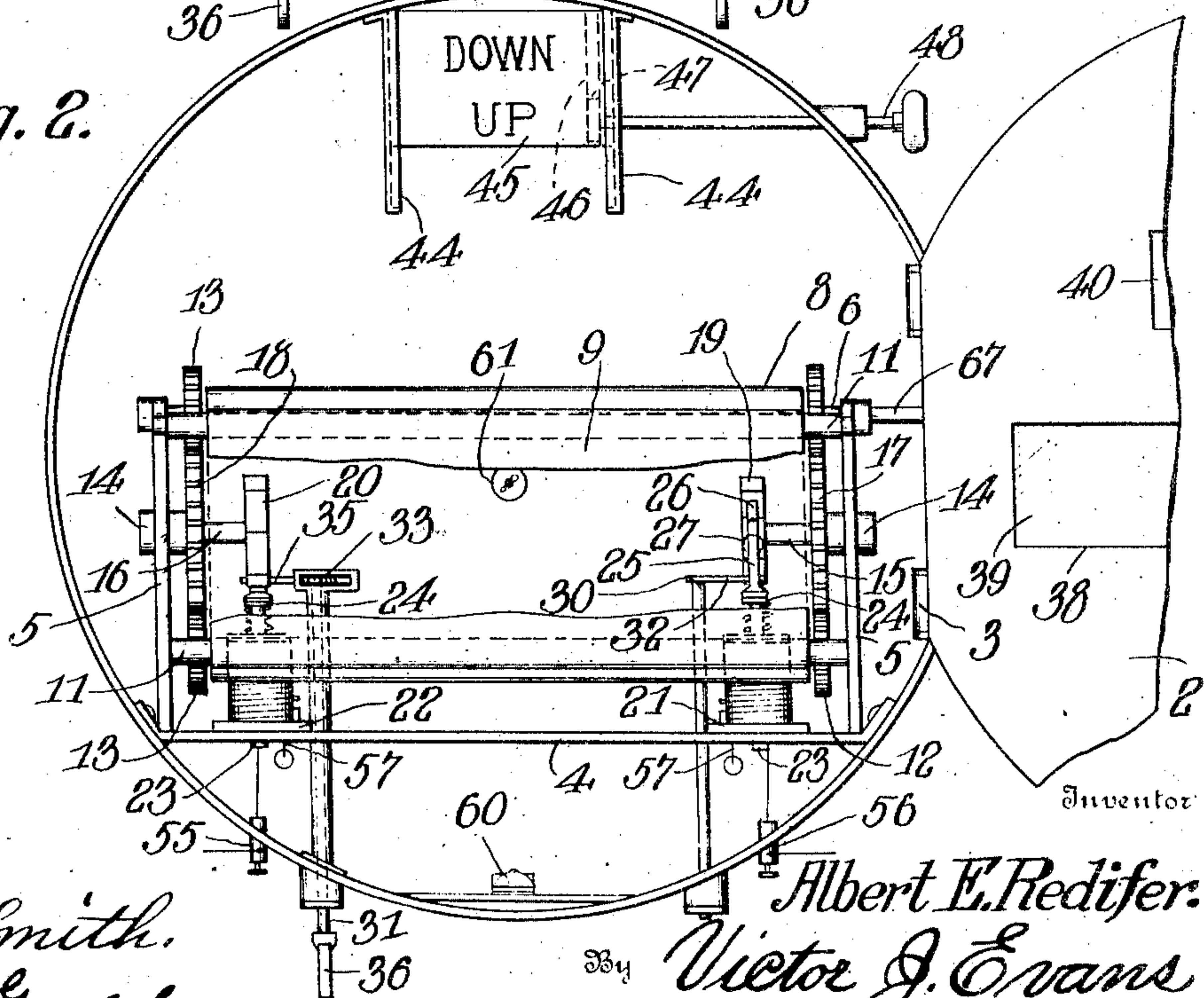


Fig. 2.



Witnesses

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3 SHEETS—SHEET 2.

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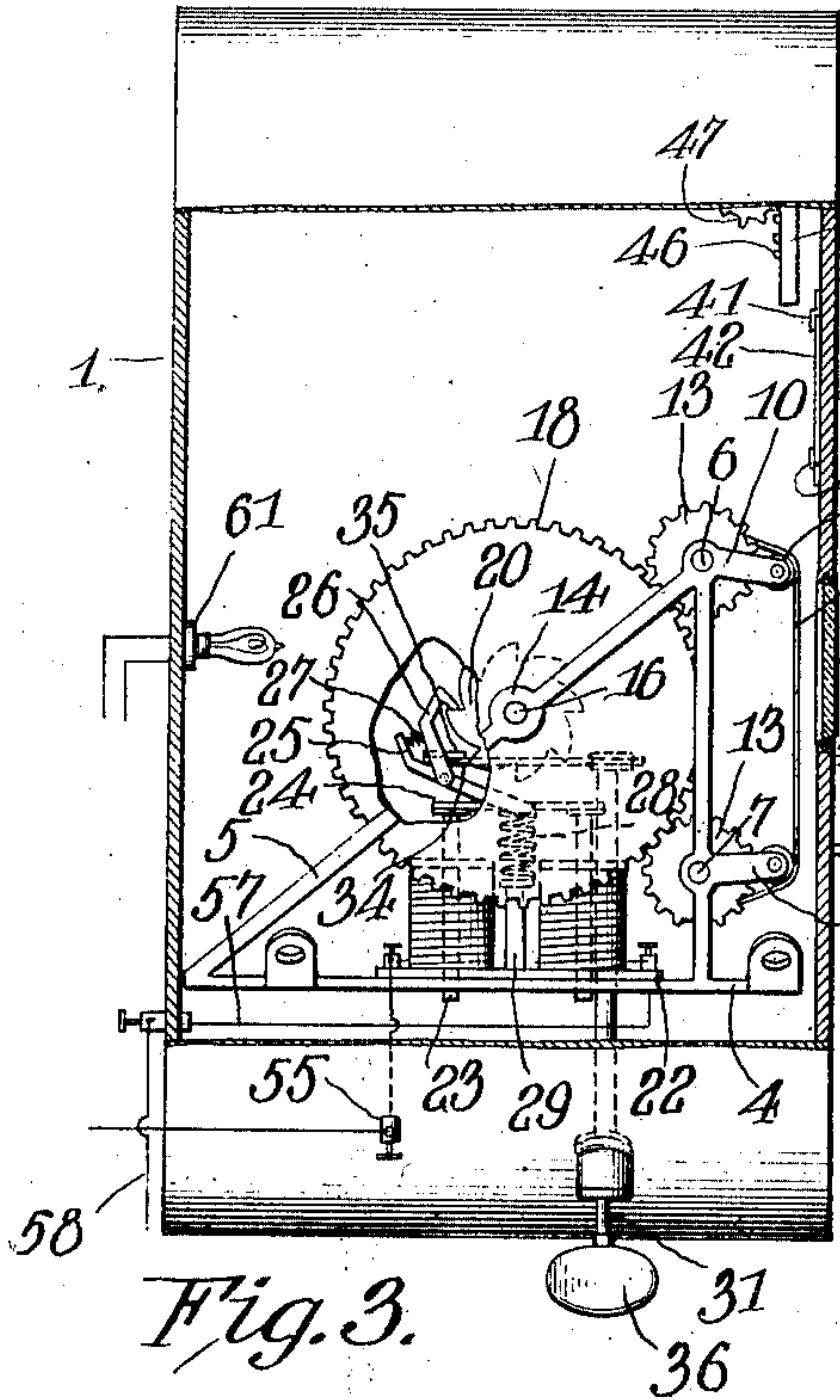


Fig. 3.

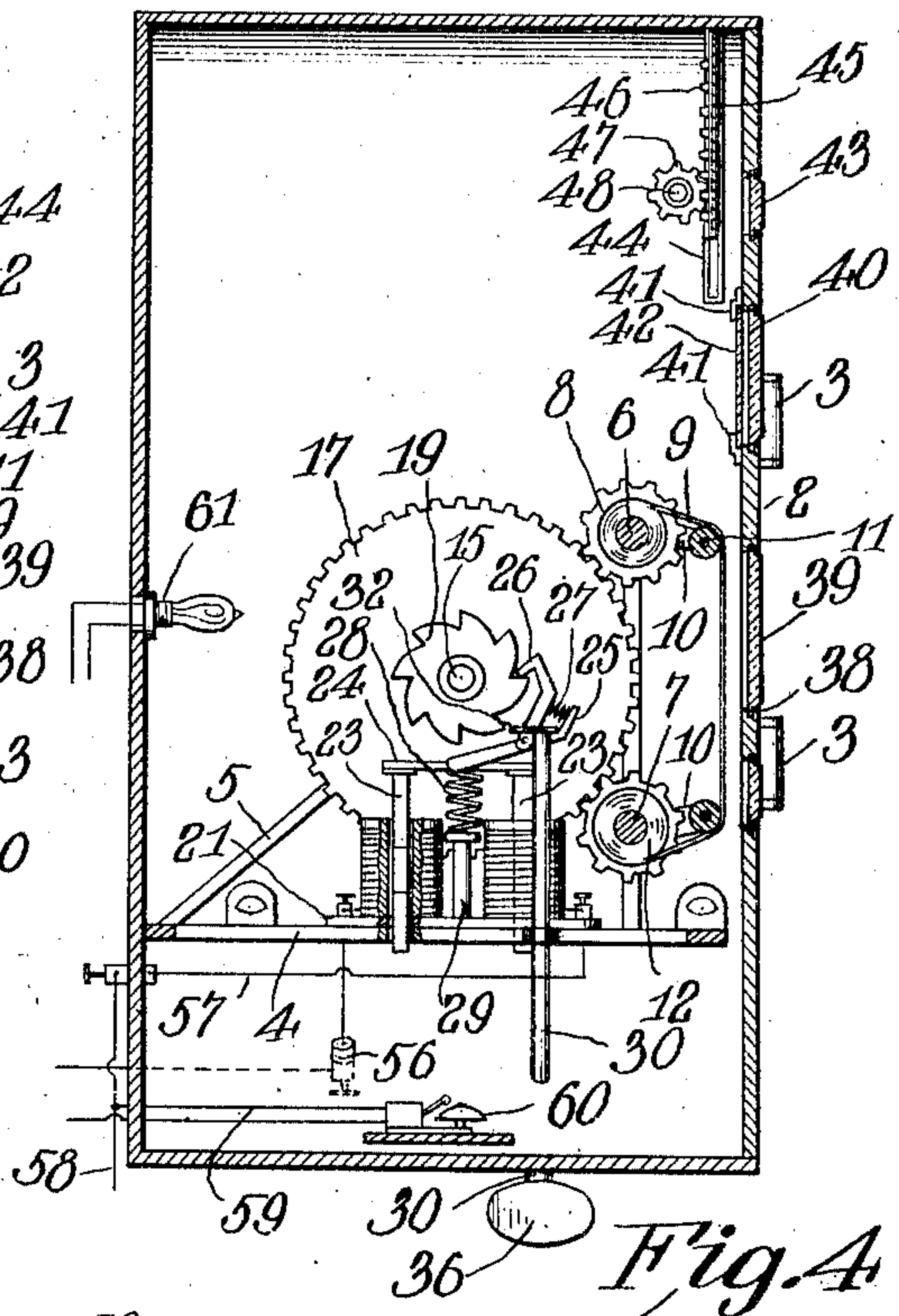


Fig. 4.

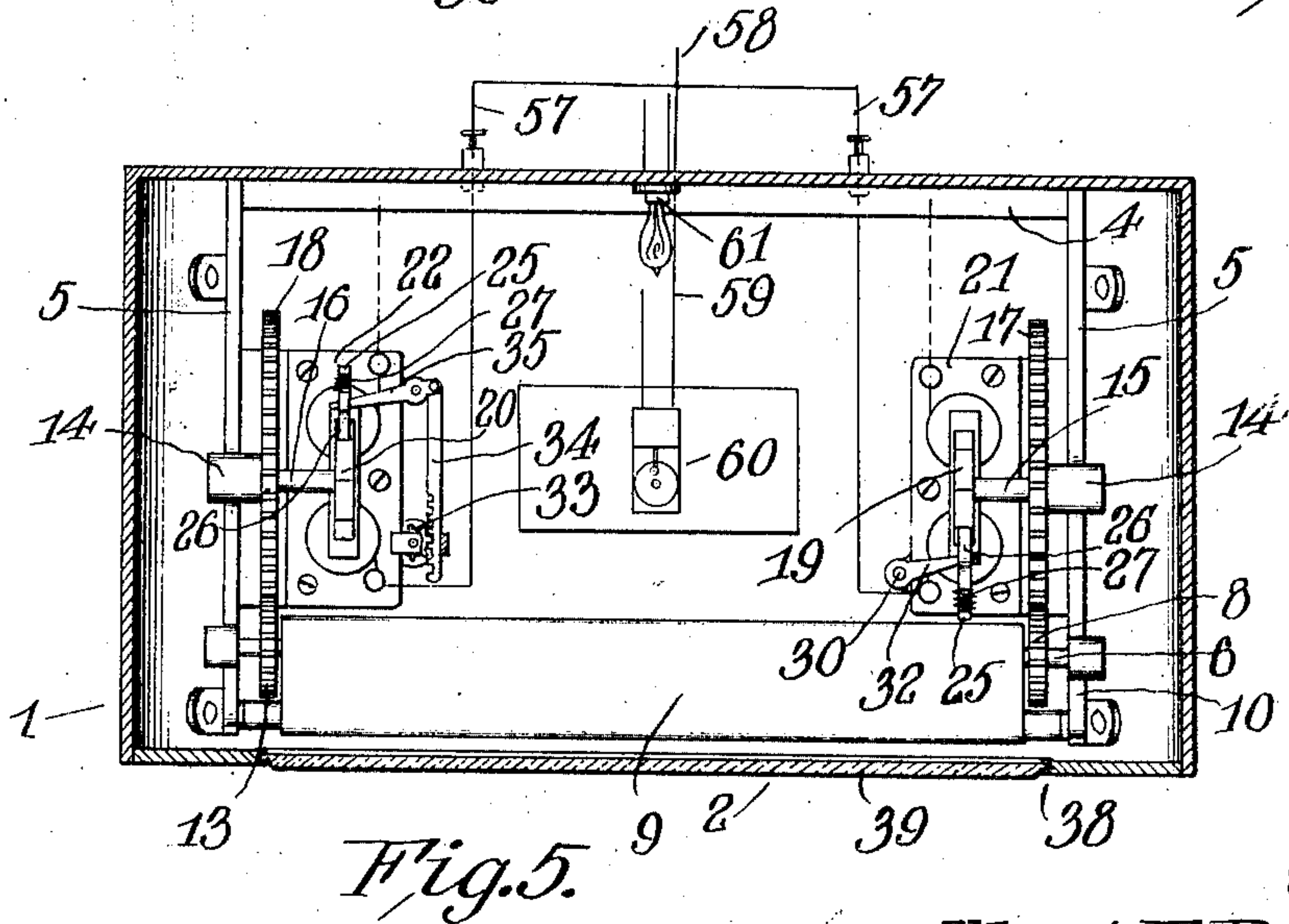


Fig. 5.

Witnesses

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3 SHEETS—SHEET 3.

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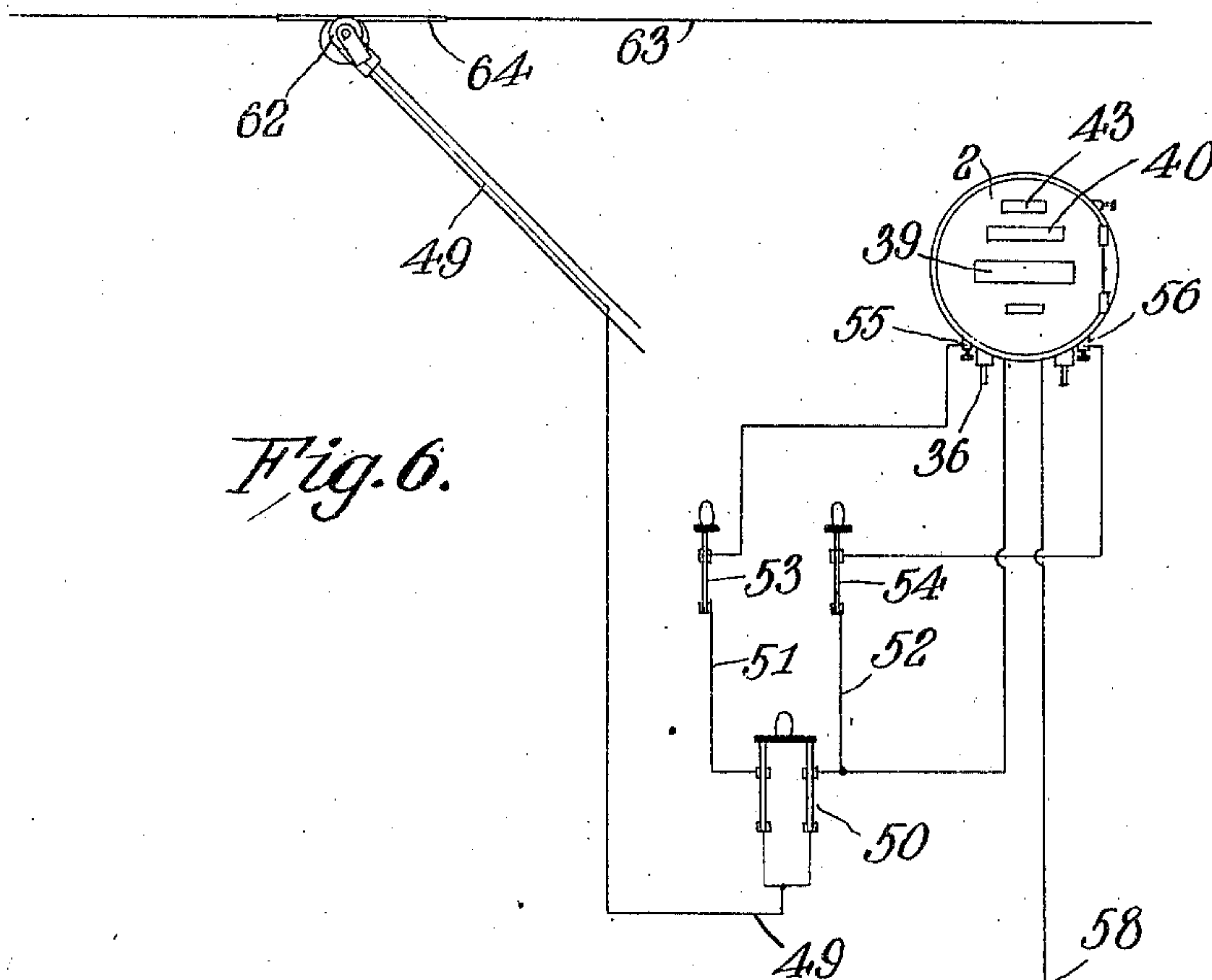


Fig. 6.

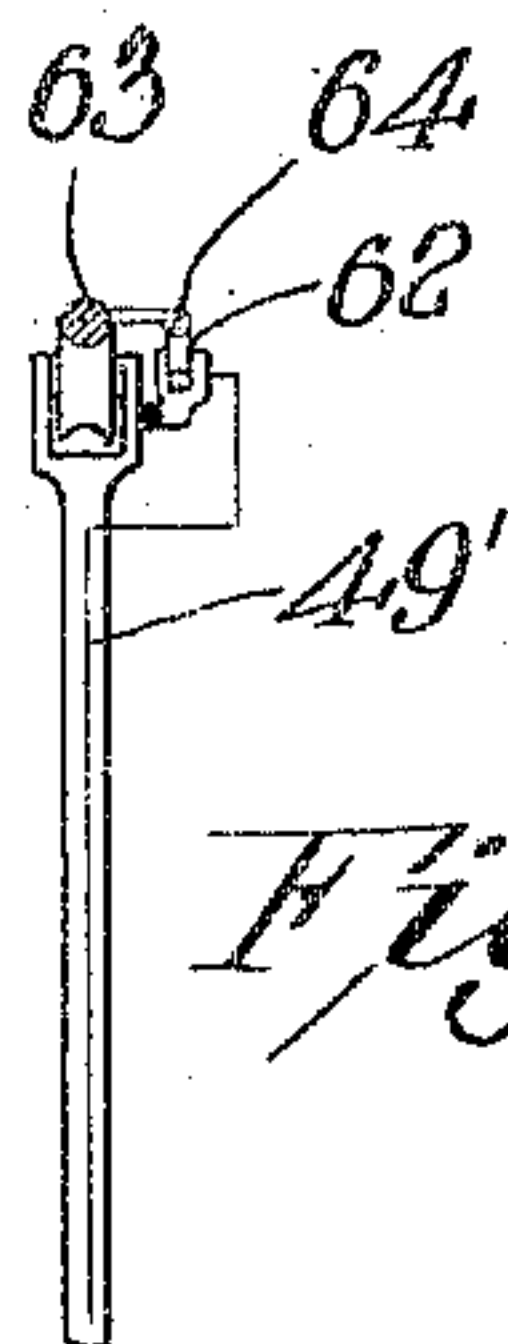


Fig. 7.

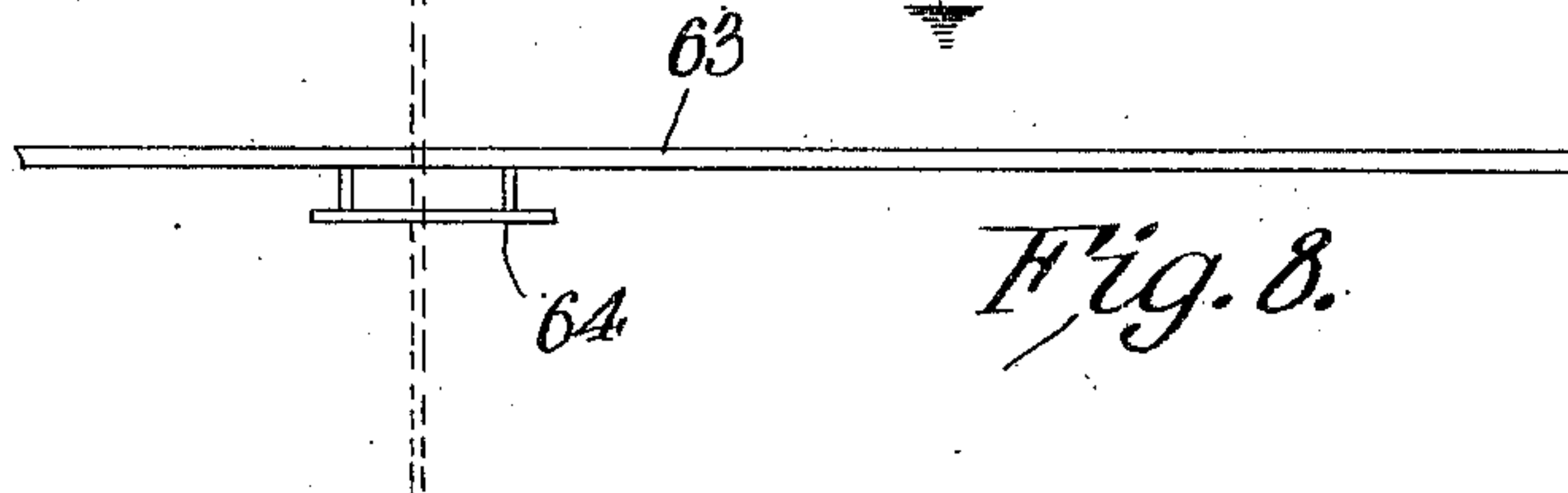


Fig. 8.

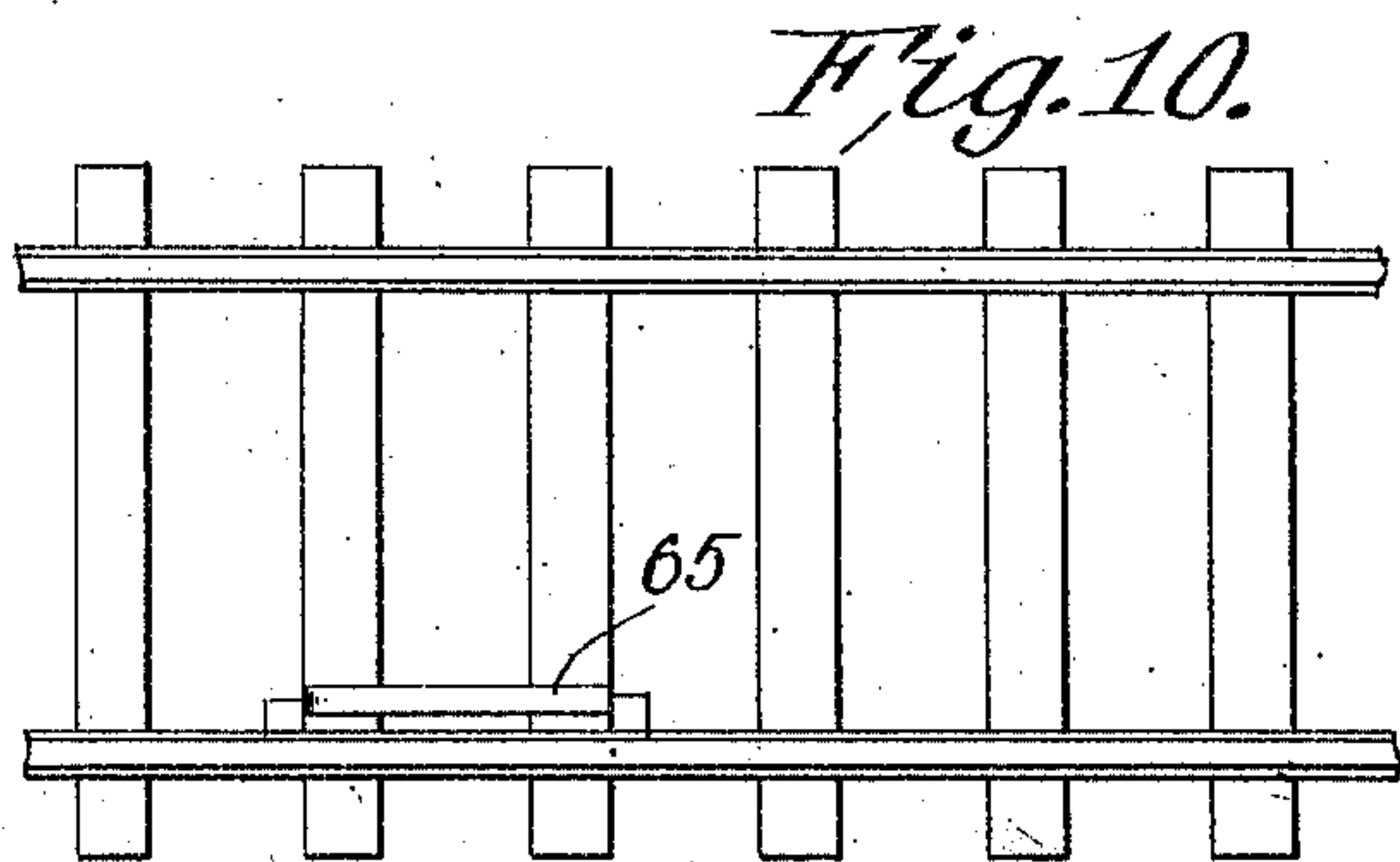


Fig. 10.

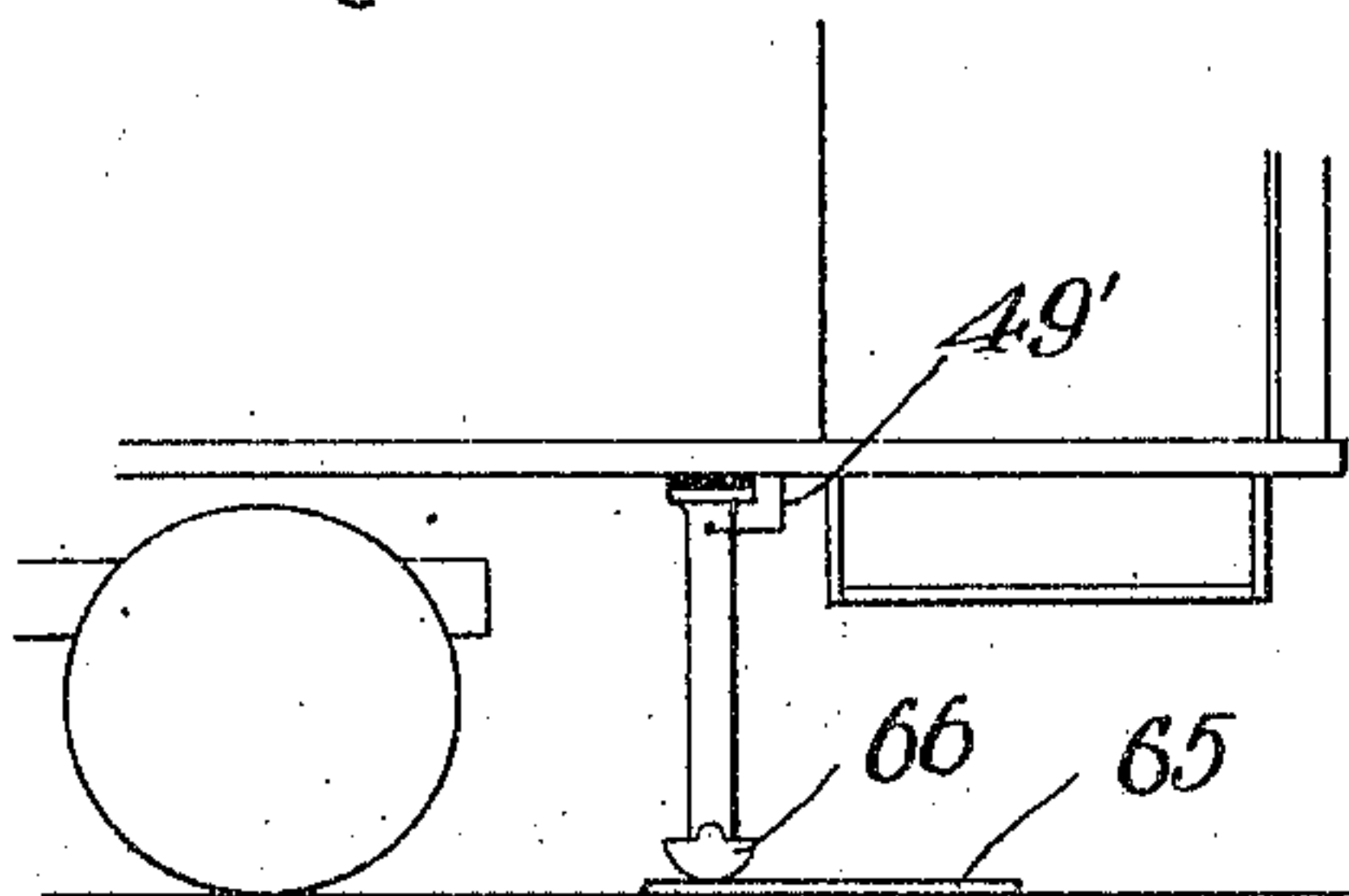


Fig. 9.

Witnesses

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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed April 24, 1908. Serial No. 429,035.

To all whom it may concern:

Be it known that I, ALBERT EDWIN REDIFER, a citizen of the United States, residing at Manila, in the Province of Manila, Philippine Islands, have invented new and useful Improvements in Indicators, of which the following is a specification.

The invention relates to an improvement in station indicators designed primarily for use with traveling vehicles and adapted to automatically indicate the name of the street or station which the vehicle is approaching.

The main object of the present invention is the provision of a station indicator of simple construction and primarily adapted for electric control, the construction providing for the simple reverse of the mechanism to permit proper operation on the return trip of the vehicle.

The invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 represents a view in elevation of a station indicator constructed in accordance with my invention. Fig. 2 is a similar view with the face of the casing open, the sign carrying ribbon being partly broken away. Fig. 3 is a section on line 3—3 of Fig. 1. Fig. 4 is a section on line 4—4 of Fig. 1. Fig. 5 is a section on line 5—5 of Fig. 1. Fig. 6 is a diagrammatic view illustrating the means for energizing the apparatus from an overhead trolley. Fig. 7 illustrates the trolley pole and offset contact shoe for use with the apparatus. Fig. 8 is a plan of a portion of a trolley wire showing one of the contact sections. Fig. 9 is a diagrammatic view, showing the contact for the apparatus in the use of the short rail or bonded rail construction. Fig. 10 is a plan showing the offset contacts of a bonded rail construction.

Referring particularly to the accompanying drawings, my improved indicator comprises a casing 1, preferably of cylindrical form and having a face plate 2 hinged to the body of the casing at 3, as clearly shown in Fig. 1. Secured within the casing 1 is a frame including a base 4, and side members 5, between which members and supported on the base is arranged the main operative parts of the structure.

Mounted in the relatively forward portions of the side members 5 of the frame, in

alinement vertically of the casing, are ribbon shafts 6 and 7, the former being supported in the upper portion of the frame and the latter in the lower portion. Secured upon each of these shafts is a drum 8, upon which is wound a ribbon 9 bearing characteristic data indicative of the information to be distributed in the operation of the apparatus. The frame members 5 are each provided with forward extensions 10 in alinement with the respective shafts 6 and 7, and in said extensions are mounted idle rollers 11, over which the ribbon passes in operation, said idlers being so located relative to the forward face 2 of the casing as to maintain the ribbon in parallel relation to and immediately adjacent said face. Upon each of the shafts 6 and 7, adjacent each end, is fixed a gear to insure operation of said shafts, the gears 12 at the same end of the shafts being designed to be operated when winding the ribbon in one direction, and the gears 13 at the opposite ends of the shafts being designed to be operated in feeding the ribbon in the opposite direction. Each frame member 5 in rear of the ribbon shafts and at a point about midway between said shafts is formed with a bearing 14, in which are mounted stub shafts 15 and 16 respectively. Secured upon the respective stub shafts are gears 17 and 18, the former being designed to engage both gears 12 upon the ribbon shafts while the latter is designed to engage both gears 13 of said shafts. The respective gears 17 and 18 engage both ribbon shaft gears as described, being at all times in mesh with said gears and thereby operating the ribbon in either direction, in accordance with the direction of rotation of the particular master gear. Each stub shaft 15 and 16 is further provided beyond the gear with a ratchet 19 and 20, whereby power is imparted to the master gears in a manner to be described. Supported upon the base 4 of the frame, beneath the respective ratchets 19 and 20 are arranged solenoids 21 and 22, being preferably disposed in independent pairs beneath each ratchet. The cores 23 of the respective solenoids of each pair are connected at their upper ends by a transverse strip 24, which carries an arm 25 to which is pivoted a pawl 26, adapted to engage and operate the particular ratchets overlying the solenoids. The terminal of the arm 25 is

inclined into parallelism with the normal disposition of the pawl, and is thereby adapted to form a rest for a spring 27 bearing between said arm and pawl and serving to normally hold the pawl in engagement with the ratchet. The plate 24 of each pair of solenoids is normally held elevated through the medium of a coil spring 28 bearing beneath the plate and at its lower end upon a post 29 arranged between the solenoids.

The respective ratchets 19 and 20 are mounted upon the stub shafts in relatively reverse directions, and the pawls controlled by the respective solenoids are similarly mounted. By this construction operation of the apparatus by the energization of the solenoid 21 will tend to revolve the ribbon spools in one direction, while the operation of the solenoid 22 will tend to revolve said spools in the opposite direction. As obviously both spools may not operate simultaneously, means must be provided whereby to control the apparatus through the particular pawl desired. For this purpose I mount in the casing 1, adjacent each of the respective pawls, rods 30 and 31, the former of which is provided at its upper end with a laterally extending arm 32 designed to rest between the pawl 26 coöperating with the ratchet 19 and said ratchet whereby in operation the arm 32 will withdraw the pawl from operative relation to the ratchet and prevent its influence upon the ratchet in the energization of the particular solenoid. The rod 31 is formed at its upper end with a gear 33 designed to engage and operate a gear rack 34, which in turn is connected with an arm 35 pivotally supported upon a portion of the frame and disposed at its free end between the pawl 26 and the ratchet 20. Operation of the rod 31 will, therefore, control the position of the particular pawl 26 and so the movement of the ribbon in the master gear 18. Rods 30 and 31 project beyond the casing 1 and are provided with operating handles or heads 36, the casing being also preferably provided with distinctive signs 37, as "Down" and "Up" for signaling the condition of the apparatus and which of the rods is to be used in the next succeeding operation.

The ribbon 9 bears suitable data indicative of the stations or streets forming stops for the train or car, these stations being arranged upon the ribbon in succession and being so spaced relative to each other that the movement of the ribbon under the influence of the particular master gear when operated by the movement of the ratchet, will move into display position a particular sign and at the same time effectively conceal the preceding and succeeding signs. The particular sign in display position on the ribbon is visible through an opening 38

formed in the face 2 of the casing and preferably closed by a strip of transparent material 39, as glass. The face of the casing is further provided above the opening 38 with a second glass protected opening 40, the horizontal edges of which are provided on the inner surface of the face 2 with reversely disposed flanges 41 adapted to slidably receive and retain in position to be visible through the opening 40, a sign 42 carrying information relating to all of the signs on the ribbon, as "Next stop." Above the opening 40 the face plate is formed with another glass protected opening 43, the cylindrical wall of the casing in rear of and beyond the side walls of the opening 43 being provided with depending guides 44, in which is slidably mounted a sign plate 45, one edge of which is formed with gear teeth 46 to be engaged by a gear 47 carried on a manually operable shaft 48 mounted in the wall of the casing and projecting therebeyond to provide for operation. Through operation of the shaft 48 the plate 45 is elevated or lowered in the guides 44, thereby disposing one or the other of the signs carried by this plate, which signs in the particular instance shown indicate the direction of travel of the vehicle, as "Up" or "Down."

The respective solenoids are energized from a main conductor 49 leading through a switch 50, from which extend branch conductors 51 and 52 in turn controlled by single switches 53 and 54, and leading through said switches to posts 55—56, which are respectively in electrical connection with the solenoids noted. From the solenoids lead conductors 57 which are connected and grounded through a conductor 58, a branch circuit 59 including a bell 60 being connected in the solenoid circuit so as to sound the alarm upon the energization of each solenoid. If desired an illuminating means, as a lamp 61, may be also arranged within the casing and energized from any suitable source, whereby to maintain a constant illumination within the case in rear of the ribbon, rendering the sign characters on the ribbon more legible. In energizing the conductor 49 in the use of the apparatus with an overhead trolley car, I prefer to lead said conductor through the trolley pole and to a contact shoe 62 offset and insulated from the main trolley pole and also provide the trolley wire 63 with offset contact sections 64 in electrical connection with said wire and in a position to be engaged by the shoe 62, as the trolley pole travels along the trolley wire.

In energizing the apparatus in its use on other than electric railroads, one rail of the track may be bonded and energized to provide a continuous electrical conductor. At proper intervals, that is immediately pre-

ceding the station which is to be noted on the indicator, the bonded rail is provided with offset contact sections 65 in electrical connection with the rail, and arranged to
 5 be engaged by shoes 66 carried by the car and in electrical connection with the conductor 49'. One of the ribbon shafts, preferably the upper, is extended beyond the casing in the form of an operating rod 67,
 10 said rod being terminally provided with a head 68 for convenient operation. Through operation of the rod 67 after throwing out the particular interfering pawl, the ribbon may be manually adjusted in a simple man-
 15 ner to dispose any particular indicating data opposite the opening 38.

The operation of the improvement will be fully obvious from the above description taken in connection with the drawings, it
 20 being understood that after operation of the proper rod 30 or 31 to influence the feed of the ribbon in the proper direction, and the subsequent closing of the proper single switch 53 or 54, each energization of the
 25 particular solenoid will operate the pawl with the effect to move the ribbon a predetermined distance. Either pawl may be thrown out of operative position at will, whereby the travel of the ribbon is directed
 30 in accordance with the travel of the vehicle, the reversal of the apparatus at the terminal of the car travel necessitating simply the throwing out of one pawl and the

throwing in of the other, the switches being correspondingly changed.

The parts are of simple construction and are particularly associated with a view to avoiding undue bulk or weight.

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

40 A station indicator comprising a casing, a plurality of rolls mounted in vertical alignment in the casing, a gear carried at each end of each roll, a master gear mounted to engage each alined pair of roll gears and co-
 45 operating to simultaneously actuate the respective roll gears of each pair in opposite directions, a ratchet connected to each master gear, the ratchets being disposed for reverse operation, a pair of electrically con-
 50 nected solenoids arranged beneath each ratchet, a bar connecting the cores of each pair of solenoids, an arm projecting from the bar, a pawl pivotally mounted on the arm and formed to engage the ratchet teeth,
 55 said arm being extended beyond the point of connection with the pawl, and a spring bearing between the pawl and the extended portion of the arm to normally maintain the pawl in engagement with the ratchet.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT EDWIN REDIFER.

Witnesses:

GEO. N. HURD,

P. SANTOS RUIZ.