

No. 887,579.

PATENTED MAY 12, 1908.

C. F. BILLINGS.
STATION INDICATOR.

APPLICATION FILED OCT. 24, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

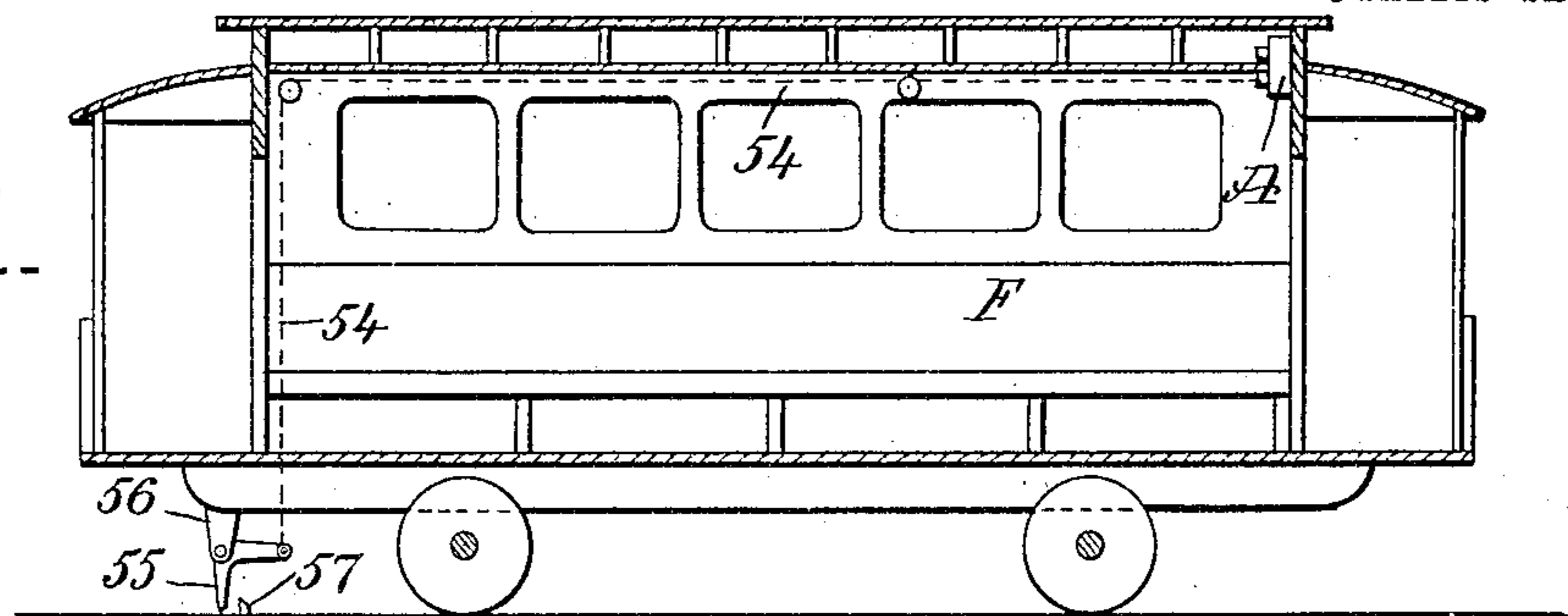
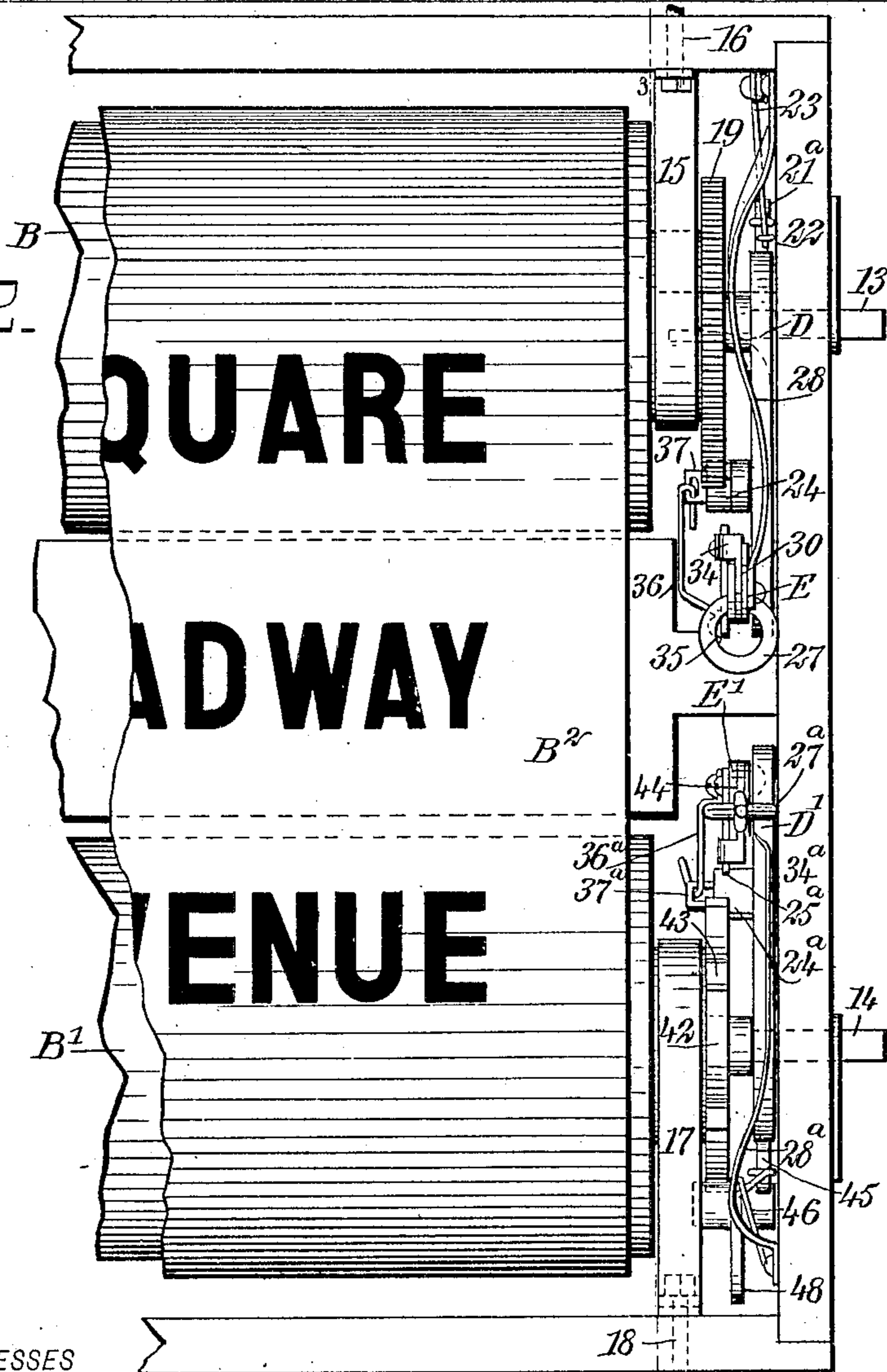


Fig. 2.



WITNESSES

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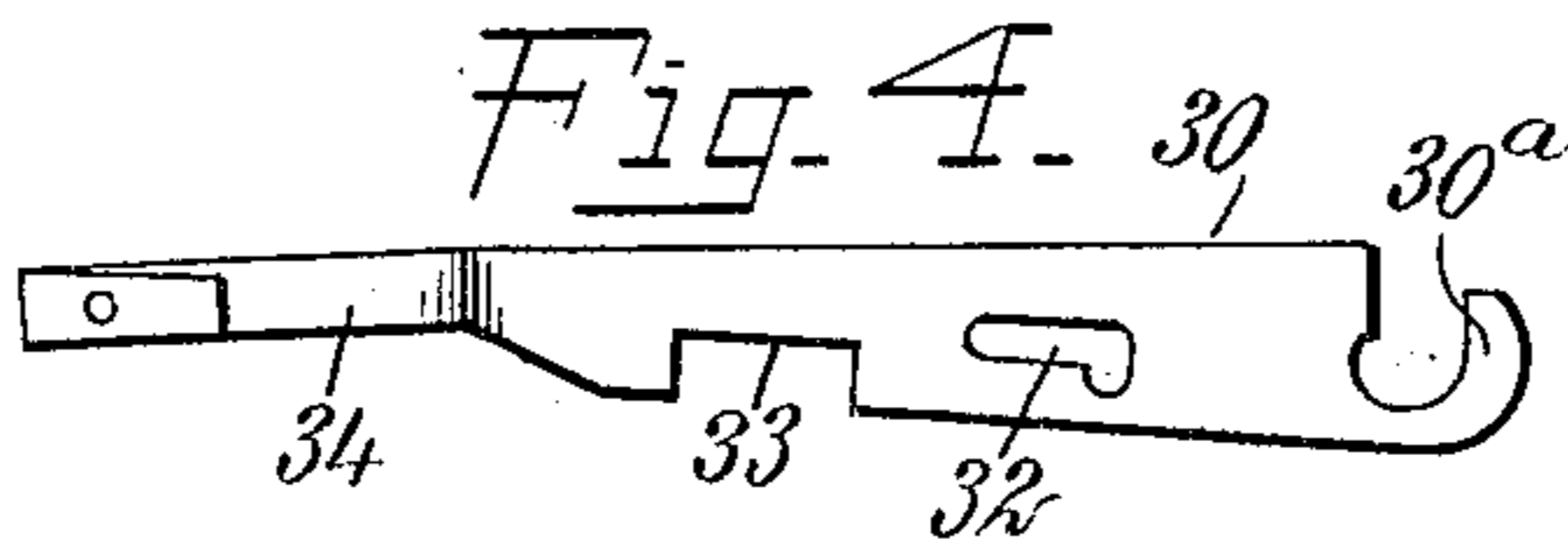
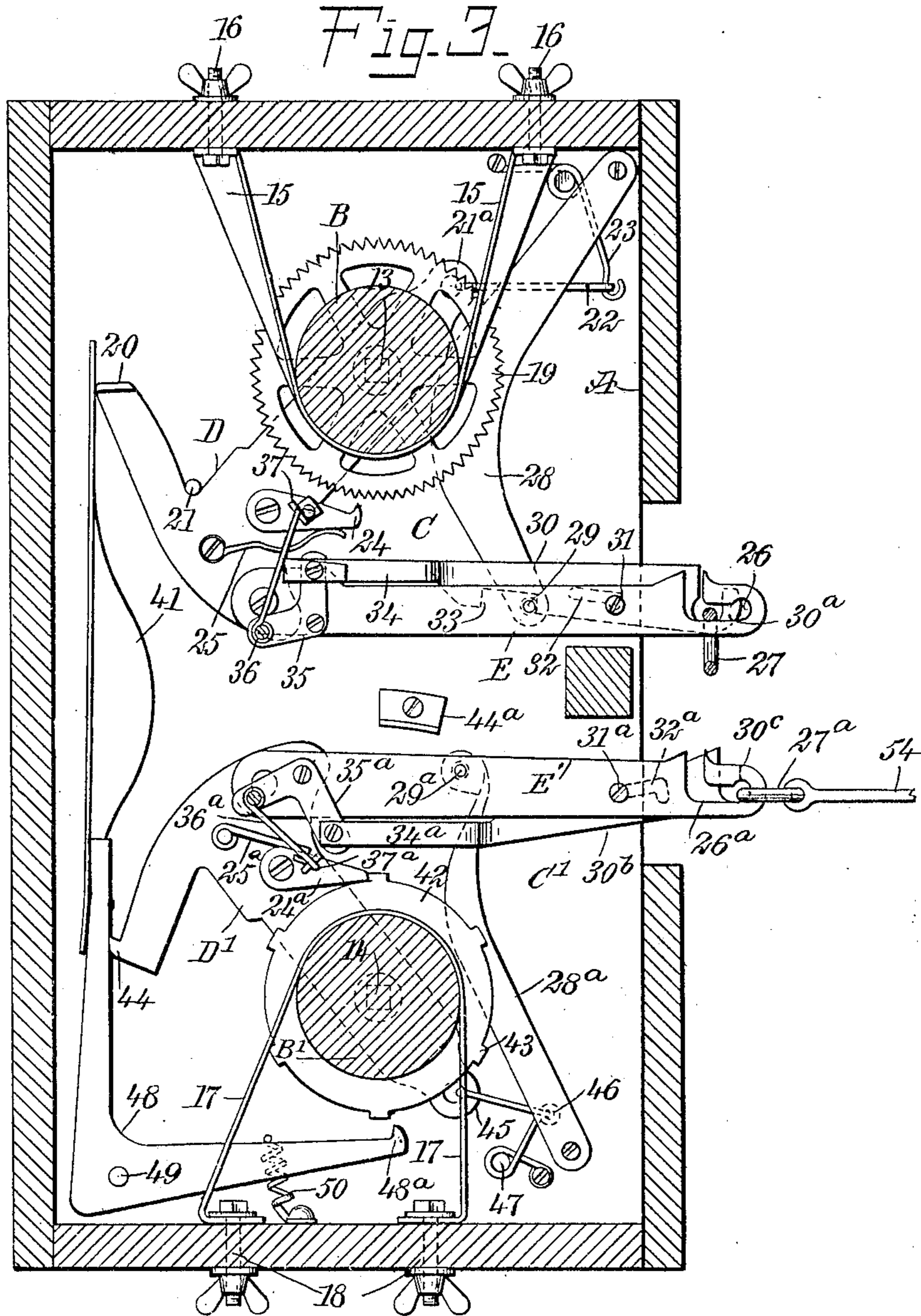
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WITNESSES

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3 SHEETS—SHEET 3.

Fig. 5.

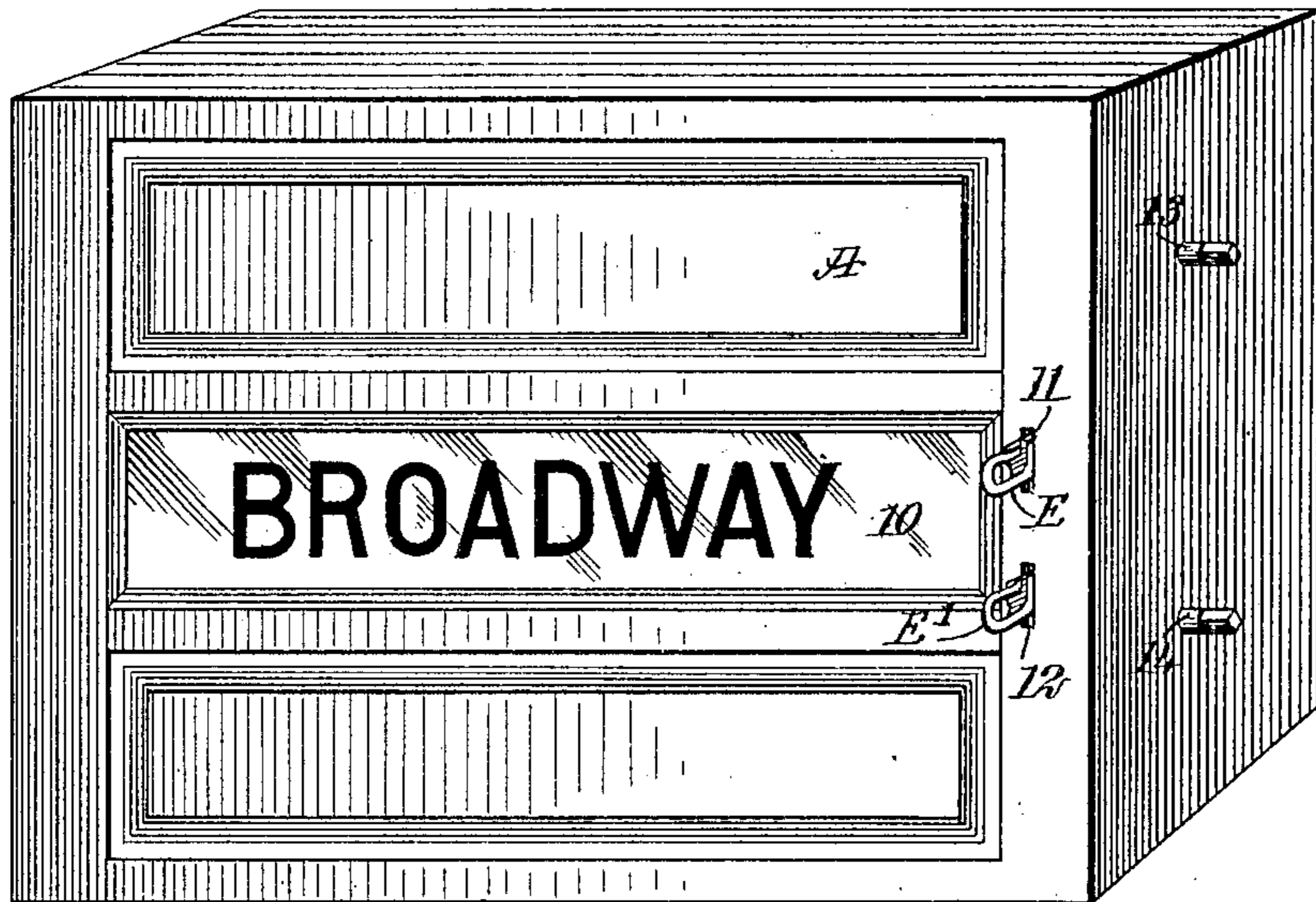
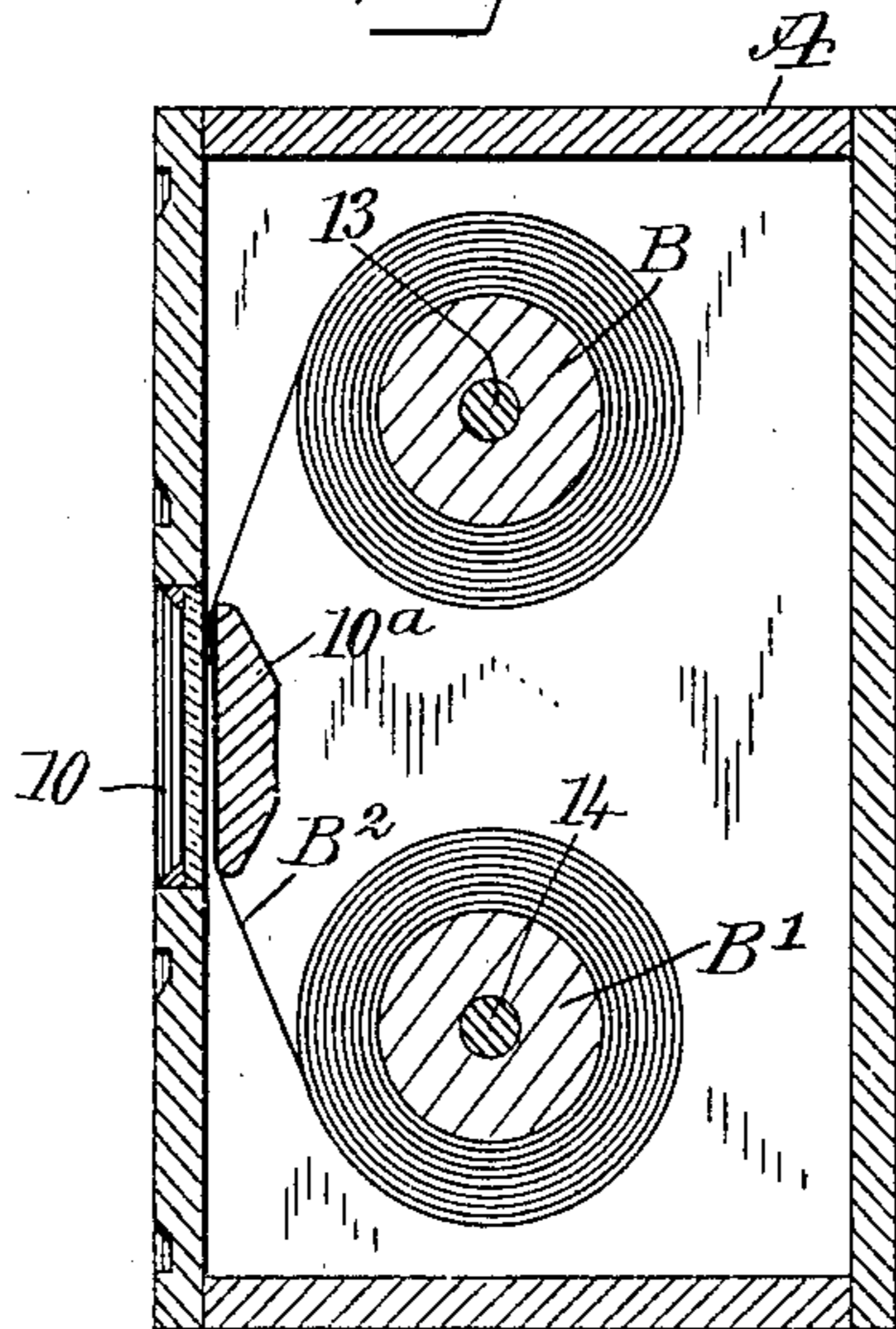


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES FRANK BILLINGS, OF ZION CITY, ILLINOIS.

STATION-INDICATOR.

No. 887,579.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed October 24, 1906. Serial No. 340,291.

To all whom it may concern:

Be it known that I, CHARLES FRANK BILLINGS, a citizen of the United States, and a resident of Zion City, in the county of Lake and State of Illinois, have invented a new and Improved Station-Indicator, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a station indicator so constructed that the upper and the lower rollers carrying the apron upon which the stations are indicated are operated by independent mechanisms, so that no matter which roller is operated a name will appear at the display opening in the indicator at each complete operation of the mechanism brought into action.

A further purpose of the invention is to provide means whereby an alarm is sounded each time that the apron is shifted to display a new name, thus calling the attention of the occupants of the car to such change.

A further purpose of the invention is to provide mechanisms for operating the rollers which will be exceedingly simple and positive in action, and which may be automatically operated by trips, for example, located at suitable intervals along the track.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section through a car equipped with the improved indicator and illustrating the manner in which the indicator may be automatically operated; Fig. 2 is a front elevation of a portion of the indicator, the front portion of the casing being removed; Fig. 3 is a transverse vertical section taken substantially on the line 3—3 of Fig. 2; Fig. 4 is a detail view of the lock for the operating rope or cable employed in connection with the machine; Fig. 5 is a perspective view of the complete machine viewed from the front; and Fig. 6 is a transverse section through the central portion of the complete machine drawn upon a smaller scale.

The casing A of the machine, is generally of rectangular formation as is shown in Fig. 5, and is provided with a front central longitudinal panel 10 for the display of the names of the stations, and at preferably the right-

hand end of the casing viewed from the front and adjacent to the said panel 10 two small openings 11 and 12 are made in the front as shown in Fig. 5 for a purpose to be hereinafter described. The casing contains two rollers B and B', one located directly above the other, and a tape or apron B² is attached at its ends to the said rollers, being adapted to be wound from one roller on to the other, either the top or the bottom roller being the receiving roller when required.

The trunnions 13 and 14 for the two rollers B and B' are suitably journaled in the ends of the casing A, and said trunnions project at the right-hand end portions of the rollers, which projecting portions of the rollers are polygonal, whereby said rollers may be turned by hand when it is desired to wind the tape or apron B² from one roller on to the other. This tape or curtain B² contains the names of the stations and is guided at the back of the transparent panel 10 by a suitable strip 10^a as is shown in Fig. 6.

A strap brake 15 is provided for the upper roller B, being controlled at its ends by suitable bolts 16 extending through the top of the casing, which bolts are provided with thumb nuts; and a corresponding strap brake 17 is provided for the lower roller B', which latter strap brake is controlled by bolts 18 passed through the bottom of the casing, being provided also with thumb nuts as shown in Fig. 3. These brakes tend to place more or less tension on the rollers, so that said rollers will not turn too easily. An independent actuating mechanism is provided for each roller, the mechanism for the upper roller being designated as C and the mechanism for the lower roller as C'.

I will first describe the mechanism C: A toothed wheel 19 is secured to the right-hand end of the upper roller B on a reduced extension of said end of the roller as is indicated in Fig. 2; and a substantially L-shaped lever arm D is pivoted at the upper end of one member on the right-hand trunnion of the said upper roller within the casing A as is shown in Fig. 3. The rear end of the horizontal member of the lever arm is more or less inwardly bent as is shown at 20 in Fig. 3 for a purpose to be hereinafter mentioned. A stop pin 21 limits the rearward or inward movement of the lever arm D, the said stop pin normally engaging with the upper edge of the lever arm where its members connect.

An extension 21^a is provided at the upper

end of the lever arm D, projecting preferably beyond the periphery of the toothed wheel 19 as is shown in Fig. 3, and said extension is pivotally connected with a link 22. Said link 22 is carried forward and is in engagement with the lower free end of a spring 23, secured to the right-hand wall of the casing at the top, the tendency of which spring is to draw the link 22 forward and thus retain the lever arm D in its normal or rearwardly-inclined position shown in Fig. 3.

A dog 24 is pivoted on the longer member of the lever arm D, and said dog engages with the teeth of the wheel 19 at the lower portion of the said wheel, and as the lever arm D is moved forward turns the wheel 19 and consequently the roller B to which the wheel is secured. The said dog 24 is held up to its work by a spring 25.

An operating arm E is pivotally connected with the lower forward portion of the lever arm D, and said operating arm E extends out through the casing at the forward upper opening 11 therein as is shown in Fig. 5, and is provided at its outer end with an L-shaped slot 26 which extends from its upper edge, which slot is adapted to receive a link or eye 27 to which the cord is attached for drawing the operating arm E outward. The said operating arm E is held in a horizontal position by means of a hanger 28 pivotally attached to the right-hand side of the casing A near the top and to the outer side face of the operating arm by means of a pivot pin 29 as shown in Fig. 3.

A shifting bar 30 is mounted to move in a longitudinal slot produced in the upper edge of the forward portion of the operating arm, and said shifting bar terminates in a hook 30^a, and said hook portion of the shifting bar is adapted to slide in the slotted portion 26 of the operating arm E. When the shifting bar 30 is pushed outward, which is its normal position, the link 27 is prevented from leaving the slot 26 in the operating arm. The shifting bar is guided in its movement in the operating arm by producing an inclined angular slot 32 in said bar and passing a pin 31 through the operating arm and the slot in the said bar and the inclination of said slot is downward and outward. And a recess 33 is made in the lower edge of the shifting bar 30 so as to clear the pivot pin 29 for the hanger 28. The rear end of the shifting-bar is inwardly offset as shown at 34 in Figs. 3 and 4, so as to clear the operating arm; and the inner end of said shifting bar 30 is pivotally attached to an elbow lever 35, which elbow lever is fulcrumed at the junction of its members upon the inner face of the rear end portion of the operating arm E. The horizontal member of the said lever 35 is pivotally connected with a rod 36, which rod is bent at its upper end and is passed through an eye 37 formed upon the inner face of the dog 24, so

that said spring 25, which holds the dog 24 up to its work, likewise holds the elbow lever 35 in such position as to normally force the shifting bar 30 outward to its locking position in the operating arm shown in Fig. 3. When the link 27 is removed from the operating arm E the shifting bar 30 is pressed inward and moves the lever 35, so that the dog 24 is withdrawn from the toothed wheel 19 of the upper roller and is held in such position until attachment is again made to the operating arm, and during the time the operating arm remains in its inner position the upper roller is free to turn in either direction. Each time that the operating arm E is drawn outward, the dog 24 turns the toothed wheel 19 just a sufficient distance to change the name at the transparent panel 10 in the casing; and as the lever arm D is moved rearward the curved extension 20 from the rear member of said lever arm engages with a lever 41 pivoted at the rear of the casing, to operate said lever. The short arm of the slot 32 acts to temporarily lock the shifting bar in position but the pin 31 passes to the longer arm of said slot when the shifting bar is moved back. The slot 32 is inclined to render it difficult for the pin 31 to be accidentally shifted from one to the other end of the slot.

The mechanism C' for operating the lower roller B' is as follows: At the right-hand end of the roller B' a disk 42 is secured, having peripheral lugs 43 at equal distances apart, and said disk 42 corresponds to a ratchet wheel 19 in the mechanism C for the upper roller B. A substantially L-shaped lever arm D' is also employed, corresponding to the lever arm D above described, but the position of the lever arm D' is the reverse of that of the lever arm D. The longer member of the arm D', however, is fulcrumed upon the right-hand trunnion of the lower roller B', and its shorter member at its rear end is provided with a lug 44, adapted to engage with a stop 44^a secured to the lower right-hand end wall of the casing A when the lever arm D' has been carried in a direction to turn the roller B', thus limiting the extent of such movement. At the lower end of the longer member of the lever arm D' an eye-projection 45 is provided, to which eye projection one end of a spring 46 is attached, said spring being provided with a suitable coil between its ends, and the spring 46 is secured to the right-hand end wall of the said casing in any suitable or approved manner as is shown at 47 in Fig. 3.

A dog 24^a is employed in connection with the disk 42, being adapted for engagement with said lugs 43, and said dog 24^a which corresponds to the dog 24 is pivotally mounted on the longer member of the lever arm D' and is held to its work by means of an engaging spring 25^a, also carried by the said lever arm as is shown in Fig. 3.

The inner end of an operating arm E' is pivotally attached to the upper forward portion of the lever arm D'; and said operating arm E' corresponds to the operating arm E heretofore described. This operating arm E' is adapted to extend at its outer end through the lower front opening 12 in the casing as is shown in Fig. 5, and at said outer end the said operating arm E' is provided with an L-shaped slot 26^a, extending through its upper edge, which slot is adapted to receive a link or eye 27^a connected with the operating cord or cable 54.

The forward portion of the operating arm E' is longitudinally slotted to receive the forward end portion of a shifting bar 30^b, which shifting bar has sliding movement in the forward portion of the operating arm, as does the shifting bar 30 heretofore referred to, and is for the same purpose, and said shifting bar 30^b is also provided with a hook-shaped outer end 30^c adapted to move in the outer slotted end portion of the operating arm E' to hold the ring or link 27^a in place.

The shifting bar 30^b is held in position by means of a pin 31^a passed through said arm E' and through a slot 32^a in the shifting bar, which slot 32^a corresponds to the slot 32 hereinbefore described, and is adapted for a like purpose. The rear end 34^a of the shifting bar is laterally offset and is below the operating arm E' and free therefrom, being pivotally connected at its rear end with a member of an elbow lever 35^a, fulcrumed upon the inner face of the operating arm E'; and a rod 36^a is pivoted to the opposite member of the said elbow lever as is shown in Fig. 3, and is passed through an eye 37^a, which is carried by the dog 24^a. The operating arm E' is held in horizontal position parallel with the upper operating arm E by means of a supporting arm 28^a, corresponding to the hanger 28 heretofore mentioned, which supporting arm 28^a is pivoted at its lower end to the lower forward portion of the right-hand end wall of the casing, and at its upper end is pivoted to the outer side face of the operating arm E' as is shown at 29^a in said Fig. 3.

In the operation of the lower roller, the operating arm is drawn outward, and in drawing said arm outward the roller B' is turned by the engagement of the dog 24^a with a lug on the disk 42, and the throw of the said dog 24^a corresponds to the throw of the dog 24, so that when either of the rollers are operated the apron or tape is moved the same distance at each operation, insuring the proper change of name at the illuminated panel 10. It will be understood that the rollers will never operate simultaneously, one roller being operated when the car is traveling in one direction and the other roller when the car is moving in an opposite direction. The rollers may be turned when found neces-

sary by keys or their equivalents, fitted to the outer polygonal ends of their trunnions.

In connection with the lower roller B' an L-shaped detent 48 is provided, which at the junction of its members is pivoted by a pin 49 to the right-hand end of the casing A at its lower rear portion. The forwardly-extending or lower member of the detent is provided with a beveled head 48^a, adapted for engagement with a lug on the disk 42, and the upper end of the vertical member is engaged at the back by the lower end of the lever 41. The L-shaped detent 48 is employed to stop the movement of the upper roller, when the apron is turned just far enough to bring the name into place at the display opening, there being no other stop for the outward motion of the upper operating arm E, and in this manner the distance that the apron is turned is always measured by the lower roller. For example a spring 50 acts to force the lower member of the lever 48 upward to engage with the lugs 43 on the disk 42, but such engagement takes place only when the upper roller is in operation, since at that time the upper rear end 20 of the L-shaped lever D for the upper roller will have moved downward and forward and away from the upper end of the rear vertical lever 41 thereby permitting its lower end to move back, also permitting the spring 50 to work. The detent 48 remains in engagement with the disk 42 during the complete forward movement of the lever D and until its upper rear end 20 again engages with the upper end of the rear lever 41, which may be termed a trip lever, and at such time the horizontal member of the detent 48 is carried out of engagement with the disk 42, remaining so until the upper roller has again operated to expose a name. It may be here stated that it is necessary to move the slide 30 or 30^b to the rear before operating the opposite roller. Each link 27 or 27^a is provided with an attached cord or cable 54 that may be led to any portion of the car.

When it is desired to have the indicator operate automatically this may be accomplished by carrying the cord or cable 54 from the indicator along the roof section of the car F and then down through the floor to an engagement with an elbow or trip lever 55 supported by a suitable hanger 56 secured to the bottom of the car, which trip lever 55 is adapted for engagement with projections 57 extending up from the road bed at such points where it is desired that a change of name shall be made at the display panel of the casing.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent,—

1. In a station indicator, opposing rollers, an apron having an end secured to each roller, a circular ratchet secured to an end of

each roller, a spring controlled lever arm mounted to turn on a trunnion of each roller adjacent to the ratchet, a spring-controlled dog carried by each lever arm, engaging with
5 the ratchets of said rollers, an independent operating arm pivotally connected with each lever arm, each operating arm being provided with a slot at its outer end, and a
10 spring-controlled shifting bar mounted to slide in each operating arm, crossing the slots in the outer ends of said arms.

2. In a station indicator, opposing rollers, an apron having an end secured to each roller, a circular ratchet secured to an end of
15 each roller, a spring controlled lever arm mounted to turn on a trunnion of each roller adjacent to the ratchet, a spring-controlled dog carried by each lever arm, engaging with

the ratchets of said rollers, an independent operating arm pivotally connected with each 20 lever arm, each operating arm being provided with a slot at its outer end, a spring-controlled shifting bar mounted to slide in each operating arm, crossing the slots in the outer ends of said arms, and operatively con- 25 nected with a dog and a pivoted support for each operating arm to hold said arms in parallelism when not in operation.

In testimony whereof I have signed my name to this specification in the presence of 30 two subscribing witnesses.

CHARLES FRANK BILLINGS.

Witnesses:

GEO. H. OWENS,
JESSIE O. OWENS.