

(No Model.)

3 Sheets—Sheet 1.

T. W. MUNROE.

AUTOMATIC STATION INDICATOR FOR RAILWAY CARS.

No. 388,371.

Patented Aug. 21, 1888.

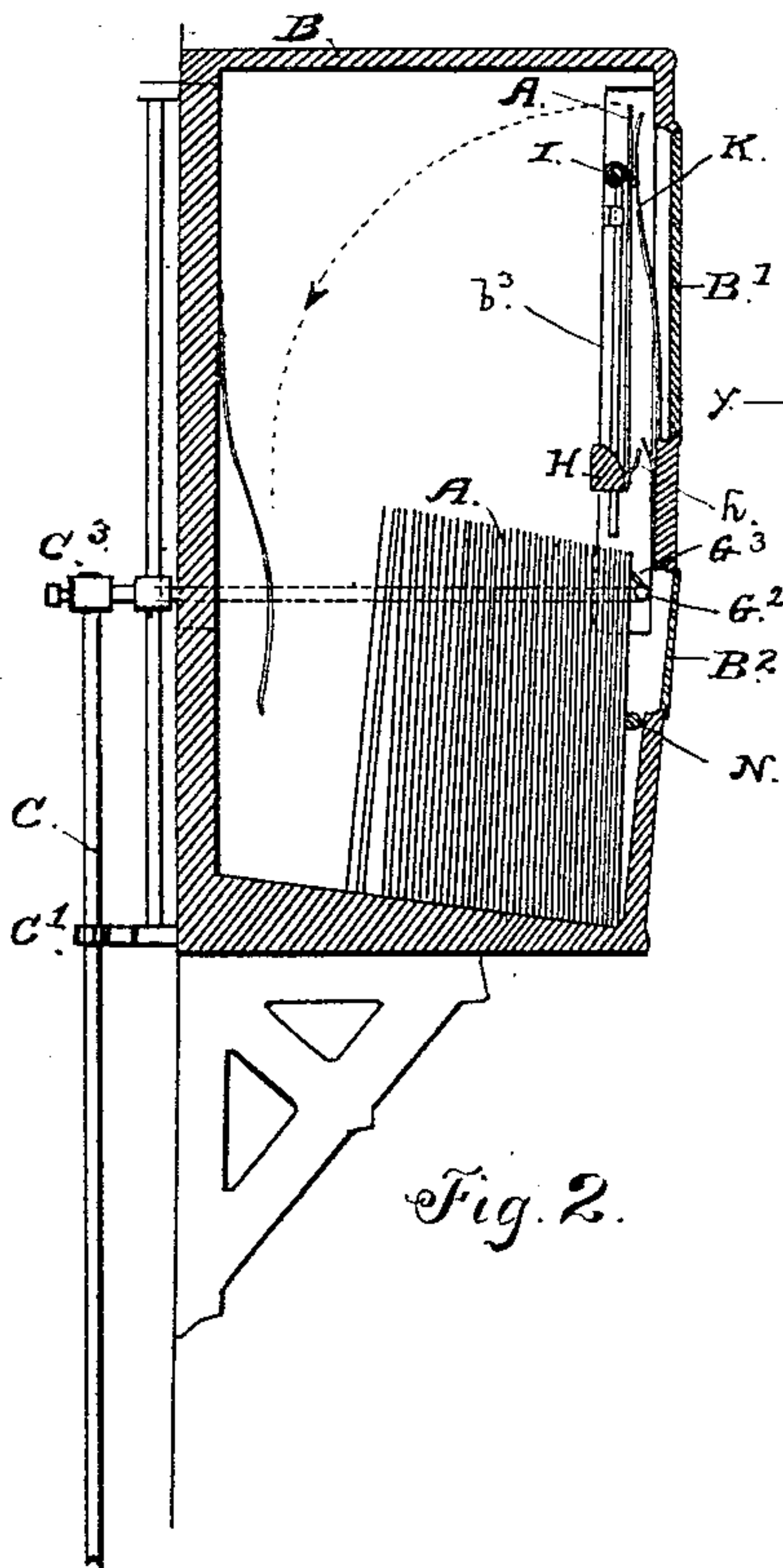


Fig. 2.

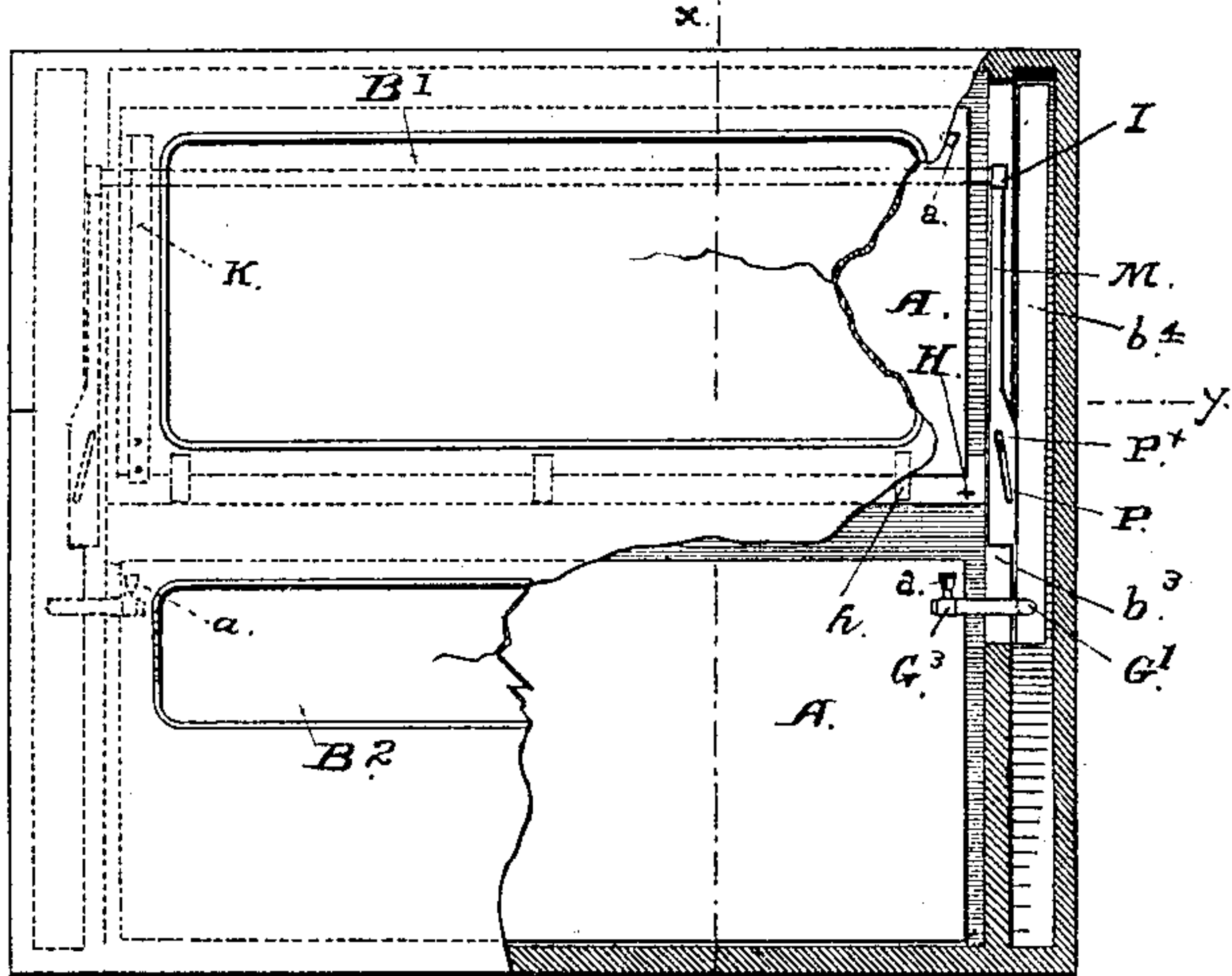


Fig. 1.

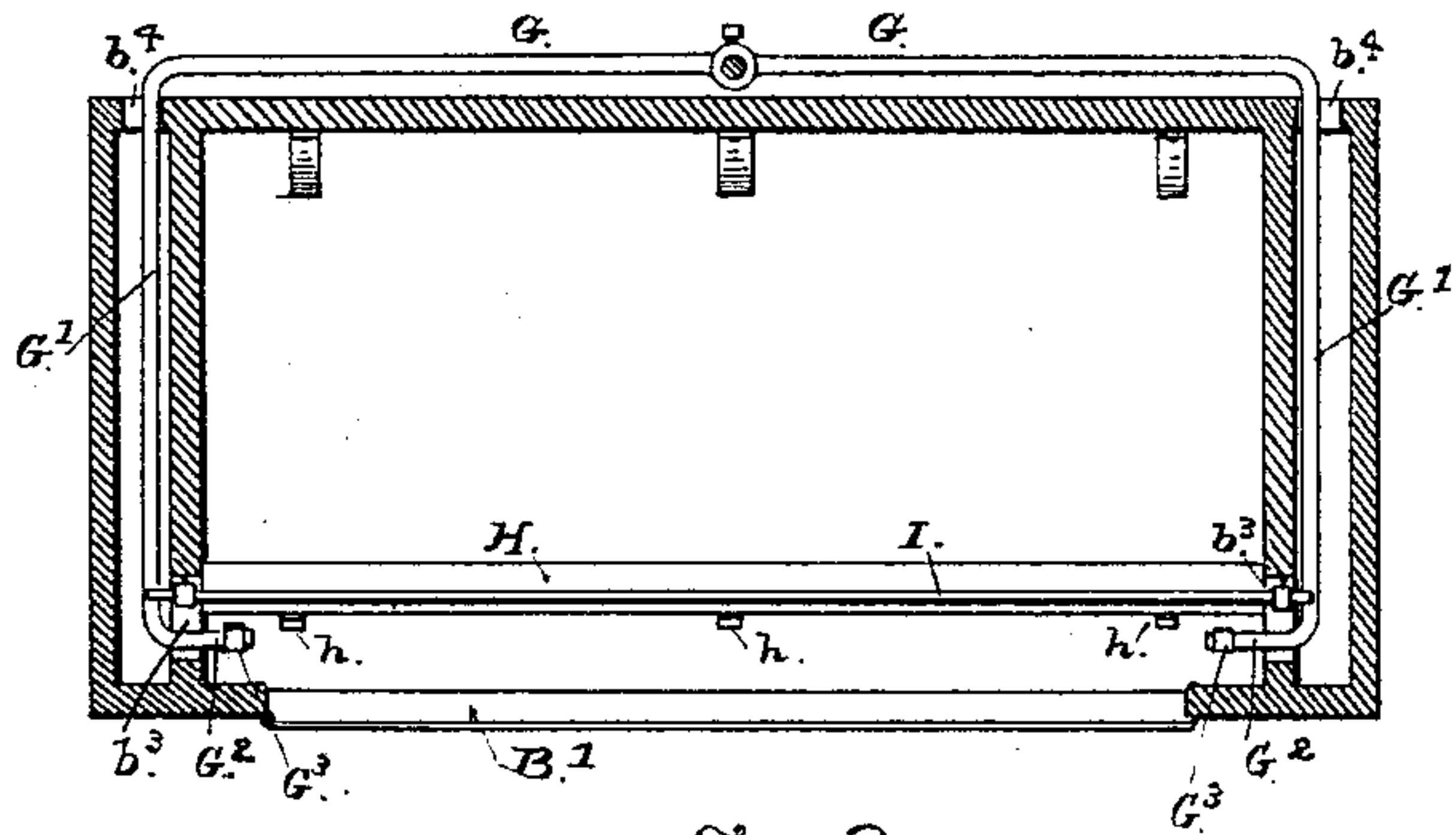
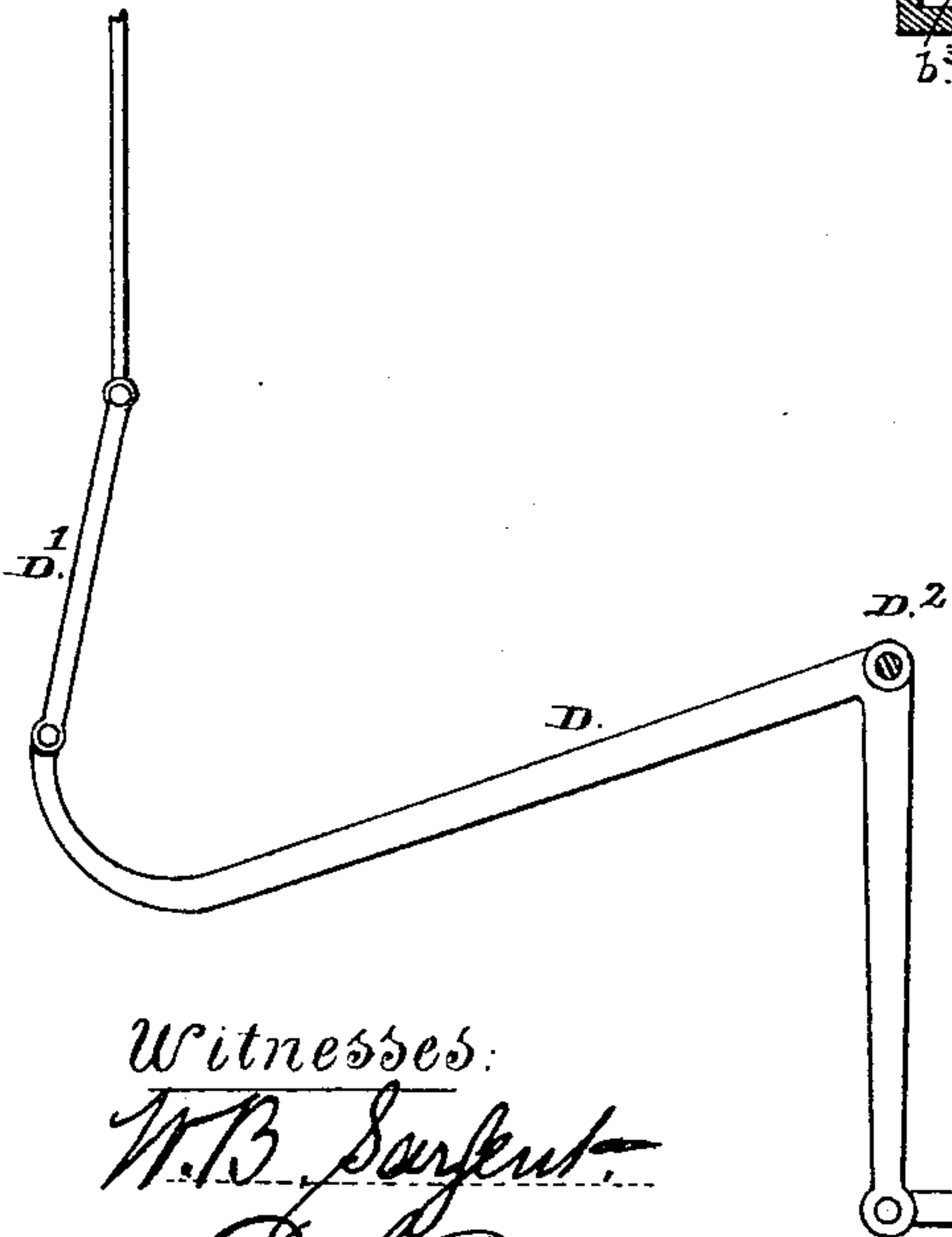


Fig. 3.



Witnesses:

W. B. Sargent.  
O. H. Peck.

Inventor.

Thomas William Munroe.

By Smith & Osborn,  
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(No Model.)

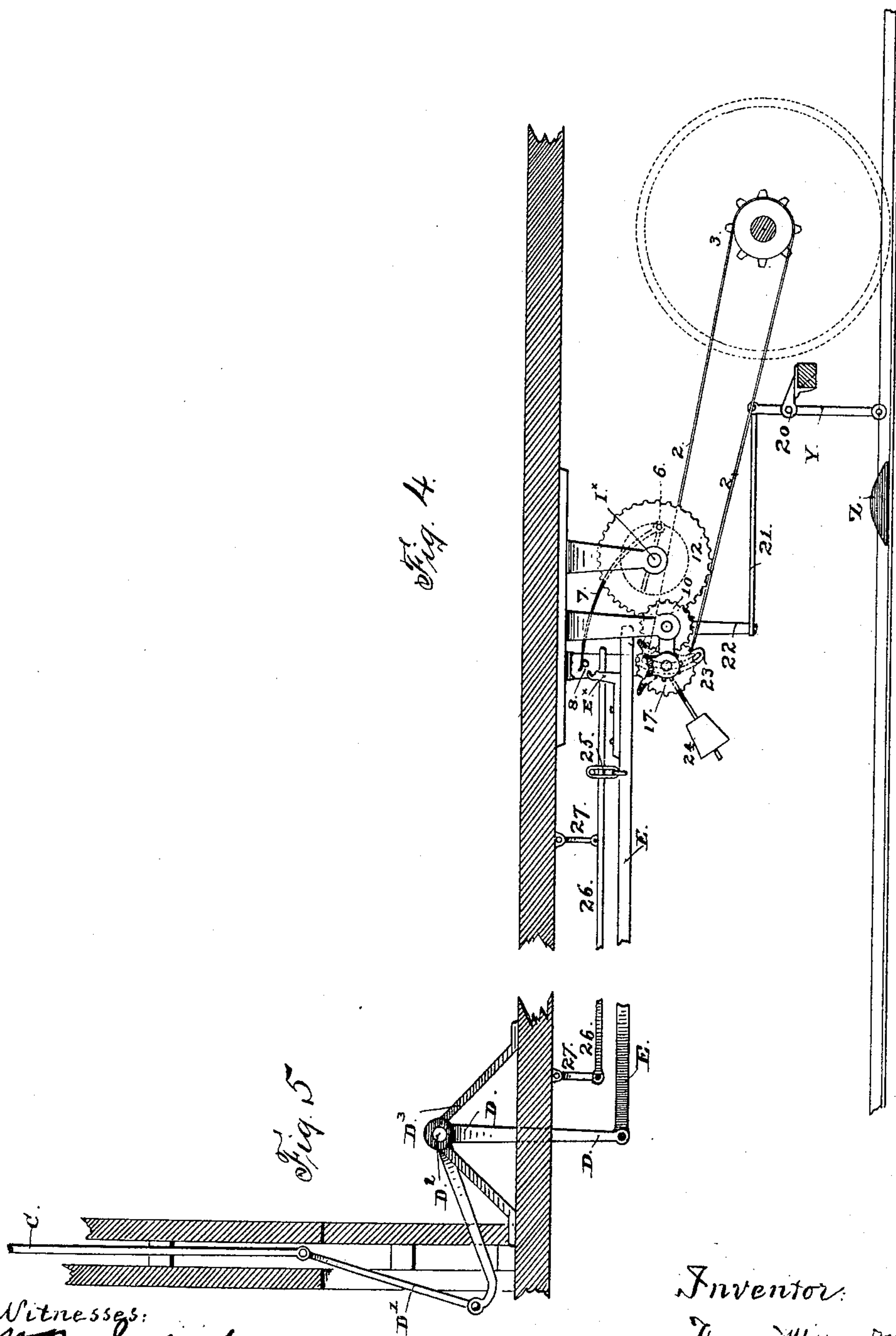
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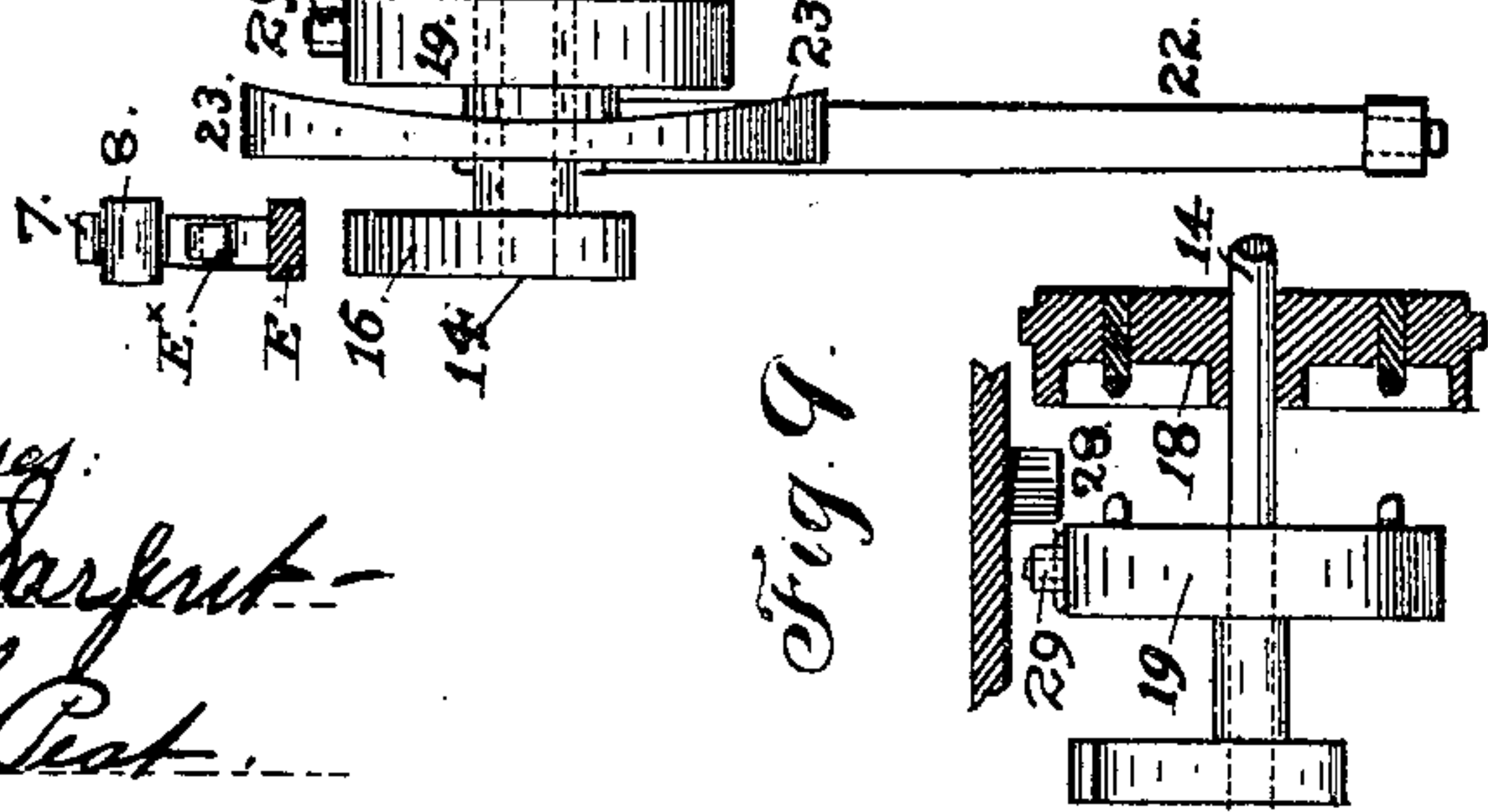
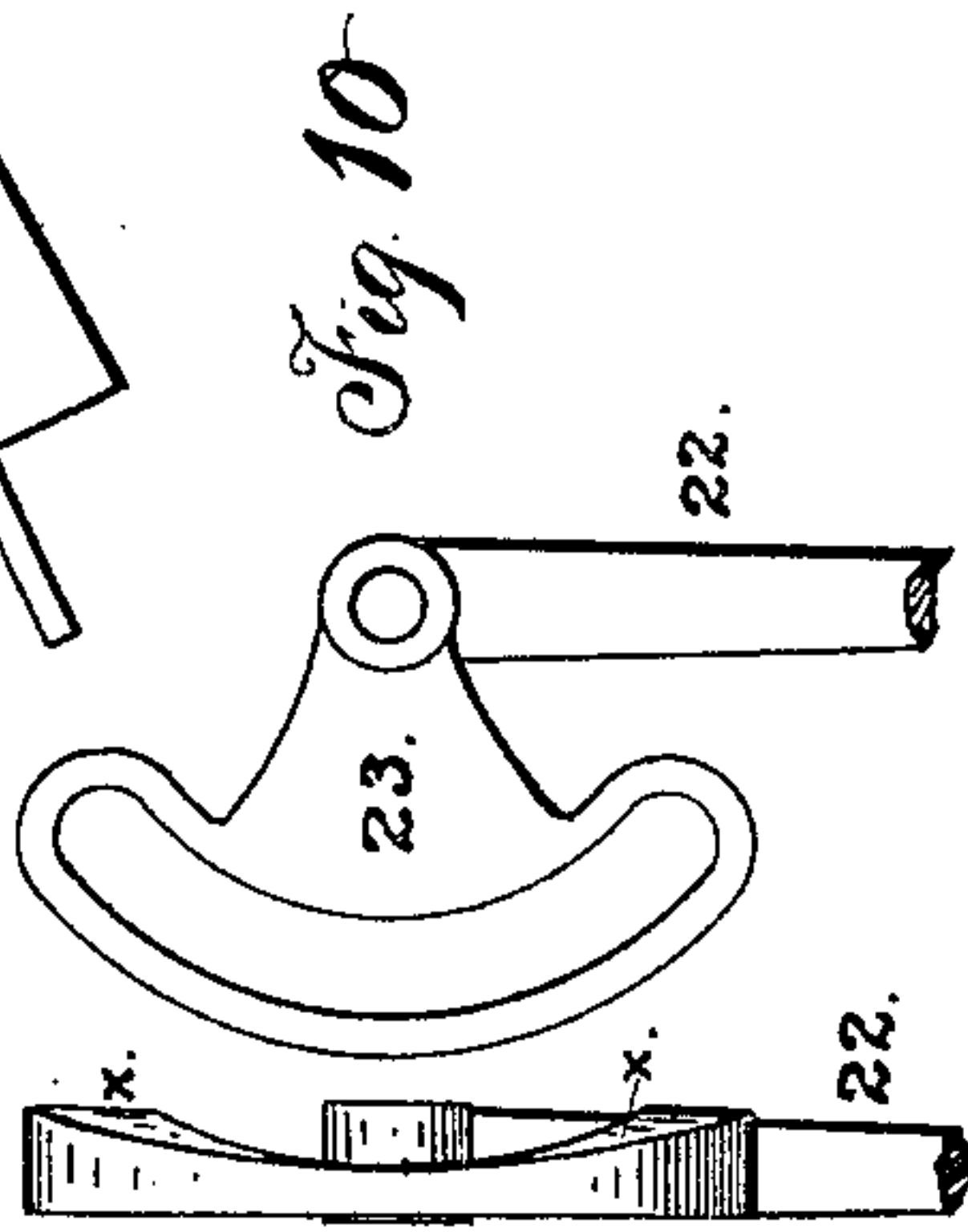
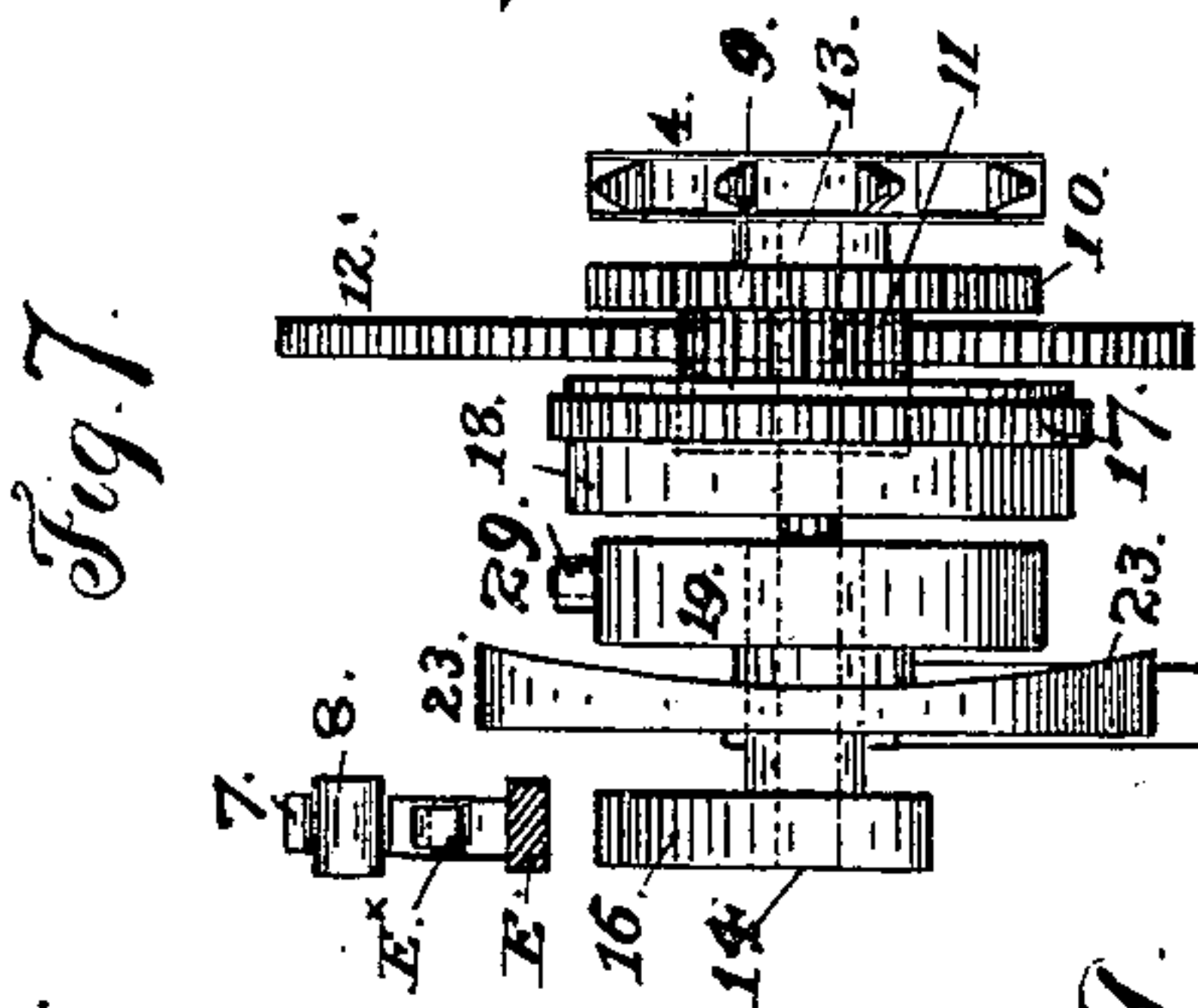
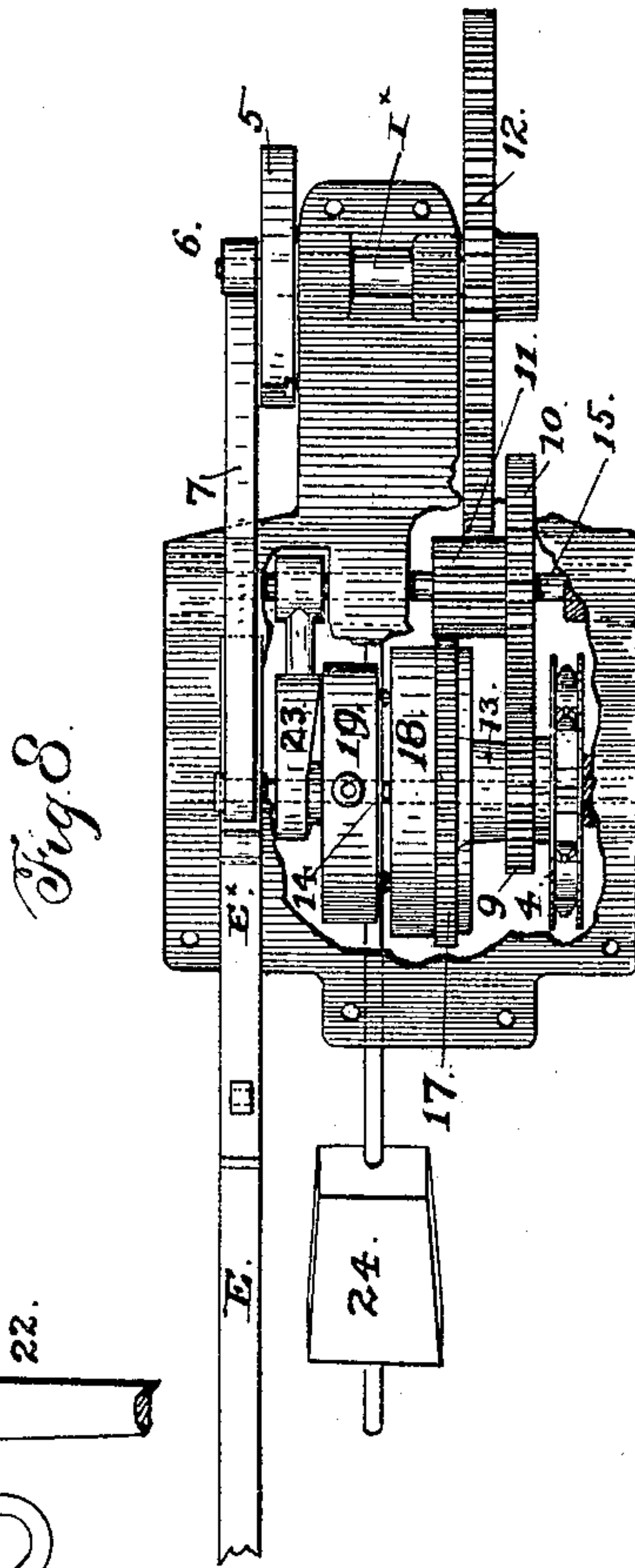
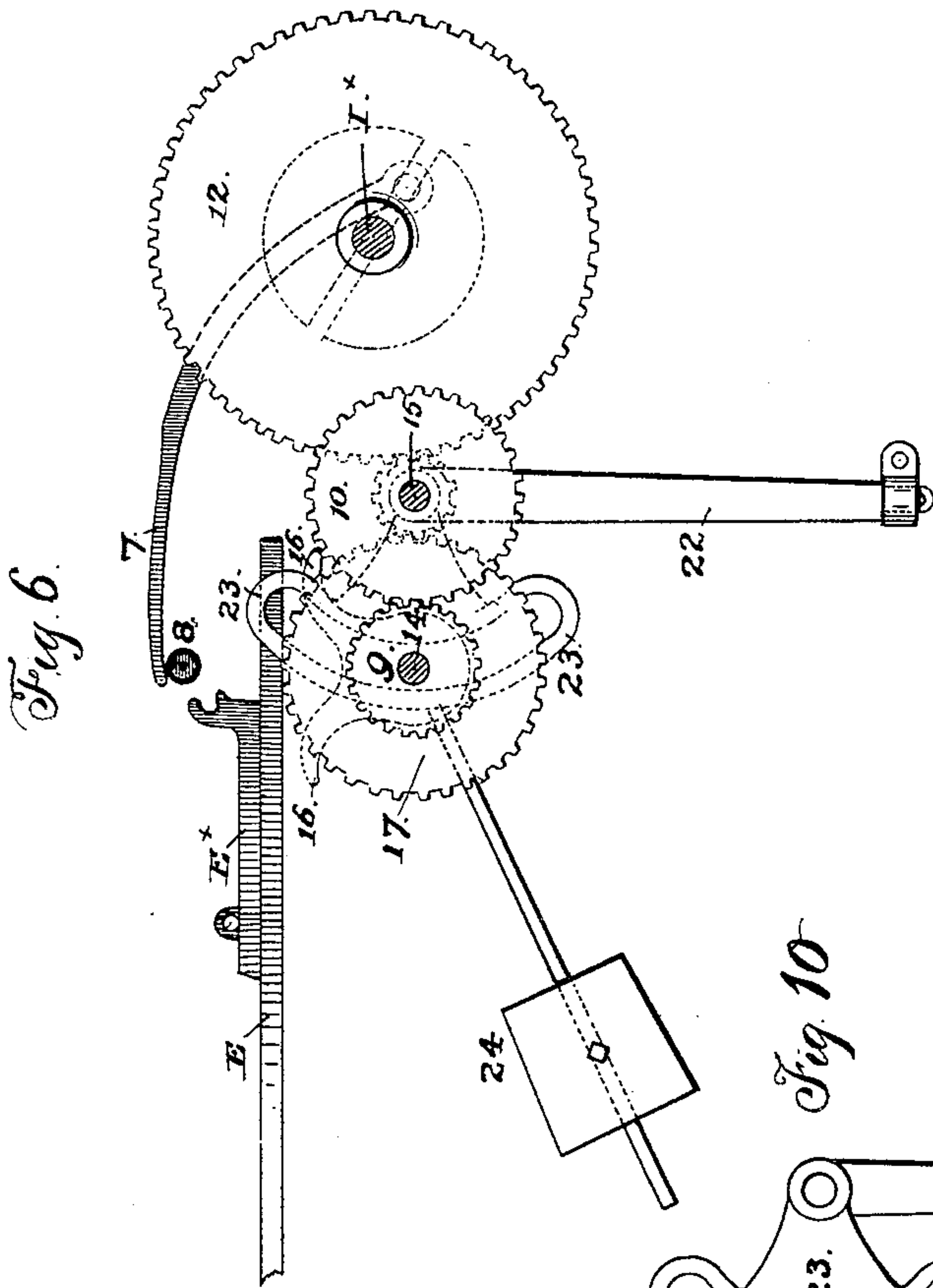
3 Sheets—Sheet 3.

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# AUTOMATIC STATION INDICATOR FOR RAILWAY CARS.

No. 388,371.

Patented Aug. 21, 1888.



Witnesses:  
W.B. Sargent -  
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Inventor:  
Thomas William Munroe.  
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# UNITED STATES PATENT OFFICE.

THOMAS WILLIAM MUNROE, OF SAN FRANCISCO, CALIFORNIA.

## AUTOMATIC STATION-INDICATOR FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 388,371, dated August 21, 1888.

Application filed April 18, 1888. Serial No. 271,082. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS WILLIAM MUNROE, a subject of the Queen of Great Britain, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Automatic Station-Indicators for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the drawings that accompany and form part of this specification.

My invention relates to devices for exhibiting in railway-cars, for the information of passengers, the names of streets or stations along the route in successive order and as they are approached in the run of the car.

The present improvements embrace certain novel construction and combination of automatic mechanism that is set in motion by stops or fixed projections on the surface of the roadway, and operating, when set in motion, to display to view within the car and in successive order a series of cards or plates on which are arranged the names or matter for exhibition.

The card-operating mechanism is also of novel construction in several points.

The nature of these improvements in station-indicators and the manner in which I have constructed and applied the same are fully explained and set forth in the following description, in which the accompanying drawings are referred to by figures and letters.

Referring to the said drawings, Figure 1 is a front view of the indicator-box, or that part of the device which is placed within the car, and contains the name-bearing cards for exhibition. A portion of the front of the box is broken away to expose the inside. Fig. 2 is a vertical transverse section taken through the line X X, Fig. 1, and showing also the upright rod and connecting-lever through which the automatic mechanism acts upon the card-elevator. Fig. 3 is a cross-section taken through the horizontal line y y, Fig. 1. Figs. 4 and 5 represent in side elevation all the parts of the mechanism that are located under the indicator-box and beneath the car. Portions of the car-floor and frame-work at one end are shown in section. Fig. 6 is a side view, on a larger scale, of the gears and parts operated by them. Fig. 7 is an end view taken from the left-hand side of Fig. 6. Fig. 8 is a top

view of the mechanism, with the bed-plate broken away to expose the parts beneath. Figs. 9 and 10 show the clutch and the parts that throw it into and out of action.

Similar letters of reference indicate like parts in all the figures of the drawings.

The indicator shown in Figs. 1, 2, and 3 of the drawings has the names of the stations and other matter to be exhibited for the information of passengers in the car arranged upon the separate cards or plates A A, that are set on edge in close order within the inclosing-case B and with their faces to the front.

Sight-openings B' B' are provided in the front of the case, and the cards are elevated one at a time to view, the case being placed in some convenient part of the car where the openings will be in view of the passengers.

An indicator of this kind is seen in the Letters Patent of the United States dated the 20th day of December, 1887, No. 375,326, that were issued to me as the inventor thereof; but, while being similar in character to that device, my present invention embraces points and features not found in that patent, and more particularly a construction and arrangement of mechanism by which each card after exhibition is turned completely over and deposited in such position in the case that when it is again elevated to view its opposite face is presented, whereby both faces of the card are utilized. This is effected by the following mechanism, which is acted upon by the automatic mechanism under the car. The sliding rod C is held in guides C', and, passing down from the case B to the bottom of the car, is connected by a link, D', to one end of a bell-crank lever, D, the other end of which is attached to the end of a horizontal push-bar, E, suspended under the floor of the car. The bell-crank lever is pivoted at D<sup>2</sup> in a bracket, D<sup>3</sup>, that is fixed to the floor of the car under the seat. To the upper end of the rod C is secured a forked frame that is formed of the back rod, G, forwardly-extending side arms, G' G', and the inwardly-bent ends G<sup>2</sup> G<sup>2</sup>, the arms being brought inside the case and to the front through the slots b<sup>3</sup> b<sup>4</sup>, so that the ends G<sup>2</sup> lie in front of the foremost card at the sides and close to the face. These ends carry fingers G<sup>3</sup> G<sup>3</sup>, that set against the face of the card and in line with slits or openings a a at the upper edge near the outer corners, and into these



openings the fingers catch as the arms move upward in the case. At every upward stroke of the sliding rod the frame G, G', &c., which constitutes the card-elevator, seizes a card in this manner and raises it from the bottom to the upper part of the case and then drops back into position, leaving the elevated card exposed to view upon the card-rest H.

Any portion of the reading matter on the foremost card in the bottom of the case can be shown and the rest concealed by having an opening of smaller area, B<sup>2</sup>, in the case-front below the principal opening, and more or less of the matter can be displayed at this opening by regulating the size thereof to the dimension of the card. This is well illustrated in Fig. 1 of the drawings, where the matter on the lower portion of the foremost card at the bottom of the case is concealed, and only that at the top part is displayed.

The card-rest H is a horizontal bar fixed across the case and at about the middle of the space, with small spring-tongues *h h h*, secured to the front of the bar. A movable rod, I, setting directly above the bar H and parallel with it, stands in position behind the card on the rest to hold it upright, and the springs K K, attached to the case-front, are set to bear at their free ends against the face of the card. This back rod I is movable vertically in the slots *b<sup>3</sup>*, and when this takes place the springs K come into play, and by their pressure act against the card to throw the top back with a quick motion toward the rear of the case as soon as the rod clears the card. The ends of the back rod are fixed in the slide-plates M M, and these parts are held and guided in the slots, in which they are movable vertically and together to throw up the rod, this movement being each time produced by engagement of the arms G' with the lower ends of the slide-plates M, and is made to take place when the elevating-frame starts upward with the card; but the rod is raised only a sufficient distance by such movement to release the card, after which it is allowed to drop back by gravity, that it may come into position to take behind and support the card being raised and as such card is left in position on the rest. To release the slide-plates and allow them to drop while the arms continue their upward motion, the inclined slots P P are formed in the slide-plates and the stop-pins P<sup>x</sup> P<sup>x</sup> are fixed in the sides of the case-slots to take into the slots P, as seen in Fig. 1. In the upward movement of the plates, therefore, these slots and pins act to draw them back into the case-slots clear of the arms G', and these arms will run up over the plates, which are then free to drop back and bring down with them the back rod, I. The plates M extend so far down the case that the upsetting of one card is effected before the succeeding one is elevated so much as to be in the way, and the plates M, with bar I, then get back into normal position before the succeeding card is elevated. In this manner by a short upward stroke of the slide-rod C the

card-elevating mechanism is operated, and at each stroke the elevator raises the foremost card from the bottom of the case and sets it on the card-rest; but in so doing it releases the card already on the rest, and the springs K K then throw the card backward and also completely over, so that it drops into the bottom of the case on its top edge and comes into position ready for the next elevation in its turn. This brings its opposite face to the front. When the rod C completes its stroke, it drops down and remains at rest until the automatic mechanism below is set in motion again, and in such position of rest the fingers of the elevator are in front of the foremost card of the set, again ready to seize it at the next upward movement.

The bar N is fixed across the case and in front of the stack of cards, as shown in Fig. 2, to hold the stack upright, and the bottom of the case slopes to the front.

The cards can be made of sheet metal, vulcanized rubber, celluloid, or other sheet material possessing suitable stiffness.

The rod C is carried down from the case B behind the interior wood-work. In the street-cars of the present day there is usually sufficient room to place the automatic mechanism under the seats, in which case suitable openings are cut through the car-floor for the drive-chain from the axle and for the setting-lever that engages the fixed stops on the surface of the roadway; but where it may be more convenient the parts now to be described may be placed under the car, as shown in the drawings, a suitable casing (not shown) being fixed over them to exclude dust and protect the parts. This automatic mechanism is composed of two parts: first, a continuously-rotating shaft, 1<sup>x</sup>, driven from one of the car axles by means of a chain, 2, and sprocket-wheels 3 4, and carrying on one end a disk, 5, with a crank-pin, 6, to which one end of a loose pitman-bar, 7, is coupled; and, secondly, a setting mechanism by which the free end of this pitman-bar is made to engage with the free end of a horizontally-suspended push-bar, E, that is attached by its other end to the bell-crank D. As often as the pitman-bar is connected to the push-bar it is moved backward. The pitman-bar plays over a roller, 8, and its shank is curved. Its free end therefore vibrates in a curved, instead of a straight, path. The shaft 1<sup>x</sup> is driven continuously by the train of gears 9 10 11 12 from the sprocket-wheel 4, the gear 9 and this wheel being fixed together on the loose sleeve 13 on the rock-shaft 14, and the gear 10 and pinion 11 being loosely mounted in like manner on the other rock-shaft 15, while the remaining gear is fast on the shaft 1<sup>x</sup>. The motion is geared down in this manner to reduce the speed, as the crank would run too rapidly if driven directly from the axle. The end of the pitman-bar playing over the roller, but clear of the hook E<sup>x</sup> of the push-bar, is made to take into this hook by giving the push-bar a short vertical move-



ment, and this is produced by the following setting mechanism: A tappet, 16, fast on the rock-shaft 14 and having two curved toes, sets directly under the free end of the push bar, 5 and by a partial rotation of the shaft one or the other of its toes is thrown up against the bar. This motion is produced by clutching the rock-shaft to a loosely-running gear, 17, that is driven by the pinion 11, the gear being on the loose portion of a two-part clutch, 10 18 19, of which the other portion slides on the rock-shaft, but is keyed to it. This clutch is thrown by the setting-lever Y, that is pivoted at 20 to some convenient part of the truck, and in such position that its lower end shall stand in line with and in close relation to the fixed stops Z on the surface of the roadway, the lever being connected at the upper end by a rod, 21, to the end of an arm, 22, 15 that is fixed on the second rock-shaft and depends from it. A segment-plate, 23, fixed on this shaft and slotted to let the rock-shaft 14 play through it, is set to move in a vertical arc, and has one side of its face beveled, as 25 shown at *xx*, Fig. 10, from the center out to both ends. This beveled side sets against the collar on the back of the sliding part of the clutch, so that as the segment-plate is moved by turning the rock-shaft in one direction or 30 the other the clutch is thrown, and the rock-shaft is thereby locked to the continuously-running gear 17. When the setting-lever Y strikes and is turned by a stop, Z, it moves the rock-shaft and brings the segment-plate 35 against the back of the clutch, the result of which is to produce partial rotation of the rock-shaft 14 and throw one of the toes of its tappet up against the push-bar. This brings the hook E<sup>x</sup> into line with the end of the pitman-bar, and as the latter comes forward it 40 engages and throws the push-bar. At the end of this movement the parts release themselves, as the pitman-bar is drawn away by the motion of its crank, and the push-bar then returns to position, ready for the next stroke.

The counter-weight 24 on the rock-shaft of the tappet acts to bring the tappet back into position, and as the connections between the rock-shaft and the setting-lever are all rigid 50 the weight also restores the lever to position after passing over the obstruction. Coil-springs could also be applied for such purpose, and, where found necessary, one can be applied to bring the push-bar into position 55 more quickly than the weight of the parts will do. A coil-spring applied, as shown, to one arm of the bell-crank will insure more prompt return of the parts to position. The free end of the push-bar is suspended by a slotted link, 60 25, from a swinging carrier-bar, 26, that is in turn suspended under the car by links 27 27, so that the push-bar is free to swing backward and forward, and also in a vertical direction at the free end when struck by the tappet.

65 The means by which the clutch is thrown off after each time of action consist of a fixed incline, 28, on the bottom of the bed-plate, and

a stud, 29, on the shifting part 19 of the clutch, as shown at Figs. 7 and 9 of the drawings. These parts are so set that the roller on this 70 stud comes in contact with the fixed incline and acts to separate the clutch as soon in the revolution thereof as the tappet has properly lifted the push-bar.

Now, as thus constructed and applied for 75 operation in the manner above described, it will be noticed that the fixed stops on the surface of the roadway do not act directly on the indicator-rod to set the cards, but that the push-bar is brought into play by a slow mo- 80 tion, and when set to the pitman-bar is acted on by such part with a smooth regular motion, and not quickly or abruptly. The setting-lever simply acts, therefore, to throw the lifting device into gear and the parts that are be- 85 ing continuously driven from the axle.

The manner of setting and connecting the mechanism will be readily understood from the drawings. The lever Y is mounted on some convenient part of the running gear of 90 the car where it will not be affected by the motion of the car-body on its springs, and the bed-plate, carrying the setting mechanism, is secured to the under side of the car in suitably close relation thereto. The drive-chain is car- 95 ried from a sprocket-wheel fast on the axle, and connection is properly made between the setting-lever and the rock-shaft that works the tappet. From the end of the car, or that point where the case containing the name- 100 bearing cards is located, the push-bar is carried along under the car to the point where the tappet is located. The bed-plate is suitably formed with bearings in hangers for the shafts, and holes for bolts to secure it to the 105 floor of the car.

The mechanism can be covered by a casing, if found necessary to protect it from dust.

In the operation of the setting mechanism the same action results whether the setting- 110 lever is struck from one side or the other, so that the indicator operates at all times, in whichever direction the car travels, without calling for any attention or special adjustment to change it. 115

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

1. In a station-indicator for railway-cars, the combination of a suitable case, the card- 120 rest H, located in the front part of said case, card-elevator consisting of rod G, arms G', inwardly-bent ends G<sup>2</sup>, and fingers G<sup>3</sup> on said ends for taking hold of the card, a sliding rod, C, to which the card-elevator is attached, 125 springs K K, located in front and above the card-rest, movable back rod, I, between which back rod and springs the card rests while being exhibited, and means for elevating the rod to release the card, substantially as set forth. 130

2. In a station-indicator for railway-cars, separate name-bearing cards or plates, and a card-elevating device consisting of a vertically-sliding frame having fingers to engage slots in



the cards, in combination with a card-rest, H, springs K K, and a back rod or support, I, between which and springs K a card is held while being exhibited, said rod or support 5 being elevated by the movement of the card-elevating device, whereby the card is released and caused to fall back, as described.

3. In a station-indicator, a case having sight-openings B' B<sup>2</sup>, a stack of name-bearing cards 10 or plates, the rest H, a card elevating device adapted to engage the foremost card and set it on the rest, and the springs K K and movable back support, I, the card standing between springs K and support I while being exhibited, 15 the support I being elevated by the movement of the card-elevating devices to release the card, in combination and for operation as hereinbefore set forth.

4. In combination with an indicator, the 20 indicator-operating rod C, the push-bar E, continuously-running shaft 1<sup>x</sup>, crank, and pitman-bar 7, driven from the car-axle, and mechanism adapted to set or bring the push-bar and pitman-bar into engagement, as de- 25 scribed, which is actuated or set in motion by stops on the surface of the roadway, whereby the said pitman-bar is caused to operate the rod C, as hereinbefore described.

5. In combination with the push-bar E for 30 operating an indicator in a railway car, the shaft 1<sup>x</sup>, driven continuously from the car-

axle, the pitman-bar 7, operated from shaft 1<sup>x</sup>, rock-shaft 14, geared to shaft 1<sup>x</sup>, carrying tappets 16, and clutches 18 19, one of which is 35 geared into the continuously-driven shaft, and mechanism, substantially as described, for throwing the sliding part of said clutch into and out of action with its continuously-run- 40 ning fellow at intervals of time, whereby the said pitman-bar is made to engage and move the push-bar a given distance, as hereinbefore set forth.

6. The combination of the continuously-driven shaft 1<sup>x</sup>, crank and pitman-bar receiving motion therefrom, rock-shaft 14, tappets 45 16, clutches 18 19, the former being loose and also geared into the crank-shaft, and the latter being fast but free to slide on the rock-shaft, the segment 23, fixed incline 28, and stud 29 on the clutch as means for throwing 50 the same alternately into and out of action, and the setting-lever Y, adapted to be acted on by fixed stops on the roadway and to throw the said segment Y, into operation, substan- 55 tially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

THOMAS WILLIAM MUNROE. [L. S.]

Witnesses:

C. W. M. SMITH,  
CHAS. D. WHEAT.