

No. 653,108.

Patented July 3, 1900.

G. W. MOCKABEE.
RAILWAY SWITCH SETTING MECHANISM.

(Application filed Apr. 20, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

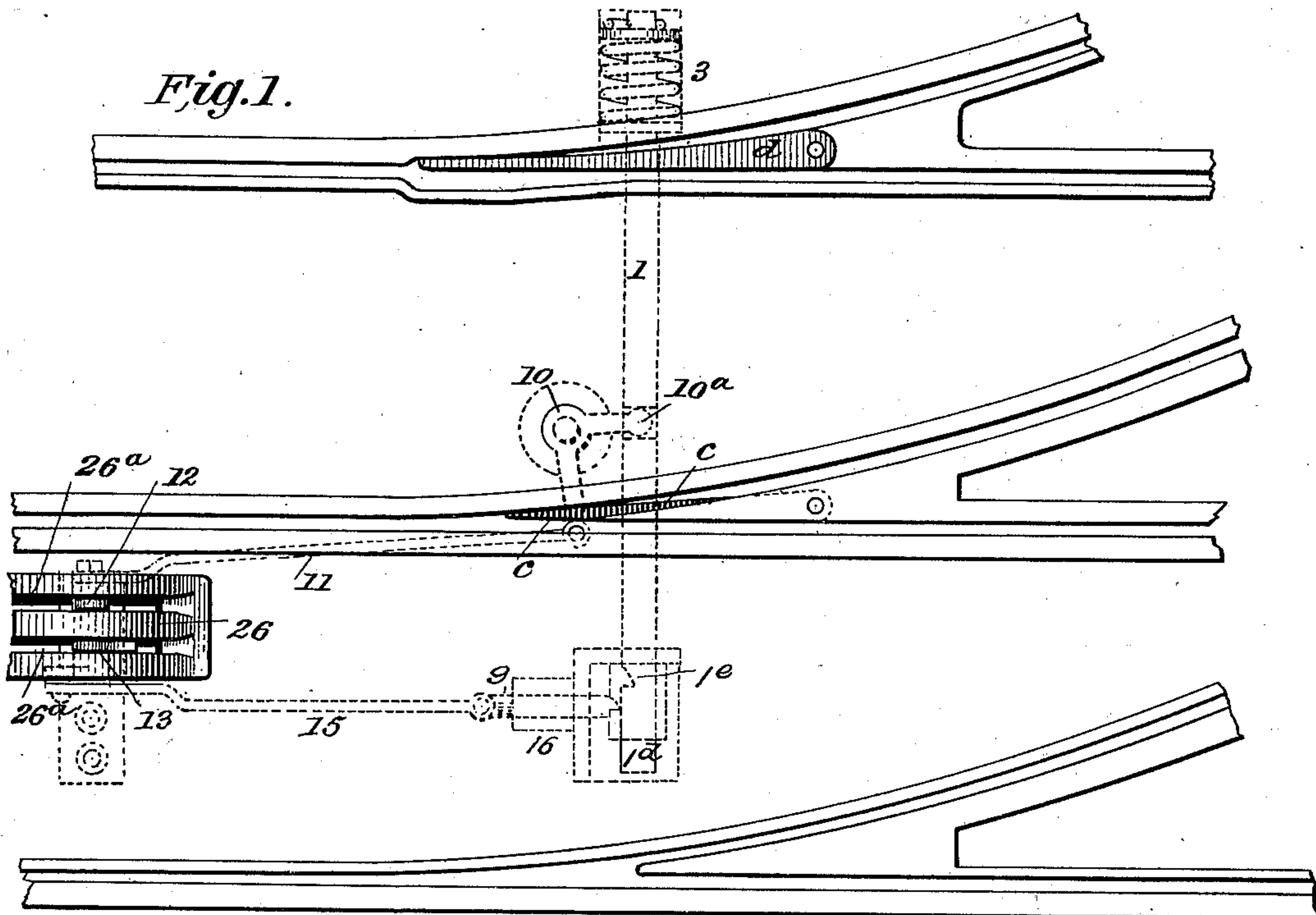
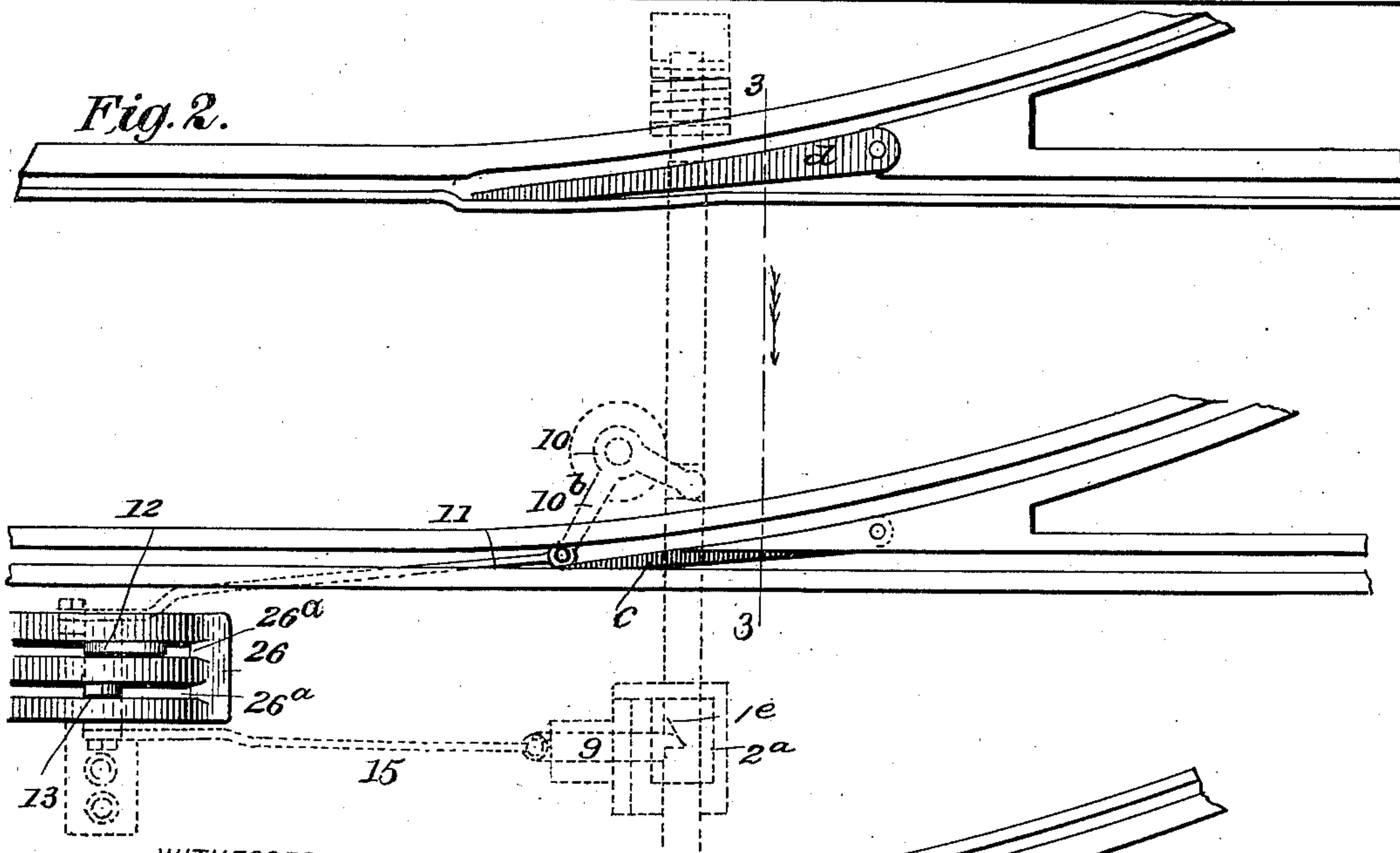


Fig. 2.



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2 Sheets—Sheet 2.

Fig. 3.

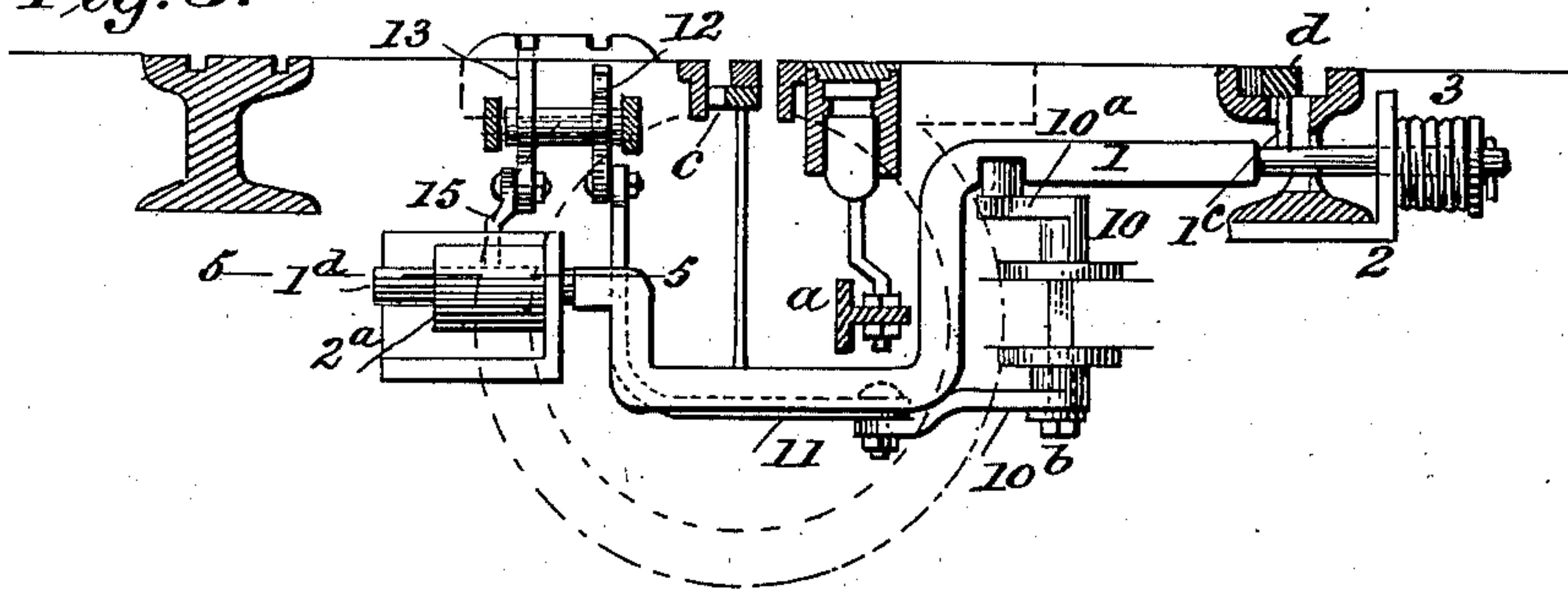


Fig. 4.

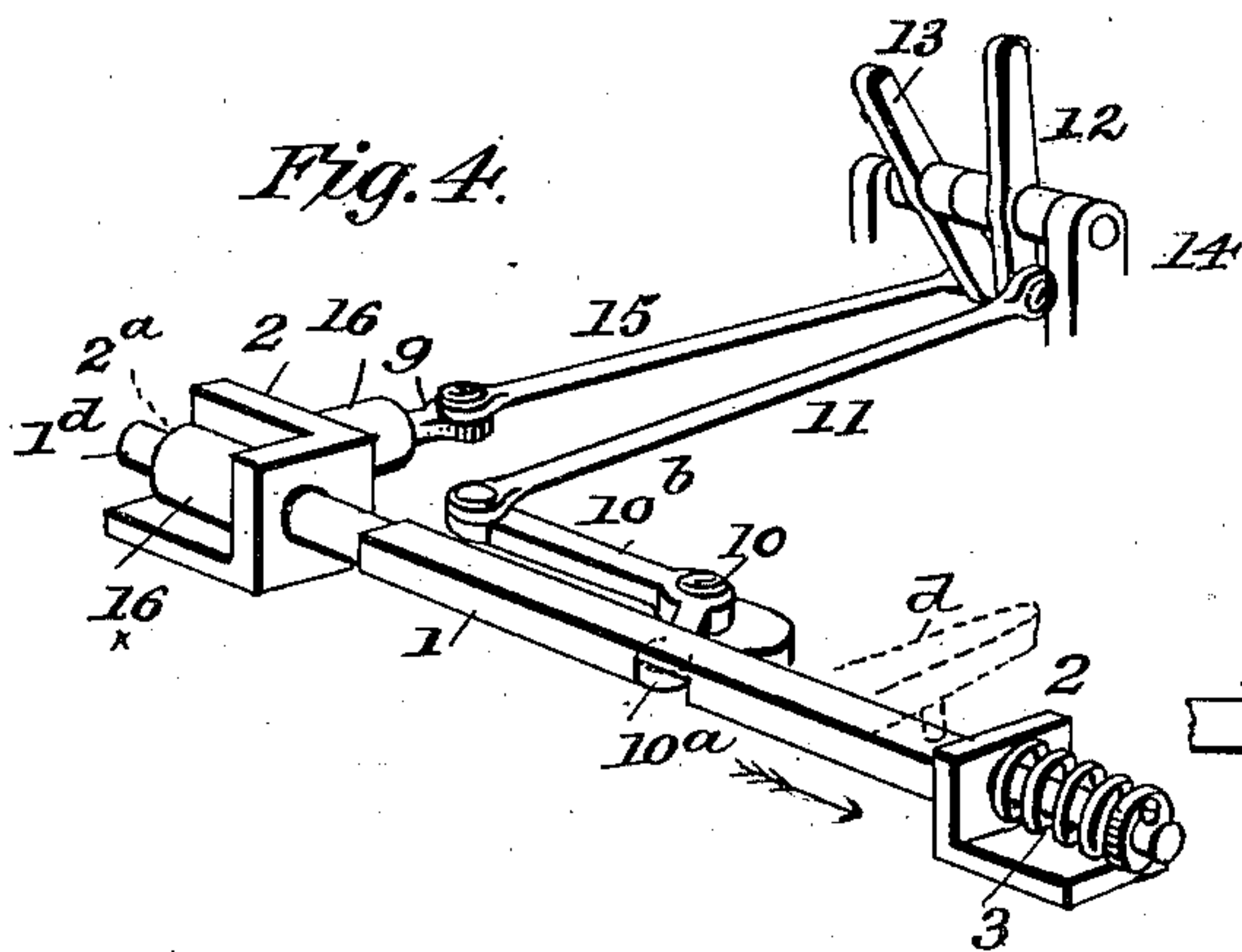


Fig. 5.

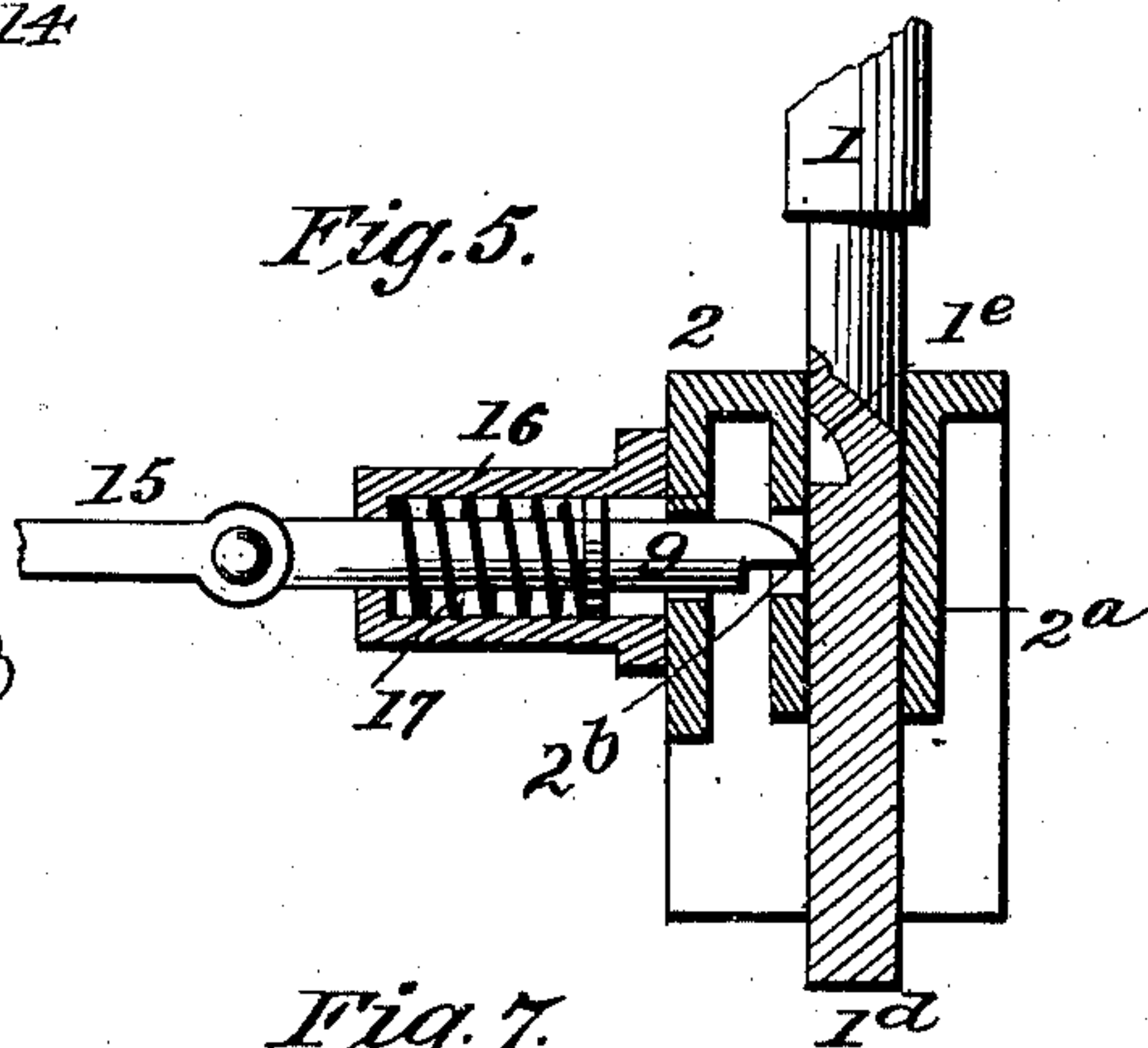


Fig. 6.

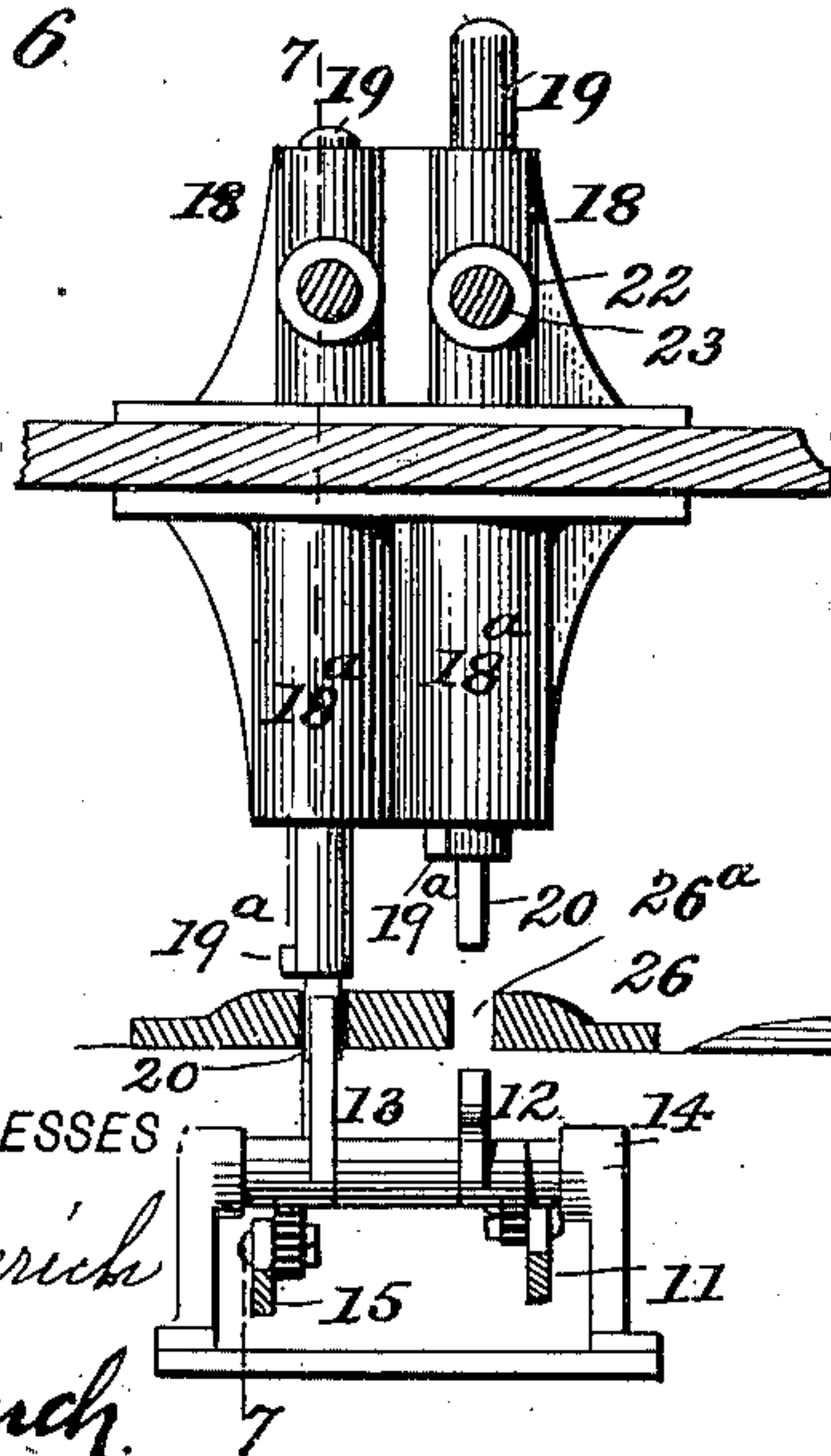
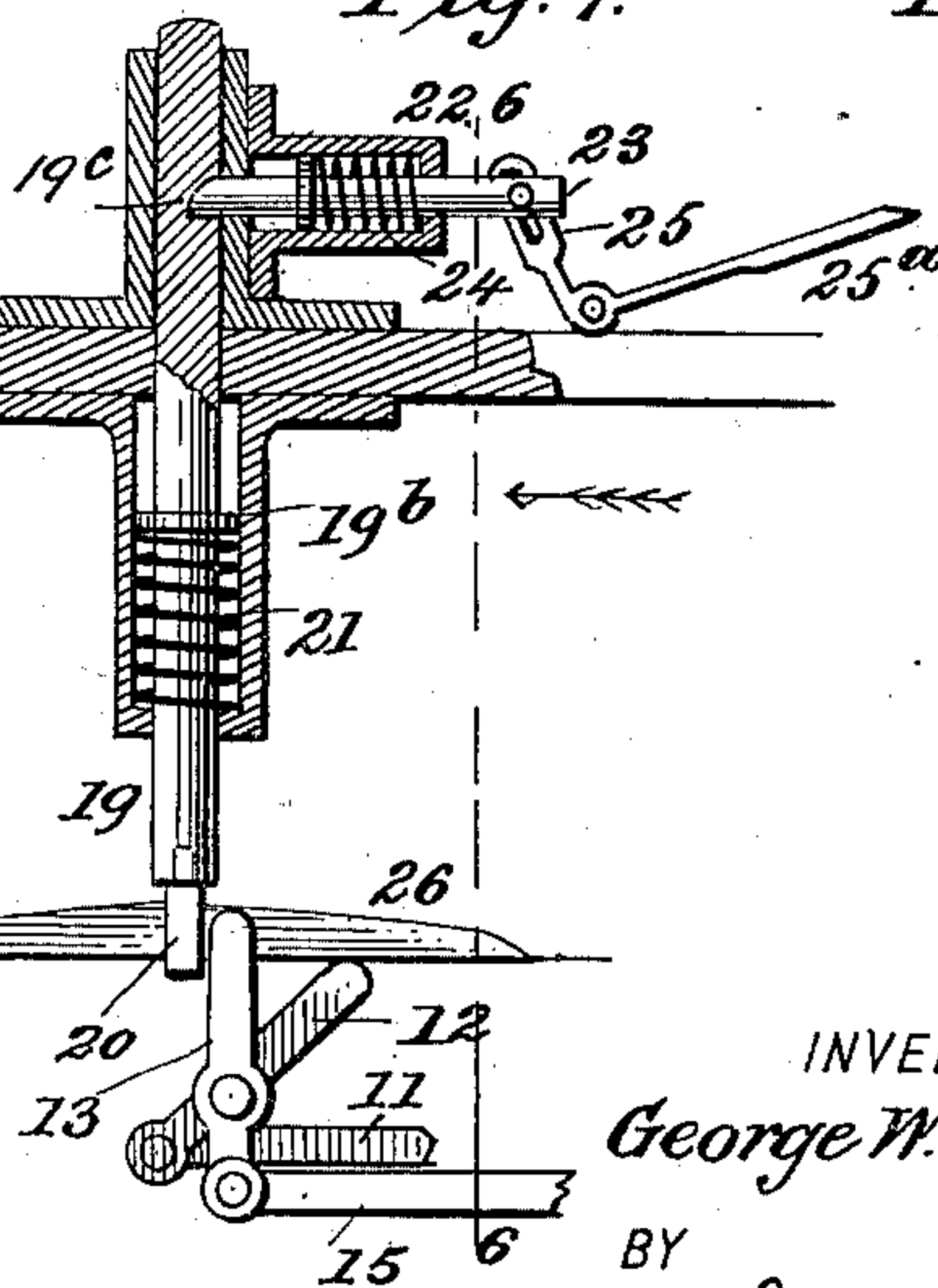


Fig. 7.



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GEORGE W. MOCKABEE, OF WASHINGTON, DISTRICT OF COLUMBIA.

RAILWAY-SWITCH-SETTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 653,108, dated July 3, 1900.

Application filed April 20, 1900. Serial No. 13,660. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MOCKABEE, residing at Washington city, in the District of Columbia, have invented certain new and useful Improvements in Railway-Switch-Setting Mechanisms, of which the following is a specification.

This invention particularly relates to improvements in that type of switch mechanisms used upon street-railway systems having lever devices for moving the switch-tongue adapted to be engaged by trip members carried upon the car and having means for automatically holding the switch-tongue and the throwing member to their adjusted positions.

My invention comprehends a novel construction of switch-throwing bar automatically moved in one direction by spring action to set the switch tongue or tongues to one of their operative positions and coöperatively connected with suitably-arranged lever devices adapted to be shifted by means of a trip mechanism mounted upon the car under the control of the motorman whereby the same can be adjusted to move the tongues in a direction reverse to their automatic adjustment and simultaneously move the switch-throwing lever or bar under a spring tension sufficient to return the said bar and the switch-tongue to the normal position when it (the said bar) is released from the position to which it is moved by the lever devices acted upon by the tripper mechanism on the passing car.

In the complete make-up this invention also includes a simple, effective, and economically-constructed locking-detent for holding the throw-bar to its lever-operated position and adapted to automatically shift to its throw-bar-engaging position, said detent also having connection with a supplemental lever mechanism also arranged to be engaged by a trip upon the car under the control of the motorman, whereby the said locking-detent for holding the throw-bar and the tension can be readily released and the said throw-bar allowed to automatically move the switch-tongues back to their normal position.

My invention also seeks to provide in a switch-operating mechanism of the character stated a novel construction of tripping mechanism adapted to be mounted on the car-

platform and including means whereby the motorman can readily set the same with his foot and when thus set to hold the said trip devices automatically in a proper operative condition.

In its subordinate features this invention consists in certain details of construction and peculiar combination of parts, all of which will hereinafter be fully described, and pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a diagrammatic plan view of my invention, the switch-tongues being shown set in line with the straightway track. Fig. 2 is a similar view, the switch-tongues being shown turned over in line with the switch or turn-off track. Fig. 3 is a transverse section taken substantially on the line 3 3 of Fig. 2 looking in the direction of the arrow, the trip-operated lever and the connections joining them with the throw-bar being illustrated, the several parts being arranged to illustrate generally their arrangement when used in connection with underground-trolley systems, the throw-bar being shown joined with the trolley-shank-slot switch-tongue. Fig. 4 is a perspective view illustrating the simplest form of my invention. Fig. 5 is a detail horizontal section taken on the line 5 5 of Fig. 3. Fig. 6 is a front view of the tripping mechanism mounted upon the car-platform as viewed on the line 6 6 of Fig. 7 looking in the direction of the arrow; and Fig. 7 is a vertical section of the said tripping devices, taken substantially on the line 7 7 of Fig. 6.

In its practical construction my invention includes among its essential features a throw-bar which is disposed transversely under the car-tracks and is reciprocally movable in suitable brackets 2, mounted within the conduit or in suitable housing buried under the track when my invention is used in connection with underground-trolley systems. The bar 1 when in its simplest form is arranged in the manner illustrated in Fig. 4, and the said bar is held to reciprocate in end bearings 2 and is automatically moved in one direction by means of a spring 3, coiled about one end of the said bar in such manner as to force the said bar normally in the direction indicated by the arrow in Fig. 4, which in the present

illustration of my invention serves to move the switch-tongues to the position shown in Fig. 1. While I have illustrated a coil-spring upon the end of the said bar, it is obvious that any other arrangement of spring mechanism may be employed for effecting the same result.

When my invention is used in connection with an underground-trolley system, the bar 1 is suitably mounted for reciprocal movement, and the said bar has a pendent arched portion whereby it will pass under the conductor-rail and out of the path of movement of the trolley-shank and trolley, as shown in Fig. 3, by reference to which it will be noticed that when thus arranged the said bar may be connected to the slot-rail switch-tongue C, whereby to cause it when the said bar is reciprocated to move in the direction with the movement of the switch-tongue D.

The end 1^a of the bar 1 is made round to slide freely in its bearing-bracket 2, and to facilitate such sliding movement the bracket 2 has a hub portion 2^a, (see Fig. 5,) apertured at one side, as at 2^b, for the entrance of the locking-bolt 9, and that part of the bar 1 which slides in the hub 2^a has a locking-notch 1^c, with which the bolt 9 engages when the bar is moved outward against the tension of its retractile spring 3, as illustrated in Fig. 2, said bolt 9 being rounded at one edge, whereby it will automatically move into engagement with the notch 1^c when the bar 1 is moved outward until its notch comes in register with the said bolt 9.

So far as described it is obvious that when arranged as shown the bar 1 is normally moved and held to one position by the action of the spring 3, which operates to set the track-rail and the slot-tongues to their normal or straightway position, as shown in Fig. 1. By shifting the bar 1 outward in the direction indicated by the arrow in Fig. 2 the tongues *d c* will be brought into a proper cooperative position with the track and the slot-rails, and when thus set the bar 1 will be held locked in such position by the detent or bolt 9.

I am aware that it is not broadly new to provide a switch-tongue-shifting bar operative in one direction of movement by spring-actuated means and in a reverse direction by throw-lever devices automatically operated by trip mechanism projected from a passing car, and I therefore make no claim for such construction, the essential features of my invention lying in the means for turning the switch-tongue-operating bar in one direction against its spring tension and locking it to such position and the means employed for releasing the locking devices that hold the said bar 1 to the aforesaid position.

Referring now more particularly to Figs. 1 and 2 of the drawings, it will be seen that adjacent the throw-bar 1 is pivotally mounted a horizontally-disposed bell-crank lever 10, the short arm 10^a of which is pivotally connected to the under side of the bar 1, while

the long arm 10^b is similarly joined to a connecting-bar 11, the outer end of which is pivotally joined to the lower end of the lever 12, extended vertically and pivotally supported upon a suitable bearing 14, as illustrated in Figs. 4 and 6. Mounted upon the same shaft and on the same bearings 14 is a second lever 13, also vertically disposed and with which connects one end of the link-rod 15, the forward end of which is pivotally joined to the rearwardly-extending portion of the locking-bolt 9.

It will be understood that when my invention is applied to an underground cable or trolley system the bell-crank 10, the locking means for holding the throw-bar 1, and the link connections 11 and 15 will be suitably arranged and so held as not to interfere with or be engaged by the trolley or trolley-shank.

To one side of the slot-rails in my construction of switch-operating mechanism is disposed a casting 26, having a pair of slots 26^a, extending parallel with the trolley-slot, said casting having its upper surface projected slightly above the level of the street, said surface being beveled or tapered, as clearly illustrated in the drawings, so as not to interfere with ordinary traffic and at the same time to provide a guide projected above the street-level in which the upper ends of the levers 12 13 are adapted to project sufficiently to be in line with the lower ends of the tripper members carried upon the car-platforms.

It will be noticed by reference to Figs. 12 and 7 that the two levers 12 13 are so disposed as to be alternately operated and such construction being made necessary by the peculiar correlation of the locking detent or bolt 9 and the bell-crank lever 10.

In connection with my improved means for throwing the bar 1 and holding it locked to one position against its spring tension I employ a special construction of trip mechanism adapted to be mounted upon the car-platform and held to be conveniently operated by the motorman. As my improved mechanism requires two distinct movements to operate it in its two directions, I provide the particular construction of trip operating and actuated devices illustrated in detail in Figs. 6 and 7 of the drawings, by reference to which it will be seen that upon the top of the car-platform is mounted a pair of tubular sockets 18, which may be made of one casting, and these sockets are held in vertical register with a second pair of sockets 18 18^a, formed in a casting secured to the under side of the car-platform. Within the sockets 18 18^a is held to slide vertically a plunger-rod 19, the lower end of which terminates in a trip member 20, said rod 19 having a lug 19^a on its lower end which limits the upward movement of the said plunger 19 when it is returned to its normal position by the springs 21, operating within the socket 18^a, as clearly shown in Fig. 7. The plungers 19 are so constructed that when at their elevated position the trippers 20 may pass in a plane

above the slotted castings 26 and when depressed by the foot of the motorman the said trippers will project down sufficient to move in a plane with the slots 26^a 26^a, and to hold the said plungers down to their lever-engaging positions each of the plungers is provided with a locking-notch 19^c, adapted to automatically engage with the inner end of the locking-bolt 23, slidable within a barrel 22, secured to or formed integrally with each of the sockets 18, said bolt 23 being spring-pressed into its locking position by the spring 24.

25 indicates a slotted angle-lever which engages with the bolt 23 and which has a forwardly-extending foot member 25^a.

From the foregoing description, taken in connection with the drawings, it is thought the complete operation and the advantages of my invention will be readily understood.

Assuming the switch-tongues to be in the position shown in Fig. 1 and it is desired to turn off the next car onto the side track, the motorman in approaching the switch portions of the track will depress the plunger 19, which comes in line with the lever 12, which as it is engaged by the proper tripper 20, which is held to its depressed position by the bolt 23, in its movement will turn the bell-crank lever 10 to the position shown in Fig. 2, which movement will throw the bar 1 over in the direction indicated by the arrow in Fig. 2 and bring the switch-tongues *c d* in position to deflect the car-trucks and the trolley-shank onto the side or turn-off track, it being understood that as the lever 12 turns down the tripper 20 may pass over it. To return the said tripper to its normal position, it is only necessary that the motorman depress the foot-lever 25^a sufficient to bring the bolt 23 from connection with the plunger 19, which will then be shot upward by the spring 21, and should the next operation is repeated by the motorman on the said car, excepting that in this case the plunger 19, having its tripper 20 in line with the lever 13, will be projected to engage with the lever 13, which now being in its vertical position will, through the medium of the member 15, draw the bolt 9 back out of engagement with the bar 1, which bar as it is thus released will be shot back to its normal position by the spring 3 and at the same time turn the tongues *c d* back to the position shown in Fig. 1, it being manifest that as the bar is thus moved the bell-crank will be turned with it, and as it is turned it will cause the lever 12 to again assume a vertical position, with the upper or nose end projected up into the slot 26^a, with which it registers.

While I have described and illustrated my invention as particularly adapted to underground-railway systems, it is manifest the same may be just as well employed for surface trackways or overhead systems, and the same may be also effectively employed in operating switch-sections or cash-carrier systems and other mechanisms where a switch

device of the general character is necessary without requiring more than the ordinary modifications or changes in details of construction over that hereinbefore described, and shown in the accompanying drawings.

While I have shown a member projected up from the draw-bar to engage the switch-tongue in the trolley-slot for turning the said tongue, it is obvious that the connections shown in the drawings for joining the bar 1 with the tongue C may be modified or entirely dispensed with, if desired, without departing from the novel features of my invention.

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

1. A switch-operating mechanism comprising in combination with the switch-tongue; a throw-bar spring-actuated in one direction of movement, a detent mechanism engaging the said bar and adapted to automatically move into a locked engagement therewith when the said bar is moved from its normal or spring-set position, lever devices adapted to be operated by a trip on a passing car to shift the throw-bar from the normal or spring-set position, and a second set of lever devices adapted to be operated by a trip upon a passing car connected with and arranged to release the aforesaid throw-bar detent mechanism, all being arranged substantially as shown and for the purposes described.

2. The combination in a switch mechanism as described with the reciprocally-held throw-bar with which the switch-tongue connects, spring-actuated in one direction of movement, said bar having a locking-notch, and the spring-actuated locking member 9, arranged to engage the said locking-notch of the throw-bar; of the levers 12 13, pivotally mounted with their ends projected in a plane of the movement, of tripper members extended down from the car-platform, a link connection joining the member 9 and the lever 13, the bell-crank-lever 10, one arm of which joins with the throw-bar, and the pitman 11, connecting the throw-arm of the crank-lever 10, all being arranged substantially as shown and described.

3. In a switch-operating mechanism as described, the combination with the throw-bar 1, the bracket members 2 2, in which the said bar is reciprocally held, one of the said brackets having a laterally-extending hub or barrel portion, the bar 1 having a locking-notch movable in line of the said barrel portion, a spring moving the bar in one direction, a bell-crank-lever mechanism arranged to be operated by a tripper upon a passing car to shift the bar 1, in a direction against its spring tension, a spring-actuated plunger held in the aforesaid bracket barrel portion, and a car-trip-engaged mechanism joined with the said plunger and adapted to draw the plunger against its spring tension when the lever means is engaged by a car-tripper as set forth.

4. In a switch mechanism as described, the

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combination with the reciprocally-held throw-
bar with which the switch-tongue connects,
a spring-actuated locking-detent for holding
the said bar under its spring tension when
5 shifted in one direction, a lever mechanism
for shifting the bar against its spring tension,
and a second lever mechanism for releasing
the locking-detent, the said two lever mech-
anisms each including a pivotal member hav-
10 ing one end arranged to be projected in posi-
tion to be engaged by a trip member pend-
ently projected from the car, of a trip mech-
anism mounted on the car-platform including

a casing, a foot-pressed plunger movable in
said casing, the lower end thereof forming 15
the trip, a spring for normally holding the
plunger out of an operative position, a de-
tent automatically engaging said plunger
when depressed to hold it to its depressed po-
sition, said detent having foot-pressed releas- 20
ing devices for moving it to its released posi-
tion as set forth.

GEORGE W. MOCKABEE.

Witnesses:

JOHN H. O'DONNELL,
JAMES W. CROSS.