

No. 684,558.

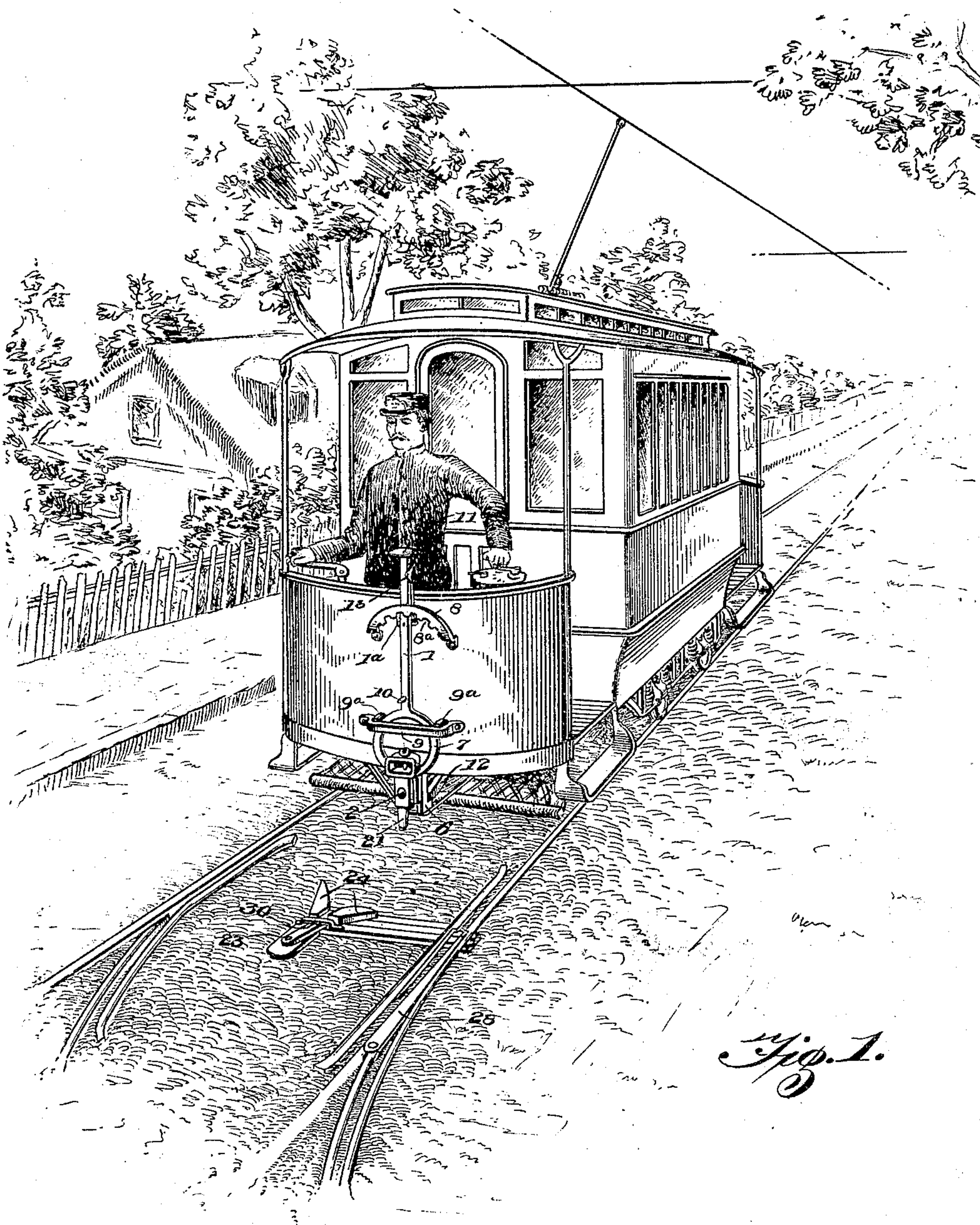
Patented Oct. 15, 1901.

C. W. TANNER.  
SWITCH OPERATING DEVICE.

(Application filed June 8, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
*Leo Dondero*  
*J. F. Riley*

*C. W. Tanner*, Inventor  
by *C. A. Snow*  
Attorneys

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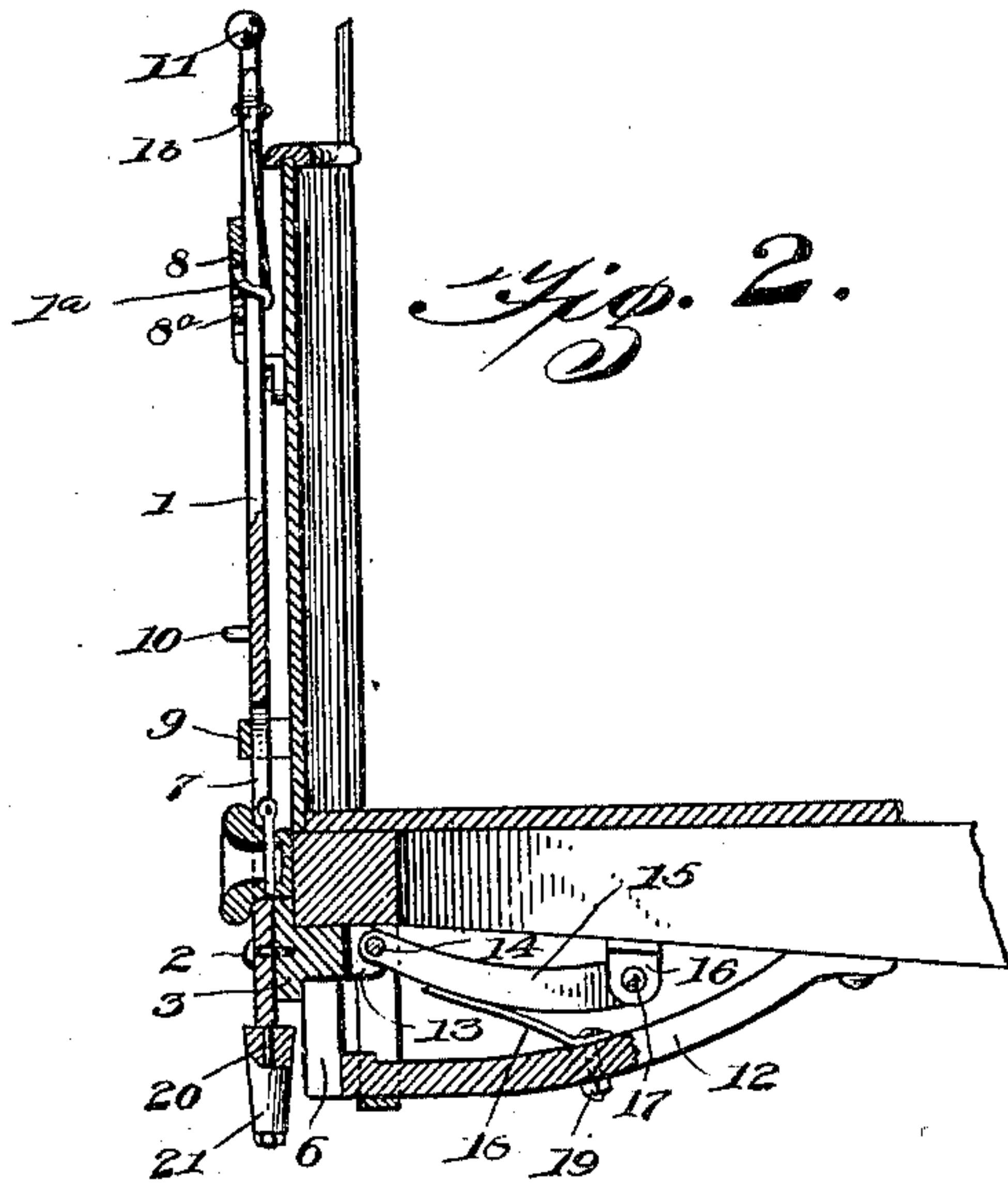
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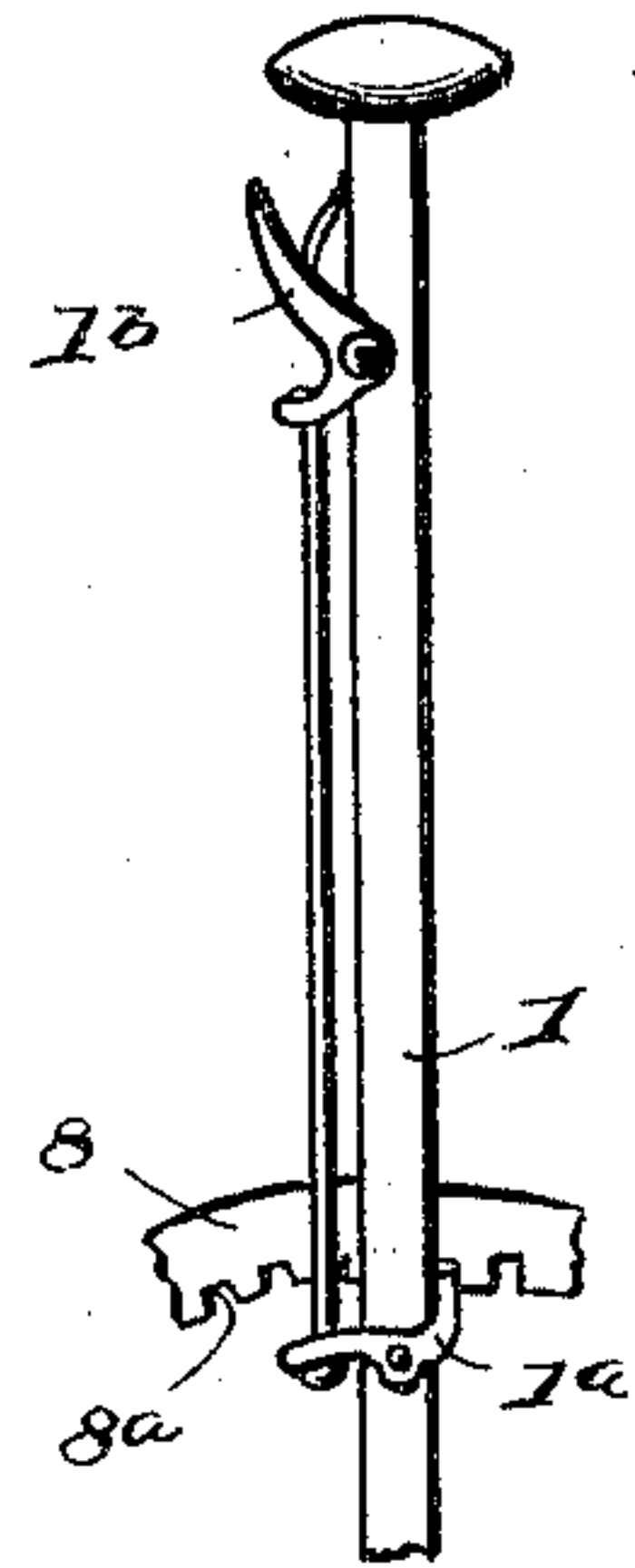
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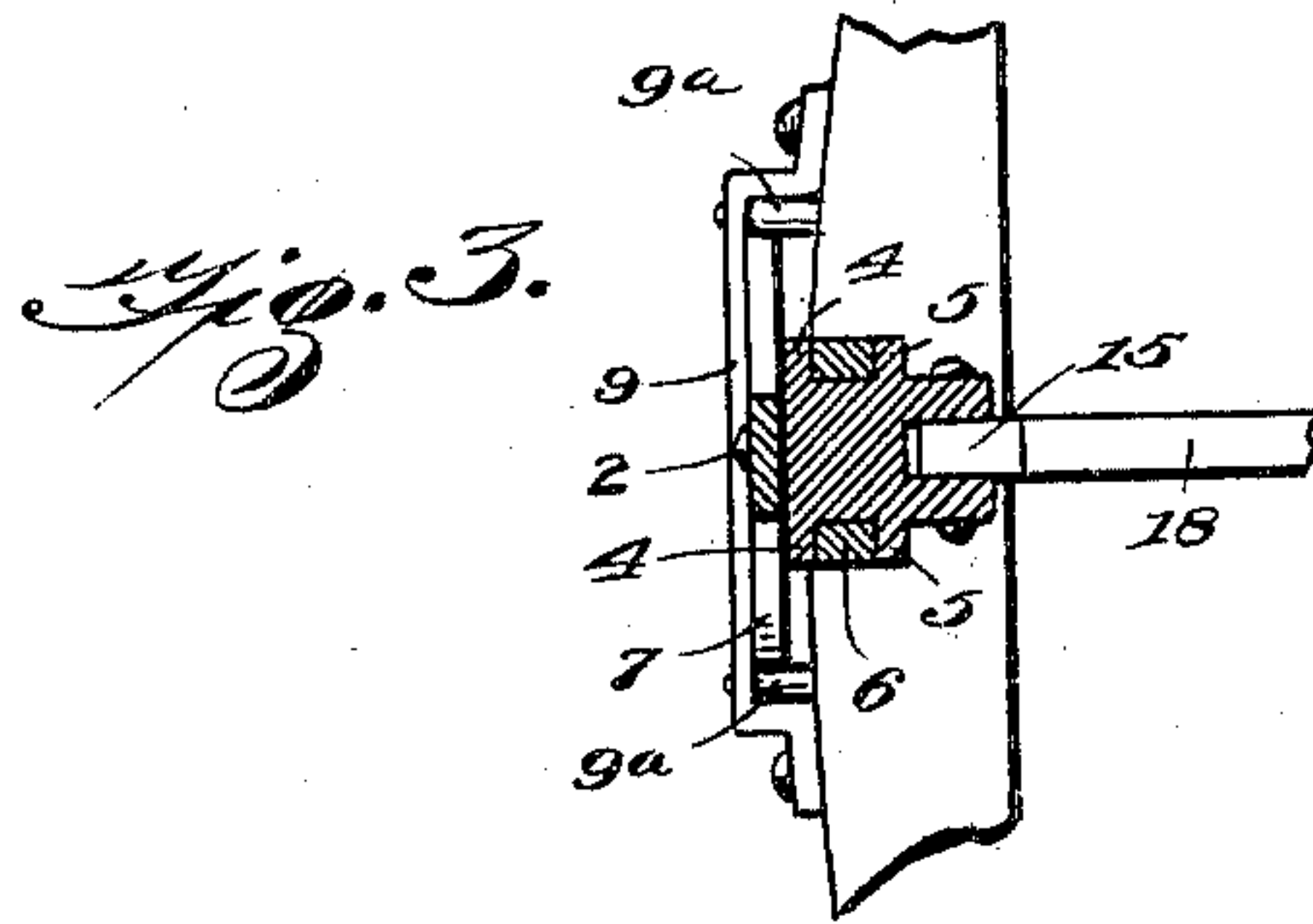
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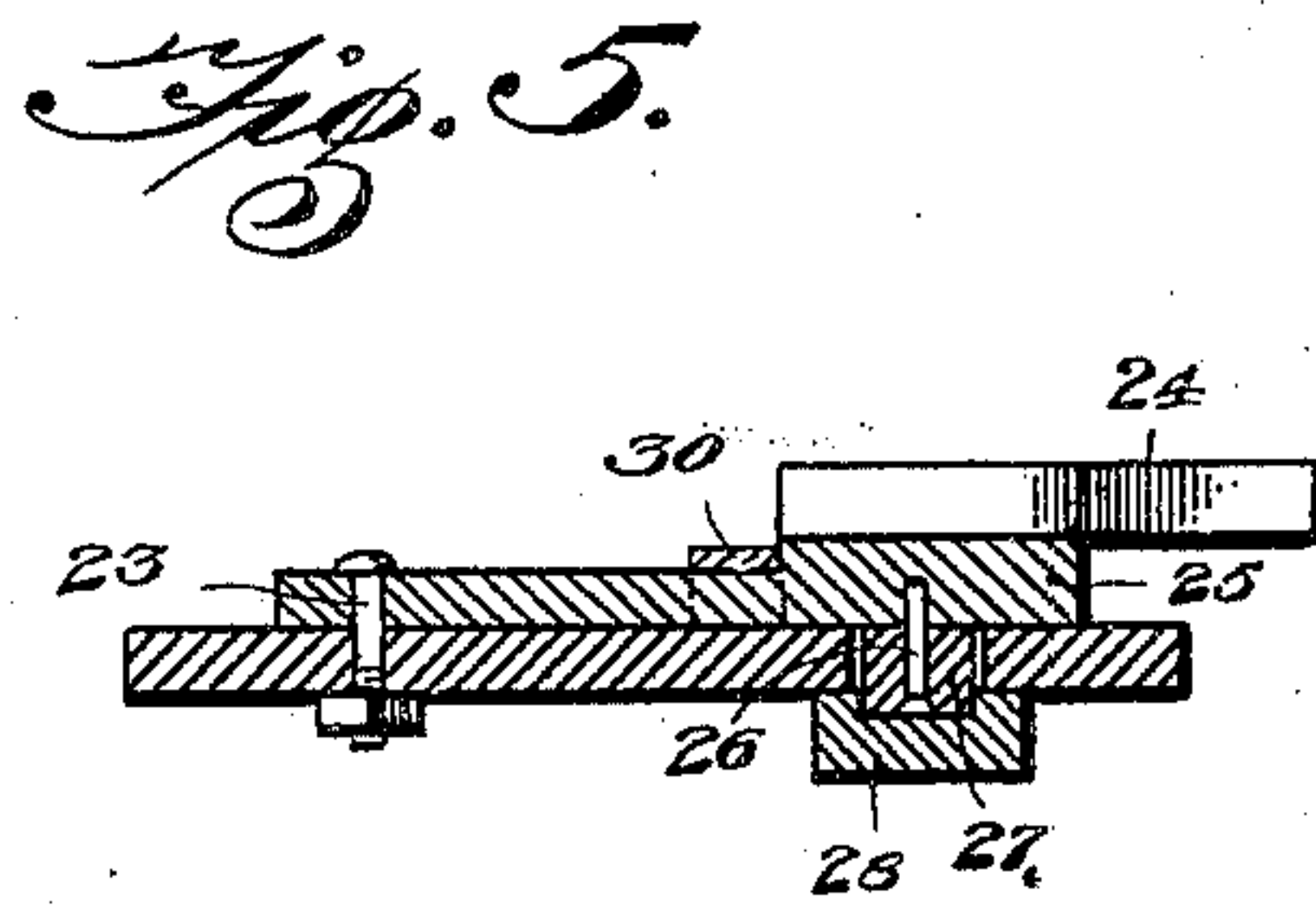
*Fig. 2.*



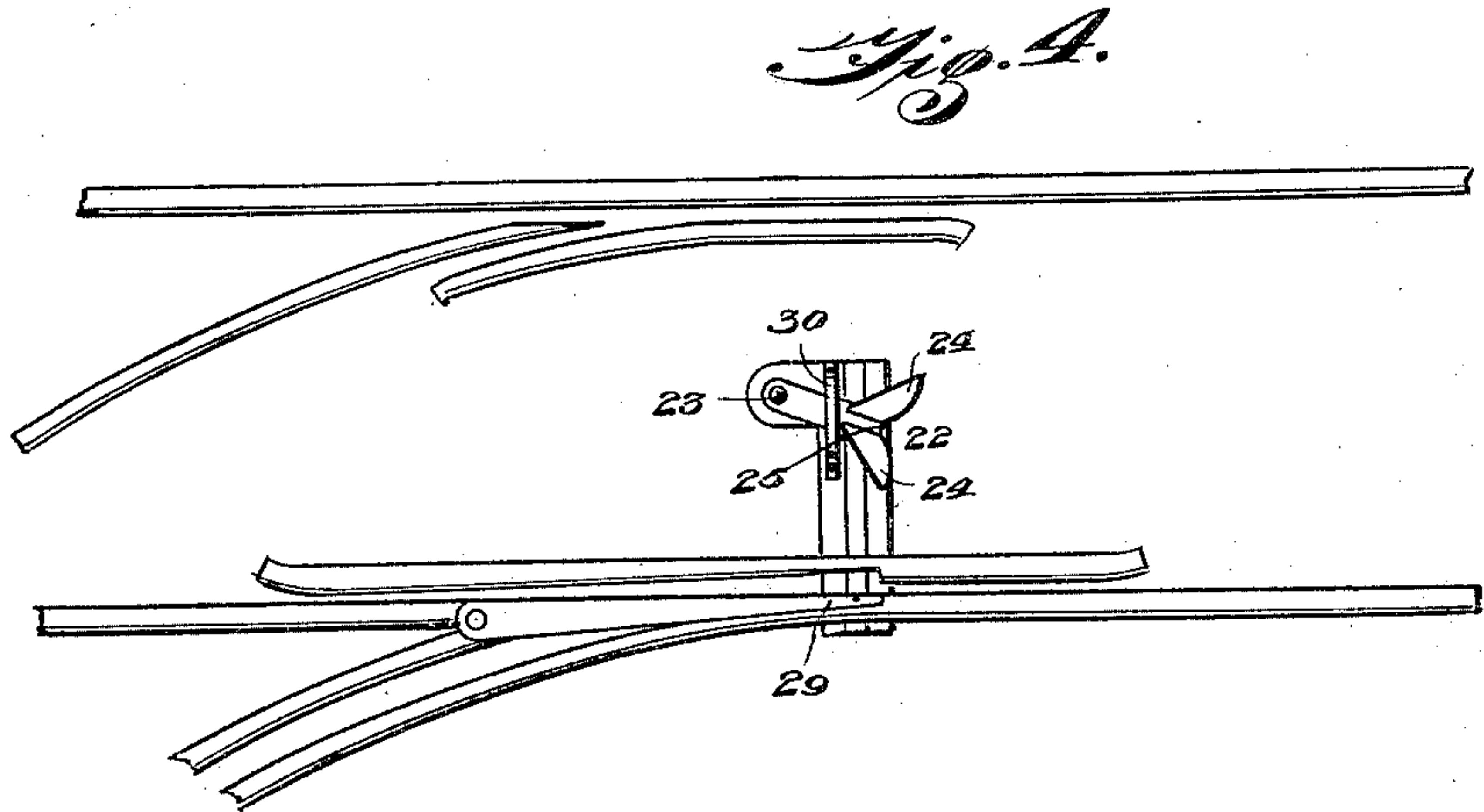
*Fig. 6.*



*Fig. 3.*



*Fig. 5.*



*Fig. 4.*

Witnesses  
*Leo L. Donders*  
*H. F. Riley*

*C. W. Tanner*, Inventor  
by *C. A. Snow & Co.*  
Attorneys



# UNITED STATES PATENT OFFICE.

CALVIN W. TANNER, OF COLUMBUS, TEXAS, ASSIGNOR OF TWO-THIRDS TO  
J. J. HARRISON AND C. E. FOLEY, OF SAME PLACE.

## SWITCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 684,558, dated October 15, 1901.

Application filed June 8, 1901. Serial No. 63,794. (No model.)

*To all whom it may concern:*

Be it known that I, CALVIN W. TANNER, a citizen of the United States, residing at Columbus, in the county of Colorado and State of Texas, have invented a new and useful Switch-Operating Device, of which the following is a specification.

The invention relates to improvements in switch-operating devices.

10 The object of the present invention is to improve the construction of devices for operating switches and to provide a simple, inexpensive, and efficient one designed for use on street-railway cars and adapted to enable  
15 a motorman to quickly throw or set a switch in the desired direction without leaving the platform of the car.

The invention consists in the construction and novel combination and arrangement of  
20 parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a car provided with a switch-operating device constructed in accordance with  
25 this invention. Fig. 2 is a longitudinal sectional view of the front portion of the car. Fig. 3 is a detail sectional view illustrating the manner of mounting the vertically-movable slide. Fig. 4 is a plan view of a portion  
30 of the track. Fig. 5 is a longitudinal sectional view illustrating the manner of mounting the switch-actuating plate. Fig. 6 is a detail view illustrating the construction for  
35 locking the operating-lever.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates an upright operating-lever fulcrumed near its lower end by a suitable pivot  
40 2, which is mounted on a vertically-movable slide 3, provided with front and rear side flanges 4 and 5 and mounted in a vertical guide 6. The lever, which is arranged at the  
45 center of the front of the car, is provided with a central loop or enlargement 7, which surrounds the coupling and which is of sufficient size to permit the necessary vertical and lateral movement of the lever. The upper portion  
50 of the lever is arranged in upper and lower keepers 8 and 9 and is provided with a

stop 10 and with a suitable grip or handle 11. The upper keeper, which is curved, as clearly illustrated in Fig. 1 of the accompanying drawings, is provided at its lower face with  
55 notches 8<sup>a</sup> to form a ratchet, which is engaged by a spring-actuated detent 1<sup>a</sup> of the lever 1 to hold the latter at the desired adjustment. The spring-actuated detent 1<sup>a</sup> is connected with a latch-lever 1<sup>b</sup>, located near  
60 the grip or handle 11 of the lever 1 and adapted to be readily grasped to withdraw the detent to enable the lever to be oscillated to change its position. The lower keeper extends across the central loop or enlargement  
65 7 of the lever and is arranged to be engaged by the stop to prevent the lever from being depressed too far and being injured by coming in contact with the road-bed. The central loop or enlargement 7 of the lever 1 is  
70 circular, and the lower keeper is provided at its ends with antifriction-rollers 9<sup>a</sup>, arranged to receive the loop or enlargement and adapted to enable the lever to be moved frictionlessly when it is engaged with either of the  
75 antifriction-rollers. The vertical guide 6, which depends from the end of the car, is supported by an inwardly-extending inclined brace 12, which extends upward and rearward from the lower end of the guide 6 to the  
80 bottom of the car and which supports the said guide 6. The slide is provided at its inner or rear face with a pair of perforated ears or flanges 13, which receive a pivot 14 for connecting the slide to the outer end of an arm  
85 15, and the latter is pivoted at its inner end to a bracket 16. The bracket 16 is provided with a pair of depending perforated ears, which receive a pivot 17 and which are located at opposite sides of the rear or inner  
90 end of the arm 15, and the said pivot 17 passes through a perforation of the arm 15. The slide is normally held in an elevated position by means of a spring 18, extending longitudinally of the arm 15 and secured at its front  
95 end to the same and having its rear end secured by a bolt 19 or other suitable fastening device to the brace 12. The lever is provided at its lower end with a rounded portion or spindle 20, on which is arranged a tapering  
100 antifriction sleeve or roller 21, and this sleeve or roller enables the lever to frictionlessly en-



gage and operate a switch-actuating plate 22, extending longitudinally of the track and located at the center thereof, as clearly illustrated in Figs. 1 and 4 of the accompanying drawings. The switch-actuating plate 22 is perforated at one end for the reception of a pivot 23, and it is provided at its other end with a pair of diverging wings or flanges 24, spaced apart to provide a groove for the passage of the lower end of the lever and provided with inner rounded edges, which form a flaring mouth or entrance. The diverging wings extend beyond the end 25 of the plate 22, and this end 25 is connected by a suitable pivot 26 with a transverse bar 27. The transverse connecting-bar 27, which is arranged in a suitable groove or way 28, is pivoted at its outer end to a switch-point 29, arranged in the usual manner and adapted to be thrown from one side to the other. The groove or way 28 is formed in a suitable guide, which may consist of any form of box or casing, and the plate 22 is arranged within a transverse keeper 30. As the car approaches the switch the operating-lever is depressed to arrange it for engaging the switch-actuating plate, and the latter may be moved in either direction by oscillating the operating-lever. The front end 25 of the switch-actuating plate is enlarged, and its upper face at the bottom of the groove lies above the plane of the transverse keeper, so that there is no liability of the lever striking the latter.

The switch-operating mechanism while being designed primarily for use on street-railway cars may be used to advantage in yards of railroads. The switch-operating mechanism may be used at one or both ends of a car, and it will be apparent that as the operating-lever surrounds the coupling it will not interfere with the latter and cars may be coupled without injuring the switch-operating mechanism. The vertical guide is also supported by transverse braces, preferably consisting of a continuous piece of metal, centrally secured to the front end of the brace 12 and extending upward from the same at opposite sides thereof and secured to the bottom of the car.

What I claim is--

1. The combination with a car having a coupling, of a slide mounted thereon, and a vertically-movable oscillating lever fulcrumed on the slide and provided with a loop or enlargement receiving the coupling, substantially as described.

2. The combination with a car having a coupling, of a vertically-movable laterally-oscillating switch-operating lever mounted on the exterior of the car at the center of one end thereof and provided with an open portion receiving the coupling and permitting the lever to move vertically and laterally of the car, substantially as described.

3. The combination with a car having a coupling, of a vertically-movable oscillatory

lever arranged on the exterior of the car and having an opening receiving the coupling and provided with a stop, and upper and lower keepers mounted on the car and receiving the lever, the lower keeper being arranged to be engaged by the stop, substantially as described.

4. The combination with a car of a vertical guide mounted on the car and having a way, a vertically-movable slide mounted in the way, a switch-operating lever fulcrumed on the slide and arranged to swing transversely of the car, and a spring for holding the slide normally in an elevated position, substantially as described.

5. The combination with a car, of a vertical guide depending from the car, a brace connected with the guide and extending upward from the bottom thereof, a vertically-movable slide mounted in the guide, a pivoted arm extending inward from the slide and connected with the car, a spring extending longitudinally of the arm and engaging the same and the brace and adapted to hold the slide normally elevated, and an operating-lever fulcrumed on the slide, substantially as described.

6. The combination with a car, of a vertical guide depending therefrom and provided with an opening, a vertically-movable slide arranged in the opening and provided with side flanges and having rearwardly-extending ears, a bracket located in rear of the guide and provided with ears, an arm pivoted between the said ears and connecting the slide and the bracket, the brace supporting the lower end of the guide, the spring for holding the slide in an elevated position, and an operating-lever fulcrumed on the slide, substantially as described.

7. The combination with a switch-point, of a pivoted plate having an enlarged end provided with diverging wings extending beyond the body portion of the plate and spaced apart to form a groove, a transverse keeper receiving the plate and located beneath the plane of the groove, and a connecting-bar pivoted to the plate and to the switch-point and mounted in a suitable way, substantially as described.

8. The combination with a car having a coupling, of a vertically-movable oscillatory lever arranged on the exterior of the car and having an opening receiving the coupling, and a keeper receiving the loop or enlargement and provided with antifriction-rollers arranged to be engaged by the loop or enlargement, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CALVIN W. TANNER.

Witnesses:

H. J. LAAS,  
H. P. HAHN.