

F. H. KAISER.

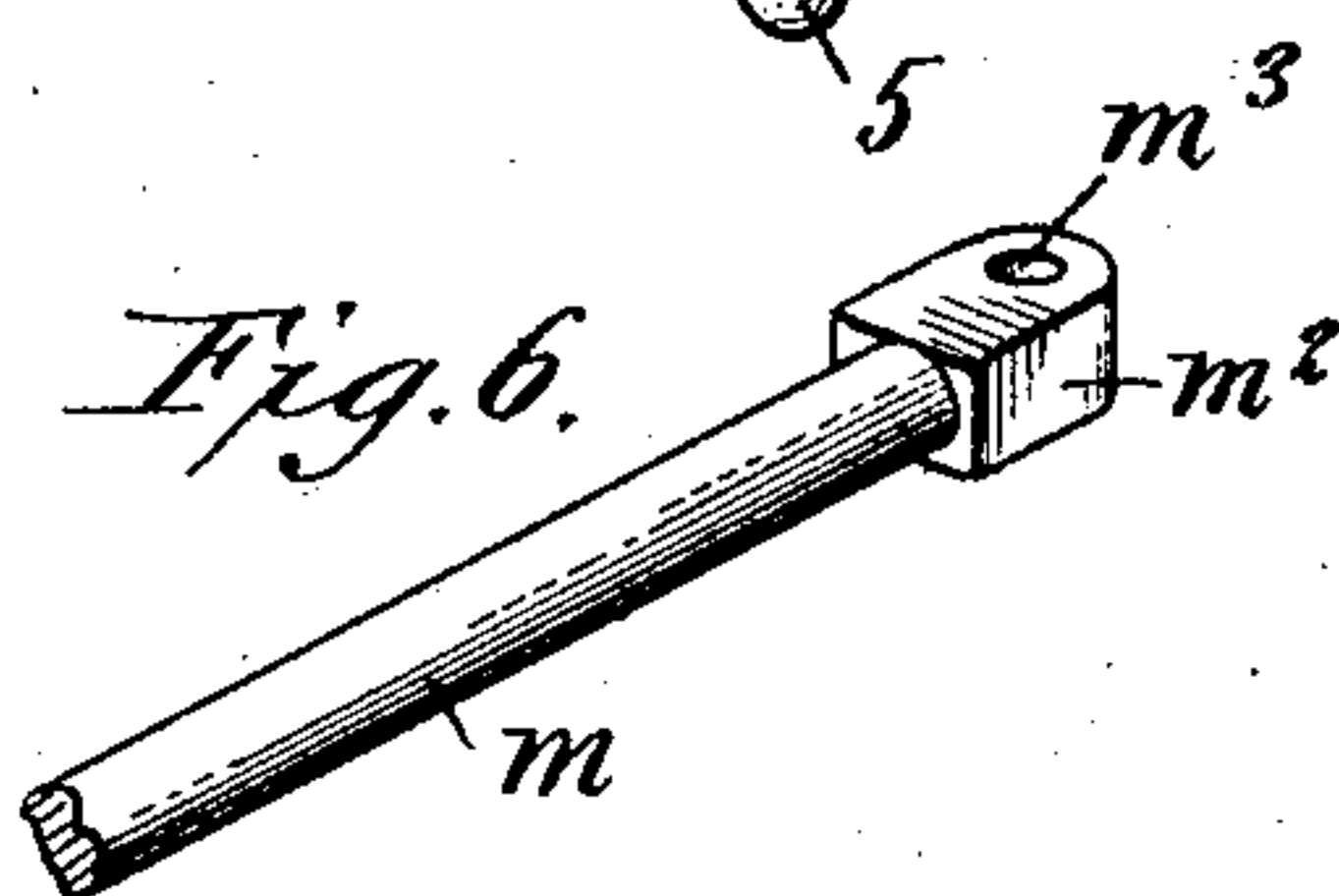
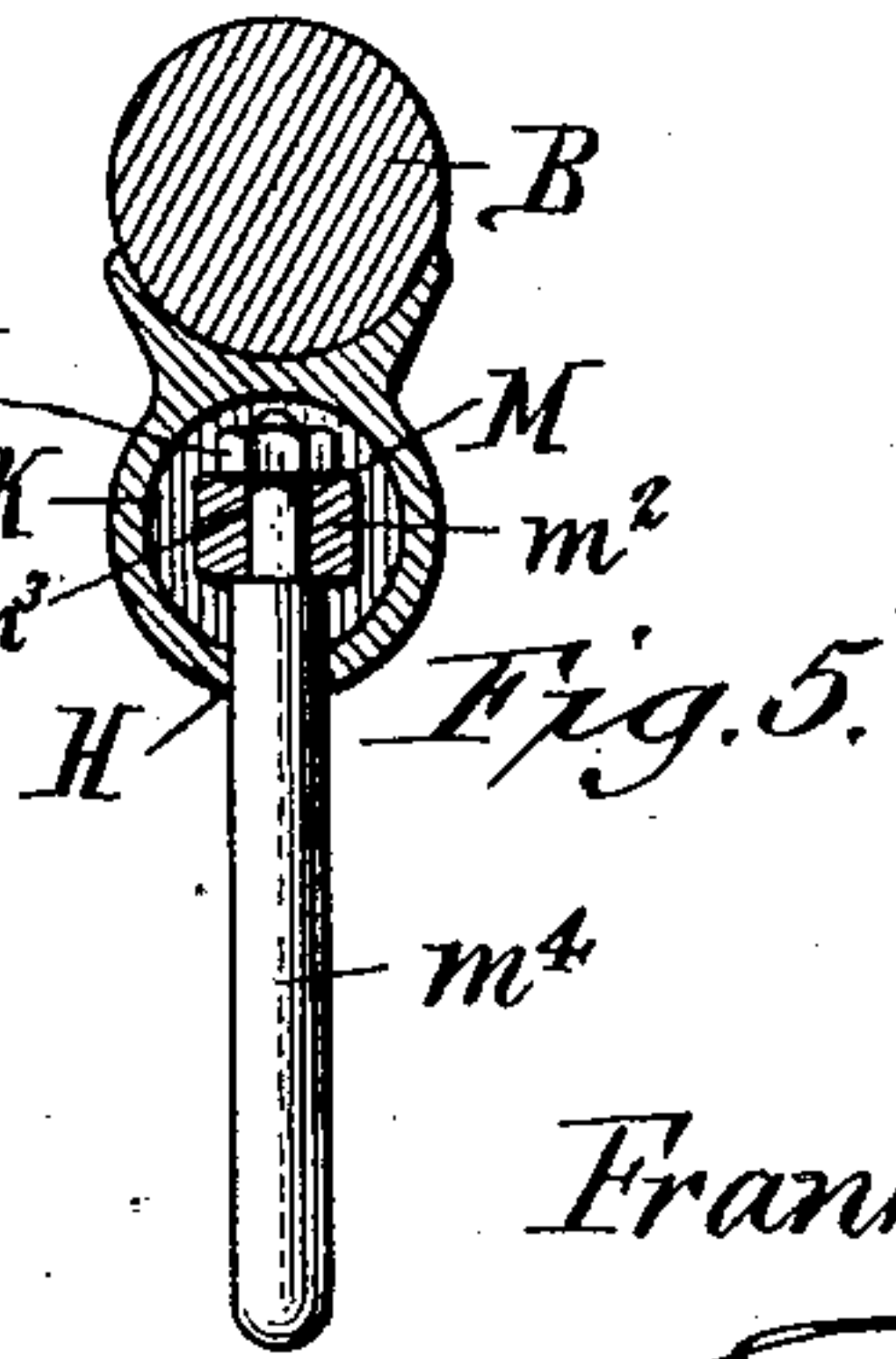
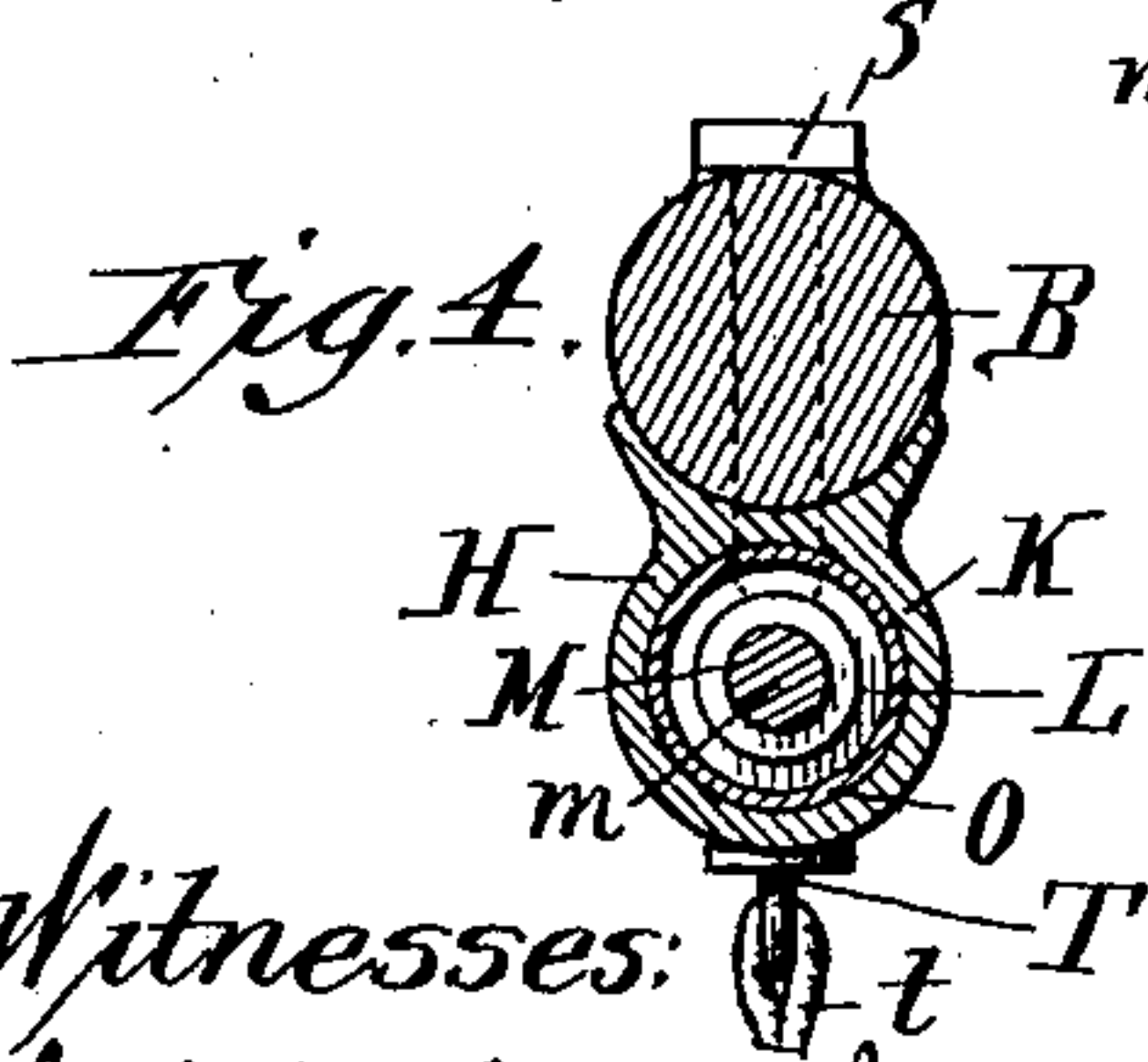
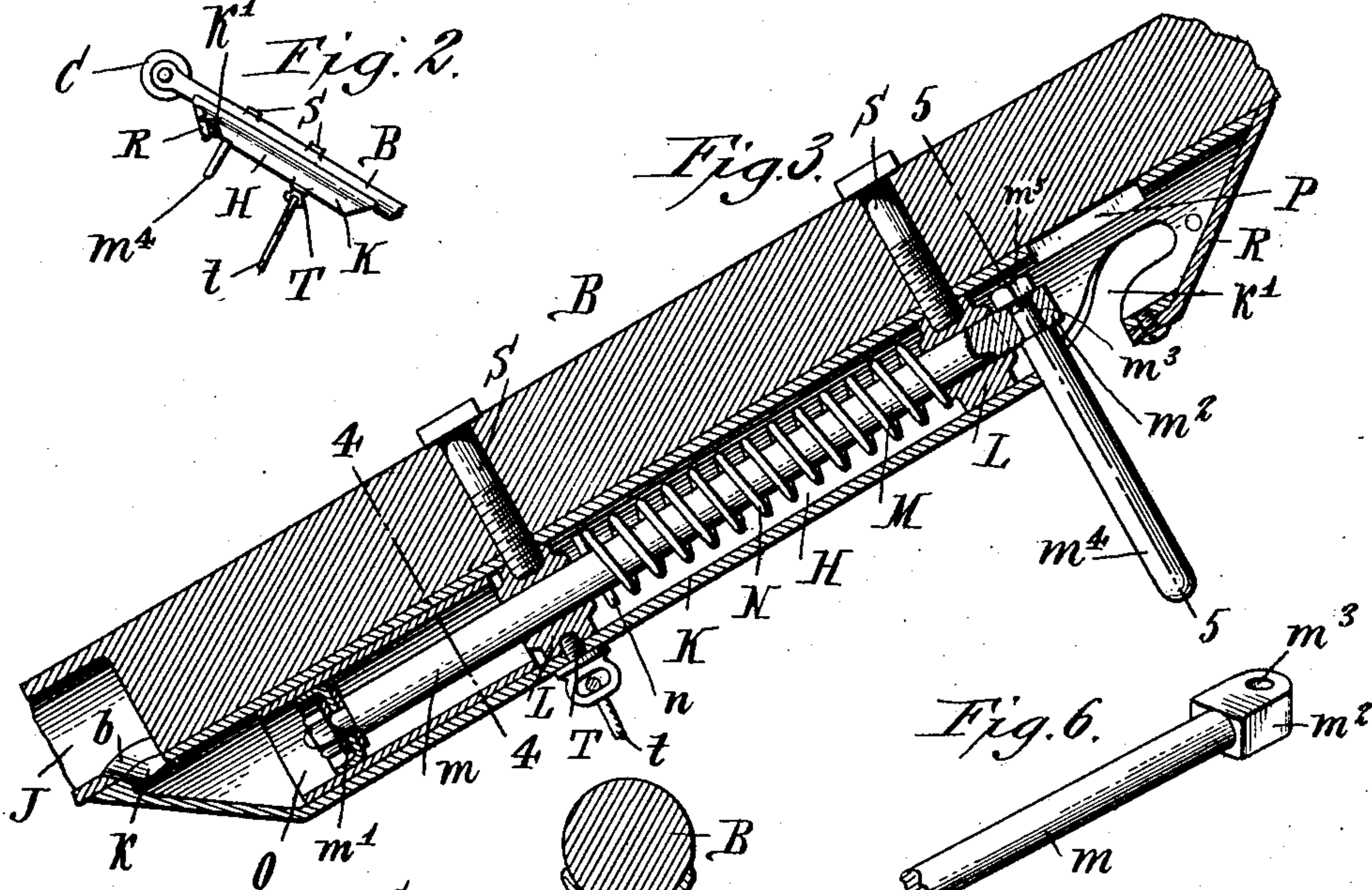
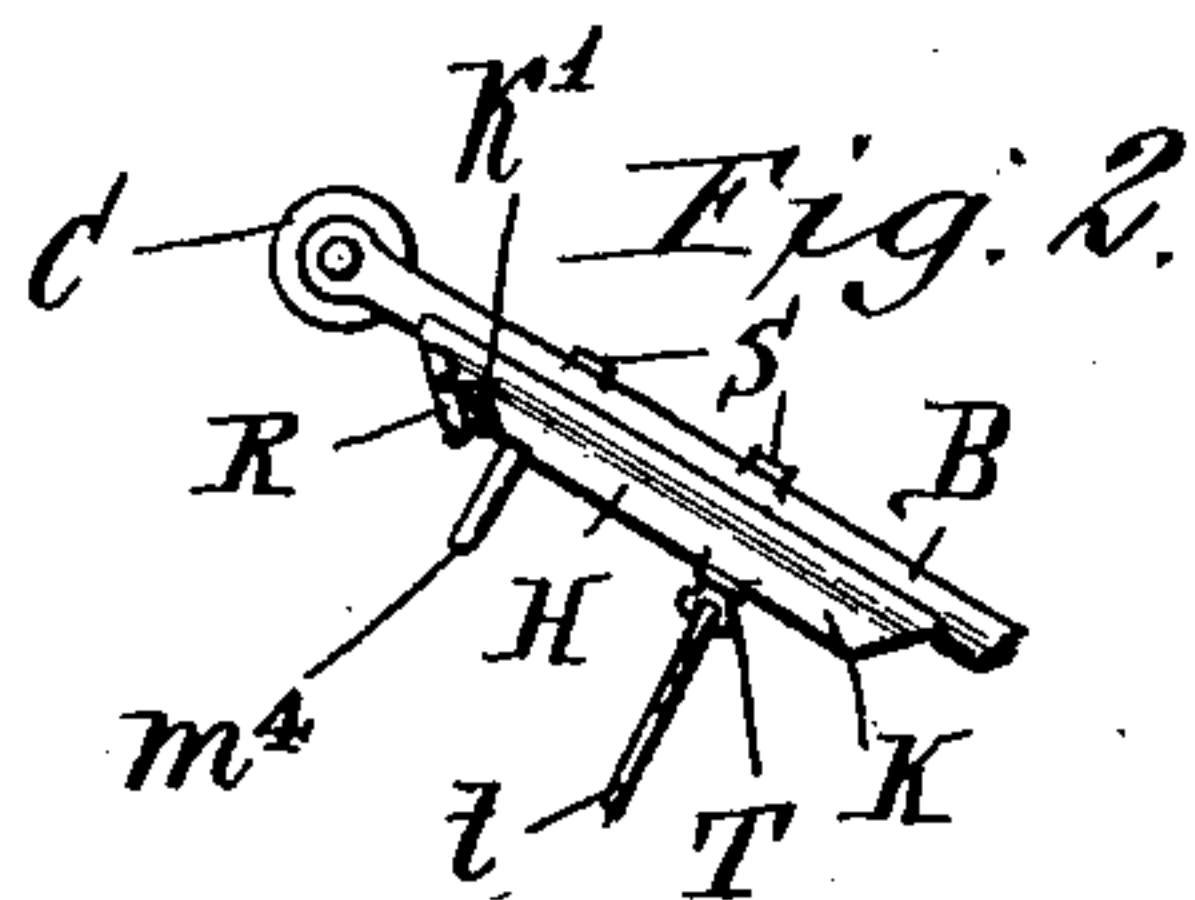
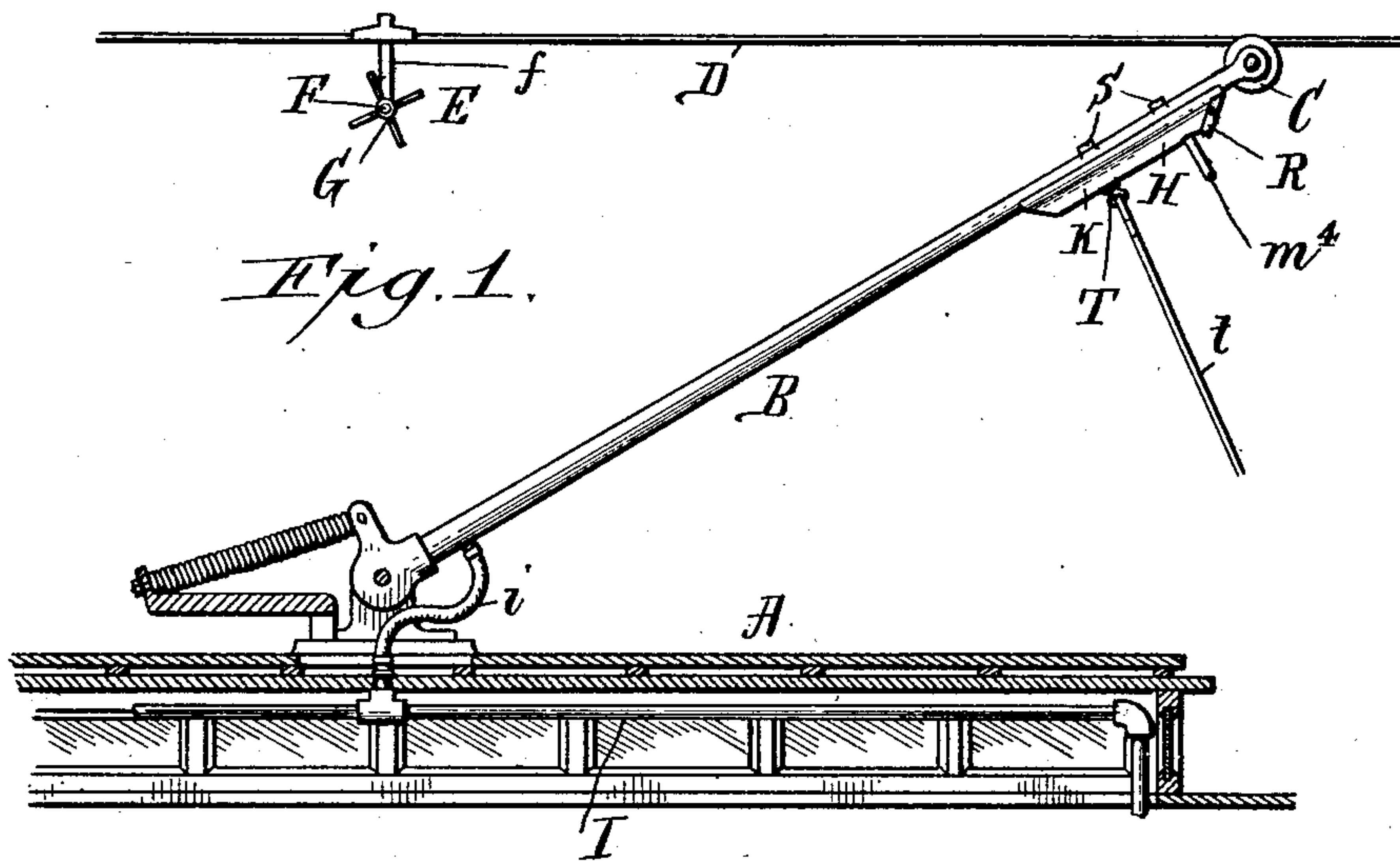
TRIP DEVICE FOR ACTUATING ELECTRIC RAILWAY SWITCHING MECHANISM.

APPLICATION FILED DEC. 19, 1908.

998,183.

Patented July 18, 1911

2 SHEETS—SHEET 1.



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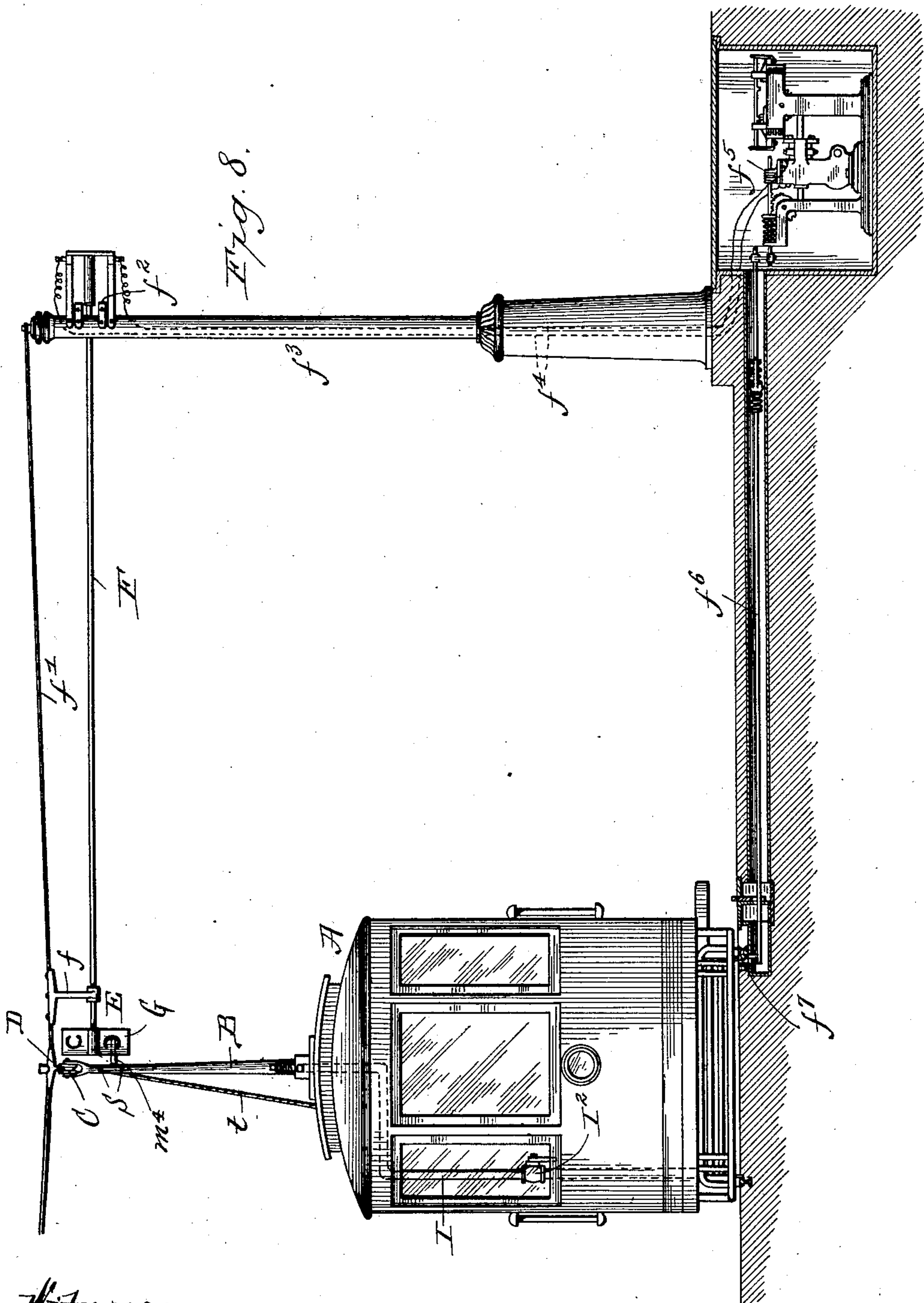
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2 SHEETS--SHEET 2.



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UNITED STATES PATENT OFFICE.

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TRIP DEVICE FOR ACTUATING ELECTRIC RAILWAY SWITCHING MECHANISM.

998,183.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed December 19, 1908. Serial No. 468,308.

To all whom it may concern:

Be it known that I, FRANK H. KAISER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Trip Devices for Actuating Electric Railway Switching Mechanism, of which the following is a specification.

My invention relates to a trip-device for actuating electric switching-mechanism, and it has for its object the provision of a simple, reliable and efficient device of this character whereby a circuit is caused to be established to set an electric-motor into action, through the instrumentality of which the switch-point of the railway-track is positioned from a distant point so that an approaching car may be directed onto the siding or branch road, or, in the event of the switch-point being in position to direct the car onto the siding or branch-road, so that the car may proceed on the main line, if desired.

A further object of my invention is the production of a quick-acting air-controlled trip-device so positioned on a car relative to an electric-switch actuating-device that upon admission of air to said trip-device, said actuating-device is manipulated by the trip-device when the car reaches a certain relative position.

The class of switching-mechanism in connection with which this improved trip-device is used is fully illustrated and described in a representative way in my Patent No. 925,343, granted June 15, 1909; and while this invention is primarily designed for switching-mechanism, it is clearly apparent that any other mechanism may be used, such as signal-mechanism and the like, or mechanism to open gates to yards, or doors to car-houses; in fact, any form or type of serving-mechanism may be controlled by my improved trip-device.

My invention consists in a trip-element having a combined longitudinal and rotary movement so that its contact-arm, arranged at an angle thereto, can be moved into operative position; and it also consists in the manipulation of the trip-element by air-pressure.

It further consists in the construction, arrangement, and combination of parts to

be hereinafter described and particularly pointed out in the subjoined claims.

In the drawings,—Figure 1 is a sectional elevation of the upper portion of an over-head electric-railway car, the feed-wire, and switch-actuating shaft of the switching-mechanism. Fig. 2 is a side elevation of the upper end of the trolley-pole viewed from the side opposite that in Fig. 1. Fig. 3 is a central longitudinal section of the trip-device and the adjacent portion of the trolley-pole to which it is attached. Fig. 4 is a transverse section taken on line 4—4, Fig. 3. Fig. 5 is a transverse section taken on line 5—5, Fig. 3. Fig. 6 is a perspective view of the plunger-rod, one end of which is broken away. Fig. 7 is a perspective view of one of the guides. Fig. 8 is an end elevation partly in section of a motor car and road bed illustrating the use of my invention.

Referring now to the drawings, in detail, like letters of reference refer to like parts in the several figures.

The reference letter A designates a car having an over-head trolley-pole B provided with the usual contact-wheel C which travels along the feed-wire D. This pole is utilized as a support for my improved trip-device which is so located thereon that when manipulated by the motor-man of the car, it will come in contact with and cause operation of an electric-switch actuating-device E. While this switch-actuating device may be constructed in various ways, I have shown a construction which will be effective for the purpose intended. In the switch-actuating device, a shaft F is provided which is mounted to rotate in a hanger f^1 or other portion of the overhead wiring-system, and secured to one end of said shaft is an indicator G having four wings bearing information, for the motor-man so that he may know whether the switch being approached is open or closed. At the opposite end of the shaft F is an electric switch f^2 which is in part carried thereby and partly supported on a pole f^3 , suitable circuit wires f^4 connecting said switch with electric motor-operated mechanism f^5 connected in any suitable manner, such as by means of a rod f^6 , with the track switch f^7 .

While the electric motor-operated mecha-

nism, the track-switch, and intervening parts form no part of this invention, I deem it desirable to illustrate the same in order to obtain a better understanding of my improved trip-device.

As my improved trip-device designated H, is preferably actuated with compressed-air, an air-supply pipe I is provided which connects the trolley-pole B with the air-brake system of the car, and as the trolley-pole is hollow, as shown at J, it serves to connect the pipe I with the trip-device. Said pipe will be within convenient reach of the motor-man so that he may, by means of suitable valve-mechanism I², admit air to the trip-device and also release the air therefrom. In order that the trolley-pole may be rotated on its support, part of the pipe I is made of flexible material, as at i.

The trip-device H has a cylinder K closed at its ends and provided with an opening k at its lower end and with a substantially oblique elongated opening k¹ near its upper end. The trolley-pole B is also provided with an opening b in registration with the opening k and by means of the openings b and k the interior of said trolley-pole is connected with the interior of the cylinder.

Fitting within the cylinder K are two cylindrical guides L in which a trip-element M is guided for movement. Said trip-element, in preferred form, comprises a rod m having a piston m¹ at its lower end and an enlargement or head m² at its upper end. Said enlargement or head has a transverse opening m³ through which the reduced inner end of a contact-arm m⁴ is passed and to the projecting portion of said reduced end, a securing nut m⁵ is applied, said reduced end being threaded for the purpose. Said contact-arm extends through the oblique elongated opening k¹ in the cylinder. The guides L are spaced apart, and surrounding the rod m between said guides is a coil-spring N bearing at one end against the upper guide and at its other end against a pin n passed through the rod. The cylinder is preferably cast and given a form convenient to be secured to the pole, and in the lower portion thereof, a brass or other smooth sleeve or bushing O is placed wherein the piston m¹ is movable. An opening P is formed in the cylinder within the region in which the contact-arm m⁴ travels so that the nut m⁵ may be unscrewed to permit said arm to be removed. The upper end of the cylinder is closed with a cap R, and when this cap is removed, the parts within the cylinder can be removed therefrom. The cylinder is secured to the trolley-pole by means of screws S which pass through said pole, through the cylinder, and take into the guides L. Said screws serve, therefore, to secure said guides within the cylinder, as well as to secure the latter to the pole. A rope-

attaching screw T is also threaded through the cylinder and into the lower guide, and to said screw, the usual manipulating rope t is secured which leads down to within convenient reach of the conductor.

The operation of the device is as follows:—If, upon approaching a switch, the motor-man finds the indicator set against the direction in which he is to travel, he operates the valve mechanism I² to admit air into the cylinder K, which then acts upon the piston m¹ to force the rod m with the contact-arm m⁴ upward. As said arm is guided by the oblique elongated opening, it is caused to travel in an oblique direction and compels the rod to rotate. Normally the contact-arm extends downward, but upon admission of air to the cylinder, it is caused to move into a position at a right-angle to that which it normally assumes, or in other words, it is caused to project through the cylinder at the side, so that when the pole passes underneath the electric-switch actuating-device E, said contact-arm will come in contact with the proper wing of said device and cause the shaft F to make a quarter revolution. This action of the shaft will establish an electric-current to rotate a motor, which in turn causes the track-switch to be opened or closed, as the case may be. When air is introduced into the cylinder it acts against the power of the spring N, and after the contact-arm has actuated the electric-switch actuating-device, the air within the cylinder is released in any suitable manner, after which the spring N causes the moving parts of the trip-device to be returned to normal position. If, when the car approaches the switch, the indicator shows the same open to the direction in which the car is to proceed, the trip-device is not actuated, since the position of the contact-arm is such that it will pass underneath the electric-switch actuating-device without actuating the same.

Having thus described my invention, what I claim is,—

1. In a device of the character described, the combination with a trolley-pole, of a reciprocating trip-element on said trolley-pole air-actuated in one direction and spring-actuated in its other direction, and means to cause said trip-element to rotate during its reciprocating movement.

2. In a device of the character described, the combination with a trolley-pole, of a cylinder secured thereto, a reciprocating piston within said cylinder, means for supplying air to said cylinder for operating said piston, a rod for said piston having a contact arm at an angle thereto, and means to cause said arm to move through a portion of a helix during the movement of said rod.

3. The combination with a car having a trolley-pole, of an electric switch, a switch

actuating-device located adjacent the path of said pole, a trip-device held to said pole and comprising a trip-element having a contact arm at an angle thereto, and means to
5 cause said arm to move through a portion of a helix to cause the switch actuating-device to be actuated.

4. The combination with a car having a trolley-pole, of a switch, a switch actuating-
10 device located adjacent the path of said pole, an air supply, a cylinder on said pole having connection with said air supply and having also an oblique elongated opening, a reciprocating piston within said cylinder,
15 a rod movable with said piston, a spring to hold said piston at one end of its movement, and a contact arm secured to said rod and extending through said oblique elongated opening.

20 5. The combination with a trolley-pole and an air supply, of a cylinder on said pole having connection with said air supply and having also an oblique elongated

opening, a reciprocating element within said cylinder, and a contact arm on said recip- 25
roccating element extending through said opening.

6. The combination of a hollow trolley-pole having an air-inlet and an air-outlet, a cylinder in communication with said pole 30
through said outlet, guides in said cylinder, screws passing through said pole and the cylinder and threaded into said guides, a piston in said cylinder, and a rod for said
35 piston guided in said guides, a contact-arm on said rod at an angle thereto, and means to cause said arm to swing laterally when the piston is actuated.

In testimony whereof, I have affixed my signature in the presence of two subscrib- 40
ing witnesses.

FRANK H. KAISER.

Witnesses:

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EMIL NEUHART.