

(No Model.)

2 Sheets—Sheet 1.

G. H. KNAPP.  
Railroad Switch.

No. 238,922.

Patented March 15, 1881.

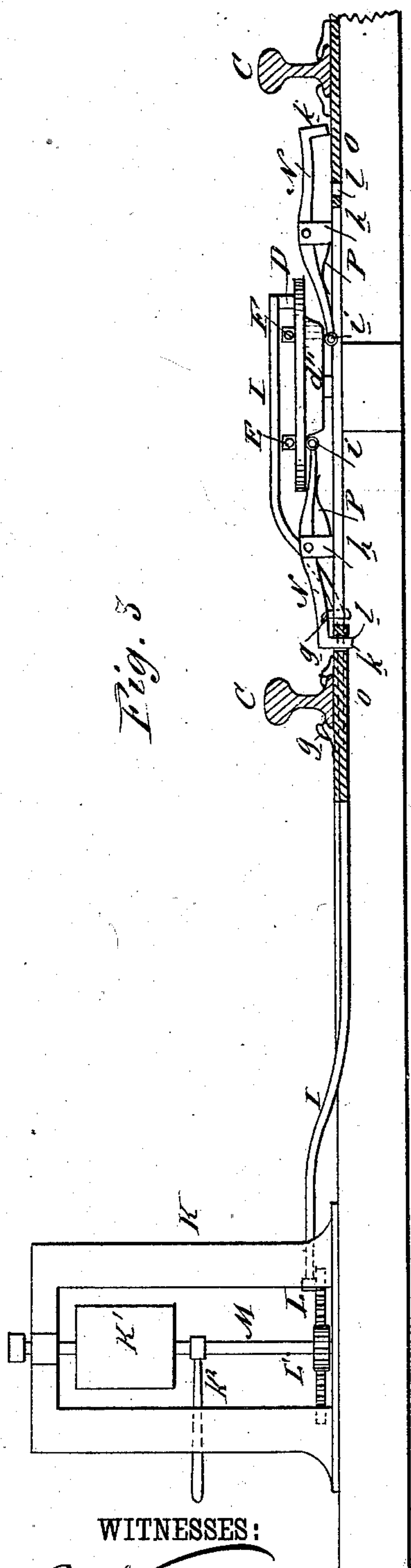


Fig. 3

Fig. 2

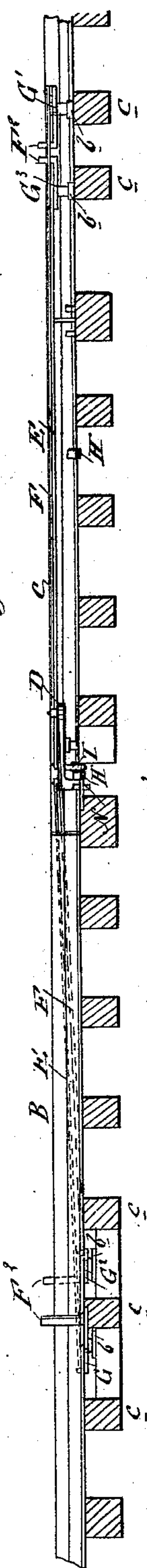
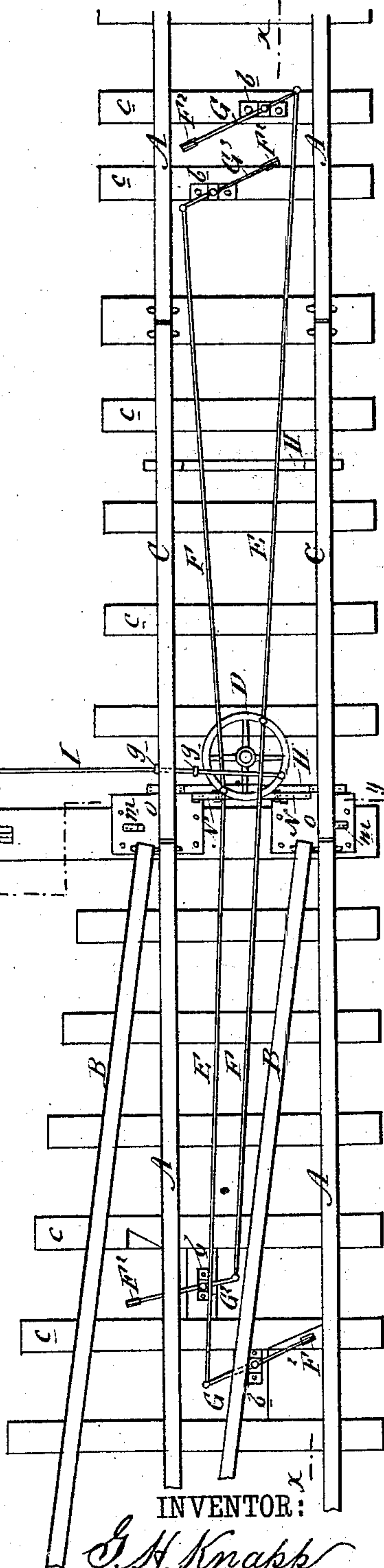


Fig. 1



WITNESSES:

C. Neveu  
C. Benquien

INVENTOR:

G. H. Knapp

BY

Mum & Co

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

G. H. KNAPP.  
Railroad Switch.

No. 238,922.

Patented March 15, 1881.

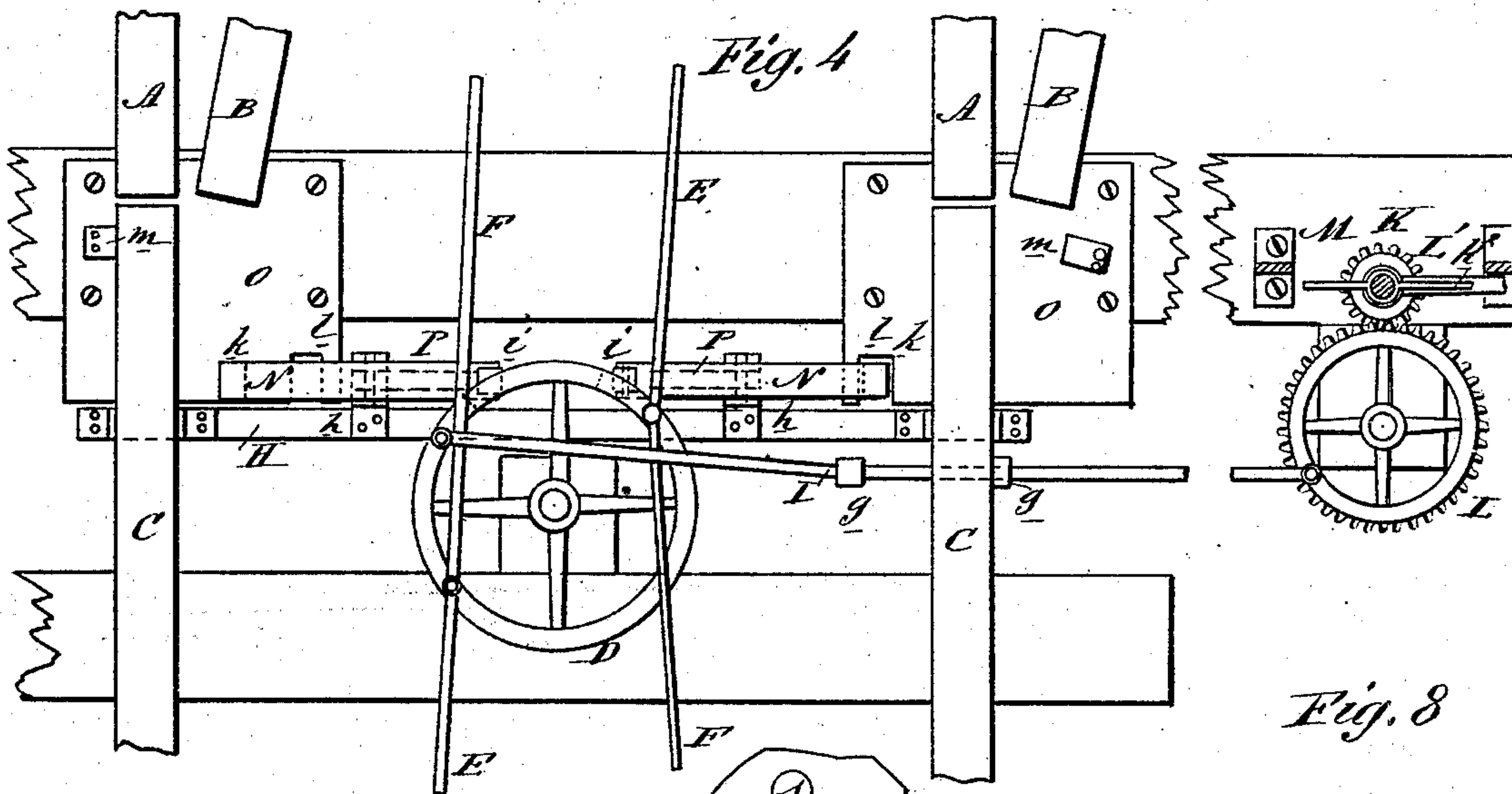


Fig. 8

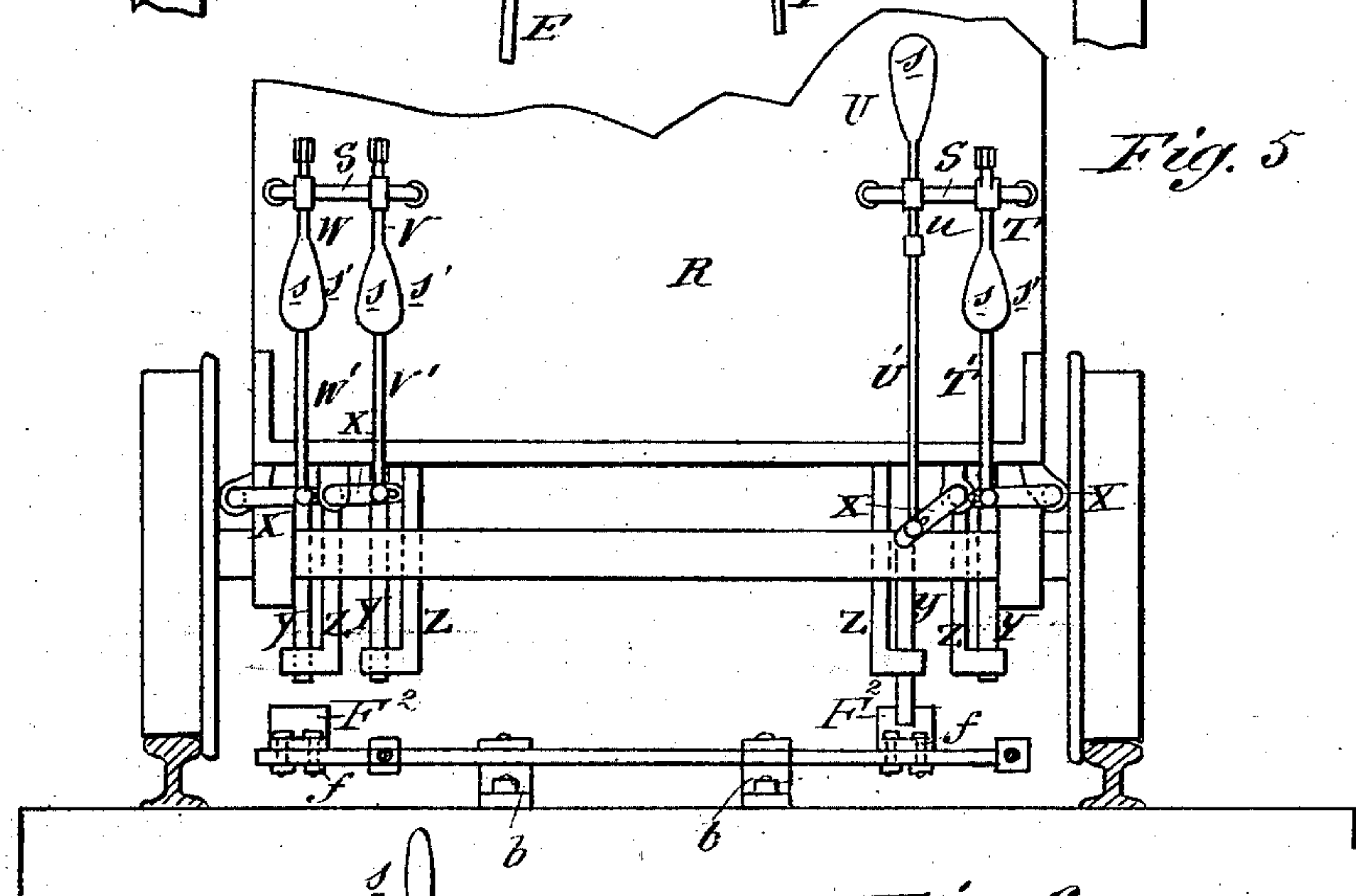


Fig. 5

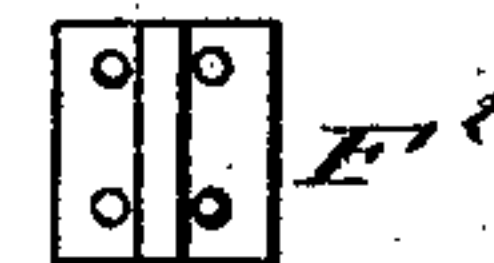


Fig. 7

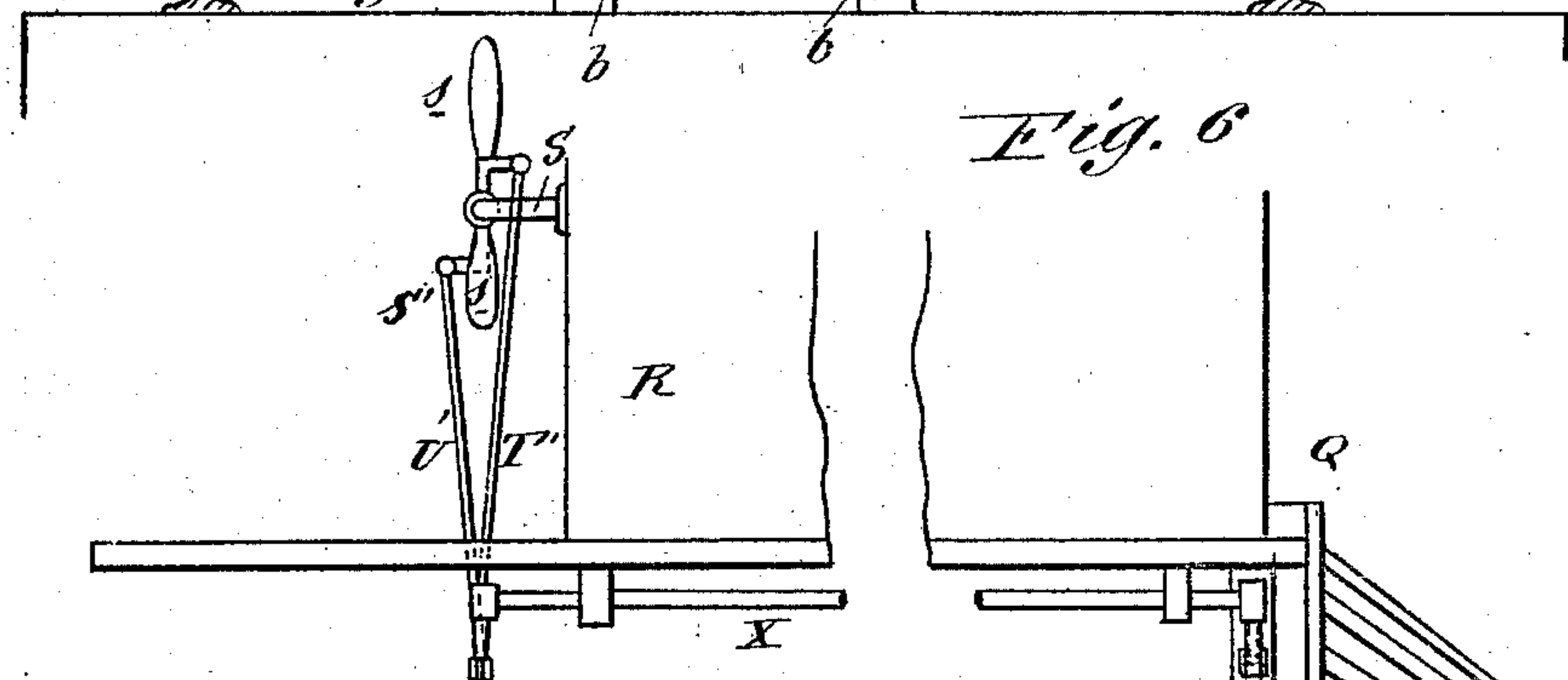
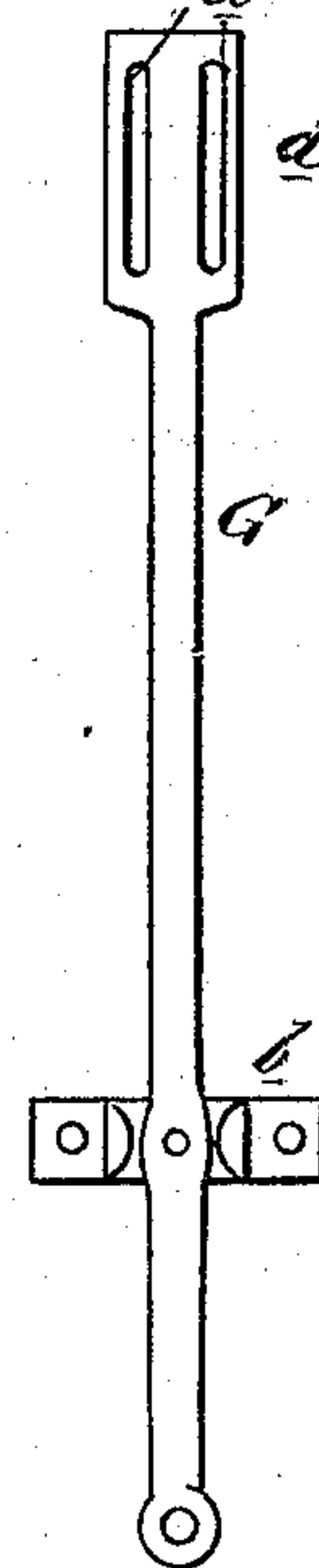


Fig. 6



WITNESSES:

C. N. Evans  
C. Sedgwick

INVENTOR:

G. H. Knapp  
By [Signature]

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

GEORGE H. KNAPP, OF BROCKTON, MASSACHUSETTS.

## RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 238,922, dated March 15, 1881.

Application filed December 30, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. KNAPP, of Brockton, in the county of Plymouth and State of Massachusetts, have invented a new and Improved Automatic Railway-Switch, of which the following is a specification.

The object of this invention is to prevent the occurrence of accidents from misplaced switches.

The invention consists of a novel arrangement of levers, in combination with the main and switch rail rods and movable rails of a railroad, whereby the switch is operated by the contact of strikers attached to the engine and controlled by the engineer, all of which will be hereinafter described, so that, if every switch on the line be thrown out and the engineer wishes to run his train through on the main track, he has but to properly adjust the engine-strikers above referred to, and as the train moves along it will place every switch on the road for the main track and leave them all locked.

Figure 1 is a plan view, showing the device applied to a track. Fig. 2 is a sectional side elevation of the same on line *xx*, Fig. 1. Fig. 3 is an enlarged cross-sectional elevation of the same on line *yy*, Fig. 1. Fig. 4 is an enlarged plan of a section of the track and applied device. Fig. 5 is a rear elevation, showing the strikers and their connecting-rods and levers in position on an engine. Fig. 6 is a side elevation of the same. Fig. 7 is an enlarged plan of a striking-lever. Fig. 8 is an enlarged plan of a striking-plate.

Similar letters of reference indicate corresponding parts.

In the drawings, A A represent the rails of the main track.

B B are the rails of the sliding track.

C C are the movable rails for transferring the train from A to B, or vice versa.

D is the switch-wheel, provided with a downward-projecting flange, *d'*, of the thickness of the rim of said wheel, and having beveled ends, as shown, and extending along the rim of said wheel for about one-sixth of its circumference.

E E are the main-track rods, connected at one end to opposite sides of the wheel D, while their other ends are respectively connected at

the striking-levers G G', that carry on their free ends the adjustable plates F<sup>2</sup>, which are designed to reach above the rails in position for the easy contact of the strikers attached to the engine. These levers G G' are set at suitable distances in opposite directions from the switch-wheel D, and are pivoted so as to extend transversely between the rails A A on blocks *b*, that are secured on ties or sleepers *c*. The ends of these levers G G' are broadened, as shown at *d*, Fig. 7, and are provided with vertical parallel slots *d'* for the reception and adjustment of the set-screws *f*, that hold the plates F<sup>2</sup> thereon, said plates F<sup>2</sup> being made adjustable in or out on said levers G G', that they may be set to correspond exactly in relative position with the strikers that are attached to the engine.

F F are the switch-track rods, that are connected with the wheel D at the same points as are the main-track rods E E, and are extended in opposite directions between the rails, and are there connected with striking-levers G<sup>2</sup> G<sup>3</sup>, which are pivoted on blocks *b*, and are provided with adjustable striker-plates F<sup>2</sup>, in the same manner as are the levers G G'.

The movable rails C C are held together by the cross-bars H, in the usual manner.

I represents the switch-rod that connects the wheel D with the mechanism of the switch-stand K. Said switch-rod I passes beneath one of the movable rails C, and is provided with lugs *g*, that project upward, one on each side of said rail C, but at a sufficient distance apart, so that the rod I may be moved far enough to unlock the switch before a lug, *g*, comes in contact with the rail C. The outer end of the switch-rod I is attached to a horizontal cog-wheel, L, that gears with the horizontal cog-wheel L', which is keyed on the lower end of the vertical switch-rod M, that is supported in the switch-stand K, and is provided with the usual signal K' and operating handle or lever K<sup>2</sup>, as shown.

One of the cross-bars H, holding the movable rails C together, is located beneath the wheel D, and said cross-bar H has secured to it, on either side of the wheel D, an upward-projecting lug, *h*, on each of which is pivoted, so as to move in a vertical plane at the side of said bar H, a lever, N. The ends of these



levers N, that extend beneath the wheel D, are provided with sheaves or rollers *i* for the contact of the downward-projecting wheel-flange *d''*, while their outer ends are bent downward at right angles into fingers *k*, that are designed to lock into the sockets *l* of the locking-plates O O, which are fastened on a suitable tie or sleeper, as shown. Beneath these locking-levers N are springs P, that press upward against the inner ends thereof and throw them "into lock" or throw the fingers *k* into the sockets *l*. On the faces of these locking-plates O O are fastened stops *m*, that are designed to hold the rails C C in place as they are being moved from one side to the other while the springs P are operating to throw the locking-levers N into lock.

In Figs. 5 and 6, Q represents the front portion of an engine, R being the cab thereon. On the inside of the cab R are fixed horizontal rods S, that serve as fulcrums for the levers T U V W, which connect, by movable joints *o*, with the rods T' U' V' W', that pass down through the cab-floor and rigidly connect with the cranked ends of the horizontal rods X X, which extend forward beneath the engine to near the front thereof, and there have cranked ends rigidly connecting with the vertical strikers or striker-rods Y, that pass down through guides Z, which are secured on the bottom of the engine Q. The levers T U V W have weighted handles *s*, that when turned down, as shown at *s'*, serve to hold the strikers or striker-rods Y from contact with the striker-plates F<sup>2</sup>. The lever T is to operate the switches for the right-hand main track, and the lever W is for the left-hand main track. The lever U is for the left-hand switch-track, and the lever V is for the right-hand switch-track. When a striker, Y, comes in contact with a striker-plate, F<sup>2</sup>, on one of the levers G G' it will cause, through a rod, F, the wheel D to be turned, so that its flange *d''* shall come in contact with a sheave, *i*, in the end of a lever, N, and thereby press said lever N down so as to unlock it from its plate O on the left. Thereupon lug *g* on the rod I comes in contact with a rail, C, thereby throwing the rails C to the switch-rails B, when instantly the opposite locking-lever N would be thrown by its spring P to lock in the plate O on the right hand, leaving said levers N in position the reverse of those shown in Fig. 3. Then, in order to throw the rails C back to the main track, a striker, Y, would be brought into contact with a striker-plate, F<sup>2</sup>, on one of the levers G<sup>2</sup> G<sup>3</sup>, for operating a rod, E, to move the wheel D, to cause the unlocking and locking of the levers N, as in the former instance.

In using the hand-switch the wheel D is moved by the rod I to lock and unlock the levers N and leave the rods E F in proper position, as required.

If, when operating the switches automati-

cally, it is desired to run on the main track, the operator turns up the lever T on the right and the lever W on the left hand, thereby pushing down their respective strikers Y, which strikers Y will, as the train moves on, come in contact with plates F<sup>2</sup> on the levers G G', connected with the rods E. If it is desired to run on a right-hand turn-out, the levers T and W are turned down with the effect of raising their corresponding strikers Y above contact with the plates F<sup>2</sup>, and the lever V is turned up at the same time with lever U. If it is desired to come back to the main track again, the lever V is turned down and the lever U is turned up. If it is desired to go on a left-hand turn-out, the levers T and W are put down and the lever U is turned up, and in order to come back thence on the main track the lever U is turned down and the lever V turned up.

This switch can be attached to any hand-switch and be worked by hand as well as from the engine.

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

1. In a railroad-switch, the combination, with the horizontal wheel D, provided with flange *d''*, and switch-rod I, of the rods E F, levers G G' G<sup>2</sup> G<sup>3</sup>, provided with striker-plates F<sup>2</sup>, locking-levers N, and locking-plates O, constructed and arranged substantially as herein shown, for the purpose described.

2. In a railroad-switch, the combination, with the track-rods E F and levers G G' G<sup>2</sup> G<sup>3</sup>, of the adjustable striker-plates F<sup>2</sup>, substantially as herein shown and described.

3. In a railroad-switch, the combination, with the wheel D, having projections, of the spring-actuated levers N, provided with sheaves *i* and fingers *k*, and plates O, provided with sockets *l*, substantially as herein shown and described, whereby the switch is locked and unlocked, as set forth.

4. In a railroad-switch, the combination, with the flanged wheel D, rods E F, levers G G' G<sup>2</sup> G<sup>3</sup>, striker-plates F<sup>2</sup>, switch-rod I, cross-bar H, locking-levers N, and locking-plates O, of the cog-wheels L L' and switch rod and signal M K', substantially as herein shown and described.

5. In a railroad-switch, the combination, with the switch-controlling wheel D, main-track rods and switch-track rods E F, levers G G' G<sup>2</sup> G<sup>3</sup>, and striker-plates F<sup>2</sup>, of the levers T U V W, connecting-rods T' U' V' W' X, and striker-rods Y, substantially as herein shown and described, whereby the switch may be operated from the engine, as set forth.

GEORGE HERBERT KNAPP.

Witnesses:

CHARLES T. HOWARD,  
GEORGE L. KNAPP.