

No. 843,641.

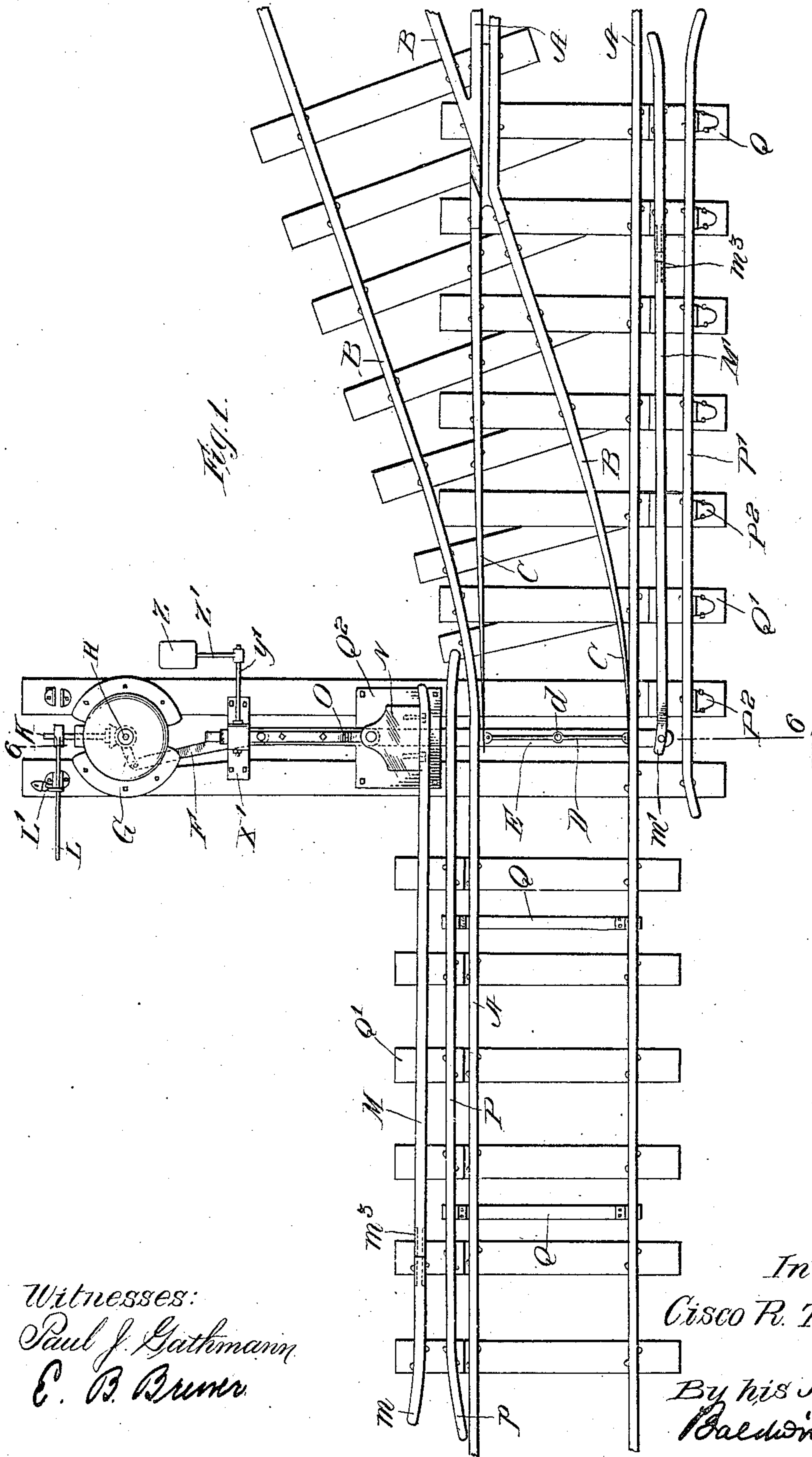
PATENTED FEB. 12, 1907.

C. R. TRAXLER.

AUTOMATIC SWITCH OPERATING MECHANISM.

APPLICATION FILED APR. 28, 1906.

2 SHEETS—SHEET 1.



Witnesses:
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E. B. Bruner

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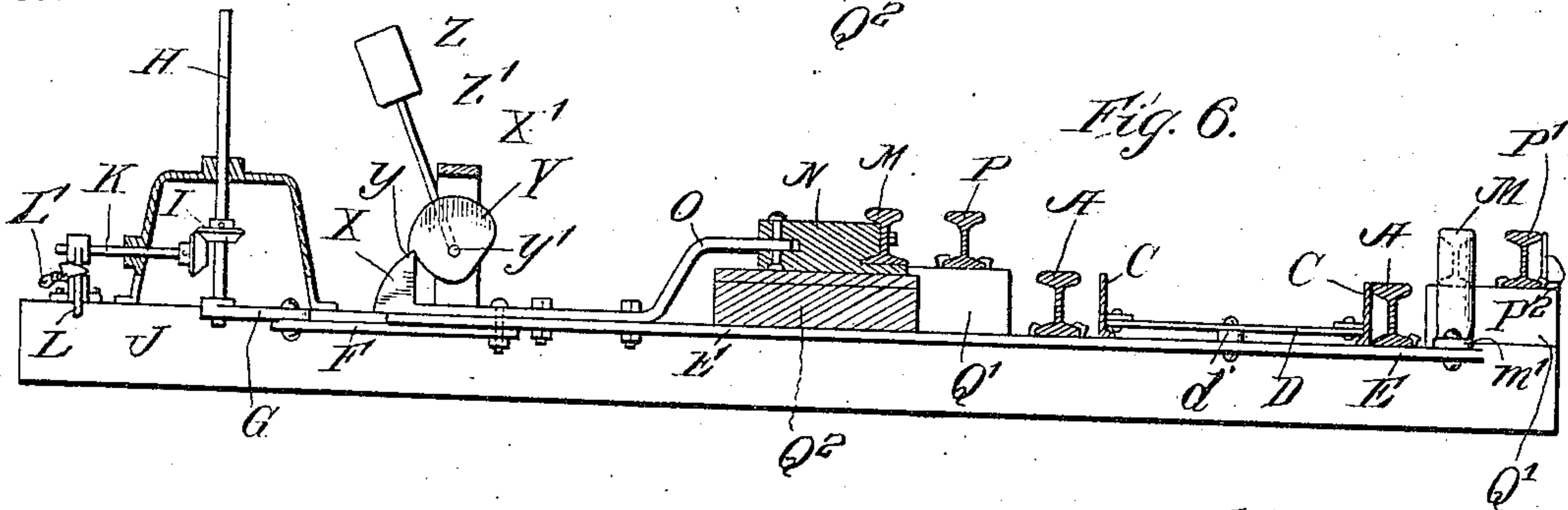
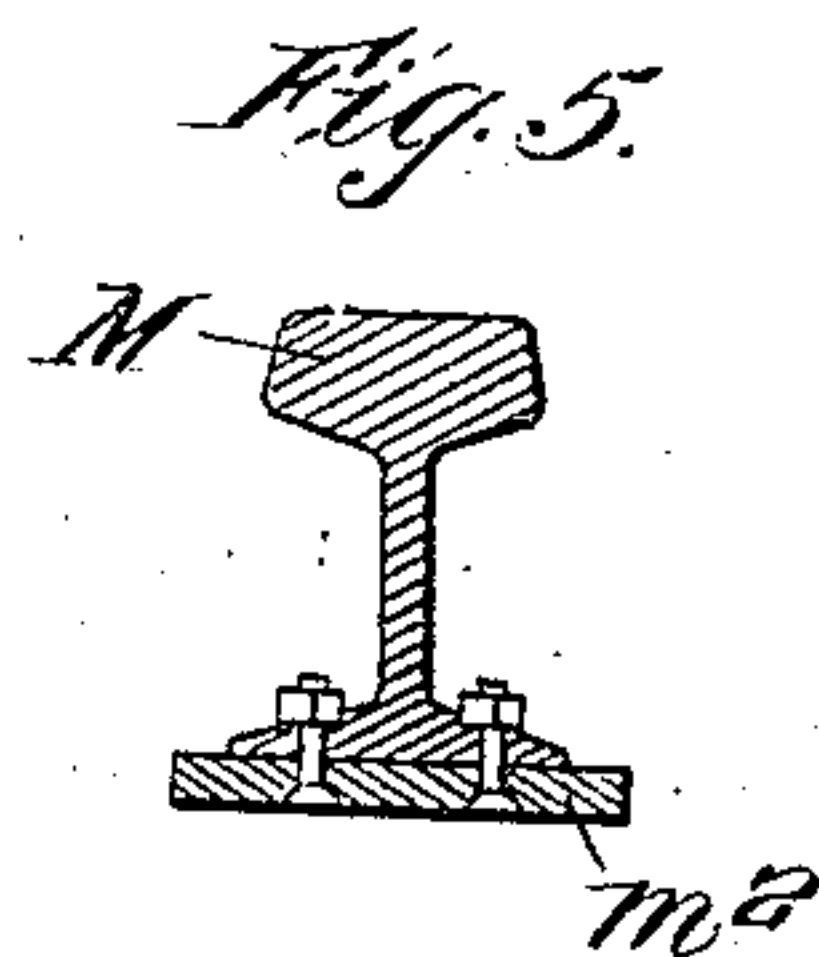
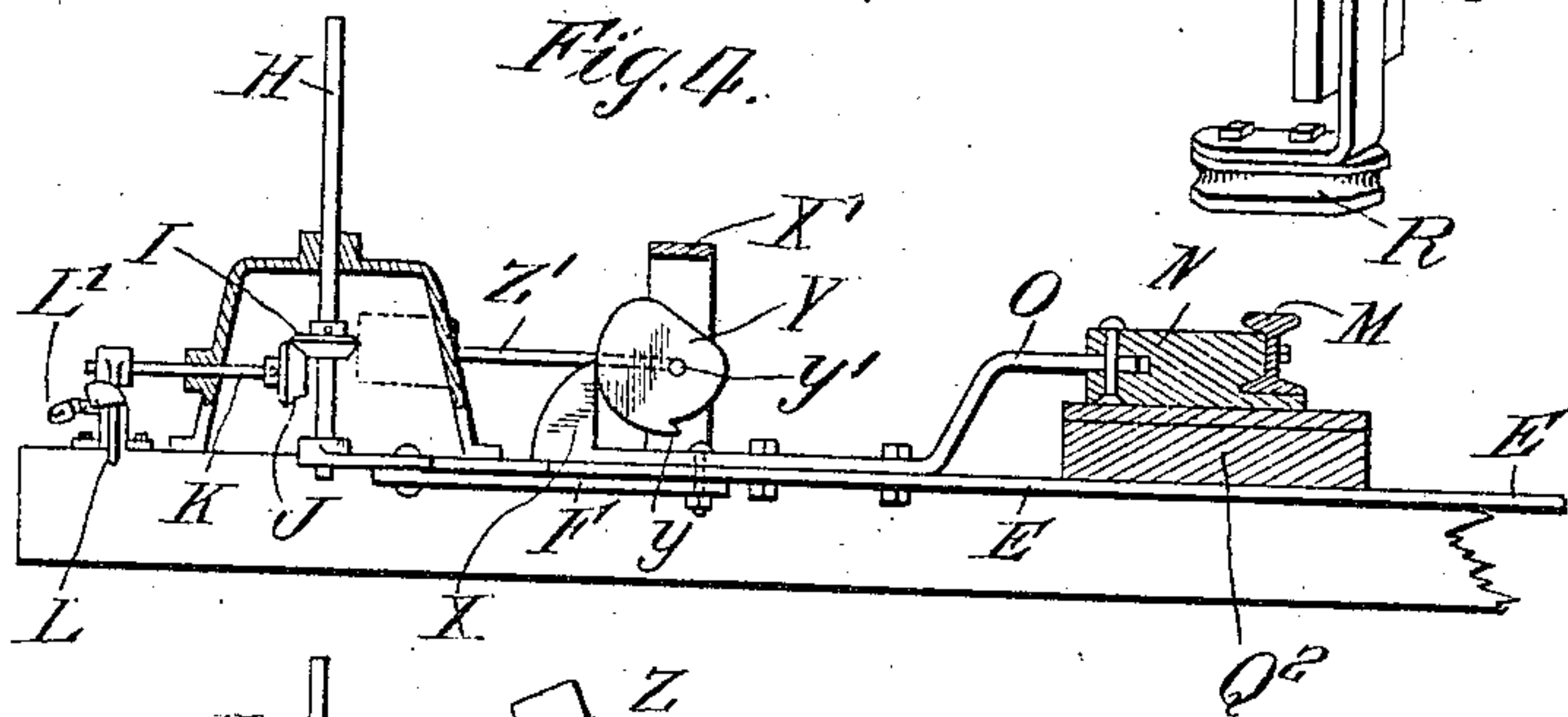
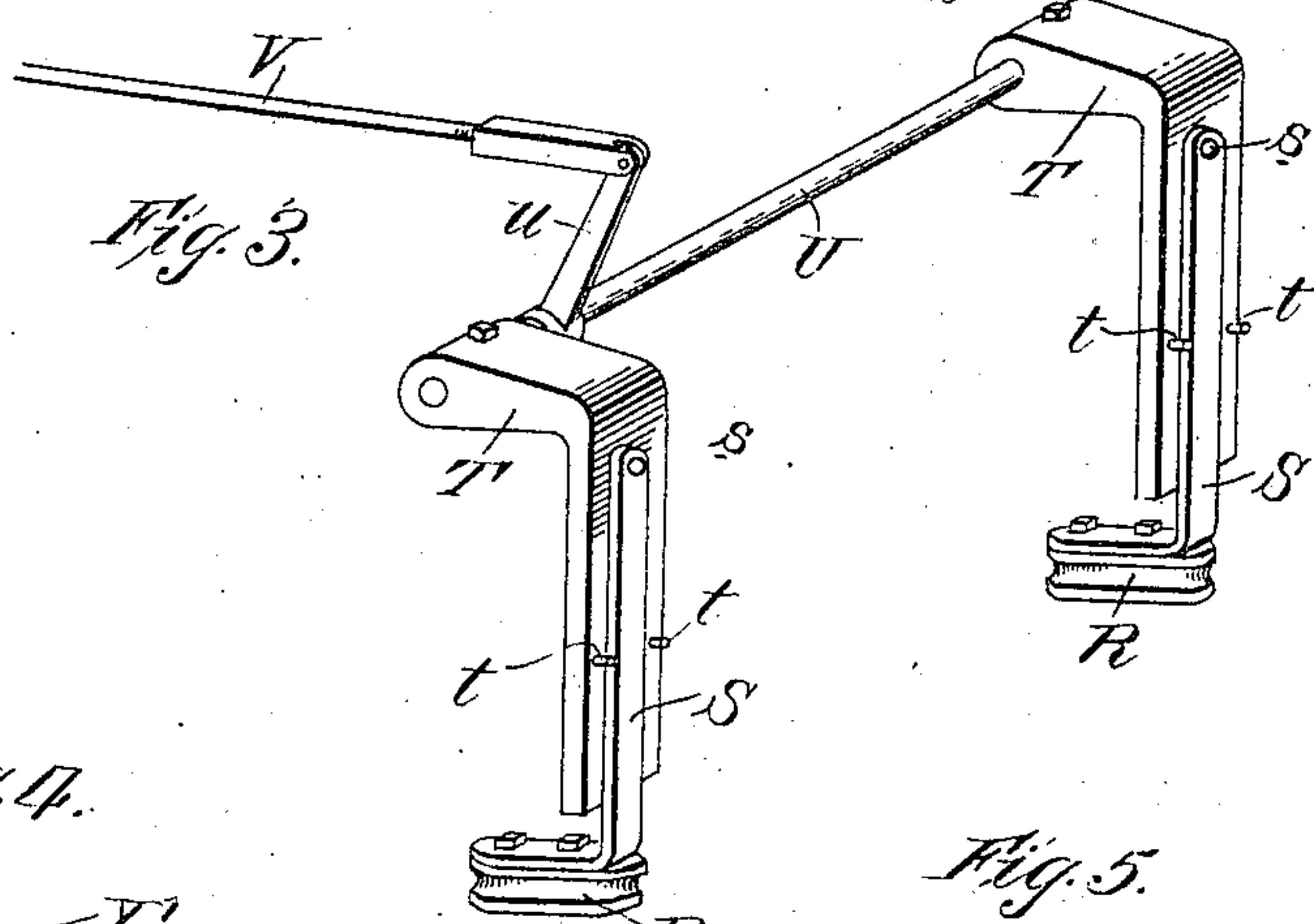
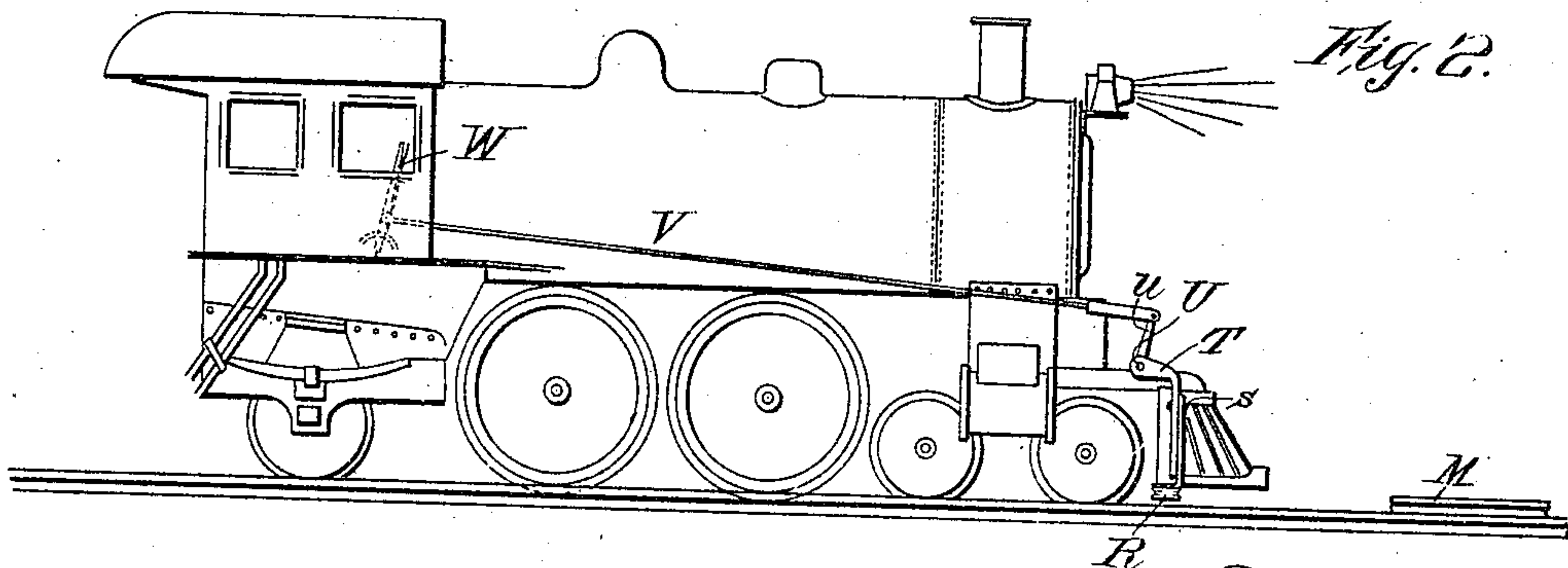
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UNITED STATES PATENT OFFICE.

CISCO R. TRAXLER, OF WINSTON SALEM, NORTH CAROLINA.

AUTOMATIC SWITCH-OPERATING MECHANISM.

No. 843,641.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed April 28, 1906. Serial No. 314,245.

To all whom it may concern:

Be it known that I, CISCO R. TRAXLER, a citizen of the United States, residing in Winston Salem, in the county of Forsyth and State of North Carolina, have invented certain new and useful Improvements in Automatic Switch - Operating Mechanism, of which the following is a specification.

The object of my invention is to prevent accidents, which often occur when a train on a main track runs into a switch improperly left open.

My invention relates to that class of switch-operating mechanism in which devices carried by a moving train or car come in contact with and automatically operate mechanism in proximity to a switch, and so actuate the mechanism as to shift the switch should it be improperly set, and my invention involves novel mechanism for this purpose.

In carrying out my invention I provide mechanism which can be easily applied to the ordinary hand-operated mechanism, which latter may be actuated in the ordinary way without interference with the automatic mechanism.

The rails of the main track and siding and the switch-rails are arranged in the usual way. The switch-rails are connected together near their outer free ends by a pivoted cross-bar, and this bar is connected with a sliding bar which extends out to one side of the main track, where it is connected with hand-operated mechanism used to shift it laterally to open or close the switch. The sliding bar is connected with a rail arranged substantially parallel with the main track and which is adapted to be engaged and shifted laterally by a shoe or similar device carried by the locomotive, car, or train, the organization being such that a train traveling at any speed when it approaches an open switch will automatically close the switch without slackening the speed of the train.

In order to relieve the engine from strain, I provide another rail substantially parallel with that first mentioned, between which and the switch-operating rail before referred to the shoe on the engine passes, and in order that the shoe may properly find its place between the rails when the engine is tilted or when the pilot-wheels are moved out of their normal position I provide means for suspending the shoe in such manner that it may swing freely to a limited extent. I also

provide devices by means of which when the switch is shifted automatically to close it in the manner before specified it is automatically locked and held closed, so that after the switch-operating shoe on the engine has passed there will be no danger of the switch-points being moved or shaken out of place.

Other features of my invention will be hereinafter referred to.

In the accompanying drawings, Figure 1 shows a top plan view of a railway-switch embodying my improvements. Fig. 2 shows a side elevation of a locomotive and part of my improved switch mechanism. Fig. 3 is a perspective view of the switch-operating devices carried by the engine. Fig. 4 shows a transverse section through part of the switch mechanism with the switch - lock closed. Fig. 5 shows a transverse section of the switch-operating rail. Fig. 6 shows a transverse section of the switch and its operating mechanism on the line 6 6 of Fig. 1.

The rails A of the main track, those B of the siding, and the switch-points C, are of usual construction and are arranged in the usual way. The outer or free ends of the switch-rails are connected by a cross-bar D, and this bar is centrally pivoted at *d* to a sliding bar E, which extends out under the rails to one side of the main track, being guided to slide crosswise of the main track, in the manner clearly shown. The outer end of the sliding bar E is pivotally connected with a connecting-rod F, which at its outer end is connected to a crank-arm G on a vertical rod H, to the upper end of which a target may be secured in the usual way. The rod H carries a beveled pinion I, which meshes with a similar pinion J on a horizontally-arranged shaft K, to which the hand-lever L is applied. It is obvious that if the hand-lever L be rocked it will, through the mechanism described, move the bar E back and forth and shift the switch-rails.

L' indicates the ordinary devices for locking the switch-operating lever.

Substantially parallel with the main track is a switch-operating rail M, which is securely fastened to a block N, which in turn is pivoted to a bent bar O, bolted to the sliding bar E. The switch-operating rail M is held a short distance above the plane of the main rails A, and at its end farthest from the sliding rod E it is bent or slightly inclined at *m* in order to guide the rail-operating shoe, here-

inafter referred to, into operative position. The rail M is made quite long, so that the shoe which actuates it may operate slowly, and thus avoid sudden jars. Between the switch-operating rail and the main track I arrange an abutment-rail P. This may be rigidly mounted in the same horizontal plane with the rail M and substantially parallel therewith. It is bent or flared at p for the purpose of guiding the shoe carried by the engine, and hereinafter more particularly described. This rail may be securely fastened to blocks Q' , mounted on ordinary ties, but for the purpose of holding it more rigidly I preferably employ metallic stringers Q , which are attached to the main track and also to the rail P. The rail M is also mounted on the blocks Q' , while the block N is mounted on a supporting-block Q^2 . It is obvious that if the rail M be moved outward at its end connected with the sliding rod E said rod will be moved laterally and shift the switch-points.

In order to operate the switch when a train is moving in the opposite direction, I employ a switch-operating rail M' , similar in all respects to the rail M, but having its end m' bent down and pivotally connected with the outer end of the rod E. If the end m' of the rail M' is moved inwardly toward the switch-stand, it will shift the switch-points in an obvious manner.

P' indicates an abutment-rail similar to the rail P. This rail may be strengthened by braces P^2 of well-known construction.

Referring now to Figs. 2 and 3, it will be observed that the engine carries devices adapted to engage the switch-operating rail and move it laterally. Various devices might be used for this purpose; but preferably I employ on each side of the engine a shoe R, which is suspended in such manner as to move between the rails M and P or M' and P' and properly shift the switch-operating rails. Each shoe is attached to a bent bar S, which is suspended by a pivot s from a hanger T, secured to a cross-bar U. The cross-bar is connected by a crank-arm u with a rod V, extending to the engine-cab and connected with an operating-lever W of any approved construction. The bar U is mounted to turn in suitable bearings at the front end of the engine. It will be understood that the bars S, pivoted at s , are free to swing; but this swinging movement is limited by means of stops t . It will thus be observed that there is a loose connection between the shoes and the engine-frame. The shoes are merely entered between the rails M and P or M' and P' and are carried forward by the engine, all side strain or thrust being taken from the engine and transferred to the rails. Sometimes the engine sways when approaching a switch or the pilot-wheels will move laterally to some extent. This

would tend to move the shoes out of proper position to engage the switch-operating rails; but by pivoting the shoe-supporting rods in the manner specified the shoes will be always held in proper position to engage the switch-operating mechanism at the proper time. Inasmuch as the rails M and P and M' and P' are arranged above the level of the rails of the main track and siding, the shoes, after leaving these rails, can pass over the main rails or siding-rails without damage; but after the shoes have left the switch-operating rails there might be some tendency for the switch-points to be shaken out of their closed position, and thus the cars following the engine might be derailed or pass onto the siding. To avoid this, I provide improved switch-locking mechanism of very simple construction. The sliding bar E is provided with an upwardly-projecting end X, with which is adapted to engage a shoulder y on a cam Y, carried by a horizontal shaft y' , mounted to turn in a frame X' . A weight Z is carried by a bar Z' , projecting laterally from the shaft y' . When the switch is open, the shoulder y engages the projection X, as indicated in Fig. 6, and when in this position the weight Z tends to turn the shaft y' in the direction indicated by the arrow in Fig. 6. If the switch-operating mechanism is actuated by a passing train and the sliding bar E is moved toward the switch-stand, the shoulder y is released from the projection X, and then the weight Z descends, moves the cam Y in the direction indicated by the arrow, and assists in closing the switch, and serves to lock the switch in its closed position when the parts have assumed the position shown in Fig. 4. When in this position, it will be impossible for the switch-points to shift in such manner as to again open the switch; but the switch-tender can readily open the switch when desired by lifting the weighted bar and operating the lever L in the usual way. In ordinary switches it sometimes happens that the points project in the path of the wheels even when the switch is supposed to be closed, and this sometimes causes a train to be derailed; but by my improved locking devices this can never occur.

The shoes R, carried by the train, move the switch-operating rails to the same extent every time they operate, never so much as to cause serious damage and never so little as to fail to properly close the switch. Should the switch-points project slightly in the manner above described when the switch is supposed to be closed, they will be automatically moved out of the way by the shoes and switch-operating rails above-referred to.

The rails M and P may be made of ordinary track-rails, and preferably each such rail is made in two parts, flexibly connected by fish-plates, as indicated at m^3 , in the usual

way. If the rails are not sufficiently stiff or strong, they may be reinforced by base-plates m^2 in the manner indicated in Fig. 5.

The mechanism described is very simple and is believed to be entirely practicable. If it happens that the switch is locked open, the shifting of the rail M or M' will exert sufficient power to break some part of the switch-stand, which can be easily repaired—for instance, one of the set-screws, which attaches the pinion I or J to its shaft, may be made to slip, and thus release the lock.

My improvements may be readily applied to ordinary hand-operated mechanism or to any switch without material modification thereof. It will be observed that there are no springs or other delicate devices embodied in my mechanism, which is both strong and durable and absolutely reliable in operation. Even should some of the parts become frozen or covered with ice the mechanism is so strong as to break the ice and free the parts to enable them to operate in the usual manner.

In such switches as employ only one shifting rail the cross-bars D may be omitted.

I claim as my invention—

1. Automatic switch-operating mechanism, comprising a rail arranged substantially parallel with the main track but in a horizontal plane above it, connections between this rail and the switch, and an abutment-rail substantially parallel with the switch-operating rail.

2. Automatic switch-operating mechanism, comprising a switch-operating rail arranged substantially parallel with the main track but elevated above it, connections between this rail and the switch, an abutment-rail arranged substantially parallel with the switch-operating rail and in the same horizontal plane, and hand-operated switch-shifting mechanism also connected with the switch.

3. Automatic switch-operating mechanism, comprising a switch-operating rail connected with the switch and arranged substantially parallel with the main track but to one side thereof and in a horizontal plane above it, devices carried by a train for moving this rail laterally, mechanism operated by hand for opening and closing the switch and means movable independently of said mechanism for opening and closing the switch and for automatically locking the switch after it is closed.

4. Automatic switch-operating mechanism, comprising a switch-operating rail connected with the switch arranged substantially parallel with the main track, but to one side thereof and in a horizontal plane above it, and an abutment-rail also arranged to one side of the main track but in the same horizontal plane with the switch-operating rail.

5. Automatic switch-operating mechanism,

comprising a switch-operating rail arranged substantially parallel with the main track and connected with the switch, an abutment-rail parallel with the switch-operating rail, devices carried by a train for moving this rail laterally and an automatic locking device for holding the switch closed after it is shifted by the switch-operating rail.

6. Automatic switch-operating mechanism, comprising a sliding bar connected with the switch, a switch-stand for moving this bar manually, a switch-operating rail connected with the sliding bar and arranged to one side of the main track above the plane thereof and substantially parallel therewith, and an abutment-rail parallel with the switch-operating rail.

7. The combination with switch-rails, a sliding bar connected therewith, mechanism for shifting said bar by hand to open and close the switch, a locking device movable independently of said mechanism for shifting the bar and engaging the bar when the switch is open and serving to automatically lock the switch closed after the bar is shifted.

8. The combination of switch-rails, a sliding bar connected therewith, means for shifting the bar, a locking-cam engaging the bar when the switch is open but which automatically locks the bar against movement after the latter is shifted to close the switch, said cam being movable independently of the means for shifting the bar.

9. The combination of a switch, a switch-operating rail, another rail parallel therewith, and a shoe carried by a train adapted to engage both switch-operating rail and said other rail and to move the former to close the switch, said shoe being adapted to move freely laterally to a limited extent without strain upon the engine-frame.

10. The combination of a switch, a switch-operating rail connected therewith, an abutment-rail and a shoe carried by a train adapted to engage the switch-operating rail and the abutment-rail and which is free to move laterally to a limited extent without strain upon the engine.

11. The combination of a switch, a switch-operating rail connected therewith, an abutment-rail and a swinging shoe suspended from a car or engine and adapted to pass between the switch-rail and the abutment-rail.

12. The combination with an engine-frame, of switch-operating shoes, pivoted bars to which they are attached, hangers to which the bars are pivoted, a shaft to which the hangers are secured and devices extending to an engine-cab for rocking the shaft.

In testimony whereof I have hereunto subscribed my name.

CISCO R. TRAXLER.

Witnesses:

LLOYD B. WIGHT,
CHARLES F. EARLY.