

No. 659,516.

Patented Oct. 9, 1900.

G. DURCHHOLZ.
RAILWAY SWITCH.

(Application filed Feb. 26, 1900.)

(No Model.)

2 Sheets—Sheet 1.

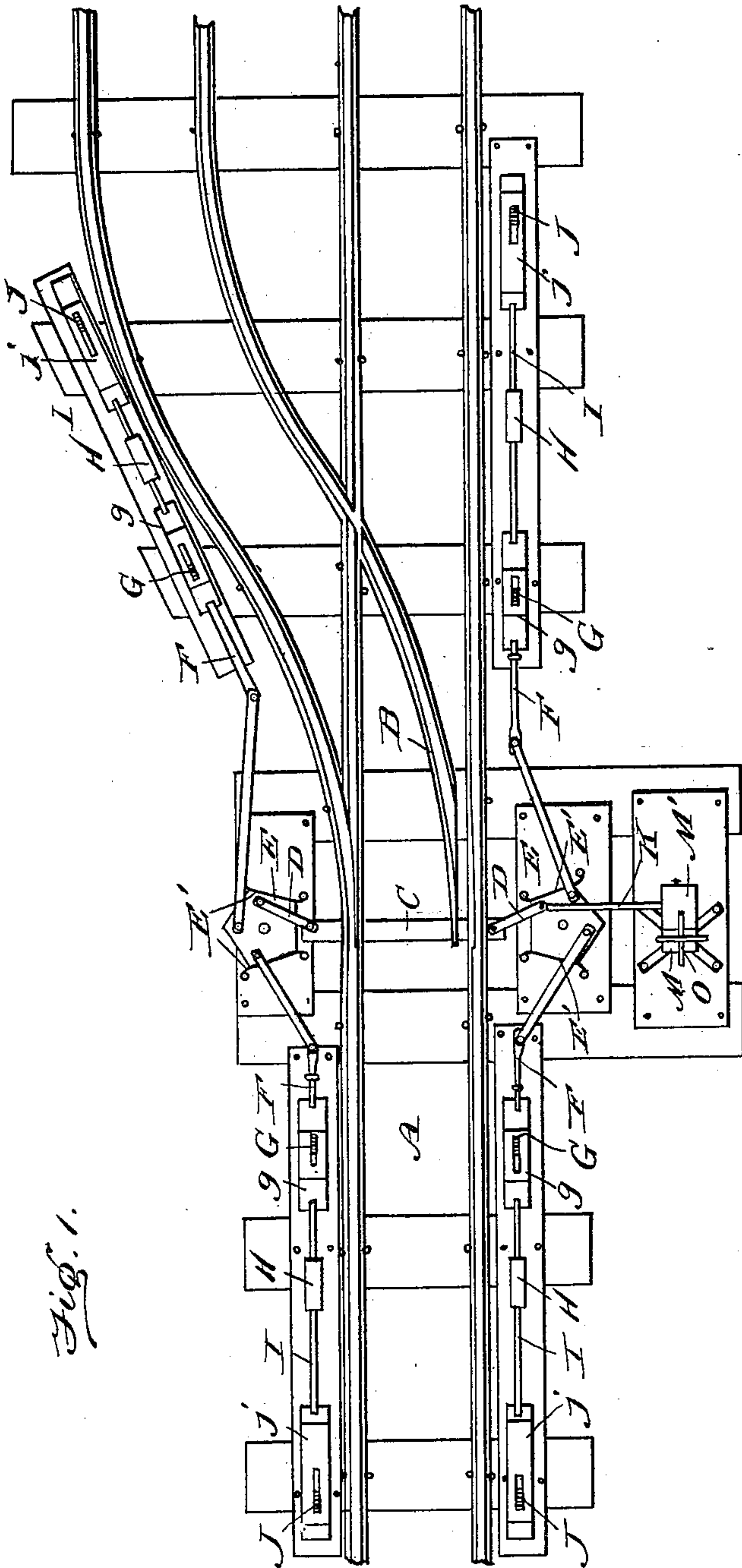


Fig. 1.

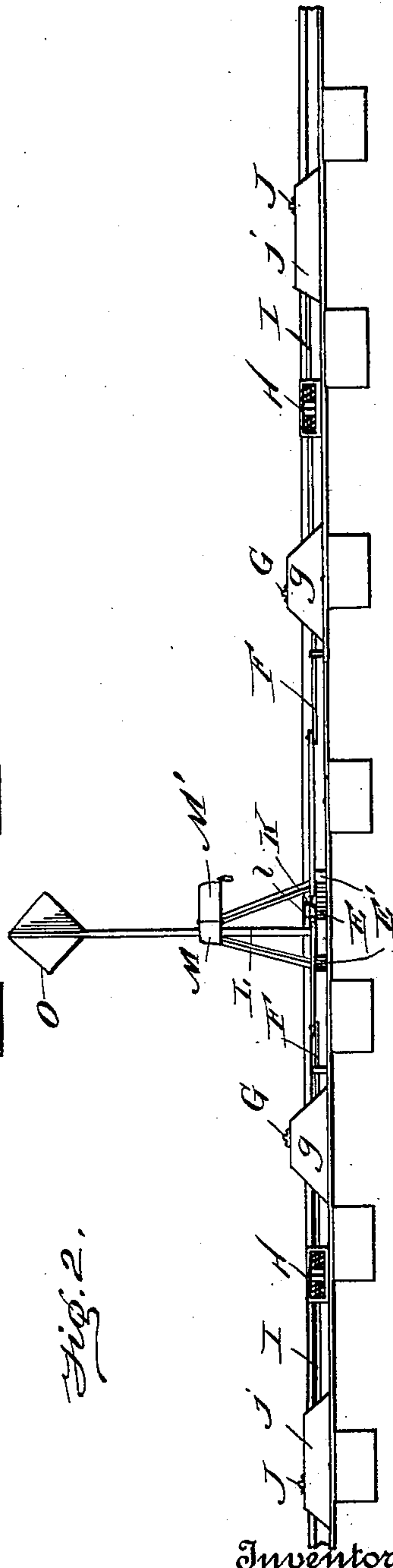


Fig. 2.

Witnesses

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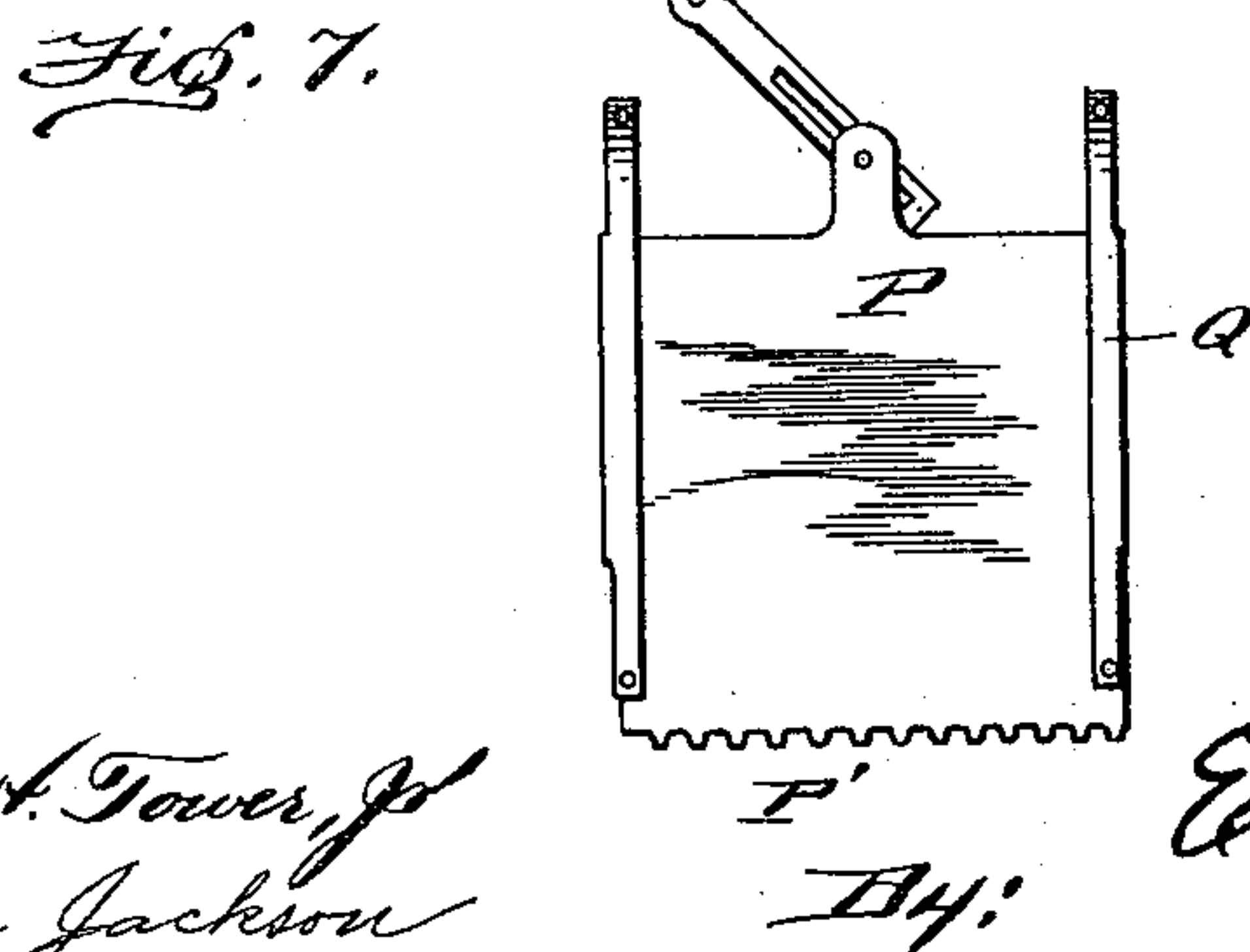
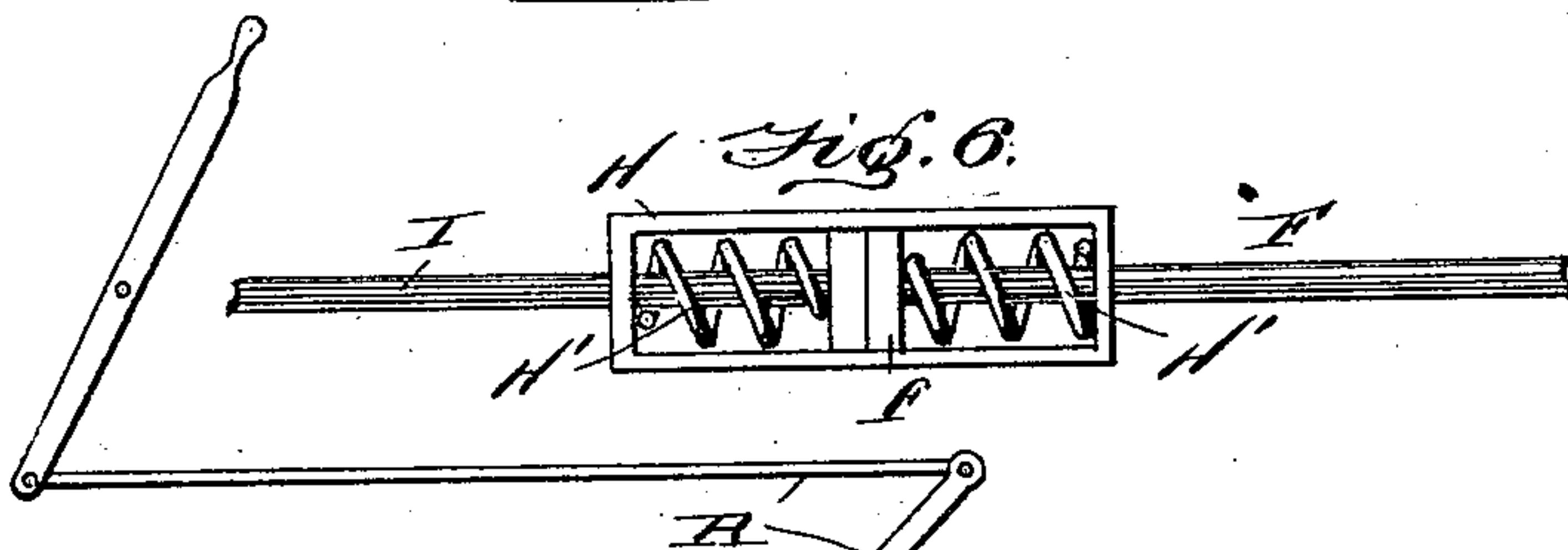
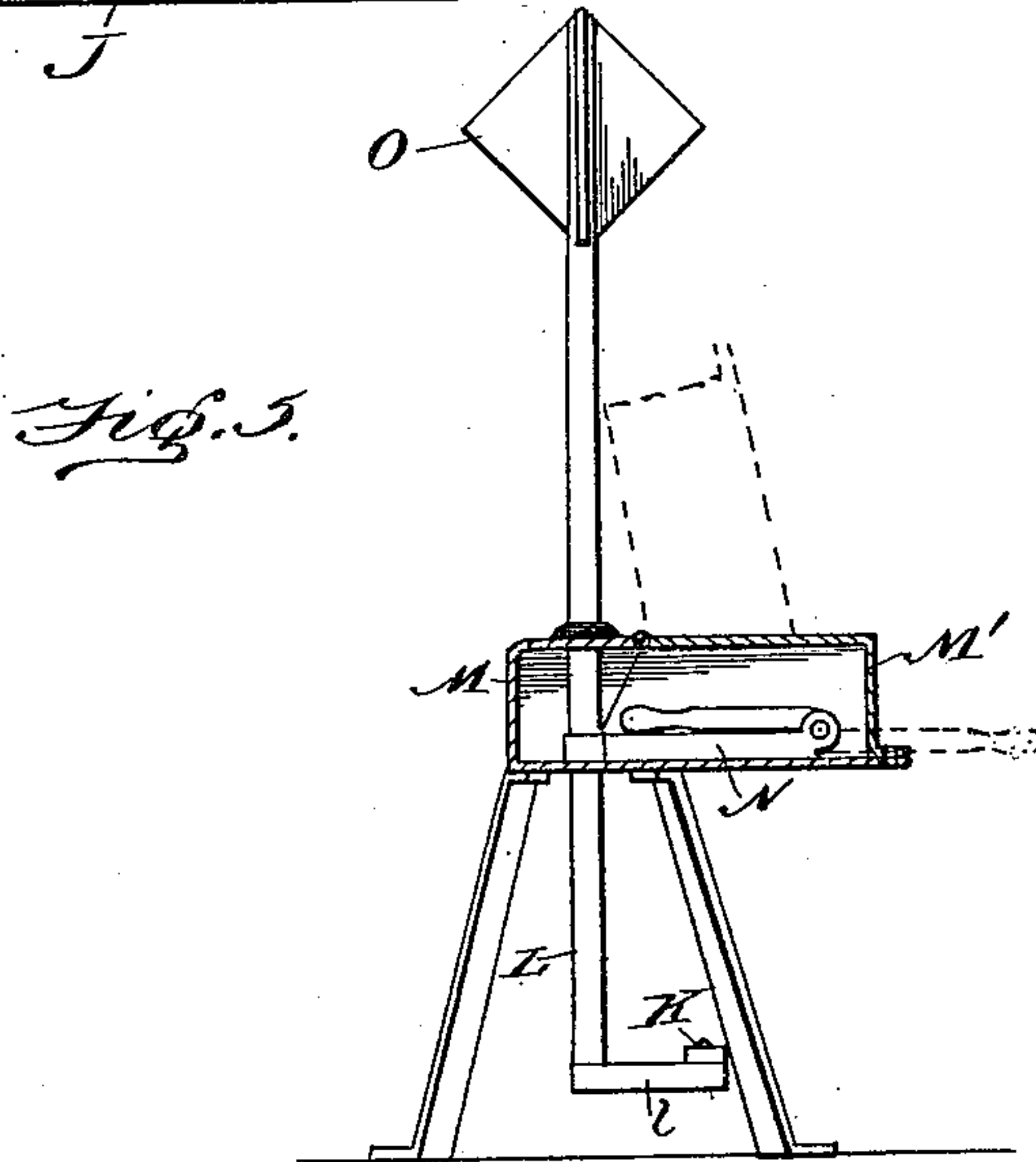
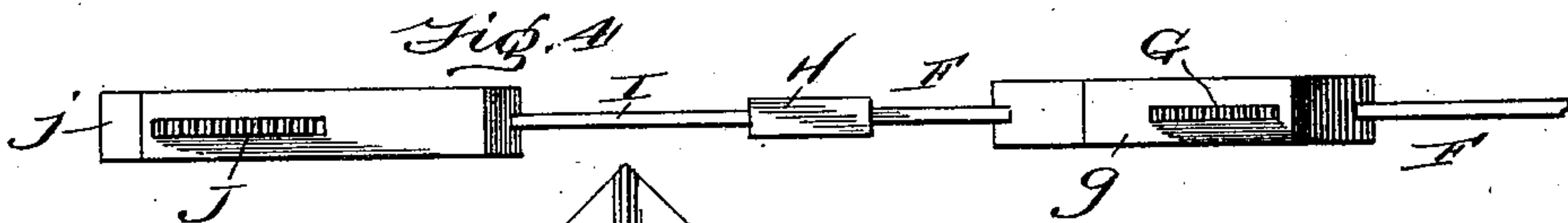
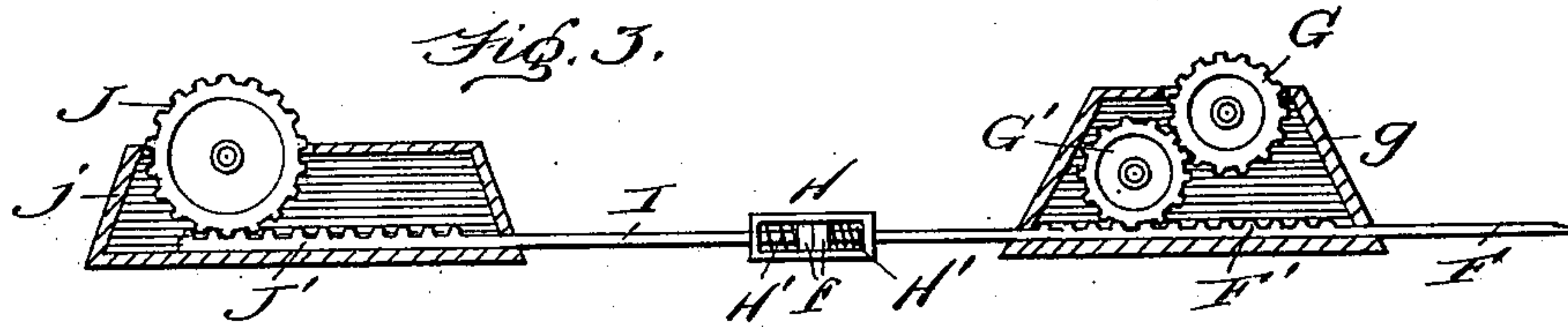
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Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE DURCHHOLZ, OF GREELEY, COLORADO.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 659,516, dated October 9, 1900.

Application filed February 26, 1900. Serial No. 6,592. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DURCHHOLZ, a citizen of the United States, residing at Greeley, in the county of Weld and State of Colorado, have invented certain new and useful Improvements in Railway-Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in railway-switches; and its object, among other things, is to provide means of peculiar construction whereby the switch may be opened or closed from a moving train.

To these ends the invention consists in the novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a plan view of a switch having my improvements applied thereto. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical section through two casings, showing the mechanism therein. Fig. 4 is a plan view of said mechanism. Fig. 5 is a section through the indicator, showing in dotted lines the device open and the lever extended for operation by hand. Fig. 6 is a detail view of a spring-cushion. Fig. 7 is a detail view of the switch-operating mechanism detached from an engine.

Referring to said figures by letters of reference, A is the main line of the railway, having a switch B, the end of which is secured to a sliding bar C, pivotally connected at its opposite ends to connecting-bars D, each of which is pivoted to an angular plate E, one to either side of the switch. Each of these plates is centrally pivoted and is preferably pentagonal in shape, and two strong bow-springs, as E', are placed on opposite sides thereof and adapted to bear against two of its sides.

Pivotally secured to each of the plates E, at a point near the inner edge thereof, is a rod F, extending along the main line and provided at a suitable distance from the switch with a ratchet F'. This ratchet engages with

a gear G', which is adapted to be driven by a second gear G, extending upward through the top of a suitable casing g, inclosing the ratchet and its gears. The rods extend beyond the casings for a desired distance, and the ends thereof are mounted and adapted to slide within couplings H. Coiled springs H' are mounted upon the ends and bear at opposite ends upon the heads f of the rods F and the ends of the couplings, respectively. It is obvious that these springs will retain the rods normally retracted into the couplings. The opposite ends of the couplings H are mounted and adapted to slide upon the ends of similar rods I, also provided with coiled springs H', which hold them in a retracted position. These rods I extend along the track for a suitable distance, and their ends are provided with ratchets J', each of which engages with a gear J, projecting upward through a casing j, which forms a bearing for the rod and practically conceals the mechanism from view. Rods similar to rods F are pivotally connected to the opposite side of each of the angular plates E, and these rods are provided with couplings, casings, and gearing similar to those hereinbefore described, the double gears, &c., F', G, and G', being arranged nearest the switch. One set of rods, gears, &c., however, extends along the main line past the switch, while the other set is arranged along the side track and adapted to be operated therefrom. Also pivoted to one of the angular plates is a rod K, which extends back from the track and is pivoted at its other end to the horizontally-extending arm l of a post or upright L, pivotally mounted in a casing M, as shown, and provided at a point intermediate its length with a handle N, which may be bent upon itself, as shown, and concealed beneath a hinged cover M', secured to the casing M. The upper end of the upright is provided with a suitable indicating device, as O, whereby the condition of the switch may be readily determined.

It is to be understood that all of the rods F and the rod K are pivoted off the center of the angular plates E, so that they will be readily turned when pressure is exerted thereupon from either of said rods.

The engine or tender of a train is provided

with means of peculiar construction whereby the switch may be operated from the train while moving. These means preferably consist of plates P, one to either side of the engine or tender and provided at their lower edges with teeth, as P'. These plates are vertically movable on guides Q, formed of bow-springs, as shown. Suitable arms and a lever R are provided, whereby the same may be readily moved up and down upon the guides by the operator on the engine.

In operation when a train approaches the switch from the main line, the indicator O will inform the engineer whether the switch is open or closed. If open and it is desired to side-track the train, the slide-plates P are lowered by means of the lever R. The teeth thereon will come into engagement with the gears J which are farthest from the switch and the same will be revolved, as is obvious, until the plates P have passed. The plates P will then be raised. The revolution of the gears will draw the rods I and F from the switch, turning the plates E upon their axes and thereby forcing the switch into closed position. The same movement will turn the upright of the indicator O and expose the signal denoting a closed switch.

The spring E', which firmly bears upon the sides of the plate, will, as is obvious, retain them securely in the position to which they are turned until the switch is again operated.

The springs H' within the couplings H are adapted to ease the sudden strain to which the operating mechanism is subjected when the teeth of the operating-plates P first engage with the gears J. The spring-guides Q of the plates P are also provided to assist in reducing the strain upon the mechanism.

In the event of a through train approaching a closed switch the indicator O will advise the engineer of the fact and the plates P will be lowered after passing the gears J. This will bring them into engagement with the gears G, which in turn communicate motion to the ratchets F through gears G'. This will press the rods I and F toward the plates E, which will be turned back upon their axes and throw the switch open and at the same time reverse the indicator O.

It is obvious that as operating-gears are placed at all approaches to the switch the same can be opened or closed by trains coming from any direction.

When it is desired to operate the switch independently of the train-operating mechanism, it is merely necessary to open the cover M' of the casing M and turn the handle N therein.

As before stated, the bow-springs E' will hold the switch in either of the two positions to which it is moved and will retain the same in such positions against all ordinary pressure. It should also be understood that, if desired, a spring-coupling similar to the couplings H can be placed within the rods F between the gears G and G' and the plate E.

This will relieve the sudden jar occasioned by the application of the teeth P' to the gear G when the switch is to be opened.

In the foregoing description I have shown the preferred embodiment of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

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

1. In a switch mechanism, the combination of a switch, a pivoted angular plate connected thereto, springs bearing upon and adapted to normally hold said plate in either of its shifting or axially-moved positions, and means for the actuation of said plate, substantially as set forth.

2. In a switch mechanism, the combination of a switch, a pivoted angular plate connected thereto, springs bearing upon and for normally holding said plate in either of its shifting or axially-moved positions, a rod connected to said plate and means for actuating, and intergeared with, said rod, substantially as set forth.

3. In a switch-operating mechanism the combination with a switch, of a pivoted angular plate connected therewith, springs for normally retaining said plate in one of two positions, a rod pivoted to the plate, ratchets thereon, gears engaging with the ratchets, and means whereby backward or forward movement is imparted to the rod through the gears and from an onwardly-moving train, substantially as described.

4. In a switch-operating mechanism the combination, with a switch, of an angular plate pivoted adjacent thereto, a rod connection therebetween, springs bearing upon the sides of the plate for normally retaining the same in one of two positions, a rod pivoted to said plate and formed of spring-connected sections, ratchets on said rod, gears meshing with said ratchets, one of said gears driven from a second gear, and means upon a train for engaging with the driving-gears and whereby the switch may be either opened or closed from an onwardly-moving train, substantially as described.

5. In a switch-operating mechanism, the combination with the switch, of a pivoted angular plate connected thereto, springs adapted to hold said plate in either of its shifting or axially-movable positions a rod pivoted to said plate and provided with ratchets, a second rod pivoted to the plate and connected to an indicating device, and means engaging with said ratchets whereby the switch may be opened or closed from an onwardly-moving train, substantially as described.

6. In a switch-operating mechanism, the combination with the switch, of a pivoted angular plate connected thereto, springs adapt-

ed to hold said plate in either of its shifting
or axially-movable positions a rod pivoted to
said plate and provided with ratchets, a sec-
ond rod pivoted to the plate, its opposite end
5 pivoted to an arm of an upright, an indicat-
ing device on said upright and means engag-
ing with said ratchets whereby the switch may
be opened or closed from an onwardly-mov-
ing train, substantially as described.
10 7. In a switch-operating mechanism the
combination, with a switch, of an angular
plate pivoted adjacent thereto, a rod connec-
tion therebetween, springs bearing upon the
sides of the plate for normally retaining the
15 same in one of two positions, a rod pivoted
to said plate and formed of spring-connected
sections, ratchets on said rod, gears meshing

with said ratchets, one of said gears driven
from a second gear, plates upon a train, spring-
guides therefor, teeth upon the lower edges 20
of said plates, and means for imparting ver-
tical movement to said plates, whereby the
teeth thereon may be brought into engage-
ment with the driving-gears and thereby either
open or close the switch from the onwardly- 25
moving train, as desired, substantially as de-
scribed.

In testimony whereof I affix my signature
in presence of two witnesses.

GEORGE DURCHHOLZ.

Witnesses:

GEORGE SCOTT,
W. W. LINDSEY.