

No. 815,202.

PATENTED MAR. 13, 1906.

W. W. McCLUNG.  
SWITCH.

APPLICATION FILED NOV. 29, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

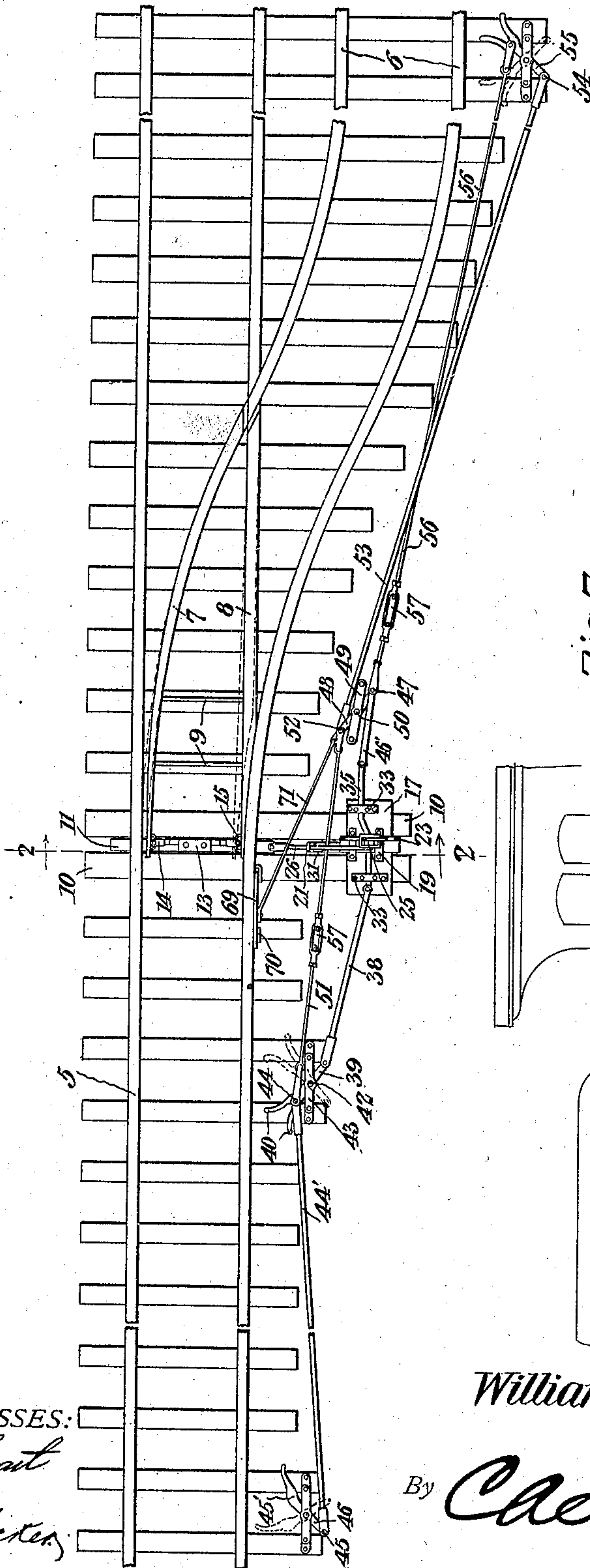
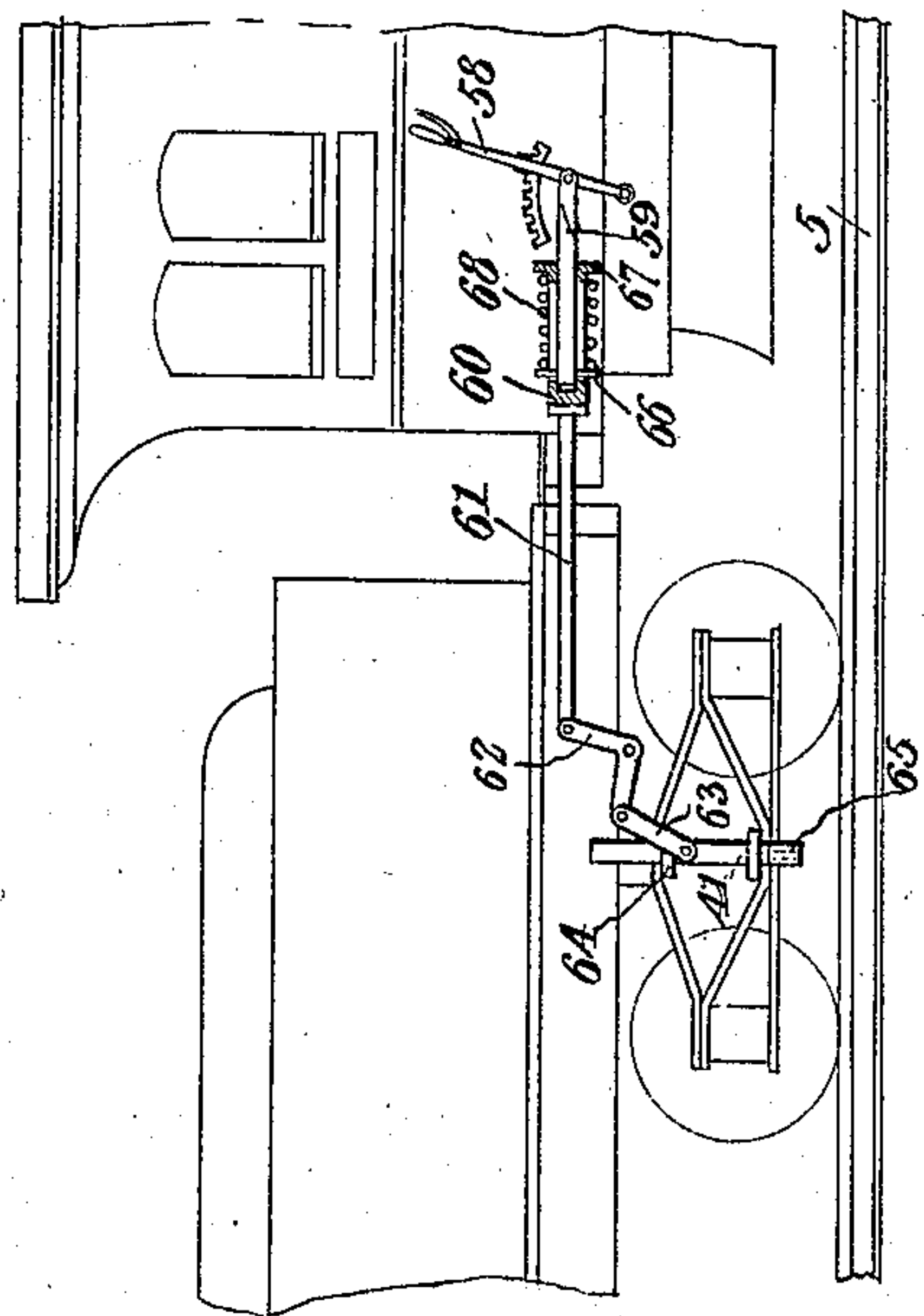


Fig. 7.



WITNESSES:  
*E. J. Stewart*  
*L. A. McKen*

William M. McClung.  
INVENTOR

By *Chas. Snow & Co.*  
ATTORNEYS

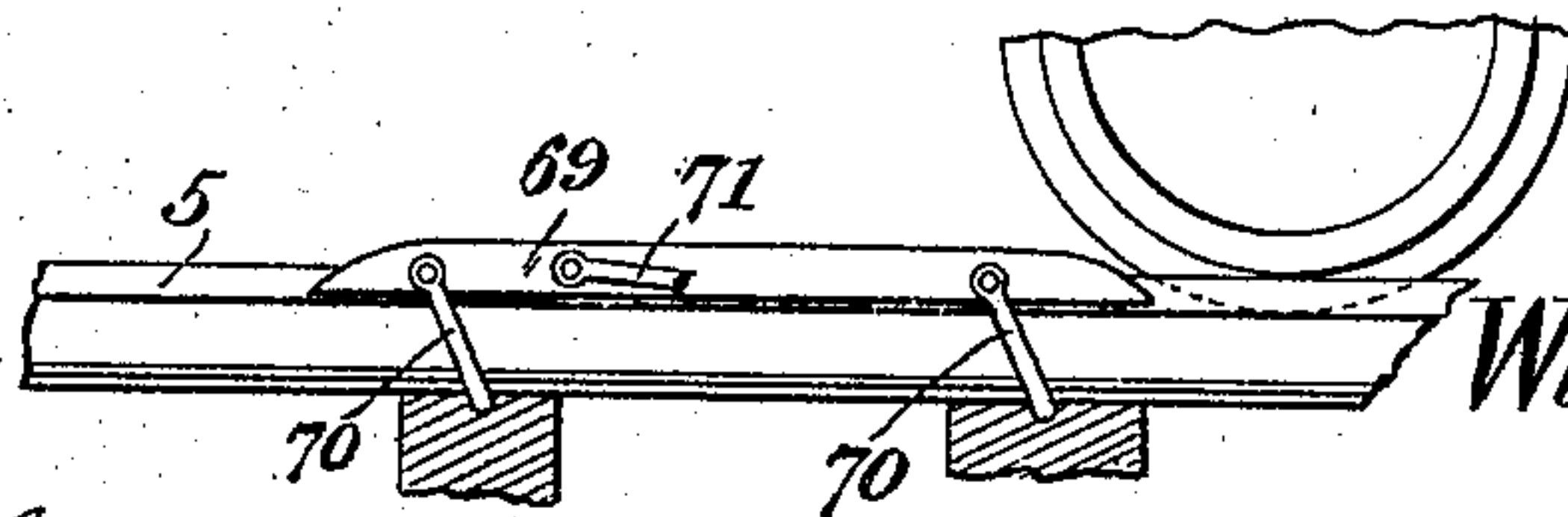
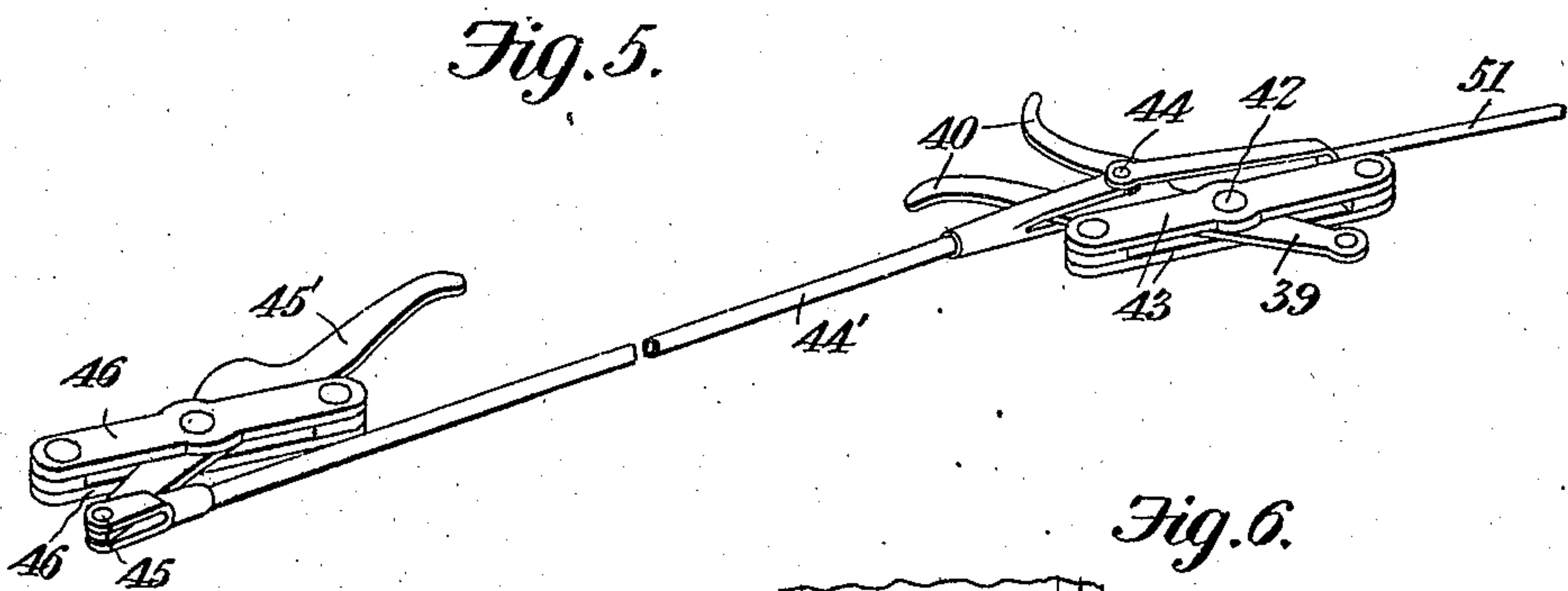
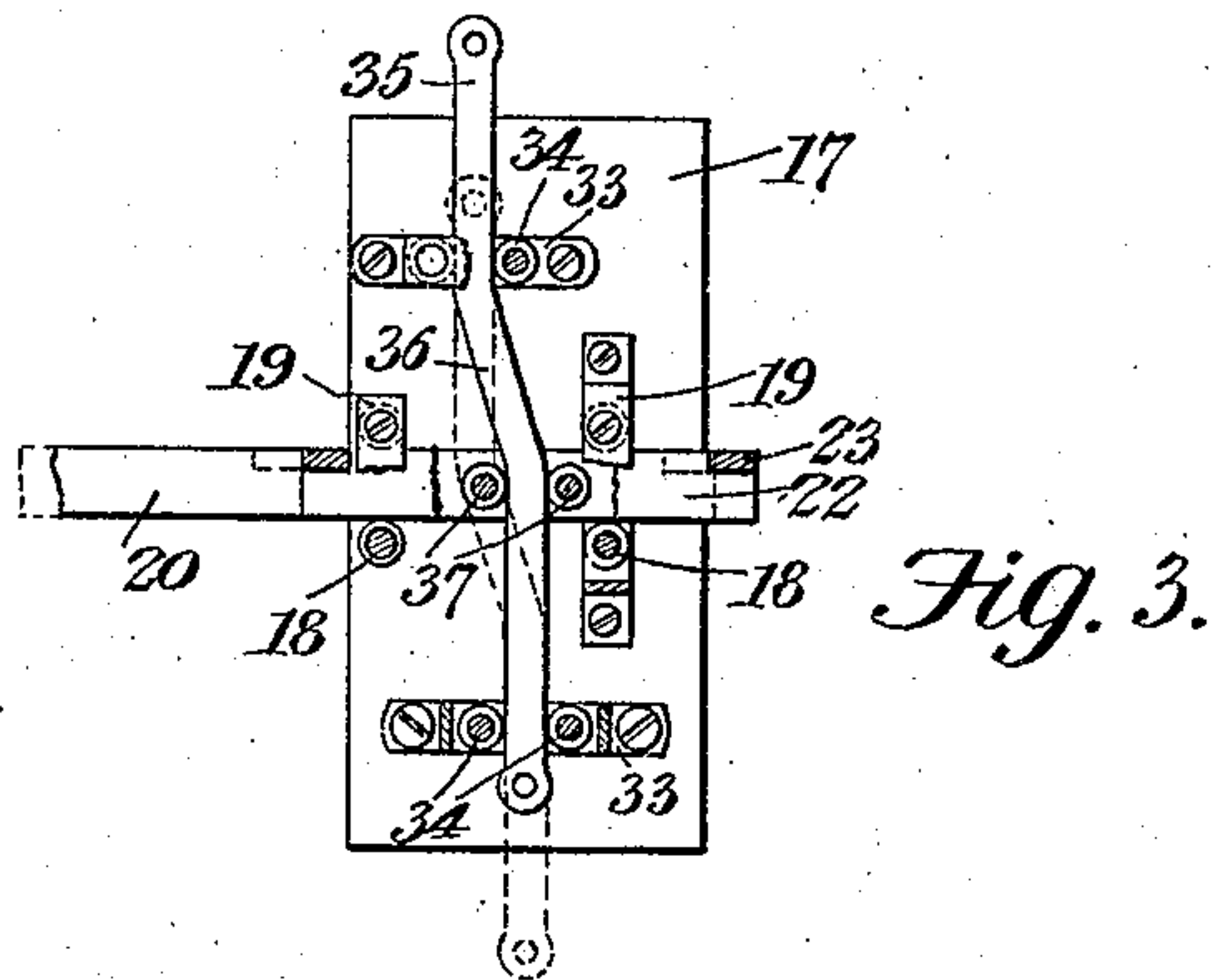
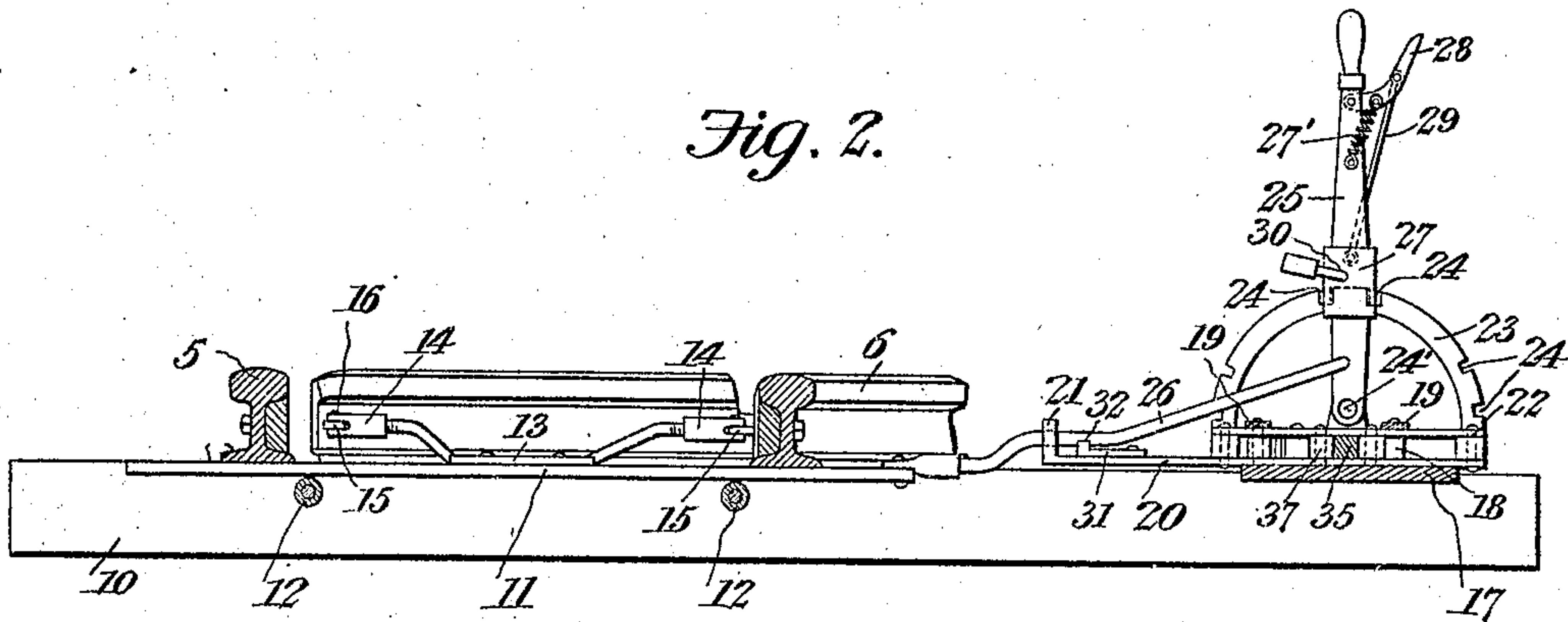
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2 SHEETS—SHEET 2.



WITNESSES:

*E. J. Stewart*  
*L. H. Ackers*

*William M. McClung*  
INVENTOR

By

*C. A. Snow & Co.*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

WILLIAM W. McCLUNG, OF BUTLER, PENNSYLVANIA.

## SWITCH.

No. 815,202.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed November 29, 1905. Serial No. 289,662.

*To all whom it may concern:*

Be it known that I, WILLIAM W. McCLUNG, a citizen of the United States, residing at Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Switch, of which the following is a specification.

This invention relates to railway-switches, and has for its object to provide a switch which is automatically moved to open and closed positions by the passage of a train and which may also be operated manually independently of the train-operating mechanism.

A further object of the invention is to provide an auxiliary operating device forming a part of the train-operated mechanism to assist in effecting the throwing of the switch.

A further object of the invention is to provide an auxiliary trip for automatically closing the switch should the latter be accidentally left open.

A further object of the invention is to provide a switch-stand movable laterally with the switch through the medium of an offset bar or cam and to which are operatively connected the train-operated trips.

A still further object is to provide main and auxiliary locking means for retaining the manually-operated switch-lever in vertical position.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in form, proportions, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of a railway-switch constructed in accordance with my invention, showing in full lines the switch in closed position and in dotted lines the switch in open position. Fig. 2 is an enlarged transverse sectional view taken on the line 2-2 of Fig. 1. Fig. 3 is a top plan view, partly in section, of the base-plate, cam-bar, and a portion of the connecting-rod. Fig. 4 is a detail perspective view of a portion of the manually-operated switch-

lever. Fig. 5 is a perspective view of a portion of the train-operating mechanism detached. Fig. 6 is a side elevation of the auxiliary train-operating device. Fig. 7 is a side elevation of a portion of a locomotive and tender, showing the manner of mounting the tappet thereon.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

To illustrate the application and operation of the present apparatus, there has been shown in the accompanying drawings the main track 5, a portion of a siding 6, and the movable switch-rails 7 and 8, connected by braces 9, all of which are of common or approved form, and therefore may be varied considerably without affecting the spirit of the present invention.

Extending transversely beneath the main rails between two of the cross-ties 10 is a switch-bar 11, mounted for longitudinal movement on rollers 12 and to which is rigidly secured a plate 13. The plate 13 is provided with oppositely-disposed threaded arms on which are mounted adjustable collars 14, the bifurcated ends of which slidably engage loops or eyes 15, secured to the adjacent side faces of the switch-points, being retained in engagement therewith by screws or similar fastening devices 16.

Secured to the cross-ties 10 at one side of the track is a bearing-plate 17, provided with a plurality of sets of vertically-disposed rollers 18, journaled in suitable supporting-brackets 19 and between which is mounted for sliding movement a bar 20, having a terminal upturned lip 21. Spaced from the bar 20 is a short horizontally-disposed bar 22, having secured to or formed integral therewith a segment or rack 23, formed with space notches or recesses 24. Pivoted at 24' to the central portion of the bar 22 is a hand-operated lever 25, to which is connected a rod 26, which passes through an eye or opening in the lip 21 and is secured to the adjacent end of the switch-bar, as shown. Mounted for vertical movement on the lever 25 is a sliding collar 27, normally held in engagement with the locking-recesses 24 by a coil-spring 27' and movable to released position by an auxiliary handle 28, pivotally connected to the collar through the medium of a rod 29. The



lever 25 and collar 27 are formed with openings 30, adapted to register with each other when the collar is in engagement with the recesses 24 to permit the insertion of a lock or other suitable fastening device, so as to prevent an unauthorized person from operating the switch. Pivottally mounted on the bar 20 is a pawl 31, which engages a recess 32 in the rod 26 and serves as an auxiliary means for locking the lever 25 in upright position. It will thus be seen that when the lever 25 is unlocked and the pawl disengaged from the recess 32 the lever is free to be swung on the pivot 24' to move the switch to either open or closed position, the bar 20 remaining relatively stationary during the movement of said lever.

Secured to the plate 17 on each side of the bar 20 are brackets 33, spaced at unequal distances from the adjacent longitudinal edge of the plate and in which are journaled rollers 34, which form bearings for a cam-bar 35. The cam-bar 35 is provided with an intermediate offset portion 36, adapted to engage a pair of rollers 37, journaled between the bars 20 and 22, so that when the cam-bar is moved longitudinally it will shift the bar 20 and switch-bar 11 laterally of the rails, and thereby effect the drawing of the switch independently of the hand-operated lever 25. Pivoted to one end of the cam-bar 35 is a rod 38, to which is pivottally connected a train-actuated trip 39, having one end thereof bifurcated to form a pair of curved divergent arms 40 for engagement by a tappet 41, operated from the engineer's cab. The trip is pivottally mounted for lateral movement at 42 between parallel supporting-plates 43, secured in any suitable manner to the adjacent cross-ties, and pivoted at 44 to the bifurcated end of the trip is a rod 44', which is in turn pivoted at 45' to an auxiliary or safety trip 45, mounted between similar plates 46 and preferably provided with a single contact-arm, as shown. Pivoted to the opposite end of the cam-bar 35 is a rod 46', to which is pivoted at 47 one end of a lever 48, the latter being pivoted between supporting-plates 49, as shown at 50, and connected, through the medium of a wire or cable 51, to the pivot 44 of the trip 39.

Secured to the inner end of the lever 48 by the pivot-pin 52 is a rod 53, the opposite end of which is pivoted at 54 to one end of a trip 55, similar in construction to the trip 39 and to the bifurcated end of which is connected a wire or cable 56, which serves to connect said trip, through the medium of the rod 46', with the cam-bar 35. The cables 51 and 56 are preferably provided with turnbuckles 57 to take up any slack in said cables. It will thus be seen that when the trip 39 is moved to the dotted position shown in Fig. 1 of the drawings by engagement with the tappet 41 it will exert a longitudinal pull on the cam-bar

35, and thereby cause the latter to shift the switch-bar 11 and automatically move the switch to open position to permit the train to enter the siding and at the same time move the trip 55 to the dotted position shown, so that when the train enters the siding the tappet will also engage the trip 55 and automatically close said switch to permit the passage of any subsequent express-trains. When the train leaves the siding through the switch, the tappet 41 will engage the trip 55, causing the latter to operate the cam-bar to open the switch, and after the train clears said switch the trip 39 by engagement with said tappet will automatically close the same. Should the engineer when leaving the siding fail for any reason to operate the trip 39, the operating-arm of the auxiliary or safety trip 46 will be left in the position shown by dotted lines in Fig. 1, so that the engineer of subsequent through-train may readily close the switch in advance of the same by operating the tappet so as to prevent danger of side-tracking the train.

The tappet 41 is preferably mounted on the tender of the engine and operated from the cab of the latter by means of a hand-lever 58, to which is pivoted a rod 59, mounted for sliding movement in a sleeve or collar 60 and to which is connected a rod 61. Pivoted to the rod 60 is a bell-crank lever 62, connected through the medium of a link 63 with the tappet 41, the latter being slidably mounted for vertical movement in brackets 64 and provided with a terminal roller 65 to prevent undue friction between said tappet and the tripping devices.

Secured to the rod 59 is a transverse pin 66, which engages oppositely-disposed slots in the collar 60, and interposed between the pin and a terminal flange 67 on said collar is a coil-spring 18, which allows for any longitudinal movement between the tender and cab without affecting the tappet.

As a means for insuring the positive throwing of the switch should the trips 39 and 55 fail to operate properly there is provided an auxiliary tripping device, preferably in the form of a tread-bar 69, mounted for swinging movement on rocker-arms 70 at a point adjacent one side of one of the main rails 5 and movable to operative position by engagement with the tread of the car-wheels. A rod 71 connects the bar 69 with the adjacent end of the lever 48, so that should the trips fail to operate or only partially throw the switch the wheels of the car will depress the bar and through the medium of the rod 71 effect the positive closing or opening movement of said switch.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art, and further description thereof is deemed unnecessary.



Having thus described the invention, what is claimed is—

1. In a switch mechanism, the combination of a switch-bar, means for manually operating the switch-bar to open and close the switch, car-actuated means operable independently of the manually-operated means for effecting the movement of the switch-bar, and an auxiliary switch-operating device operatively connected with the car-actuated means to assist in throwing the switch-bar.

2. In switch mechanism, the combination of a switch-bar, means for manually operating the switch-bar to open and close the switch, car-actuated means operable independently of the manually-operated means for effecting the movement of the switch-bar, and a safety trip-lever forming a part of the car-actuated means for operating the switch-bar when the switch is in open position.

3. In switch mechanism, the combination of a switch-bar, means for manually operating the switch-bar to open and close the switch, a cam-bar for effecting the movement of the switch-bar independently of the manually-operated means; and car-actuated trips operatively connected with the cam-bar.

4. In switch mechanism, the combination with a switch-bar, of a manually-operated device connected to the switch-bar for moving the switch to open and closed positions, a cam-bar for shifting the manually-operated device laterally to effect the movement of the switch-bar independently of said manually-operated device, and car-actuated trips operatively connected with the cam-bar.

5. In switch mechanism, the combination with a switch-bar, of a bearing-plate, a hand-operated lever mounted for lateral movement on the bearing-plate and operatively connected to the switch-bar for moving the switch to open and closed positions, a cam-bar mounted for longitudinal movement on the bearing-plate and adapted to engage the lever for effecting the movement of the switch-bar independently of the hand-lever, and car-actuated trips operatively connected with the cam-bar.

6. In switch mechanism the combination with a switch-bar, of a bearing-plate provided with a plurality of sets of rollers, a hand-operated lever mounted for lateral movement on the bearing-plate and operatively connected to the switch-bar for moving the switch to open and closed position, a cam-bar having an offset portion for engagement with the rollers of each set to shift the lever and thereby effect the movement of the switch-bar independently of said lever, and car-actuated trips operatively connected with the cam-bar.

7. In switch mechanism, the combination with a switch-bar, of a hand-operated lever for operating the switch-bar to open and close the switch, means for locking the hand-

lever in inoperative position, a cam-bar for shifting the hand-operated device laterally to effect the movement of the switch-bar independently of the hand-lever, car-actuated trips operatively connected with the cam-bar, and an auxiliary locking device for said hand-lever.

8. In switch mechanism the combination with a switch-bar of a bearing-plate, a bar slidably mounted on the bearing-plate, a hand-lever spaced from the bar and operatively connected with the switch-bar for moving the switch to open and closed position, rollers interposed between the base of the lever and the bar, a cam-bar engaging the rollers for shifting the lever laterally to thereby effect the movement of the switch-bar independently of said lever, and car-actuated trips operatively connected with the cam-bar.

9. In switch mechanism, the combination with a switch-bar, of a bearing-plate, a bar slidably mounted on the bearing-plate and provided with a vertically-disposed perforated lip, a locking-segment carried by the bar and spaced from the latter, a hand-operated lever movable with the bar and coacting with the locking-segment, a rod pivoted to the lever and extending through the perforation in the lip for engagement with the switch-bar for moving the switch to open and closed position, rollers interposed between the bar and segment, a cam-bar engaging said rollers for shifting the lever laterally to thereby effect the movement of the switch-bar independently of the hand-lever, and car-actuated trips operatively connected with the cam-bar.

10. In switch mechanism, the combination with a switch-bar, of a bearing-plate, a bar mounted for longitudinal movement on the plate, a hand-lever pivoted to the bar and movable longitudinally therewith for operating the switch-bar to open and close the switch, a cam-bar for shifting the sliding bar to thereby effect the movement of the switch-bar independently of the hand-lever, and car-actuated trips operatively connected with the cam-bar.

11. In switch mechanism, the combination with a switch-bar, of a bearing-plate, a bar mounted for longitudinal movement on the bearing-plate and provided with a perforated lip, a toothed locking-segment secured to and spaced from the sliding bar, a hand-lever pivoted to the bar and cooperating with the locking-segment, a rod pivoted to the lever and passing through the perforation in the lip for engagement with the switch-bar for opening and closing the switch, said rod being provided with a locking-recess, a locking-collar slidably mounted on the lever and adapted to engage the recesses in the segment, an auxiliary locking device pivoted to the sliding bar and adapted to engage the re-



cess in the rod, a cam-bar engaging the sliding bar for effecting the movement of the switch-bar independently of the hand-lever, and car-actuated trips operatively connected  
5 with the cam-bar.

12. In switch mechanism, the combination with a switch-bar, of a hand-lever for moving the switch-bar to open and closed position, a cam for shifting the hand-lever laterally to effect the movement of the switch-  
10 bar independently of the hand-lever, car-actuated trips, rods connecting the cam-bar and trips, an auxiliary switch-throwing device, and a pivoted lever one end of which is  
15 pivotally connected with one of the connecting-rods and the other end thereof operatively connected with the auxiliary switch-throwing device.

13. In switch mechanism, the combination  
20 with a switch-bar, of a bearing-plate, a hand-lever mounted for longitudinal and pivotal movement on the bearing-plate for moving

the switch-bar to open and close the switch, a cam-bar for shifting the hand-lever laterally to effect the movement of the switch-  
25 bar independently of the hand-lever, a pivoted car-actuated trip disposed on each side of the bearing-plate, rods connecting the cam-bar and trips, a safety-trip, a rod connecting the safety-trip and the adjacent car-  
30 actuated trip, an auxiliary switch-operating device operable by the car-wheel, a pivoted lever one end of which is pivoted to the adjacent connecting-rod and the opposite end thereof to the auxiliary switch-operating de-  
35 vice, and a connection between the pivoted lever and one of the car-actuated trips.

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

WILLIAM W. McCLUNG.

Witnesses:

C. QUILL McCLUNG,  
ANNIE B. McCLUNG.