

No. 719,826.

PATENTED FEB. 3, 1903.

G. L. MANSFIELD.  
SWITCH STAND.

APPLICATION FILED MAY 26, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

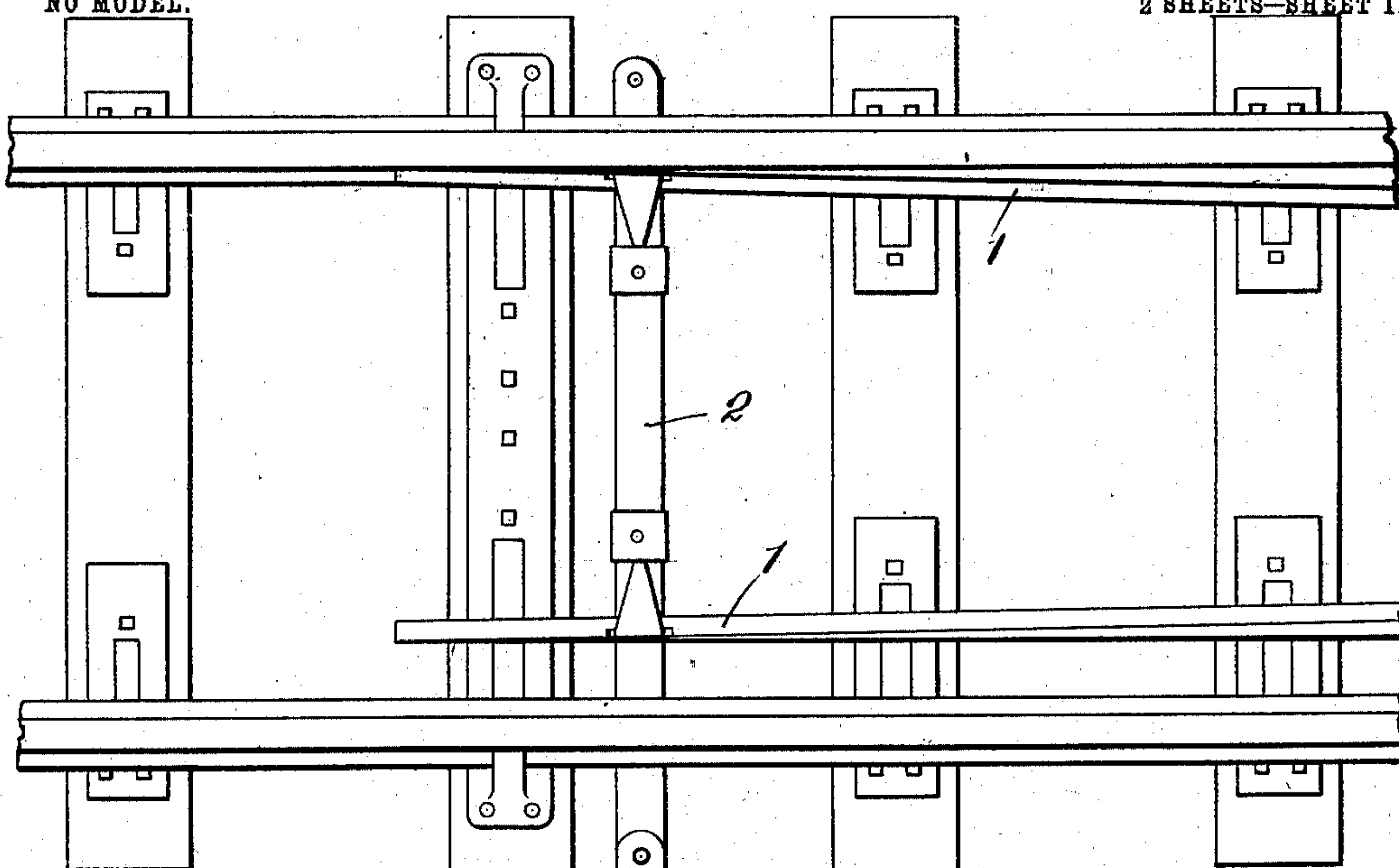


Fig. 1.

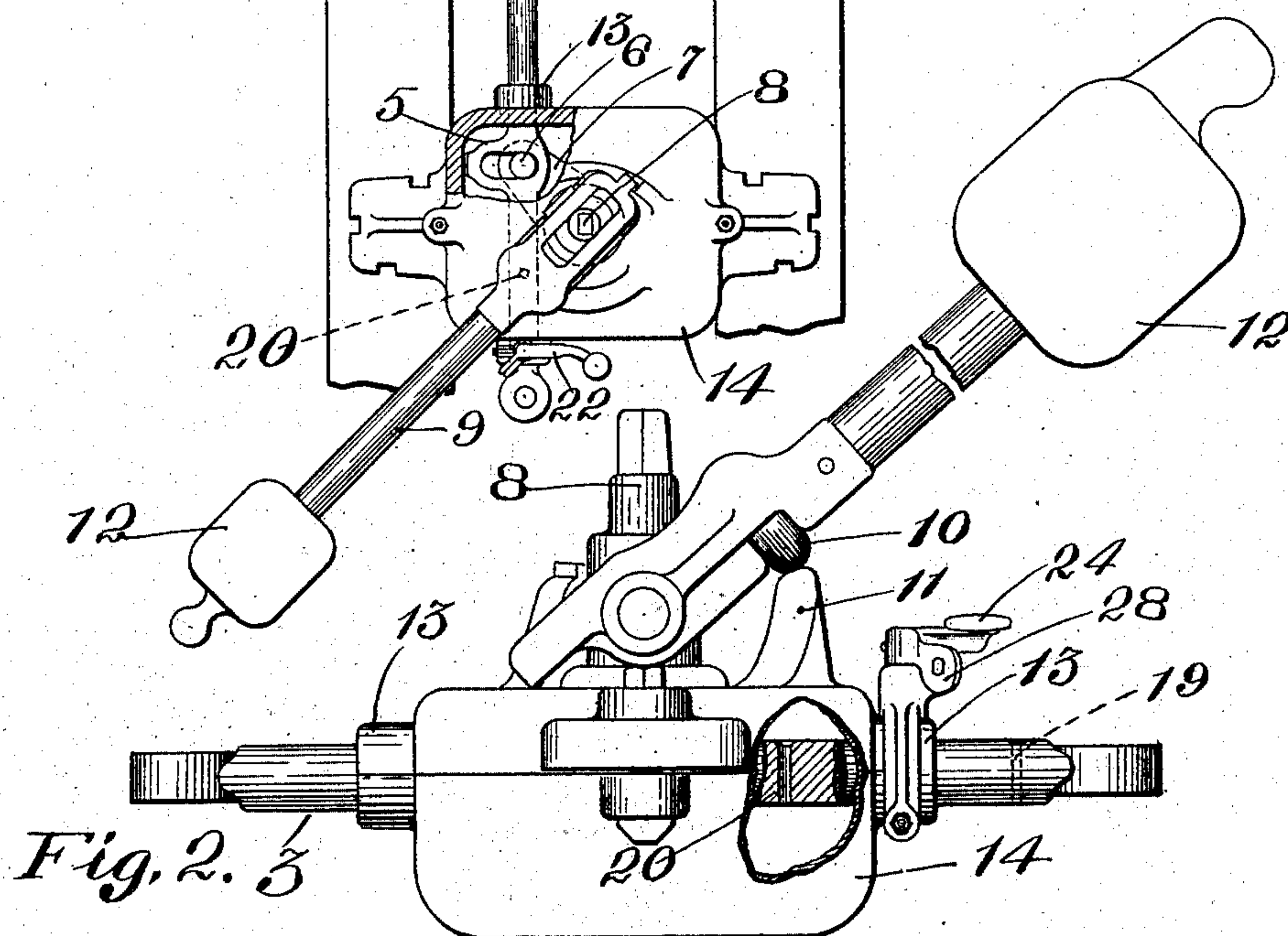


Fig. 2.

Witnesses:

L. W. Novander

Lyman A. Williams

Inventor

George L. Mansfield.

By Charles A. Brown & Cragg  
Attorneys.

No. 719,826.

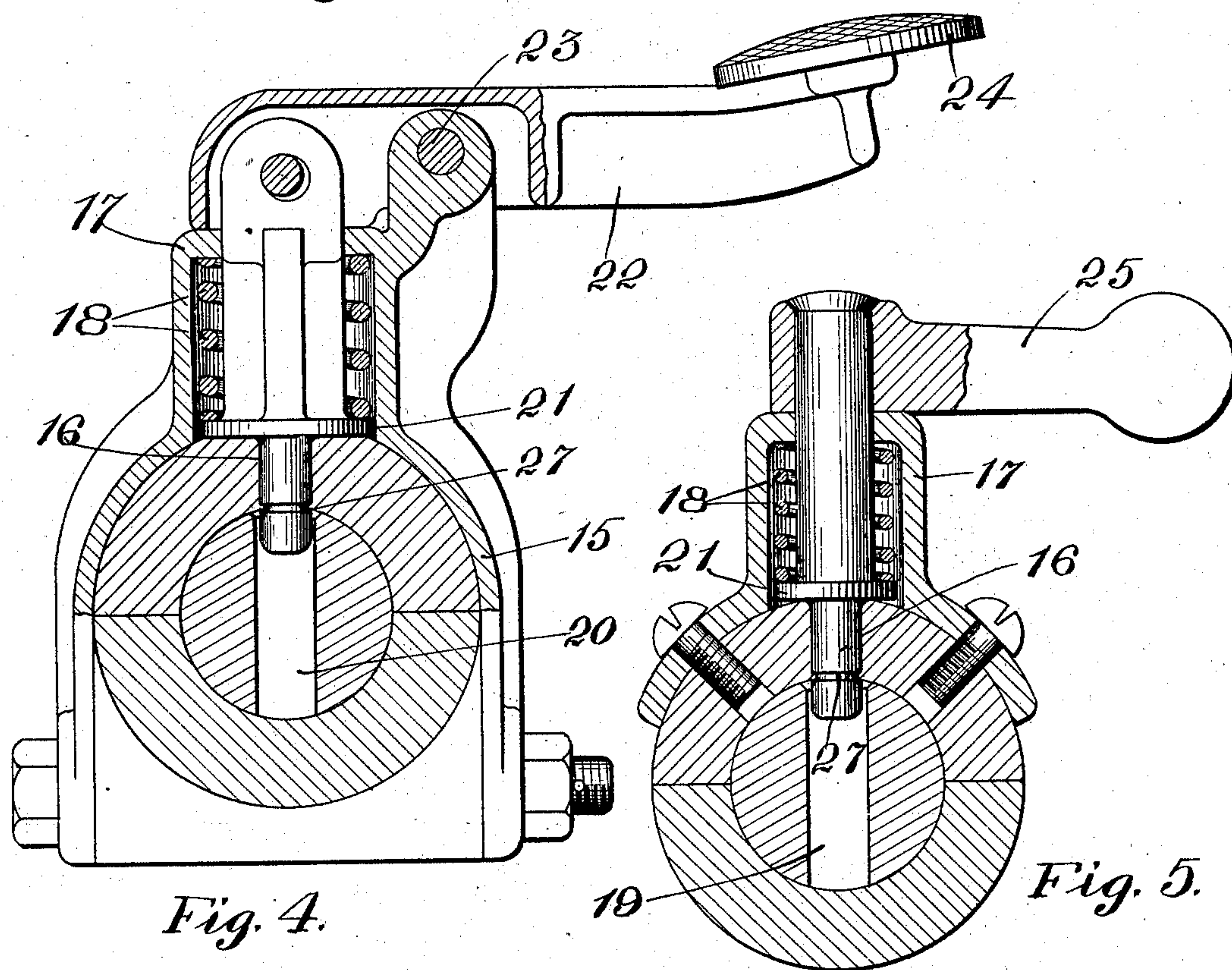
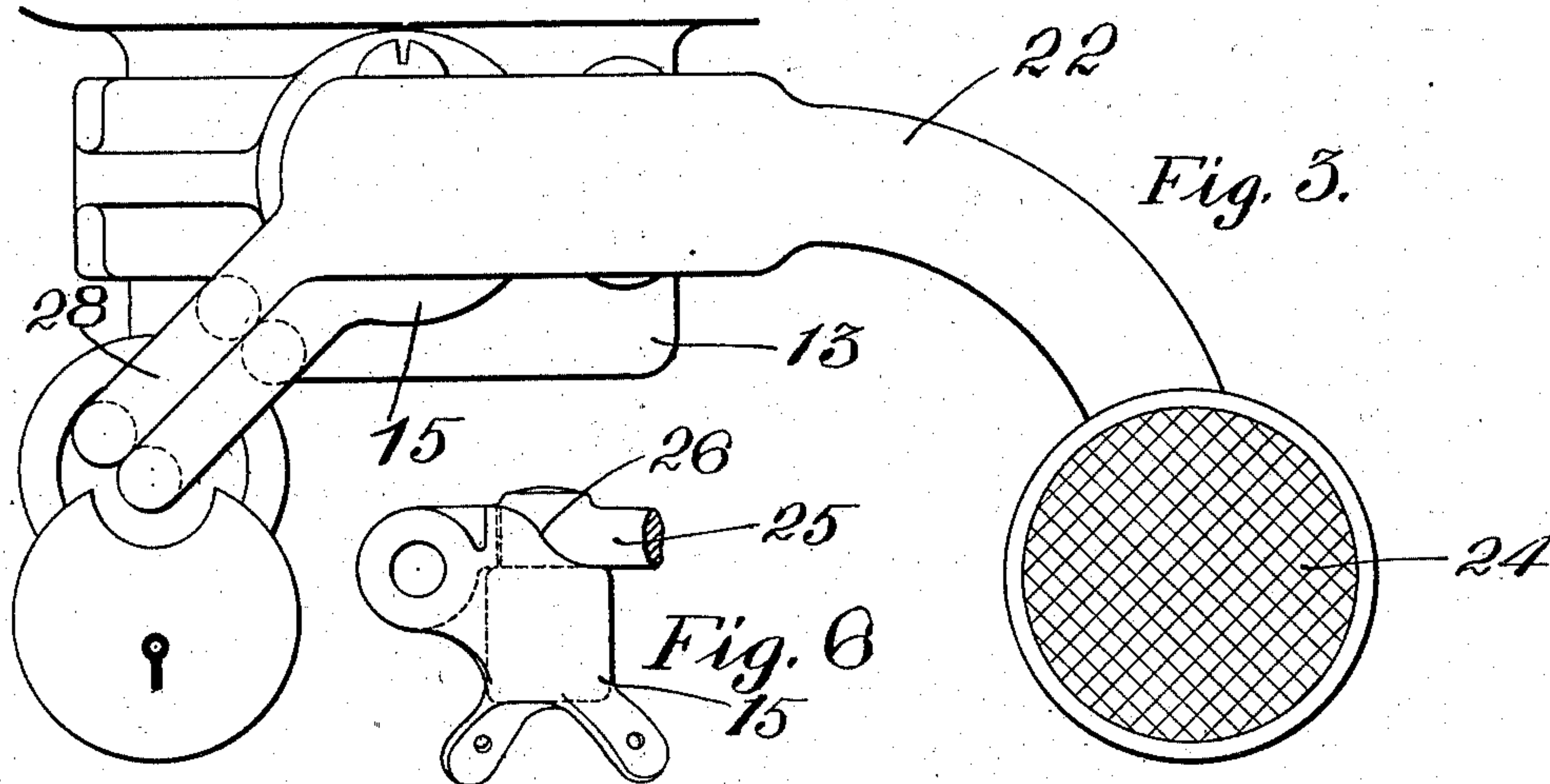
PATENTED FEB. 3, 1903.

G. L. MANSFIELD.  
SWITCH STAND.

APPLICATION FILED MAY 26, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:  
E. W. Novander.

Lynn A. Williams

Inventor  
George L. Mansfield.

By Charles A. Brown & Cragg  
Attorneys.



# UNITED STATES PATENT OFFICE.

GEORGE L. MANSFIELD, OF CHICAGO, ILLINOIS.

## SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 719,826, dated February 3, 1903.

Application filed May 26, 1902. Serial No. 108,992. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE L. MANSFIELD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Switch-Stands, (Case No. 2,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to switch-stands for railway-service, and has for its object the provision of an improved form of locking mechanism whereby the switch may be held in positions to which it may be adjusted, but which locking mechanism may yield to the superior force of railway-vehicles to permit an automatic adjustment of the switch-points if they should be improperly adjusted with respect to the direction of travel of the vehicles.

In practicing my invention I associate my locking device with an element moving with the switch-points. The locking device has two complemental locking portions, elements, or members, the portion moving with the switch-points being provided with one of the said elements, while the other element preferably has a stationary mounting. The latter element is preferably in the form of a pin, while the former element is preferably integrally formed with and constitutes a part of the portion moving with the switch-points, being a socketed portion adapted to receive the pin. The socketed portion of the locking device preferably has as many socket-openings as there are operative positions of the switch-points, there usually being two sockets adapted for engagement with the same pin, one or the other of the sockets being in engagement, according to the adjustment of the switching mechanism.

In my view the preferred form of switch-operating mechanism is one wherein the switch-points have a common tie-bar and an actuating-rod linked thereto, which actuating-rod is confined to a rectilinear travel and by its thrust serves to secure the adjustment of the switch-points in one position or another. The actuating rod or bar is directly connected with the switch-stand mechanism, and it is in this portion of the mechanism that I prefer to locate the sockets, the locking-pin be-

ing preferably mounted upon the stationary casing of the switch-stand. This pin is preferably provided with an actuating device that permits it to be readily withdrawn from an engaging socket when the operative position of the switching mechanism is to be changed, there being preferably provided a spring for effecting the depression of the pin when the operative position of the switching mechanism has been changed, the alternative socket then having been brought into line with the pin. There may also be provided in association with the pin a padlock or other form of key-controlled lock which will prevent a withdrawal of the pin from an engaging socket by tamperers, this lock to be controlled by switchmen, as in ordinary practice. In order that the locking-pin may be severed upon the passage of railway-vehicles over a switch not properly adjusted with respect to their direction of travel, the pin is so associated with the actuating element of the switch-stand and its mounting that it will be subject to a shearing action upon the exertion of force by the railway-vehicles, tending to replace the switch, the pin being adapted to respond to this shearing action, so that it will be severed to permit of the automatic readjustment of the switch-points. Thus where a reciprocating actuating rod or bar is employed it passes through a stationary sleeve, the locking-pin passing through this sleeve at right angles to the actuating-rod, any relative displacement of the actuating-rod and sleeve when a pin is in locking position obviously securing the desired shearing action. To insure the effectiveness of the operation of the mechanism of my invention, the locking-pin is preferably scored on a line coinciding with the line between the actuating-rod and the sleeve, the pin being thus weakened at this point and more readily severed by the action of a passing vehicle. The pin is preferably disposed in a barrel containing a spring that tends to force the pin into an engaging socket, a foot-lever being connected with the pin, whereby it may be withdrawn against the force of the spring by the switchman who is effecting a readjustment of the switch-points. A hand-operated device may, if desired, be substituted for the foot-lever; but I do not consider this as convenient.



I will explain my invention more fully by reference to the accompanying drawings, which show the preferred embodiment thereof, Figure 1 being a plan view of one type of apparatus in association with the pair of railway-switch points; Fig. 2, a side view of the mechanism shown in Fig. 1, parts being broken away more clearly to reveal the details of construction, the switch-stand or operating mechanism being, however, shown in an intermediate working position; Fig. 3, a plan view of the foot-lever mechanism and portions of the locking device; Fig. 4, a sectional view, partially in elevation, of the locking mechanism; Fig. 5, a detailed view of a hand-operated mechanism; and Fig. 6, an elevation somewhat in perspective, on a reduced scale, of the structure shown in Fig. 5.

Like parts are indicated by similar characters of reference throughout the different figures.

I have illustrated one form of railroad-switch employing switch-points 11, having a swinging mounting, as is well understood, and united near their free ends by a tie-bar 2, which tie-bar is preferably connected by an actuating rod or bar 3 through the agency of a link 4. This actuating-rod 3 is provided with a transverse slot 5 and has engagement with a crank-pin 6, that is mounted upon a crank-arm 7, secured to a vertical shaft 8. A manually-actuated arm 9 has pivotal or swinging connection with the shaft 8 and has a roller 10, adapted to ride over a cam-surface 11, which forces the switch parts to assume one or the other of two operative positions, in accordance with a previous invention of mine. The crank-arm is weighted at 12 to more readily enable the actuating-arm to assume one or the other of two alternative positions. It will be obvious that by the mechanism shown as the arm 9 is swung from one position to another (the range of travel of the arm being through substantially a quadrant) the actuating rod or bar 3 will be reciprocated, thereby securing a corresponding operation of the switch-points. To confine the actuating-rod 3 to a travel that is substantially rectilineal, it is mounted to slide in the sleeve portions 13, with which the casing 14 of the switch-stand is provided. Upon one of these sleeves is located the mounting 15 for the locking-pin 16, which mounting is preferably provided with a barrel 17, within which the pin may be drawn and which may contain a spring 18 for positively forcing the pin into engagement with one of sockets 19 20 in the rod 3. These sockets 19 and 20 are placed a distance apart corresponding to the extent of the excursion of the rod 3, one engaging the locking-pin when the rod is in one or the other of its alternative operative positions. To secure the depression of the pin, I preferably equip the same with a shoulder 21, the spring being interposed between the shoulder and the upper end of the spring-barrel. In the form of the invention illus-

trated in all of the figures except 5 and 6 the upper end of the pin has link connection with a foot-lever 22, this foot-lever having a fulcrum 23, that is also carried upon the casing 14, being preferably an extension of the mounting 15. The foot-lever is provided with a foot-plate 24, that may be suitably knurled or roughened, so that the foot may securely rest in engagement therewith. In the form of the invention illustrated in Figs. 5 and 6 the pin 16 is also preferably enlarged and brought into fixed engagement with a hand-lever 25, there being provided a cam 26 upon the barrel 17, forcing the elevation of the pin when the hand-lever is moved in one direction and permitting its descent through the action of a spring when relieved of manual actuation.

It will be observed by reference to Figs. 4 and 5 that the actuating-rod 3 has close engagement with the surrounding sleeve and that when the said actuating-rod 3 is forcibly moved through the action of a passing vehicle the said pin will be sheared, permitting a readjustment of the switch. To insure this shearing action, the locking-pin may be scored or weakened along the line 27. The sleeve constitutes the preferred agency for forcing the pin to break or yield when the switch is operatively acted upon by the vehicle.

If it should be desired to permanently lock the switch-stand in any operative position, an eye may be cast upon the spring-barrel, while a corresponding eye may be located upon the actuating-lever, these eyes registering when the pin is in engagement with a socket, so that they may be secured together by a padlock to prevent the elevation of the locking-pin.

It is obvious that many changes may be made from the forms of my invention herein set forth without departing from the spirit of the invention, and I do not, therefore, wish to be limited to the precise details of construction illustrated; but,

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

1. In a switch-stand, the combination with a manually-actuated arm, of a reciprocating actuating-rod for moving the switch, provided with sockets corresponding to operative positions of the switch, a locking-pin adapted for insertion within a socket to retain the switch in an operative position and made weak to yield or break when subject to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the vehicle, and constraining means forcing the pin to release the switch when the switch is operatively acted upon by the vehicle, substantially as described.

2. In a switch-stand, the combination with a manually-actuated arm, of a reciprocating actuating-rod for moving the switch, provided with sockets corresponding to operative positions of the switch, a locking-pin



adapted for insertion within a socket to retain the switch in an operative position and made weak to yield or break when subject to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the vehicle, a lever for effecting the elevation of the pin, and constraining means forcing the pin to release the switch when the switch is operatively acted upon by the vehicle, substantially as described.

3. In a switch-stand, the combination with a reciprocating actuating-rod for moving the switch, provided with sockets corresponding to operative positions of the switch, of a locking-pin adapted for insertion within a socket to retain the switch in an operative position, a lever for effecting the elevation of the pin, and a spring for forcing the pin into engagement with the socket when relieved of the actuating influence of the lever, substantially as described.

4. In a switch-stand, the combination with a manually-actuated arm, of an actuating-rod provided with sockets corresponding to operative positions of the switch, a sleeve portion through which the same reciprocates, and a reciprocating pin carried by the sleeve and adapted for engagement with a socket to hold the switch in an operative position, said pin being made weak to yield or break when subject to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the vehicle, said sleeve constituting constraining means forcing the pin to release the switch when the switch is acted upon by the vehicle, substantially as described.

5. In a switch-stand, the combination with an actuating-rod provided with sockets corresponding to operative positions of the switch, of a sleeve portion through which the same reciprocates, and a reciprocating pin carried by the sleeve and adapted for engagement with a socket to hold the switch in an operative position, the portion of the sleeve through which the pin passes snugly inclosing the actuating-rod, whereby the pin may be sheared when the said actuating-rod is moved by a passing vehicle, substantially as described.

6. In a switch-stand, the combination with an actuating-rod provided with sockets corresponding to operative positions of the switch, of a sleeve portion through which the same reciprocates, a reciprocating pin carried by the sleeve and adapted for engagement with a socket to hold the switch in an operative position, and a lever for effecting the elevation of the said pin to permit a change in the operative position of the switch, substantially as described.

7. In a switch-stand, the combination with an actuating-rod provided with sockets corresponding to operative positions of the switch, of a sleeve portion through which the same reciprocates, a reciprocating pin carried by the sleeve and adapted for engagement with

a socket to hold the switch in an operative position, the portion of the sleeve through which the pin passes snugly inclosing the actuating-rod, whereby the pin may be sheared when the said actuating-rod is moved by a passing vehicle, and a lever for effecting the elevation of the said pin to permit a change in the operative position of the switch, substantially as described.

8. In a switch-stand, the combination with an actuating-rod provided with sockets corresponding to operative positions of the switch, of a sleeve portion through which the same reciprocates, a reciprocating pin carried by the sleeve and adapted for engagement with a socket to hold the switch in an operative position, a lever for effecting the elevation of the said pin to permit a change in the operative position of the switch, and a spring for effecting depression of the pin when registering with a socket and when relieved of the actuating influence of the lever, substantially as described.

9. In a switch-stand, the combination with an actuating-rod provided with sockets corresponding to operative positions of the switch, of a sleeve portion through which the same reciprocates, a reciprocating pin carried by the sleeve and adapted for engagement with a socket to hold the switch in an operative position, the portion of the sleeve through which the pin passes snugly inclosing the actuating-rod, whereby the pin may be sheared when the said actuating-rod is moved by a passing vehicle, a lever for effecting the elevation of the said pin to permit a change in the operative position of the switch, and a spring for effecting depression of the pin when registering with a socket and when relieved of the actuating influence of the lever, substantially as described.

10. In a switch-operating mechanism, the combination with an actuating member thereof for effecting operation of the switch, of a fracturable locking element for engaging the actuating member to hold the switch in an operative position, the said fracturable locking element being adapted to break by reason of the force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the vehicle, whereby the switch may be automatically adjusted, substantially as described.

11. In a switch-operating mechanism, the combination with an actuating member thereof for effecting operation of the switch, of a yielding locking element for engaging the actuating member to hold the switch in an operative position, the said locking element being adapted to yield to the force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the vehicle, whereby the switch may be automatically adjusted, substantially as described.

12. In a switch-stand, the combination with an actuating-rod for operating the switch, of



a manually-actuated arm for moving the rod, and a locking device comprising pin and socketed portions, one of the said portions being provided upon the actuating-rod, substantially as described.

13. In a switch-stand, the combination with an actuating-rod, of a sleeve for confining the same to a substantially rectilinear travel, a manually-actuated arm for moving the rod, and a locking device comprising pin and socketed portions, the said actuating-rod being provided with one of the said portions, while the sleeve carries the companion portion, substantially as described.

14. In a switch-stand, the combination with an actuating-rod for operating the switch, of a manually-actuated arm for moving the rod, and a locking device comprising pin and socketed portions, one of the said portions being provided upon the actuating-rod, the said pin portion being adapted to yield to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the said vehicle, substantially as described.

15. In a switch-stand, the combination with an actuating-rod, of a sleeve for confining the same to a substantially rectilinear travel, a manually-actuated arm for moving the rod, and a locking device comprising pin and socketed portions, the said actuating-rod being provided with one of the said portions, while the sleeve carries the companion portion, the said pin portion being adapted to yield to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the said vehicle, substantially as described.

16. In a switch-stand, the combination with a manually-actuated arm, of an actuating-rod for moving the switch, provided with sockets corresponding to operative positions of the switch, a locking-pin adapted for insertion within a socket to retain the switch in an operative position and made weak to yield or break when subject to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of

travel of the vehicle, and constraining means forcing the pin to release the switch when the switch is operatively acted upon by the vehicle, substantially as described.

17. In a switch-stand, the combination with a manually-actuated arm, of an actuating-rod for moving the switch, provided with sockets corresponding to operative positions of the switch, a locking-pin adapted for insertion within a socket to retain the switch in an operative position and made weak to yield or break when subject to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the vehicle, a lever for effecting the elevation of the pin, and constraining means forcing the pin to release the switch when the switch is operatively acted upon by the vehicle, substantially as described.

18. In a switch-stand, the combination with a reciprocating actuating-rod for moving the switch, of a manually-operated arm for moving the actuating-rod, and a locking-pin for engaging the actuating-rod to hold the same in a position of adjustment and made weak to yield or break when subject to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the vehicle, substantially as described.

19. In a switch-stand, the combination with an actuating-rod for moving the switch, of a manually-operated arm for moving the actuating-rod, and a locking-pin for engaging the actuating-rod to hold the same in a position of adjustment and made weak to yield or break when subject to force exerted by a passing vehicle when the switch is improperly adjusted with respect to the direction of travel of the vehicle, substantially as described.

In witness whereof I hereunto subscribe my name this 22d day of May, A. D. 1902.

GEORGE L. MANSFIELD.

Witnesses:

GEORGE L. CRAGG,  
HARVEY L. HANSON.