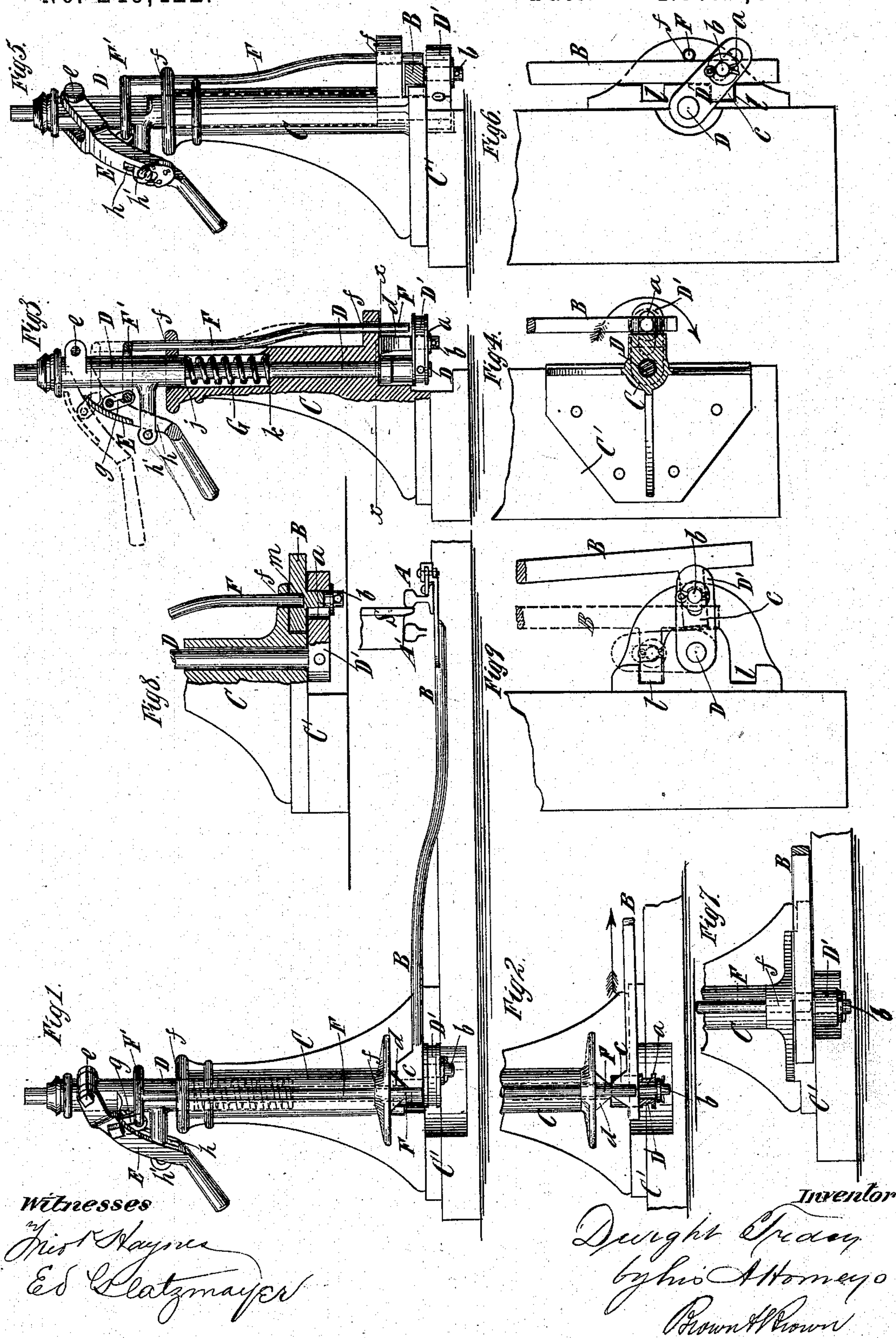


(No Model.)

D. TRACY.
SWITCH STAND.

No. 249,422.

Patented Nov. 8, 1881.



UNITED STATES PATENT OFFICE.

DWIGHT TRACY, OF RIDGEWOOD, NEW JERSEY.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 249,422, dated November 8, 1881.

Application filed July 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, DWIGHT TRACY, of the town of Ridgewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Switch-Stands, of which the following is a specification.

One feature of my invention relates to "safety-switches," which are so-called because a train coming in a direction opposite to that for entering the turnout will shift the switch and set it right, even if it has been set and locked in a wrong position. This result is usually provided for in point-switches by forming a yielding or spring connection between the switch-moving rod and the switch; but such an arrangement is chiefly objectionable because if any obstruction should get between the switch-rails and the main rails, the switch-tender can still completely turn the handle or operate the shifting mechanism and lock the switch without properly placing it, thus leaving the switch only partially set, which would necessarily lead to an accident. One object of my invention is to obviate this defect; and to this end the invention consists in the combination, with a switch-moving rod to be positively connected with a switch, of a switch-stand of novel construction which cannot be locked unless the switch is fully open or fully closed, and which permits the whole moving-rod to be moved longitudinally when the switch is opened by a passing train.

Another feature of my invention relates to switch-stands for both safety and stub switches in which the switch-moving rod is actuated by a moving crank upon the end of a spindle in the switch-stand; and another object of my invention is to relieve the spindle and crank from all strain to which they are commonly subjected by the thrust upon the moving-rod when the switch is locked and a train is passing.

To this end my invention also consists in the combination of a switch-stand and moving-rod constructed with one or more interlocking notches and catches or lugs, a spindle and a slotted crank at the end thereof, and a crank-pin rigidly fixed to the moving-rod and entering the slot in the crank. When the switch

is to be shifted the first movement of the crank moves the switch-moving rod laterally sufficiently to disengage the aforesaid catches or lugs from the notches, and the further movement of the crank shifts the rod lengthwise and sets the switch and moves the rod laterally to cause the re-engagement of said lugs and notches. In connection with the above I employ a vertically-movable locking-bolt, which, when the switch is locked, projects upon the side of the moving-rod and prevents the lateral movement thereof; and all the parts of the stand are so combined and organized that the switch may be unlocked, shifted, and again locked by simply raising the handle of the switch-stand, then moving it horizontally, and finally depressing it, as hereinafter fully described.

The invention also consists in various details of construction, hereinafter described.

In the accompanying drawings, Figure 1 represents a front elevation of a switch-stand for a safety-switch embodying my invention, and also a moving-rod and a switch-rail. Fig. 2 represents a front elevation of the lower portion of the stand, showing the moving-rod in a different position. Fig. 3 represents a vertical section of the stand. Fig. 4 represents a horizontal section on the dotted line *xx*, Fig. 3. Fig. 5 represents a side elevation of a stub-switch stand embodying my invention. Fig. 6 represents an inverted plan thereof. Fig. 7 represents a front elevation of the lower portion of a stub-switch stand for a three-way switch. Fig. 8 represents a vertical section thereof, and Fig. 9 represents an inverted plan thereof.

Similar letters of reference designate corresponding parts in all the figures.

Referring first to Figs. 1, 2, 3, and 4, which represent the safety-switch stand, A designates one of the switch-rails, A' the adjacent main rail, and B designates the switch-moving rod, secured positively to the rail A, and always moving with the switch in either direction. Any longitudinal movement of the rod always produces an equal movement of the switch, and vice versa.

C designates the stand proper or supporting-column, which is secured to the base-piece C';

and D designates the vertical actuating-spindle, adapted to be turned within said stand or column. Upon the lower end of the spindle D is secured a crank, D', which has in it a slot, *a*, (best seen in Fig. 4,) and projecting from the under side of the moving-rod B is a crank-pin, *b*, fitting in said slot and through which the crank imparts motion to said rod. Upon the upper side of the rod B is an upwardly-projecting lug, *c*, and on the adjacent part of the stand is a downwardly-projecting lug, *d*; (shown clearly in Figs. 1 and 2;) and when the rod is moved to its fullest extent in either direction the lugs *c* and *d* are brought into line with each other by the movement of the crank D', and interlock. The two lugs *c* *d* may be regarded as interlocking-catches.

E designates an operating-handle, which is bifurcated so as to embrace the upper part of the spindle, and is pivoted at *e* thereto; and F designates a locking-bolt adapted to move vertically in guides *f* *f* on the stand, and capable of being depressed so that its lower end will project down upon the side of the moving-rod B, as seen in Fig. 3. The upper end of the locking-bolt is provided with a ring-shaped portion, F', which surrounds the spindle D, and to which the handle E is connected by a link, *g*, as best seen in Fig. 3.

It will be clearly understood that as the lugs *c* and *d* are in line or in engagement when the switch is locked, it is necessary to move the rod B laterally outward from the stand to disengage the lug *c* from the lug *d*, and this is effected by means of the slotted crank D' acting upon the crank-pin *b*. When the switch is locked, however, the bolt F prevents such lateral movement of the rod B, and said bolt must be raised before the switch can be shifted by hand.

The handle E has a slot, *h*, formed in it, and when the handle is depressed this slot receives a hasp, *h'*, upon an arm projecting from the spindle D, and through which a padlock may be inserted to prevent the switch from being tampered with.

When the switch is to be shifted the padlock is removed from the hasp *h'*, and the handle E is raised, thereby through the link *g*, raising the locking-bolt F. The handle may then be turned or swung horizontally, turning the spindle D and moving the crank D' horizontally to move the rod B, first laterally, then longitudinally, and then laterally to bring the lug *c* thereon upon the opposite side of the lug *d*. The handle E is then moved down or depressed over the hasp *h'*, and thereby the locking-bolt F is pushed down upon the side of the rod B, precluding any further lateral movement thereof. It will be clearly understood that the operation of shifting the switch may be performed with one hand by first raising the handle or lever E, then moving it horizontally, and finally depressing it.

The advantage of constructing the locking-bolt F with the upper ring-shaped portion, F', is that the link *g* may move thereon in the arc

of a circle when the handle E is shifted horizontally.

I will now describe how the switch may be automatically shifted by a passing train when locked in the wrong position.

The lugs *c* and *d* are inclined upon their engaging-faces as clearly seen in Figs. 1 and 2, and the spindle D is maintained in an elevated position by means of a spring, G, arranged between a shoulder, *j*, on the spindle D and a shoulder, *k*, upon the stand C.

In Fig. 1 I have shown the wheel S upon the main rail A', and if the switch had accidentally been left open the flange of the wheel would force the switch-rail A away from the main rail, and would pull the moving-rod B in the direction indicated by the arrow in Fig. 2, and the inclined face of the lug *c* acting upon the correspondingly-inclined face of the lug *d* would depress the spindle D and crank D' against the force of the spring G sufficiently to allow the lug *c* to pass under past the level face of the lug *d*, (see Fig. 2,) and then the rod would be raised by the spring G, so that the lug *c* would engage with the opposite side of the lug *d*, thus locking the switch in the other position. Inasmuch as the moving-rod yields or moves downward to permit the lug *c* to pass the lug *d*, the former lug may be said to yield downward; but in lieu of the spring G being applied to the spindle, the lug *d* might be made to yield upward against the force of a similar spring, or the lug *d* might be secured so that it would be detached or broken off by a strong longitudinal thrust on the rod B in either direction; but in the latter case the lugs would not have inclined faces.

I will now describe Figs. 5 and 6, which represent my invention as applied to a stub-switch stand. In this case the arrangement and construction of the stand C, the spindle and crank D D', the handle E, and the locking-bolt F are all similar to corresponding parts in Figs. 1 to 4, except that the spindle is not capable of yielding vertically, and the spring G is therefore not necessary. The moving-rod B has a lug, *c*, upon its inner side, which may engage with either of two notches, *l*, in the stand to hold the switch in one or the other position; but inasmuch as a stub-switch is not shifted automatically by a train the lug and notches have straight instead of inclined engaging-faces. The notches *l* in reality form catches, with which the lug *c* may engage, and the portion of the stand between the notches *l* may be regarded as a lug. The locking-bolt F projects down on the side of the rod B, and precludes the lateral movement thereof, which is necessary to disengage the lug *c* from the notches *l*.

Figs. 7, 8, and 9 represent a three-way switch-stand embodying my invention, and the stand C, the spindle and crank D D', and the rod B are very similar in construction to corresponding parts in the other figures before described. The rod B is provided with a single lug, *c*, and

the stand with two notches, *l*, as in Figs. 5 and 6, and when the switch is shifted to either of its extreme positions, so that the lug *c* engages with either notch, the locking-bolt *F* is projected downward upon the side of the rod, as before described, to prevent lateral movement thereof.

It is obvious that when the switch is in its intermediate position the crank *D'* will stand at right angles to the rod *B*, as seen in Fig. 9, and hence it is clear that, inasmuch as the crank has not power, when moved in either direction from its central position, to move the rod *B* laterally, the said rod cannot be held by its lugs *c* entering a notch in the stand.

In order to hold the rod *B* when the switch is in its intermediate position, I provide the rod with a hole, *m*, in its upper side, into which the end of the locking-bolt *F* is inserted, as clearly seen in Fig. 8.

In both the forms of stub-switch stands here shown it will be seen that the rod *B* is held rigidly against longitudinal movement by its lug engaging with the notches in the stand, and that the spindle, crank, and crank-pin are entirely relieved of the great strain often produced by a passing train and transmitted through the rod *B*. In ordinary switch-stands all this strain is received upon the crank-pin, and generally upon the crank and spindle, and hence these movable parts are subjected to immense strain and wear, and soon require to be replaced. Such parts also are liable to and often do break, leaving the switch-rails unsecured, and thereby causing accidents. All such straining, wear, and breakage of these parts is obviated by my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a switch-moving rod and a switch-stand provided with interlocking lugs or catches, having inclined engaging-faces, and one of which is adapted to yield to enable the lug or catch upon the rod to pass the lug or catch upon the stand, substantially as and for the purpose specified.

2. The combination of a switch-moving rod and a switch-stand provided with interlocking lugs or catches having inclined engaging-faces, and one of which is adapted to yield to enable the lug or catch upon the rod to pass the lug or catch upon the stand, and a spring for maintaining said lugs or catches in engagement with each other, substantially as specified.

3. The combination of a switch-moving rod and a switch-stand provided with interlocking lugs or catches having inclined engaging-faces, a spindle adapted to yield longitudinally, a crank upon said spindle for actuating said moving-rod, and a spring for returning said spindle and crank, substantially as specified.

4. The combination of the rod *B* and stand *C*, provided with inclined catches *c* *d*, the spindle *D*, the slotted crank *D'*, the crank-pin *b*, rigidly fixed to said rod and engaging with said slotted crank, and the spring *G*, arranged within said stand and between the shoulders *j* and *k*, substantially as specified.

5. The combination of a switch-moving rod and a switch-stand provided with interlocking lugs or catches, a spindle, a slotted crank, and a crank-pin fixed to the said rod and fitting the slot in said crank, whereby provision is afforded for moving the rod laterally to disengage the lug or catch from the lugs or catches upon said stand, and for moving it longitudinally for shifting the switch, substantially as specified.

6. The combination of a switch-moving rod and a switch-stand provided with interlocking lugs or catches, a spindle and slotted crank, a crank-pin fixed to said moving-rod and fitting said slotted crank, and a locking-bolt projecting on the side of said rod for precluding lateral movement thereof, substantially as specified.

7. The combination, with a switch-moving rod and a switch-stand provided with interlocking lugs or catches, a spindle and a slotted crank for operating said rod, and a locking-bolt projecting on the side of said rod and precluding lateral movement thereof, of a handle adapted to be moved horizontally to turn said spindle, and raised or lowered to actuate said locking-bolt, substantially as specified.

8. The combination of the switch stand or column *C*, the spindle *D*, the handle *E*, fulcrumed at *e*, the locking-bolt *F*, having a ring-shaped upper portion, *F'*, surrounding said stand or column, and the link *g*, connecting said handle and said ring-shaped portion *F'*, all substantially as specified.

DWIGHT TRACY.

Witnesses:

FREDK. HAYNES,
CHANDLER HALL.