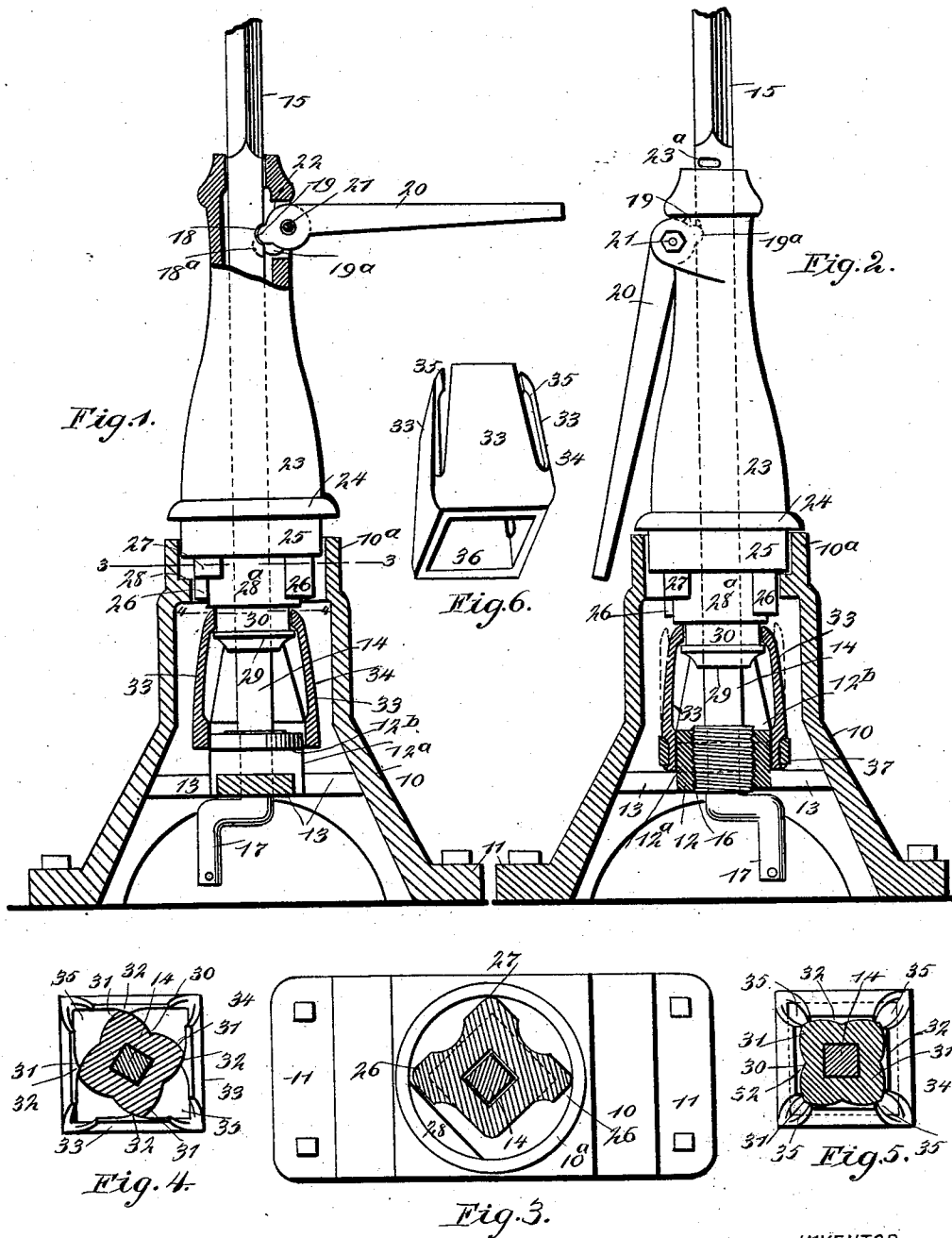


(No Model.)

M. G. PRUTZMAN.
SWITCH STAND.

No. 507,842.

Patented Oct. 31, 1893.



WITNESSES:
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MORRIS G. PRUTZMAN, OF LEHIGH GAP, PENNSYLVANIA.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 507,842, dated October 31, 1893.

Application filed February 11, 1893. Serial No. 461,883. (No model.)

To all whom it may concern:

Be it known that I, MORRIS G. PRUTZMAN, of Lehigh Gap, in the county of Carbon and State of Pennsylvania, have invented a new and Improved Switch-Stand, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of switch stands known as spindle switch stands, in which the switch actuating rods are connected with a crank shaft or spindle in the switch stand, and which is adapted to operate in connection with automatic split switches which are pressed one way or the other by the flange of a wheel and which may be also operated by hand.

The class of switch stands described is illustrated in Letters Patent of the United States, No. 491,812, dated February 14, 1893, and my present invention is intended to improve certain details of construction shown in the patent referred to. As this class of switch stands is constructed in such a manner as to permit the throwing of the switch by hand independent of the spring pressure that resists the rotation of the target spindle when in engagement, it is evident that such stands should be provided with ample means to insure the complete throw of the switch in all cases when operated automatically, thereby guarding against accidents which would occur if a switch were left standing in an intermediate position. My present improvement has reference to this idea and is intended to prevent the switch from standing in an intermediate position, and a further object of my invention is to provide means for raising the standard in such a manner as to prevent any lost motion and also to provide a convenient means for locking the spindle and the spindle column and limiting the rotary movement of the same.

To this end, my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken sectional elevation of the switch stand, showing it adapted for use when set for a solid throw and operated by

hand. Fig. 2 is a similar view, but with the switch stand set to operate automatically by the pressure of the switch rod. Fig. 3 is a sectional plan on the line 3—3 in Fig. 1, showing lugs 26 and 27, and ledge 28. Fig. 4 is a cross section on the line 4—4 in Fig. 1, and showing the dilating spring in an expanded position thus acting on the convex surfaces on the rotary column or standard to rotate the spindle and move the switch, as herein-after described. Fig. 5 is a similar view showing the position of the dilating spring and the adjacent convex surfaces of the revoluble column or standard when the switch is fully thrown; that is, is either wide open or closed; and Fig. 6 is a detail perspective view of the dilating spring.

The stand is in the main like the switch stand shown and described in my former patent, but its parts will be described quite fully so that its operation may be clearly understood and attention called to the changes and improvements.

The switch stand has a hollow base 10 with an open cylindrical upper end 10^a, and at the bottom are broad feet 11 upon which it rests and which are adapted to be bolted to the sleepers of the track. Within the base and near the lower end is a fixed collar 12 which serves as a bearing for the target spindle and which is supported by cross arms 13. On the upper side of the collar is a tenon 12^a of rectangular cross section, which tenon serves as a support for the dilating spring hereinafter described, and the extreme upper portion of the tenon is cylindrical in cross section, as shown at 12^b to enable the spring, when raised, to turn freely on the tenon. A spindle 14 extends vertically through the base and through the entire stand, the spindle having a wrench head 15 to enable a lever to be conveniently applied to it so as to screw it into its bearings in the collar 12, this bearing being a screw bearing, as shown at 16 in Fig. 2, although any suitable bearing may be substituted. At the lower end of the spindle is a crank 17 which is adapted to connect in the usual way with any switch rod.

The above construction is like that shown in my former patent and no novelty for it is claimed in this application.

In the upper portion of the spindle are re-

cesses 18 and 18^a, as shown in Fig. 1, these being in different vertical planes and also in different horizontal planes, and they are adapted to receive the lugs 19 and 19^a on the inner end of the lever or handle 20 which is fulcrumed, as shown at 21, in a recess 22 near the top of the sliding column or standard 23 which is adapted to slide on the spindle 14 and is also adapted to turn with it, the body of the standard or column and the adjacent portion of the spindle being of rectangular cross section, as shown in Fig. 2.

It will be seen that by lifting the handle, the standard or column will be raised on the spindle, and the double arrangement of the recesses and lugs described causes one lug to follow the other so that there is no lost motion and the column or standard may be quickly and easily raised. This feature is an improvement on the arrangement shown in my former patent for lifting the standard or column. When the switch stand is not to be operated manually the standard or column is locked so that it cannot be raised, and to this end the spindle is provided at a point just above the standard with the perforation 23^a in which a padlock may be fastened. This locking may, however, be effected in the usual way. Near the lower end of the standard or column is a flange 24 which rests upon the top edge of the base 10, and immediately beneath the standard or column is cylindrical in cross section, as shown at 25, to enable it to revolve in the stand. Projecting downward from this cylindrical portion are lugs 26 which are arranged on diametrically opposite sides of the column, as shown clearly in Fig. 3, and a lug 27 which is shorter than the lugs 26, as shown in Fig. 1, and which is arranged on one side of the column at a point midway between the lugs 26. These lugs are adapted to engage a ledge 28 on the inner side of the base 10 and limit the movements of the column. The arrangement of the lugs and ledge I claim as novel and as an improvement on my former device.

When the switch stand is to be hand-operated, the lug 27 is arranged on the opposite side to that in which it is shown in Fig. 3, and when the column is in its lowest position the lug 27 and one of the lugs 26 will bear against the ledge 28, and the column and spindle can then only be turned by raising the lever 20 and the column 23 so as to lift the lug 27 above the ledge 28 and the column may then be turned quarter around, the lugs 26 limiting its movement.

When the switch stand is to be automatically operated by the pressure of the switch rod on the crank 17, the lug 27 is turned to the position shown in Fig. 3 with the lug almost diametrically opposite the ledge and the column may then be oscillated, its movement being limited by the lug 26 as described. The column is reduced below the cylindrical portion 25 and opposite the lugs 26 and 27, as shown at 28^a, and at its lower extremity it

is again reduced at 29 in which reduced portion is a circumferential groove adapted to receive the free ends of the wings of the dilating spring, as described below, and a cross section of the grooved portion is shown in Figs. 4 and 5, from which it will be seen that the column at this point has a series of convex or cam-like faces 31, each of which terminates in a point, although the pitch of these faces or surfaces may be varied as desired and a greater or less number of them may be used. The arrangement of these cam faces and of the adjacent portions of the dilating spring form the most important features of my present invention. These convex or cam surfaces 31 contact with the convex inner portions 32 of the free ends of the wings 33 of the dilating spring 34, these wings extending upward in a nearly parallel position but slightly converging, as shown best in Figs. 1 and 6. The dilating spring is of a generally rectangular shape and it has an open bottom adapted to fit upon the tenon 12^a. To increase the strength of the spring, its base portion may be encircled by a collar 37 as shown in Fig. 2.

The operation of the dilating spring is substantially as described in my former patent; that is to say its tension is such that when the column 23 is in its lowest position and the spring in engagement with the tenon 12^a, the tension of the spring is such as to prevent the turning of the column by hand, but to permit it to be turned under heavy pressure applied to the crank 17, as for instance, by the pressing of the crank by the switch rod when the switch is thrown by a passing train.

The operation of the switch stand is as follows:—If the switch stand is to be used in connection with an automatic switch such as is operated by the pressure of a wheel flange, the column is adjusted with the lug 27 on the side of the base 10 which is opposite the ledge 28, and the column is locked down as described to prevent it from being raised. When the switch is operated the pressure of the switch rod on the crank 17 will turn the spindle 14 and column 23, the pressure being sufficient to spread the wings 33 of the dilating spring 34 which immediately close, after the switch is operated, and it will be seen that the switch cannot be left in an intermediate position unless it is clogged, as the adjacent convex surfaces 31 and 32 on the column and spring, relatively cause the column to be turned to its normal position with the points of the cam-like or convex surfaces 31 resting in the corner openings 35 of the spring. If the switch is clogged to prevent this action, the position of the target on the spindle 14 will indicate that something is wrong and the trouble be quickly located and an accident averted. For use as a solid throw or hand stand, the column 23 is arranged on the side next the ledge 28, so that the lug 27 and one of the lugs 26 will abut with the ledge

and as the column cannot be turned while in this position, it is then necessary to raise the lever 20 and the column so as to bring the lug 27 above the ledge 28 and this movement also lifts the spring 34 so as to bring its lower end opposite the cylindrical portion 12^b of the tenon and the column and the spindle may then be freely turned by the lever 20. It will be seen then that the switch stand is perfectly adapted for use as either a solid throw; that is, a hand-operated switch stand, or an automatic switch stand, that when used in the former way easy and convenient means are provided for locking and operating it, and that when used as an automatic switch stand provision is made to guard against leaving the switch half open.

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

1. In a switch stand, the combination of the base, the revoluble spindle extending vertically out of the base, the revoluble standard adapted to turn with and slide on the spindle, locking mechanism to lock the standard to the base by the dropping of the standard and to release it by the lifting of the standard, and a lever fulcrumed in a recess of the standard and having a plurality of projecting lugs adapted to enter corresponding recesses in the spindle, substantially as described.

2. In a switch stand, the combination with

the base, having a ledge therein on one side, of a revoluble spindle held to turn in the base, the standard or column held to slide on and turn with the spindle, the lugs 26 on the lower portion and opposite angles of the standard, these being adapted to contact with the ledge in the base, and the shorter lug 27 arranged at a point between the lugs 26, substantially as described.

3. In a switch stand, the combination of the revoluble spindle, a column held to slide thereon and turn therewith, the column having convex surfaces circumferentially thereon, and a dilating spring held on the support, to encircle the spindle and having expansible wings with concave inner faces to contact with the convex faces of the column, substantially as described.

4. The combination of the revoluble spindle, the revoluble column held to turn with and slide on the spindle, the column having a circumferential groove with convex faces therein, the squared tenon arranged beneath the column, and the dilating spring held to slide on the tenon and having expansible wings with concave inner faces adapted to contact with the convex faces on the column, substantially as described.

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Witnesses:

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