No. 780,490. PATENTED JAN. 24, 1905.

F. C. ANDERSON.

SWITCH STAND.

APPLICATION FILED MAY 21, 1904.

Fig. 1.

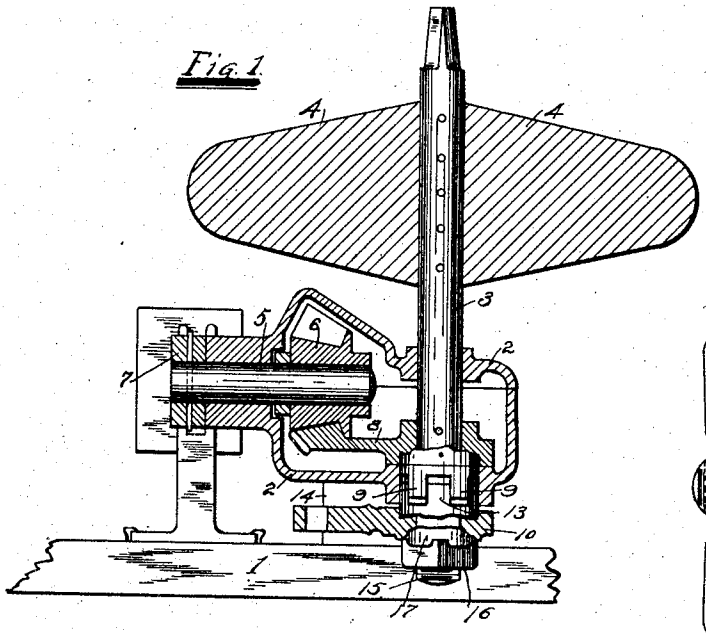


Fig. 4.

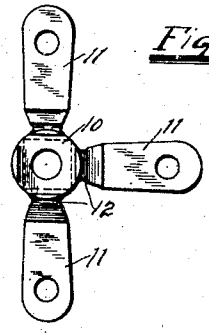


Fig. 3.

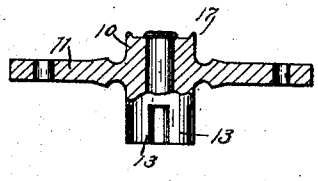


Fig. 2.

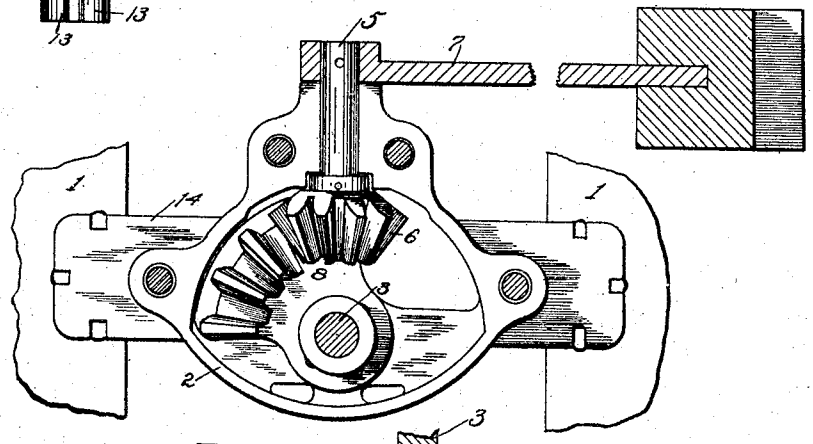
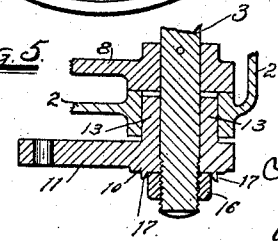


Fig. 5.



Witnesses.

A. B. Bramble.

Edward Peck.

Inventor.

Frank C. Anderson

by Chas. M. Cox

his Attorney.

No. 780,490. Patented January 24, 1905.

UNITED STATES PATENT OFFICE.

FRANK C. ANDERSON, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO AMERICAN VALVE AND METER COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF WEST VIRGINIA.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 780,490, dated January 24, 1905.

Application filed May 21, 1904. Serial No. 209,069.

To all whom it may concern:

Be it known that I, FRANK C. ANDERSON, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Switch-Stands, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of mechanism for operating switches of railways wherein a target-shaft is provided to carry visible targets for day use and a lantern with colored lights for night use; and it has for its object the provision of simple and efficient means whereby the life of such operating mechanism is greatly prolonged over those now in general use and whereby the danger of breakage of the switch-points is reduced to a minimum.

The novelty of my invention will be hereinafter more fully set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a central sectional side elevation of a switch-stand embodying my invention. Fig. 2 is a broken plan view, partly in section, of Fig. 1 with the upper part of the housing removed and showing the target-shaft in section. Fig. 3 is a broken sectional elevation, inverted, of the crank-arm and clutch member. Fig. 4 is an inverted plan view of the same member. Fig. 5 is a sectional detail elevation of the lower part of the operating mechanism.

The same numerals of reference are used to indicate identical parts in all the figures.

My present invention is an improvement on my prior patent of December 15, 1903, No. 746,911, and the switch-stand illustrated and described herein is substantially that of said prior patent, except in the particulars hereinafter to be pointed out.

The switch-stand, as is usual, is supported upon and secured to two adjacent cross-ties 1 just outside of the track; and it consists, essentially, of a two-part box or housing 2, which incloses the gearing against the weather and cinders or dirt and at the same time serves as a bearing for the vertical shaft 3, which carries the targets 4 above the housing and has its upper end above the target shaped to enter a socket in the bottom of a lantern to be used as a night signal. It also serves as a bearing for the lateral stub-shaft 5, which has fast thereon within the housing the beveled pinion 6 and on its outer end the weighted operating-arm 7, by which the shaft 5 is partially turned to operate the switch in the usual manner. The beveled pinion 6 meshes with a beveled crown-gear 8, which, as in this instance, may be a mutilated gear or which may be a full gear. It is preferable to make it a mutilated gear in this instance, for it reduces the size of the housing, and consequently economizes in the amount of metal required. The gear 8 is fast on the vertical shaft 3 and the lower side of its hub rests upon a boss within the housing 2 to serve as a step for the shaft. At the same time it has projecting from its lower side clutch-fingers 9, confined within a bore in the lower plate of the housing.

Slipped loosely upon the lower projecting end of the target-shaft 3 is a multiple crank-arm member 10, having in this instance three arms 11, perforated at their outer ends to enable any one of them to be connected to the switch-throwing rod (not shown) and whose inner ends next to the hub 10 are materially reduced in size, as at 12, Fig. 4, to form a point of breakage should the switch be run through carelessly or accidentally, as in my former patent before referred to.

The upper side of the hub 10 is provided with clutch-fingers 13 to engage the clutch-fingers 9, so that in case of the breakage of an arm 11 it is a very simple matter to disengage the clutch-fingers and turn the arm member to bring an unbroken arm into position to be reëngaged with the switch-throwing rod, all as described in my aforesaid prior patent. In my former patent, however, in case of breakage of one of the crank-arms it was necessary to disconnect the two-part housing, take out the shaft 5, and lift the target-rod bodily before the lower arm member could be turned so as to bring an unbroken arm into

connecting position. All of this is obviated by my present construction, for the housing 2 is supported upon an arched plate 14, which raises it some distance above the ties, and the arm member, with its one part of the clutch, is entirely below the bottom plate of the housing, and to hold it in place I simply thread the lower end of the shaft, as 3 at 15, and screw on a nut 16, which bears against the under side of the hub 10 of the crank-arm member, and to prevent said nut from turning and to form a practical nut-lock for the same I provide lugs or teats 17 on the under side of the hub, which when the nut is screwed up are engaged by said lugs on its upper side and hold it from being unscrewed or accidentally jarred loose, though not preventing its being unscrewed by means of a wrench, for sufficient play is allowed between the ends of the clutch-fingers, as seen in Fig. 1, to permit the crank-arm member to be raised sufficiently to permit the unscrewing of the nut, as will be readily understood.

While the above described and illustrated form of automatically locking the nut against turning is my preferred construction, as no pins or cotters are required to lock the nut, which would be a nuisance in dark nights or cold weather when it was required to shift the crank-arm member, yet a large part of the advantage of my invention would be secured even if such keys or cotters were used for the nut instead of the automatic nut-lock above described, for I would still retain all the advantages of being enabled to shift the crank-arm member without having to remove the target-shaft or take the housing apart, and by threading the lower end of the target-shaft and securing the crank-arm member in place by means of a nut I avoid the employment of a bottom cross-piece to serve as a step for the lower end of the target-shaft and which would afford a shelf for the accumulation of cinders, dirt, or ice.

Having thus fully described my invention, I claim—

1. In switch-operating mechanism, the combination of a vertical target-shaft, a supporting-bearing for the same, an operating-gear fast on said shaft and adapted to be operated by hand, a threaded extension of said shaft below said bearing, a multiple crank-arm member upon said lower projecting end of the shaft, the arms of which have a reduced area of metal to afford points of breakage, and a nut screwed upon the lower projecting end of said shaft to hold said crank-arm member in place, substantially as described.

2. In switch-operating mechanism, the combination of a vertical target-shaft, a supporting-bearing for the same, an operating-gear fast on said shaft and adapted to be operated by hand, a threaded extension on said shaft below said bearing, a multiple crank-arm member upon said lower projecting end of the shaft, the arms of which have a reduced area of metal to afford points of breakage, a positive clutch between said gear and crank-arm member, and a nut screwed upon the lower projecting end of said shaft to hold said crank-arm member in place, substantially as described.

3. In switch-operating mechanism, the combination of a vertical target-shaft, a supporting-bearing for the same, an operating-gear fast on said shaft and adapted to be operated by hand, a threaded extension on said shaft below said bearing, a multiple crank-arm member upon said lower projecting end of the shaft the arms of which have a reduced area of metal to afford points of breakage, a positive clutch between said gear and said shaft to hold said crank-arm member in place, and locking mechanism for said nut, substantially as described.

4. In switch-operating mechanism, the combination of a vertical target-shaft, a supporting-bearing for the same, an operating-gear fast on said shaft and adapted to be operated by hand, a threaded extension on said shaft below said bearing, a multiple crank-arm member upon said lower projecting end of the shaft, the arms of which have a reduced area of metal to afford points of breakage, a positive clutch between said gear and crank-arm member, a nut screwed upon the lower projecting end of said shaft to hold said crank-arm member in place, and an automatic lock between said nut and crank-arm member, substantially as described.

5. In switch-operating mechanism, the combination of a vertical target-shaft 3, a supporting-bearing 2 for the same, an operating-gear 8 fast on said shaft and adapted to be operated by hand, clutch-fingers on the lower side of the hub of said operating-gear, a multiple crank-arm 10 with frangible connections for the arms adjacent to the hub and having upwardly-extending clutch-fingers 13 to engage the clutch-fingers of the gear 8 and provided on the under side of its hub with lugs 17, a nut 16 screwed upon the lower threaded end of the shaft 3 and engaging the lugs 17 at its upper edge to form a nut-lock, substantially as and for the purpose specified.

FRANK C. ANDERSON.

Witnesses:
EDWARD PECK,
EDWARD SUSSDORF.