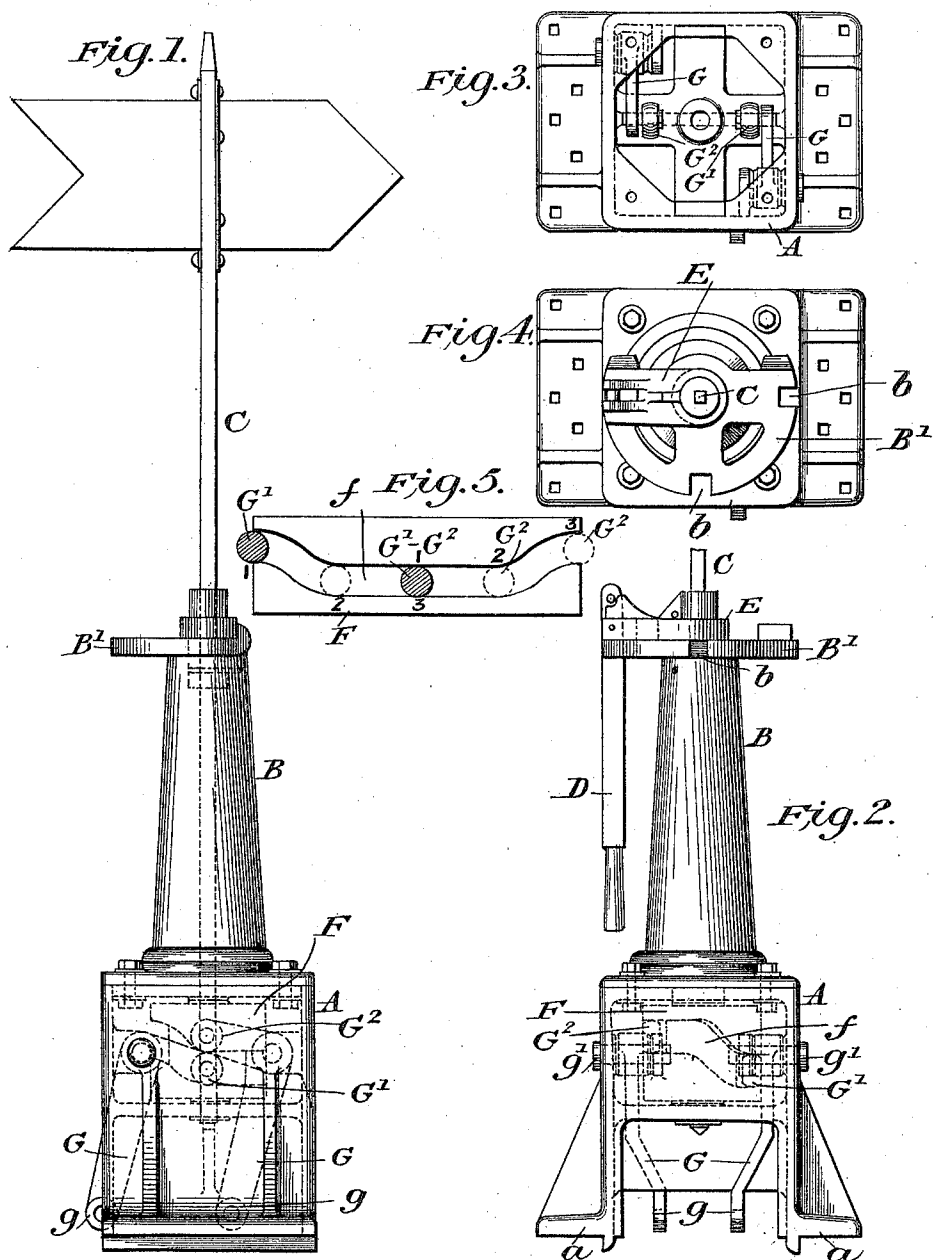


(No Model.)

F. A. PHELPS, Jr.
SWITCH STAND.

No. 585,403.

Patented June 29, 1897.



Witnesses.
Myrtle E. Sharpe
R. M. Lane

Inventor
Fred. A. Phelps Jr.
By Richard L. Phelps
Atty.

UNITED STATES PATENT OFFICE.

FREDERICK A. PHELPS, JR., OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR
TO THE JOHNSON COMPANY, OF LORAIN, OHIO.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 585,403, dated June 29, 1897.

Application filed March 15, 1897. Serial No. 627,559. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK A. PHELPS, Jr., a resident of Johnstown, Cambria county, Pennsylvania, have invented certain new and useful Improvements in Switch-Stands, of which the following is a specification.

My invention relates to that class of switch-stands known in the art as "three-way" stands. These stands are designed for use with a switch having two independently-movable switch-rails, each of which is connected by a rod with a suitable portion of the stand. The mechanism is designed so that either switch-rail is thrown by the movement of a common operating-lever.

The object of my invention is to provide an improved switch-stand of this character which shall be compact, durable, efficient, and inexpensive, which shall have its working parts inclosed, which shall have a minimum of joints through which to transmit the movement of the lever, which may be secured between two ties in a convenient position for securing the connecting-rods thereto, and every part of which is locked at each of the working positions.

To these ends my invention consists in the novel construction, arrangement, and combination of parts hereinafter described and claimed.

Referring to the drawings, Figure 1 is a side and Fig. 2 a front elevation of my improved stand. Fig. 3 is a plan view of the inside of the stand, the actuating-shaft and cam being removed. Fig. 4 is a plan view of the top of the stand with the actuating-shaft removed. Fig. 5 is a development of the cam.

The principal operating mechanism is inclosed within the box A, which is a casting resting upon the ties at *a a*. Bolted upon A is a second casting B, which surrounds and protects the actuating-shaft C and carries the index-plate B', having the slots *b b* to engage the operating-lever D. This lever is pivoted at *d* to an arm E, which is secured to the actuating-shaft. When at the desired position, the lever may be locked at *d'*.

F is a circular block secured to C and having a cam-shaped passage *f* about its periphery.

G G are bell-cranks adapted to be connected to the switch-rail-connecting rods at *g g*.

They are mounted on the pivots *g' g'*, which are secured to the box A. Upon the ends of the bell-cranks are rollers *G' G'*, which are adapted to travel in the slot *f*.

The operation of my invention may now be clearly seen. As the shaft rotates, the cam-block, rotating with it, causes the rollers *G' G'* to rise and fall. A change in the vertical position of either roller imparts a horizontal motion to the lower end of the corresponding bell-crank, moving the switch-rail connected to it backward or forward.

The precise movements of the connecting-rods may be understood from the cam development in Fig. 5. A ninety-degree movement of the cam changes the rollers from position 1 to position 2. By this movement *G'* has dropped, but *G'* has not, thus shifting one of the switch-rails without altering the position of the other. Changing from position 2 to position 3, *G'* remains at the same height, but *G'* is raised, thus shifting the second of the switch-rails, the previously-shifted rail remaining stationary. The reverse movement of the shaft exactly reverses the procedure.

It is clear that many modifications may be made in this invention without departing from the scope thereof. I do not, therefore, limit myself to the exact details shown and described.

The invention may readily, with slight modifications, be used for a switch having more than three positions, and the stand, without change, may, if desired, be used for a simple two-way switch.

Having thus described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a switch-stand, the combination with a movable cammed slot, of pivoted bell-cranks adapted to engage said slot.

2. In a switch-stand, the combination of a box, pins secured thereto, bell-cranks pivoted about the pins, a cammed slot adapted to engage one end of each bell-crank, and means for imparting motion to the cammed slot.

3. The combination, in a switch-stand, of an actuating-shaft, a cylinder movable therewith and having a cammed slot in its periphery, and a pair of pivoted bell-cranks engaging said slot.

4. The combination, in a switch-stand, of an actuating - shaft, a cylinder having a cammed slot in its periphery and movable with said shaft, a box surrounding said cylinder, and pivoted bell-cranks, one end of which engages said slot and the other end of which projects from the bottom of the box.

5. In a switch-stand, the combination of a box having its lower side open and adapted to be supported between two ties, with a pair

of pivoted bell - cranks projecting through said open side, and means for imparting the desired movement to said bell-cranks.

In testimony whereof I have affixed my signature in presence of two witnesses.

FREDERICK A. PHELPS, JR.

Witnesses:

JOHN H. KENNEDY,
H. W. SMITH.