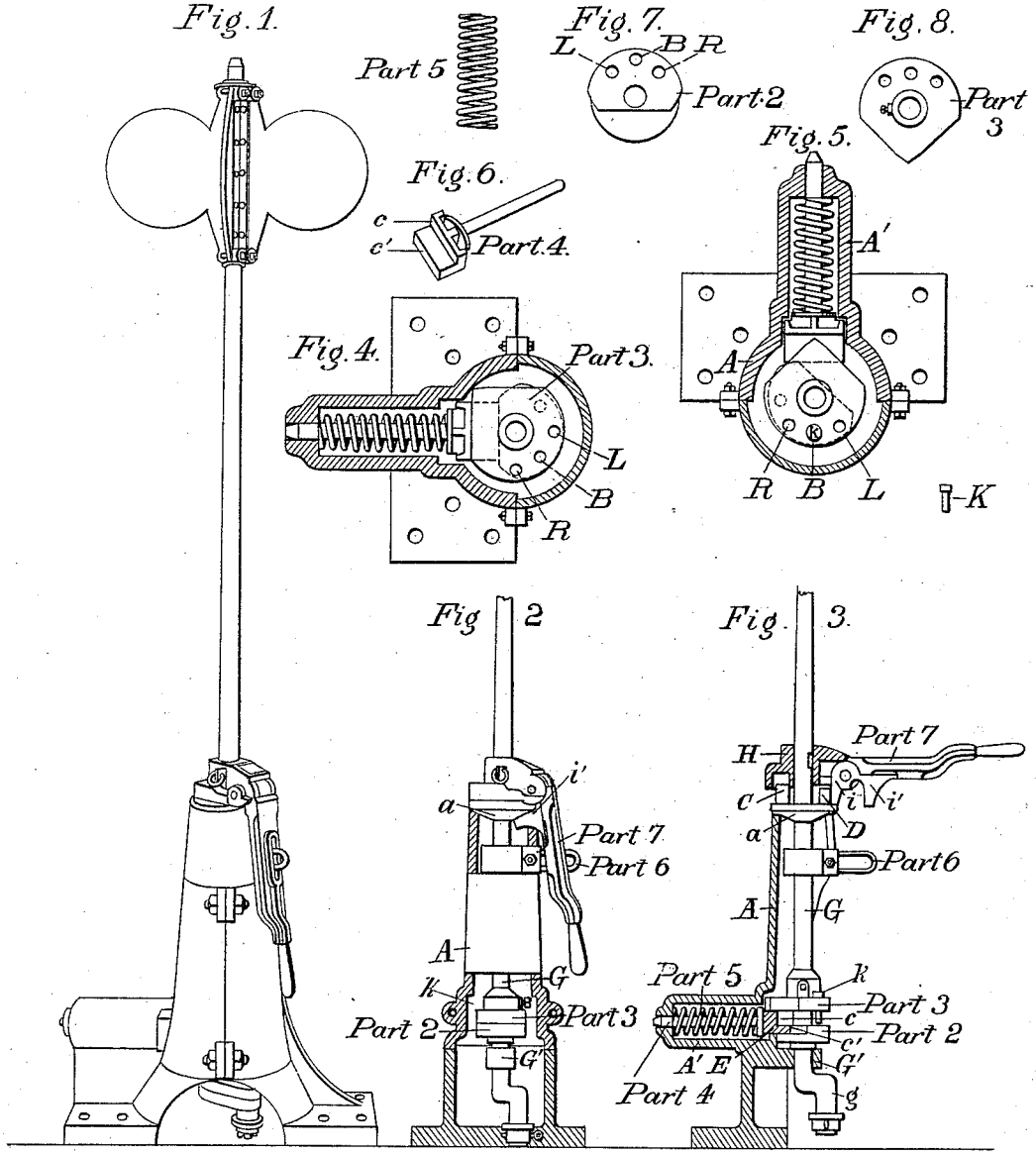
(No Model.)

J. BRAHN.

SWITCH STAND.

No. 342,322. Patented May 25, 1886.



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SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 342,322, dated May 25, 1886.

Application filed January 15, 1886. Serial No. 188,659. (No model.)

To all whom it may concern:

Be it known that I, JAMES BRAHN, a citizen of the United States of America, and a resident of Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in a Railroad-Switch-Stand, of which the following is a specification.

My invention relates to a switch-stand designed to shift and lock railway-switches automatically when being opened by the wheels of the cars while trailing the points when set wrong on either the main or side track, and may be adjusted to force the switch to return to its normal position as soon as the train has passed through, trailing the points on either track, or it may be adjusted to force the switch to return on one track and make positive throw on the other; and it consists in the devices and combination of devices hereinafter described and claimed.

Figure 1 is a plan of my switch-stand with all its parts in position as when connected to a switch and locked. Fig. 2 is a vertical front view of the stand with a part of the frame A removed so as to show the position when stand is locked of shaft G, parts 2, 3, 6, and 7. Fig. 3 is a vertical section of the same turned quarter-round with a portion of the frame A and head-block H cut away, so as to show the position of shaft G, parts 2, 3, 4, 5, 6, and 7, when operating the switch by hand. Fig. 4 is a cross-section of the stand with all of the upper portion of the frame and parts removed that are above cam 3, shaft 4, and spring 5, so as to show the upper face view of parts 3, 4, and 5 and their positions when the stand is locked. Fig. 5 is a cross-section of the stand showing the position of parts 2, Figs. 3, 4, and 5, when the switch is being opened by the train and parts 2 and 3 are vibrated. Fig. 6 is an upper perspective view of part 4. Fig. 7 is an upper face view of part 2. Fig. 8 is an upper face view of part 3.

G is a shaft located within frame A of the stand, and journaled near its lower end in bracket G′, formed on and projecting from the inner face of the frame A, and at the upper end in the head *a*, which also is a part of the frame A, as shown in Fig. 3. Thus the shaft has a vibratory rotary motion on its journals. At the lower end of the shaft is a crank-arm, *g*, which can be connected to the switch-rails (not shown) by a suitable connecting-rod. (Not shown.)

Part 2 is a cam, which is placed loosely on the shaft G and rests on the upper face of bracket G′. Part 3 is also a cam, placed on shaft G, and rigidly secured to said shaft. The forms of these cams 2 and 3 are as shown in Figs. 2, 3, 4, 5, 7, and 8. There are three small holes in each of the said cams, as can be seen in Figs. 4, 5, and 7, designated by letters R B L, which serve a special purpose, to be presently explained. Hole B in cam 3 is the same distance from shaft G as holes R and L are in cam 2, and hole B in cam 2 is the same distance from shaft G as holes R and L are in cam 3. Holes B in cams 2 and 3 differ in their distance from shaft G.

Part 4 is a shaft located in a socket or recess, A′, projecting from and preferably cast on frame A. One end of the shaft 4 passes through a hole in the outer end of the socket A′. The other end of shaft 4 is provided with a broad head, E, having two flat faces, *c* and *c′*, as shown in Figs. 3 and 6.

Part 5 is a spring placed on shaft 4, and presses face *c* against one straight face of cam 3, as shown in Fig. 4, and the face *c′* against the straight face of cam 2, as shown in Fig. 3 and by dotted lines in Fig. 4, and thus locks the switch by the spring 5. With this arrangement it is evident that the shaft G cannot be rotated when in position, as shown in Figs. 2 and 4, without compressing spring 5, thus the switch is held in position until there is a greater pressure put on the switch than the spring has got, in which event the cam 3 will force spring 5 to contract sufficiently to permit it to pass from one straight face to the other, and thus carry the switch-rails a full throw.

H is a head-block placed on and keyed fast to the upper end of shaft G. The hole through the block H and that part of the shaft G that passes through it is square. In one side of head-block H is hinged lever 7. On the inner face of lever 7, at its hinged end, are projections *i* and *i′*, and when the lever is in a horizontal position, as shown in Fig. 3, pro-

jection *i* rests on upper face of head *a*, below the under face of head-block H, and has lifted head-block H, together with shaft G, sufficiently high to allow the point of cam 3 to pass over the head of shaft 4, as shown in Fig. 3, and thus release the shaft G from spring 5, so that it can be rotated without compressing spring 5, as shown in Fig. 3. When lever 7 is depressed, as shown in Fig. 2, projection *i'* passes under the lower inclined face of head *a*, as shown in Fig. 2, and thereby forces downward the shaft G and cam 3, and in position, as shown in Fig. 2.

Part 6 is an arm secured to shaft G, and passes through a slot in lever 7, as shown in Fig. 2, so that lever 7 can be locked to shaft G by a padlock, and thus prevent them being raised while so locked.

K is a pin, which, when placed in hole B of cam 3, will enter hole R of cam 2 when cam 3 is in position, as shown in Fig. 4, and should a train pass through a switch when set wrong—that is, connected to a stand with the cams in position as just stated—cam 2 would vibrate with cam 3, and permit the train to pass through the switch, and return the switch to its original position as soon as the train was through it, and when cam 3 is lifted, so its point will pass over the head of shaft 4, it lifts pin K out of hole R of cam 2, as shown in Fig. 3, so the shaft G can be rotated by hand sufficiently to shut the other straight face of cam 3 against face C of shaft 4, and when so shut pin K will drop in hole L of cam 2, and thus cause cams 2 and 3 to vibrate with shaft G when a train is passing through a switch set wrong, and thus it is locked by cams 2 and 3, as above described, and forces shaft 4 to compress spring 5, as shown in Fig. 5. Cam 2 has one straight face and a round segment at each end of the same sufficiently long to force face C' of head E of shaft 4 away from contact with the point of cam 3 when vibrated together with cam 2, as shown in Fig. 5. It is also long enough to force head E of shaft 4 to touch the bottom of its recess in frame A, and thus check the further movement of the switch before cam 2 loses its tendency to return to its normal position and return the switch to its original position as soon as the train has passed through the switch by the agency of spring 5. When pin K is placed in hole R of cam 3, it rests on top of cam 2, when cam 3 is in position, as shown in Fig. 4, and should cam 3 be caused to rotate by a train passing through the switch when set wrong that was being held by cam 3 in position as just described, the switch would make a full throw, and pin K would drop in hole B of cam 2, and thus the switch could not be made to make a full throw by a train passing through it unless the switch was set back by hand, as in Fig. 4, or the pin removed, or placed in hole L of cam 3. If it were so placed, the stand would work the reverse from that just described—that is to say, the stand is made right or left-handed by placing pin K in hole R or L of cam 3, and by pin K adjusted so a train cannot throw a switch and leave it wrong for the main track.

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

1. A switch-stand having frame A, shaft G, head-block H, lever 7, cam 3, cam 2, shaft 4, and spring 5, all arranged to operate as herein shown and described, and for the purpose specified.

2. A switch-stand having a tight and loose cam on the same shaft, in combination with shaft 4 and spring 5, for the purpose herein shown and described.

3. A switch-stand having cams 2 and 3, with holes R, B, and L, in combination with pin K, shaft 4, and spring 5, arranged to operate as and for the purpose substantially as shown and described.

4. A switch-stand having frame A, shaft G, head-block H, lever 7, cam 2, cam 3, arm 6, shaft 4, spring 5, crank-arm *g*, and pin K, all arranged to operate as and for the purpose herein shown and described and specified.

5. The combination of a switch-stand, the switch-operating rod, the main shaft, and an engaging device provided with a pin to limit the rotary movement of said engaging device, carried by said shaft, with a spring-actuated engaging device connected with the stand, adapted to move the switch-rails connected to the rod, and a lever fulcrumed so as to swing in a vertical plane to disengage said engaging device and permit the switch to be turned.

6. The combination of a switch-stand, the switch-operating rod, the main shaft, and an engaging device provided with a pin to cause the rotary motion of said engaging device carried by said shaft, with a spring-actuated engaging device connected with the stand and adapted to move the switch-rails connected to the rod, and a lever fulcrumed so as to swing in a vertical plane to disengage said engaging device and permit the shaft to be turned.

7. The combination of a switch-stand, a switch-operating rod, and main shaft, of engaging devices carried by the shaft, a spring-actuated engaging device carried by the stand, and connecting and adjusting mechanism to engage or disengage and adjust the devices upon the shaft relatively to each other, whereby the stand may be adjusted to act as both a full throw and a self-returning spring-switch mechanism, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 12th day of January, 1886.

JAMES BRAHN.

Witnesses:
W. C. MEEKER,
H. W. BRAHN.