(No Model.) 2 Sheets—Sheet 1.

J. A. JOHNSON.

SWITCH STAND.

No. 451,403. Patented Apr. 28, 1891.

FIG. I.

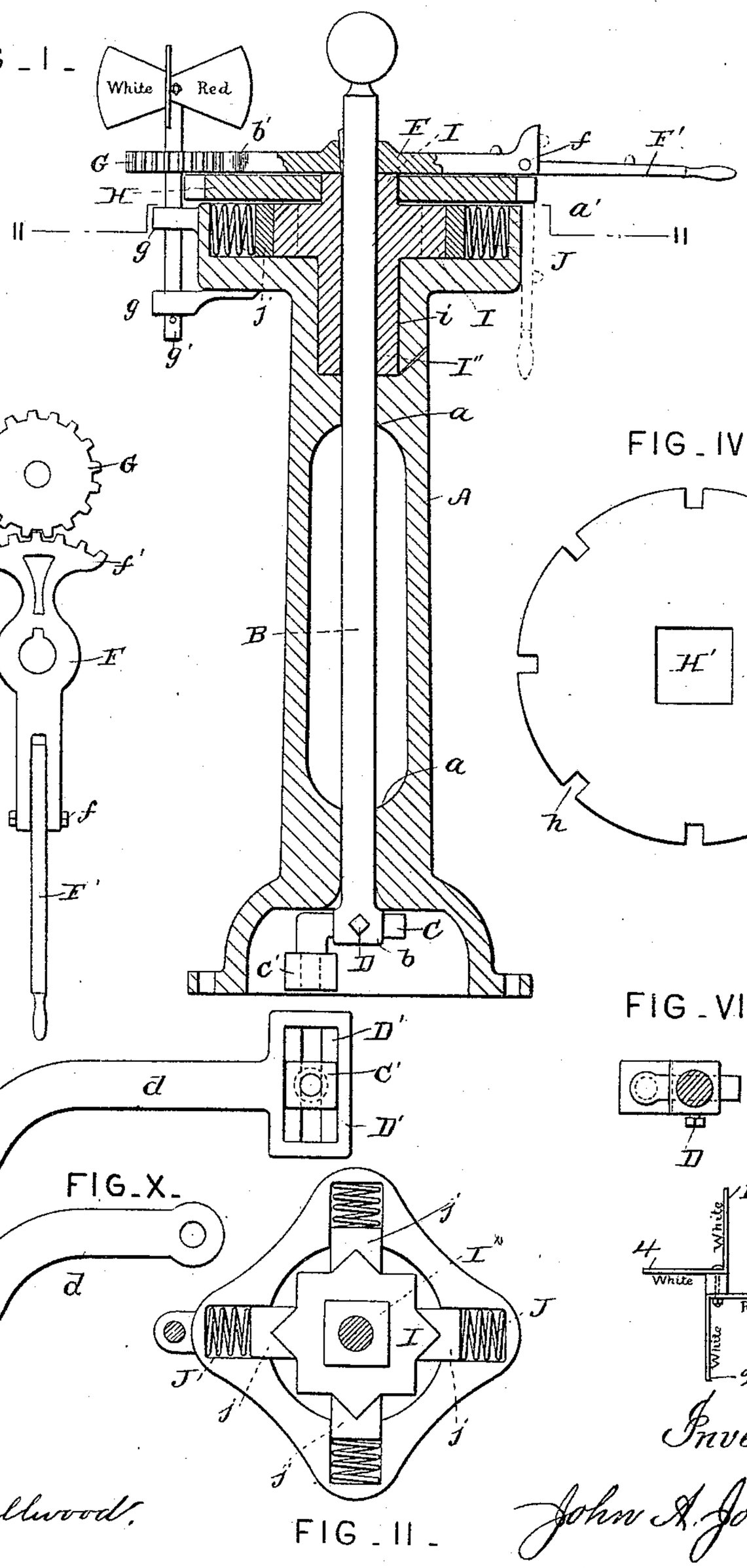

FIG. III.

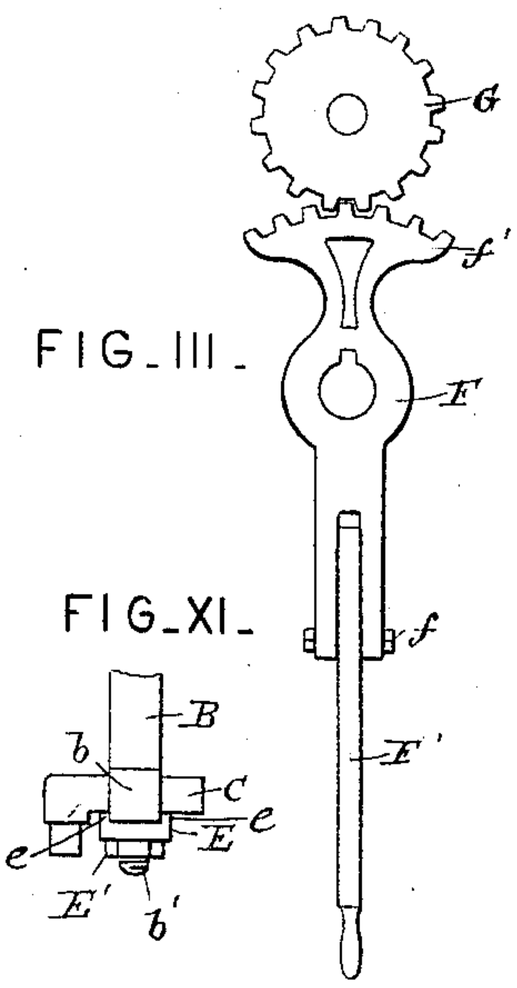

FIG. XI.

FIG. IV.

FIG. VI.

FIG. V.

FIG. X.

FIG. II.

FIG. XII.

Attest:

Geo. T. Smallwood.

Geo. H. Wheelock

Inventor

John A. Johnson.

By Knight Bros

Attys

(No Model.) 2 Sheets—Sheet 2.

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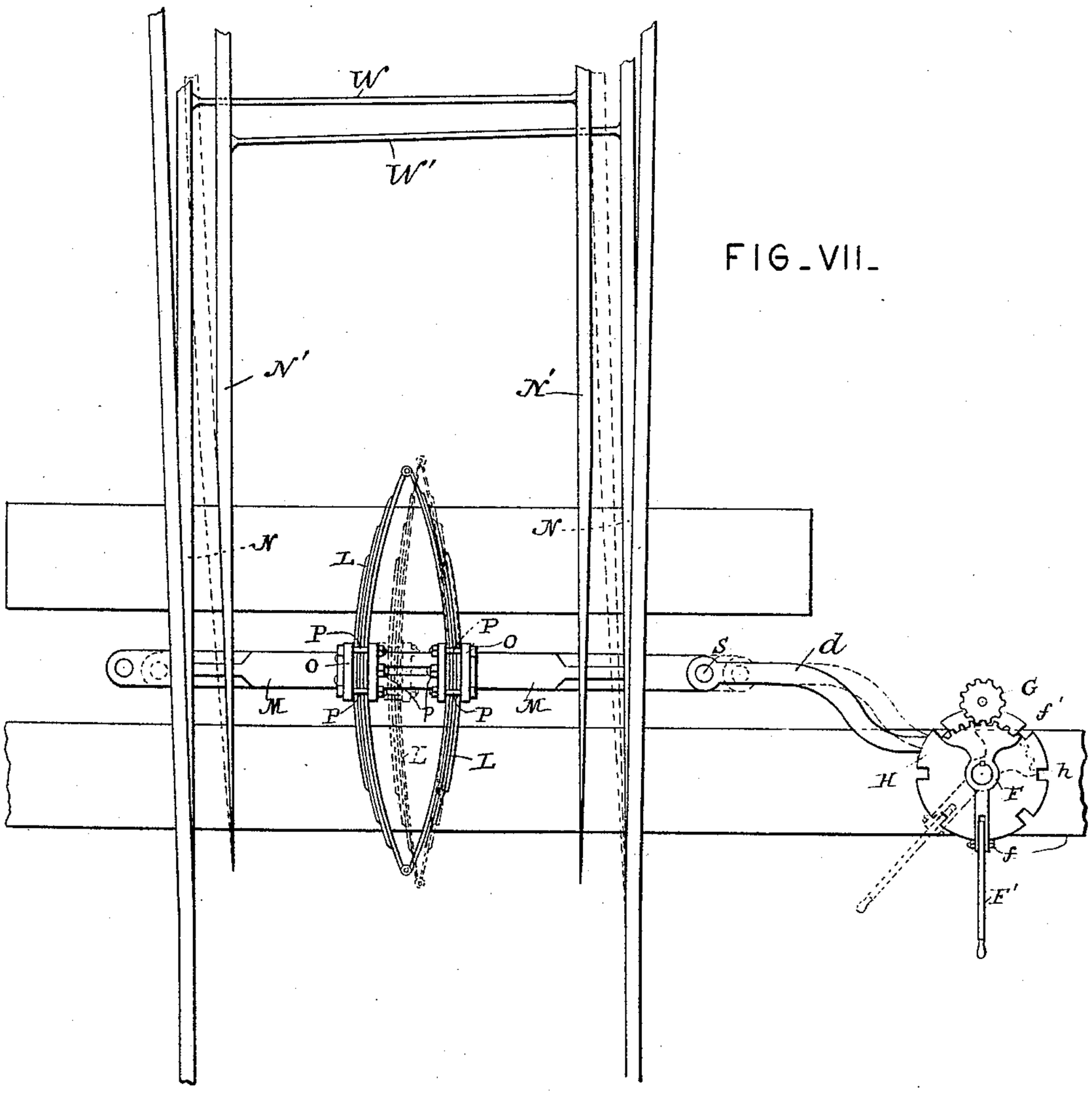


FIG. VII.

FIG. VIII.

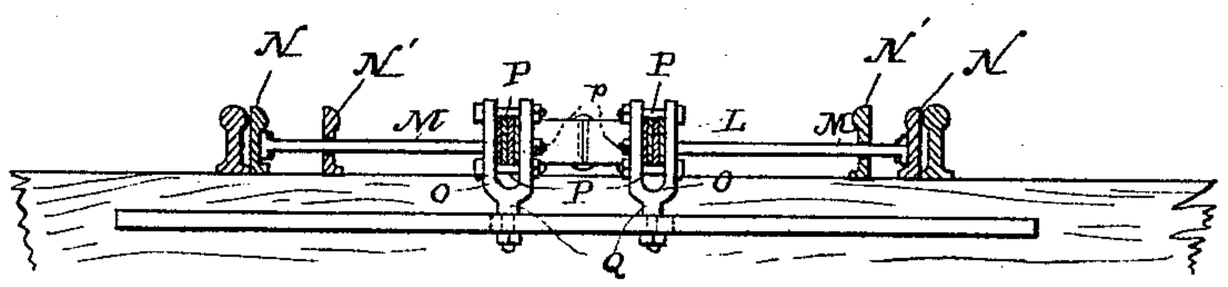
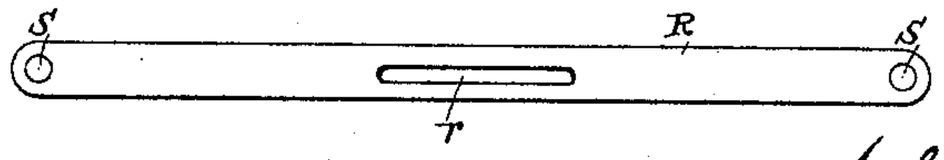


FIG. IX.



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Inventor:

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UNITED STATES PATENT OFFICE.

JOHN A. JOHNSON, OF TREMPEALEAU, WISCONSIN, ASSIGNOR OF ONE-HALF TO JAMES S. PIERSON, OF SAME PLACE.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 451,403, dated April 28, 1891.

Application filed October 25, 1889. Serial No. 328,128. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. JOHNSON, a citizen of the United States, residing at Trempealeau, in the county of Trempealeau and State of Wisconsin, have invented certain new and useful Improvements in Switch-Stands, of which the following is a specification.

This invention relates to improvements in railway switch-stands. Switch-stands for three-way split switches are generally constructed for one particular kind of switch, or switch and stand made to work together, and cannot be attached to any other, and a stand made for a three-inch throw cannot be used for any other. It would hence often be convenient if the throw of a stand could be changed to suit the throw of a switch. As is often the case in practical work, when the stand is set in place and holds the switch firm to the one side, it fails to throw full to the other side. The only remedy then is to put in shims or nut-locks between switch-rail and lug, or else spike the continuous rail in, which makes it too tight gage, and that is very objectionable. Three-way stands as usually constructed do not give an exact indication of position of switch—that is, the stand may show a correct signal for main track, but gives but one form of signal for either of the two side tracks, and does not indicate which side track is closed or open.

My invention has for its object the correction of these evils, and the provision of certain novel features hereinafter described, and particularly pointed out in the claims.

My stand has a signal attachment that shows exact position of switch, what tracks are closed and what tracks are open, working automatically with the stand and switch—that is, if the switch is run through or thrown automatically by a car or engine, the signal will then indicate the position the switch is left in, and can be made to apply to either track as main track.

The automatic feature hereinafter described in my stand permits an engine, car, or train to run through a switch provided with it on any one track, while the switch may be thrown and locked for any other track, and it will simply throw the switch stand and signal into position for the track run through on, leaving the stand locked secure, so it cannot be thrown by hand without unlocking it unless the elliptic-spring connection is used, which may be attached to my stand with advantage. By the use of this elliptic spring my three-way split switch is made a safety-switch, and in this way it will always be left for main track whatever way a train may be run through it.

In order that my invention may be fully understood I will proceed to describe the same with reference to the accompanying drawings, in which—

Figure I is a vertical sectional view of a switch-stand embodying my improvements. Fig. II is a horizontal section of the same, on the line II II. Fig. III is a detail view showing the operating-lever and the segment-rack with the cog-wheel operated thereby. Fig. IV is a plan view of the notched disk. Fig. V is a view showing the manner in which the crank is secured to the connecting-bar. Fig. VI is a detail. Fig. VII is a view showing my three-way switch with the elliptic spring. Fig. VIII and IX are detail views of the devices to which the spring is secured. Figs. X and XI are modifications. Fig. XII shows a semaphore.

In the drawings, A is a cast-iron or other metallic stand, that may be solid or hollow with bearings *a* at intervals, or it may be a skeleton frame. Journaled in the bearings *a* is a vertical rotary shaft B, having at its lower end a sleeve *b*, in which is adjustably secured the long arm of a crank C, a set-screw D passing through the sleeve and engaging the crank for the purpose of such adjustment. The lower or short end of crank C is swiveled in a nut C′, and said nut engages underneath with the flanges of the slot or guideway D′ of the head D at the inner end of the connecting bar or rod *d*, the end of said crank passing down through the slot. As the connecting-bar reciprocates and the crank-arm rotates, it will be readily seen that this slide-connection is useful, but is not absolutely essential, as the short arm of the crank C could be swiveled directly in the end of the con-

necting-bar, as shown in Fig. X, in which case the bar will have the same action on the switch, but will have a lateral swinging motion, as it has to move with the crank to one side or the other. This latter construction will work all right with a skeleton stand, but for a closed or solid casing the form shown in Figs. V and VI is better.

In Fig. XI a modification of the manner of connecting the crank with the vertical shaft is shown, and consists in passing the end of the crank through a transverse opening in the lower end of shaft and providing a screw-threaded end b', of less diameter than the shaft. On this end b' is placed a washer E, having two projections e e, that engage the crank and securely hold it when the nut E′ is screwed on. To the upper end of the vertical shaft B is keyed a lever F, one end of which is slotted to receive the end of a hand-lever F′, through which and through the slotted end passes the pintle f. Secured to the stand are brackets g, in which journals the vertical rotary shaft g', having a cog-wheel G, that meshes with a segment-rack f' on the lever F. H is a circular plate or disk with notches h. At its center is a rectangular opening H′, that receives a central square boss I′ on the upper side of the ratchet-wheel I. Projecting downwardly from the ratchet-wheel I is a cylindrical boss I″, that journals in a socket i in the stand. The vertical shaft B passes axially through the ratchet-wheel and its bosses. The ratchet-wheel is within a receptacle formed by the annular flange a' of the stand. J are spiral springs (here shown as four in number; but the number, of course, may be varied) that are interposed between the notched dogs j and the flange a', so as to cause the dogs to engage the teeth of the ratchet-wheel. Targets K of suitable design are carried by the shaft g'.

Fig. XII shows how the semaphore may be arranged to indicate the position of track. The white targets 1 2 indicate the track clear. The red and white targets 3 4 will show which side track is clear, the white target being on the clear and the red on the closed side. In the night, lamps are attached to the shaft g' for the same purpose.

In Fig. VII is shown my elliptic-spring attachment used with a three-way switch. L is the elliptic spring. Such a spring is more durable and elastic than a coil-spring, and cannot be clogged. It can easily be covered to prevent anything being caught in it, and to exclude snow, &c. M M are bars that are secured by suitable fastenings each to one side of the spring and to an outer point N, said bars passing through inner points N′. O are clamps secured to the spring by means of bolts P, above and below, as shown, and may be long enough to give more or less tension to the spring. This may also be done by the nuts p, screwed on the ends of the bars M M. The clamps O are forked, the lower ends being formed into taps Q, which work loosely in a slot r in the bar R, under the rails and points, but said taps stay in the extreme ends of the slot, except when the switch is run through, when the spring is depressed and changes the position of one of the taps, as shown by dotted lines. The tap and spring return to former positions after the train has passed through. The switch also takes the same position, as shown in dotted lines, when thrown by hand, but the lever F′ must be raised. When operated by a train, the lever is engaged in one of the notches of the disk H and the disk is moved with it. The switch cannot be moved by hand when the lever is down. The bar R has pivotal connection at S with the bar d. The respective points of each pair of points of the right and left turn-outs are of course connected by the customary tie-rods—such, for instance, as W W′. It will be observed that when the shaft B runs loosely through the disk H and ratchet-wheel I, the hand-lever being brought in horizontal position, the shaft is then subject to the motion of the hand-lever, but if the hand-lever is dropped into one of the notches of the disk H the lever and disk become combined and fixed as to relative movement one with the other. Consequently the shaft B is locked with disk H. The ratchet-wheel I, when the lever is dropped, will also be locked with said devices by reason of its rectangular boss I′ engaging in the rectangular opening in the disk. As the dogs j are pressed by the springs into engagement with the teeth of the ratchet-wheel, the shaft cannot now be turned by hand without unlocking and raising lever F′. It will be seen that when the switch and stand are in position for either of the turn-outs, (shown in dotted lines in position for the left turn-out,) the pressure of a car going through the wrong track, which in this instance would be the main or middle track, will force the crank C outwardly to position shown in full lines, and it being combined fixedly with the shaft B, levers F′ F, disk H, and ratchet I, the whole mechanism must turn, the dogs being forced back against the action of springs J by the revolution of the ratchet until the switch is thrown completely over. When the switch and stand are thrown to dotted position, it will be seen that it is absolutely necessary that the springs J be stronger or stiffer than spring L to hold the switch to the position it may be set. Of course when this position is changed, as just described, the semaphore would be brought into harmony with the stand and would show the position of the track upon which the car ran through. If, when the switch and stand are in position shown in full lines—*i. e.*, in position for the main track—a car runs through on one of the switches, the action of the car-wheels compresses one side of the elliptic spring, as shown in dotted lines; but the position of the stand or semaphore is not changed or affected, and after the car has passed

through, the switch, by the action of the elliptic spring, resumes its former position and is indicated by the semaphore.

Having thus described my invention, the following is what I claim as new therein, and desire to secure by Letters Patent:

1. In a switch-stand, the combination of the frame having an annular flange forming a chamber at top, the operating-shaft, the connecting-bar of the switch having connection with the shaft, the hinged operating-lever fixedly attached to said shaft, a notched disk above the flange and within which the shaft is adapted to rotate, said operating-lever being adapted to engage in the notches, dogs, or catches, and a ratchet-wheel within the chamber formed by the flange, adapted to rotate with the disk and engaged by the dogs or catches, substantially as and for the purpose set forth.

2. A semaphore-signal consisting of targets 1 2, of one color, for indicating main track clear, and the targets 3 4, of different colors, for indicating which side track is clear, substantially as set forth.

3. In combination with a switch-stand having a semaphore, a swinging operating-lever fixedly attached to the main operating-shaft, a switch, a spring secured to the points of said switch, means of connection between the switch and the shaft, whereby the spring is adapted to be compressed, a notched disk, said shaft being rotatable independently thereof, dogs or catches, and a ratchet-wheel adapted to rotate with the disk and engaged by the dogs or catches, substantially as and for the purpose set forth.

4. The combination, with a switch, of an elliptic spring and means for compressing said spring, consisting of a reciprocating slotted bar, arms projecting from separate pairs of points of said switch and secured one each to one of the sides of said spring, clamps secured to said spring and having projections extending into the slot of said bar, and an automatically-operated switch-stand connected with said bar, substantially as and for the purpose set forth.

JOHN A. JOHNSON.

Witnesses:
J. E. McCONNELL,
H. L. HIGBEE.