(No Model.) 2 Sheets—Sheet 1.

T. R. BROWN & W. C. MEEKER.

RAILROAD SWITCH STAND.

No. 336,988. Patented Mar. 2, 1886.

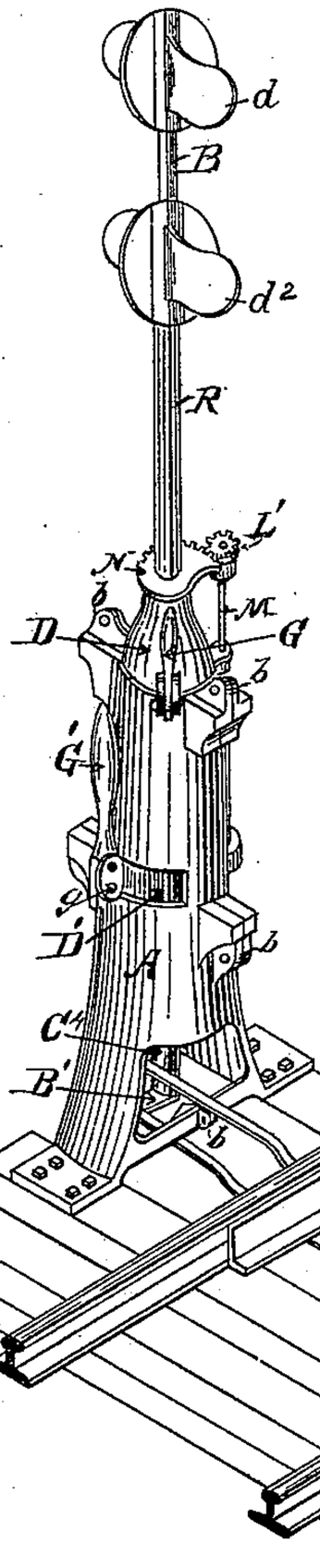


Fig. 1.

WITNESSES:
Wm. A. Sharp
W. E. Chapin Jr.

INVENTOR:
Thomas R. Brown
Walter C. Meeker

(No Model.) 2 Sheets—Sheet 2.

T. R. BROWN & W. C. MEEKER.

RAILROAD SWITCH STAND.

No. 336,988. Patented Mar. 2, 1886.

Fig. 2.

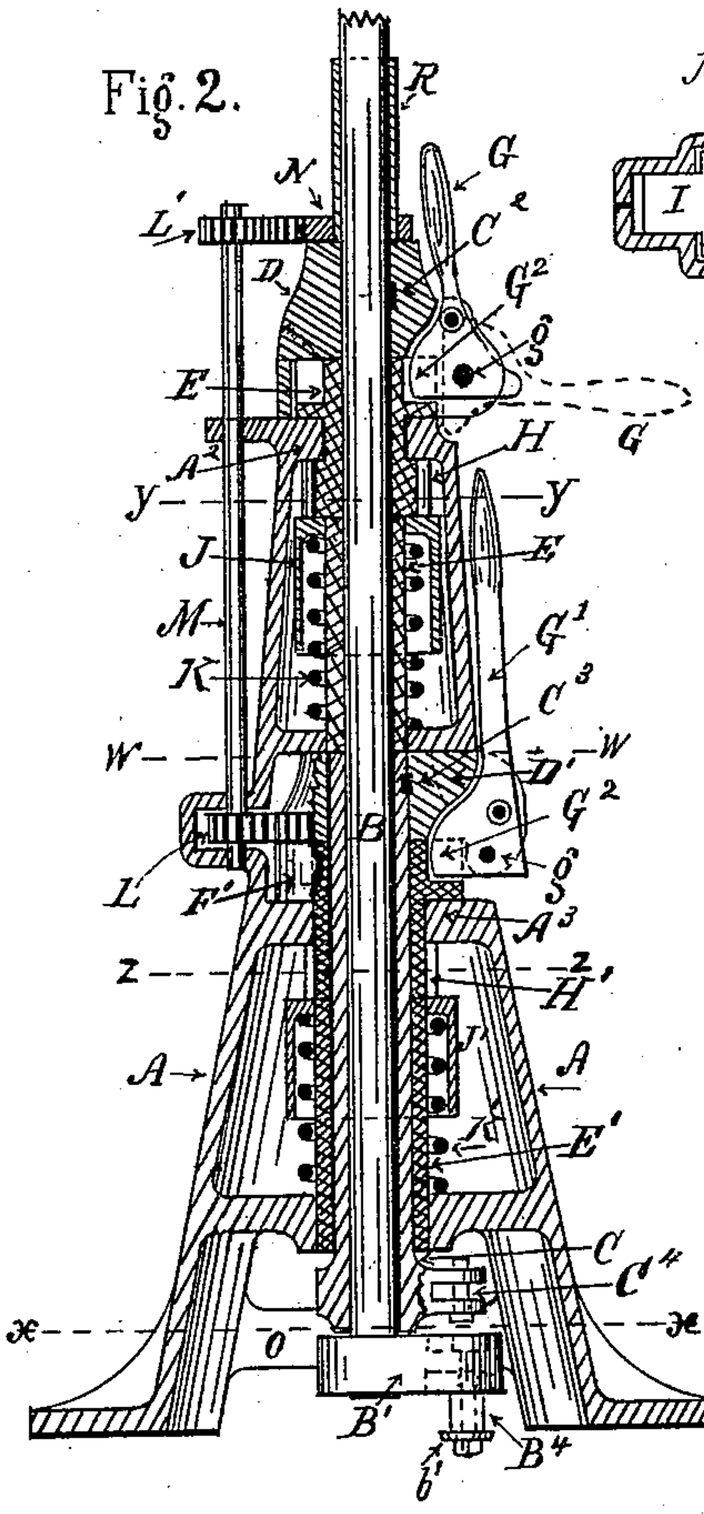
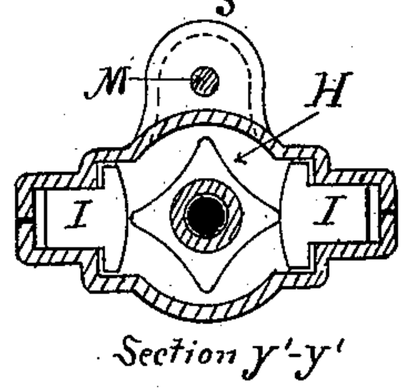
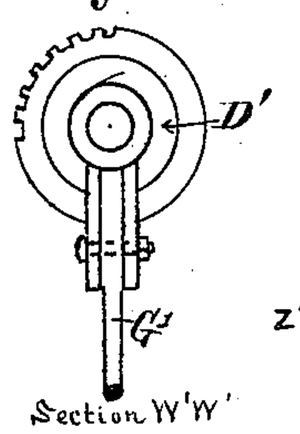


Fig. 4.



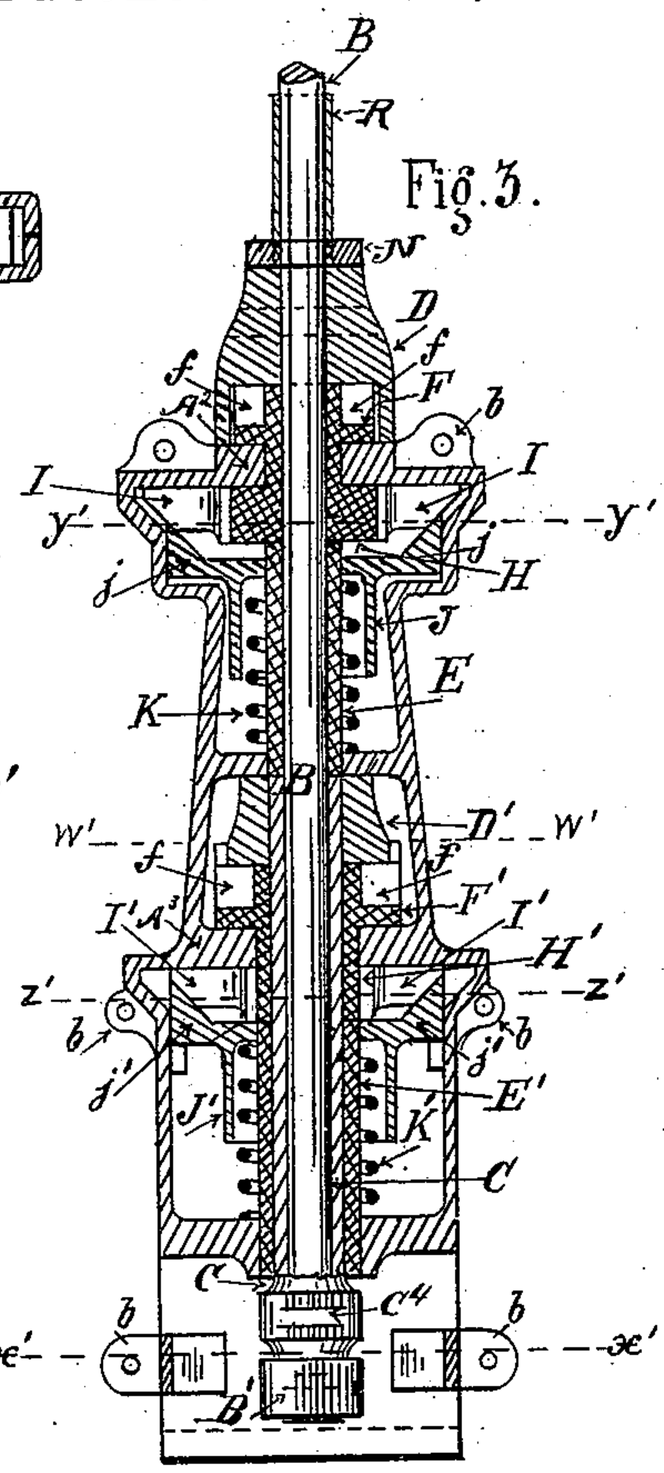
Section y'-y'

Fig. 5.



Section W'W'

Fig. 3.



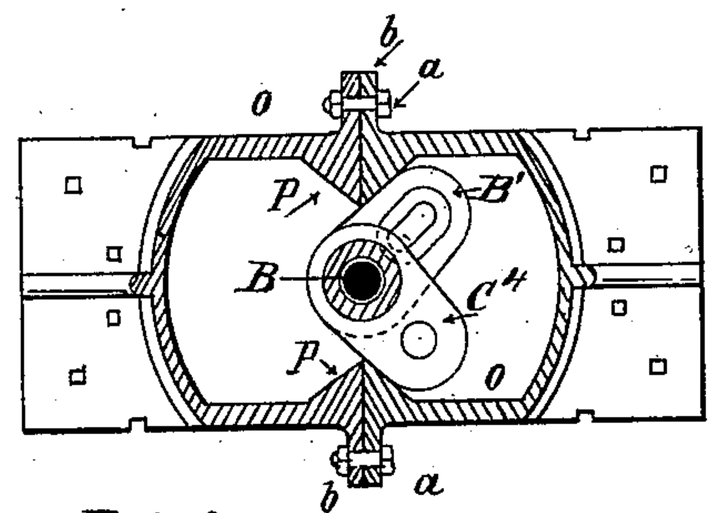
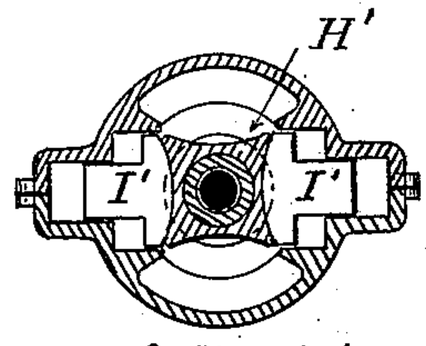


Fig. 6. Section x-x

Fig. 7.



Section z'-z'.

Fig. 8.

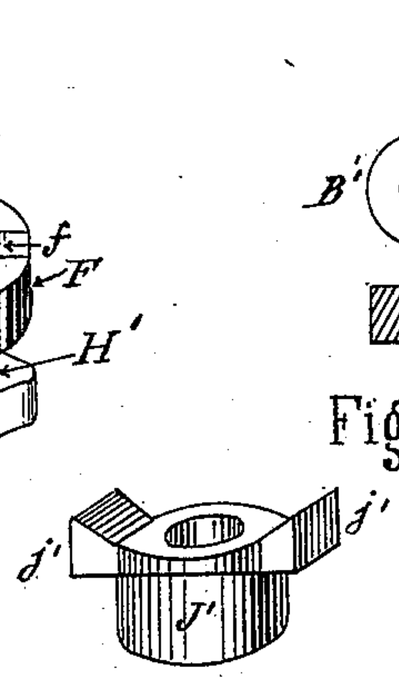


Fig. 10.

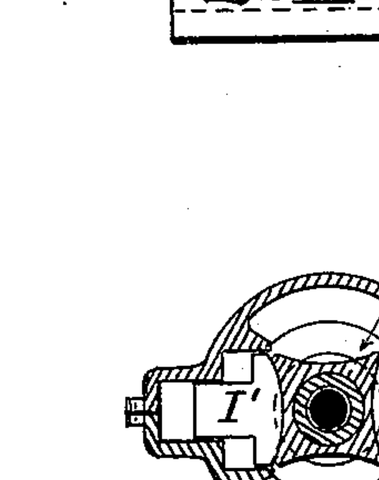


Fig. 9.

Fig. 11.

WITNESSES:

Wm. A. Sharp

W. E. Chapman

INVENTOR

Thomas R. Brown

Walter C. Meeker

UNITED STATES PATENT OFFICE.

THOMAS R. BROWN AND WALTER C. MEEKER, OF JERSEY CITY, N. J.

RAILROAD SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 336,988, dated March 2, 1886.

Application filed October 7, 1885. Serial No. 179,194. (No model.)

To all whom it may concern:

Be it known that we, THOMAS R. BROWN and WALTER C. MEEKER, citizens of the United States, and residents of Jersey City, county of Hudson, and State of New Jersey, have invented new and useful Improvements in Railroad Switch-Stands, of which the following is a specification.

Our invention relates to what are generally known as "automatic railroad switch-stands," which are especially constructed for split or point switches, and are designed to permit the wheels of the engine or cars to automatically operate the stand through the switch points or rails in case the latter should be misplaced; and our invention consists, further, of such an automatic stand, especially constructed to operate what are known as "double-throw" or "three-way" split switches, and will equally as well operate two adjacent single-throw split switches. Thus we accomplish with one stand what has heretofore required two separate and distinct stands, and is therefore an invention of great merit, as it will make the operation of double-throw or three-way split switches far more simple, as well as preventing delays in their operation, all of which will be more clearly understood by reference to the specifications and drawings.

Figure 1 represents a perspective view of the double-throw switch-stand as applied to a double-throw or three-way split switch. Fig. 2 represents vertical section of stand, showing the positions of the several parts when the stand is locked and ready to work automatically. Fig. 3 represents a transverse sectional view of stand, that portion above line *w' w'* showing position of the several parts when stand is working automatically. Fig. 4 shows plan in section at *y y*. Fig. 5 shows plan of cap or hub at W' W'. Fig. 6 shows plan in section at *x x*. Fig. 7 is plan in section at *z z*. Fig. 8 is a perspective view of upper part of rocker-shaft or loose sleeve detached. Fig. 9 shows detail views of the crank and attachments disconnected. Fig. 10 is a perspective view of the spring-sleeve. Fig. 11 shows detail views of the crank-pin.

Referring by letters to the accompanying drawings, the body or frame of stand A A is formed in halves, which are held together at intervals by bolts *a* passing through the ears *b* formed for that purpose, and the stand is designed to rest on two ties, as shown in Fig. 1. Although it is not essential to its operation that it should be constructed to rest on two ties, still it is preferably so for rigidity.

The stand is provided with two vertical shafts, the solid one, B, rotating within the hollow one, C, and they are independent of each other. The shaft B passes through the entire length of the stand, and is secured to the upper cap or hub, D, by a key, C^2, and is continued above the main body of stand about three to four feet, and finished to receive a target or signal, *d*, as shown in Fig. 1. To the lower end of the said shaft B is secured the crank B', to which in turn is connected one of the rods connecting it with one pair of the switch-points, as shown in Fig. 1. The hollow shaft C passes only about half-way through the stand to the lower cap or hub, D', and is secured thereto by a key, C^3. To the lower end of the said hollow shaft C is secured the crank C^4, to which in turn is connected the other rod, connecting it with the remaining pair of switch-points, (also shown in Fig. 1.) Both the solid shaft B and hollow shaft C pass through a loose sleeve or rocker-shaft, E and E', respectively. The upper ends of these loose sleeves terminate in the heads F and F', which are also a part of the said loose sleeves E and E'. The said heads F and F' rest on the inward projecting parts of the main body A^2 and A^3, the said projecting parts also forming journals for the loose sleeves E and E'.

In the upper and outer surfaces of heads F and F' are four recesses or notches, *f f f f*, into one of which, on each head, rest the inward projecting parts G^2 of the handles or hand-operating levers G and G' when in an upright position, as shown in Fig. 2. The hand-operating levers G and G' are pivoted to the caps or hubs D and D', respectively, at *g g*.

Just below the heads F and F' the loose sleeves or rocker-shafts are formed into squares or cams H and H', the four sides of which are concave and the corners slightly rounded, as shown in Figs. 4, 7, and 8, for the purpose hereinafter set forth. Against two opposite sides of these squares or cams H and H' are set the spring-sleeve compressors I I and I' I', their inward faces being

formed convex and fitting to the concave surfaces of the squares or cams H and H′, as shown in Fig. 7. Their outward ends are beveled under at an angle of about forty-five degrees, and operate against the beveled surfaces of ears *j j* and *j′ j′* of the spring-sleeves J and J′, and are shown in their different positions in Fig. 3.

Encircling the loose sleeves E and E′, are spiral springs K and K′, confined between the inward projecting parts of the main body of stand A^2 and A^3 and the spring-sleeves J and J′. The spring-sleeves J and J′ are so constructed as to bear on the springs K and K′, and yet work vertically on the loose sleeves or rocker-shafts E and E′. The said spring-sleeves J and J′ are provided with two beveled ears, *j j* and *j′ j′*, opposite each other, which bear against the beveled surfaces of the compressors I I and I′ I′. They also fit in grooves or guides formed on the main body of stand, to prevent any other than a direct vertical movement when working automatically.

On the caps or hubs D and D′ are formed ears or projections, between which are pivoted the handles or hand-operating levers G and G′, which also form pockets for the handles when in an upright position. The outward surface of cap D′ is formed into gears arranged to engage the pinion L on lower end of the transmitting-shaft M, Fig. 2.

To the upper end of the transmitting-shaft M is secured a pinion, L′, of the same size as the one on lower end of said shaft. The pinion L′ engages the geared segment N, as shown in Fig. 2, thus operating the hollow shaft R, which carries the signal or target d^2.

On either side and near the lower part of the main body of the stand are the bars O O, having inward projections or stops P of a suitable angle, against which the cranks B′ and C^4 bear, as shown in Fig. 6, their functions being more fully set forth in the description of the operation of this stand. The crank B′ has an adjustable crank-pin B^4, which is formed square at its upper end, or may be formed into any shape or form to prevent its turning in its socket. Said crank-pin B^4 is secured in its place by means of a bolt passing through it, which also holds the connecting-rod on the crank-pin B^4 by means of the washer *b′*.

On two opposite sides of the square portion of the crank-pin B^4 are the projections b^2, which fit corresponding detents, b^3, on the underside of crank B′, and which keep said crank-pin B^4 from shifting when once adjusted as shown in Fig. 9. It is thus clearly seen that the throw of the crank can be adjusted or altered by simply loosening the bolt which passes thrcugh the center of said crank-pin B^4 sufficiently to allow the changing of the projections b^2 from one detent to another, which operation does not involve the removal of the connecting-rod from the crank.

The operation of this stand is as follows, Fig. 1 showing the stand connected to a double-throw switch set right for the center track. In order to set the switch right for the right-hand track, it is simply necessary to lower the handle G to position shown by dotted lines in Fig. 2. Pull it to the left as far as it will go, throw it upright again to its pocket, and the switch is set right for the right-hand track, and ready to work automatically. To set it right for the left-hand track, lower the handle G′ to a similar position of the one already described, and pull it to the right as far as it will go. Throw it upright again, and the switch is right for the left-hand track, and is ready to work automatically. When the handles G and G′ are lowered, they are thrown out of the sockets or recesses *f*, as shown by dotted lines in Fig. 2, and thus all connection between the switch and the springs is broken. Therefore the operation and action become the same as many other ordinary or non-automatic crank-stands, as the action is direct from the handles G and G′, which are pivoted to the caps or hubs D and D′. They in turn, being keyed or otherwise secured to shafts B and C, respectively, transmit the motion to the cranks B′ and C^4, thence through the connecting-rods to the switch. To prevent the said handles from being moved too far either to the right or left, the cranks B′ and C^4 are made to bear against the bevel-surfaces of the projections P on the bars O when the said handles or operating-levers are in their proper positions to enter one of the notches or recesses *f* in the heads F and F′, respectively. The said projections P also relieve the shafts and upper parts of the stand from any undue strain that may be caused from the passing of a train. In many stands this strain is largely carried to the upper part of the stand, where it is least calculated to bear a strain. The bars O O may be either cast to the main body of the stand or they may be formed separately and bolted or otherwise secured thereto. The handles or operating-levers G and G′ cannot be thrown upright to their pockets or locked unless the switch is thrown entirely over to the other track, when the handles will be directly opposite one of the recesses *f* and ready to engage it. Thus it is evident that any obstruction between the points and the main rails will be instantly detected by the inability of the operator to move or raise the handles to their proper positions.

The automatic operation of this stand is as follows: The points being closed for the track on which a train is running, the flanges of the wheels open the points, which in turn cause the connecting-rod to move the crank B′ or C^4, or both, as the position of the switch may be, thus rotating the shaft B or C and the cap D or D′. The handles G and G′ being pivoted to their respective caps and locked in an upright position, the projections G^2 are engaged with the recesses *f f*, thus rotating the loose sleeves E and E′ and the cams H and H′ formed thereon, said cams moving or throwing out-

ward the spring-sleeve compressors from position, as shown in Fig. 7, to position shown in Fig. 4. At the same time the said compressors I I and I′ I′ force down the spring-sleeves J and J′, compressing the springs K and K′, as shown in upper half of Fig. 3. As soon as the train has opened the switch-points a little more than half-way the points of the cam H have passed the centers of the spring-sleeve compressors I I or have passed the line of direct pressure, and the force of the spring is brought to bear on the next surface of the cam H, and the result is the loose sleeve has made one-fourth of a revolution and has carried with it the handles, caps, and shafts, thus throwing the switch-points to the other track, or the complete and full throw of the switch.

In order to economize space and material and obtain symmetry of parts, the sides of the cams H and H′ are concave and the corresponding surfaces of the spring-sleeve compressors I I and I′ I′ are convex, thus giving a greater movement to the compressors than would be possible to obtain were the respective surfaces straight. The cap or hub D′ being housed within the main body of the stand A A, an opening is formed in said body A, through which the ears or projections to which the handle or operating-lever G′ is pivoted pass or extend, and the said handle G′ is outside of the main body A, in a convenient position to be operated, as shown in Fig. 1.

The operating-levers G and G′, when locked in position, are so close to the outer surface of the stand as to prevent the insertion of any bar or other means of leverage between them and the stand by which the switch might be thrown.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a switch-stand, the hollow shaft C, provided with the crank C^4 and surrounding shaft B, to which the crank B′ is attached, in combination with a railroad-switch stand for moving switch-points, substantially as and for the purpose specified.

2. In a railroad switch-stand, the spring-sleeves J and J′, constructed to bear on the springs K and K′, respectively, and to work vertically on the rocker-shafts or loose sleeves E and E′, and provided with beveled ears $j\ j$ and $j'\ j'$.

3. In a railroad switch-stand, the spring-sleeve compressors I I, having convex inner bearing-surfaces with outer ends constructed to operate against the beveled ears $j\ j$ of the spring-sleeve J.

4. The rotating shaft or sleeve E, provided with the head F and rotating cam or square H, the sides of which are concave to fit the convex surfaces of spring-sleeve compressors I I, and operating substantially as and for the purpose specified.

5. In a switch-stand, the caps D and D′, secured to the shaft B and hollow shaft C, respectively, said shafts being mounted on the same axial line and in a common combination with the levers G and G′, which engage with the heads F and F′ by the projections G^2, fitting into the recesses $f\ f$ in the heads F and F′, substantially as and for the purpose specified.

6. In a switch-stand, the cap D′, provided with the gear engaging with the pinion L, secured to the vertical shaft M, and operating the segment N and signal sleeve or shaft R by the pinion L′.

7. In a railroad switch-stand, the signal sleeve or shaft R, surrounding and rotating around the shaft B, the upper target being attached to the shaft B, and the lower target, d^2, being attached to the sleeve R, and both rotating the full throw of the switch, respectively.

8. In a switch-stand, the case A A, provided with the bars O O, and stops P, of a suitable angle, in combination with the cranks B′ and C^4, respectively, substantially as and for the purpose set forth.

9. In a switch-stand, the crank B′, provided with an adjustable connecting rod, pin, or sleeve, B^4, having at its upper end projections b^2, fitting the corresponding detents, b^3, and combining the switch-stand and switch-points by a suitable connecting-rod, substantially as and for the purpose specified.

10. In a railroad switch-stand, the crank-shaft B and hollow crank-shaft C, in combination with the operating mechanism which is placed in a suitable frame, A, one above the other, and operating each shaft independently, substantially as shown.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 5th day of October, 1885.

THOMAS R. BROWN.
WALTER C. MEEKER.

Witnesses:
WM. A. SHARP,
W. E. CHAPMAN.