

(No Model.)

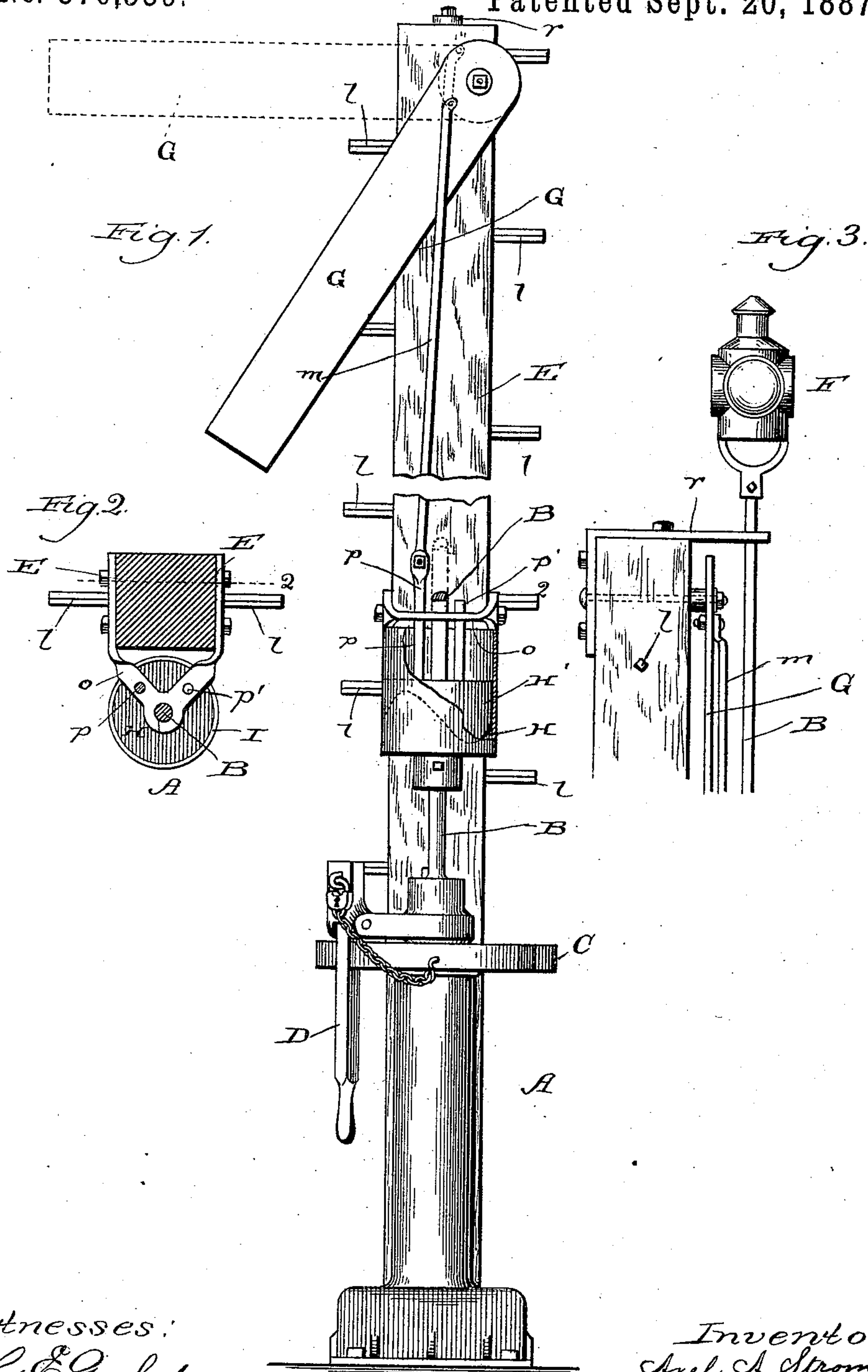
2 Sheets—Sheet 1.

A. A. STROM.

SEMAPHORE.

No. 370,359.

Patented Sept. 20, 1887.



Witnesses:
Chas. E. Gaylord.
Edward Thorpe.

Inventor:
Axel A. Strom,
By Dyumforth and Dyumforth,
Attys.

(No Model.)

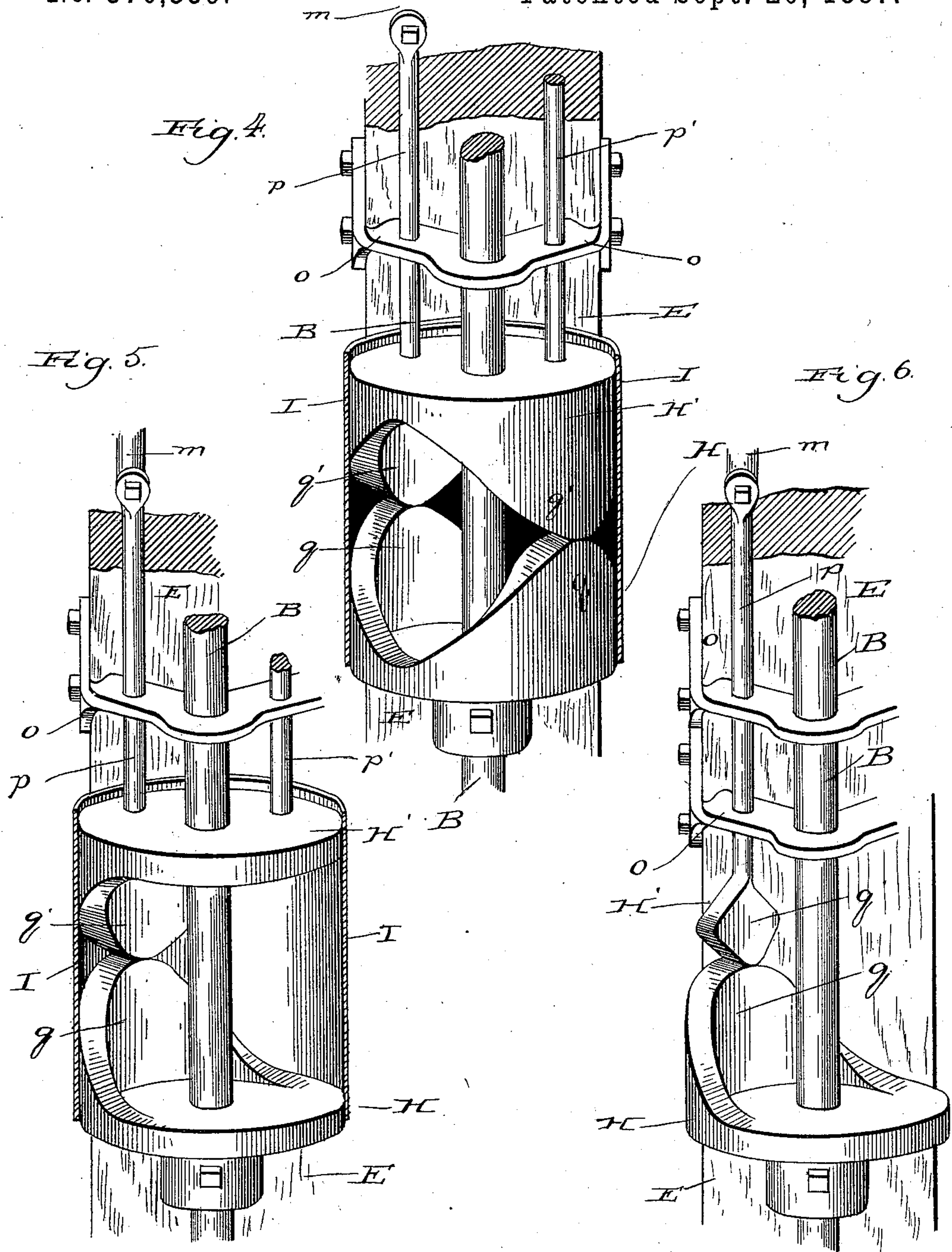
2 Sheets—Sheet 2.

A. A. STROM.

SEMAPHORE.

No. 370,359.

Patented Sept. 20, 1887.



Witnesses:
Chas. E. Gaylord.
Edward Thorpe.

Inventor:
A. A. Strom.
By *Dynerfort & Dynerfort,*
Attys.

UNITED STATES PATENT OFFICE.

AXEL A. STROM, OF AUSTIN, ILLINOIS.

SEMAPHORE.

SPECIFICATION forming part of Letters Patent No. 370,359, dated September 20, 1887.

Application filed April 2, 1887. Serial No. 233,378. (No model.)

To all whom it may concern:

Be it known that I, AXEL A. STROM, a citizen of the United States, residing at Austin, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Semaphores; and I hereby declare the following to be a full, clear, and exact description of the same.

It is my primary object to afford by my improvement means of very simple construction, admitting of ready operation, and thoroughly effective in their purpose for operating the signal-arm of a semaphore. It is further my object to apply these means to a rotatory spindle, such as that of a switch-stand, whereon the signal-arm may be controlled through the medium of the switch-stand lever, and the spindle of the switch-stand may be employed to assist in the operation, and thereby also operate the signal-lamp, provided on the spindle for night signaling, simultaneously with the signal-arm, which of course is useful only during daylight.

My invention consists, primarily, in an inclined plane supported to be rotated or oscillated, and a pivotal signal-arm connected with and raised and lowered on its pivot by the inclined plane.

My invention also consists in the combination, with a rotatory spindle, such as the spindle of a switch-stand, of a pivotal signal-arm connected with it to be raised and lowered by turning the spindle; and it further consists in details of construction and combinations of parts, all as hereinafter more fully set forth.

In the drawings, Figure 1 shows my improved semaphore device in elevation in connection with a switch-stand from which it is operated, the view being broken toward its upper end to permit representation within the limits on the sheet. Fig. 2 is a section taken on the line 2 of Fig. 1, viewed in the direction of the arrow, and showing the connection of the switch-stand with the semaphore-post. Fig. 3 is a side view of the upper portion of Fig. 1; Fig. 4, an enlarged view, in broken side elevation, of the inclined-plane mechanism, in the form of a clutch, for operating the signal-arm of the semaphore; Fig. 5, a similar

view of the same in the form of a modification, and Fig. 6 a similar view of the same in the form of still another modification.

I show my improvement in connection with a switch-stand, as this forms a most desirable connection for it, and particularly because it is one of my objects to supplant the more expensive forms of semaphores hitherto used on railroads by simpler and less expensive but at least as effective means. I do not, however, wish to be understood as limiting myself to the use of the mechanism for actuating the signal-arm, hereinafter described and claimed, with a switch-stand, as the same may be useful disconnected therefrom or in other connections.

A is a switch-stand provided with the spindle B, table C, and lever D.

My present invention does not relate to the construction of the switch-stand proper; hence the latter is not illustrated in detail nor so described, as it presents no features of novelty forming part of this application. It may be said, however, by way of general explanation of its parts and to insure fullness of description, that the spindle carries at its lower end a crank connected with the connecting-rod at the switch, and is turned through the medium of the lever, which is locked when in normal position, as shown, in the recessed periphery of the table.

Alongside of the switch-stand is a vertical post or pole, E, of desired height, and parallel with the spindle B, which extends above it, as shown in Fig. 3, to carry the switch or signal lamp F, the spindle being braced near its upper end by means of a bracket, r, secured to the post or pole, and through the horizontal arm of which the spindle extends. Turning of the spindle, as will readily be seen, through the medium of the lever, to adjust the switch, turns the lamp to desired position to cause its display of the proper signal, as it is common to do.

Near the upper end of the post E, on one side of the same, is pivoted a signal-arm, G, to be actuated to occupy a hanging position, as shown by the full lines representing it in Fig. 1, or to be extended into the horizontal

position indicated by the dotted lines representing it in that figure, in which position it performs its signaling function.

As hereinbefore stated, my invention involves in its broadest sense the general construction of the means I employ for producing the actuation of the signal-arm G, which I accomplish by any of the forms of mechanism shown in Figs. 4, 5, and 6, or equivalents of the same for my purpose, though the form I prefer is that shown in Figs. 1 and 4.

Following is a description of the signal-arm-actuating means as operated from a switch-stand:

H is a block secured upon the spindle B, to be turned with the latter by manipulating the lever D, and supported above the table C. The block H is in the form of a clutch-block, being provided on opposite sides with cams or teeth *q*, each curved on opposite edges, as shown.

H' is another block, in form like the block H, and inverted upon the spindle B, which extends through its center to cause its cams or teeth *q'* to coincide with the cams *q* of the block H, the two blocks, when the cams of both intermesh, affording a clutch. The block H' is loose upon the spindle, whereby when the latter is turned, and with it the block H, the block H', held from turning, as hereinafter described, is raised by the wedging effect of the inclined edges of the cams *q* against the corresponding edges of the cams *q'*. Rods *p* and *p'* extend upward from the upper side of the block H' through a bracket, *o*, embracing the post E, to which it is secured, and afford guides for the block H' in its vertical movements, and the rod *p* is pivotally connected with one end of a link, *m*, the opposite end of which is pivoted to the arm G to one side of the fulcrum of the latter, as shown, and near the upper edge, to remove it, as far as practicable, from the center, and thus avoid the consequences of a dead-center or an approximation thereto. Turning of the lever around forces the block H' out of mesh with the block H and in an upward direction to the position shown on Sheet 2 of the drawings, and with the upward movement of the block H' the link *m* raises the arm G to a horizontal position. Turning of the lever the same distance around in the opposite direction lowers the arm G and produces intermeshing of the cams *q* and *q'*.

The construction shown in Fig. 5, wherein each block H and H' is provided with only one cam or tooth, operates like the device as shown in Fig. 4, but less readily, and it is not so strong, though stronger than the construction represented in Fig. 6, wherein the block H is similar in construction to that shown in Fig. 5; but the block H' is supplanted by a mere cam or tooth on the end of the rod *p*, this construction rendering necessary, for the sake of strength, an extra bracket, *o'*. A thimble or roller would perhaps answer as well as the block shown in Fig. 6.

The blocks H and H' are covered by a shield, I, extending from the block H', to protect them from the elements, and the post E is provided with steps or rungs *l* for the usual purpose.

Obviously the stationary and movable cam-blocks may be reversed in their relative positions on the spindle without departing from my invention, when the connection of the vertically-movable cam with the signal-arm will be arranged accordingly.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a semaphore, the combination of a pivotal signal-arm and an inclined plane supported to be turned and connected with the arm to raise and lower it on its pivot, substantially as described.

2. In a semaphore, the combination, with a rotatory spindle, B, of a pivotal signal-arm connected with the spindle, to be raised and lowered on its pivot by turning the said spindle, substantially as described.

3. In a semaphore, the combination of a rotatory spindle, B, a cam-block, H, secured upon the spindle to turn with it, a signal-arm, G, and a cam, *q'*, connected with the arm G and extending into contact with the cam-block H', substantially as and for the purpose set forth.

4. In a semaphore, the combination of a rotatory spindle, B, a cam-block, H, secured upon the spindle to turn with it, a cam-block, H', loosely surrounding the spindle to extend the cams on both blocks into contact with each other, and a signal-arm, G, connected with the block H', whereby turning of the spindle actuates the block H' to raise and lower the signal-arm, substantially as described.

5. In a semaphore, the combination of a rotatory spindle, B, a block, H, provided with cams *q* and secured upon the spindle to turn with it, a block, H', provided with cams *q'*, corresponding with the cams *q* on the block H, and loosely surrounding the spindle, to extend the cams on both blocks into contact with each other and form a clutch, and a signal-arm, G, connected with the block H', whereby turning of the spindle actuates the block H' to raise and lower the signal-arm, substantially as described.

6. In a semaphore, the combination of a rotatory spindle, B, a block, H, provided with cams *q* and secured upon the spindle to turn with it, a block, H', provided with cams *q'*, corresponding with the cams *q* on the block H, and loosely surrounding the spindle, to extend the cams on both blocks into contact with each other and form a clutch, a post, E, adjacent to the spindle, and a signal-arm, G, pivotally supported on the post and connected with the block H', whereby turning of the spindle actuates the block H' to raise and lower the pivotal signal-arm, substantially as described.

7. In a semaphore, the combination of a rotatory spindle, B, a block, H, provided with

cams q and secured upon the spindle to turn with it, a block, H' , provided with cams q' , corresponding with the cams q on the block H , and loosely surrounding the spindle, to extend the cams on both blocks into contact with each other and form a clutch, a post, E , adjacent to the spindle, a signal-arm, G , pivotally supported on the post, a rod, p , extending from the block H' through a suitable guide, and a link, m , connecting the signal-arm with the rod p , the whole being constructed and arranged to operate substantially as described.

AXEL A. STROM.

In presence of—

J. W. DYRENFORTH,

FRANK L. DOUGLAS.