

UNITED STATES PATENT OFFICE.

AXEL A. STROM, OF AUSTIN, ILLINOIS.

SEMAPHORE.

SPECIFICATION forming part of Letters Patent No. 389,611, dated September 13, 1888.

Application filed March 19, 1888. Serial No. 267,622. (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 new and useful Improvement in Semaphores, of which the following is a specification.

My invention relates to improvements in the class of devices used on railroads for signaling purposes to notify approaching trains of the condition of the track ahead of them.

The objects of my invention are to provide an improved construction of the mechanism for operating the signaling medium upon that shown in Letters Patent of the United States No. 370,359, granted me on the 20th day of September, 1887, so that the tendency of the semaphore-arm shall be to assume automatically the "danger" position, from which position it shall be moved and held at "safety" by positively-acting mechanism.

In the drawings, Figure 1 shows my improved semaphore in broken elevation, having its rotatory spindle connected directly with switch-rails and a ground-switch-operating device. Fig. 2 is a sectional plan view of the same, showing a broken portion of a railroad-track; Fig. 3, a broken sectional view showing a home signal and a long-distance signal connected together to be operated simultaneously by actuating the switch-rails; and Fig. 4 a section taken on the line 4 4 of Fig. 1, enlarged, and viewed in the direction of the arrows.

A is a semaphore comprising a post, r , which may be provided with the usual lateral rungs, r' .

B is the rotatory spindle supported in bearings x on one side of the post and extending from near the base of the latter beyond the upper end of the same, where it carries the lantern C for night-signaling.

D is the semaphore-arm, pivoted toward one end to the side of the post provided with the spindle and immediately behind the latter, and provided at such end with a weight, q , sufficiently heavy to raise the semaphore-arm to its horizontal position, at which it is at "danger." A rod or bar, p , moves in guide-slots x' in the bearings x , (see Fig. 4,) behind the spindle, and carries a roller or thimble, p' , at its lower end extending toward the spindle,

and the bar p is connected by a link, o , to the signal-arm D, to the side of the fulcrum thereof opposite that from which the weighted end extends. A cam, E, is secured upon the semaphore-spindle, to be turned with the latter. The cam is V-shaped—that is, it has two edges like the edge presented to view in Fig. 1, and which covers and thus hides from view the other edge, and the last-named edge is in contact and engages with the thimble or roller p' below it. Thus, when the semaphore-spindle is turned in one direction the cam (since it is rigid thereon in the sense that it is not movable vertically) forces the bar or rod p downward, thereby, owing to its connection through the link o with the signal-arm D, pulling the latter down to its "safety" position, where it is held by the continued engagement of the cam with the thimble p' until it is released by turning the semaphore-spindle in the opposite direction, (whereby the thimble moves toward its highest point on the cam,) during which movement of the spindle the weight q raises the arm D until it reaches its normal horizontal or "danger" position.

To rotate the semaphore-spindle, I connect it with the switch-rails n of a track through the medium of a crank-arm, m , near the base of the spindle, and a connecting-rod, l , and operate the switch-rails from a suitable switch-stand, a ground-switch stand, F, being shown in the drawings for the purpose. Whatever form of switch-stand is used, however, it is to be understood that by means of the one lever, as that shown at k , the switch-rails are moved and that through them the semaphore is set accordingly.

Where a home signal and a long-distance signal are employed, as shown at G and G' in Fig. 3, where they are connected together, as by cables or rods i and i' , fastened at their extremities to the ends of levers h and h' , (preferably bent, as shown, to permit the desired extent of movement and have them as close as possible to the semaphore-posts,) secured at their centers to the spindles B of the respective semaphores by connecting the switch-rails through the medium of the link m and connecting-rod l with the spindle of the home signal, both the latter and the long-distance semaphore may be actuated by actuating the switch-rails.

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

1. In a semaphore, the combination of a post, *r*, a signal-arm, D, pivotally supported on the post and weighted to assume automatically the "danger" position, a rotatory spindle, B, carrying a cam, E, to rotate with it, a link, *o*, pivoted to the signal-arm to the side of the pivot thereof opposite that from which the weight end extends, and a sliding rod or bar, *p*, connected from one end with the link *o* and carrying toward its opposite end a thimble, *p'*, extending below and in contact with the cam, substantially as described.

2. In a semaphore, the combination of a post, *r*, a rotatory spindle, B, supported by the post, a signal-arm, D, pivoted toward one

end to the post and provided at such end with a weight, *q*, sufficiently heavy to raise the semaphore-arm automatically to its horizontal or "danger" position, a sliding rod or bar, *p*, in guides *x'* on the post, carrying a thimble, *p'*, at its lower end, a link, *o*, connecting the bar *p* and signal-arm at the side of the pivot of the latter opposite that at which the weighted end extends, and a cam, E, secured to the spindle and engaging with the thimble *p'* below it, substantially as and for the purpose set forth.

AXEL A. STROM.

In presence of—

J. W. DYRENFORTH,
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