

N. J. SMITH.
SEMAPHORE SIGNALING APPARATUS.

No. 470,310.

Patented Mar. 8, 1892.

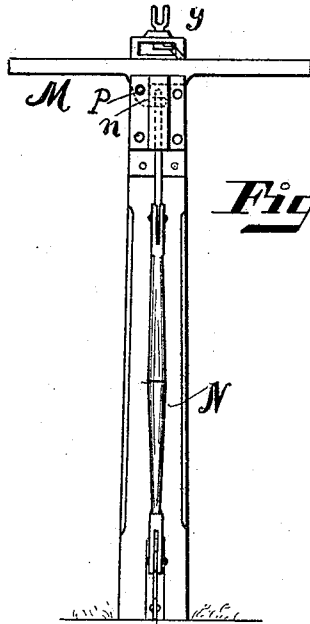


Fig. 1.

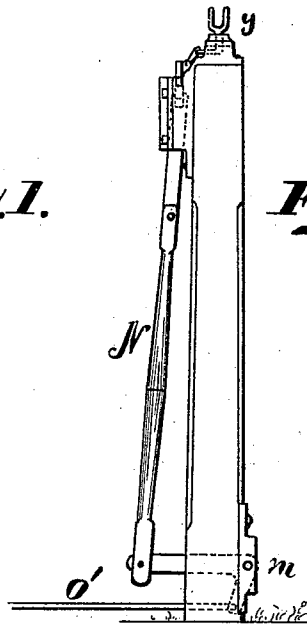


Fig. 2.

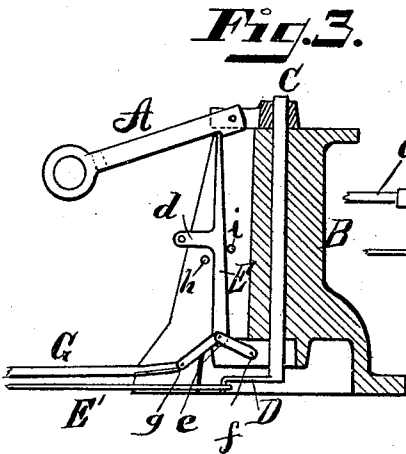


Fig. 3.

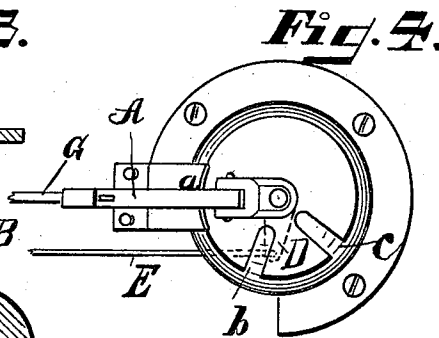
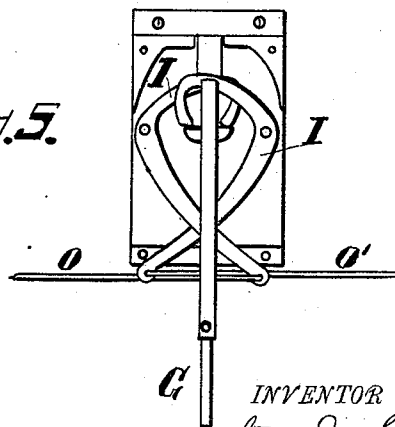


Fig. 4.

Fig. 5.



WITNESSES
N. J. Bradford
Edward A. Burton.

INVENTOR
Nathan J. Smith
by *Parker & Burton*
his Attorneys.

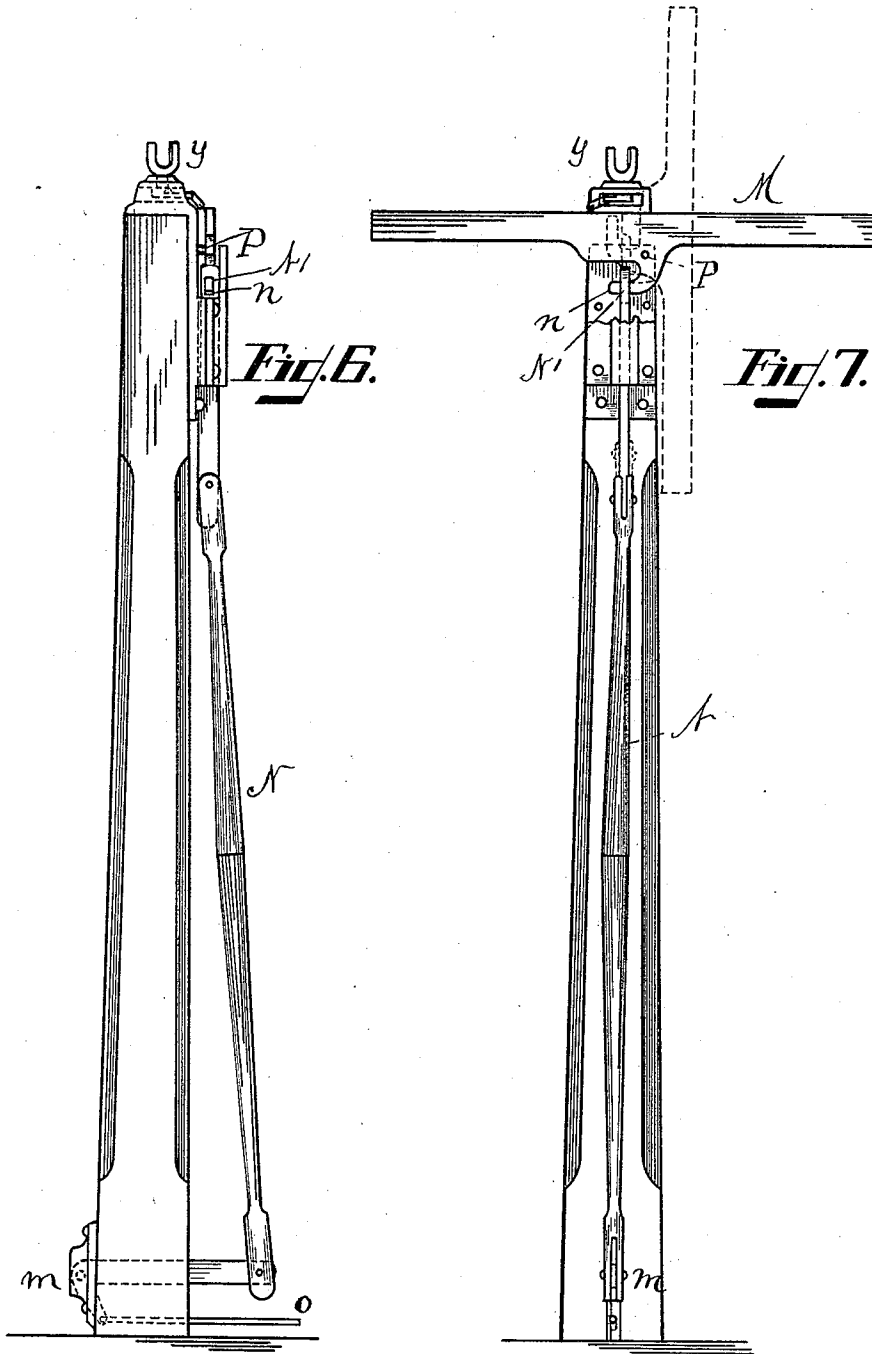
(No Model.)

2 Sheets—Sheet 2.

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WITNESSES
F. Clough
E. Craft

INVENTOR
Nathan Jobe Smith
by *Parker & Burton*
his Attorneys.

UNITED STATES PATENT OFFICE.

NATHAN J. SMITH, OF PONTIAC, MICHIGAN.

SEMAPHORE SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 470,310, dated March 8, 1892.

Application filed August 26, 1891. Serial No. 403,814. (No model.)

To all whom it may concern:

Be it known that I, NATHAN J. SMITH, a citizen of the United States, residing at Pontiac, county of Oakland, State of Michigan, have invented a certain new and useful Improvement in Semaphore Signaling Apparatus; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In the drawings, Figure 1 represents a post or standard bearing a semaphore-arm at its upper end. Fig. 2 is a side view of the same. Fig. 3 is a standard supporting the shaft of a switch-lever. Fig. 4 is a top view of the same. Fig. 5 is a plan of the bell-crank levers used to change direction in connecting-links. Figs. 6 and 7 are enlarged views of the posts shown in Figs. 1 and 2, showing some details of construction.

In the use of the semaphore signal apparatus described in the patent granted to me December 9, 1890, No. 442,340, it has been found that the links connected directly to and operating with the switch-lever do not throw the semaphore-arms into a position to indicate "danger" sufficiently soon after the switch-lever commences to move, and it is desirable that as soon as the switch-lever begins to move and the movable rails of the shifting section of track begin to be out of line with the main or through track the semaphore-arms should take a position to indicate "danger" and should retain that position until the shifting rails are brought back to the main line and the switch-lever locked in position to hold them there. To render the signal absolutely certain, I now employ a system of levers and links controlling the movement of the semaphore-arms, such that the semaphore-arm takes a position to indicate "danger" as soon as the switch-lever is unlocked and even before it is in a position to operate the shifting rails at all. I employ a switch-lever of which the main parts are in common use and which consists of a standard or support fixed with respect to the track. Through the center of the support B is an upright crank-shaft C, having a crank D at its lower end and hinged switch-lever A at its upper

end. The upper end of the support B has a number of radial slots *abc*, into one of which the part A of the switch-lever drops, and thereby locks the upright crank-shaft C in a position such that the ends of the shifting rails are held opposite to any desired one of the shunt-tracks or opposite to the fixed tracks of the main line, if desired. I continue the slot *a* downward through the standard, making a recess, within which is received an upright link E, connected at its lower end to a knuckle-joint *e* and held to an upright position by means of supporting-pins *hi*, that pass across the recess. The upper end of the upright link E comes against the under side of the lever A and the upright link E is forced downward, carrying with it the knuckle-joint *e*. When the lever A is dropped in the recess *a*, the end *f* of the knuckle-joint is fixed to the standard B. The end *g* of the knuckle is hinged to a rod G, that connects indirectly to a bell-crank lever *m*, operating the upright link N. (Shown in Figs. 1, 2, 6, and 7.) Inasmuch as it is desirable to operate two or more signal-arms at the same time, I prefer an indirect connection, making use of the bell-crank levers I, fully described in my former patent.

At the summit of the signal-standard I swing an arm M, having on its under side a hook *n*, that engages in an eye N' at the upper end of the link N. The arm M swings on a pin P, that is above and to one side of the eye N', which terminates the upper end of the link N, and the hook *n* slides through the eye N' as the arm M swings between a vertical and a horizontal position. The end of the link N rises above the hook *n* when the parts occupy the position shown in Fig. 1, pushes against the under side of the arm M, and causes it to assume a position with its longest diameter vertical, indicating "safety," when the link N is pushed upward by the depression of the link E, when the switch-arm A is pushed down into the recess *a*; but as soon as the switch-arm A begins to rise the link E is allowed to rise and does rise under the impelling force of the heavy link N, which drops downward, and in dropping downward catches on the hook *n* and pulls the signal-arms M to a horizontal position—that is, with its longest diameter horizontal—and the signal-arms

remain in a horizontal position until the switch-lever A has been pushed downward again in the recess *a*. The operation of turning the switch-lever to the slots *b c* does not
 5 affect the position the signal-arm M in the least; but the signal-arm M continues to indicate "danger" so long as the switch-lever A is out of the recess in which it must be when the track is in a condition of safety for
 10 through trains.

On the summit of the signal-post is a lamp-standard *γ*, swiveled and connected by a short link to the arm of M and so adjusted that the turning of the arm M from a vertical to a
 15 horizontal position will rotate the lamp-standard ninety degrees, and thus change the signal-light from one color to another if a properly-prepared light has been hung in the standard.

20 On the link E is a lug or projection *d*, having a perforation through it to receive the hook of a padlock or a pin or any other suitable device adapted to lock the switch arm or lever A down securely into the recess *a*.

25 The style of switch-lever employed by me is in common use, but is not, so far as I am aware, used in connection with levers and links arranged in the way I employ them to automatically throw a semaphore-arm into a
 30 position to indicate "danger" whenever the switch-lever is unlocked and lifted upward from the recess into which it drops and is secured when the main line is in position for the passage of trains.

35 Having thus described my invention, what I claim as novel, and desire to have secured to me by Letters Patent, is—

1. In combination with a railroad-switch, a standard supporting a semaphore-arm, a semaphore-arm hung to said standard, links connecting said switch to said semaphore-arm, and a hook on said semaphore-arm passing through an eye terminating the last of said links and adapted to slide through said eye as the semaphore-arm turns between a horizontal and a vertical position, substantially as
 40 45 and for the purpose described.

2. In combination with a switch-lever operating an upright crank-standard, a system of links and levers operating a semaphore-arm, the said semaphore-arm being jointed to the last of said links by a curved hook on said semaphore-arm, adapted to lie in and slide in an eye at the end of said link, substantially as and for the purpose described.
 50 55

3. In a semaphore apparatus, the combination of the arm M, having the hook *n*, and the link N, operating by gravity to force the semaphore-arm M into a position to indicate "danger," substantially as and for the purpose described.
 60

4. In combination with a switch-standard, the dropping switch-lever A, upright link E, and lock-arm *d*, operating, as described, to move the semaphore-arm into a position to indicate "danger" whenever the switch-arm A is raised from the lock-arm *d*, as and for the purpose specified.
 65

In testimony whereof I sign this specification in the presence of two witnesses.

NATHAN J. SMITH.

Witnesses:

EDWARD A. BURTON,
 MARION A. REEVE.