

(No Model.)

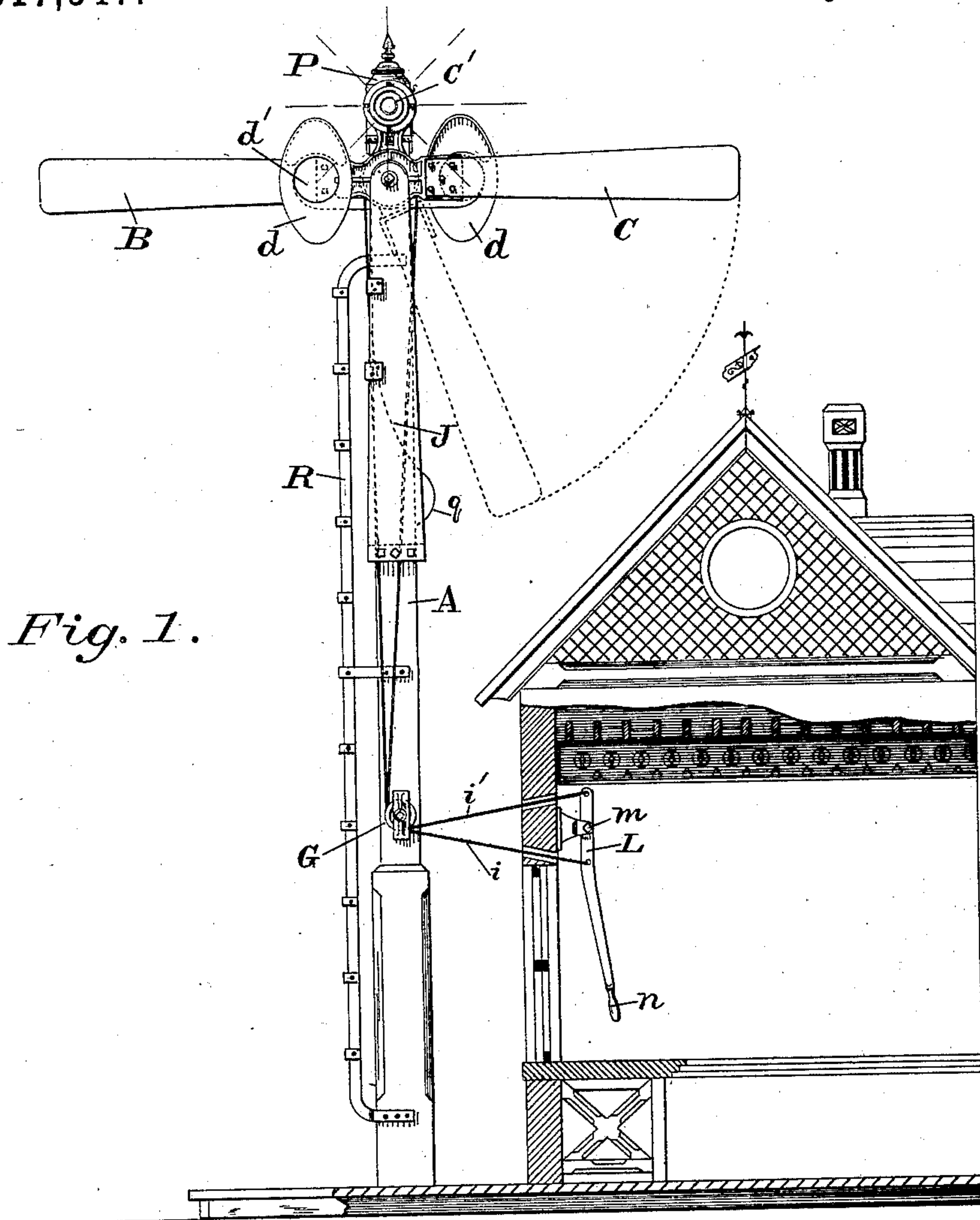
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S. H. HARRINGTON.

SEMAPHORE.

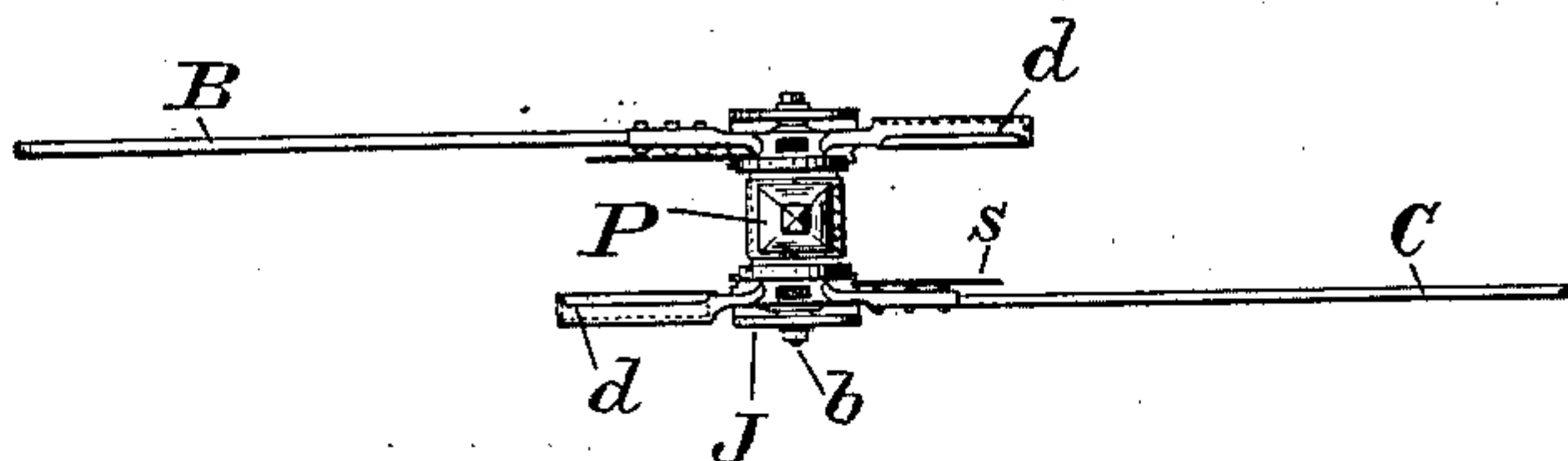
No. 317,347.

Patented May 5, 1885.



*Fig. 1.*

*Fig. 2.*



WITNESSES:

Edward A. Osse,

John E. Morris

INVENTOR:

Saml H Harrington

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(No Model.)

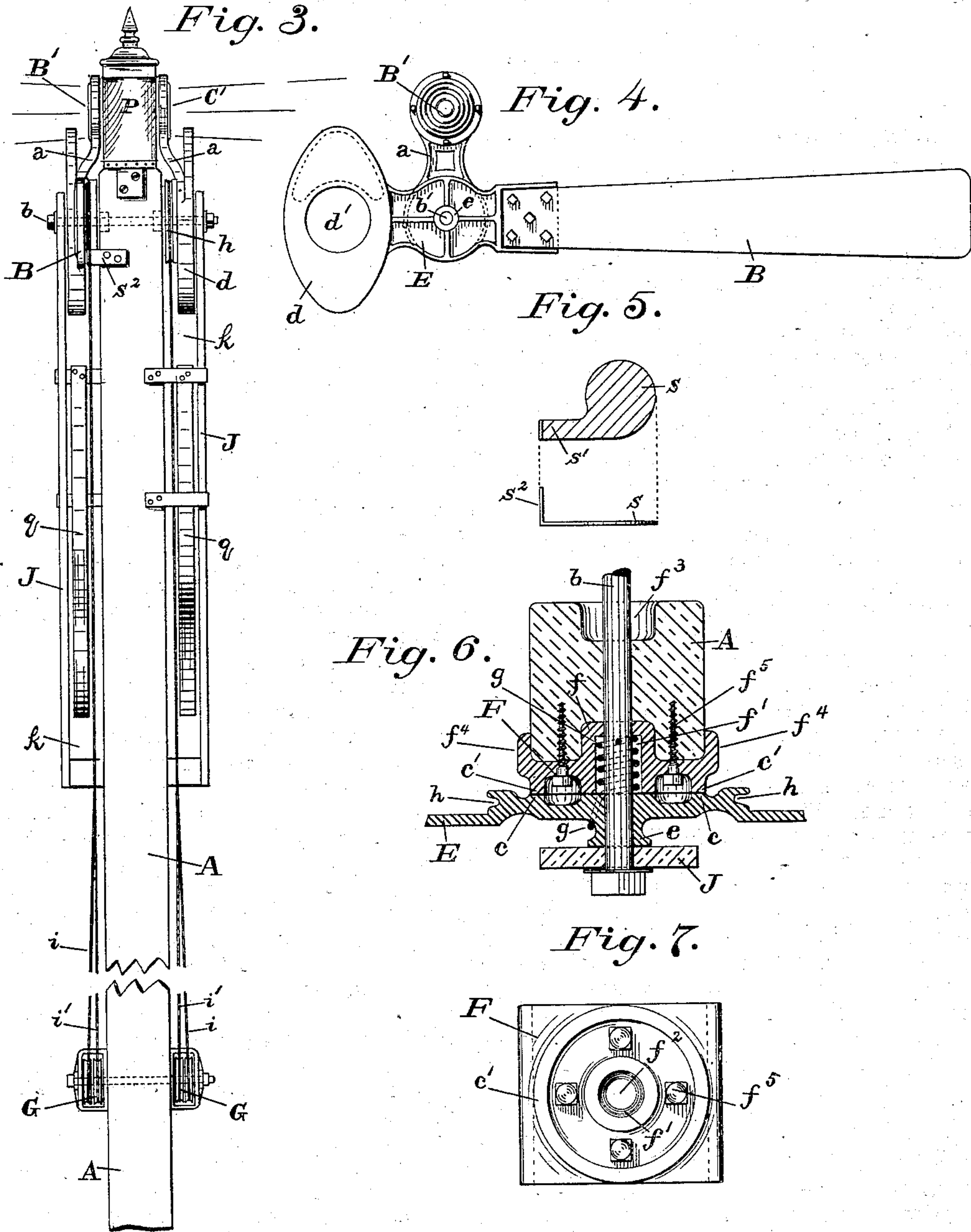
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# UNITED STATES PATENT OFFICE.

SAMUEL H. HARRINGTON, OF COLUMBUS, OHIO.

## SEMAPHORE.

SPECIFICATION forming part of Letters Patent No. 317,347, dated May 5, 1885.

Application filed January 26, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL H. HARRINGTON, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Semaphores, of which the following is a specification.

My invention relates to an improved semaphore for railroads; and it consists of certain features of construction, novel parts, and combinations of parts, hereinafter described and claimed.

The invention is illustrated in the accompanying drawings, in which Figure 1 is a view of the semaphore and operator's house as seen by the engineer of an approaching train. Fig. 2 is a top view of the semaphore. Fig. 3 is a view of the semaphore, showing a side elevation transverse to that seen in Fig. 1. Fig. 4 is a view of one of the arms and lens. Fig. 5 is a view of the lens-shield. Fig. 6 is a cross-section of the post and the metal parts at one side at the point where the center shaft passes through. Fig. 7 is a side view of the center plate, which is attached to the post.

The letter A designates the post, B and C the signal-arms, and B' and C' the signal-glass lens, each mounted on an arm, *a*, integral with and having position at a right angle to the signal-arm. A signal-arm and a signal-lens have position on each of two opposite sides of the post, and both turn freely on the same center shaft, but are independent of each other. The normal position of the signal-arms is on a line projected horizontally from the post, and of the lens-arms is upright or standing directly over the center shaft, and these positions of both comprise the "danger" or stop signal. When the arm is turned down to a vertical position alongside of the post, the engineer on an approaching train will understand that the road is open and that the train may proceed.

The signal-arms B and C are preferably wooden blades, each attached to an arm-plate, E, which has a pivot-hole, *b'*, for the center shaft, *b*. The arm-plate has on the inner side, or that side which sets next to the post, a ring-shaped face, *c*, which bears against a similar

face, *c'*, on the center plate, F. On the outer side of the arm-plate is a hub, *e*. The arm-plate carries the counter-weight *d*, which has sufficient gravity to overbalance the arm and raise it and the lens from the turned-down position to the elevated. The hole *d'* in the weight will have position in front of the white light of the lantern P, and expose it to view when the arm and lens are down at night. The center plate, F, has on one side a round central boss, *f*, which on the opposite side is hollow, forming a socket, *f'*. A hole, *f''*, is in the center of this boss for the passage of the center shaft, *b*. On the same side as the socket is the ring-shaped face *c'*, before alluded to. Two of these center plates are employed, one being attached on one side and one on the opposite side of the post A. The manner of attaching them is to first make a bore, *f''*, into the post far enough to allow the round boss *f* to enter, and the flange *f'* at each side of the plate takes on opposite sides of the post. Screws *f'''* are then passed through the face of the plate into the post, and the center shaft, *b*, passes through the holes *f''* of the bosses of the two center plates and also through the post. When the signal-arm is down to an exactly vertical position, the counter-weight *d* is uppermost and has no effect on the arm. This position of arm and weight is maintained by the ropes *i i'* and lever L in the operator's house when an approaching train is to be notified to proceed; but to assist in starting the signal-arm in its movement to one side, in case the rope or any of its connections should be broken, a spiral spring, *g*, may be employed, as shown in Fig. 6. This spring *g* is coiled around the center shaft, *b*, and has one end fastened thereto and occupies space in the socket *f'*, and the other end is fastened to the arm-plate E. The arrangement is such that the tension of the spring will tend to impart a rotary motion to said arm-plate, and thereby start the signal-arm to one side and the counter-weight to the other, where the gravity of the counter-weight will take effect on the arm and raise it, thus, if any of the signal-operating parts be broken, assuring the presentation of the "stop" signal.



It will be understood that the signal-arm and lens have movement to the extent only of a quarter-revolution. A grooved pulley, *h*, is formed around the ring-shaped face *c* on the arm-plate, and the ropes *i i'* are made fast thereto in any suitable manner, one rope depending from the groove at one side and one at the other. The direction of these ropes is changed from a vertical to a horizontal by two pulleys, *G*, secured on the side of the post. After passing under these pulleys the rope leads to the operator's house, where, as already stated, they are attached to a lever, *L*, one rope, *i*, being made fast at one side of and at a certain distance from the lever-pivot *m*, and the other rope, *i'*, at the other side of the pivot and at the same distance therefrom. By this construction both ropes are kept taut, and whichever way the handle *n* of the lever may be moved one of the ropes will be drawn, thereby the signals (the arm and lens) are raised and also lowered by the positive action of a drawing-rope. The lantern *P* is placed directly on top of the post. In this position the necessity of a bracket to support the lantern is obviated and a lens-arm, *a*, projecting independent of the counter-weight *d* may be used, thus differing from the lens and counter-weight shown in my Patent No. 304,928, dated September 9, 1884. Since the lens-arm is a distinct part, it is practicable to curve it as shown in Fig. 3, thereby bringing the lens somewhat nearer to the lantern, and consequently admitting of a smaller-size lens with the same effect as a larger one when farther from the lantern. This is more desirable, besides being cheaper. This particular position of the lantern and the signal-arm having a lens-arm at a right angle thereto enables the blades of both arms to be equally long, giving a better signal without increasing the counter-weights—an advantage not possessed as the lens is arranged in my patent before referred to—and, furthermore, enables the counter-weight, lens-casting, and arm-plate on one side of the post to be exactly like those on both sides, whereby a single pattern serves for the production of both; whereas, when the lantern is at one side of the post, as heretofore, the lens on one side must of necessity have a different position in the casting than it has on the other side, as shown in the patent referred to. A shield or pocket, *J*, for the signal-arm when turned down, is attached on the side of the post. This consists of a board wide enough to cover the said arm. Said board is attached so as to leave a space, *k*, between it and the post. This space receives the signal-arm. The signal-arm is designed to be painted red, while the shield will be white. The shield therefore will prevent the exposure of the signal-color. A spring, *g*, is arranged and secured within the shield-pocket in such manner as to bear on the edge of

the signal-arm when the latter is in the shield-pocket. The tendency of this spring *g* is to press the signal-arm and start it out of the pocket. The ropes *i i'* will keep the arm in the pocket, notwithstanding this tendency of the spring. This spring *g* and the spring *g'*, acting directly on the arm-plate, serve substantially the same purpose. Either or both may be used; but where the shield or pocket *J* is employed the spring *g* ordinarily would be preferred. A lens-shield (see Figs. 2 and 5) consists of a plate of sheet metal, *s*, large enough to hide the lens from view. A shank, *s'*, projects laterally from the lower edge of the plate and has a right-angle bend, *s''*, which is made fast to the post *A*. When the lens is turned down to a horizontal position, its curved arm *a* crosses above the shank *s'* of the shield, and thereby the red-glass lens takes position back of the shield *s*, which is painted white. In this description thus far, except where the lantern is referred to, one side of the semaphore, the signals on one side, and parts connected therewith have been described. It will now be understood that both sides are alike, a complete semaphore for two railway-tracks comprising a duplication of the mechanism and devices described. A ladder, *R*, is made fast to the post and serves to approach the signals or lantern.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of a post having in one side a bore, *f*<sup>3</sup>, a center plate, *F*, having on one side a boss provided with a hole, said boss occupying the bore in the post, a center shaft, *b*, passed through the hole in the boss and through the post, and a signal-arm mounted on the center shaft, as set forth.
2. The combination of a signal-arm pivoted to partially revolve in a vertical plane, a counter-weight on the end of the arm, and a spring fixed in position for the arm to bear directly on it when said arm is turned down to a vertical position, as set forth.
3. The combination of a post, a lantern directly on top of the post, a curved arm pivoted to the post and provided with a glass lens, as set forth.
4. The combination of a signal-arm provided with a counter-weight and pivoted to partially revolve in a vertical plane, a shield or pocket into which the signal-arm may enter, and a spring in the pocket to start or move the arm therefrom, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL H. HARRINGTON.

Witnesses:

C. C. COVNER,  
E. A. DAWSON.