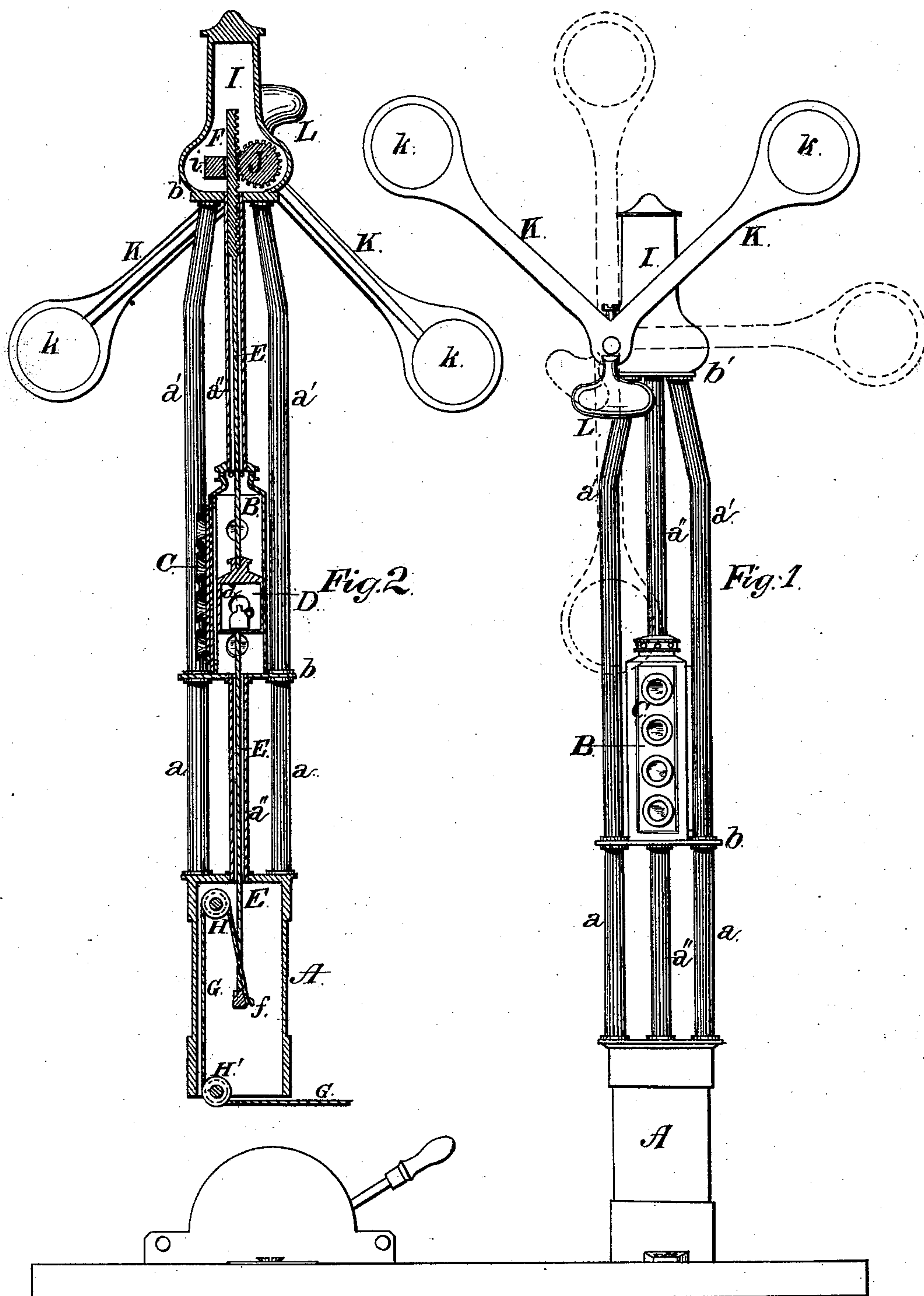


W. GRAVIT.
Signaling Apparatus.

No. 204,721.

Patented June 11, 1878.



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UNITED STATES PATENT OFFICE.

WILLIAM GRAVIT, OF ELKHART, INDIANA.

IMPROVEMENT IN SIGNALING APPARATUS.

Specification forming part of Letters Patent No. **204,721**, dated June 11, 1878; application filed April 1, 1878.

To all whom it may concern:

Be it known that I, WILLIAM GRAVIT, of Elkhart, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Signaling Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to signaling devices, more particularly to that class of signals which are adapted for use on railroads, bridges, and such places, where it is necessary to indicate the condition of the track or position of the bridge, &c., to the engineer or driver of an approaching train or vehicle.

The invention consists in a semaphore having double arms, arranged to operate in the manner hereinafter described, so as to signal two tracks or lines of railroad.

It also consists in the combination, with said double-armed semaphore, of a lantern of novel construction, which is also arranged to signal two lines, said lantern being constructed with a series of fixed lenses and a lamp moving in a vertical plane, so that the moving of the lamp up and down within the lantern behind the lenses is made to give different signals, as hereinafter more fully set forth.

It also consists in combining the movable lamp with a semaphore, both devices being connected by suitable mechanism, so as to operate simultaneously.

And, further, it consists in the combination of said signaling devices with suitable connecting mechanism for operating the same at a distant point, all as hereinafter more fully described.

In the accompanying drawings, Figure 1 is an elevation of my signaling apparatus. Fig. 2 is a vertical sectional view of the same.

Referring to the parts by letters, A represents the pedestal or base of the supporting-frame, which may be made of any suitable material and pattern, and hollow. The frame may also be made of any suitable material; but I prefer to make it of rods *a a'*, said rods being connected and braced by horizontal plates *b b'*.

B is the lantern or lens case, which is rigidly secured to the plate *b*. This case B has on three of its sides a series of lenses, C, arranged in a vertical plane, and said lenses may be of different colors to indicate different signals, according to any prearranged system of signaling that may be adopted.

D is the movable lamp and lamp-case, which is also provided with colorless lenses *d* on the three sides corresponding with the three sides of the casing B which have the lenses C. The lamp-casing D is secured to the vertical rod E, which passes through the central supporting-tube *a''* and through the upper and lower ends of the lens-casing B. To the upper end of this rod E a rack-bar, F, is secured; or the rack may be formed as a part of the rod, and the lower end of the rod E is provided with a hook or similar attaching device, *f*, to which a rope or chain, G, is secured. This rope is passed over an upper and lower pulley, H H', which are journaled to and within the pedestal A, and said rope is then led to any convenient point at which the operator may be located, where it may be attached to an ordinary switch-lever or other suitable mechanism for convenience of operation.

I is a hollow cap-piece, to which the shaft J of the semaphore is journaled, and within which the rack-bar F reciprocates vertically. The shaft J is provided with a pinion, which is located within the cap-piece and gears with the rack-bar F.

i is a guide-block, which holds the rack-bar in gear with the pinion.

K K is a double-armed semaphore, the arms of which are secured to the shaft J, and diverge radially therefrom. *k k* are the disks on the end of the semaphore-arms, which may be colored in the usual manner. L is a weight, secured to the semaphore at the point where the arms converge or meet.

All the parts of the apparatus within which the operating mechanism is located are made water-tight or inclosed, so that no rain, snow, or dust can get at the operating parts; but portions of the pedestal and cap-piece and lantern-case are made removable, so that the workmen can get at the mechanism, supply it with lubricating material, and get at the lamp, to light it and cleanse the lenses.

The lenses, for convenience, are secured to plates, which slide in grooves formed on the corners of the lantern-case, so that they can be readily removed therefrom when desired; but each slide should be so made that it will only fit its own groove, and thus avoid mistakes, which might occur if the slides were wrongly placed.

The lever or other device for operating the apparatus may be located in the open air, or in any convenient part of the depot or other building connected with the railroad.

The connections may be made of chains and connecting-rods or wire rope, as found most convenient or desirable.

The operation is as follows: When the arms of the semaphore are raised or in position as indicated by Fig. 1 of the drawing, they indicate danger on both lines; and when the apparatus is left to itself, or the connections should be severed by the breaking of the rope, the semaphore will always assume this position through gravity by reason of the weight L. By drawing on the rope, one arm may be lowered and the other raised, thereby indicating danger on one line and safety on the other; and by still further drawing on the operating mechanism, both arms may be lowered into the position shown by Fig. 2 of the drawings, thereby indicating safety on both lines. In this way one semaphore is made to signal two roads.

The operation of signaling at night is accomplished by the same means or connecting apparatus which operates the semaphore. When left to itself, the lamp-case D will remain at the bottom of the lens-case B, the light of the lamp shining through the lower of the series of lenses C, which may be colorless or colored, according to the prearranged system of signaling in use.

When it is desired to alter the signal, the connecting-rope is drawn toward the operator, thereby raising the rod E, and with it the lamp D, until the lamp-lense is brought opposite another of the lenses C, which is so colored as to convey the desired signal.

On releasing the strain on the operating-

rope, the lamp will again descend to the bottom of the case B through its own gravity and that of the semaphore-weight L, the lamp and semaphore always moving together by means of the pinion and rack-bar F.

In this way it will be seen that by a proper arrangement of the colors of the lenses C the same lamp is employed to indicate either safety or danger on both lines, or danger on one line and safety on the other, as the case may be.

Of course, it will be understood that by any prearranged system of signaling any particular position of the semaphore-arms may be adopted to convey certain information; but I prefer to use them in the manner described, so that the arms will always assume the danger position when the apparatus is left free to move by gravity, in the manner described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A semaphore constructed, substantially as described, with two arms, K K, pivoted to a common shaft, J, and arranged to operate so as to simultaneously signal two lines or tracks, substantially as set forth.

2. The combination of the semaphore K, having the weighted end L, with the movable lantern or lamp chamber D and lens-casing B, the semaphore and lamp-chamber being connected by suitable mechanism, so as to operate by gravity, in the manner and for the purpose set forth.

3. The combination of the semaphore K, pinion and rack-bar F, rod E, lamp-chamber D, rope or chain G, and lens-case B, substantially as and for the purpose specified.

4. The cap-piece I, tube a'', case B, and hollow pedestal A, constructed substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM GRAVIT.

Witnesses:

JAY L. TAYLOR,

GEORGE C. WILKISON.