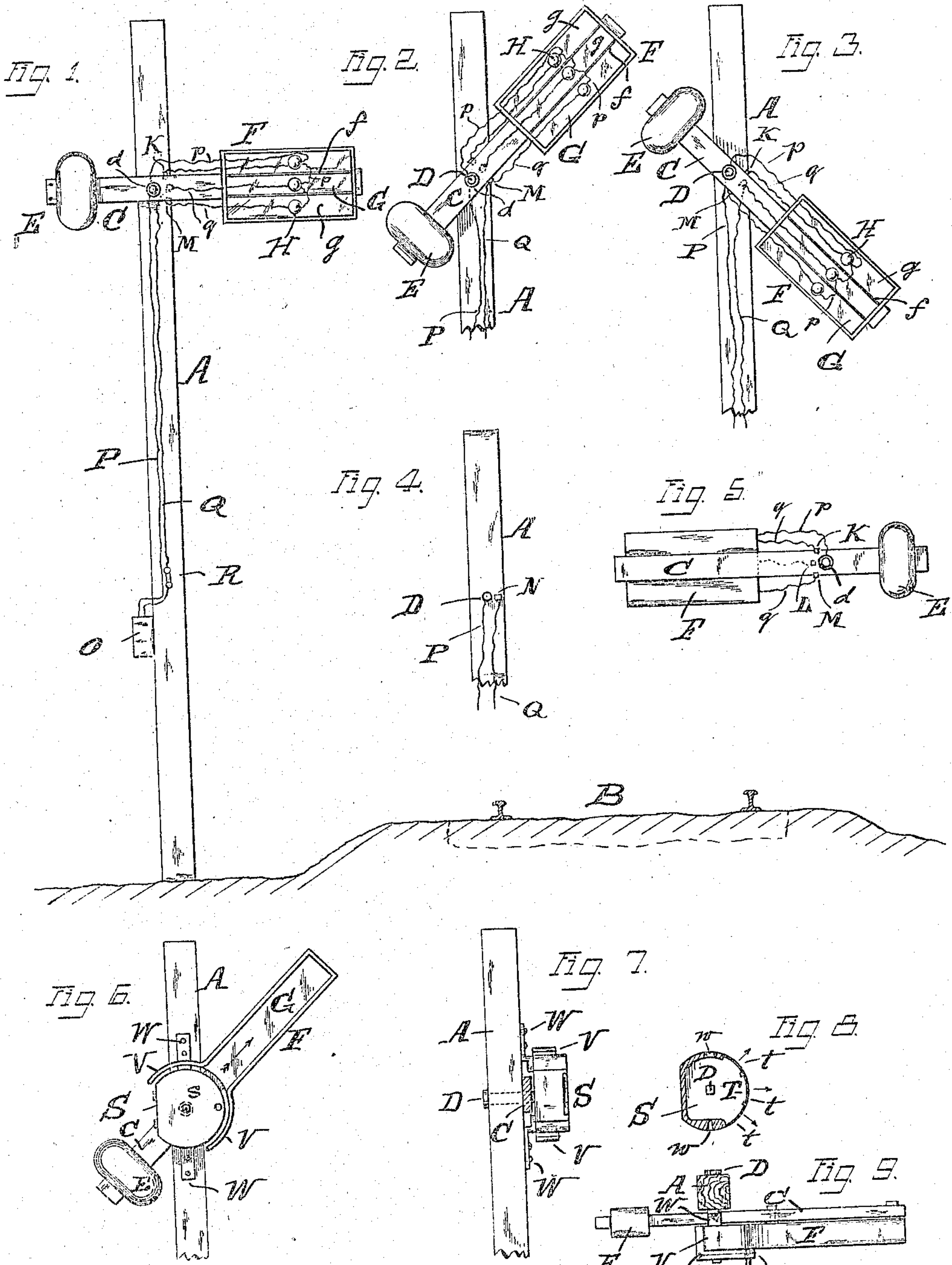


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ILLUMINATED SEMAPHORE.
APPLICATION FILED MAY 24, 1907.

Patented Feb. 9, 1909.

911,640.



Witnesses.

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UNITED STATES PATENT OFFICE.

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ILLUMINATED SEMAPHORE.

No. 911,640.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBA D. ARCHIBALD, a citizen of the United States, and residing at Covington, Kenton county, State of Kentucky, have invented certain new and useful Improvements in Illuminated Semaphores; and I do declare the following to be a clear, full, and exact description of the invention, attention being called to the accompanying drawing, with the reference characters marked thereon, which form also a part of this specification.

This invention relates to certain means and devices whereby, by illumination, the usual semaphore-signal device used in connection with rail-way systems, is also rendered available at night, the operation of the illuminating means being automatic and induced by the usual operation of the semaphore.

The invention consists of the particular means and devices as hereinafter described and pointed out in the claims and as illustrated in the accompanying drawing, in which:—

Figure 1, shows in elevation a usual semaphore signal with an adjacent rail-way track in profile. Figs. 2 and 3, show the upper part of the semaphore in different signaling-positions. Fig. 4, shows the upper part of the post merely. Fig. 5, shows a rear-view of the semaphore-arm detached. Fig. 6, shows again the upper part of the semaphore with the illuminating means modified. Fig. 7, is a side-elevation of the preceding figure, viewed from the left side. The semaphore arm is presumed to be in normal position with the balancing weight cut off. Fig. 8, is a sectional detail view of the light holder. Fig. 9, is a top-view of the semaphore in this modified form and with the arm in normal position.

In its usual form the semaphore signaling-device consists of a post A, erected in proper position with reference to a near-by track B, and provided at proper height with the signaling arm C, which is adjustably supported between its ends on the post by a pivot D. A balancing weight E, on the shorter part of this arm holds the same in a certain normal position which is a horizontal one as shown in Figs. 1, and 9. This position is at the same time a signal-conveying one and changes from it either up or down as shown in Figs. 2, and 3, serve to convey additional signals. What these sig-

nals may mean is not material for present purposes, nor have the means for manipulating the semaphore any bearing on my invention. Ropes guided by pulleys are generally used for this purpose and the arrangement is such that the arm, unless manipulated, always occupies a certain normal position, which is usually the horizontal one and to which position, after every manipulation, it seeks to return, which tendency is induced by the balance-weight. This normal position generally serves to indicate the danger-signal.

Darkness of night renders the semaphore useless unless means are provided to make it visible. My invention provides such means which operate in a certain manner, so that the semaphore-arm is illuminated in any of its signaling positions to which it may be adjusted by the operator and may thus be readily seen at night. The illumination may be merely a plain one, or a color-scheme may be added, so that with a change of the signal-arm from one position to another, the color of the light changes also whereby a certain signal is not only indicated by a different position of the arm, but also by a different light. For these purposes I provide a box-shaped reflector F, which is attached to the proper side of the longer part of the semaphore arm. Its open front may be closed by a glass-panel G, to keep dust as well as rain and snow out. The inside surfaces are suitably prepared by painting or a lining, to render them reflective.

In the form shown in Figs. 6, to 9, mere illumination without change of color is contemplated. In the other form shown in Figs. 1, to 5, change of color is added. In this latter case the reflector box is divided lengthwise by partitions *f*, in as many compartments as there are colors to be used. For illuminating these compartments incandescent, electric light lamps H, are used, one or more being provided in each compartment. The bulbs of these lamps are of different colors, for instance in one compartment they may be plain, in the other red, and in the third one green, or each compartment may have a glass panel *g*, correspondingly colored. One compartment only is lighted up at a time and in a certain position of the arm and when this position changes, the illuminated compartment becomes dark and another becomes visible. Thus the

changed position of the signal arm not only becomes noticeable by reason of it being visible, but the change is emphasized by a corresponding change in color of the light. This switching of illumination from one compartment to another is brought about by using the signal-arm as the operating medium or switch whereby, in co-action with properly located contact-points, the desired change is obtained. For the three positions and corresponding different colors, three contact-points K, L, and M, properly spaced, are provided on the semaphore arm, one for each lamp. Another contact-piece N, is provided on the post. See Figs. 4, and 5.

Any suitable source of current may be used which I indicate in form of a battery O, as most reliable, because not subject to accident and interruptions to which a mechanically created current would be liable. This battery may however be connected to such a current for purposes of its automatic re-generation in the well known manner. From this source O, the current is carried to the lamps and back again by two wires P, and Q, the wiring between this source, the lamps and the contact-points to be of any of the usual approved methods. Wire P, for instance may bring the current to pivot D. A metallic bushing *d*, in arm C, which serves for a bearing, may receive this current and by a wire *p*, carry it to all the lamps. Each of these latter is connected by short wires *q*, with the contact points K, L, and M, respectively. Wire Q, connects with contact point N. This part of the operation is now readily understood. Normally points L, and N, are always in contact and the middle compartment on the semaphore arm is illuminated. When this latter moves into the position shown in Fig. 2, this contact is broken and contact is established between points M, and N, and the lower compartment is illuminated. Corresponding action takes place when arm C, assumes the position shown in Fig. 3.

A switch R, is provided whereby operation of the lights is cut out during daytime, or when no illumination is needed. In reality the wires will obviously not appear as they are shown in the drawing. They will be practically invisible, being stretched close to the semaphore members or embedded in grooves therein.

In Figs. 6, to 9, the light, which may be electric or a lantern, is contained in a box S, provided with a door *s*, for access to place a lantern in case such is used. One side of this box is opposite one end of reflector box F, on arm C, which box is not subdivided in this case and at this particular end is open towards this side of box S. This latter side is also open towards the open end of the reflector box, the opening T, being of an extent to take in, that is to be opposite,

the open end of reflector F, in all positions of this latter, so that light may radiate into the reflector at all times, no matter in what signaling-position the semaphore arm may be. The open end of this reflector and the open side T, of box S, are brought as close together as is consistent with the operation of the semaphore arm, so that no dissipation of light can occur. Towards the front, box S, is closed light-proof by door *s*.

Escape of light towards the track is prevented by hoods V, which extend in opposite directions from the open end of the reflector, and cover always that part of the open side T, which at the time is not opposite the end of the reflector.

Light box S, is supported in a stationary position in any suitable manner. It may be hung upon the squared end of pivot D, upon which the semaphore arm is supported as shown in Fig. 8, the pivot being sufficiently extended for the purpose. Braces W, may also be used as shown in Fig. 7, and whereby this box is rigidly attached to post A. For ventilation, openings *w*, *w*, are provided in light box S. If it is desirable to also show different colors in this form, then the open side T, of box S, is covered with three panels *t*, of different colored glass, arranged so that one is always opposite the open end of the reflector-box in either of the three positions of the semaphore-arm. The light radiated from box S, into the reflector box F, is thus correspondingly modified.

As will be seen, the semaphore arm is visible in all its positions and the light, whereby it is illuminated, may also be changed if desirable.

Where plain illumination merely is desired and the form of lighting shown in the first form is used, then the reflector-box need not be as wide as shown in Fig. 1, and may be as narrow as shown in Fig. 6.

Having described my invention, I claim as new:

1. In a semaphore signal, the combination of a post, an arm, a pivot whereby it is supported on the post so as to be adjustable to various signaling positions, a reflector-box attached to the arm so as to move with the same, means supported in a stationary position on the pivot mentioned, to illuminate this reflector-box in all signaling positions of the semaphore-arm, and colored panels whereby the light shown by the reflector-box is modified as the position of the semaphore-arm changes.

2. In a semaphore signal, the combination of a post, a pivot projecting from one side of it, a semaphore arm on this pivot supported close against the post and adjustable thereon to various signaling positions, a reflector-box provided on the outer or front side of the arm so as to move with the same, a stationary source of light also provided on

the front-side of the arm, supported on the pivot thereof and adapted to illuminate the reflector-box in all signaling positions of the arm and means to change the color of the light emanating from the reflector box simultaneously with the change of position of the arm.

3. In a semaphore signal, the combination of a post, a pivot-projecting from one side of it, a semaphore arm on this pivot supported close against the post and adjustable thereon to various signaling positions, a reflector-box provided on the outer or front side of the arm so as to move with the same and means also supported on the pivot and in front of the arm and adapted to supply light to the reflector box.

4. In a semaphore signal, the combination of a post, an arm pivotally supported thereon so as to be adjustable to various signaling positions, a reflector-box attached to the arm so as to move with the same, and open at its inner end, a light-box stationary on the post and opposite the open end of the reflector, its side towards this end being also open to an extent to cover the open end of the reflector-box in all positions of the semaphore-arm, suitable illuminating means in the light-box whereby the reflector-box may be

lighted up, and hoods provided on this latter to prevent radiation of light through that part of the opening in the light-box which is not covered by the end of the reflector-box.

5. In a semaphore signal, the combination of a post, an arm pivotally supported thereon so as to be adjustable to various signaling positions, a reflector-box attached to the arm so as to move with the same, and open at its inner end, a light-box stationary on the post and opposite the open end of the reflector box, its side towards this end being also open to an extent to cover the open end of the reflector-box in all positions of the semaphore-arm, vari-colored glass panels in this opening, there being one for each signaling position of the semaphore-arm, the arrangement being such that a different colored panel is always opposite the open end of the reflector-box and suitable illuminating means in the light-box which radiate light through the colored panels into the reflector box.

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

ALBA D. ARCHIBALD.

Witnesses:

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T. LE BEAN.