

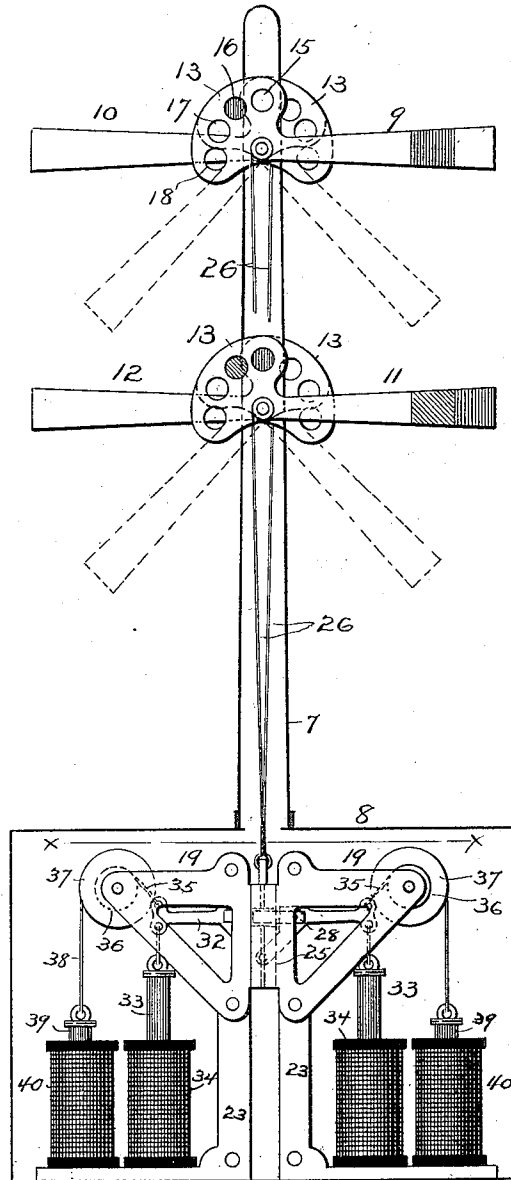
A. J. ALLARD.
ELECTRIC SIGNAL.

APPLICATION FILED FEB. 18, 1911. RENEWED FEB. 3, 1913.

1,060,406.

Patented Apr. 29, 1913.

2 SHEETS-SHEET 1.



WITNESSES

E. Nottingham
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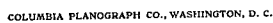
INVENTOR

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APPLICATION FILED FEB. 18, 1911. RENEWED FEB. 3, 1913.

Patented Apr. 29, 1913.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

ANDREW J. ALLARD, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-THIRD TO T. F. GREEN AND ONE-THIRD TO D. R. CREECY, JR., OF RICHMOND, VIRGINIA.

ELECTRIC SIGNAL.

1,060,406.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed February 18, 1911, Serial No. 609,352. Renewed February 3, 1913. Serial No. 746,038.

To all whom it may concern:

Be it known that I, ANDREW J. ALLARD, of Richmond, in the county of Henrico and State of Virginia, have invented certain
5 new and useful Improvements in Electric Signals; and I do hereby 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 appertains to
10 make and use the same.

This invention relates to improvements in electrical signaling and more particularly to improvement in electrically actuated
15 semaphores,—the object of the present invention being to so construct a semaphore that it shall comprise a plurality of visual signals which can be actuated in such manner as to display “rear-end” and “head-on” signals at respective ends of a block
20 simultaneously, and so that the signals can be released successively as a train passes from one block to another,—the said semaphores being controllable by a system of circuits and devices specifically described and
25 illustrated in my copending application filed February 18th, 1911, Serial No. 609,355.

A further object is to provide simple and efficient devices for actuating and releasing the signals.

30 With these and other objects in view the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

35 In the accompanying drawings, Figure 1 is an elevation of a semaphore embodying my improvements; Fig. 2 is a view with parts of the supporting frame removed showing the normal position of the signal
40 blade operating devices; Fig. 3 is a view on the line $x-x$ of Fig. 1. Fig. 4 is a diagrammatical view showing the arrangement of signal lights; and Figs. 5, 6 and 7 are detail views.

45 The semaphore comprises a standard 7 (preferably tubular) rising from a suitable housing 8 located near the track at the intersection of two blocks. Four semaphore or
50 signal blades 9—10 and 11—12 are pivotally supported on the standard 7, the blades 9—10 being located at a higher position than the blades 11—12. Each blade is provided with a segment head 13 having a series of
55 lamps are provided so as to be in line with

these windows when the blade and its head are in position to indicate danger. The upper two windows in the head 13 of each upper blade 9—10 are constructed to show red and white lights while the lower windows 60 in these heads are intended to show two white lights. The upper windows in the head of each lower blade 11—12 are adapted to show green and red lights, while the lower windows of these heads are adapted 65 to show white lights. I prefer to employ at least two electric lamps 1—2 for each window of each signal segment, but a pair of such lamps may be placed between each two parallel segments so as to supply light for both. 70 The lamps are arranged in two sets 3, 4, as indicated in Fig. 4, the lamps of each set being included in series with each other and the lamps of the two sets being arranged in parallel circuits. An electro-magnet 5 75 is included in series with the lamps of the set 3 and a switch 6 is included in series with the lamps in the other set 4. This parallel circuit of the set 4 is maintained normally open by the action of the magnet 5. With 80 this construction and arrangement of signal lights, if the lamps of the set 3 should become extinguished, the magnet 5 would permit the closing of the switch 6 and the consequent lighting of the lamps of the set 4. 85 The blades are so mounted on the standard that they will project therefrom in a direction at right angles to the line of the railroad, and the engineers of trains will obey the semaphore or signal blades which project in a right hand direction. The upper 90 blades and lights are intended to be “head-on” signals, and the lower blades and lights are used as “rear-end” signals. The upper blade 9 is painted red and white on one face, 95 and white on the other face. One face of the blade 10 is painted red and white and the opposite face of this blade 10 is painted white. Similarly, each lower blade is painted green and red on one face and white on 100 the other face. Thus an upper blade projecting horizontally in a right hand direction when viewed from an approaching train, will give a red and white or “head-on” signal and indicate to the engineer that 105 another train occupies the block and is traveling toward his train, or, in other words, running in the opposite direction. A lower signal blade projecting horizontally in a right hand direction will display a green 110

and red or "rear-end" signal and indicate to the engineer of a following train the presence of train in the block running in the same direction. One blade of each pair is intended to warn trains running in one direction, and the other blade of each pair is intended to warn trains running in the reverse direction,—the engineers of trains taking cognizance only of signal blades projecting horizontally in a right hand direction.

Within the housing 8 at the base of the semaphore standard, a plurality of sets of electrically controlled devices (one set for each signal blade) are located and connected with the signal blades. A detail description of one set of these devices will suffice for all.

An arm or frame 19 (preferably triangular in form and comprising two members 21—22 spaced apart but rigidly secured with relation to each other) is secured to a suitable support 23. The arm or frame 19 is provided with guides at 24 for the accommodation of a vertically movable bar 25, to the upper end of which, the lower end of a cable 26 is secured, said cable extending upwardly through the tubular standard 7 and passing over a segment on the head of one of the semaphore blades and secured to said segment. The weight of a semaphore blade will overbalance that of bar 25 so that when the latter is not locked the semaphore blade can drop by gravity to normal position as indicated by dotted lines in Fig. 1 and raise the bar 25. The bar 25 is provided with recesses 27 for the reception of locking dogs 28 which are mounted in the frame 19 to move longitudinally into and out of said notches in the bar 25. These dogs are connected at one end by a pin 28^a which also passes through an elongated slot 29 located at the juncture of two arms 30—31 of a lever 32, at respective sides of which latter, the dogs are located. The free end of the arm 30 of this lever is pivotally attached to the bar 25, preferably at a point intermediate the ends of the latter. The core 33 of a solenoid 34 is connected with and depends from the arm 31 of lever 32, and a flexible device 35 (preferably a chain or cable) is also secured to the arm 31 and passes upwardly about a pulley 36, to which it is secured. A larger pulley 37 is mounted in the frame 19 to turn with the pulley 36, and a flexible device 38 (preferably a chain or cable) is secured to and partially surrounds the pulley 37, said flexible device 38 depending from the pulley and having its lower end secured to the core 39 of a solenoid 40.

When the signal blade is displayed to indicate a danger signal, viz.—when said blade is in a horizontal position,—the devices above described will be in the positions shown in Fig. 1, with the dogs 28 in the

notches or recesses 27 of bar 25, thus locking said bar and also locking the semaphore blade in danger position. Should the solenoid 34 be now energized, the core 33 would be moved downwardly,—causing the lever 32 to be moved on its pivotal connection with the bar 25 and the locking dogs 28 to be withdrawn. The bar 25 will now have been unlocked and the semaphore blade will drop by gravity, causing the bar 25 to rise; when the parts will assume their normal positions (as indicated in Fig. 2) with the dogs resting at their forward ends against the bar 25 and the semaphore blade at safety. Should the solenoid 40 be now energized, the core 39 will be drawn down and motion will be imparted through flexible device 38, pulleys 37—36 and flexible device 35, to raise the arm 31 of lever 32. The lever 32 thus will be caused to turn on the pin 28^a as a fulcrum and depress the bar 25 and cause the semaphore blade to be raised. A continued movement of the lever 32 after the bar 25 has descended will cause the dogs 28 to be moved forwardly and engage the recesses of the bar 25 and lock the latter and therefore lock the signal blade in danger position.

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

1. In a semaphore, the combination with a standard and a signal mounted thereon to swing, of a longitudinally movable bar connected with the same, means for supporting the same, a lever pivotally connected with said bar, locking dogs for the bar connected with said lever, and two solenoids connected with said lever for moving it in opposite directions.

2. In a semaphore, the combination with a standard and a signal mounted thereon to swing, of a longitudinally movable bar, connections between said bar and signal, a lever connected with said bar, locking means for the bar controlled by said lever, electromagnetic devices connected with said lever for actuating the same in one direction to withdraw the locking means, and electromagnetic devices connected with said lever to move the bar downwardly and project the locking devices.

3. In a semaphore, the combination with a standard and a signal mounted thereon to swing, of a longitudinally movable bar, connections between said bar and the signal for transmitting motion to the latter, a lever cooperating with said bar for moving the same, locking means connected with said lever for locking the bar, and two electromagnetic devices both connected with said lever for moving the same in opposite directions.

4. In a semaphore, the combination with a standard and a signal mounted thereon to

turn, of a longitudinally movable bar, a
support therefor, connections between said
bar and signal for transmitting motion from
one to the other, a lever pivotally connected
5 with said bar, a longitudinally movable dog
mounted in said support and having loose
connection with the lever, two solenoids, two
pulleys, a flexible device secured to one of
said pulleys and to the core of one solenoid,
10 a flexible device secured to the other pulley

and to said lever, and a connection between
said lever and the core of the other solenoid.

In testimony whereof, I have signed this
specification in the presence of two subscrib-
ing witnesses.

ANDREW J. ALLARD.

Witnesses:

WM. P. RIDD,

PERCY SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
