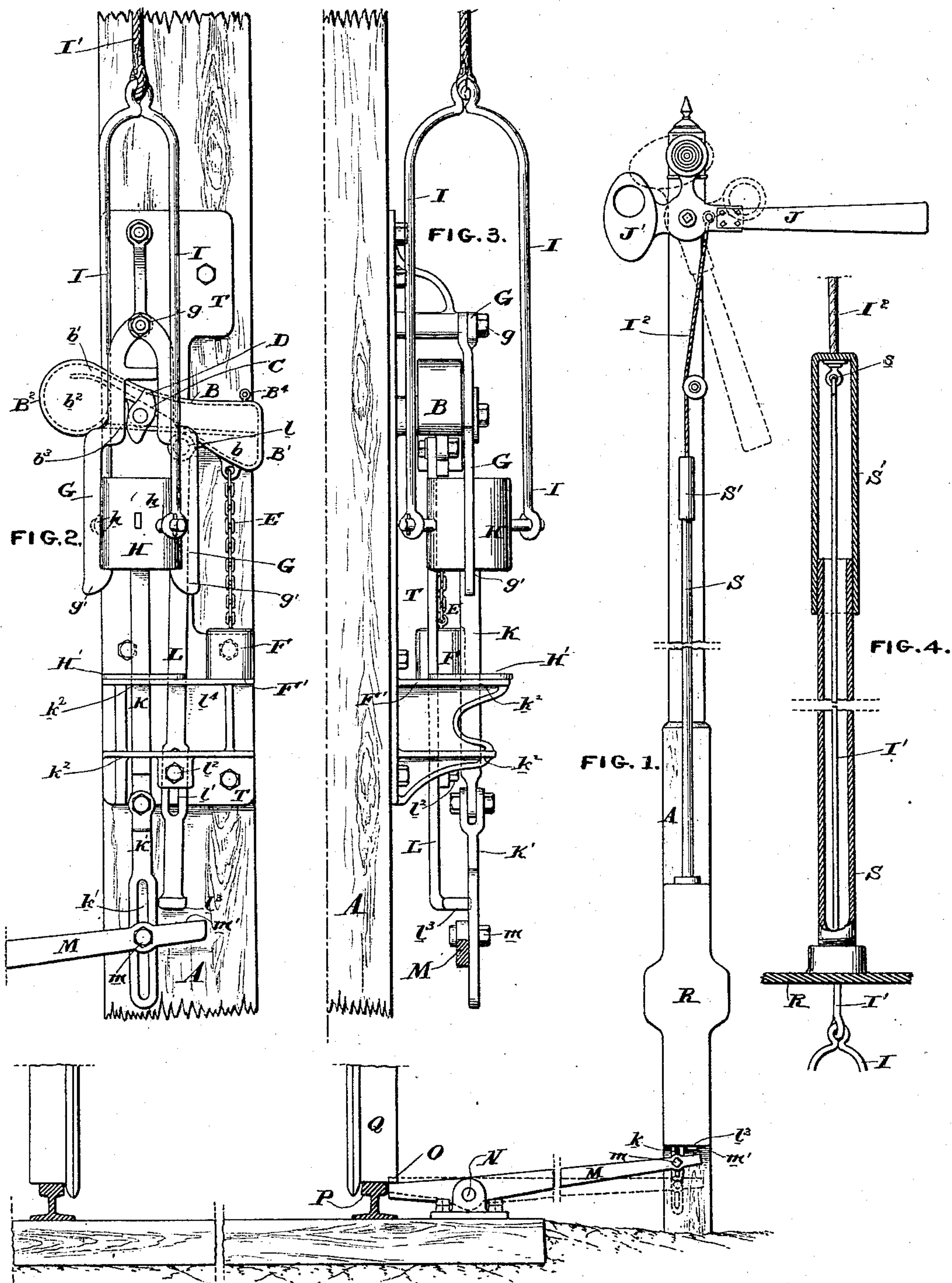


(No Model.)

S. H. HARRINGTON.
RAILWAY TIME SIGNAL.

No. 433,566.

Patented Aug. 5, 1890.



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UNITED STATES PATENT OFFICE.

SAMUEL H. HARRINGTON, OF BINGHAMTON, NEW YORK.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 433,566, dated August 5, 1890.

Application filed September 23, 1889. Serial No. 324,824. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. HARRINGTON, a citizen of the United States, and a resident of Binghamton, county of Broome, State of New York, have invented a new and useful Improved Signal-Actuating Mechanism, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to mechanism for actuating signals such as are used on railways; and my object is to provide a device which can be attached at will to ordinary railway-signals, such as a semaphore-arm, and which can be actuated by a passing train, so as to draw the signal to the position indicating "danger" and then automatically retain the signal in that condition for any desired length of time.

In an application for Letters Patent filed by myself and John F. O'Brien, August 24, 1888, and bearing the Serial No. 283,620, we have illustrated and described an attachment to a semaphore-signal arm consisting of a pair of chambers adapted to contain a fluid and connected by passages, through the upper one of which the fluid flows into the rear compartment when the semaphore-signal arm is thrown up, and through the lower one of which the fluid gradually finds its way back to the front department when the signal-arm is in a horizontal position, the said connected compartments being rigidly attached to the signal-arm, and so arranged with respect to its pivot that the weight of the fluid will hold the signal in a horizontal position when it is contained in the rear compartment, and will draw it down to the position understood as signifying "safety" when it or a large proportion of it is contained in the front compartment.

In another application which I am about to file I have illustrated and described certain improvements in the construction of a device for actuating the signal, which improvements are well adapted for use with my present invention, and which are in part shown, though not claimed, in this application.

The nature of my present invention will be best understood after a description of the

drawings, in which it is illustrated, and its novel features will be hereinafter clearly stated in the claims.

Reference being now had to the drawings, 55 which illustrate my invention in what I consider its best and most complete form, Figure 1 shows a railroad-signal post having a semaphore-signal at its top, a railroad-track adjacent to the said signal-post, a lever arranged to be actuated by a passing train and in turn to actuate mechanism to move the signal, said last-mentioned mechanism, however, not being shown in this figure. Fig. 2 is a front view of my preferred mechanism for actuating the signal; Fig. 3, a side view of the same mechanism, and Fig. 4 a sectional view showing my device for protecting the cord which extends up from the mechanism shown in Fig. 2 to actuate the signal.

A is the signal-post, to which, by means of the pivot C, is connected a box B, which said box consists of two chambers b and b^2 , adapted to contain a fluid, a passage b' , connecting the chamber B with the top of the chamber b^2 , and a passage b^3 , connecting the bottom of chamber b^2 with the chamber b . For convenience of description I have designated the end of the box which contains chamber b by the letter B' , and that end which contains chamber b^2 by the letter B^2 .

D is a catch-actuating device attached to the pivot-box B; E, a chain connecting the end B' of the box B with a weight F.

F' is a platform to receive and sustain the weight F.

G G are arms pivoted at g and having hooked ends g' , constituting a retaining-catch to engage and support a weight H.

H' is a platform placed to receive and hold the weight H when it is released by the arms of the catch.

I is a strap engaged with pins h of the weight H and connected with the signal-cord I'.

I² is a continuation of the signal-cord; J, a semaphore-arm, having a counter-weight J'; K, a rod situated beneath the weight H and moving in guides k^2 .

K' is a link pivoted to the lower end of the rod K and having a slot k' formed in it.

L is a rod connected with the box B at l

and guided by a bearing at l^4 and by a pin l^2 moving in a slot l' of the rod, the lower end of which rod is indicated by the letter l^3 .

M is a lever pivoted at N, having at what I will call its "front end" a pin m , moving in the slot k' of the link K' , and a surface m' , lying beneath the end l^3 of the rod L. At its other or rear end the pivoted lever M is arranged so as to be depressed by the wheel Q of a passing train on the track P, as by a projection O, extending close to the track, so as to be forced down by the wheel Q.

T is a frame or casting adapted to be secured to the post A, and in and to which the guides and supports for the catch C, box B, weights H and F, and rods K and L are formed or supported.

R is a box or casting arranged to be secured to the post A to surround and inclose the frame T and the parts supported upon it. From the upper part of the box R, I extend a pipe-section S to inclose the signal-cord I' , a larger pipe-section S' with closed top fitting over the pipe-section S, so as to slide freely upon it. The cord I' is attached to the closed top of the section S' , and a cord I^2 forms a continuation of the actuating-line, as shown.

The functions and mode of operation of the devices above indicated are as follows: The semaphore-signal J is of ordinary character, and can be actuated by any ordinary and well-known devices, as well as by the peculiar mechanism which I have shown in connection with it. This is desirable, as it permits my peculiar device to be connected or disconnected with the signal, as may be desired. When used in connection with my device, the signal is counterweighted so as to stand normally in the position indicating "danger," as by making the weight J' sufficient to counter-balance the arm J and hold it in a horizontal position. Referring next to what I have called and will hereinafter term the "box" B, consisting of the chambers b and b^2 , connected by the passages b' and b^3 and pivoted on the post, so as to permit the chamber b to be thrown up above the chamber b^2 and to fall below said chamber, a quantity of mercury is placed within this box and normally will all run into and remain in the chamber b , causing the weight of that end of the box to exceed that in the end B^2 occupied by the chamber b^2 and depressing the end B' below the position indicated in Fig. 2 of the drawings. When by any exercise of power the box B is turned so that its chamber b will lie above the chamber b^2 , the mercury or other fluid will flow through passage b' into said chamber b^2 , and the pivot is so placed that the weight of the mercury in chamber b^2 will counterbalance the weight of the box and its attachments on the other side of the pivot. With the box B, however, I provide a device which will to a certain extent counteract the weight of the mercury in chamber b^2 and will cause the box B to assume a position in

which the mercury can flow through the passage b^3 from chamber b^2 into chamber b . Such a device is indicated by the chain E and weight F, which, when the chamber b is thrown above the position indicated in Fig. 2 of the drawings, act to draw down the box into the position shown when the weight resting on the platform F' serves simply to hold the box in that position. The mercury or other fluid in chamber b^2 can then flow through the passage b^3 into chamber b . The time during which the box B will remain in the substantially horizontal position shown in Fig. 2 being that required for a sufficient quantity of mercury to flow through passage b^3 in order to bring the center of gravity again on the side of box B in which the chamber b is situated. The construction and mode of operation of the box B are, as I have before noted, shown, described, and claimed in the other applications to which I have referred.

The leading feature of my present device consists in so combining the signal with the box B as to cause the signal to rise to the "danger" position when the end B^2 of the box is depressed to remain in the "danger" position, while the box B remains in the substantially horizontal position shown in Fig. 2, and to fall to the position indicating "safety" when the end B' of the box falls below the position indicated in Fig. 2, and this is accomplished in the simplest and most direct way by connecting the signal-cord I^2 I' with the end B' of the box B, as by attaching it to an eye B^4 . It is desirable, however, that the force tending to draw the signal to the "safety" position should be greater than that directly exerted by the mercury in the box B, and accordingly I prefer to connect the signal-cord with a weight H, which in falling will draw the signal to the position indicating "safety," and resting on a platform H' will hold the signal in that position. Where such a weight is used, I provide a catch which will hold it above its platform at such a distance as to permit the signal to assume the position indicating "safety," and I combine with this catch a catch-releasing device so connected with the box B as to move the catch and release the weight when the flow of mercury through passage b^3 causes the end B' of the box B to fall. Thus, as shown in the drawings, a cam D is attached to the box B, and the arms G of the catch, which maintains the weight H in its uppermost position, are arranged in such relation with this cam that when it is turned by the falling of the end B' of the box the arms G of the catch are forced apart, releasing the weight H, which then falls onto its platform H' , and, through the strap I and cords I' and I^2 , draws the signal J to the position indicating "safety."

In order to cause the passage of a train to set the signal to "danger," I provide the appliance shown in the drawings, a guided rod K being sustained in the frame T, so that its

end will extend beneath the weight H, and a guided rod L being connected to the box B, as shown. Upon the lower parts of these rods the lever M operates, and, as is clearly shown, whenever the end O of the lever is depressed its outer end is thrown upward, and, by means of the pin *m* and projection *m'*, it acts at the same time upon the rods K and L, thrusting them upward and simultaneously raising the weight H until it is engaged by the catch G and the box B until its chamber *b* occupies a position above the chamber *b'*. When the train is passed, the rods K and L will fall to their normal position, leaving the weight H in the grasp of the catch and permitting the weight F to draw the box B into the position shown in Fig. 2, and the parts will remain in this position and the signal in the position indicating "danger" until the mercury has passed in sufficient quantity into the chamber *b* to depress the end B' of the box, which, in turning, opens the catch by means of its cam D and permits the weight H to fall and draw the signal into the position indicating "safety."

The purpose of the inclosing box R and inclosing tubes S S' is to protect the signal-actuating mechanism and the lower part of the signal-cord and prevent their being tampered with or becoming inoperative by reason of the deposit of snow or ice upon them.

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

1. As a signal-actuating device, a weight arranged to draw a signal to "safety," in combination with a catch arranged to hold the weight out of operation, a catch-releasing device, and a pivoted box B, constructed as described and arranged to actuate the catch-releasing device and permit the weight to fall, all substantially as and for the purpose specified.

2. In a signal-actuating device, the combination of a weight adapted to be attached to and act upon a signal-cord, a catch adapted to engage and hold the weight out of operation, a pivoted box B, constructed as described, and having a catch-releasing device attached to it and arranged to release the catch as the box turns, a weight arranged and connected to draw the box B to a substantially horizontal position, a rod arranged to raise the weight connected to the signal, a rod arranged to throw up the end of box B, and a lever M, arranged to act upon said rods, all substantially as and for the purpose specified.

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Witnesses:

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ASAHEL W. CUMMING.