

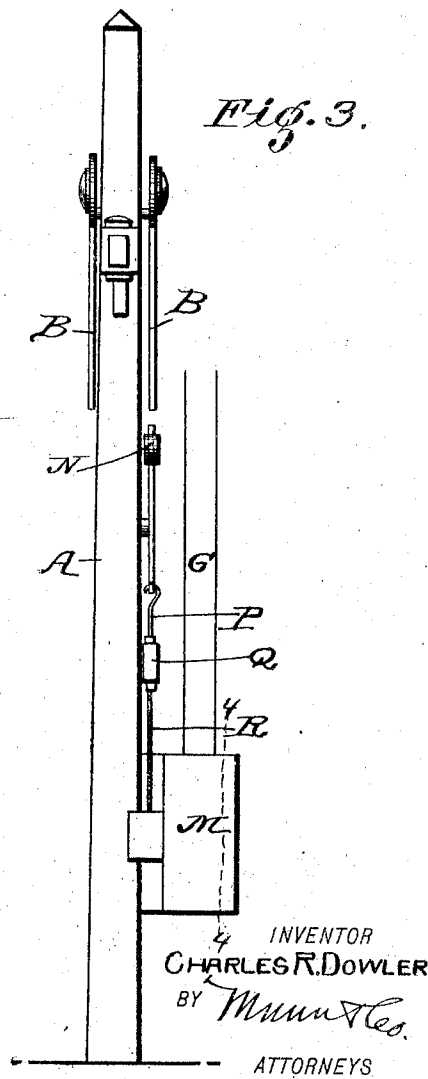
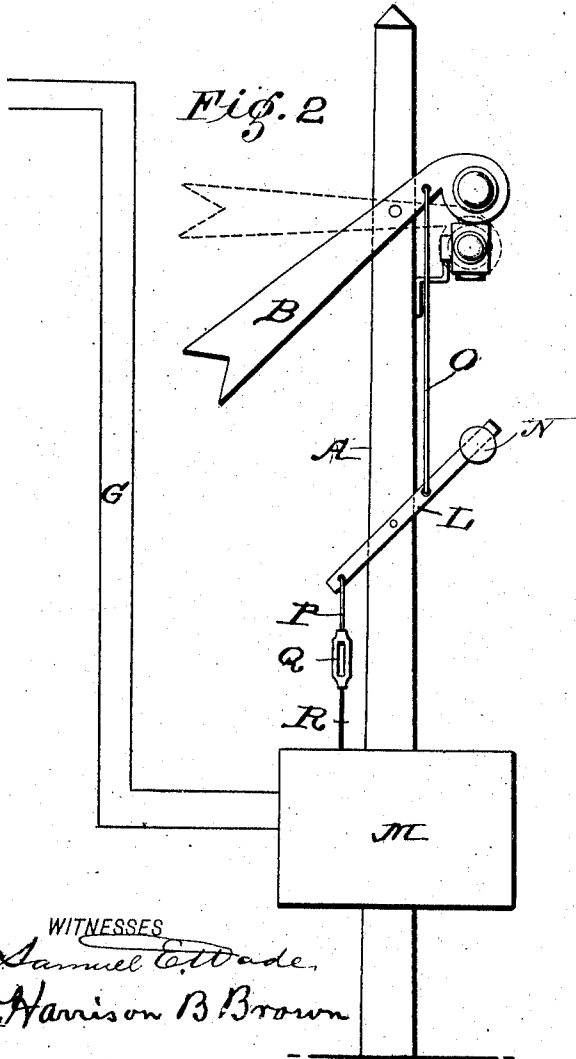
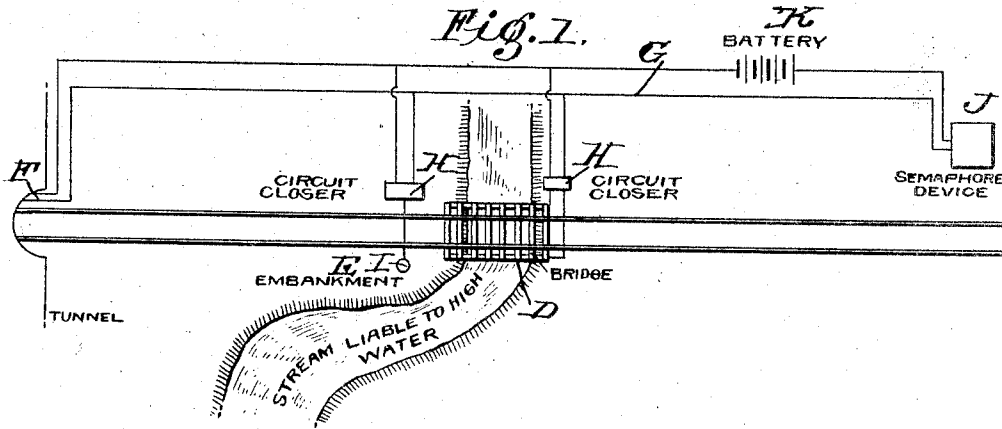
No. 865,169.

C. R. DOWLER.
SIGNAL.

PATENTED SEPT. 3, 1907.

APPLICATION FILED SEPT. 12, 1906.

2 SHEETS—SHEET 1.



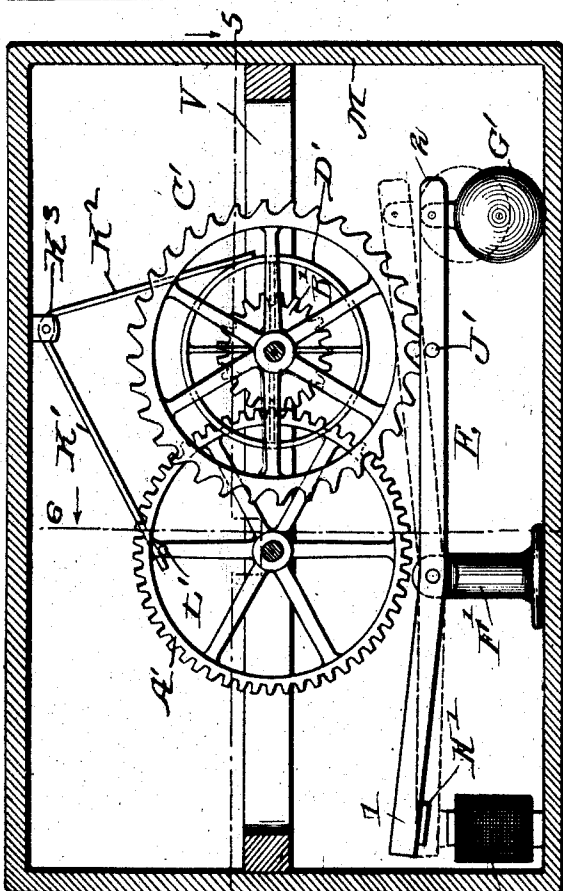
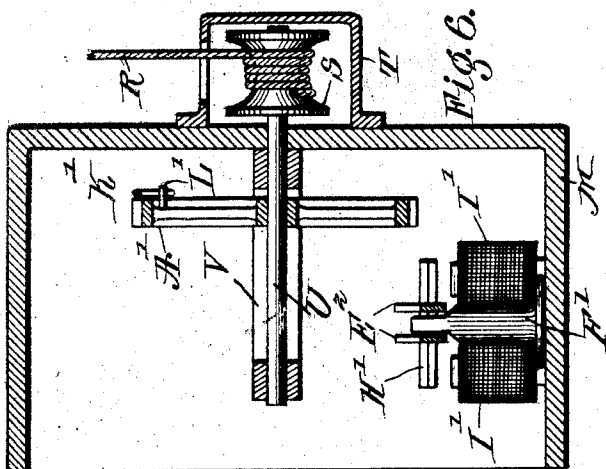
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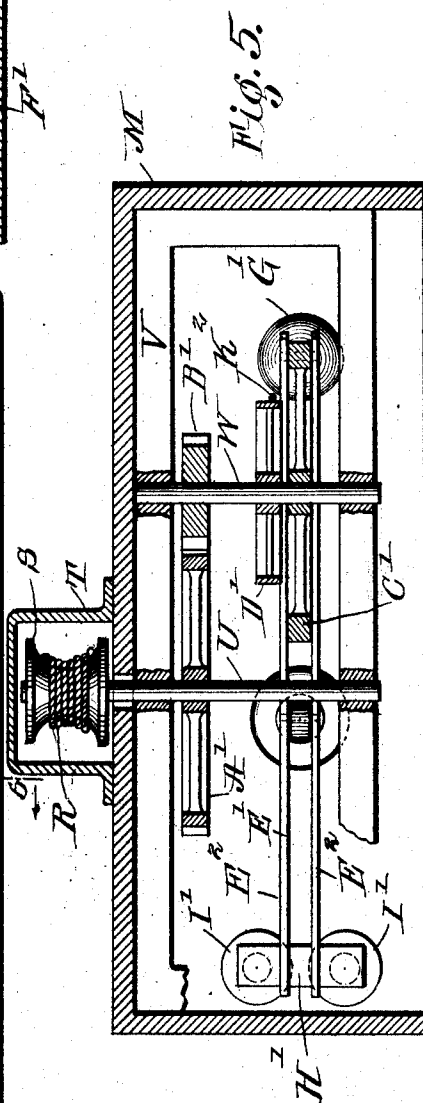
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2 SHEETS—SHEET 2.



WITNESSES
Samuel C. Wade
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Fig. 4.



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UNITED STATES PATENT OFFICE.

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SIGNAL.

No. 865,169.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed September 12, 1906. Serial No. 334,317.

To all whom it may concern:

Be it known that I, CHARLES R. DOWLER, a citizen of the United States, and a resident of Denver, in the county of Denver and State of Colorado, have invented a new and Improved Signal, of which the following is a specification.

The invention relates to railway signals, and has for its object the provision of improved means adapted for automatic operation of ordinary semaphore devices.

10 The invention consists of peculiar and novel means on the semaphore device, adapted for holding it at safety display, circuit "closers" operated by floats or other automatic means, suitable circuit wiring with any source of electric current supply, and automatic means whereby to adjust the semaphore to danger display.

15 The preferred form of my invention is shown by the accompanying drawing, and hereinafter fully described, the novel features being pointed out in the appended claims.

20 In the drawings—Figure 1 is a diagrammatic view in illustration of my invention. Fig. 2 is a front elevation of a common form of semaphore signal employing a pivoted bar with setting means, a case or box is shown secured to the semaphore post, adapted for containing mechanism illustrated in other views of my drawing, circuit wires leading to the case or box are also illustrated in the view. The bar is illustrated in full lines at safety, and at danger, by dotted lines. Fig. 3 is a side view of the features illustrated in Fig. 2. Fig. 4 is a vertical sectional view, taken on line 4—4, of Fig. 3, showing devices or mechanism employed by me. Fig. 5 is a horizontal sectional view, taken on line 5—5 of Fig. 4, and Fig. 6 is a vertical sectional view, taken on line 6—6 of Fig. 5.

35 The invention has to do with danger signals for railways of the general form, utilizing a post having a bar pivoted near its upper end, adapted to be worked by rods and levers as is common, and with the post located at a point along the track suitably distant from a point where it is liable to be undermined, washed away, or otherwise rendered dangerous to railway traffic.

40 Briefly stated, my invention resides in peculiar means at the signal posts, electrical devices and circuit wiring, adapted to hold the signal at safety, be it in the nature of a semaphore bar, light, or other means, during safety condition of the track, and with the signal holding means adapted for automatic operation, setting the semaphore or other signal device to danger.

50 In carrying out my invention I employ a common form of semaphore signal device illustrated in Figs. 2 and 3, consisting of a post A with pivoted bars B and a light C, at its upper end.

55 It is designed to locate the semaphore device, see Fig. 1, at a point suitably distant from a bridge D liable

to be washed away, or otherwise rendered dangerous, an embankment E liable to be washed away by high water in a near stream thereof, effecting undermining of the railway track, or from the approach of a tunnel F.

60 G indicates circuit wiring extending from suitable switches H, normally held at circuit closing adjustment by operation of a float substantially as now patented by me, by an embedded weight I and connecting means, as in my allowed application, injury to or the washing away of the bridge D, or operation of suitable devices at other danger points upon the caving in of the walls of a cut, an obstruction formed in the tunnel F, &c, all as will be understood and not therefore necessary to illustrate in my drawings, or described in this specification, for a full understanding of my invention. 70

In Fig. 1 J indicates the signal device, and K a battery in the circuit G, but obviously any other suitable current supply may be employed.

I would now refer to Fig. 2 of my drawing, showing a lever L pivoted to the post A, at a point between the signal device B and a box or case M, having support on the post A. One end of the lever L is provided with a weight N and connected with the signal device or bar B, by means of a rod O. The other end of the lever L is provided with a depending rod P, having at its lower end, a turn buckle Q, or other suitable adjusting means. 80

R denotes a cord, cable, or chain, extending down from the turn buckle Q, with its lower end coiled around a drum S, in an inclosure T, on the box or case M, as will be understood upon reference to Figs. 5 and 6. The drum S is arranged on a shaft U, having rotatable support on a suitable frame V, located within the box or case M. 85

W indicates a like shaft having similar support on the frame V. 90

On the shaft U I arrange a gear-wheel A', with its teeth in gear with similar teeth of a pinion B', arranged on the shaft W, see Figs. 4 and 5

A ratchet wheel C', is arranged on the shaft W, and I also arrange a brake-wheel D' on the same shaft, see Figs. 4 and 5, the object of which will appear further on. 95

E' indicates an arm having oscillating support on a standard F', leaving projecting ends 1, 2, as shown.

The end 2 of the lever E' is provided with a weight G', and an armature H' is arranged on the under side of said lever, at its end 1, as shown by Fig. 4. 100

An electro-magnet I' is provided in the box or case M, the same being arranged under the armature H' suitably for magnetic attraction of the armature on the lever E'. 105

It will be understood that the coils of the electro-magnet I' are located in the circuit G, see Fig. 1.

The oscillating lever E' is constructed with two spaced bars E², E², connected at their weighted ends 2, by a transverse stop pin or tooth J'. The arms E² of the 110

lever E' are located adapted to pass up on opposite sides of the teeth on the ratchet wheel C', and the connecting pin or tooth J' is located on said lever adapted for engaging the ratchet wheel teeth, as indicated by dotted lines in Fig. 4.

5 adjustment of the lever E, see Fig. 4.
K', K² indicate brake arms on an oscillating shaft K³, the latter having suitable elevated support in the case M.

10 The arms K', K² and the shaft K³ are rigidly connected. The lower end of the arm K² is arranged for frictional contact with the brake-wheel D', and the lower end of the like arm K' is designed to be engaged by a pin L', on the gear wheel A', substantially as shown by Fig. 4.

15 The construction of my improved signal, will be understood from the above description.

To set the semaphore device B to safe or proceed position, the ratchet wheel C' is rotated, which will in turn actuate the drum S on which the cable R is coiled, 20 and in that way draw the semaphore blade to clear position indicated by full lines on Fig. 2. On the blade having assumed this position the armature H' is manually adjusted into contact with the electro-magnet I', which action also adjusts the pin J' into engagement 25 with the ratchet wheel C', thereby holding the semaphore in that position during closure of the circuit G.

My signal is intended to warn trainmen of dangerous condition of roadway, at some given point, and in practice one would be set on either side of any point suitably in advance of the dangerous location. The circuit 30 breakers H are intended to open the circuit G, upon rise of water to a given height, a burned bridge, a washed out condition of road bed, cave in tunnel &c, &c.

The semaphore being set at clear position as before 35 mentioned, it will remain in that position until some condition arises opening the circuit G. Obviously when the circuit G is opened the magnet becomes de-energized and the weighted end of lever thereby be permitted to drop from holding engagement with the 40 ratchet wheel, the semaphore being thus freed, it will assume the danger or stop position as shown by dotted lines in Fig. 2. In signaling against this class of danger it is necessary that the track be examined before signals are set at safe position. It will be seen that my signal 45 device must be manually set to the safe position, and that it assumes the danger position automatically.

To better illustrate my meaning we will assume we have a bridge protected by this device against a dangerous rise of water, such as might occur from a sudden violent storm of local character, such storms are of frequent occurrence in the country adjacent to the Rocky Mountains, the water courses having many feet of fall to the mile, the flood soon spends its force, often in a few minutes, but frequently sweeping everything before them. 55

Current may be taken from line wire carrying dynamo current instead of battery current as illustrated. By engagement of the arms K', K² with the pin L' and the brake wheel D', the gear wheel A' will be prevented rotating further than is necessary to allow the semaphore to assume proper position. 60

I claim—

1. A signal comprising a semaphore device, gravity operating means adapted to set the semaphore device at danger-adjustment, power operating means adapted to set the semaphore device at safety, an electro-magnet, an oscillating device, weighted at one end, and provided with an armature at its other end, a device on the oscillating arm, adapted to be adjusted into holding engagement with said power operating means, a battery, wiring electrically connecting the battery and electro-magnet, and a circuit closer in operative arrangement between the battery and said electro-magnet. 65

2. A signal comprising a post, an adjustable semaphore on the post, means holding the semaphore at safety, comprising a lever weighted at one end, means counterweighting the semaphore and adapted when released by said holding means, to automatically adjust the semaphore to danger; an armature on the holding means, an electro-magnet, automatically operating circuit breakers, and circuit wiring connecting the circuit breakers, and an electro-magnet with suitable source of current supply. 70

3. A signal comprising a post, a pivoted bar on the post, counterweighting devices operating to adjust the bar to danger, a drum and cable with the latter attached to the bar, operating devices, gearing wherethrough to operate the drum, means adapted to retard operation of the gearing, means adapted for adjustment into holding engagement with the gearing, comprising a lever weighted at one end, and electro-magnet devices in circuit with current supply and automatically operating circuit breakers, the gear holding means being held in action during completion of circuit, energizing the electro-magnet, and adapted to permit automatic adjustment of the signal bar to danger upon open circuit demagnetizing the electro-magnet. 80

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Witnesses:

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CLARK C. FENNER.