

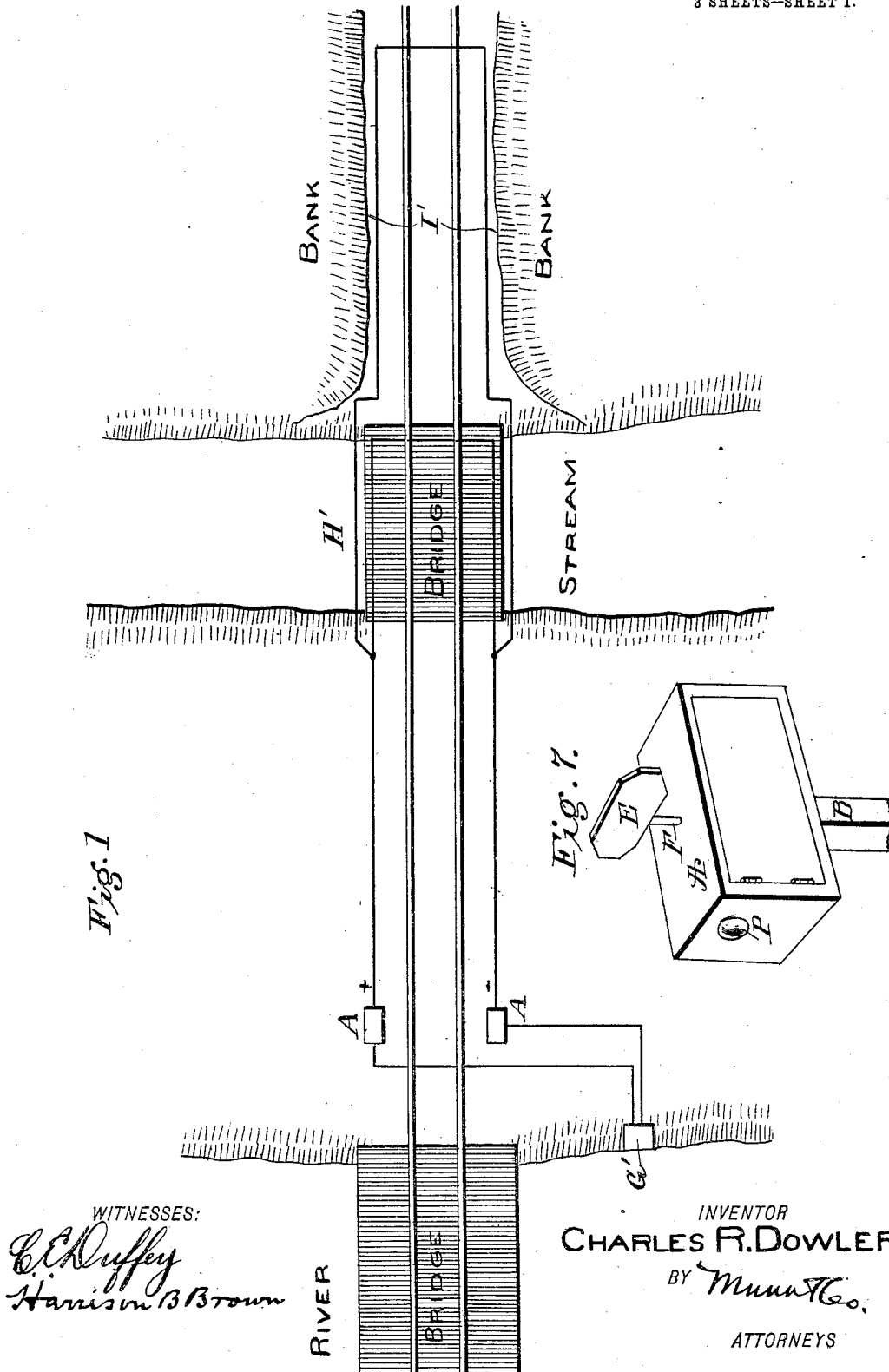
No. 835,410.

PATENTED NOV. 6, 1906.

C. R. DOWLER.
SIGNAL.

APPLICATION FILED JAN. 12, 1906.

3 SHEETS--SHEET 1.



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3 SHEETS—SHEET 2.

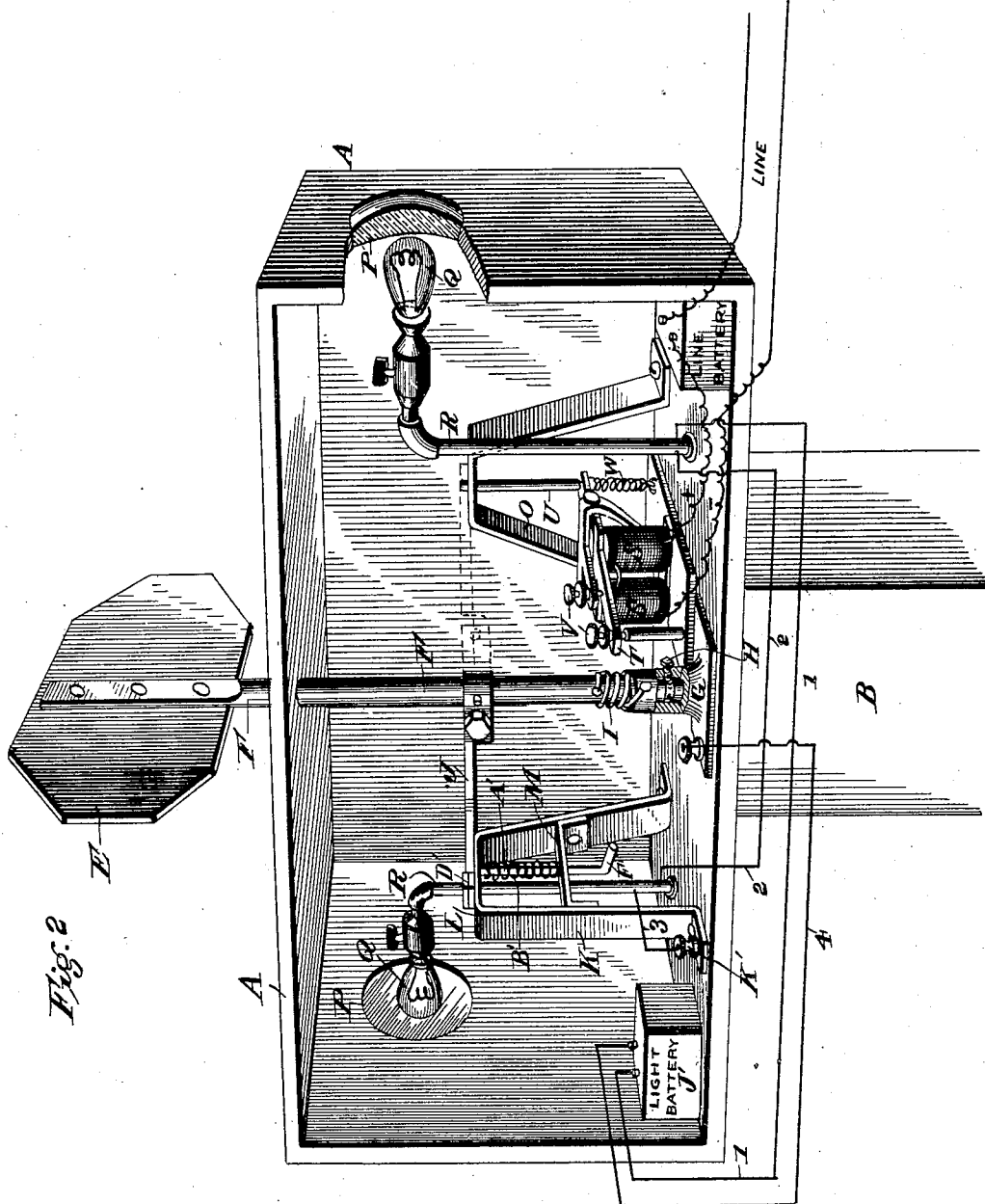


Fig. 2

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3 SHEETS—SHEET 3.

Fig. 3

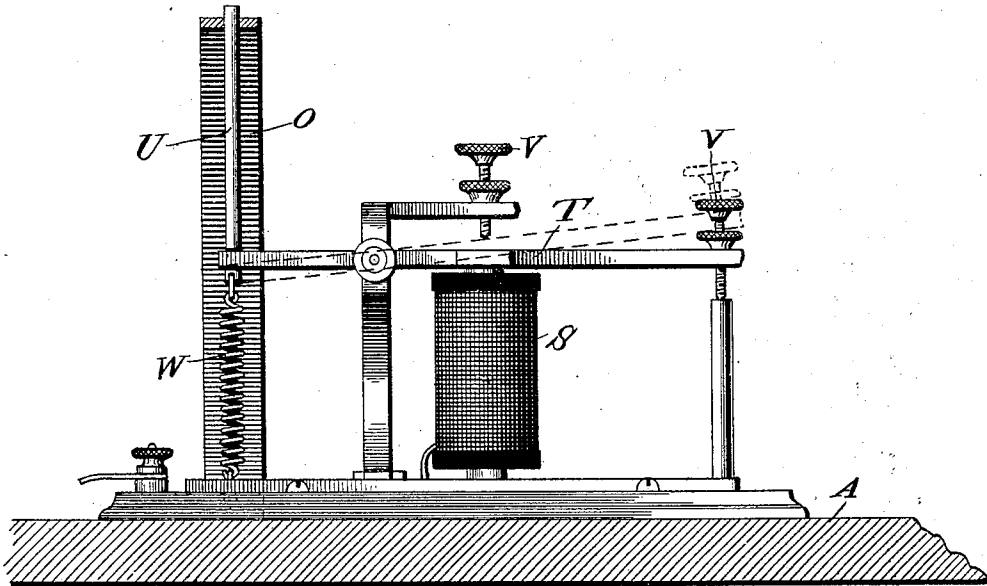


Fig. 5

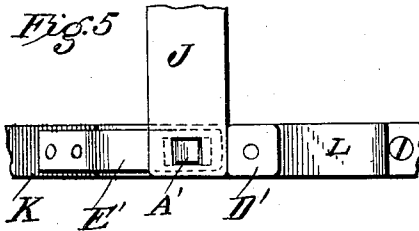
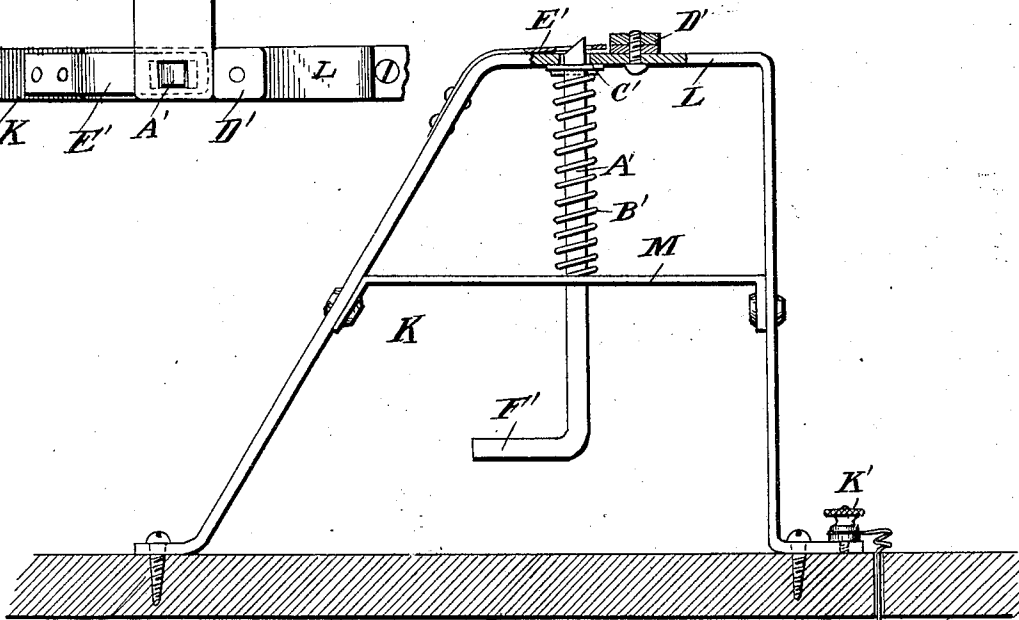


Fig. 4



WITNESSES:

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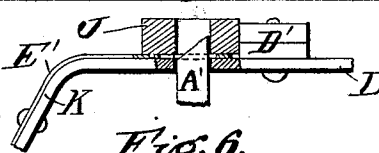


Fig. 6.

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UNITED STATES PATENT OFFICE.

CHARLES R. DOWLER, OF LAMAR, COLORADO, ASSIGNOR TO THE COLORADO RAILWAY SIGNAL COMPANY, A CORPORATION OF COLORADO.

SIGNAL.

No. 835,410.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed January 12, 1906. Serial No. 295,732.

To all whom it may concern:

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

My invention may be characterized as an "automatic danger-signal" designed for location near the approach of a railway-bridge at places along railway-trackage and on public roads where through action of high water the bridge may be washed away or rendered unsafe and places along the track or roadway made dangerous by washouts, land-slides, or due to other impediment to travel.

The invention comprehends new and improved signal means adapted, through electric circuit means, for operation, holding the signal at "safety" during closed circuit and for automatic danger display upon open circuit being formed and also the display of electric lights during continued danger position of the signal.

The invention further comprehends means locking the signal devices at danger position and also for retaining completion of the light-circuit operative through manual manipulation and the said means accessible only to an authorized person.

The invention consists of the peculiar devices and combination of features illustrated by the accompanying drawings and herein-after fully described, the novelty being pointed out in the appended claims.

Figure 1 is a diagrammatic view in illustration of my invention. Fig. 2 is an enlarged detail view of the signal-case with the apparatus shown arranged therein. Fig. 3 is a detail sectional view, in side elevation, of electromagnets and attached devices. Fig. 4 is a sectional detail view of the devices holding and locking the target at danger adjustment. Fig. 5 is a fragmentary detail top plan view of the features illustrated in Fig. 4, and Fig. 6 is a vertical sectional view of the parts illustrated in Fig. 5. Fig. 7 is a reduced perspective view of the signal-case employed by me.

In the practice of my invention I would employ signal devices located on opposite sides of some danger-point and arrange them in sets of two, employing as many sets as occa-

sion may require, though my drawings show one set thereof.

The signal devices are arranged in any suitable inclosure A, having elevated support, by means of a post B or other suitable elevated support.

My drawings illustrate one side of the case open; but it is intended to have a door closing the opening and the same be securely locked against access to the interior of the case by unauthorized persons.

E denotes any desired form of target or semaphore device having support at the upper end of a shaft F, extended above and from within the case A, the lower end of the shaft being rotatably stepped into a suitable socket G and secured therein by engagement of a set-screw H, entering a suitable groove around the shaft F. (See broken-away portion of the socket in Fig. 2.)

I denotes a spring on the lower end of the shaft F, having one end secured to the shaft and its other end secured to the socket G. The function of this spring is to effect rotation of the shaft F, as will appear further on.

On the shaft F, I arrange a transversely-disposed arm J, constructed of conductive material. I will here state that the shaft F and its socket G are also constructed of conductive material.

In the case and to one side of the shaft F I arrange an upright substantially A-shaped frame K, having an upper flat portion L and a lower bracing member M. O denotes a similar-shaped upright frame suitably located on the opposite side of the shaft F, having its upper portion flattened similar to the upper portion of the frame K.

Windows P are provided in opposite ends of the case A for the display of incandescent lights Q, located within the case. The lights are supported by tubular standards R, substantially as shown.

S denotes electromagnets having a common vibrating armature T. The vibrator has one side connected with a reciprocating rod U and its other side provided with suitable check-screws V, as will be well understood.

It will be noticed that the upper end of the rod U is arranged in a vertical opening through the flattened upper portion of the frame O. The rod is placed under downward tension through means of a suitably-connected

spring W. At downward adjustment of the rod U it is designed that its upper end shall be positioned just below the upper surface of the flattened portion L of the frame O.

5 Upon reference to Fig. 3 of my drawings it will be seen that when the vibrator or armature T is drawn down through completion of an electric circuit in the magnets its connection with the rod U operates, forcing same
10 upwardly against tension of the spring W, the construction of parts being adapted for moving the rod endwise to position, leaving its upper end projecting above the flattened portion L for the purpose described further
15 on.

A' denotes a sliding bolt on the frame K, having a spring B' arranged thereon and confined between the brace member M of the frame K and a suitably-secured washer C',
20 the washer being located on the bolt sufficiently below its upper end, permitting suitable projection thereof through an opening in the flattened portion L of the frame K. On the upper surface of the flattened portion
25 just mentioned I arrange a stop device D' at one side of the bolt-opening therethrough and affix a yielding contact-plate E' upon said flattened portion, locating same on the opposite side of said bolt-opening.

30 The lower end of the sliding bolt A is fashioned into any suitable handle F', whereby to facilitate its manual retraction or adjustment from locking action, described further on.

35 In further carrying out my invention I employ any suitable electric supply, a battery being illustrated in my drawings and the same shown in circuit with the magnets S through + and - wires, which latter lead
40 in closed circuit from the place of danger—as, for instance, any suitable normally closed switch (indicated at G') adapted to be opened by action of a float upon dangerous floods in a river or other streams of water or a break
45 being produced in the line-wires + - by washing away of a bridge (indicated at H') or from its otherwise being rendered dangerous. It will be understood that the line-wires just described, or "target-circuit," as
50 same may be termed, should be arranged crossing the bridge H', adapted to be broken through rupture of its structure.

It is further contemplated extending the target-circuit wires along portions of the
55 road (indicated at I') where land-slides are liable to occur, the wires being supported adapted to be broken by weight of the falling rock, earth, &c., liable to produce dangerous obstructions to travel.

60 J' denotes suitable electric-battery supply, whose circuit from one pole thereof may be traced along the wire 1, extending up one light-support R, thence down same by the wire 2, with the latter extending to and up
65 the other light-support R, and then there-

down, ending with a wire 3, leading to a binding-post K' on the conductive frame K. The other pole of the battery is placed in circuit with the target-shaft socket G by a wire 4.

70 The construction and arrangement of my improved signal will be understood from the above description. In its use the arm J is adjusted from its full-line position to position indicated by dotted lines in Fig. 2,
75 whereat it is held through locking engagement of the rod U, the latter being retained into shoved-up adjustment by means of the energized magnets S and operation of their vibrator or armature T.

80 According to my invention when the arm J is adjusted to position indicated by dotted lines and locked thereat, as above described, the target displays "safety" and will be so retained so long as closed circuit is maintained in the line-circuit indicated by the
85 characters + -. Upon a break being produced in the line-circuit the magnets will be deenergized and the rod U pulled down from locking engagement with the arm J by action
90 of the spring W. The arm J being thus freed, it is apparent that tension of the spring I at the lower end of the shaft F will impart rotation of the shaft, swinging the arm J from position over the frame O to the
95 position indicated by full lines over the frame K, its adjustment being gaged by the stop device D' on the frame K and conductive contact insured through action of the spring-plate E'. (See Fig. 4.) Now with the arm
100 J adjusted as just described the target will display "danger," and during continuance of danger display of the target the lights will be in closed circuit with the battery J', traced by the numerals 1 2 3, binding-post K',
105 frame K, the arm J, target-shaft F, the socket G, and the wire 4.

My invention is peculiar in that the target is locked at safety display during continuance of closed circuit through the line-wire
110 + - and also in being adapted upon a break being produced in the line-wires for automatic action, adjusting the target to danger display, whereat it is locked and insured against being tampered with by unauthorized persons. It is further peculiar in
115 the display of signal-lights retained at display during continuance of danger display of the target or semaphore device.

What I claim is—

120 1. A signal employing a signal-device shaft, apparatus and closed electric circuit means locking same at safety, means exerting a constant readjusting stress or tension on the signal-shaft, while the same is
125 held at safety, whereby to readjust said shaft when released by a break in the said circuit, and means retaining the signal at danger against the shifting thereof to safety.
2. A signal employing apparatus and
130

closed electric-circuit means, locking same at safety, means adapted to shift the signal to danger, upon a break being produced in said circuit, means retaining the signal at danger, electric lights with suitable circuit having closing means therein, the closing means being adapted for cutting in the lights, conjointly with shifting action of the signal to danger, and means retaining closure of the light-circuit, during continuance of danger display of the signal.

3. A signal employing a suitable case, having a door, adapted to be locked closed, a movable shaft extending from within the case and projecting therefrom, a signal device on the outer end of the shaft, a bearing within the case providing support for said shaft, means adapted to move or adjust the shaft upon release thereof, means adapted to lock the signal-shaft at safety, apparatus and electric circuits with current-supply, adapted during continued closure of the electric circuits to hold the signal-shaft at safety, and means adapted to lock the signal-shaft when adjusted to danger position, the combined apparatus consisting of the shaft-support, means for adjusting it, the locking means and means wherethrough the locking means is operated, being located in the case.

4. A signal employing a suitable case, having a door, adapted to be locked, a movable shaft extending from within the case and projecting therefrom, a signal device on the outer end of the shaft, a bearing within the case, providing support for said shaft, means adapted to move or adjust the shaft upon release thereof, means adapted to lock the signal-shaft at safety, apparatus and electric

circuits with current-supply, adapted during continued closure of the electric circuits, to hold the signal-shaft at safety, means adapted to lock the signal-shaft when adjusted to danger position, electric lights adapted for display through suitable windows in the case, circuits and current-supply for the lights, and means adapted to effect closure of the light-circuits, and retaining closure thereof during continued danger display of the signal device.

5. The combination in a signal, of a suitable case, having a window in its side wall, a rotatable shaft projecting from within the case and provided at its outer end with a signal device, a transversely-disposed arm on the shaft, means for locking said arm holding the shaft and signal device at safety, means employing electromagnets in circuit with suitable current-supply, wherethrough the arm-locking means is retained, holding same at safety position during continued closed circuit of the electromagnets, means for releasing the signal-shaft upon a break being produced in the electromagnet-circuit, means for rotating the signal-shaft to danger upon release thereof, means for locking the signal-shaft at danger, electric lights with circuits and current-supply, and means cutting in the lights upon shifting action of the signal-shaft to danger, the light-cutting-in means being adapted to maintain closure of their circuit, during danger display of the signal.

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Witnesses:

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