Dec. 9, 1941. M. L. PHILIPS 2,265,309

HIGH WATER SIGNALING DEVICE

Filed March 1, 1939 2 Sheets-Sheet 1

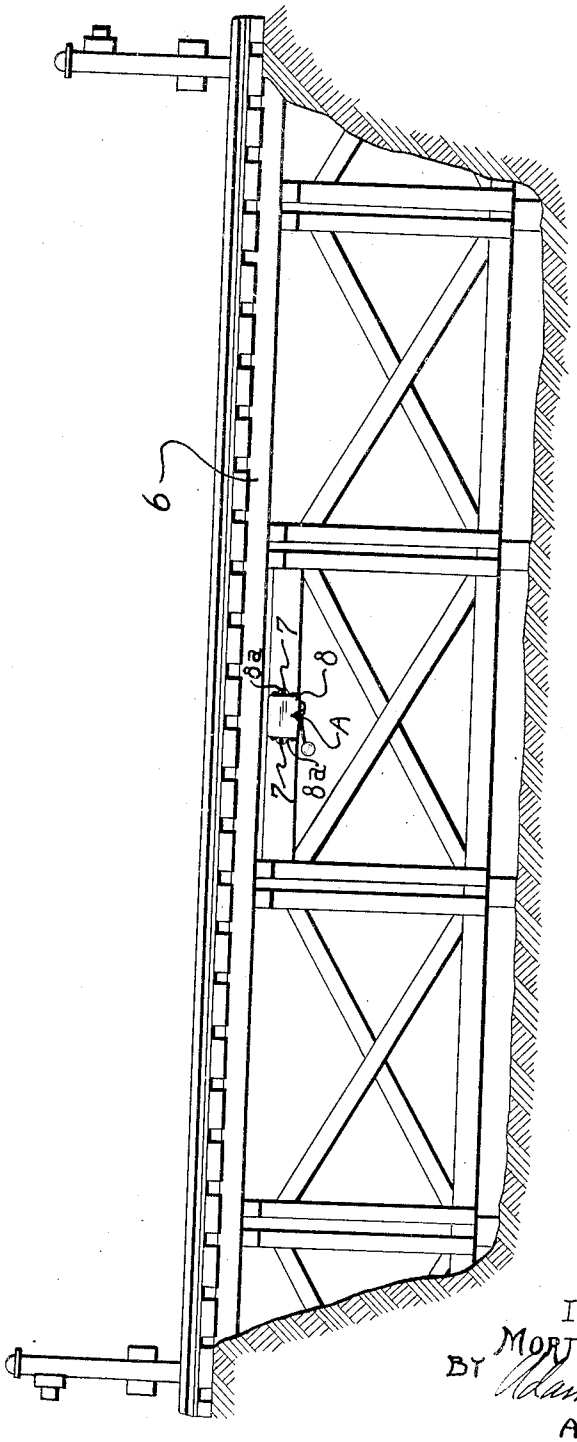


Fig. 1.

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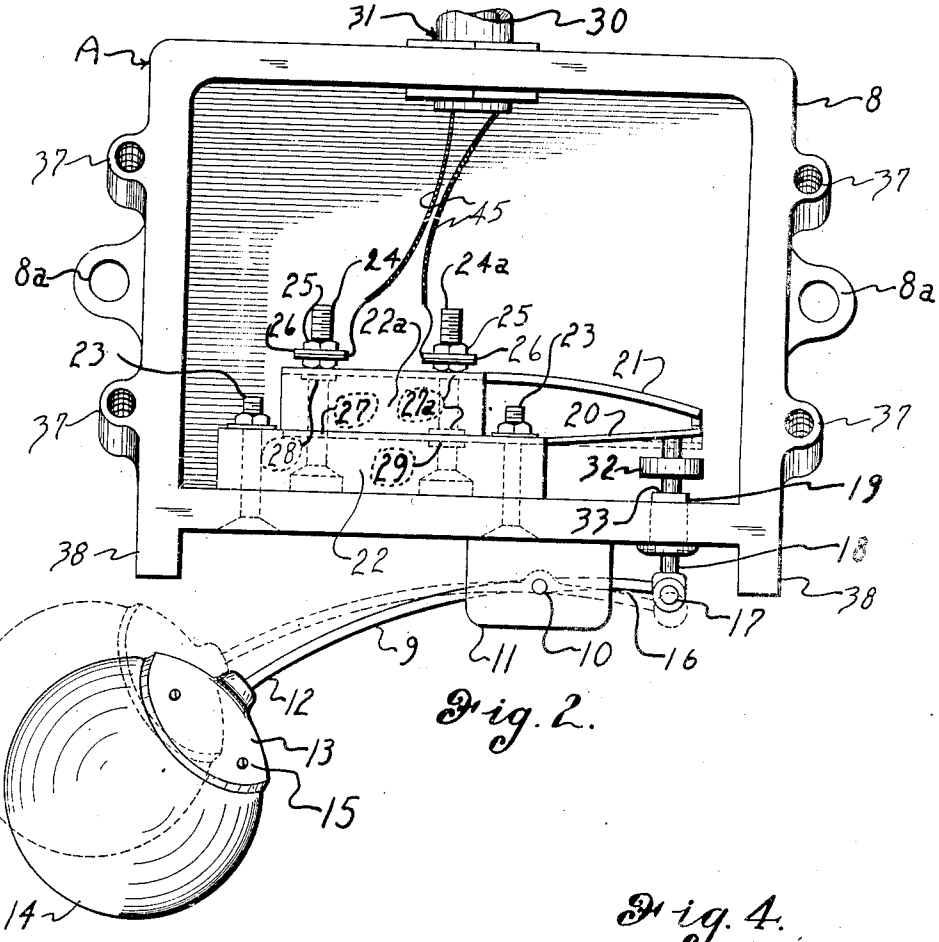


Fig. 2.

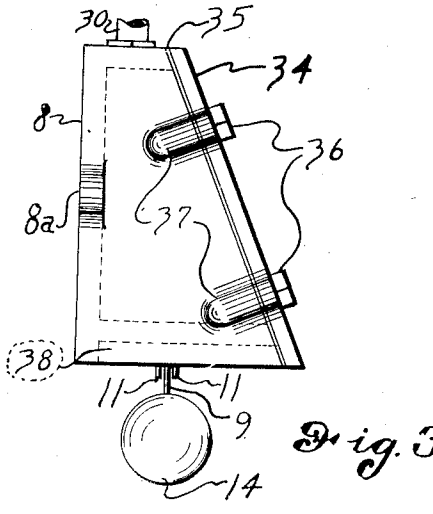
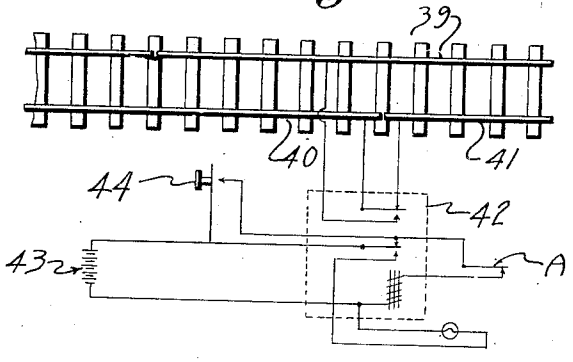


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE

2,265,309

HIGH WATER SIGNALING DEVICE

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Application March 1, 1939, Serial No. 259,093

1 Claim. (Cl. 200—84)

This invention presents new and useful improvements in high water signaling devices for use in connection with bridges, dams, levees, and similar structures.

The principal object of this invention is to provide a device having means for actuating a visual or audible signal indicating a dangerous high level of the water at a bridge or other place where such a device may be located.

Another object of this invention is to provide a float operated high water signalling device consisting of a housing having secured thereto an externally pivotally connected lever, said lever having attached at one end a float and at the other end a pivotally connected plunger for operating a circuit breaker enclosed within the aforementioned housing.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming a part of this specification wherein like characters denote corresponding parts in the several views and in which:

Figure 1 is a view in elevation of a conventional railroad bridge showing the installation of the controlling means thereon;

Figure 2 is an enlarged view in elevation of the housing and actuating elements of the invention, the cover plate of the housing being removed, and showing in full lines the normal position of the operative elements, and in dotted lines the position of the said elements during high water conditions;

Figure 3 is an end view of the housing with the pendant float and operating lever;

Figure 4 is a schematic diagram of the electrical elements and wiring of the invention and related equipment, as connected to a bonded railroad track.

In the drawings reference numeral **6** denotes a conventional bridge structure having the invention secured thereto, the invention being represented generally at A, and including the housing **8** with ears **8a** through which bolts or screws **7** are passed, said housing being positioned upon the bridge at the normal high water mark at that point.

A lever **9**, curving slightly downward in a vertical plane is pivotally secured by a medially positioned pin **10** between spaced flanges **11**, said flanges being preferably integrally constructed with and extended downwardly from the bottom of the housing.

Attached to the outer end **12** of the lever by welding or the like is the arcuate plate **13** having secured thereto the float **14** by means of the screws or bolts **15**, said float being preferably of a hollow metallic construction, although cork or other buoyant material may be used. Pivotally attached to the upper or inner end **16** of the lever, by the pin **17**, is the plunger **18**, said plunger being slidably operable in and through the bushing **19** leading through the bottom of the housing **8**. A pair of spaced and resilient contact arms **20** and **21** mounted upon and extended from the superimposed insulation blocks **22**—**22a** have their outer free ends extended in vertical alignment and in spaced relation immediately over the inner end of the plunger **18**, whereby this plunger on its upward movement is adapted to force the lower contact arm **20** to engage the upper contact arm **21** when the float is in the lower or normal position. These contact arms **20** and **21** are electrically connected to terminals **24**—**24a** at the points **27**—**27a** respectively, there being provided apertured insulating bushings **28** and **29** upon the terminals for the prevention of a short circuit between the contact arms. The aforementioned terminals, having the binding nuts **25** and washers **26** for engaging the lead wires **45**, are inserted upwardly through the insulation blocks **22**—**22a** thereby serving to hold the blocks **22**—**22a** together as well as to hold the contact arms in position, the counter-sunk terminal heads being recessed within the block **22** so as to prevent the terminals from short circuiting upon the housing.

The blocks **22**—**22a** are secured to the base of the housing by the bolts **23**.

A conduit **30** is secured to the upper side of the housing as shown at **31** for the reception of the lead in wires **45**, this opening being then sealed to prevent the entrance of water.

Normally, and when the water flowing under the bridge is at low stage, the float **14** will fall to its lower position shown in full lines in Figure 2, thus forcing the plunger **18** upward and closing the circuit through the meeting of the contacts **20**—**21**. On the other hand, during a high water stage the float is in the raised position as shown by the broken lines in Figure 2, and the plunger **18** is then lowered, causing a sealing ring **32** secured thereto to seat upon the upper surface **33** of the bushing **19**. As both the ring and bushing have the contacting surfaces nicely machined, a water tight fitting is thereby formed between them, thereby excluding water from the housing.

A cover plate **34** having a gasket **35** thereon is secured to the housing by means of the bolts **36** threadably engaged by the lugs **37** extended from the sides of the housing.

Drip flanges **38** are provided for at the base of the housing to prevent the rusting and corrosion of said base.

In Figure 4 a specific example of the application of this invention is illustrated, the housing **8** and associated elements being incorporated at the point marked A. Electrical energy is preferably supplied to the invention A, and switch **42** by means of batteries **43**, although the invention and switch could be energized directly from the railroad track through suitable resistances. A manually controlled switch **44** is provided for resetting the electrically operated switch **42**.

In use the invention is secured to a bridge or structure subject to be endangered by high water and connected to either an audible or visual signal through related equipment as described. Under normal conditions a closed circuit is maintained by the invention, thereby holding an electrically operated switch in the open position, but upon high water striking the float and raising same the plunger is lowered permitting the contact arms to spread apart and thereby breaking the circuit causing the electrically operated switch to assume a closed position and thereby setting off an alarm signal.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention within the scope of the appended claim.

What I claim is:

In a device of the kind described, a closed housing, a pair of superposed insulation blocks mounted within the housing, a pair of resilient, electrical contact arms extended from said insulation blocks in a superposed relation, an end of one arm being inserted between the blocks and an end of the other arm being laid atop the upper block, terminals extended through the blocks and through said arm ends apertured for the purpose, said terminals serving to hold the blocks together and being connected one to the lower contact arm and one to the other contact arm, and otherwise being insulated, the outer free ends of said contact arms being extended in vertical alignment and normally standing in spaced relation to open an electrical circuit, a plunger extended slidably up through the bottom of the housing beneath the free end of the lower contact arm for pushing that end upward into contact with the aligned end of the upper contact arm for closing the circuit, and means controlled by a weighted float for forcing the plunger upward by its weight, to normally close the electrical circuit by forcing the contact arms together, said float operating as such in high water to reverse said action by permitting said contact arms to separate, for operating an electrically connected signal.

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