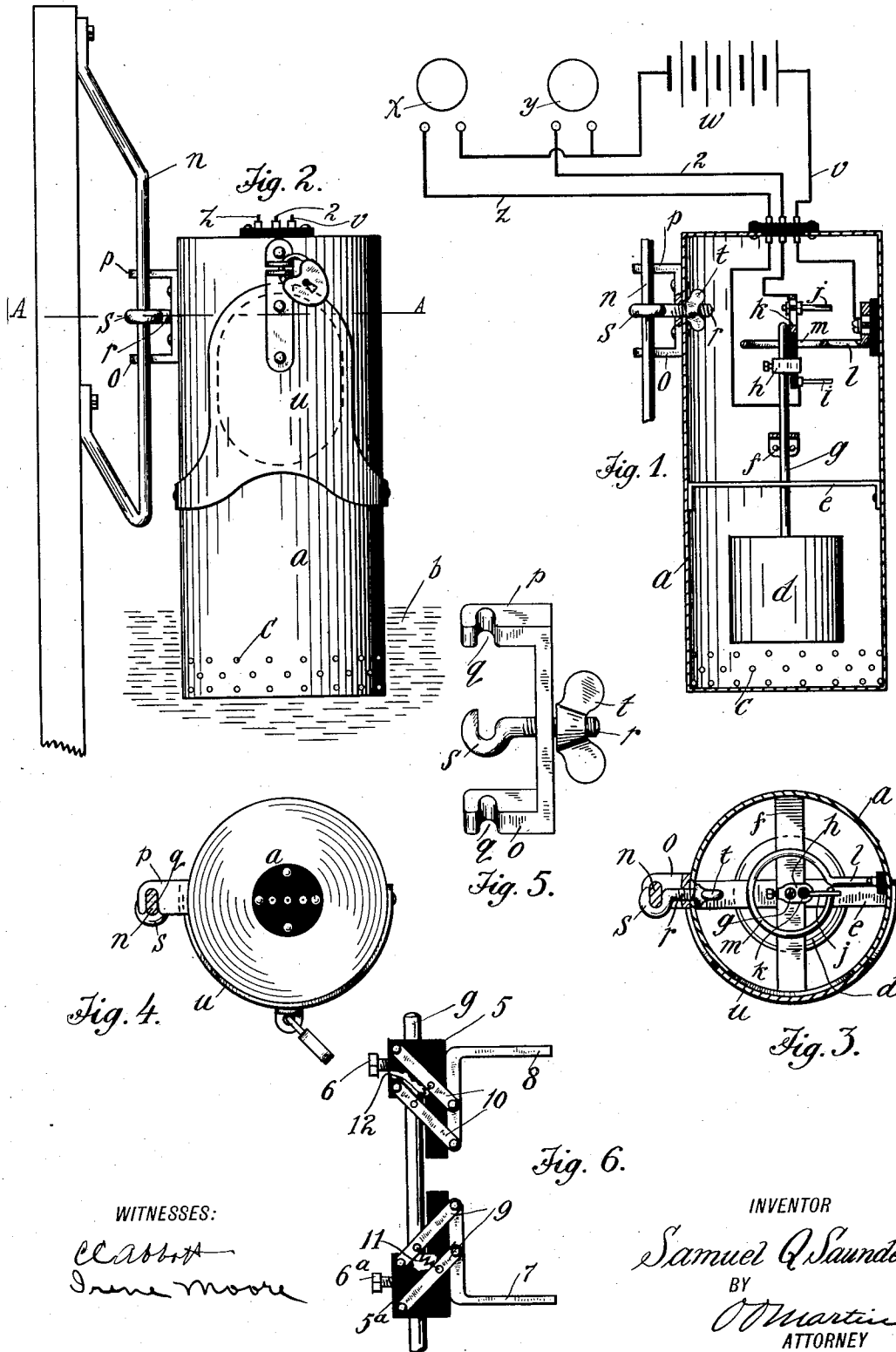


S. Q. SAUNDERS.
 AUTOMATIC WATER LEVEL ALARM.
 APPLICATION FILED NOV. 1, 1911.

1,056,946.

Patented Mar. 25, 1913.



UNITED STATES PATENT OFFICE.

SAMUEL Q. SAUNDERS, OF NEW BRIDGE, OREGON.

AUTOMATIC WATER-LEVEL ALARM.

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Specification of Letters Patent.

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Application filed November 1, 1911. Serial No. 658,005.

To all whom it may concern:

Be it known that I, SAMUEL Q. SAUNDERS, a citizen of the United States, residing at New Bridge, Baker county, State of Oregon, have invented certain new and useful Improvements in Automatic Water-Level Alarms, of which the following is a specification.

My invention relates to means for automatically indicating the height of the water level in an irrigation ditch, canal or other body of water in which it is desired to retain a certain height of water.

The object of my invention is to provide a device of the character mentioned, which will cause an alarm to be sounded or an alarm signal to appear, when the water level reaches a predetermined maximum or minimum.

More specifically my aim is to provide a signal apparatus which can be immersed directly into the body of water it serves, and which, through the medium of an electric circuit, communicates with suitable signals.

To this end my invention consists in a vertically adjustable casing, in which is slidingly suspended a buoyant member operated by the rise and fall of the water level to close the electrical circuits which control the alarm signal.

The further objects and features of my invention are clearly set forth in the following description and illustrated in the appended drawing, of which:

Figure 1 is a sectional side elevation showing my device immersed into a body of water as in practice, and also includes a diagram of the electrical connections between the device and the alarm signal, Fig. 2 is a side elevation of my device as it appears inclosed in a sealed casing, Fig. 3 is a sectional plan view taken substantially on line A—A of Fig. 2, Fig. 4 represents a plan view of the device, Fig. 5 illustrates on a larger scale the parts of my device by means of which the casing is adjustably fixed on its support, and Fig. 6 shows other details of construction.

Casing *a* is shown immersed into a body of water *b* and is at the bottom provided with perforations *c*, through which said water is free to enter. A float *d*, slidingly mounted in suitable bearings *e*, *f*, of the casing, rides on the water entering the casing as described, and is made with a vertically disposed stem *g*, on which is adjustably

fixed a bracket *h* carrying contact arms *i*, *j*. Bar *k*, on which said contact arms are mounted, is preferably made of insulating material, or may be made of metal, in which case both of the contact arms must be insulated from the bar. A bracket *l*, made with a loop *m*, is secured on and insulated from the inner wall of the casing, and so positioned relative to stem *g*, that loop *m* encompasses said stem.

It is noticed that the perforations *c* are relatively very small, partly for the purpose of preventing foreign matter from entering the casing and thereby obstructing the contact mechanism, and partly in order to prevent a person from tampering with said mechanism.

As already stated, casing *a* is vertically adjustable on its support, and in Fig. 1, I show a means of accomplishing this. The support in this case takes the shape of a rod *n*, which is supposed to be rigidly mounted on some stationary object near the water level. On the side of the casing is fixed a bracket made with projecting members *o*, *p*, and the latter are provided with notches *q*, adapted to engage rod *n*. A screw *r*, centrally located between members *o*, *p*, extends through the wall of the casing and its outer end is made with a hook-shaped head *s*, which is caused to engage rod *n*, whereupon a nut *t*, engaging the threads of screw *r* inside the casing, is operated to clamp the casing tightly on the rod.

The operation of my device is as follows: Casing *a* is first secured to rod *n* in the desired vertical relation to the water level. Contact arms *i*, *j* are next vertically adjusted on stem *g* to the desired position relative to loop *m*, and in order to facilitate this adjustment, one or both contact arms are independently adjustable on bar *k*, as indicated in Fig. 1, by mounting arm *j* in an elongated perforation of said bar. Bracket *l* is preferably also vertically adjustable in the same manner, as shown in the figure. The casing is then sealed by closing and locking a suitable door or cover *u*. Assuming in the first instance the water level to be as shown in Fig. 1, and in the act of rising. Contact arm *i* then approaches and finally touches loop *m*, which by wire *v* is electrically connected with a battery *w*, from which runs a wire to bells *x*, *y*. From bell *x* extends a wire *z* to contact *i*, while bell *y* is electrically connected with contact arm *j*

through wire 2. When therefore contact arm *i* touches loop *m*, a circuit is closed between battery *w* and bell *x*, causing said bell to sound. In a similar manner bell *y* is actuated when contact arm *j* touches the loop on the dropping of the water level. The alarm signals, whether bells, as shown, are used, or lamps or buzzers are employed, instantly notify the operator that a limit has been reached, whereupon he is required to regulate the water level as conditions permit. While it is most desirable to have a separate signal for indicating each extreme, it is obvious that one signal can be dispensed with by cross-connecting contact arms *i*, *j*. The water level rises and contact arm *i* touches loop *m*, but if the operator does not immediately respond to the alarm given, and the water continues to rise, the pressure on arm *i* and loop *k* may become great enough to injure said parts unless they were made unduly heavy. To eliminate this danger I may yieldingly mount said arms as illustrated in Fig. 6, where 5 and 5^a represent frames made of insulating material and adjustably fixed on rod *g* by screws 6 and 6^a. The contact arms 7, 8, are journaled on said frames by arms 9, 10, and retained in position by springs 11, 12. When arm 7 touches loop *m*, the arm is free to yield against the tension of spring 11 and the float can thus continue to rise until the operator receives the signal without injuring the working parts of the device.

My device lends itself as readily to other purposes. It may, for instance, be placed in the bottom of a ship, and serve to display an alarm signal when water, due to leakage, reaches a certain height.

My device may also be installed in a water tank, and the battery circuit utilized to control a power circuit operatively connected with the feed pump of said tank.

Having thus described my invention, I claim:

1. In a device of the character described, the combination with an electric circuit, a pair of signals in the said circuit, and a contact device operated by the rise and fall of the water to actuate either signal; of a sealed casing encompassing said contact device; and means for detachably mounting

said casing for vertical adjustment, said means controlled from the interior of the casing, so that the position of the casing cannot be disturbed from the outside after the casing is sealed.

2. In a device of the character described, the combination with an electric circuit, a pair of signals in the said circuit, and a contact device operated by the rise and fall of the water to actuate said signals; of a sealed casing encompassing said contact device, said casing provided with a plurality of small apertures near the bottom for the purpose of admitting the water into the casing; and means for detachably mounting said casing for vertical adjustment, said means controlled from the interior of the casing:

3. In a device of the character described, the combination with an electric circuit, a pair of signals in the said circuit, and a contact device operated by the rise and fall of the water to actuate either signal; of a sealed casing encompassing said contact device; a vertical support fixed in close proximity to the water level; means on the casing for engaging said support for the purpose of clamping the casing in adjusted position on the said support; said means operative from the interior of the casing only

4. In a device of the character described, the combination with an electric circuit, a pair of signals in the said circuit, and a contact device operated by the rise and fall of the water to actuate said signals; of a sealed casing encompassing said contact device; a vertical support fixed in close proximity to the water level; a recessed bracket fixed on said casing for engagement with said support from one side; a recessed bolt for engaging said support from the opposite side, said bolt projecting through the wall of the casing; and a nut engaging the projecting end of the said bolt, said nut serving to draw the aforesaid recessed members tightly on to the said vertical support.

In testimony whereof I affix my signature in the presence of two witnesses.

SAMUEL Q. SAUNDERS.

Witnesses:

K. F. DOUGHTY,
IRENE MOORE.