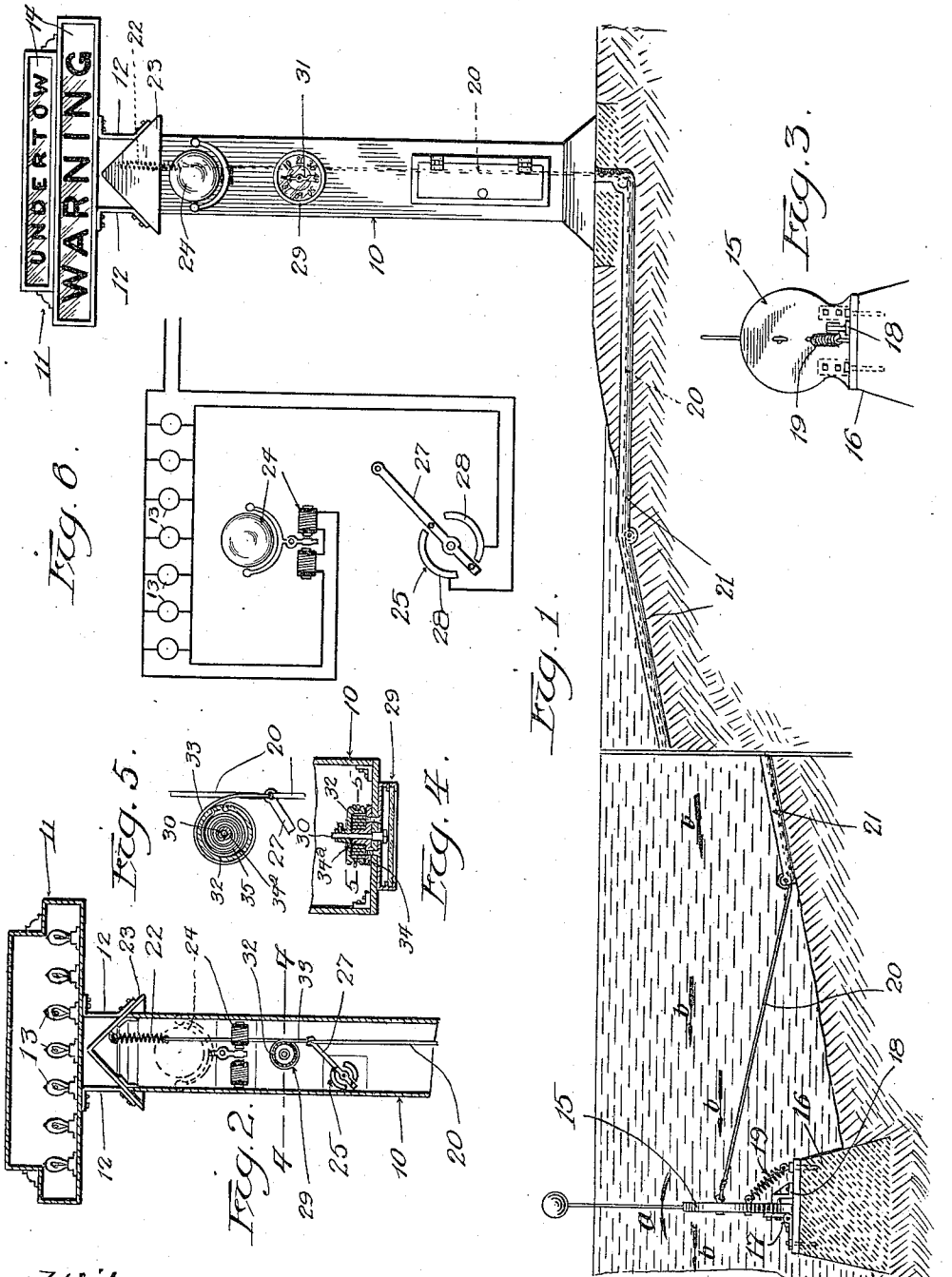
M. M. VOORHEES.

UNDERTOW WARNER INDICATOR REGISTER.

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1,153,653.

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UNDERTOW-WARNER INDICATOR-REGISTER.

1,153,653. Specification of Letters Patent. Patented Sept. 14, 1915.

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To all whom it may concern:

Be it known that I, MARTIN M. VOORHEES, a citizen of the United States, and a resident of Oak Park, county of Cook, and State of Illinois, have invented an Undertow-Warner Indicator-Register, of which the following is declared to be a full, clear, and exact description.

This invention relates to life saving apparatus, and its primary object is to provide means for warning bathers of the presence of undertow, at bathing beaches, and also to register the strength or force of the undertow at any given time.

To such ends, this invention consists in means acted upon by the out-going, moving water and coöperating with signal mechanism to set off an alarm when the force of the undertow exceeds a predetermined power.

It consists further in means located in the water and actuated by the undertow thereof, in combination with a gage to indicate the strength or power of the undertow at all times.

It consists further in means actuated by the movement of the water, in combination with a sign, and means for illuminating the sign, controlled by the action of the means located in the water.

It further consists in the other novel features hereinafter fully set forth in the following specification, and particularly pointed out in the appended claims.

The invention is clearly illustrated in the drawings furnished herewith, in which:

Figure 1 is a side elevation of an apparatus embodying a simple form of the present invention, and showing the same located at or near the shore line of a body of water. Fig. 2 is a view, partly in side elevation and partly in vertical section, showing certain portions within the main post or tower. Fig. 3 is a front view of a certain actuating device used in the apparatus. Fig. 4 is a detail, horizontal section taken on line 4—4 of Fig. 2. Fig. 5 is a detail vertical section taken on line 5—5 of Fig. 4, and Fig. 6 is a diagramatic view, illustrating the wiring for the electrically operated portions of the apparatus.

Referring to said drawings, which illustrates a simple form of the invention, the reference number, 10, designates a post or tower, standard or the like, which may be placed upon the ground somewhere near the water's edge or shore line. Preferably said post is hollow to receive certain operating parts of the device, and said post carries a sign, 11, here shown as supported above the top thereof by brackets, 12. Preferably the sign is in the form of an illuminated sign, and is here shown in the form of a box-like structure, containing a number of incandescent lamps, 13, and having one or more glass fronts, 14, bearing an inscription indicating the presence of an undertow. Normally, said incandescent electric lights are extinguished, but when the pulling force of the undertow reaches a certain predetermined power, an electric current is passed through said lamps, and the sign is thus illuminated.

An actuating member, 15, is submerged in the water at a suitable distance from the shore line, for instance where the depth of the water would be dangerous for unskilled persons to venture into when there is any marked degree of undertow, and in the form of the invention illustrated in the drawing, said actuating device comprises a circular plate hingedly secured upon a support, 16, as for instance by hinges, 17, and arranged to swing toward or away from said post, 10. A stop, 18, limits its movement in one direction and a spring, 19, secured to said actuating device and support, 16, operates to yieldingly hold said actuating device against the stop and to yieldingly resist the effort on the part of the moving water of the undertow to swing it in the direction of the arrow *a*, in Fig. 1. Secured to and leading from said actuating device is a signal operating element, here shown as comprising a cable, chain or other like connecting medium, 20, which may lead to and through a pipe or tube, 21, which extends back to the post or tower, 10; said cable is thereby connected to said post or tower into which it extends, and is secured at its extreme upper end to a coiled tension spring, 22, secured to the roof portion, 23, of the post. It is obvious that when the water flows in the direction of the arrow, *b*, in Fig. 1, the effect thereof will be to swing the actuating device, 15, in the direction of the arrow, *a*, and against the tension of the spring, 19, and inasmuch as said cable is connected to and operates a switch for turning the current on and off from the illumi-

nating sign, an electric gong, and a gage, said devices will be set in motion by the out-going action of the water, as will be hereinafter set forth.

An electric bell or gong, 24, is supported by the post and its magnets may be in circuit with the lamp circuit, as clearly indicated in Fig. 6. Said circuit is controlled by a switch, 25, secured within the post and having an operating handle, 27, connected to the cable or chain, 20, which extends to the actuating device, 15. Normally said circuit is broken, but whenever the cable or chain, 20, is drawn downward, contact is made between the handle 27 and the semi-circular contact pieces, 28, of said switch, whereupon the circuit is closed through said incandescent electric lamps and electric bell or gong, 24, and said circuit remains closed as long as there is any undertow present having a force or power above a certain predetermined point.

A gage, 29, for indicating the pull or force of the undertow is provided and said gage is secured upon a wall of the post and may be of any suitable form. It is here shown as comprising an arbor, 30, having a pointer, 31, upon one end and secured to a drum 32, around which is wrapped one or more turns of a cord, cable, or other connecting medium, 33, the other end of which is secured to the main cable, 20. Said arbor, 30, extends through a hollow boss, 34^a, of a stationarily supported plate, 34, and a volute spring, 35, is secured to said boss and drum, 32, for turning the pointer back toward the zero mark on the dial of the gage. The arrangement is such that when the main cable, 20, is pulled downward and forward by the actuating device, 15, the cord, 33, is partially unwrapped from the drum, 32, thus turning it and the arbor in the hollow boss and consequently moving the pointer around the face of the dial.

In the operation of the device, electricity is supplied to the electrical elements thereof from any suitable source of supply, and under normal conditions the sign remains dark, the gong silent, and the gage registers no undertow present. The presence of an undertow causes the actuating devices, 15, to be swung away from the land side and in the direction of the arrow, *a*, against the action of the spring, 19; the main cable, 20, is thereby drawn forward and downward, thus closing the switch, 25, causing the incandescent electric lamps to be illuminated, and causing the electric gong to ring. At the same time the downward movement of the cable, 20, actuates the gage, 29, and the latter indicates the pull or force of the undertow present. Persons hearing the gong ring or seeing the sign illuminated are thereby warned against remaining in the water because of the presence of the dangerous undertow, and attendants, by observing the force thereof may also warn and command the bathers to withdraw from the water until the volume or velocity diminishes to a certain point indicated on the dial of the gage. By observing the gage at stated periods, a record may be kept of the presence, absence and strength or force of undertow.

More or less variation of the exact details of construction are possible without departing from the spirit of this invention, and I desire, therefore, not to limit myself to said details of construction and arrangement, shown and described, but intend in the following claims to point out all of the invention disclosed herein.

I claim as new and desire to secure by Letters Patent:

1. An apparatus of the character described comprising a submerged actuating element operated by undertow, and a signaling device controlled by said actuating element.

2. An apparatus of the character described comprising a submerged actuating element operated by undertow, and a signaling device controlled thereby and having an electric gong for sounding an alarm.

3. An apparatus of the character described comprising a submerged signal actuating element and a remotely located signaling means, controlled by said actuating element.

4. An apparatus of the character described comprising a submerged actuating element and signaling means located on the shore, and a mechanical element connecting said actuating element with said signaling means.

5. An apparatus of the character described comprising a submerged actuating element having a spring for yieldingly holding it against undertow movement of water, an electric gong and support therefor, and an electric switch for making and breaking the circuit of said electric gong, and operated by said actuating element.

6. An apparatus of the character described comprising a submerged actuating element, a gage for indicating the force of undertow, and connecting means between said actuating device and gage for operatively connecting it therewith.

7. An apparatus of the character described comprising a submerged actuating element having a spring for yieldingly holding it against undertow movement of the water, a remotely located gage for indicating the force of said undertow, and a cable connecting said actuating device with said gage for operating the latter.

8. An apparatus of the character described comprising a submerged actuating element, a remotely located sign, illuminating means therefor, and operative connec-

tions between said actuating device and said illuminating means, for controlling the latter.

9. An apparatus of the character described comprising a submerged actuating device, a remotely located post, a warning sign carried thereby, incandescent electric lights for illuminating said sign, an electric gong located in the circuit of said electric lamps, a switch in the said circuit, and a cable connecting said actuating device with said switch for actuating the latter.

10. An apparatus of the character described comprising a submerged oscillatory actuating device, a spring for holding the same against the action of undertow, a remotely located signaling device comprising an electrically operated gong, a switch in the circuit of said gong, a spring for moving said switch to break the circuit, a cable leading from said switch to said actuating device for moving said switch against the action of said spring, and a conduit for said cable leading from the actuating device to said remotely located signaling device.

11. In a device of the character described, an undertow warning signal, having means actuated by undertow for sounding an alarm.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."