

(No Model.)

H. J. CHAPMAN.  
FOG SIGNAL.

No. 548,698.

Patented Oct. 29, 1895.

Fig. 2.

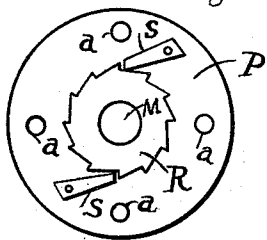


Fig. 3.

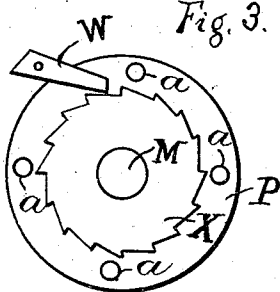


Fig. 4.

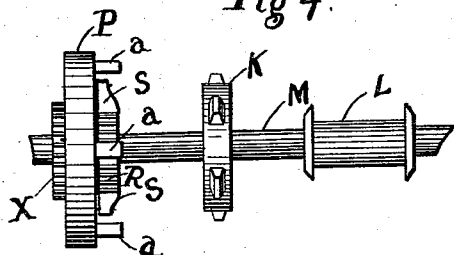
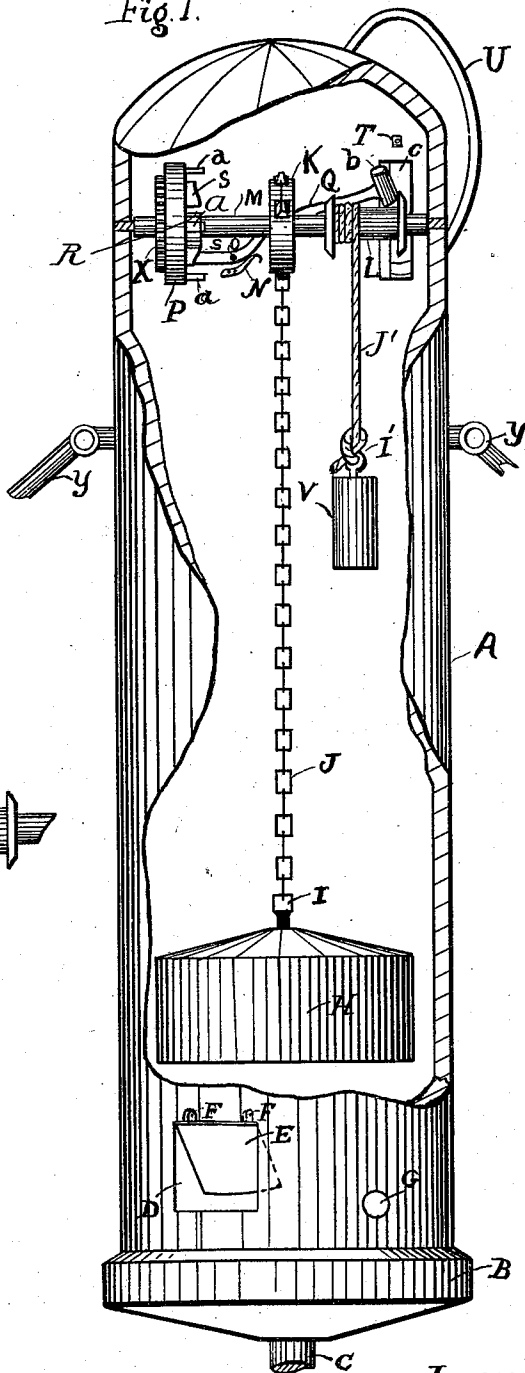


Fig. 1.



Witnesses.

Thomas D. Hemenway  
George H. Worster

Inventor:

Harry J. Chapman.

# UNITED STATES PATENT OFFICE.

HARRY J. CHAPMAN, OF BANGOR, MAINE.

## FOG-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 548,698, dated October 29, 1895.

Application filed January 8, 1894. Serial No. 496,221. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY J. CHAPMAN, a citizen of the United States, residing at Bangor, in the county of Penobscot and State of Maine, have invented a new and useful Fog-Signal Machine; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a new and useful improvement in automatic fog-alarm machines in which a bell is sounded by a mechanism actuated by a weight and a float within a hollow mast or compartment.

The object of my invention is to provide an alarm-machine as a danger warning by which a bell is struck by a hammer actuated through intervening mechanism by the rise and fall of the ocean swell or waves. I attain this object by mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation front view of my fog-alarm machine with parts of case broken away to show interior mechanism. Fig. 2 is a face view of operating-wheel. Fig. 3 is a back view of operating-wheel. Fig. 4 is a front view of axle and gear.

Referring to the drawings, in which similar letters of reference indicate corresponding parts in the several figures, A is a hollow mast or compartment standing upright in the water, closed at top and bottom, with orifices hereinafter described.

B is a step of metal fitting into a hole in the rock or obstruction, with one end of the mast A secured therein. Y Y Y are braces supporting said mast A in a vertical position.

D is an opening near the bottom of said mast below extreme low-water mark, fitted with a ball, trap, or other valve E, capable of opening only inward and of closing only outward. E is shown as a trap-valve, properly suspended by hinges F F, attached to the mast A. G is a smaller orifice either in said mast A or valve E. H is a float within said mast, weighted and preferably with a rounding top. I is a ring-bolt or other device by which a rope or chain J is attached to said float. K is a drum fixed on the axle M, set in said mast A, on which is wound the rope J.

L is a drum on axle M by which the weight

V is suspended by the rope J', with proper attachments, or said weight may be suspended by one end of said chain J and act without the intervening extra drum L and rope J'.

P is a wheel placed loose on axle M, supplied with pawls s s, engaging with the ratchet R, fixed on said axle M, and which turn said wheel P when said float H descends. W is a click fastened to said mast A and engaging with the ratchet X, cast on said wheel P, preventing the said wheel from turning backward when the float H ascends and while axle is reversed by weight V. a a a a are pins on said wheel P near the perimeter, which engage with the end of the lever Q, attached to said mast A by the pivot O. c is an opening cut in said mast A near the top, through which the end of the lever Q extends. b is a hammer on the end of said lever Q. U is a bell properly attached to the outside of said mast A over the opening c and in position to be struck by the hammer b. N is a spring properly attached to said mast A and so adjusted as to hold the lever Q up normally and cause said hammer to recoil from said bell, and thus avoid deadening the sound.

The operation of this mechanism is as follows: When the swell or wave of the ocean is passing, the water will force open the valve E and flow up into the mast A, raising the float H at the same time, the valve being of sufficient size to admit the water forced by the wave or swell in sufficient quantity to raise said float before the wave or swell has passed by. As the float H rises the weight V descends, winding up the slack of the rope J either directly or by the cord J' over the drum K; but when the wave has passed by the pressure of the water within the mast A closes the valve E over the opening D and the water slowly escapes through the orifice G made for that purpose, causing the float H to gradually descend, and the chain J, by means of the drum K, revolves the axle M, the ratchet R engages with the pawls S, S, and revolves wheel P, which trips the lever Q by means of the pins a a a a thereon, which may be of any number, and the hammer b falls on the bell U and sounds an alarm. The click W engages with the ratchet X and prevents wheel P from turning backward as the weight V descends and revolves the axle M in the op-

posite direction from that in which it turned when float H descended. The spring N holds the hammer *b* normally up off the bell, so that its resonance is not deadened.

5 It is obvious that this machine can only be operated in a position where it will be exposed to the waves and swell of the ocean. It is not claimed that the alarm will be sounded at exactly equal intervals. The number of  
10 alarms will depend on the number of pins on the wheel P and the size of the orifice G and the frequency of the waves or swell. By proper length of the mast and suspending-chain J (and J') the alternate motions of the  
15 axle M will continue, whatever the condition of the tide.

I am aware that fog-alarms and fog-signals have been invented before, such as Foster's, No. 260,962, filed July 11, 1882; Fletcher's,  
20 No. 422,928, filed March 11, 1890, and others. These are different from the machine described herein. Others still have the float outside exposed to the full force of the waves, with a rack-bar or other device communicating the motion, and this mechanism is quickly  
25 worn out or broken by the violence of the waves.

The advantage of my machine is that the float and all the mechanism are within the  
30 mast and protected from the violence of the elements, and the valve closing the opening D confines the water, which slowly escapes by the orifice G, causing the float to slowly descend, and thereby preventing violent action of the mechanism; and, on the other  
35 hand, when the float H is being raised by a wave, with whatever force or rapidity, the only power applied to the axle is the uniform weight V, which simply winds up the slack  
40 of the chain J on its drum without imparting any motion to the striking mechanism. It will be noticed that the orifice D may be left open without a valve, freely admitting the water, which will actuate the mechanism as  
45 above, and, further, reticulated material may be placed over the orifices D and G to prevent the entrance of matter other than water.

I therefore do not claim a compartment, float, weight, mechanism, and orifices, broadly,  
50 as my invention; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In combination, a hollow mast, with a

step and braces, (capable of holding it in place,) an orifice beneath low water mark, a  
55 float within said mast rising and falling with the water, a chain connecting said float with a drum fixed on an axle set in said mast, a weight attached to a cord wound on another drum fixed on said axle, said weight  
60 acting in opposition to the gravity of said float, a wheel turning loose on said axle, having pawls thereon, engaging with a ratchet fixed on said axle, a click engaging with a  
65 ratchet on said wheel so as to prevent said wheel from turning backward when said weight is descending, pins on said wheel, a lever placed on a pivot (set in said mast) so as to engage with said pins, and provided with  
70 a hammer, a bell fixed to said mast (with proper attachments) so as to be struck by the hammer; all for the purposes described.

2. In combination, a hollow mast, with a step and braces (capable of holding it in place,) an aperture in said mast beneath low water  
75 mark, a valve fitted in said aperture and capable of opening only inward, and shutting only outward, a smaller orifice in said mast, also beneath low-water mark, a float within said mast rising and falling with the water,  
80 a chain (or other flexible material) connecting said float with a drum or sprocket wheel, on an axle, set in said mast above high water mark, a weight attached to a cord wound on another drum fixed on said axle, said weight  
85 acting in opposition to the gravity of said float, a wheel turning loose on said axle and having pawls thereon, engaging with a ratchet fixed on said axle, a click attached to said mast engaging with a ratchet on said wheel,  
90 so as to prevent said wheel from turning backward when said weight descends, pins on said wheel, a lever placed on a pivot (set in said mast) so as to engage with said pins and provided with a hammer, an opening cut  
95 in the side of said mast through which said lever projects, a bell fixed by proper attachments to said mast over said opening, so as to be struck by said hammer, and a spring to hold said hammer normally off from said  
100 bell; all for the purposes described.

HARRY J. CHAPMAN.

Witnesses:

JAMES F. MALONEY,  
T. D. CHAMBERLAIN.