

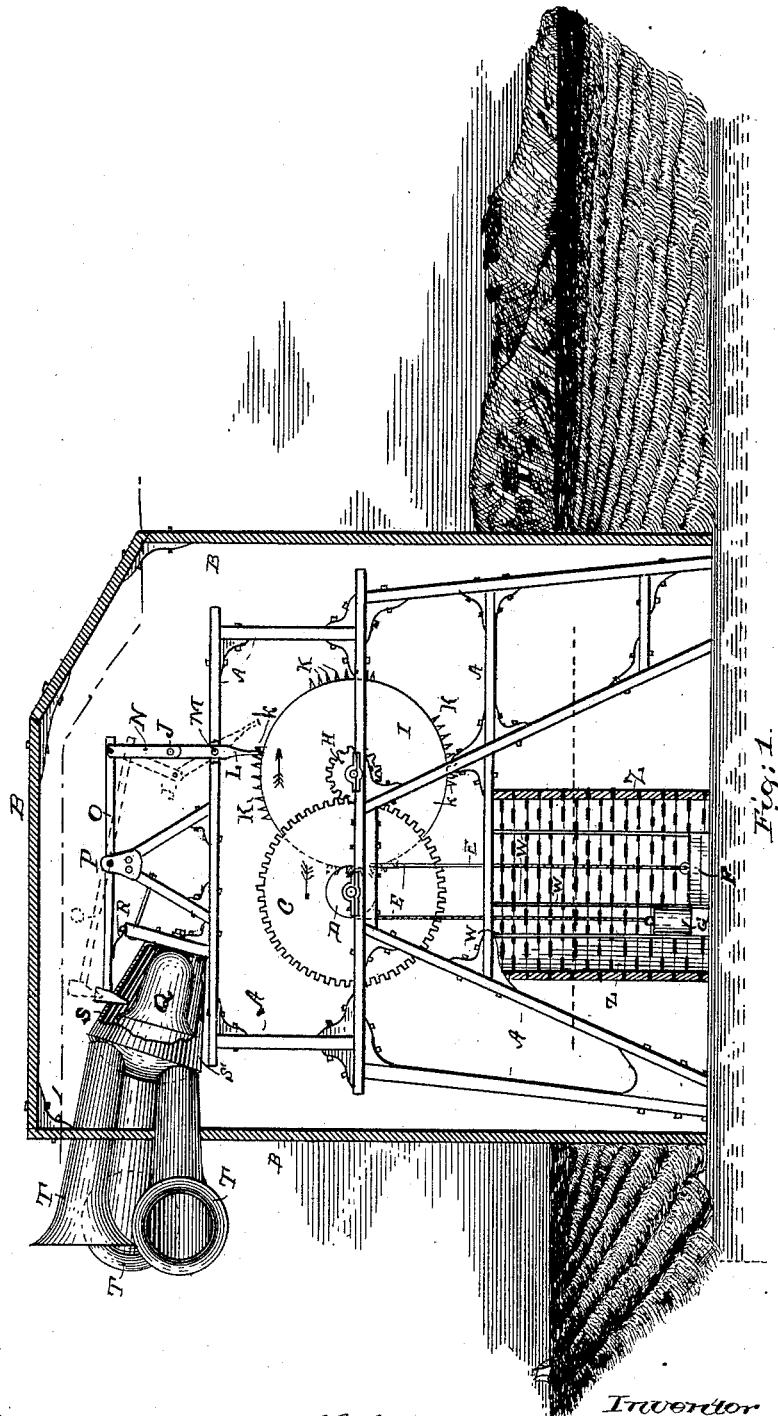
(No Model.)

2 Sheets—Sheet 1.

M. R. FLETCHER.
TIDE SIGNAL.

No. 422,928.

Patented Mar. 11, 1890.



Witnesses.
J. Hobday.
E. J. Alexander

Inventor
Moore Russell Fletcher
by A. H. Fennell
attorney

(No Model.)

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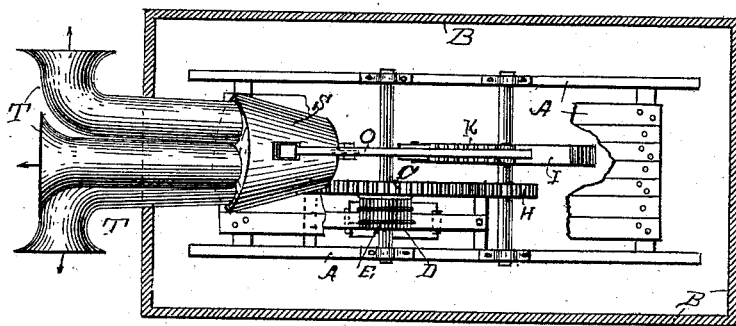


Fig. 2.

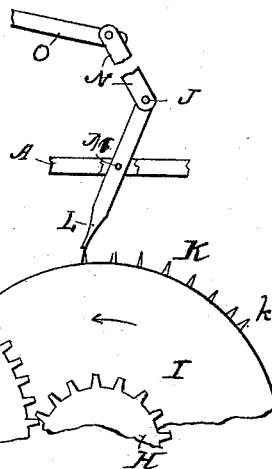


Fig. 3.

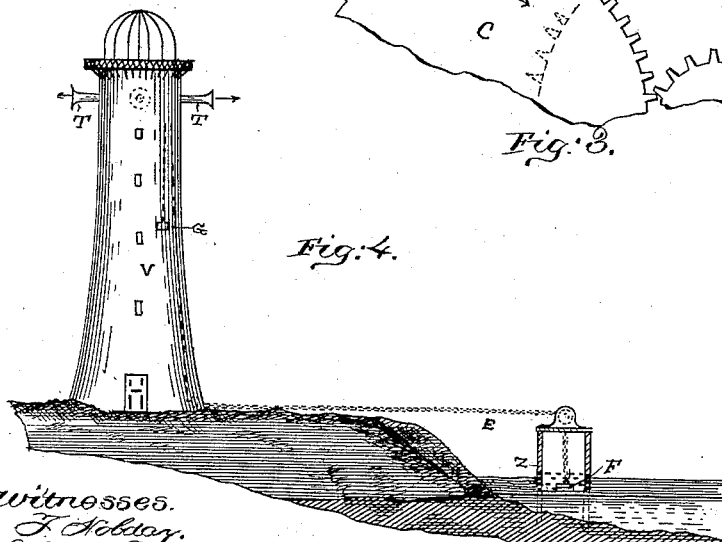


Fig. 4.

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UNITED STATES PATENT OFFICE.

MOORE RUSSELL FLETCHER, OF BOSTON, MASSACHUSETTS.

TIDE-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 422,928, dated March 11, 1890.

Application filed May 12, 1887. Serial No. 237,945. (No model.)

To all whom it may concern:

Be it known that I, MOORE RUSSELL FLETCHER, of Boston, in the county of Suffolk and State of Massachusetts, have invented
5 certain new and useful Improvements in Tide-Signals, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention is in the nature of an improvement upon that for which Letters Patent of the United States No. 13,126 were granted to me June 26, 1855, for tidal alarm. In my former patent a series of hammers mounted side by side were caused to strike a gong by
10 the action on the hammer-handles of a series of pins in the periphery of a rotating wheel, each pin striking one handle only. Said wheel was rotated and the hammers actuated by the rising and falling of the tides alternately
15 raising and lowering a float and a sinker-weight connected by ropes with a drum on the axle of said wheel.

By my present improvement I employ a single hammer only and connect the extremity of
25 its handle by a link with a pivoted lever actuated by projections on the rotating wheel, so placed as to give the strokes on the bell on a rising tide in a different manner from those on a falling tide. I partially inclose the bell
30 by a flaring resonant shield facing to seaward, and provide one or more trumpets leading therefrom for the purpose of concentrating and projecting the sound in the desired directions. I surround the float with a crib or
35 breakwater, or furnish vertical guides for the movements of the float and sinker, so that their proper action shall not be disturbed by the waves.

My present invention consists in the combinations of devices herein set forth, and specified in the appended claims.

In the drawings, Figure 1 is an elevation of apparatus embodying the several features of my invention. Fig. 2 is a top plan of the same.
45 Fig. 3 is a detail of the striking mechanism, and Fig. 4 illustrates a modification in which parts of the apparatus are applied to a light-house.

A represents in Figs. 1 and 2 a suitable
50 supporting-frame, braced and made strong to resist the action of wind and wave and located in tide-water of moderate depth.

B is a suitable inclosure, which may be provided to protect the upper portion of the frame and the apparatus thereon from the
55 effects of storms.

Somewhat above high-water mark I mount in bearings on the frame A a rotating wheel C, having on its shaft a pulley or drum D, around which is coiled a rope or chain E, provided at one end with a float F, which will
60 rise and fall with the tide, and at its opposite end with a sinker G, arranged to move in alternation with the float. It is obvious that there may be two separate ropes, one for the float and the other for the sinker, and that
65 they may be coiled on pulleys of different diameters to adjust the leverage of the weights as desired. The float F is a buoyant weight of, perhaps, six thousand pounds and the sinker
70 a dead-weight of, say, three thousand pounds, the difference being sufficient at all times to secure the vertical movement desired, and thus to actuate the striking mechanism. The weights move in guides or vertical ways, as
75 at W, Fig. 1. The sinker may be at all times above the water, so that its action will be uniform. In addition to these guides, or as a substitute for them, I surround the float with a
80 crib or breakwater Z of timbers, perforated to admit water freely, but to break the force of the waves, so that the weight shall not be drifted about or thrown out of position.

The wheel C is a gear-wheel, and is shown as in mesh with a pinion H on the shaft of
85 the striker-wheel I, which has a series of pins K in its periphery to engage with a striking-lever L, pivoted to the frame at M and connected by a joint J and link N with the end of the hammer-handle O, which is shown pivoted at P in position to strike a quick blow
90 upon the bell Q when the lever L is disengaged from each pin. A suitable spring R throws back the hammer slightly from the bell, so as not to interfere with its resonance.

The pins K are located in groups on the wheel I, so as to have intervals of silence followed by a succession of blows of the hammer upon the bell, and in order to distinguish the different localities along a given
100 coast I design to give a different number of strokes at the several points, and hence the number of pins in a group will depend on the place for which the apparatus is intended,

and sailors approaching during a fog can know by the number of blows the exact locality they have reached.

5 As illustrated in Figs. 1 and 3, I arrange also to distinguish the ebb from the flood tide by placing the two pins K at the end of a group nearer together than are the others, so that on a rising tide the first two blows come in quick succession and the others of that series at somewhat longer intervals of time, 10 while on a falling tide the first blows are at regular intervals and the last two are quicker. This order may be reversed or the arrangement otherwise modified without departing 15 from this feature of my invention, so long as the strokes automatically indicate the character of the tide. An additional gear-wheel and pinion may be introduced in the train to increase the surface speed of the striker-wheel, or such wheel be mounted direct on the 20 shaft of the drum D in lieu of the wheel C.

The bell Q is partially inclosed by a flaring shield or sounder S, designed to throw the sound generally to seaward. From the front 25 of this shield one or more trumpets T extend in the directions to which it is especially desired to project the sound. In the drawings these trumpets are shown pointing to seaward

and up and down the shore for the purpose of increasing the volume of the sound and causing it to reverberate and be heard much farther 30 than if generally diffused in the open air. The trumpets may be of the form shown or such other shape as will best direct and concentrate the sound. 35

In the modification, Fig. 4, the float is shown within the crib Z, from which the chain E extends into the light-house V, thence over pulleys to the weight G to actuate the mechanism. (Not shown.) 40

I claim as my invention—

In a tide-signal apparatus, the combination, with the bell and striking mechanism, of the shield or sounder S and trumpets T, said 45 sounder being located in rear of the bell and adapted to deflect the sound to seaward, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 28th day of 50 April, A. D. 1887.

MOORE RUSSELL FLETCHER.

Witnesses:

A. H. SPENCER,
J. C. KENNEDY.