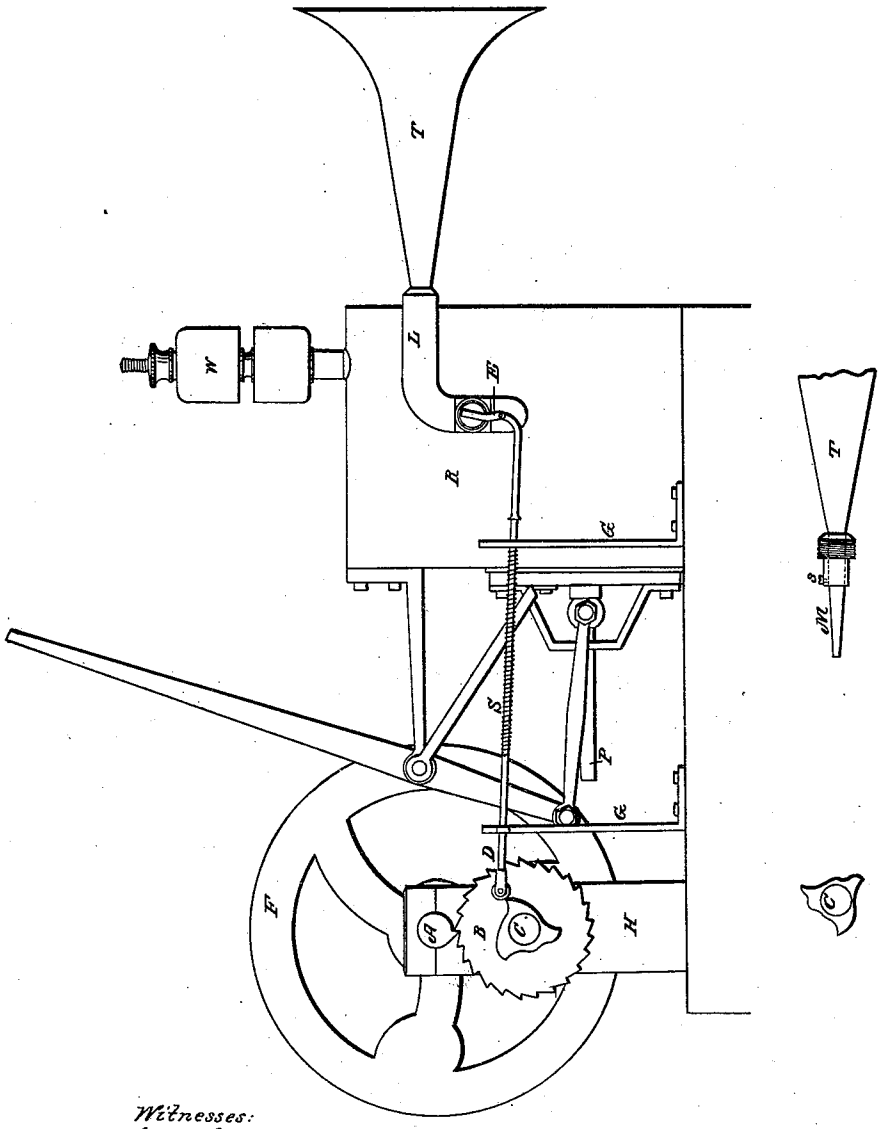
C. L. DABOLL.

Fog Alarm.

No. 28,837. Patented June 26, 1860.



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CELADON L. DABOLL, OF NEW LONDON, CONNECTICUT.

FOG-ALARM.

Specification of Letters Patent No. 28,837, dated June 26, 1860.

To all whom it may concern:

Be it known that I, CELADON L. DABOLL, of New London, in the State of Connecticut, have invented a new and Improved Mode of Making Signals by Sound, which I term "Fog-Alarms," and which are intended particularly to give warning of danger to vessels when signals by sight would be prevented by thick or foggy weather; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to letters of reference marked thereon.

The nature of my invention consists in a combination of sounds created by a whistle or trumpet which is blown by condensed air. These sounds may be made so to vary in frequency, intensity, and key, as to give intelligence of danger at a great distance, when other well-known means would fail, and may be so arranged as to communicate specific information which could not be done by any other mode heretofore known and used. When the state of the atmosphere will admit of the effectual use of sight signals they undoubtedly are preferable to any other, but in times when the vision is obscured by dense fogs or snow storms, sounds must be resorted to as a means of communicating the desired intelligence. The readiest means of doing this is by the use of bells, which by means of conventional arrangements present many of the requisites for communicating the needed intelligence. But the bell gives a very uncertain sound. The ear is not able to distinguish the direction from which it proceeds with anything like the accuracy with which it is directed to the sound of a whistle or trumpet, besides it is comparatively weak, and amid the fury of the tempest and the roar of the breakers is often times wholly undistinguishable, and thus entirely fails the mariner in the time of his greatest need. Both these objections are, to a great extent overcome by the use of the whistle and trumpet.

Whistles sounded by steam have been long used on boats and locomotives, and wherever steam power is used. Little invention would be necessary in adapting that power to the sounding of fog alarms, in a manner analogous to that now proposed by me; but to the use of steam for this purpose there are some great objections. It requires skill and care in its management in order to avoid the most serious disasters, which greatly increases the expense of such a mode of making signals, besides, fresh water could not be obtained at many places where it would be desirable to have ear signals, and without fresh water steam would be obtained with the greatest difficulty. It is often very desirable also to locate the whistle at some distance from the boiler, in which case the condensation in the long pipe which conveys the steam to the whistle is so great as to render it almost unmanageable. It cannot be made to produce reliable sounds when condensation is thus going on in the pipe through which it passes. Even the condensation of steam which takes place in the whistle and in the short pipe leading to it, is sufficient to affect sensibly the tone and efficiency of the former. By the use of condensed air for this purpose a resort to steam may be entirely avoided. The air may be condensed by any power that is sufficiently reliable and effectual. All danger of explosion may in this manner be avoided and nothing but the simplest kind of skill and caution will be required. As there is no condensation from cooling to be guarded against, the pipes which convey the air to the whistle may be of any desired length and will produce in all cases a sharp ringing sound, no matter how short or how frequent the sound may be desired to be.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and manner of operation.

In the accompanying drawings R represents a tank or reservoir for the condensed air.

P is the shaft of the piston of the air pump by which the condensation is effected. Instead of being worked by hand, as represented in the drawing, this would ordinarily be moved by the power of animals or of water, air or steam. I prefer however the use of the caloric engine, as being safe, simple, and sufficiently powerful for the purpose, and seems, in fact, precisely adapted to this use. In that case the piston of the engine, and that of the air pumps may both be worked upon the same shaft or piston rod without the interposition of any crank motion between them.

F is a fly wheel attached to the engine upon the journal of which is fixed the re-

volving pawl A, which engages with the ratchet B and thus moves the cam C a certain distance at each revolution of the fly wheel. If found necessary a brake may be placed on this ratchet wheel to prevent it moving farther than it is carried by the positive motion of the revolving pawl.

D is a stem supported by the standards G with a friction wheel at one end which is pressed against the cam C by the spiral spring S. The other end of this stem works a valve in the pipe leading from the reservoir R to the trumpet T and thus sounds may be produced upon the trumpet, which in length, intensity and frequency shall be determined by the form of the cam C. By changing the form of this cam a new series of sounds may be produced at pleasure. Each of the different stations at which these fog alarms may be located may have its own peculiar series of sounds, and thus give information which will enable the bewildered pilot to know his real geographical position. Nor will it be difficult to fix upon a conventional alphabet of sounds upon a principle analogous to that adopted by the telegraph which operates by sound, so that by the use of suitable cams or other equivalent means short sentences may be uttered by these trumpets or whistles which shall be heard high above the roar of the tempest, and at the distance of many miles. In all cases the valve used in sounding the trumpet or whistle should be placed near the throat of the instrument in order to render it more sensitive and manageable.

The pipe leading from the reservoir to the trumpet should be sufficient in size to prevent any obstruction resulting from the friction of the air in passing through it. The pipe in such cases becomes a portion of the reservoir itself and holds the condensed air ready to obey the operations of the cams with the greatest readiness and with the best effect. In this way the trumpet may be placed at any desirable distance from the main reservoir, or there may be different trumpets pointing in different directions, or in the same direction. The object in this latter case would be to increase the number, intensity and variety of the tones produced.

Figure 2 shows the manner in which the reed may be attached to the throat of the trumpet by means of the screw S so as to be easily replaced when defective, and these reeds or tongues may be made of steel, brass, German silver, or any other kind of metal or material found most preferable.

Instead of the trumpet T the whistle W may be substituted by means which requires no explanation.

I know that whistles have long been sounded by steam, for the purpose of giving signals. I am also aware that air condensed by mechanical means has in some instances been employed for machinery purposes, but there is a peculiar adaptation of condensed air to the purposes contemplated by me in the present case, which renders it something more than the mere equivalent of steam. The trumpet also, though not invented by me has a peculiar fitness for the purpose to which it is applied in this connection. Therefore

What I claim as new and desire to secure by Letters Patent, is—

1. The general method substantially as herein set forth by which air which has been mechanically condensed shall be applied to the sounding of a trumpet or whistle for the purpose of giving marine signals by sound.

2. The use of the cam C when used for the purpose of communicating a series of signals more intelligible than mere independent sounds, substantially as set forth.

3. The combination of the cam C, the stem D and valve E for the purpose of giving a variety of sounds of a trumpet or whistle for the purposes and in the manner above described.

4. The trumpet T in combination with the reservoir R and connecting pipe L when used for the purpose herein set forth.

CELADON L. DABOLL.

Witnesses:
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