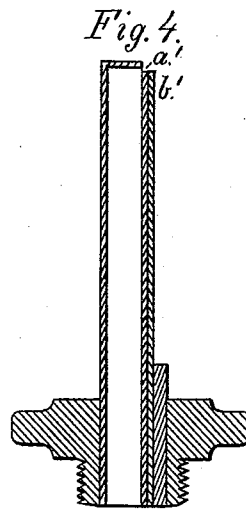
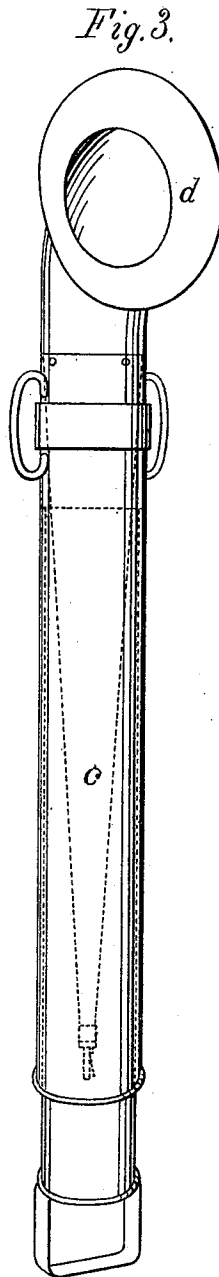
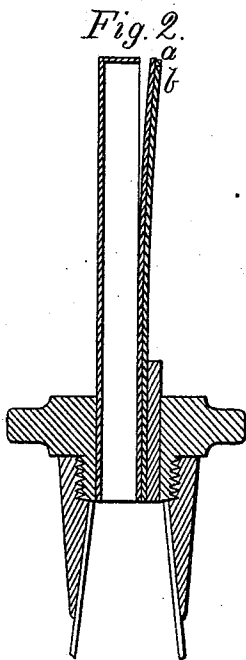
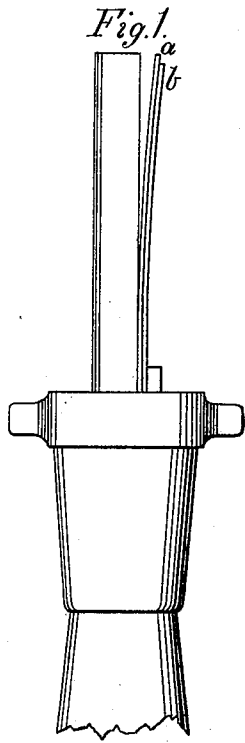


N. J. HOLMES.
AUDIBLE ALARM SIGNAL.

No. 177,398.

Patented May 16, 1876.



WITNESSES

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By

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UNITED STATES PATENT OFFICE.

NATHANIEL JOHN HOLMES, OF LONDON, ENGLAND.

IMPROVEMENT IN AUDIBLE ALARM-SIGNALS.

Specification forming part of Letters Patent No. **177,398**, dated May 16, 1876; application filed September 17, 1875.

To all whom it may concern:

Be it known that I, NATHANIEL JOHN HOLMES, of London, England, have invented certain Improvements in the Construction of Audible Alarm-Signals for marine and other purposes, of which the following is a specification:

My improvements consist in the manner of constructing audible alarm-signals, such as fog horns or trumpets, to produce a maximum amount of sound or noise with simple mechanical and acoustical arrangement of parts.

By means of my improved method of construction I am able to form what I designate a "compound or mixture reed fog-alarm." In principle, this compound or mixture reed fog-alarm may be described as consisting of two or more separate and independent reed or sound vibrators, so constructed and disposed as to form, when acted upon by a current of compressed air, the sound-producers, in connection with one or more trumpet-shaped tubes, in the manner hereafter described.

In the drawing, Figure 1 is an elevation, showing my improved compound reed; Fig. 2, section of same; and Fig. 3, view of a fog-horn with my improved compound reed applied thereto.

The sound-producing power of the compound reed or mixture fog-alarm is determined by the relative proportions of the vibratory reeds and the diameter and length of the trumpet-shaped tube or tubes, according to acoustical laws well known, in connection with the pressure of the air driven through the vibratory reeds or mouth-piece.

One or more forms of the compound or mixture reed fog-alarm which I find may be successfully employed may be described to be more or less as follows: One form of the compound reed arrangement of vibrator which I use is the employment of two similar vibrat-

ing reed-tongues, *a* and *b*, Figs. 1 and 2, placed together, or one upon another, so as to vibrate as a split reed in unison, upon a current of air being driven into the mouth-piece.

This compound reed produces a most powerful tone with a very small expenditure of air, and possesses prompt speech.

When I require to be produced a more continuous sound, so as to give speech to the fog-alarm, both at the time of the exit of the wind, and also on the inhalation of the air into the mechanical bellows, (shown at Fig. 3,) I employ a compound arrangement of two or more free-reed vibrators, which give speech on the forcing of the air through them in either direction.

This compound free-reed arrangement is employed in connection with a trumpet-tube, *c*, and bell-mouth *d*, to insure carrying capacity and vibration of a large column of air.

Fig. 4 shows such a double free-reed detached, *a'* and *b'* designating the reed-tongues.

I claim—

1. The described double reed, consisting of two or more vibratory reeds, *a* and *b*, placed one upon the other throughout their lengths, and united at one end to the reed block or tube, and free to vibrate at their other ends, for the purpose of producing, by such vibrations, a powerful sound, substantially as set forth.

2. In a device for audible alarm-signals, the compound free-reed, composed essentially of the reed block or tube, and the double reed *a'* *b'*, arranged to vibrate freely in said tube without striking, substantially as and for the purpose specified.

NATH. J. HOLMES.

Witnesses:

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G. F. REDFERN.