W. E. LEIGHTON.

Steam Fog-Alarm.

No. 218,286. Patented Aug. 5, 1879.

Fig: 1

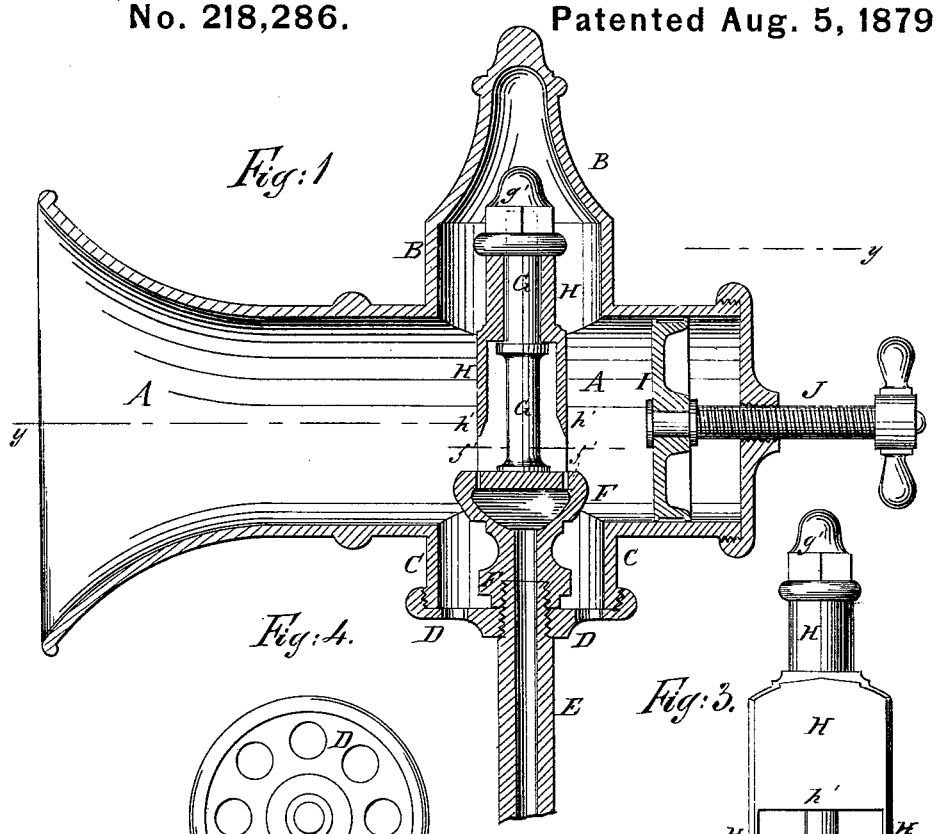


Fig: 4.

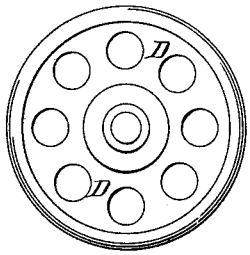


Fig: 3.

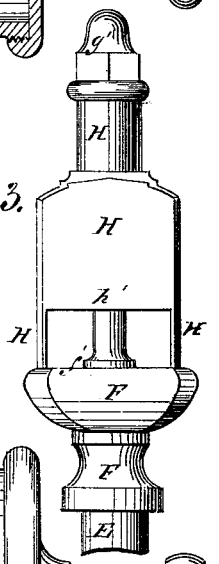


Fig: 2.

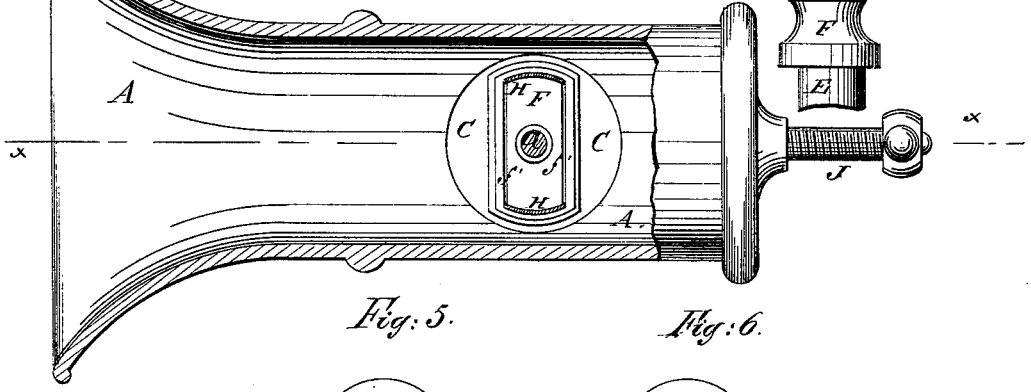


Fig: 5.

Fig: 6.

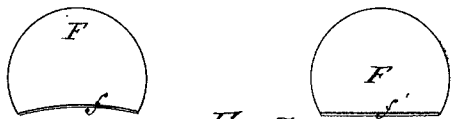
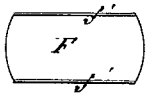


Fig: 7.



WITNESSES:

Chas. Niles.

C. Sedgwick

INVENTOR:

W. E. Leighton

BY Munn & Co

ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM E. LEIGHTON, OF WEST PEMBROKE, MAINE.

IMPROVEMENT IN STEAM FOG-ALARMS.

Specification forming part of Letters Patent No. **218,286**, dated August 5, 1879; application filed July 14, 1879.

To all whom it may concern:

Be it known that I, WILLIAM E. LEIGHTON, of West Pembroke, in the county of Washington and State of Maine, have invented a new and useful Improvement in Steam Fog-Alarms, of which the following is a specification.

Figure 1 is a vertical longitudinal section of my improved apparatus, taken through the line *x x*, Fig. 2. Fig. 2 is a top view of the same, partly in horizontal section, through the line *y y*, Fig. 1. Fig. 3 is a detail side view of the whistle. Fig. 4 is a detail view of the perforated base-plate. Figs. 5, 6, and 7 show different forms for the steam-escape orifices of the whistle.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved apparatus for giving fog-signals with steam-whistles, which shall be so constructed as to increase the intensity of the sound and project it farther than has heretofore been practicable.

A represents the fog horn, which is made of any desired length and size, and with a flaring or bell-shaped mouth.

Upon the upper side of the rear part of the horn A is formed a closed chamber, B, to receive the upper part of the steam-whistle.

Upon the lower side of the horn A, directly beneath the chamber B, is formed a chamber, C, to receive the lower part of the steam-whistle. The chamber C is closed by a base-plate, D, which has a number of holes formed through it to admit air to fill the vacuum formed in the lower part of the horn by the rapid entrance of the steam. In the center of the base-plate D is formed a hole, in which is secured the pipe E, through which the steam is introduced.

To the end of the steam-pipe, E or to the base-plate D, around the said end, is attached the base of the lower part, F, of the steam-whistle, to the top of which is attached the standard G, that supports the bell H. The bell H is secured to the upper end of the standard G by a nut, *g'*.

The lower part, F, of the whistle is made with closed ends and with two straight parallel orifices, *f'*, for the escape of the steam; and the bell H is made with closed ends and with two straight parallel edges, *h'*, to receive the steam as it issues from the said orifices *f'* and give the sound.

The whistle F G H is arranged within the fog-horn A, with the orifices *f'* and edges *h'* at right angles with the length of the said horn.

The whistle may be made with two straight parallel orifices, *f'*, as shown in Figs. 1, 2, and 7, or with one straight orifice, as shown in Fig. 6, or with one curved orifice, as shown in Fig. 5; but I prefer the construction first described, as giving better results.

In the rear part of the horn A is placed a plate, I, to receive the waves of sound and reflect them out through the mouth of the said horn. The reflector I is swiveled to the end of the screw J, which passes in through a screw-hole in the rear end of the horn A, and has a lever or other handle attached to its outer end, so that the reflector I can be readily adjusted nearer to or farther from the whistle F G H, as circumstances may require.

The reflector I is made adjustable, in order that the column of air back of the whistle may be shortened or lengthened until its vibrations synchronize with those of the whistle. On account of interference, there will be no augmentation of sound unless this correspondence in the resonance of the air takes place.

The object of constructing the whistle with the straight orifices *f' f'* and the straight parallel sides *h'* is to give a greater volume of sound in any particular direction, instead of expending the force in all directions, as is the case with a whistle having an annular orifice.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The fog-horn A, provided with opposite chambers B C, at right angles thereto, a perforated plate, D, and a steam-whistle, arranged as shown and described.

2. The lower part, F, of whistle, provided with one or more straight orifices, *f' f'*, and the bell H, with one or more straight sides, *h'*, as and for the purpose set forth.

3. The reflector I, arranged in a fog-horn in the rear of a steam-whistle, and made adjustable with respect thereto, as and for the purpose specified.

WILLIAM E. LEIGHTON.

Witnesses:
BELA A. WILDER,
N. C. BROWN.