(No Model.)

H. R. FRISBIE.

STEAM WHISTLE.

No. 471,171. Patented Mar. 22, 1892.

Fig. 1

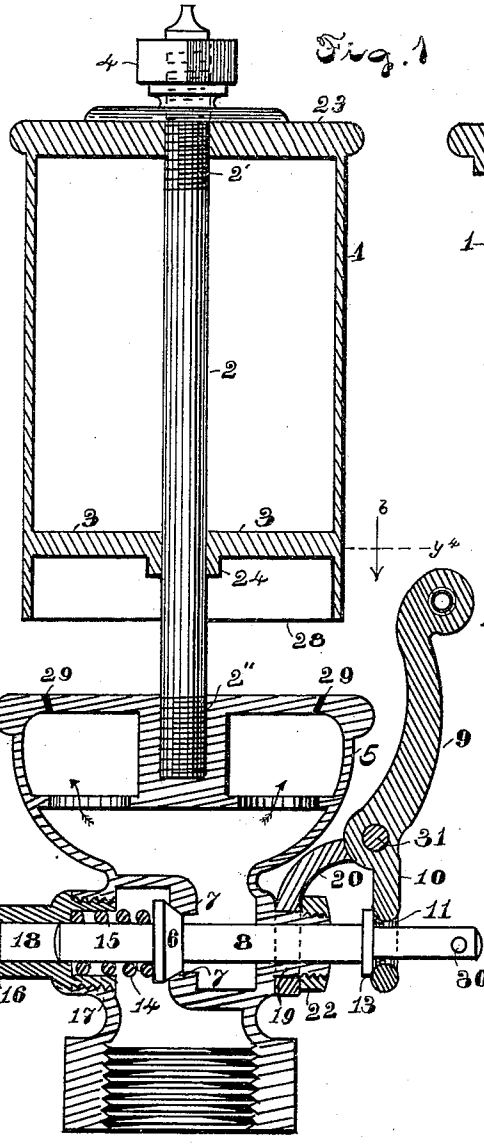


Fig. 2

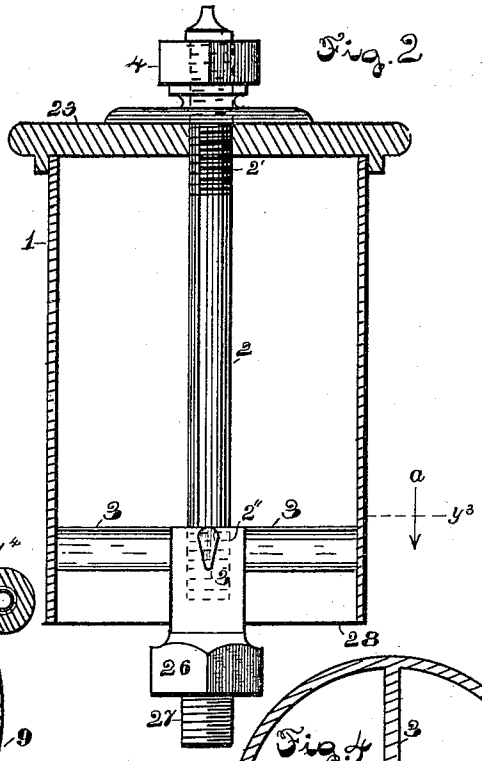


Fig. 4

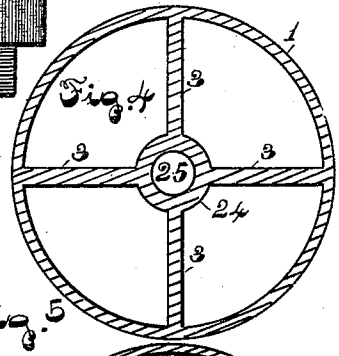


Fig. 5

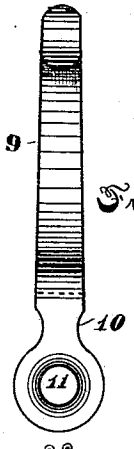


Fig. 3

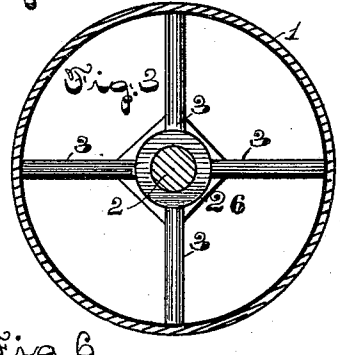


Fig. 6

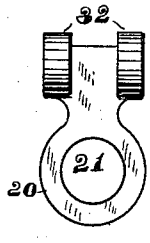
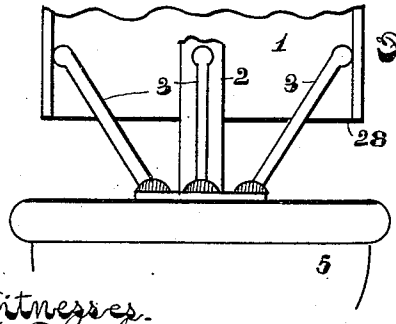


Fig. 7



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UNITED STATES PATENT OFFICE.

HENRY R. FRISBIE, OF BRIDGEPORT, CONNECTICUT.

STEAM-WHISTLE.

SPECIFICATION forming part of Letters Patent No. 471,171, dated March 22, 1892.

Application filed November 11, 1891. Serial No. 411,546. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. FRISBIE, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Steam-Whistles, of which the following is a specification.

My invention relates to single-bell steam-whistles, its object being to provide a support for the lower end of the bell, whereby its sounding edge or lip and the circular steam-orifice of the bowl are kept in perfect alignment; also, to improve on the construction of the valve, so that it may be ground or re-seated under steam-pressure, or the position of its lever reversed, without removing or disturbing any of its parts.

Heretofore in constructing single-bell whistles the bell hangs dependent from the central stud and in contact therewith at its upper closed end only, so that a slight jar or strain will cause the lower open end or mouth to be thrown out of alignment with the circular steam-orifice of the bowl, thereby greatly impairing the tone, as in consequence of such misalignment the full force of the outgoing steam is lost, which should be utilized in order to produce a full clear sound.

In order to enable others to understand and use my said invention, I will proceed to describe the construction and operation of the device whereby I obtain the above results, and subsequently point out in the appended claims such characteristic features as I believe to be novel.

Referring to the accompanying drawings, Figure 1 represents a vertical central section of the bell, its lower supporting-arms integrally formed therewith, steam-bowl, valve-chamber, valve-operating lever, valve-spring, and full view of the bell-supporting stud, valve, valve-stem, and bell-tightening nut. Fig. 2 is a vertical central section of a whistle-bell, its cap, full view of bell-tightening nut, bell-supporting rod, and lower lateral bell-support, such support not being integrally formed with the bell. Fig. 3 is a sectional plan view of the bell and its supporting-stud through line y^3 of Fig. 2, and also a full plan view of the lower bell-support looking in the direction of arrow *a*. Fig. 4 is a sectional plan view of the bell and its lower supporting-arms through line y^4 of Fig. 1. Fig. 5 is a front elevation of the valve-lever; Fig. 6, a front elevation of the valve-lever-supporting bracket. Fig. 7 is a modified form of the lateral bell-support.

Its construction and operation are as follows:

1 represents the whistle-bell; 2, the bell-supporting stud; 3, arms radiating from the central stud for supporting the lower part of the bell; 4, nut mounted on the upper threaded portion of the rod 2 for securing the bell in place; 5, steam-bowl; 6, valve; 7, its seat; 8, valve-stem; 9, valve-lever; 10, projecting arm of said lever, having the eye 11, which eye loosely embraces the outer end 12 of the valve-stem 8.

13 is a collar on the valve-stem, against which the arm 10 of the valve-lever acts to open the valve.

14 is a coiled spring mounted on the end 15 of the valve-stem 8 to seat the valve 6.

16 is a threaded plug fitting a threaded hole in the rear end of the valve-body 17, said cap having a recess 18 to support and guide the end 15 of the valve-stem 8.

19 is a boss or projection of the valve-body to support the valve-lever bracket 20, having a hole 21, which hole fits said projection freely enough to enable the bracket and its lever to be revolved when the tightening-nut 22 is loosened.

When the bell 1 is made from cast metal, as shown in Fig. 1, the cap 23 and arms 3 are integrally formed with the bell. The arms 3 radiate from the hub 24, (see Fig. 4,) having the hole 25, which hole loosely engages the central stud 2, thereby enabling the bell to be vertically adjusted on said stud, so as to adjust the height of the sounding edge or lip of the bell to and from the steam-bowl with regard to the pressure of steam necessary to produce the sound proportionate to such pressure. The central hole in the cap 23 of the bell is threaded to fit the upper threaded end 2′ of the stud 2. By this means the vertical adjustment of the bell is effected and firmly fixed in any position by the threaded nut 4.

In making the whistle-bell of drawn-metal tubing, as shown in Fig. 2, the threaded end 2″ of the supporting-stud 2 is firmly screwed or cast into a threaded hole in the upper part

of the support 26. As shown in Fig. 1, such stud is attached directly to the upper surface of the steam-bowl, while the lower threaded end 27 of the support 26, as shown in Fig. 2, is screwed to the steam-bowl 5. The radial arms 3, projecting from their support 26, touch the inner surface of the bell at a point above its sounding edge sufficient to permit a vertical adjustment of the bell and always keep such arms in contact therewith.

It is quite apparent from the construction shown and described of the supporting-arms and their relation with the bell that such bell is as thoroughly braced at the bottom as it is at the top, and its sounding edge 28 is thus kept in perfect alignment with the circularly-arranged steam-orifice 29 of the bowl 5.

The construction shown in Fig. 1 enables the valve to be reground or the lever 9 reversed while under pressure without disconnecting any of the parts. To regrind the valve or remove particles of dirt which mingle with the steam and frequently become lodged under the valve, a piece of wire or nail is inserted in the hole 30 of the projecting end 12 of the valve-stem and the valve rotated on its seat or opened independently of its lever, the hole 11 (see also Fig. 5) in the arm 10 of said lever being large enough to permit the valve-stem to be rotated freely therein, the collar 13, as before mentioned, being the only point of contact between the lever and stem, which lever is operated on its pivoted support 31 in the ears 32 of the bracket 20 to open the valve, which is closed by the steam-pressure and spring 14. To change the position of the lever 9 and operate it from any direction about the axis of its stem, loosen the nut 22 just sufficient to enable the bracket 20 to turn on its support.

As regards the lateral bell support or brace, I do not wish to be confined to the exact construction shown. The gist of my invention in this respect lies in firmly supporting the lower part of the bell either to the central stud or bowl, so that the sounding edge of the bell and circular steam-passage of the bowl are kept in perfect alignment. I prefer that the supports shall be so arranged that the mouth of the bell is practically open, giving thereby free access to the interior or sounding-chamber.

In Fig. 7, which represents a broken vertical section of the bell, supporting-rod, and bowl, the arms or braces 3 are supported from the upper surface of the steam-bowl.

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

1. The herein-described improvement in that class of steam-whistles having a single stationary bell, a steam-bowl, an annular steam-orifice therein, and a bell-supporting stud projecting from said bowl and passing through the longitudinal axis of the bell, whose upper closed end is rigidly secured to the upper end of said stud, combined with a lateral brace for rigidly supporting the lower end or mouth of the bell and thereby preserve its alignment with the supporting-stud and the annular steam-orifice of the bowl, said brace consisting, preferably, of arms rigidly attached to the central stud, radiating therefrom and engaging the inner surface of said bell, thus bracing the same firm to the central stud or its support, so as to prevent any lateral or vibratory motion of the bell at its lower end, as described and set forth.

2. The herein-described improvement in steam-whistles, having the bowl 5, valve-body 7, valve 6, arranged in said body to operate as shown, bracket 20, mounted on projection 19 of the valve-body and arranged to be revolved thereon and firmly secured thereto in any position required, and valve-lever 9, pivotally mounted on said bracket, combined with the arm 10 of said lever, having hole or eye 11 in the lower end of the same to loosely embrace the valve-stem, collar 13 on said stem, with which said arm engages to open the valve, the valve-stem projecting through the eye of the arm far enough so that the valve may be opened or revolved independent of the valve-lever for the purpose of regrinding said valve to its seat or removing foreign matter temporarily lodged thereon without removing or disconnecting the valve-lever, as set forth.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut.

HENRY R. FRISBIE.

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SIGMUND DONNITZEN.