

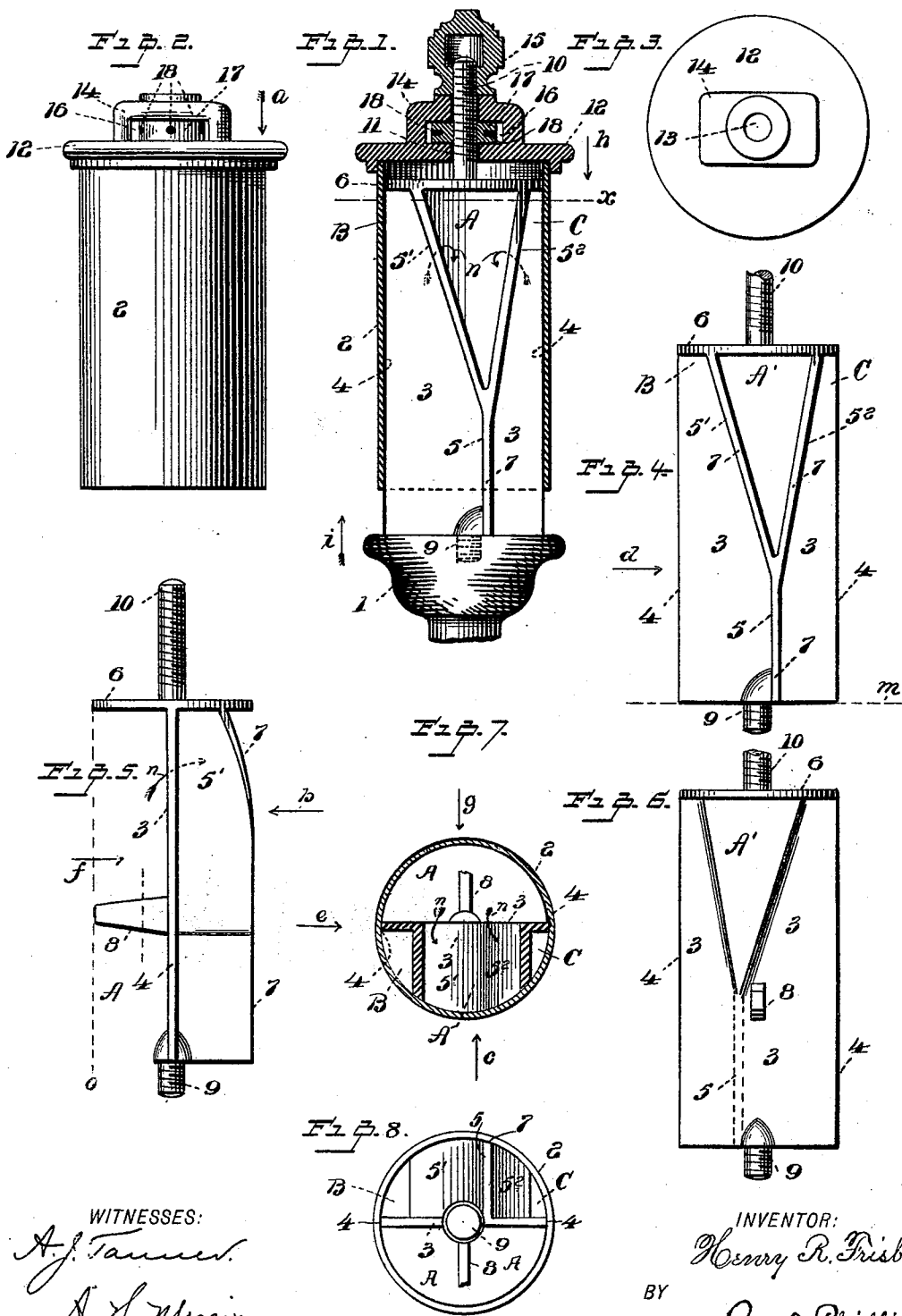
(No Model.)

2 Sheets—Sheet 1.

H. R. FRISBIE.
STEAM CHIME WHISTLE.

No. 520,418.

Patented May 29, 1894.



WITNESSES:

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INVENTOR:

Henry R. Frisbie.

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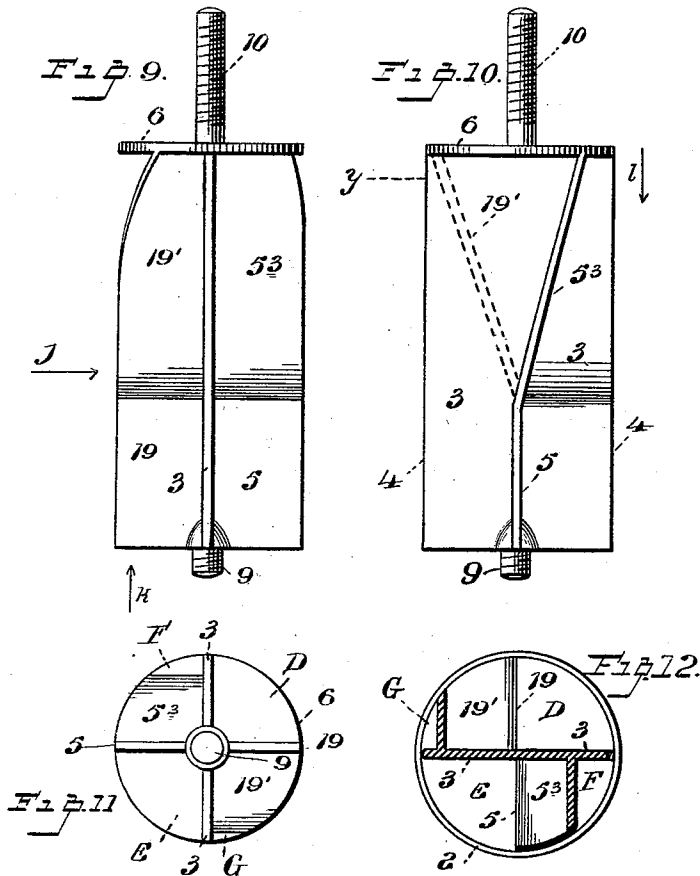
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UNITED STATES PATENT OFFICE.

HENRY R. FRISBIE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO FRANK KINSLEY, OF SAME PLACE.

STEAM CHIME-WHISTLE.

SPECIFICATION forming part of Letters Patent No. 520,418, dated May 29, 1894.

Application filed March 30, 1893. Serial No. 468,260. (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 Chime-Whistles, of which the following is a specification.

My invention relates to steam chime whistles, and is an improvement on Patents No. 466,403, No. 466,404 and No. 472,946, previously granted to me, and has for its object; first, to improve the tone of each sound chamber or compartment and thereby add to the harmonious effect of the whole; second, to cheapen the general construction and also to provide novel means whereby the outer tube or shell is vertically adjusted on the webs forming the divisions of the several compartments.

To this end my invention consists in varying the size of the compartments relative to the tone required and to do this by either contracting or expanding the area of each,—preferably at the top or upper portion of the bell—also to cheapen the construction by casting the webs which form the divisions or partitions in one piece and mounting thereon a piece of drawn metal tubing to form the bell, and to vertically adjust the same upon such webs by means of a nut mounted upon the upper threaded stud of the webs and to so confine such nut upon the bell cap that it is incapable of a vertical movement, but by means of a rotative movement it will give a vertical adjustment to the bell. All of which improvements will be more fully set forth in the following specification and such features as I believe to be new and novel, particularly pointed out in the claims.

To enable others to understand my invention, reference is had to the accompanying drawings and to the figures and letters of reference thereon, which, together with the specification, explain my device.

Figure 1, represents a vertical central section of the bell, its cap, adjusting and locking nut therefor, and a full view of the webs of a three chime whistle mounted upon a broken section of a steam bowl. Fig. 2, is a detail vertical elevation of the bell and its cap

showing also the adjusting nut mounted thereon. Fig. 3, is a detail upper plan view of the construction shown in Fig. 2, looking in the direction of the arrow *a*. Fig. 4, is a detail vertical elevation of the web as shown in Fig. 1, or looking in the direction of the arrow *b*, Fig. 5, or arrow *c*, Fig. 7; also broken section of the adjusting stud projecting from the top plate of the webs. Fig. 5, is also a detail vertical elevation of the webs, looking in the direction of the arrows *d* and *e*, Figs. 4 and 7. Fig. 6, is another detail vertical elevation of the webs looking in the direction of arrows *f* and *g*,—Figs. 5 and 7—also a broken view of the bell-adjusting stud. Fig. 7, is a cross section on line *x* of Fig. 1, looking in the direction of arrow *h*. Fig. 8, is a bottom plan view of the webs detached from the steam bowl, with the bell mounted thereon, with its cap removed, looking in the direction of arrow *i*, Fig. 1. Figs. 9, 10, 11, and 12, represent the arrangement of the webs for a four chime whistle. Fig. 9, is a detail vertical elevation of one of such webs removed from the whistle. Fig. 10, is a view of the same web looking in the direction of arrow *j*, Fig. 9. Fig. 11, is a bottom plan view of the web looking in the direction of arrow *k*, Fig. 9. Fig. 12, is a horizontal section of the webs on line *y* of Fig. 10, looking in the direction of arrow *l*, also showing the bell mounted upon or drawn over the webs.

Its construction and operation are as follows:

1 represents the steam-bowl, 2 the bell.

Referring to Figs. 1, 4, 5, 6 and 7, 3 is a web which divides the bell longitudinally through the center and whose outer edges 4 support the bell 2; 5 is a web,—see Fig. 4—placed at right angles to the web 3,—see also Fig. 5—and also to the right of the center as shown in Figs. 1, 4 and 6. This web has the two branches 5' and 5², which extend up to and join with the web 3, the circular plate 6 at the upper end. In constructing the whistle this plate 6 together with the outer edges 4 and 7 of the webs and branches and also the outer projecting end of the brace 8, is turned off true and of the proper diameter to allow the interior of the bell 2, to envelop the same and slide thereon. The object of the brace 8 will be seen more clearly at Fig. 5, wherein

it will be observed that, as there are no webs at the left of the central web, this narrow brace 8 projecting from, and integral with the brace 3, touches the interior of the bell and assists in centralizing the webs within said bell. The lower threaded stud 9 of the web is adapted to screw into a centrally arranged threaded hole in the bowl-plate,—seen at Fig. 1—whose upper surface is represented by the dotted line *m*, shown at Fig. 4. The upper stud 10,—see Fig. 1—which projects from the upper surface of the plate 6 and passes freely both through the smooth cylindrical hole 11 of the bell cap 12 and the hole 13,—see also Fig. 3—of the yoke or housing 14 of said bell cap, is provided on its outer projecting end with the tightening nut 15. This housing 14 which I prefer to make integral with the bell cap 12, as shown, is provided with the transverse opening 16 therethrough to admit the adjusting nut 17, whose central threaded hole engages with the threaded portion of the stud 10. The position of this nut 17, one of whose faces rest against the upper surface of the bell cap 12, and the other, against the wall of the cut or opening 16 of the housing 14, will always maintain the nut 17 in the same position, while, it can be freely rotated by inserting a piece of iron in the holes 18 and thus raise and lower the bell upon the webs, and, when sufficiently adjusted, is securely locked by means of the nut 15, before referred to. It will be observed that, in Fig. 1, the bell is raised from the upper web plate 6 about one-quarter of an inch. It will be understood that the bell 2 is soldered or otherwise fastened in a recessed portion in the lower surface of the cap 12, before such bell is mounted upon the webs. Thus the bell will be vertically raised and lowered without being rotated and, in consequence thereof, can be easily assembled or removed from the webs.

I will now proceed to describe the peculiar construction and arrangement of the webs whereby the several tones of the chime are produced with proper regard to the volume of each, and the harmonious effect of the whole. This is most effectually produced by enlarging the area of some of the compartments in the upper part, and contracting the area of others.

The compartment A,—Figs. 5, 7 and 8 for the lowest tone of the three chime whistle requires the largest area, and as such, is represented by one half of the longitudinal area of the interior of the bell. This compartment is further enlarged in its upper part by including in its dimensions the space,—see arrows 60 *n*—shown also in Fig. 1—between the branches 5' and 5² of the web 5. This space I will designate in Figs. 4 and 6 as A', although in reality, it is a part of the large compartment A, shown in Figs. 1, 5, 7 and 8. In Fig. 5 the dotted line *o*, represents the interior surface of the bell.

It will be understood that the letter A, which,

as before mentioned, designates the large compartment, also includes within its boundary the space A', shown in Figs. 4 and 6. 70

It will be understood that, the compartments are not shortened, but that the partitions or webs extend the full length of the bell, which is represented by the upper plate 6. The other two compartments B and C,—Figs. 7 and 8, are, by reason of the angularly disposed branches 5' and 5² contracted at the top. The volume or area of the compartment B, being smaller than A, will represent a higher tone, while the compartment C, which is the smallest, or the one most contracted at the top, will represent the highest note in the scale. The area of this latter compartment is also reduced below where the branches 5' and 5² meet, by reason of the fact that, the web 5,—see Figs. 1 and 4—is set to one side of the center. 85

The arrangement of the webs for the four-chime whistle, shown in Figs. 9, 10, 11, and 12 are practically the same as in the three chime except,—see bottom plan Fig. 11—the webs at the bottom divide the interior of the bell into four equal parts. The web 3 being the same as in the views for the three chime, extends vertically to the top plate, and is integral therewith. In this arrangement there is no opening or pocket in the upper part of this vertical web as shown in the same web for the three chime, but the upper portion of the four compartments D, E, F and G,—see Fig. 12—are enlarged or contracted by deflecting the upper portion of the webs 5 and 19. The deflected or bent portion 19',—see dotted position on the reverse side of web 3, Fig. 10—is greater than the bent portion 5³ of the web 5, and, in consequence thereof, the compartment G,—see also Figs. 11 and 12—is smaller in its upper part than the compartment F, and this arrangement will make the upper portion of compartment D of greater area than the upper portion of the compartment E. I prefer to extend all of the webs or their branches, to the top plate 6, located at the upper part of the bell, so as to get the full benefit of the greatest possible depth for each of the several compartments,—both for volume and air cushioning. 115

The advantage of my present improvement in a single bell chime, is readily seen when compared with a construction showing the web running vertically the full length of the bell, thus making the top and bottom of a compartment of equal area, and varying the tone by arranging the webs unequally about the axis of the bell, or having the webs vertically arranged evenly about the axis and shortening the several compartments in their length to obtain the several tones. 125

Neither of the above mentioned constructions are productive of good results for the reason that, in dividing up the internal area of a single bell into several longitudinal compartments to form separate and distinct whistles, all of which are blown together, to form 130

a chime, great difficulty is experienced in procuring the same concordancy as in a chime composed of a series of single whistles, and, in practice, it is found impracticable to do so.

5 The area of the bass or lowest note being the most important, is hard to establish without unduly contracting the area of the other compartments to such an extent that they cannot be sounded except at a pressure that will
10 destroy the harmony of the whole. As the slightest change of area at the bottom or lower part of the compartments is instantly noticeable in the tone, I have found that, by enlarging the bass note in the upper portion of
15 its compartment, for reverberation, and gradually contracting the other compartments in a greater or less degree, proportionate to their volume, and that of the bass note, a beautiful harmonious effect is produced.

20 To facilitate and cheapen the construction of my whistle, I cast the webs separate, and turn them off true, and for the bell I employ a drawn metal tube, which is slipped over such webs, otherwise it would be difficult to
25 enlarge the area at the top, besides, in any construction of a single bell chime it is cheaper to use metal tubing for the bell.

30 I do not wish to be confined to the exact means I show for increasing or diminishing the areas of the several compartments at the top, as the webs, instead of extending up the bell in a vertical line for a part of the distance and then deflected the rest of the way, could be gradually inclined from bottom to top.

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

1. In a single-bell chime whistle of the character described, the combination with a steam-bowl or other like device having an outlet or blowing orifice therein; of a bell, whose interior is divided into longitudinally arranged webs which form longitudinal compartments of equal lengths some of which are enlarged, and others contracted in area at the top, proportionate to the tone required for each and the harmonious effect of the whole.

2. In a single bell chime whistle, the combination with the webs, a support therefor, a threaded stud projecting from the upper end thereof, a tube to form the bell arranged to be mounted on such webs, as shown; a cap firmly mounted upon the upper end of said bell having a central hole therethrough to freely admit the web stud, of a housing on the upper surface of the bell-cap carrying a nut arranged to engage the threaded web stud, so that, by means of the arrangement of said nut, as set forth, the bell is vertically adjusted upon the webs, combined with a locking-nut, all arranged to operate as shown.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 7th day of March, A. D. 1893.

HENRY R. FRISBIE.

Witnesses:

S. O. CANFIELD,
GEORGE E. HILL.