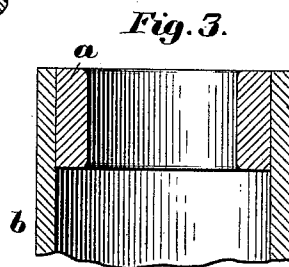
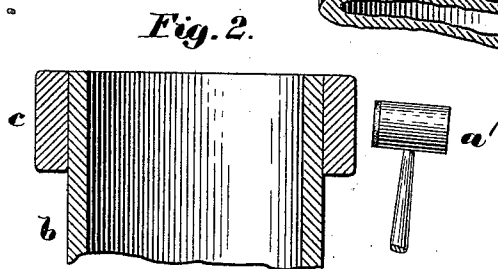
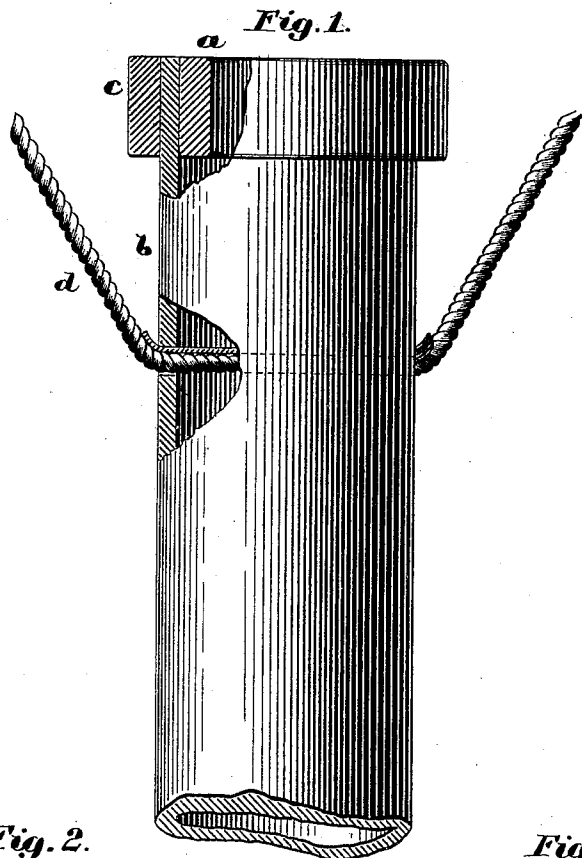


(No Model.)

J. E. TREAT.
TUBULAR BELL.

No. 568,816.

Patented Oct. 6, 1896.



Witnesses:

*Walter E. Lunt and
Thomas F. Drummond;*

Inventor:

*James E. Treat,
by Crosby & Gregory -
Attys.*

UNITED STATES PATENT OFFICE.

JAMES E. TREAT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE UNITED STATES TUBULAR BELL COMPANY, OF METHUEN, MASSACHUSETTS.

TUBULAR BELL.

SPECIFICATION forming part of Letters Patent No. 568,816, dated October 6, 1896.

Application filed January 11, 1896. Serial No. 575,100. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. TREAT, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Tubular Bells, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve tubular bells in such manner that they will give out better and clearer musical tones when struck. It has been found in practice that the tube constituting the bell must be struck near one end, and to lessen or prevent undue vibration of the bell at the point where it is struck means have been provided to stiffen the bell at that point, and for this purpose the bell has been bored and a pin put through the tube diametrically and riveted, and the blow of the hammer to sound the bell has been made on the end of the pin. This pin in some chiming clocks using these tubes for bells is struck by two hammers, one located near each end of the pin. This diametrical pin, by connecting the opposite walls of the tube, interferes with its proper action, and said pin is liable to be loosened by the action of the hammer on it, and the continued blows are liable to loosen the pin, and the tone of the bell is greatly injured and it will not emit the clear musical tone which it was intended to produce. Further, by experiment I have found that breaking the continuity of the metal of the tube at its end by boring the same for the reception of the pin, the hole being at right angles to the necessary suspension-hole, in a measure affects the sound.

I have provided a novel means for holding the end of the tube very firmly without connecting it diametrically, and a tube held as I have herein provided for emits clearer and more continuous sounds than any tube known to me when used as a bell or for chimes.

In accordance with my invention I hold the end of the tube by a ring, which acts to increase the thickness of the end of the tube. This ring may be applied to either or both sides of the tube.

Figure 1 shows a tube having a metallic ring at its outer and inner sides. Fig. 2 shows a tube with a ring at its outer side, and Fig. 3 a tube with a ring only at its inner side.

The metallic ring *a*, made true at its outer side and preferably cold, has applied over it the end of the tube *b*, the tube being forced onto the ring, or the tube may be shrunk onto the ring, the object being to connect the tube and ring in such manner as to make the tube and ring practically one piece. The outer ring *c* is shrunk onto the end of the tube, making a very close fit. Either of these rings increase the quantity of the metal at the end of the tube and add volume and clearness to the tones of the tube, but both rings add yet further to the completeness of the quality of the tone.

The tube may be suspended by a suitable cord *d*, as provided for in United States Patent No. 516,085, dated March 6, 1894, and the ring *c*, or if only the ring *a* is used the tube outside the ring may be struck by a hammer *a'*, as provided for in said patent, or in any other usual manner; the said hammer being actuated by suitable mechanism. These rings *a* and *c* will preferably be made from metal thicker than that used in the tube to thus give additional thickness and volume of metal at the point where the bell is to be struck.

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

1. A tubular bell having a metallic ring secured thereto at its end, said metallic ring fitting in intimate, solid contact throughout its length against said tube, whereby the sonorous vibrations of the latter are amplified, substantially as described.

2. A tubular bell having its end fitted very firmly to the exterior of a metallic ring, substantially as described.

3. A tubular bell having its end embraced and held firmly both externally and internally between metallic rings, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES E. TREAT.

Witnesses:

GEO. W. GREGORY,
LAURA S. MANIX.