Sept. 16, 1930. L. DAVIS 1,776,216

MUTE FOR BRASS WIND AND LIKE MUSICAL INSTRUMENTS

Filed Feb. 25, 1927

Fig.1.

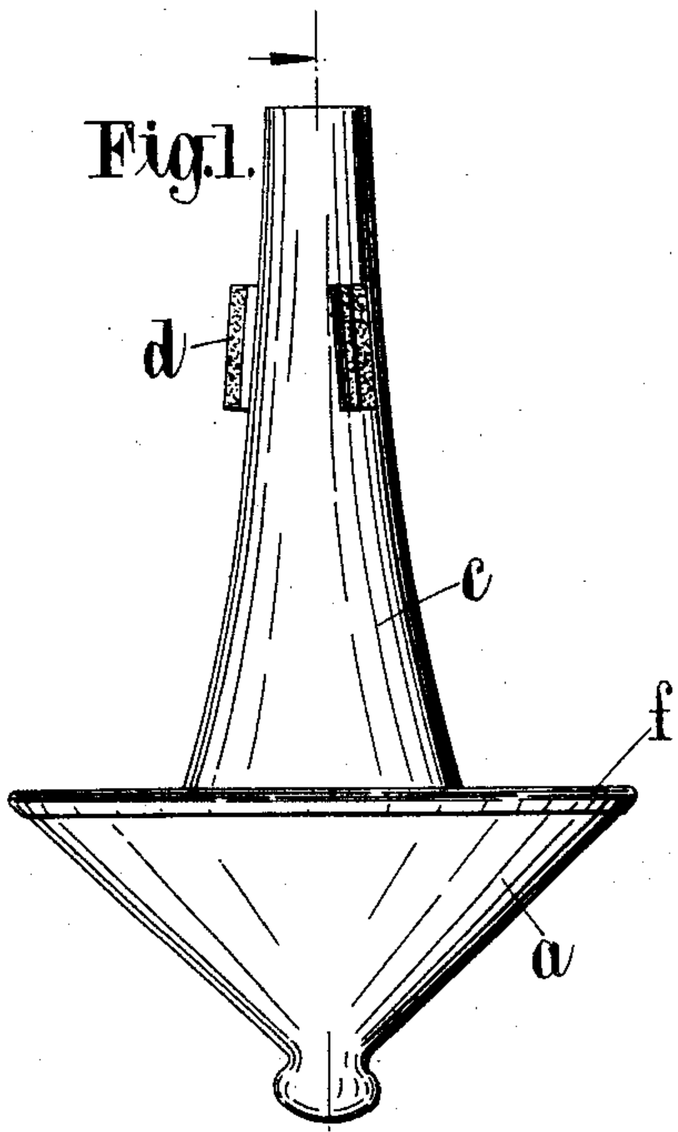


Fig.2.

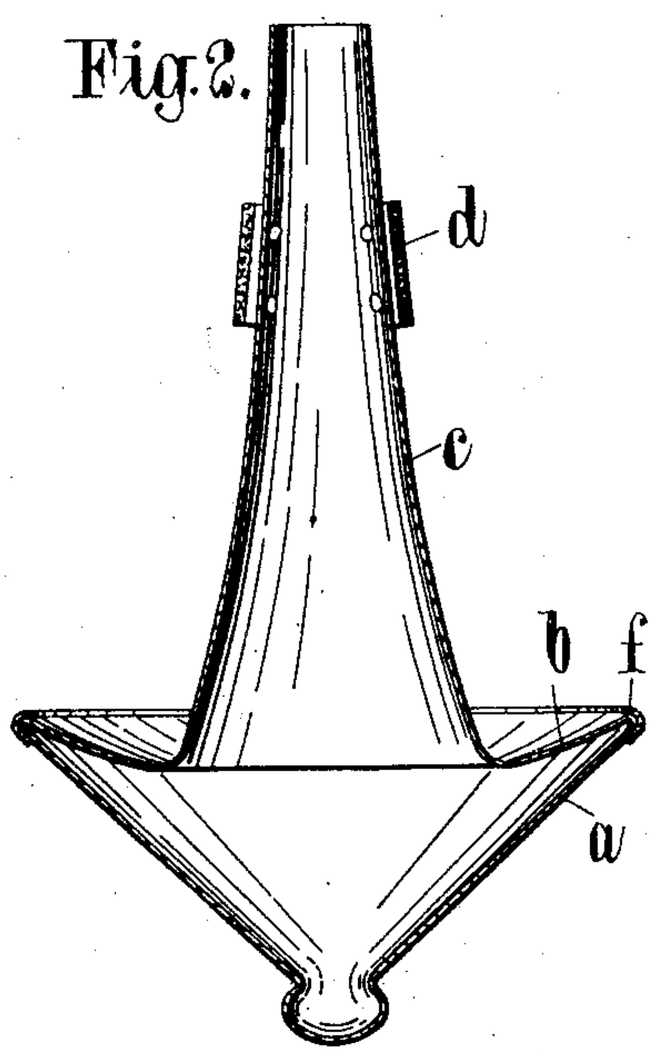


Fig.3.

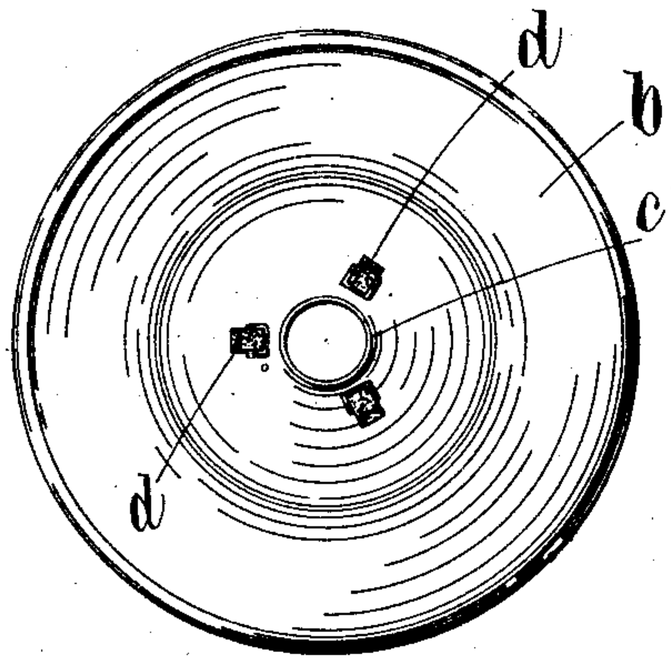
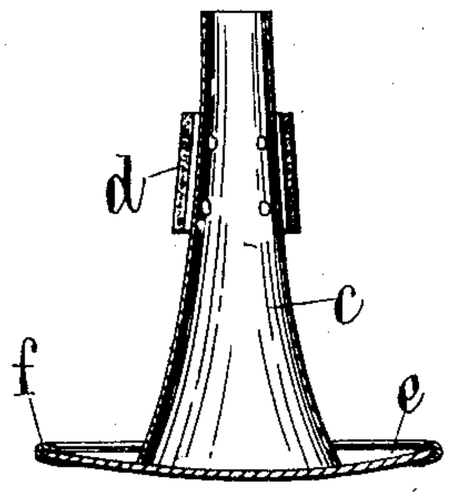


Fig.4.



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Patented Sept. 16, 1930

1,776,216

UNITED STATES PATENT OFFICE

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MUTE FOR BRASS WIND AND LIKE MUSICAL INSTRUMENTS

Application filed February 25, 1927, Serial No. 171,031, and in Great Britain December 10, 1926.

This invention relates to an improved mute for use with trumpets, trombones, cornets and other wind musical instruments and provides an improved construction of mute intended to be held wholly or partly within the bell of the instrument.

According to this invention, the improved mute comprises a hollow tubular stem, preferably tapered, having ribs or strips of cork or other suitable material secured on the outside thereof, for example, by a cement or by rivets, the strips being arranged substantially in the longitudinal direction of the tubular stem to which they are affixed, so as to act by their resiliency wedgewise against the interior wall of the bell of the instrument to support the mute therein in the desired position, the smaller end of the said stem, in the case of a tapered hollow stem, being preferably inserted foremost into the bell of the instrument in which it is to be supported. At its larger or outer end, the stem supports a disc, plate or cone or the like which when the mute is in use almost entirely obturates the open mouth of the bell of the instrument. The said disc or like part may be supported slightly within the rim of the bell or it may be entirely outside the same and held at a short distance from the rim thereof so that in either case a narrow annular thoroughfare is left between the said disc and the interior wall of the bell or the rim as the case may be, the passage or passages extending longitudinally between the stem and the bell, terminating in this narrow annular thoroughfare. The larger or outer end of the hollow stem, instead of being closed by a disc or plate can open into a chamber formed within conical or curved walls provided in place of the disc or plate and supported by the said stem. In a preferred construction a hollow cone or conical wall is supported within a second hollow cone having a smaller apex angle, the two conical parts being united around their basal edges and the stem extending axially out from the interior of the inner conical part. The stem is in this case in open communication with the chamber provided between the said conical parts.

The improved mute is preferably made of metal, for example, a light metal such as aluminium or it can be made of wood veneer, indurated fibre or the like.

In the accompanying drawing:

Figure 1 is a side view in elevation of a mute constructed in accordance with this invention.

Figure 2 shows the same in central section.

Figure 3 is a plan view thereof.

Figure 4 is a view similar to Figure 2 illustrating a modified constructional form of the mute.

As shown in Figures 1, 2 and 3, the improved mute comprises a hollow cone *a* and a substantially conical part *b* arranged within the cone *a*, these two parts being united around their basal edges. Extending outwardly from within the inner conical part *b* a stem *c* is provided of tapering tubular form, the walls of the stem, as shown in Figure 2 being continuous with the wall forming the inner conical part *b* which merges gradually into the stem. The wall of the part *b* may be truly conical or it may be slightly curved in cross section. The conical part *b* and the hollow tapered stem *c* can be formed integrally by spinning, and strips *d* of cork, felt or the like are secured to the stem at convenient parts by a suitable cement or by means of rivets. The two cones are united around their basal edges which are of approximately the same diameter, by means of a soldered, welded, beaded, or other appropriate joint.

The mute is supported within the bell of the instrument by inserting the stem *c* so that the cork or like strips *d* thereon are frictionally held within the bell leaving sound passages between the wall of the bell and the mute stems supported therein. The basal diameter of the cones is chosen so as to be about the same as or somewhat greater than the diameter of the rim of the bell, and when the mute is in position in the instrument the inner cone is in a position near to the rim of the bell. The open smaller end of the hol-

low stem is then directed towards the interior of the instrument, and thus a sound track is provided extending through the hollow stem into the space enclosed between the two cones or conical walls *a*, *b*. If desired, the apex of the outer cone can be enlarged into a bulbous form which facilitates grasping the mute when it is desired to remove it from the bell of a trumpet in which it is held by the strips *d*.

In the modified arrangement illustrated in Figure 4, the stem *c* supports a disc or plate *e* in place of the chamber enclosed by the concial parts *a*, *b*. The said disc is secured to the stem by soldered, brazed or like joint. The edge or rim of the disc or plate *e* is adapted to almost entirely close the bell of an instrument in which the mute is inserted, so that only a narrow annular thoroughfare is left between this edge or rim and the inner wall or the rim of the bell accordingly as the diameter of the disc or plate is smaller or larger than that of the bell.

A covering of suitable non-resonant material, such as an india rubber ring or washer *f* may be provided around the basal edges of the conical parts *a*, *b* or disc *e*.

I claim:

1. A device of the character described, comprising a tubular stem for insertion in the mouth of a wind musical instrument, a frusto-conical sound reflecting member extending radially and outwardly from the said stem, and a closure for one end of the said stem, said closure being fixedly mounted to form with the tubular stem a chamber of fixed dimensions.

2. A device of the character described, comprising a tubular stem for insertion in the mouth of a wind musical instrument, a frusto-conical sound reflecting member extending radially and outwardly from the said stem, and a cone forming a closure for one end of the tubular stem and forming with said stem a chamber of fixed dimensions, and the frusto-conical sound reflecting surface being arranged within its basal edge.

3. A device of the character described, comprising a tubular stem for insertion in the mouth of a wind musical instrument, a frusto-conical sound deflecting member extending radially and outwardly from the said stem, and a cone forming a closure for the tubular stem attached around its basal edge to the outer edge of the said frusto-conical member and forming with the tubular stem a chamber of constant volume.

4. A device of the character described, comprising a tubular stem for insertion in the mouth of a wind musical instrument, a frusto-conical sound reflecting member extending outwardly and radially from the said stem, the wall of the stem merging into the said frusto-conical member and a closure for one end of the said stem which forms with the tubular stem a chamber of constant volume.

5. A device of the character described, comprising a tubular stem for insertion in the mouth of a wind musical instrument, a frusto-conical sound reflecting member extending radially and outwardly from the said stem, a conical closure for the end of the said stem and a bulbous enlargement at the apex of the said conical closure to serve as a gripping portion of said device.

6. A device of the character described, comprising a tubular stem for insertion in the mouth of a wind musical instrument, ribs in spaced relation on the exterior of the stem, a frusto-conical sound reflecting member extending radially outwards from the stem and a closure for one end of the said stem and forming with said tubular stem a chamber of constant volume.

7. A mute for musical instruments comprising an imperforated cone, a bulbous enlargement at the apex of said cone to serve as a gripping portion of said device, an imperforated frusto-conical annulus lodged within said cone, said cone and frusto-conical annulus being united at their basal edges, a ring of non-resonant material covering the said united edges, a tubular stem extending axially outwardly from and formed integrally with said conical annulus, ribs on said stem for supporting it within the bell of an instrument and a deflector formed by said conical annulus to deflect sound waves emitted between said stem and the bell of the instrument.

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