P. SANTA EMMA
TONE MODULATING DEVICE
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INVENTOR:
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ATTORNEYS.
This invention relates to tone modulating devices, and particularly to a form of tube which constitutes an improvement over my invention in United States Letters Patent for cornet mute, No. 1,842,846, dated June 8, 1929.

The present invention has for its object the provision of a tone modulating device which will permit a wide variation of effects to be produced in any horn instrument such as cat calls, laughter and various other trick sounds under full control of the musician handling such horn instrument.

The invention has for another object the provision of a device in which the volume of the tone emitted by the horn may be directly controlled at will of the musician and still produce the various effects desired, without the necessity of impressing more air upon the reeds or reeds in the horn.

The invention has for another object the provision of a device of the character stated which is novel, compact as to form, which has many features of superior merit and which provides a device readily adaptable to any form of horn instrument.

With the above and other objects in view, the invention consists in the provision, formation, construction, association and relative arrangement of parts, members and features, all as shown in one embodiment in the accompanying drawing, described generally, and finally pointed out in the claims.

In the drawing:

Figure 1 is an elevation of the improved tone modulating device;

Figure 2 is a longitudinal sectional view, on an enlarged scale of the bell portion of a horn within which the tone modulating device is incorporated;

Figure 3 is a cross sectional view, on an enlarged scale, of certain features of the device, taken on the line 3–8 of Figure 1; and

Figure 4 is a front view of the tone modulating device.

Referring with particularity to the drawing, A designates a horn and B the improved tone modulating device.

The horn A may be a cornet, a slide trombone or any other form of wind instrument in which it is desired to modulate or vary the quality and quantity of tone emitted from such wind instrument.

In the showing the horn A is provided with a bell 1 terminating in the usual beaded extremity 2. The tone modulating device B may be formed in one piece or two pieces, as shown in the drawing, and the same may be spun or otherwise formed to meet the needs and convenience of the manufacturer. Said tone modulating device includes an outer wall 3 which is bellied or curved to correspond in part to the general inner surface curvature of the wind instrument within which it is adapted to be incorporated, such as conforming in part to the curvature of the bell portion 1 of the horn A. It will be noted that the wall 3 gradually flares outwardly and then straight upwardly, as shown at 4, to where it may have a swaged connection as shown at 5, with a second portion 6 of such device B.

The portion 6 includes a slightly tapered conical tubular member 8 which is bellied or flared as shown at 7. It will be noted that there is a space included between the parts 3 and 8 of such device B and that the chamber formed between such parts gradually enlarges from the end zone as 9 of such device B upwardly to what may be termed the head portion which would correspond to the dome 7.

The purpose of this is to allow an expansion of sound waves during the playing of the instrument A. The wall 3 is reduced in diameter as shown at 10 and accommodates a sleeve valve 11 upon said reduced portion. The sleeve valve includes a sleeve within which are transverse perforations or bores 12 adapted to register when the sleeve valve is rotated properly with corresponding bores transversely placed in the reduced portion 10—all as shown at 13. The sleeve valve is maintained on such reduced portion by slightly faring the end of such reduced portion, as shown at 14. An annular frictional member 15 is placed upon the sleeve valve beneath the openings 13, and the said frictional member 15 is adapted to contact with a portion of the inner wall of the wind instrument, as shown at 16, when it is desired to use the device B. It will be noted that the curvature of the wall 3 is such as to form a space, as shown at 17 between the inner surface of the flared portion 1 of the instrument A and the outer surface of the wall 3 of the device B. It will also be noted that the dome portion 7 extends outwardly from the bell of the horn or wind instrument A. As a brace for the conical tube 8 I have provided a lug 18 between the wall 10 and a portion of the tube 8.

In actual operation I insert the device B within the bell of the wind instrument A,
pushing the same inwardly to where the frictional member 15 tightly engages the inner wall surface which will hold the device B spaced from such wall at the zone marked 17.

If it is desired to allow a large volume of sound to be passed through such tone modulating device, as well as the horn, I may cause registration of the perforations 12 and 13 by grasping and turning the dome portion of the device B so that such perforations register, registration being determined by the quality of tone emitted, and it will be noted that the sound will be allowed to pass through the annular space included within the tube 8 as shown at 20 and outwardly from such device B, as well as through the perforations and the space included between the walls 1 and 3. If I wish to modulate the tone as to volume I may turn the sleeve valve by rotating the device B which will close the perforation or perforations 13 over the perforation or perforations 12, or I may completely turn it so that none of the perforations register. In this connection it is noted that the perforations 12 or 13 where there is a plurality of the same, are spacedly arranged so that there may be no registration of any of the perforations, but all connection with the space 17 is closed and hence all sound must pass through the space 20. It is further noted that the sound will enter between the parts 3 and 8 and th ere in a measure absorbed, reflected back by the dome so as to perform a muting operation and change the tone quality or tone emitted by the wind instrument A.

This device gives a wide variety of sounds, allows the musician to regulate at will the volume of such sounds and permit trick playing of a wind instrument.

It is obvious that various changes and modifications may be made in practicing the invention, in departure from the particular showing and description given, without departing from the true spirit of the invention.

Having thus disclosed my invention, I claim and desire to secure by Letters Patent:

A tone modulating device, comprising a bell-shaped outer member, a tapered inner wall member joined to the outer wall member at one end to form an enlarged dome sound reflecting chamber; said outer wall member having a portion of reduced diameter, formed with a perforation, and a sleeve provided with a perforation adapted to register at times with the perforation of the outer wall member.

In testimony whereof, I have signed my name to this specification.

PASQUALE SANTA EMMA.