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[72] Inventor **Julius E. Brooks**
P.O. Box 19464, Los Angeles, California 90019

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[54] **DUAL-BELL TRUMPET OR SIMILAR-TYPE HORN**
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[56] **References Cited**

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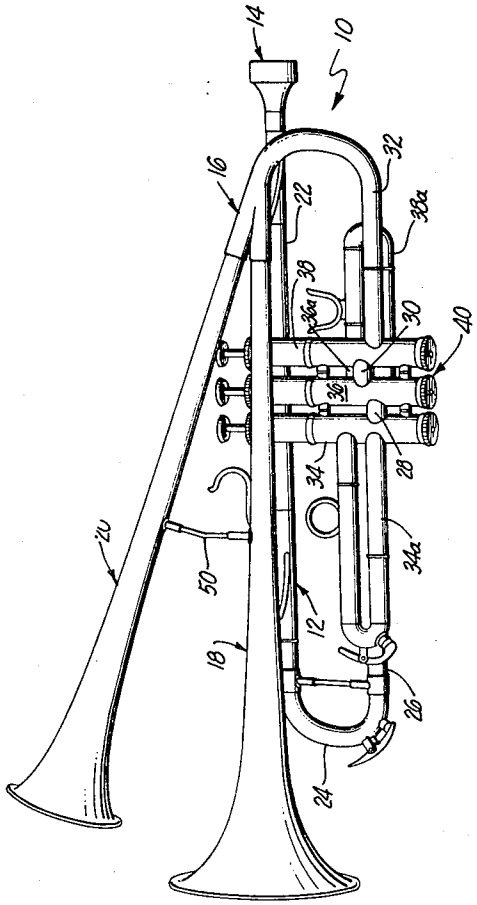
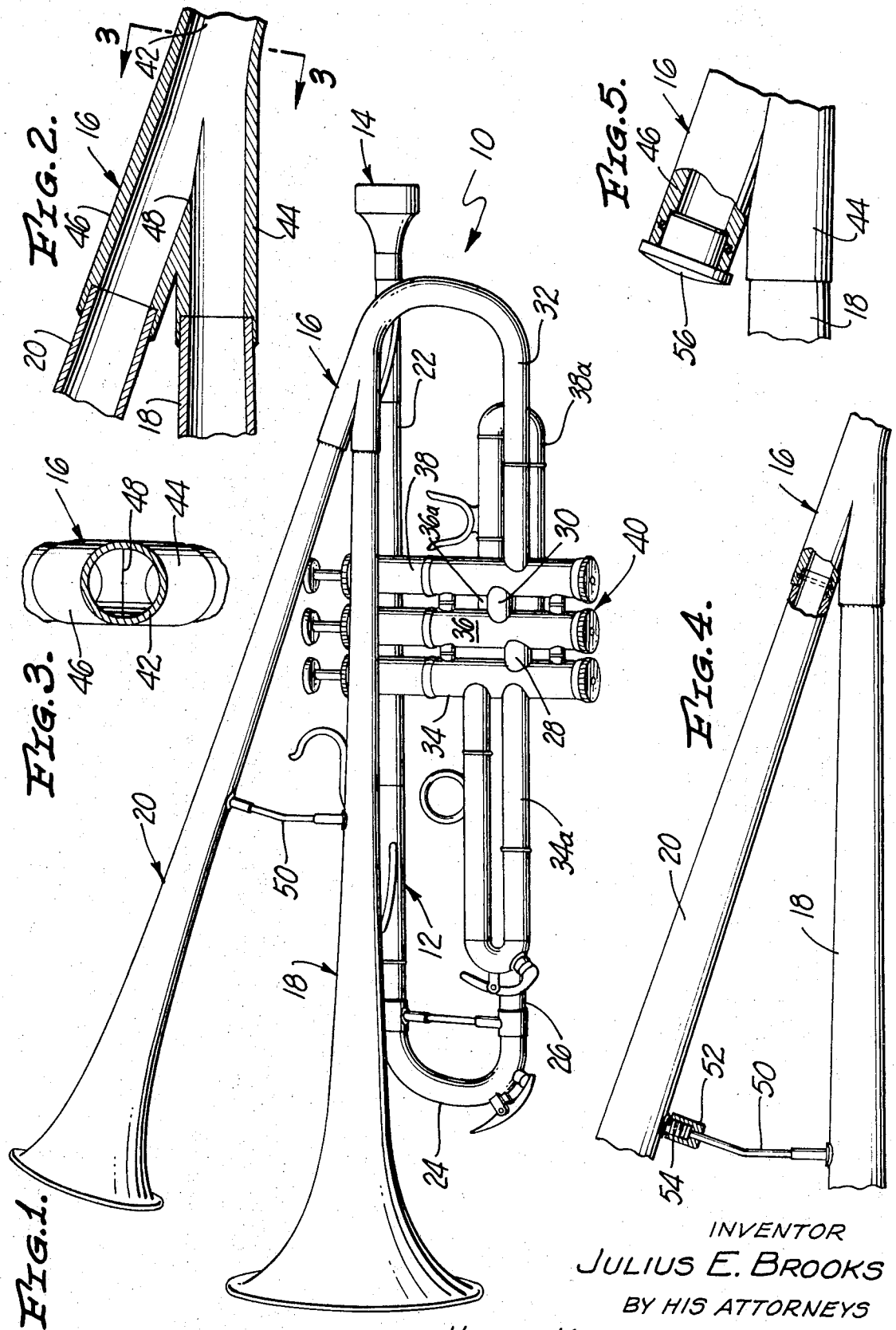
Primary Examiner—Richard B. Wilkinson
Assistant Examiner—John F. Gonzales
Attorney—Harris, Kiech, Russell and Kern

ABSTRACT: A trumpet or similar horn including a tubing assembly and two dissimilar bells joined such that like notes of similar volume but of different pitch and brilliance emanate simultaneously from the bells.





INVENTOR
JULIUS E. BROOKS
BY HIS ATTORNEYS
HARRIS, KIECH, RUSSELL & KERN

DUAL-BELL TRUMPET OR SIMILAR-TYPE HORN

The present invention relates to improvements in trumpets and similar horns and, more particularly, to a novel structure for a horn enabling the horn to simultaneously generate two like notes of similar volume but of different pitch and brilliance and thereby produce a unique musical effect.

It is very common for musicians, particularly in the jazz field, to search for a unique sound either from their instrument or for their particular orchestra or band. Accordingly, over the years, various people have experimented and endeavored to develop trumpets and other horns capable of producing unique yet pure tones. Some have endeavored to modify the horns of standard key such as the B flat, C, and E flat trumpets. Others have experimented with horns of more than one bell. Heretofore, and prior to the construction of my present invention, however, horns incorporating more than one bell have been incapable of generating notes or tones of different pitch that are in tune over the range of the horn whether it be a trumpet, cornet, or other brass instrument.

Accordingly, it is an object of my invention to provide a novel construction for a trumpet, cornet, or other horn which enables the horn to simultaneously generate like notes of differing pitch that are in tune over the entire range of the instrument.

Another object of my invention is to provide a horn of the foregoing character incorporating two bells of different length and taper in combination with a conventional tubing assembly such that the total length of the tubing assembly and one of the bells corresponds substantially to the tube and bell length for a horn of a given key and such that the total length of a tubing assembly and second bell is less than the tube and bell length for a horn of the given key.

Still another object of my invention is to provide a dual-bell horn of the foregoing character incorporating a connector for the bells to the tubing assembly which equally divides air emanating from the tubing assembly into the bells.

A still further object of my invention is to provide a dual-bell horn of the foregoing character wherein one of the bells is removable from the horn for replacement by a different bell when it is desired to produce a different musical effect.

The foregoing, as well as other objects and advantages of my invention may be more clearly understood by reference to the following detailed description when taken with the drawing which illustrates a trumpet incorporating the features of my invention.

In the drawing:

FIG. 1 is a side view of my trumpet;

FIG. 2 is a fragmentary sectional side view of a tubular connector for my trumpet;

FIG. 3 is a sectional view taken along the line 3—3 in FIG. 2;

FIG. 4 is a fragmentary side view of a portion of the bells included in an alternate form of my trumpet; and

FIG. 5 is a fragmentary side view of the tubular connector of FIG. 2 having a plug in its upper branch.

The drawing illustrates by way of example only a trumpet embodying the features of my invention. The trumpet is represented generally by the numeral **10** and includes a tubing assembly **12**, a mouthpiece **14**, a tubular connector **16**, and lower and upper bells **18** and **20**. The lower and upper bells **18** and **20** are connected to the tubing assembly **12** through the tubular connector **16** in such a manner that one blowing into the mouthpiece **14** is able to generate like notes from the lower and upper bells of similar volume but different in pitch and brilliance. The notes generated by the trumpet are clear and in tune throughout the entire range of the trumpet enabling the trumpet to be played as a novelty or solo instrument and also as an integral and important part of an orchestra or band.

In the illustrated trumpet **10**, the tubing assembly **12** comprises a series connection of a leader pipe **22**, tuning slide **24**, valve connecting tubes **26**, **28**, and **30**, and a bell connecting tube **32**. The leader pipe **22** is adapted to receive the mouthpiece **14** and connects at its opposite end to the tuning slide **24**. The tuning slide **24** is of conventional design and connects to the valve connecting tube **26**. The tube **26**, in turn, leads to the third of three valve units **34**, **36**, and **38** in a conventional valve assembly **40** (**34***a*, **36***a*, and **38***a* being the usual valve slides for the valve units). The valve connecting tubes **28** and **30** directly connect the third and second and second and first-valve units. Leading from the first-valve unit **38** and curving upwardly in a vertical plane of the valve assembly **40** is the bell connecting tube **32**. The tubing assembly **12** is of a predetermined length and of substantially the same inner diameter throughout. For example, the tubing assembly may be about 35 inches long and about one-half inch in inner diameter.

The tubular connector **16** is connected to an upper end of the bell connecting tube **32** and comprises three branches **42**, **44**, and **46**. The branch **42** is of substantially the same inner and outer diameter as the bell-connecting tube and is secured directly thereto as by welding. The branches **44** and **46**, however, are of a smaller similar inner diameter and are adapted to receive the small open ends of the lower and upper bells **18** and **20**, respectively. In this regard, the branch **44** extends forward toward the valve assembly **40**. The branch **46** is adjacent the branch **44** and extends upward from the branch **42** in a plane slightly inclined from the vertical plane including the axis of branch **44**. Within the connector **16**, the branches **44** and **46** are immediately adjacent each other and are divided by a pointed shoulder **48** which extends across the connector along an axis of the bell-connecting tube **32** to equally divide air from the bell-connecting tube into the branches **44** and **46** and hence into the lower and upper bells **18** and **20** (see FIGS. **2** and **3**). The sharp point on the shoulder effects a sharp cutting of the air with a minimum of turbulence which would interfere with the quality of the notes generated by the trumpet.

As previously indicated, the lower bell **18** is connected to the tubing assembly **12** by the connector **16**. In this regard, the relatively small open end of the bell **18** extends tightly into the branch **44** of the connector and may be secured therein as by welding. As illustrated, the inner diameter of the small open end of the bell **18** is somewhat less than the inner diameter of the bell-connecting tube **32**. From the small end, the bell **18** extends forwardly from the connector **16**. As the bell extends forwardly, it tapers outwardly toward its forward end and at its forward end flares outwardly to an enlarged opening. For example, the bell **18** may have an inner diameter at its small end of just less than one-half inch and may taper outward to a flared end of about 4¾ inches.

The length of the bell **18** is such that the total length of the bell connector branches **44** and **42**, and the tubing assembly **12** corresponds substantially to the tube and bell length for a horn of a given key. For example, in a preferred form of my trumpet, the total length is about 52 inches. This correspond closely to the tube in bell length of a B flat trumpet. It bears noting, however, that the bell **18** differs in inner diameter, taper, and flare from the bell of a B flat trumpet. In fact, in structure, the lower bell **18** resembles somewhat the structure of a bell for a C trumpet, while the tubing assembly **12** resembles in structure and length the tubing assembly of the conventional B flat trumpet. With such a structural combination, the note B flat emanates from the lower bell with the valve assembly in an open condition. However, the note is of a noticeably different pitch (lower) than the note B flat generated by a B flat trumpet and differs noticeably in pitch from the valve tone B flat of a C trumpet. Also, the brilliance of the tones are substantially different.

As previously indicated, the upper bell **20** is also connected to the tubing assembly **12** by the tubular connector **16**. In this regard, the small open end of the bell **20** is received tightly

within the branch 46 of the connector 16 and may be secured therein as by welding. Thus secured, the bell 20 extends upwardly and forwardly from the connector 16 in a plane slightly inclined to the vertical and to one side of the valve assembly 40 thereby permitting free operation of the valve units during the playing of the trumpet. The bell 20 is further supported in its upward direction by a vertically extending post 50 connected to a top of the bell 18 and to a bottom of the bell 20. As the bell 20 extends upwardly and forwardly from the connector 16, it tapers outwardly toward its forward end and at its forward end flares outward to an enlarged opening. For example, the bell 18 may have an inner diameter at the small end of just less than one-half inch and may taper outward to a flared end of about three inches.

As illustrated, the inner diameter of the small end of the bell 20 is somewhat less than the diameter of the bell connecting tube 32 and is substantially equal to the inner diameter of the bell 18. In fact, the total area of the open small ends of the bells 18 and 20 is only slightly greater than the inner open area of the bell-connecting tube. Thus, the amount of wind required to play the trumpet 10 is nearly the same as required to play a conventional trumpet having a tube and bell length substantially equal to the length of the tubing assembly 12 and one of the bells 18 or 20.

The length of the bell 20 is less than the length of the bell 18. Thus, the total length of the bell 20, tube connector branches 46 and 42, and the tubing assembly 12 is less than the tube and bell length for the horn of the given key previously referred to. In a preferred form of my invention, the total length of the bell 20 and the tubing assembly is about 50 inches. That is, the total length is about two inches less than the tube and bell length for a B flat trumpet. Please note, however, that the upper bell 20 differs in diameter, taper, and flare from the bell of a B flat trumpet. Also, the flare and taper of the bell 20 is different from the flare and taper of the bell 18 and as previously mentioned, the bell 20 is shorter than the bell 18. In fact, in structure, the upper bell 20 resembles somewhat the structure of a bell for an E flat trumpet, while the tubing assembly resembles in structure and length the tubing assembly of the conventional B flat trumpet. With such a structural combination, the note B flat emanates from the upper bell with the valve assembly in an open condition. However, the note is of noticeably different pitch (higher) than the note B flat generated by a B flat trumpet and differs noticeably in pitch from the B flat valve tone generated by an E flat trumpet. Also, the brilliance of the tones is substantially different.

With the structure of my trumpet 10 described above, a musician playing my trumpet simultaneously generates like notes from the lower and upper bells 18 and 20. The notes are of substantially the same volume but differ in pitch and brilliance from each other and from like notes emanating from a trumpet of the key having a bell and tube length corresponding to the bell and tube length of the lower bell 18 and tubing assembly 12. Thus, for example, comparing my trumpet with a B flat trumpet, with the valve assembly open, my trumpet generates notes B flat from the lower and upper bells. The notes, however, differ in pitch and brilliance from each other and from the note B flat generated by the B flat trumpet. In fact, the note emanating from the lower bell 18 is lower in pitch than the note emanating from the upper bell 20. The musical sounds emanating from the bells of my trumpet combine to produce a unique tone. It is a fuller tone than has heretofore been generated by trumpets or other brass instruments and is yet in tune for all notes within the range of a trumpet. Thus, my trumpet may be usefully employed as a unique solo instrument and as an integral part of an orchestra.

In an alternate form of my trumpet (see FIG. 4), the upper bell 20 may be removed and replaced by a different bell when it is desired to produce a different unique musical effect. To accommodate such replacement of the upper bell, in one form, the branch 46 of the tubular connector 16 is adapted to tightly receive by way of pressure fit the small end of the upper bell 20. An O-ring seal may be provided, if desired. Also, the post 50 extending upwardly from the lower bell 18 supports an internally threaded sleeve 52 for receiving a threaded stub 54 extending from the lower surface of the upper bell 20. The connection of the sleeve to the stub effects a rigid support for the upper bell above the lower bell. When it is desired to replace the upper bell, the musician simply turns the threaded sleeve to loosen the stub and twists the upper bell to remove it from the branch 46 of the connector 16. He then replaces the upper bell with a different bell by inserting the small end of the bell into the branch 46 and twisting the bell to bring the threaded stub into alignment with the post 50. The threaded sleeve is then turned to secure the stub and post together thereby effecting a rigid support for the new upper bell above the lower bell. Alternatively, the branch 46 may be covered by a plug 56 when it is desired to only use the bell 18 (see FIG. 5).

In the foregoing, I have described in some detail a preferred form of trumpet embodying the features of my invention. It is to be understood, however, that my invention is not limited to trumpets. It is useful in cornets and other brass instruments wherein it is desired to produce a unique tonal effect, that is, simultaneous generation of like notes of different pitches and brilliance. Also, changes and modifications may be made in the illustrated trumpet without departing from the spirit of my invention. It is therefore intended that my invention be limited in scope only by the terms of the following claims.

I claim:

1. A trumpet or similar horn comprising:
   - a tubing assembly including a series connection of a leader pipe, tuning slide, valve connecting tubes, and bell-connecting tube, and having a predetermined length;
   - a first bell having an open end of a diameter less than and connected to said bell-connecting tube such that the total length of said first bell and said tubing assembly corresponds substantially to the tube and bell length of a horn of a given key, said first bell differing in diameter, taper, and flare from a bell for a horn of said given key; and
   - a second bell having an open end of a diameter less than and connected to said bell-connecting tube such that the total length of said second bell and said tubing assembly is less than said tube and bell length of said horn of said given key, said second bell differing in taper and flare from said first bell and from said bell for said horn of said given key, whereby when the trumpet is played, like musical notes emanate simultaneously from said first and second bells but differ in pitch and brilliance from each other and from like notes emanating from said horn of said given key.

2. The combination of claim 1 further comprising means connecting said first and second bells to said bell-connecting tube for equally dividing air passing from said bell-connecting tube into said open ends of said first and second bells.

3. The combination of claim 2 wherein said means connecting said first and second bell to said bell-connecting tube comprises a tubular connector including first, second, and third branches, said first branch being of substantially the same diameter as said bell-connecting tube and connected thereto and said second and third branches being of lesser and substantially equal inner diameters and extending outwardly from said first branch for receiving said open ends of said first and second bells respectively.

4. The combination of claim 3 wherein inner openings of said first and second branches are immediately adjacent each other and are divided by a pointed shoulder directed along an axis of said bell-connecting tube to equally divide air from said bell-connecting tube into said second and third branches and hence to said first and second bells.

5. The combination of claim 3 wherein said third branch is adapted to releasably receive said open end of said second bell and wherein said trumpet further includes support means from said first bell for supporting and releasably connecting said

second bell in a space relationship to said first bell whereby said second bell may be removed and replaced by a different bell if so desired.

6. The combination of claim 1 further comprising means for releasably receiving and connecting said open end of said second bell to said bell-connecting tube and means for releasably supporting said second bell from said first bell.