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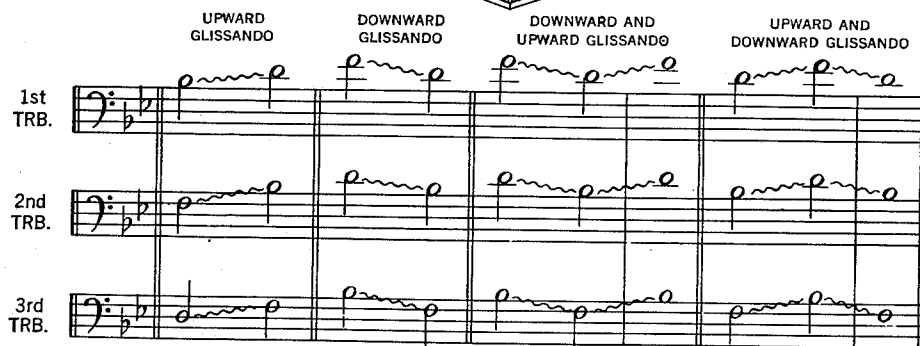
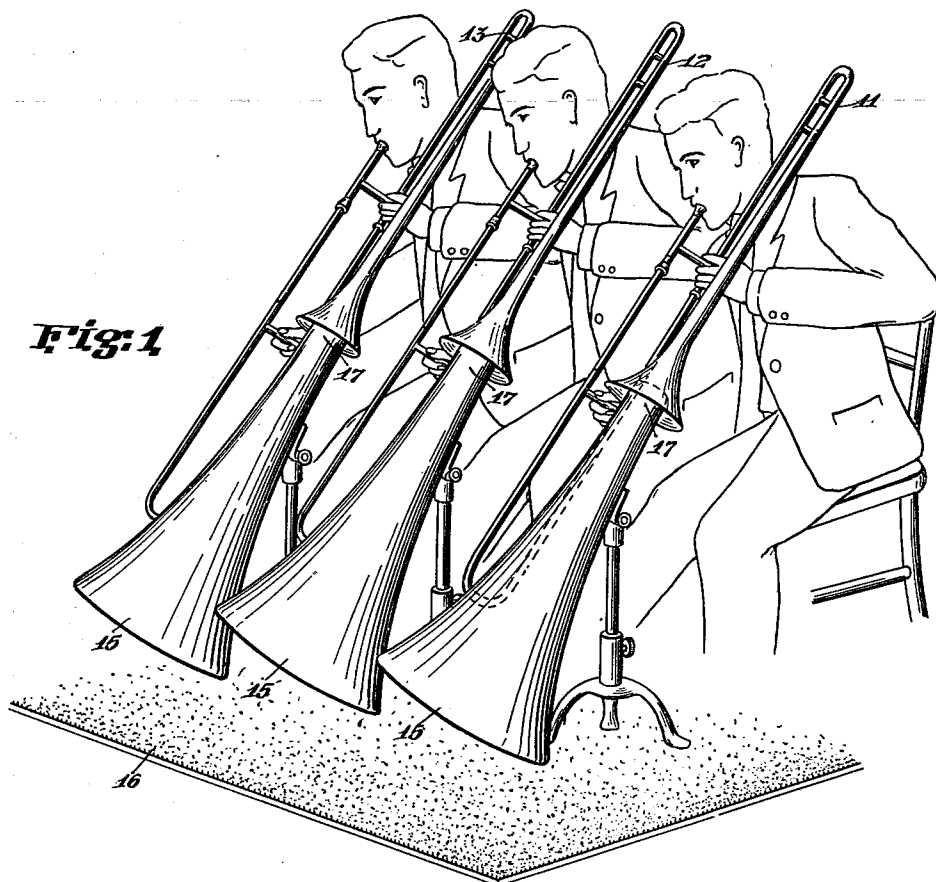
W. OSBORNE

2,059,898

METHOD OF PRODUCING MUSICAL SOUND EFFECTS

Filed Oct. 5, 1935

2 Sheets-Sheet 1



**Fig: 2**

INVENTOR.  
*Will Osborne*  
BY *Harry Ernest Rubens*  
ATTORNEY.

Nov. 3, 1936.

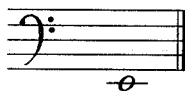
W. OSBORNE

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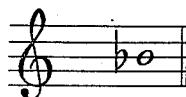
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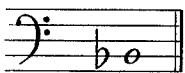
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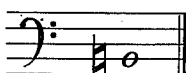
**Fig: 3**



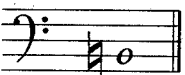
**Fig: 4**



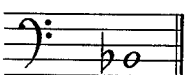
**Fig: 5**



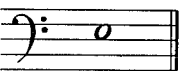
**Fig: 6**



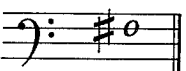
**Fig: 7**



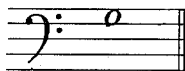
**Fig: 8**



**Fig: 9**



**Fig: 10**



**Fig: 11**

INVENTOR.  
*Will Osborne*  
BY *Harry Ernest Rubens*  
ATTORNEY.

## UNITED STATES PATENT OFFICE

2,059,898

METHOD OF PRODUCING MUSICAL  
SOUND EFFECTS

Will Osborne, Hazleton, Pa.

Application October 5, 1935, Serial No. 43,750

3 Claims. (Cl. 181—0.5)

My invention relates to novel means for and methods of producing novel musical effects and, more particularly, relates to a novel arrangement of trombones, preferably in an orchestra, and methods of producing novel musical effects thereby.

The so-called tenor trombone, commonly known as the slide trombone, is a metal tubular instrument of some three or four feet in length and consisting of three separate parts: (1) the bell, (2) the slide, (3) the mouth-piece. Sounds are produced by blowing into the latter, a small tunnel-like contrivance at one end of the instrument, and tightening or loosening the lips, at the same time drawing the slide to or away from the body of the player.

It is a member of the brass instrument family, along with trumpets, cornets, French horns, tuba, etc., but its history precedes any of these in dating back to the medieval ages.

The earliest composers used the trombone in their scores of symphonies, operas, etc., and its position in legitimate or classical music is unquestioned.

In the popular dance orchestra of today the trombone was one of the last instruments to be added, saxophones, violins, and trumpets coming first. Since its adoption, however, its use for the most part has been along so-called legitimate lines.

The natural scale of the instrument is B $\flat$  but music for it is written in the base or F clef. Its practical range is from the note shown in Figure 3 to that shown in Figure 4. All sharps or flats between these two extremes are available; the various degrees of the scale being obtained by lengthening the slide to seven different "positions." Accurate manipulation of the slide in these seven positions constitutes the foundation of trombone playing.

Because of its peculiar construction, the trombone is better adapted to the playing of "glissandi" than any other instrument in the orchestra. A "glissando" is the sliding from one note to another, playing all the intervening half and quarter tones, etc., but so rapidly that the ear is not conscious of any disagreeable effect such as would ordinarily be expected. The glissando itself is so-called illegitimate musically, its use in classical music being confined to the human voice and to stringed instruments, but purely as an emotional effect, the slide itself being scarcely noticeable.

Classical composers down through the ages never took advantage of the sliding possibilities

of the trombone as they probably felt it to be too unmusical and therefore not worthy of consideration. In modern symphony orchestra music the trombone glissando is occasionally encountered, thus in Stravinsky's "Fire Bird" suite, the trombone slide representing the cry of the Fire Bird. There have been a few compositions written for brass bands using the slide trombone on certain glissandos, but these compositions are purely a novelty, being too unworthy musically to have a lasting appeal. In fact, they are rarely heard today.

In the modern dance orchestra the trombone is used legitimately, but an occasional lone glissando is heard purely for its novel effect.

In all cases, however, where trombones have been used as in bands where as many as ten are used, orchestras using about four, and dance orchestras usually using one or two at the most, the glissando has been used and heard only in unison; i. e., the horns play the same notes at the same time. The opposite of "unison" playing is "divisi" playing, meaning of course that two or more instruments play different notes at the same time, or, in other words, in harmony. Heretofore, the trombone glissando has never been heard divisi.

I have discovered that I can obtain novel musical effects not heretofore accomplished with an orchestra by eliminating the string section of the orchestra and adding two trombones to the one already possessed, thus making a complete section, and utilizing their glissando possibilities to the utmost advantage.

Accordingly, objects of my invention are to provide novel apparatus for and methods of obtaining novel musical effects; to provide a novel arrangement of orchestral instruments and a novel coordination therebetween; and to provide a novel arrangement and operation of trombones; and to provide tone chambers and sound absorbing effects in combination thereto. There are other objects of my invention, which, together with the foregoing, will appear in the detailed description to follow in which:

Fig. 1 is a perspective schematic illustration of my novel trombones and their arrangement for producing my desired effect.

Fig. 2 is an illustration of the harmony music of the trombones as it would have to be written according to my invention.

Figs. 3, 4, 5, 6, 7, 8, 9, 10 and 11 represents various musical positions referred to in the description.

In Fig. 1, I have illustrated three trombones 11, 55

12, and 13 which are to form part of an orchestra where all the string instruments have been eliminated.

As has been explained before, the range of a trombone is almost three octaves. Because of its construction it is possible to slide from any tone to the half tone above, and from any tone to the half tone below, with the two exceptions of from the note shown in Fig. 5 to that shown in Fig. 6, and from that shown in Fig. 7 to that shown in Fig. 8. The trombone is built on the overtone or harmonic principle, and this accounts for the fact that every note from that shown in Fig. 9 upwards can be played in two or more positions, except that shown in Fig. 10 and that shown in Fig. 11. These are called "false" positions and are rarely, if ever, used in legitimate trombone playing. In fact, the average trombonist is barely aware of their existence. With the aid of these false positions, it soon becomes evident that an infinite variety of glissandi are possible between intervals of major and minor 2nds, 3rds, 4ths, and in some instances 5ths. (An interval is the distance from one tone to another, as gauged by staff degrees). This enables the use of trombone glissandi in divisi form. The use of three trombones doing the same thing in harmony intensifies this appeal not only three times, but many more times. Furthermore, it is possible to slide upwards until the desired note is reached, or downwards until the desired note is reached, or combining the two motions, slide upward and downwards and vice versa, in the same breath. It can readily be seen that the uses of the glissando are many.

The natural open tone of a trombone may be described as follows—in the lower register, blatant; in the middle register, rich and powerful; in the high register, if blown loud, it is penetrating—if blown softly and legato, a certain amount of sweetness is attained. In recent years, various contrivances, known as "mutes" have been marketed, which if placed in the bell of the trombone, alter its original tone considerably. These mutes may be made of metal, wood, fiber, etc., and they produce various tonal effects, but all have one main purpose in general—to soften the tone. Practically all trombonists in the general run of dance orchestras use such of these mutes as their work may demand.

Some trombonists make use, for solo work only, of a cone shaped fiber contrivance of various lengths known as a "megaphone". This megaphone is generally placed on an especially fitted stand, with the large end of the megaphone facing the audience, while the player blows into the small end with his horn. Its effect is to eliminate somewhat the harshness of the open tone, while adding to the instrument's carrying quality.

In accordance with my invention, I take a plurality of megaphones, about three in number and each approximately three feet in length, and preferably placing the large ends on a carpeted floor as at 16 in the drawing, with the large ends at an angle with said carpet, the three trombonists play into the small ends 17. There are many ways of creating the same tonal effect by using any of the well known tone chambers

in combination with a sound absorbing effect such as cloth, felt, etc.

The resultant effect is a new instrument producing musical effects which have never been produced in any known instrument. Even to a well-versed musician it would be impossible to tell from a distance, by radio or record, what instrument was playing if it were not for the fact that only a trombone can glissando so readily.

In employing this new instrumental effect in an orchestra, every piece of music must necessarily be specially arranged because of the different instrumentation required.

To this end it is first necessary to draw up a chart for the trombone, showing all the different notes on the instrument, together with their true positions and false positions; then to decide which intervals are best for glissando purposes, which keys are better, etc. A true glissando would be impossible to write musically because of the intervening quarter or eighth tones, so it is necessary to write the first note of the glissando (the starting point) and the last note (the destination) and, indicating the glissando by a wavy line, to number the positions to be used. At times it is feasible to orally explain to the performers what effect is wanted.

The use of the megaphones in particular has done more to create a distinctive flavor than any other factor. The exceptionally smooth, well rounded tone that pours from the megaphones can only result from the proper use of them as explained above.

Although I have made specific illustrations of my invention, it will be clear that I do not wish to be limited thereby, as the trombones may be used with megaphones, metal or cloth hats, any tone chamber such as barrels, square or round boxes, various mutes and other possible contrivances such as would produce the exact tone quality.

The invention constitutes a novel utilization of the glissando possibilities of two or more trombones playing in harmony and the creation of a new and distinctive tone color by the use of trombones playing into megaphones in the manner described in detail above.

I claim:

1. The method of producing musical sound effects, consisting in directing the sound from a musical instrument into a sound amplifier and thereafter permitting the amplified sound to be modified by a sound absorbing medium placed inclined to said amplifier.

2. The method of producing musical sound effects, consisting in directing the sound from a musical instrument into a megaphone and thereafter permitting the amplified sound to be modified by a sound absorbing medium placed inclined to said amplifier.

3. The method of producing musical sound effects, consisting in directing the sound from a musical instrument into a megaphone inclined to a vertical axis, and thereafter permitting the amplified sound to be modified by a carpet placed horizontally below and adjacent to said megaphone.

WILL OSBORNE.