Sept. 17, 1935. B. BERNATH 2,015,029

BALANCE FOR MUSICAL INSTRUMENTS

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Fig. 1

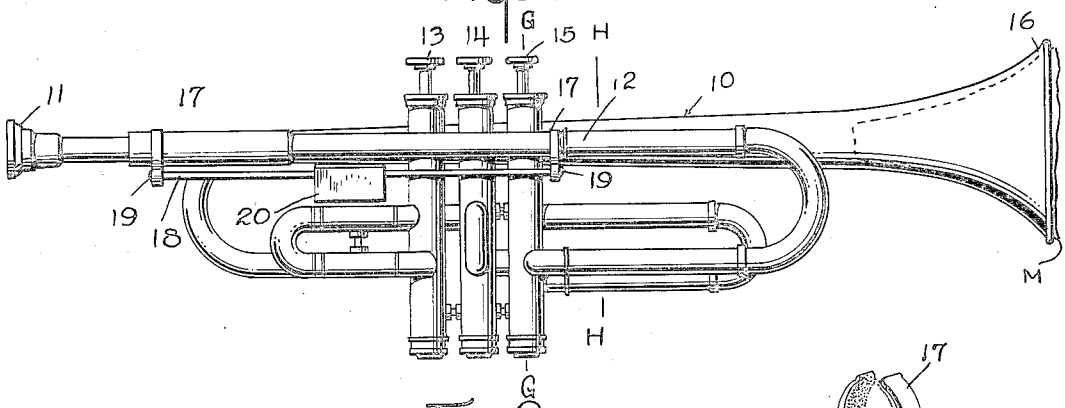


Fig. 2

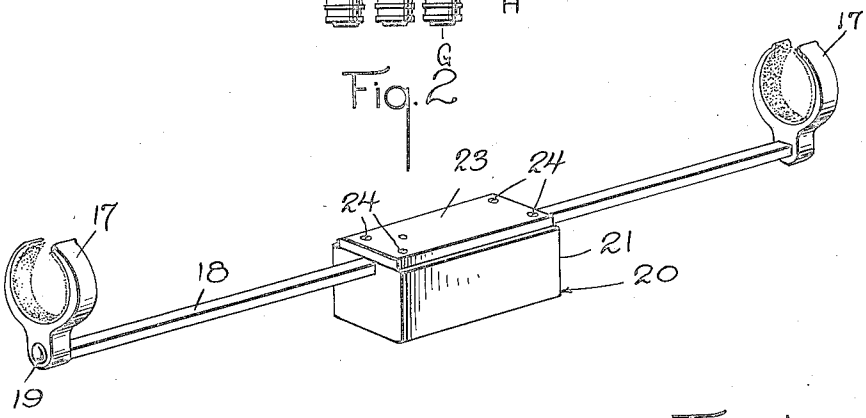


Fig. 3

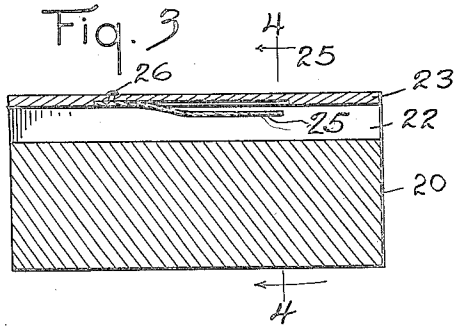
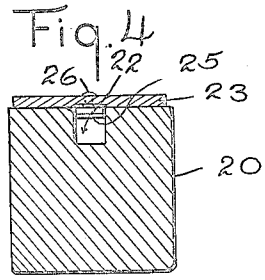


Fig. 4



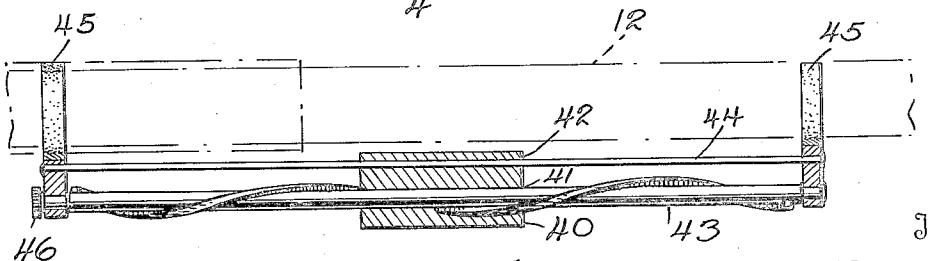


Fig. 5

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BALANCE FOR MUSICAL INSTRUMENTS

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6 Claims. (Cl. 84—453)

This invention relates to musical instruments and more particularly to balance weights for musical instruments of the horn type whereby the center of gravity of the instrument may be shifted to suit the taste of the individual player or whereby the center of gravity may be maintained constant despite the addition of extraneous weight to the instrument. The invention is particularly applicable to instruments of the trumpet or cornet type but it will be readily understood that it may also be applied to any other instruments with which its use appears to be desirable.

One of the objects of this invention is to provide a balance weight as above described, which may be incorporated in an instrument of the horn type during its manufacture, or which may be manufactured separately and applied to any such instrument now on the market. Another object is to provide a device of the above-mentioned character, which may be readily and inexpensively manufactured. Another object is to provide a device of the above-mentioned character which is comprised of a relatively small number of parts. A still further object is to provide a device of the above-mentioned character, which is sturdy, durable, and attractive in appearance.

Other objects will be in part obvious or in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts as will be exemplified in the structure to be described hereinafter and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which are shown two of the various possible embodiments of this invention,

Fig. 1 is a side elevation of a musical instrument such as a standard trumpet showing one form of the present invention;

Fig. 2 is a perspective view of one form of the invention, separate from the instrument to which it is to be applied;

Fig. 3 is a side sectional elevation of a feature of the present invention;

Fig. 4 is a sectional view taken along line 4—4 of Fig. 3;

Fig. 5 is a plan view, partly in section, of a modified form of the invention.

As conducive to a clearer understanding of this invention, it may be here pointed out that amongst professional musicians, particularly those engaged in orchestral work and those who play instruments of the horn type such as the standard trumpet, it is frequently necessary to play for a period of several hours without rest of any substantial duration. Further, in playing such an instrument as a trumpet, it is frequently necessary to insert in the bell of the instrument a device known as a mute in order to modulate the tone of the instrument. These mutes are well known in the art and are available in many sizes, shapes, materials and weights.

It has been found by musicians that the insertion of a mute tends to throw the instrument materially off balance, which results in an unnatural strain on the wrist of the player using the instrument and, as a consequence, severely tires the wrist which frequently causes the player to produce a relatively inferior grade of music.

It has been found, however, that if the balance of the instrument is maintained constant and the center of gravity in substantially the same position at all times, this unnatural strain on the wrist of the player is alleviated and the inconvenience caused thereby with the resulting tonal inferiorities is obviated. By the use of this invention, the balance of the instrument and the center of gravity may be maintained and adjusted to suit the particular player as well as the weight of the particular mute utilized.

Referring now to the drawing in detail, and first to Fig. 1, a musical instrument such as a standard trumpet is broadly indicated at 10. 11 indicates the mouthpiece of said instrument, 12 the convoluted tube comprising a part thereof, 13, 14 and 15 the valves thereof, and 16 the bell.

Supported by the tube 12 are two spring clips 17 (see also Fig. 2) which in turn support a rod 18 preferably of angular cross-section. The end portions 19 of rod 18 may be affixed to spring clips 17 in any desired manner such as by soldering or welding or threaded interengagement.

While in the above spring clips 17 are specifically referred to, it will be understood that any other suitable means may be utilized to support rod 18. It has been found, however, that spring clips readily adapt themselves to quick removal should it be desired to utilize the instrument without the device of the instant invention.

Supported on rod 18 is a weight 20 (see Figs. 2, 3 and 4). Weight 20 is comprised of a body portion 21 having a groove 22 in the upper portion thereof, groove 22 being of an angular cross-section corresponding to that of rod 18. Affixed to the upper portion of weight 20 is a plate 23 which may be held in place by suitable screws 24 or any other desired means. Attached to the

inner surface of plate 23 and centrally positioned so as to fit into groove 22 is a suitable spring 25 which may be of the leaf type and held in place by a suitable screw or rivet 26. Spring 25 thus by its action on rod 18 holds weight 20 in any desired position.

Weight 20 may be constructed of any desired material as may be plate 23. It has been found desirable in practice, however, to form the weight of lead and encase the same in thin brass for plating purposes. The upper plate 23 is preferably constructed of brass since this material readily adapts itself to plating in order that the finish may conform to that of the instrument to which it is to be applied.

While weight 20 is illustratively indicated as broadly rectangular, it will be understood that a weight of any suitable shape or configuration may be used.

In practice it has been found advisable to make weight 20 of a weight slightly in excess of the average mute in order to provide a proper counterbalance.

From the above description, it will now be seen that, assuming the longitudinal center of gravity of the instrument to be normally indicated by a central point on the line G—G (see Fig. 1), upon the insertion of a mute M (see Fig. 1) into bell 16, this center of gravity will be shifted approximately to a point along line H—H (see Fig. 1). It will further be seen, however, that by shifting the weight 20 toward the mouth-piece 11 of the instrument, the weight of mute M will be compensated and the center of gravity of the instrument restored to the line G—G. When mute M is removed from bell 16, the weight may be shifted back to a suitable position wherein the center of gravity is that of the normal instrument without the mute. It will also be understood that should a player find that a normal center of gravity along the line G—G is unsuitable to him, he may readily determine such a center of gravity as appeals to his own particular touch and by a suitable adjustment of weight 20 maintain this center of gravity at all times.

One of several possible modified forms of the invention is disclosed in Fig. 5. Here a weight 40 having a bore 41 threaded at a high pitch therethrough and a second smooth bore 42 substantially parallel to bore 41 is supported by a rod 43 having a high pitch screw thread thereon passing through bore 41, the threads of bore 41 and rod 43 coacting, and a smooth rod 44 passing through bore 42 of weight 40. Rod 43 is rotatably journaled at its ends in a pair of spring clips 45 similar to the spring clips 17 above described. Clips 45 also support rod 44 in parallel relation to threaded rod 43. A knurled knob 46 or other suitable grip is fixed to one end of rod 43 whereby it may be rotated. It will now be seen that the same objects and advantages are achieved by this construction as described in the construction embodied in the modification previously disclosed. Further, a single rotation of knob 46 will shift weight 40 a substantial distance to facilitate rapid adjustment of the balance. Such speed of adjustment is important in that frequently such adjustment must be made while the instrument is being played.

If desirable, graduations may be placed along the length of the rods 18 and 44 to indicate the proper position to which the weights 20 and 40, respectively, should be moved to compensate for varying weights of mutes. These, however, have been found in practice to be largely unnecessary since the proper feel of the instrument may differ to different players.

As many possible embodiments may be made of the above invention and as many changes might be made in the embodiments set forth, it is to be understood that all matter hereinbefore set forth or shown in the drawing is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. A device of the character described comprising, in combination, a threaded rod, supporting means for said threaded rod, said supporting means adapted to be affixed to a musical instrument of the horn type, a second rod adjacent said threaded rod and substantially parallel thereto, a weight having a plurality of bores therethrough, said weight carried by said rods one of said bores being threaded and adapted to coact with said threaded rod, rotatable means affixed to an end of said threaded rod whereby upon rotation of said rotatable means said threaded rod and said threads in said bore coact to cause said weight to travel along said threaded rod and said second rod whereby to shift the center of gravity of said musical instrument.

2. Counterbalancing means for a musical instrument of the trumpet type adapted to receive a mute comprising, in combination, securing means on said instrument, a rod supported by said securing means in substantial longitudinal parallelism to said instrument, a weight carried by said rod at substantially the normal center of gravity of said instrument and shiftable along the length of said rod to counterbalance the weight of said mute upon the addition thereof and thus maintain the center of gravity of the instrument substantially constant.

3. Counterbalancing means for a musical instrument of the trumpet type adapted to receive a mute comprising, in combination, securing means on said instrument, a rod carried by said securing means, a weight carried by said rod at substantially the normal center of gravity of said instrument and shiftable with respect to one end of said rod to counterbalance said mute upon the addition thereof and thus maintain the center of gravity of the instrument substantially constant.

4. Counterbalancing means for a musical instrument of the trumpet type adapted to receive a mute comprising, in combination, securing means on said instrument, a rod supported by said securing means in substantially longitudinal parallelism to said instrument, a weight carried by said rod at substantially the normal center of gravity of said instrument and shiftable along the length of said rod to counterbalance said mute upon the addition thereof and thus maintain the center of gravity of the instrument substantially constant, and means to prevent accidental displacement of said weight with respect to its position on said rod.

5. Counterbalancing means for a musical instrument of the trumpet type adapted to receive a mute comprising, in combination, securing means on said instrument, a rod supported by said securing means in substantially longitudinal parallelism to said instrument, a weight carried by said rod at substantially the normal center of gravity of said instrument and shiftable along the length of said rod to counterbalance said mute upon the addition thereof and thus maintain the center of gravity of the instrument substantially constant, and means to prevent accidental displacement of said weight with respect

to its position on said rod, said means comprising a spring contained in said weight and adapted to bear against said rod.

6. Counterbalancing means for a musical instrument of the trumpet type adapted to receive a mute comprising, in combination, securing means on said instrument, a rod supported by said securing means in substantially longitudinal parallelism to said instrument, said securing means comprising a plurality of spring clips disposed at predetermined positions along said rod, a weight carried by said rod at substantially the normal center of gravity of said instrument and shiftable along the length of said rod to counterbalance said mute upon the addition thereof and thus maintain the center of gravity of the instrument substantially constant, and means to prevent accidental displacement of said weight with respect to its position on said rod.

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