

Nov. 28, 1939.

H. SELMER

2,181,346

MUSICAL INSTRUMENT

Filed July 10, 1937

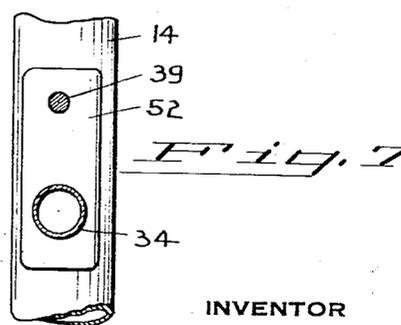
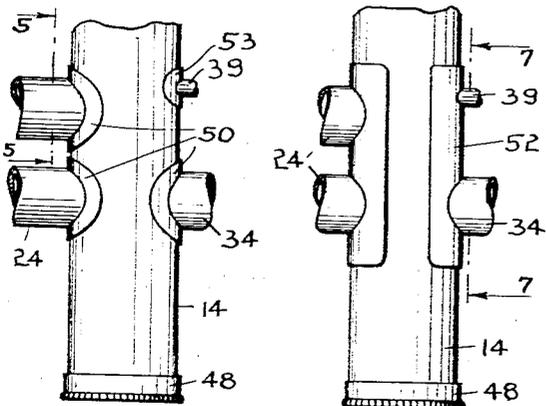
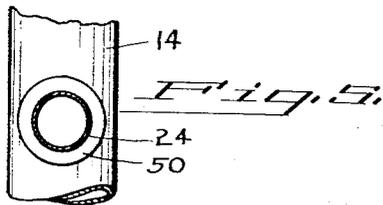
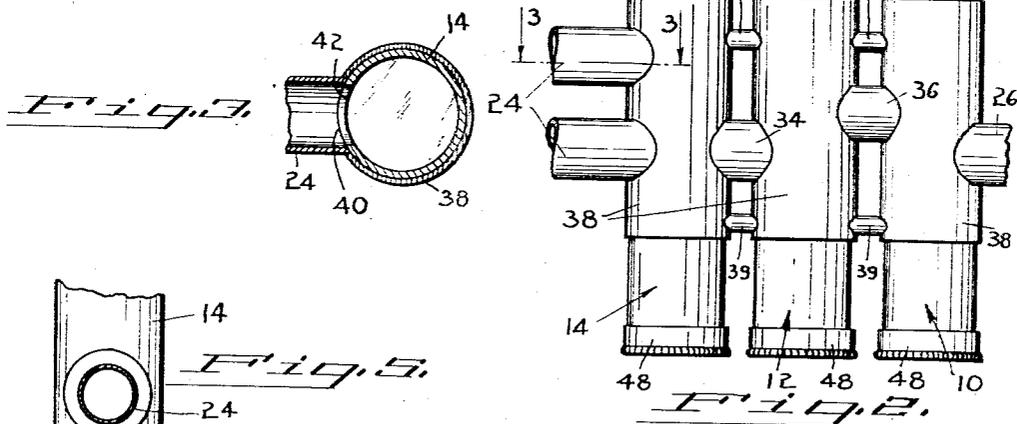
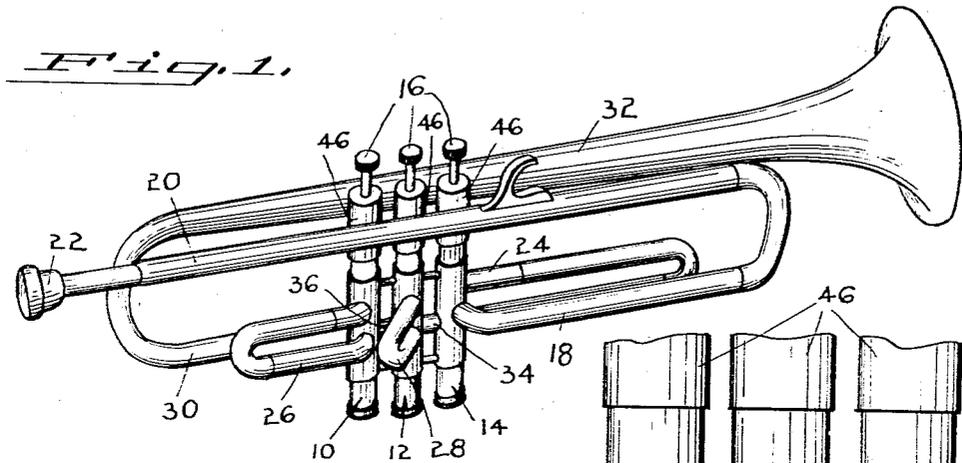


Fig. 4. *Fig. 5.*

INVENTOR
HENRI SELMER.
BY *Edwin Peisoker*
ATTORNEY

UNITED STATES PATENT OFFICE

2,181,346

MUSICAL INSTRUMENT

Henri Selmer, Paris, France

Application July 10, 1937, Serial No. 152,945

5 Claims. (Cl. 84—388)

The present invention relates to musical instruments and, more particularly, to trumpets and similar brasses, and to a method of making them.

As heretofore constructed, the tubing of brass musical instruments such as cornets, trumpets, etc., are hard soldered or brazed directly to the valve casings or chambers. This process of hard soldering or brazing requires the application of relatively intense heat which softens or anneals the metal of the valve casing or chamber more especially in the region thereof to which the heat is applied. Due to the softening of the walls of the valve casings the inner surfaces thereof which are engaged by the valves wear unevenly and said casings must be replaced after a relatively short time. Also, such heat frequently warps the valve casings. One object of the present invention, therefore, is to obviate these objections and disadvantages and for that purpose to provide for connecting the tubing to the valve casings in such manner that the hardness of the casings is conserved thereby increasing the life of the casings and improving the operation of the valves therein.

Another object of the invention is the provision of musical instruments of the class described and in which a plurality of valve casings are provided, constructed and arranged to permit the removal and replacement of said casings independently of each other.

The above objects of the invention and other objects ancillary thereto, and the manner of accomplishing said objects will be fully understood from the following description considered with reference to the accompanying drawing.

In the drawing:

Fig. 1 is a perspective view of a trumpet embodying the present invention;

Fig. 2 is a side view in elevation, on a larger scale, of the valve casings and part of the tubing connected thereto;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary view in side elevation of a valve casing, showing a modification;

Fig. 5 is a sectional view on the line 5—5 of Fig. 4;

Fig. 6 is a view similar to Fig. 4, showing another modification;

Fig. 7 is a sectional view on the line 7—7 of Fig. 6.

Referring now more particularly to the drawing, the musical instrument of the class referred to above, and here shown as a trumpet, comprises the valve casings 10, 12 and 14 to which the usual tubing is connected in the manner hereinafter described, and in which the customary valves operated by keys 16 are operated to control the passage of air for obtaining the desired sounds.

Except as hereinafter described, the trumpet here shown may be of any well known construction and it is to be understood that it includes all the parts requisite to an operative instrument of this type. As shown, the instrument includes the tubing 18 connected to the air pipe to which the mouthpiece 22 is attached, the U-shaped tubings 24, 26 and 28, the tubing 30 which connects valve casing 10 to the bell 32, and the short lengths of tubing 34 and 36 which connect and form passages between valve casings 12 and 14 and valve casings 10 and 12, respectively.

The manner in which said tubing is connected to the valve casings whereby to obviate the objections referred to above and to permit the removal and replacement of said casings independently of each other will now be described. Briefly described, in accordance with the present invention, the direct connection of the tubing to the valve casings by such processes as hard soldering or brazing is eliminated thereby obviating the necessity for applying intense heat to the valve casings, and instead of hard soldering or brazing the tubes to the valve casings, said tubes are first hard soldered or brazed to arcuate members such as sleeves or equivalent devices, as will more fully hereinafter appear, which are attached to the valve casings by soft solder which requires a relatively low temperature and hence does not reduce the hardness of the valve casings or otherwise deleteriously affect the same. In other words, while the tubing may be connected to the arcuate members by a process involving the application of intense heat or heat at high temperature, said arcuate members are connected to the valve casings by a process involving means fusible at low temperature.

In the form of the invention illustrated in detail in Figs. 2 and 3, the means for attaching the tubing to the valve casings, comprises arcuate members such as sleeves 38 which fit over companion valve casings which are provided with ports or openings which register with similar ports or openings in the valve casings. The tubings are connected to the ports in said sleeves by hard soldering or brazing, as was the case heretofore, when said tubing was connected directly to the valve casings. Then the sleeves are slid over said valve casings and positioned on the latter so that the openings in said sleeves register with the openings in the valve casings and when thus positioned said sleeves are secured to the valve casings by low temperature fusible means such as soft solder which is preferably applied for the full inner surfaces of the sleeves co-extensive with the underlying peripheral surface portions of the valve casings. Thus, for example, as illustrated in Fig. 3, the tubing 24 is hard soldered or brazed to the sleeve 38 at the port 40 in said sleeve, and said sleeve is positioned on the

valve casing 14 co-axially therewith and so that the end of tubing 24 at port 40 registers with the opening 42 in casing 14. It will be understood that each of the sleeves 38 has a sufficient number of ports for connecting the necessary tubing and that each of said ports registers with a companion port in the valve casing on which said sleeve is mounted. Although soft solder is utilized for fastening the sleeves to their valve casing, it will be understood that a strong connection between sleeve and casing is provided because said sleeves and casings are soldered together over relatively large surface portions thereof.

It will be understood that the tubular sections 46 in which the upper ends of the valve casings are fastened are secured to said valve casings by soft solder and that the lower end caps 48 are similarly secured to the valve casings by soft solder. Thus, when it is desired to remove a valve casing for the purpose of repair or replacement, it is merely necessary to remove either a top section 46 or a cap 48 from the valve casing which is to be removed, which can readily be accomplished by applying heat at low temperature to the fusible joint, and then similarly applying heat at low temperature to the companion sleeve of the casing to melt the solder at the joint therebetween. In this manner, each of the valve casings can be removed and replaced independently of each other. As here shown, adjacent sleeves are connected together as a unit by links 39 which may be hard soldered or brazed thereto.

In the form of the invention illustrated in Figs. 4 and 5, the means for attaching the tubing to the valve casing comprises arcuate members such as flanges 50 which are hard soldered to the ends of the tubing and secured to the valve casing by soft solder, it being understood that said flange is sufficiently wide to provide a joint of adequate strength between flange and valve casing whereby the tubing has a good strong connection with the casing. In this form of the invention, and as here shown, each end of the tubing connected to the valve casing is provided with an individual flange, but in the form of the invention illustrated in Figs. 6 and 7, an arcuate plate 52 to which a plurality of tube ends are hard soldered may be utilized instead of separate flanges, said plate being soft soldered to the valve casing for securing said ends of the tube in position. It will be observed that links 39 which serve to connect adjacent sleeves to each other, as in the form of the invention illustrated in Fig. 2, are in the modified forms of the invention just referred to provided with flanges 53, which are soft soldered to the valve casings, or are connected to said arcuate plates 52.

While I have shown and described the preferred embodiment of my invention as well as modifications of the latter, it will be understood that the invention may be embodied otherwise than as here shown, and for this reason the constructions herein shown and described are to be considered as illustrative of the invention and not limitative thereof, and that I do not wish to be limited precisely to said constructions or to any of them, except as may be required by the appended claims considered with reference to the prior art.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a musical instrument of the class de-

scribed, a metal casing providing a valve chamber having a port, a valve movable in said chamber for controlling said port, metal tubing associated with said casing in registry with said port, metallic means having an opening in registry with said tubing and with said casing port for connecting said tube to the casing, said means being secured to said tubing by fusible means and secured to said casing by means fusible at a temperature lower than that necessary to fuse said first mentioned fusible means.

2. In a musical instrument of the class described, a metal casing providing a valve chamber having a port, a valve movable in said chamber for controlling said port, a sleeve mounted on said casing co-axially therewith and provided with a port in registry with said casing port, tubing fusibly connected to said sleeve in registry with said port therein, and a fusible connection between said sleeve and said casing fusible at a temperature lower than that required to fuse the connection between said sleeve and said tubing.

3. In a musical instrument of the class described, a metal casing providing a valve chamber having a port, a valve movable in said chamber for controlling said port, metal tubing associated with said casing in registry with said port, and a metal sleeve having an opening therein mounted on said casing with said sleeve opening in registry with said port and with said tubing, said sleeve being secured to said tubing by means fusible at a relatively high temperature and secured to said casing by means fusible at a lower temperature whereby said sleeve can be disconnected from said casing without disconnecting said tubing from said sleeve.

4. In a musical instrument of the class described, a plurality of adjacent metal casings each providing a valve chamber having a port, a valve movable in said chamber for controlling said port, a metal member having an opening therein and mounted on each of said casings with said member opening in registry with said port of a companion casing, tubing fusibly connected at its opposite ends to said members, respectively, said members being secured to said tubing by means fusible at a relatively high temperature and secured to said casings by means fusible at a lower temperature whereby said casings can be disconnected from said members without disconnecting the latter from said tubing.

5. In a musical instrument of the class described, a plurality of adjacent metal casings providing valve chambers, each having a port and a valve movable therein for controlling said port, a sleeve mounted on each of said casings co-axially therewith and having a port in registry with said casing port, tubing connected to each of said sleeves in registry with the ports therein, said tubing being connected to said sleeves by means fusible at a relatively high temperature, and means in addition to said tubing connecting the sleeves on adjacent casings to each other, said sleeves having a relatively low temperature fusible connection with said casings whereby each of said casings may be removed and replaced independently of each other while said sleeves remain connected to each other and to said tubing, the temperature necessary to fuse the connection between said casings and their companion sleeves being lower than the temperature required to fuse the connection between said sleeves and tubing.

HENRI SELMER.