

J. LÖW.
BRASS MUSICAL INSTRUMENT.
APPLICATION FILED DEC. 8, 1906.

924,250.

Patented June 8, 1909.

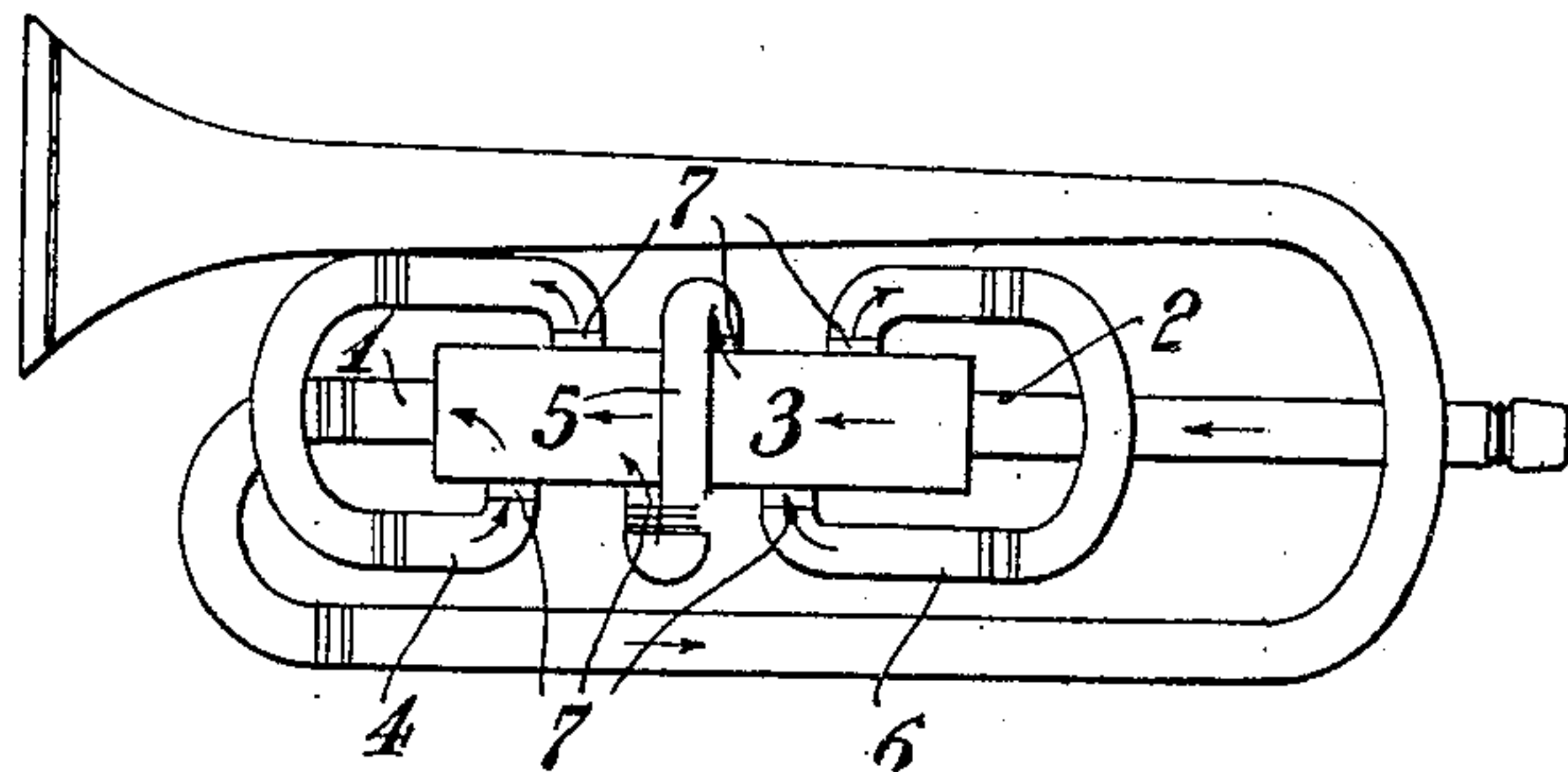


Fig. 4.

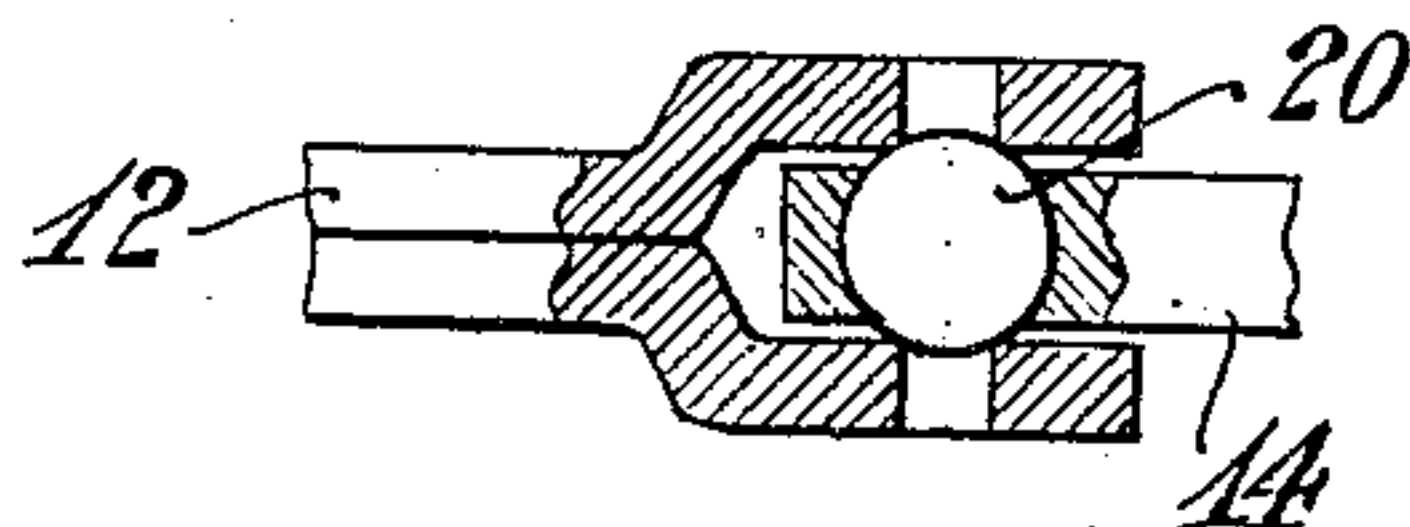


Fig. 5.

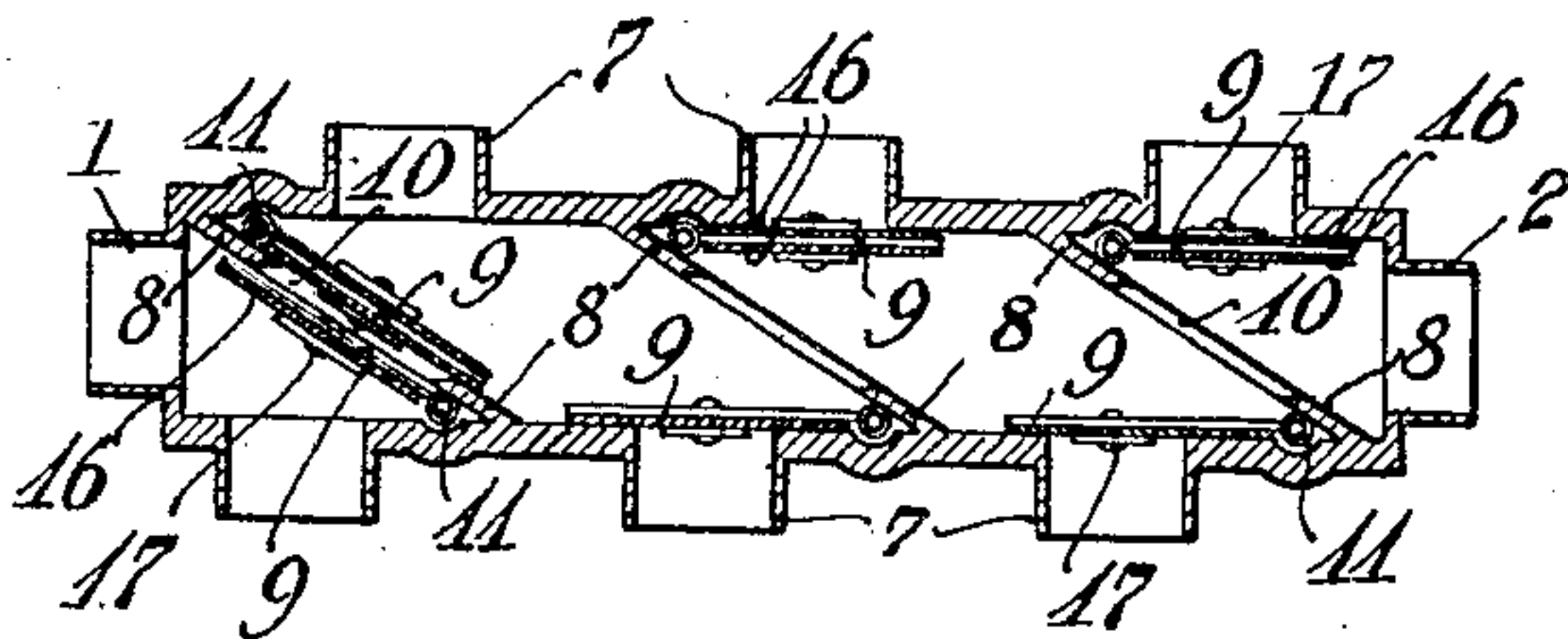


Fig. 3.

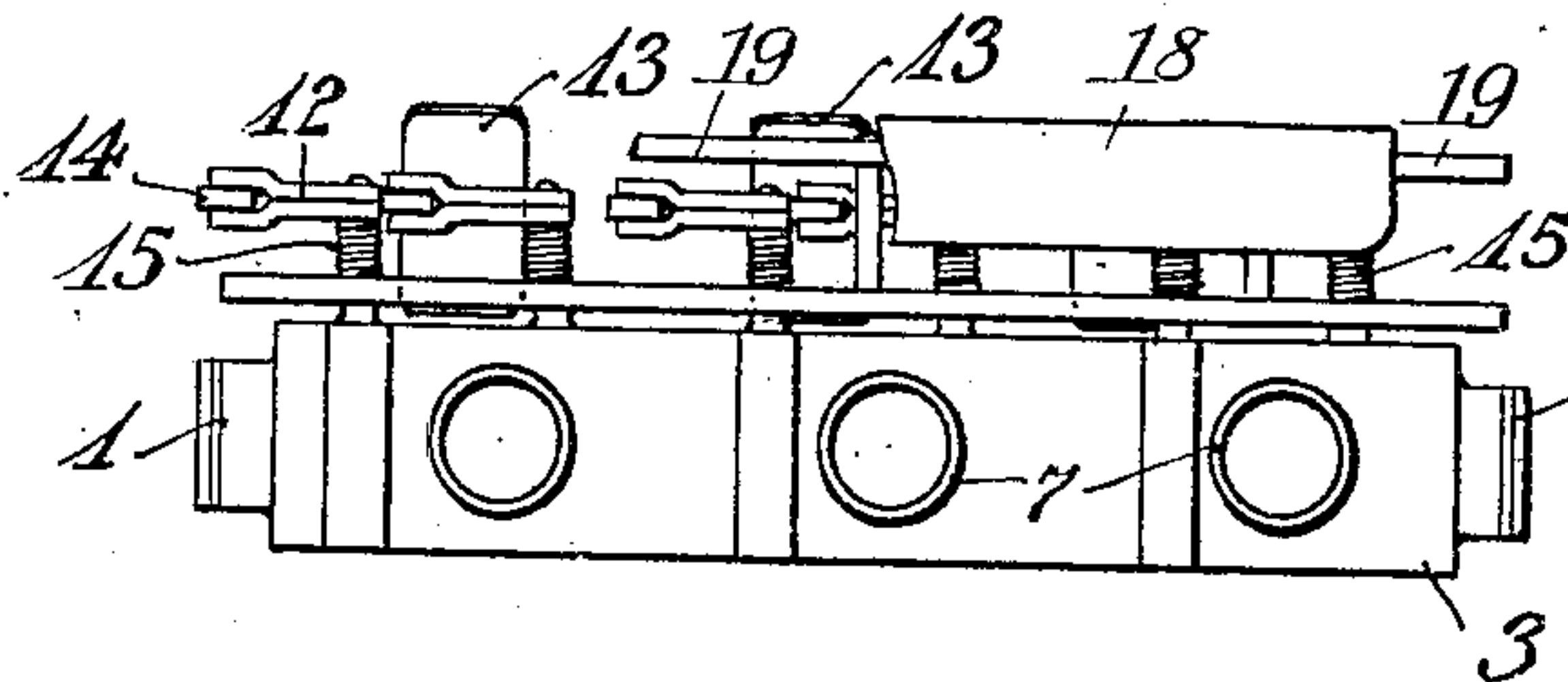


Fig. 2.

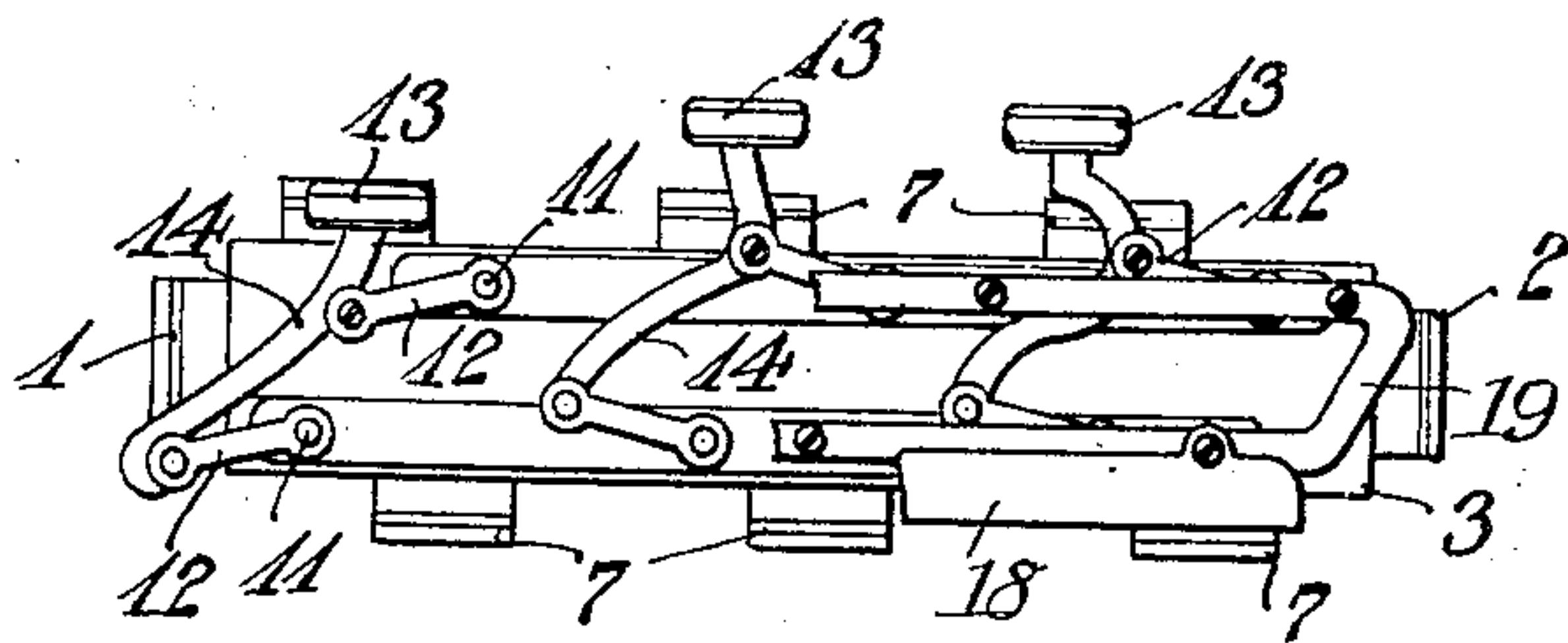


Fig. 1.

Witnesses

Wm. H. H. H. H.
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Inventor

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UNITED STATES PATENT OFFICE.

JACOB LÖW, OF MÜNSTER, GERMANY.

BRASS MUSICAL INSTRUMENT.

No. 924,250.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed December 8, 1906. Serial No. 346,840½.

To all whom it may concern:

Be it known that I, JACOB LÖW, a subject of the King of Prussia, and resident of Münster, in the Empire of Germany, have invented new and useful Improvements in Brass Musical Instruments, of which the following is a specification.

The present invention relates to improvements in brass musical instruments of various kinds, and more particularly the improvements refer to the arrangement and construction of the valve tubes and valves.

Special objects of the invention are to simplify and cheapen the construction and to render more efficient serviceable and durable in operation devices of the kind referred to.

With these ends in view the invention consists in the novel combination, arrangement and adaptation of parts, all as more fully hereinafter explained, shown in the accompanying drawings and then specifically set out in the appended claims.

In the accompanying drawings Figure 1 shows a front elevation of the valve box. Fig. 2 is an inverted plan view of the valve box. Fig. 3 represents a longitudinal section through the valve box. Fig. 4 shows a rear view of a brass musical instrument fitted with the valve mechanism. Fig. 5 illustrates a detail of construction on an enlarged scale.

The valve box according to the present invention is inserted in the tubing of the brass musical instrument at a suitable place thereof in the well known manner. The casing 3, which is preferably of rectangular cross section, is provided with the tubular sockets 1 and 2 for facilitating the aforesaid connection with the instrument.

The valve tubes 4, 5, 6, shown in the brass musical instrument, illustrated by way of example in Fig. 4, terminate nearly opposite in the casing 3, where they are received in tubular sockets 7 provided on the casing. This arrangement of the individual valve tubes causes the air to take a helical course through the valve tubes in contradistinction to the U-shaped or horse-shoe course common with brass musical instruments of the ordinary kind. Such a helical course of the air passing through the valve tubes is of great importance, since the changed tone is produced thereby more sonorous and full-sounding as well as purer, and more empha-

sized. The size, shape and configuration of the valve tubes are, of course, determined by the special kind of the brass musical instrument to be produced.

The valves for opening and closing the tubes 4, 5, 6 are of the nature of flap valves and they are opened in pairs in a manner to be described in detail later on. Ordinarily said flap valves 9 rest against the mouths of the tubular sockets 7 at the inside of the casing 3 permitting the air to pass freely through the latter. When it is desired to change the tone by elongating the way of the air current blown through the instrument, the flap valves 9 of the required tube or tubes have to be actuated, so as to establish communication between the casing and the respective valve tube or tubes and close the direct passage of the air through the casing.

Inside the casing 3 is provided a plate 8, one for each of the valve tubes 4, 5 and 6, which has an aperture 10 of a size and shape similar to the opening of the tubular sockets 1 and 2 to enable the air blown through the instrument to pass through the casing 3. The plate 8 is mounted obliquely in the casing 3 between the two terminal ends of each valve tube, as shown in Fig. 3. It is preferably so arranged, to guide the air in an arc of 90° from the casing into the valve tubes and vice versa.

The flap valves 9 are mounted on axles 11 journaled in the acute-angled corners between the casing 3 and the plate 8. At one side of the casing 3 said axles 11 extend outwardly, each outer extremity being firmly connected to a crank arm 12, which is jointed to the rod 14 of the finger plate 13. As will be seen by inspecting Figs. 1 and 3 the two flap valves of each valve tube have a common finger plate 13, their crank arms 12 being pivoted to the same rod 14. The length of the crank arms 12 of each pair of flap valves and their connection with the finger plate is, obviously, chosen so as to insure a uniform actuation of each of the two coacting flap valves. A helical spring 15 encircles the outwardly extending portion of each axle 11 and bears with one extremity against the casing 3 or against a stud fixed stationary with the casing, while the second extremity bears against the crank arm 12 of the respective axle. These springs 15, on releasing the finger plate 13, return the flap valves 9 to their

seat against the tubular sockets 7 of the casing, thereby shutting off the valve tube from the casing.

The flap valves 9 are coated or cushioned by elastic material to insure a tight closure against their seats. It has been ascertained in practice that soft india rubber sheets or pads 16 answer the purpose to perfection.

The elastic pads or washers 16 are, for instance, secured to the flaps 9 by a rivet 17 or in any other suitable and known manner.

To facilitate the actuation of the finger plates 13, an abutment plate 18 is attached to the lower side of the casing 3 in such a position as to enable the thumb to conveniently rest against same when playing the instrument. A frame 19 interconnects the axles 11 at their external outer ends, affording a bearing for said axles and steadying them in their relative position, as will be readily understood.

The connection between the rod 14 of the finger plate 13 and one of the two crank arms 12 may be effected by a ball and socket joint 20, as illustrated in Fig. 5.

The valve mechanism, being simple in construction can be produced at a comparatively low cost and the assembling of the various internal and external organs requires no special skill.

Owing to its small dimensions and its compact construction failure in the actions of the various parts of the valve mechanism is impossible. Another important advantage of the hereinbefore described valve mechanism consists in the fact that anybody can clean and replace the component parts without the aid of an expert. Friction and weight are reduced to a minimum and in view of the connection between the valves and the finger plates the latter require only to be moved about a third of the distance of finger plates of ordinary brass instruments. This entails the important advantage of enabling a quicker succession of tones.

While I have shown in the accompanying drawings the preferred form of my invention, it will be understood that I do not limit myself to the precise form shown, for many of the details may be changed in form or position without affecting the operativeness or utility of my invention, and I therefore reserve the right to make all such modifications as are included within the scope of the following claims, or of mechanical equivalents to the structure set forth.

What I do claim as my invention, and desire to secure by Letters Patent, is:

1. A valve mechanism for brass musical instruments comprising a casing to be inserted in the tubing of the instrument at the proper place thereof, valve tubes each having its extremities terminating on opposite sides of said casing, pairs of flap valves located in said casing and adapted to be actuated in pairs, each pair of said flap valves serving for closing the extremities of one valve tube, an apertured abutment plate for each pair of the flap valves mounted obliquely in the casing, finger plates and transmission means between the valves and the finger plates substantially as set forth.

2. A valve mechanism for brass musical instruments comprising a casing 3 to be inserted in the tubing of the instrument at the proper place thereof, valve tubes 4, 5, 6 each having its extremities terminating on opposite sides of said casing 3, pairs of flap valves 9 for closing the extremities of the valve tubes, means for simultaneously actuating the two flap valves 9 of each valve tube so as to open or close the communication between the casing and one valve tube, an apertured abutment plate for and common to each pair of the flap valves 9, said abutment plate 8 being mounted obliquely in the casing, finger plates and transmission means between the valves and the finger plates, substantially as set forth.

3. A valve mechanism for brass musical instruments comprising a casing 3 to be inserted in the tubing of the instrument at the proper place thereof, valve tubes 4, 5, 6 each having its extremities terminating on opposite sides of said casing 3, flap valves 9 for closing the extremities of the valve tubes, means for simultaneously actuating the flap valves 9 of each valve tube so as to open or close the communication between the casing and valve tubes, an abutment plate 8 for and common to each pair of the flap valves and mounted obliquely in the casing, said abutment plate 8 having an aperture 10 for the passage of the air through the casing, an axle 11 journaled in each acute angled corner between the casing 3 and the plates 8, a flap valve 9 fixed to each axle 11 normally shutting off communication between the casing and one valve tube and adapted to close against the apertured abutment plates 8, springs 15 for automatically returning the flap valves 9 to their normal position, crank arms 12 attached to outwardly extending portions of the axles 11, rods 14 pivotally jointed to the aforesaid crank arms 12 and finger plates 13, attached to the rods 14, each finger plate 13 and its rod 14 serving for actuating the two flap valves of one valve tube, substantially as set forth.

4. A valve mechanism for brass musical instruments comprising a casing 3, tubular sockets 1, 2 at the two ends of said casing for the reception of the tubing of the instrument, tubular sockets 7 in the upper and lower faces of the casing, valve tubes 4, 5, 6 for insertion in the aforesaid tubular sockets 7, one extremity of the same terminating at the upper, the other at the lower face of the casing, plates 8 mounted obliquely in the casing, apertures 10 in the plates 8, a flap valve

9 for each extremity of the valve tubes,
springs 15 for pressing the flap valves 9
against the extremities of the valve tubes,
finger plates 13 for actuating the flap valves
5 9 in pairs and transmission means interme-
diate between the valves and finger plates,
substantially as set forth.

In witness whereof I have hereunto signed
my name this 8th day of Nov. 1906, in the
presence of two subscribing witnesses.

JACOB LÖW.

Witnesses:

EDWARD BUTTNER,
FRIEDRICH LUNORD.