

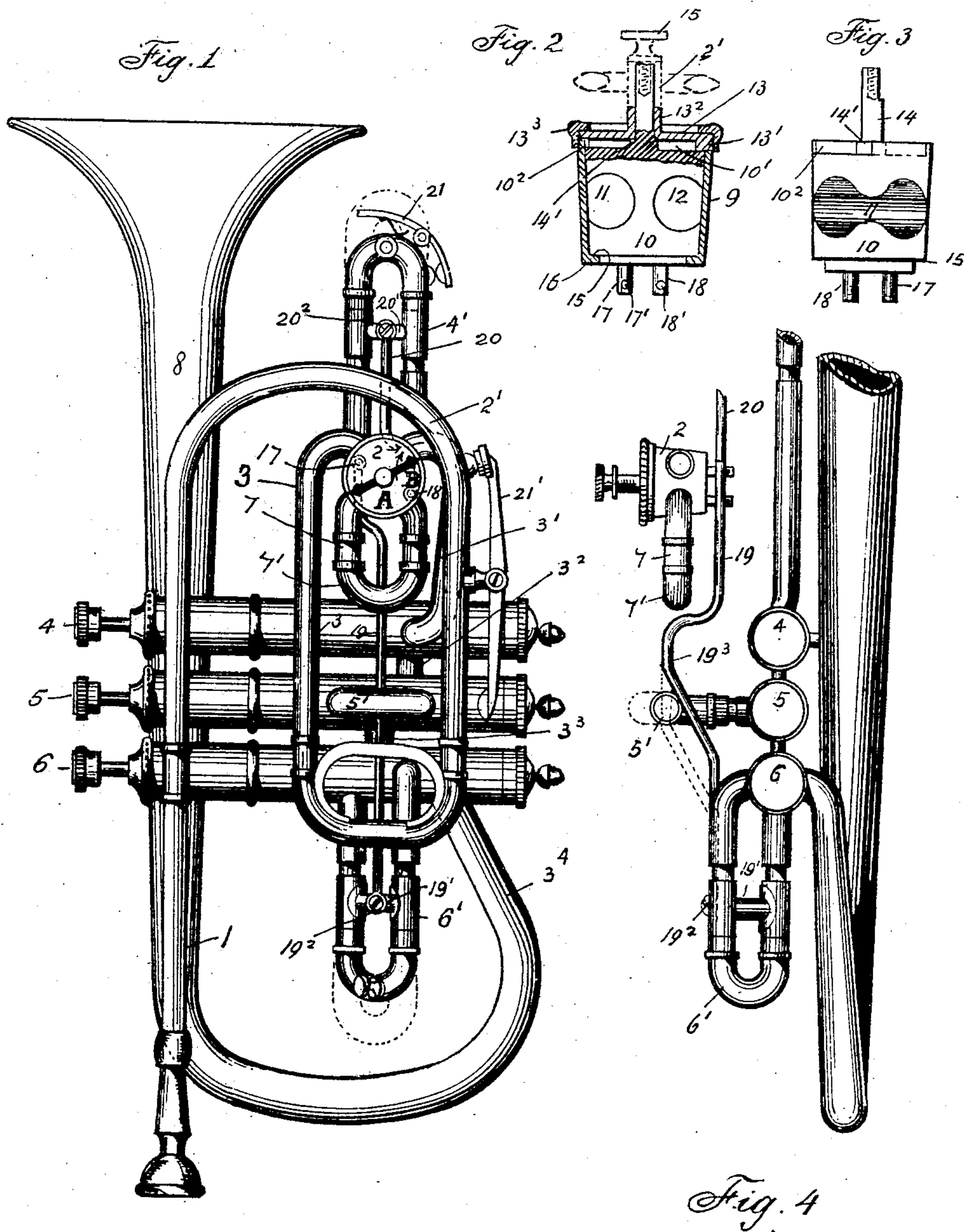
No. 879,322.

PATENTED FEB. 18. 1908.

A. RIEDL.  
MUSICAL VALVE INSTRUMENT.

APPLICATION FILED AUG. 11, 1906.

2 SHEETS—SHEET 1.



WITNESSES  
J. L. Goosmann  
Hans Koehler

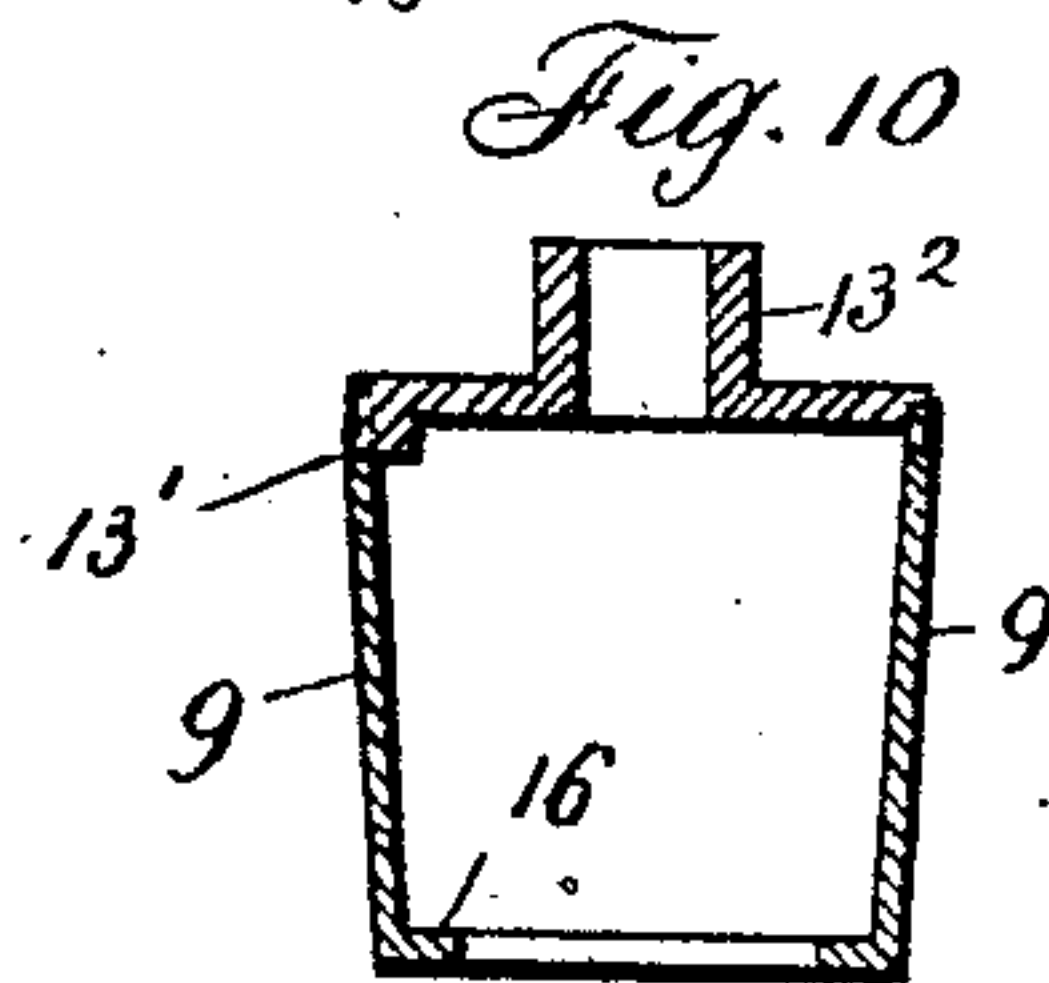
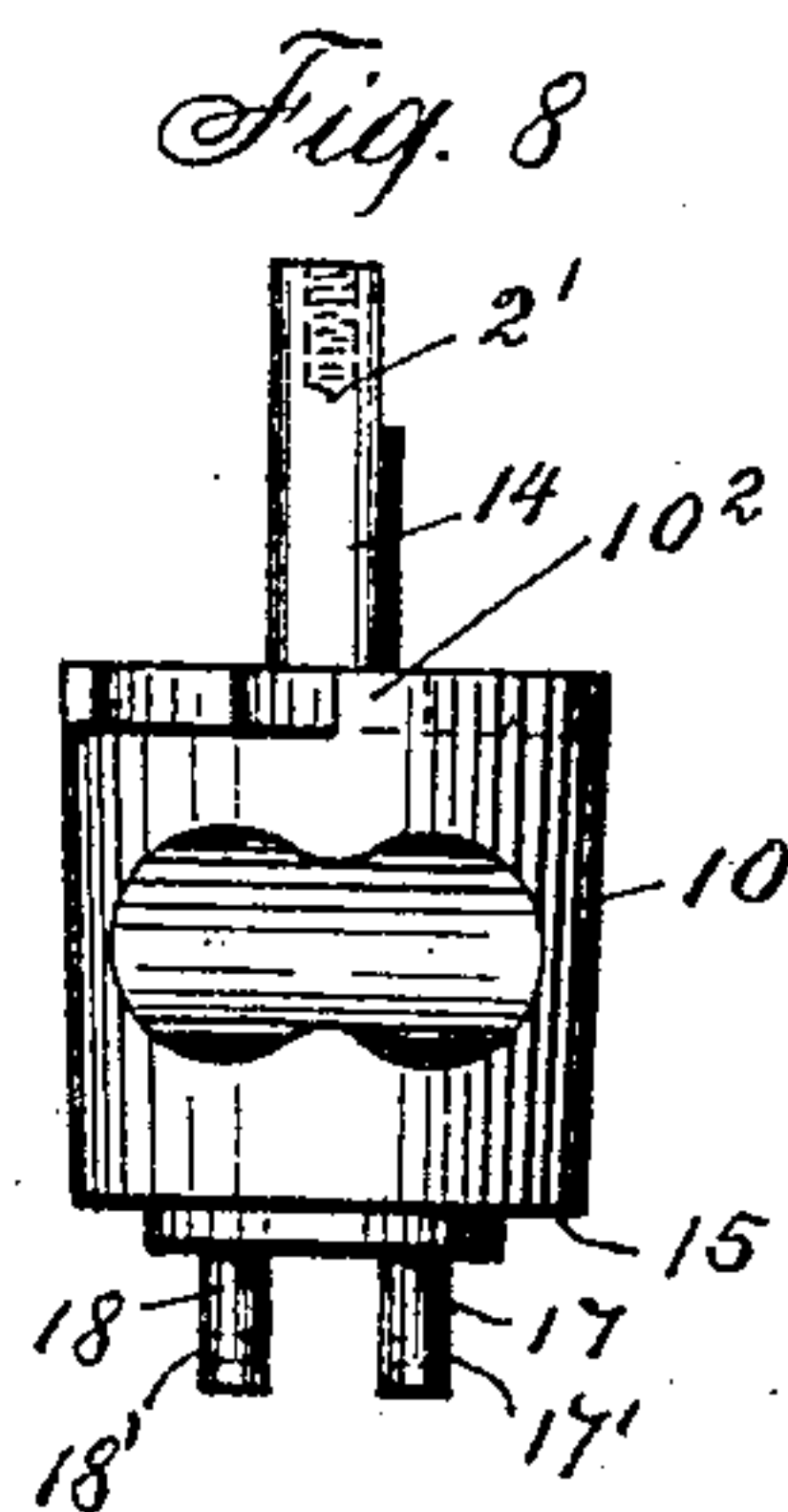
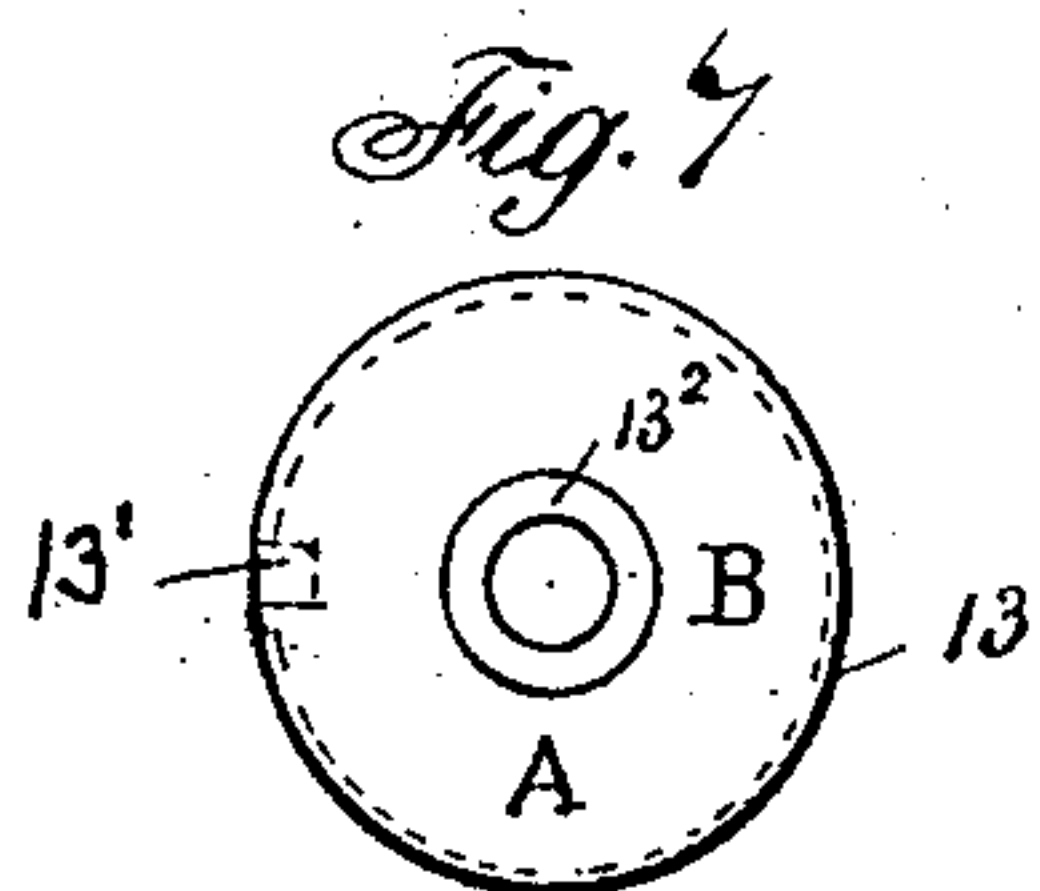
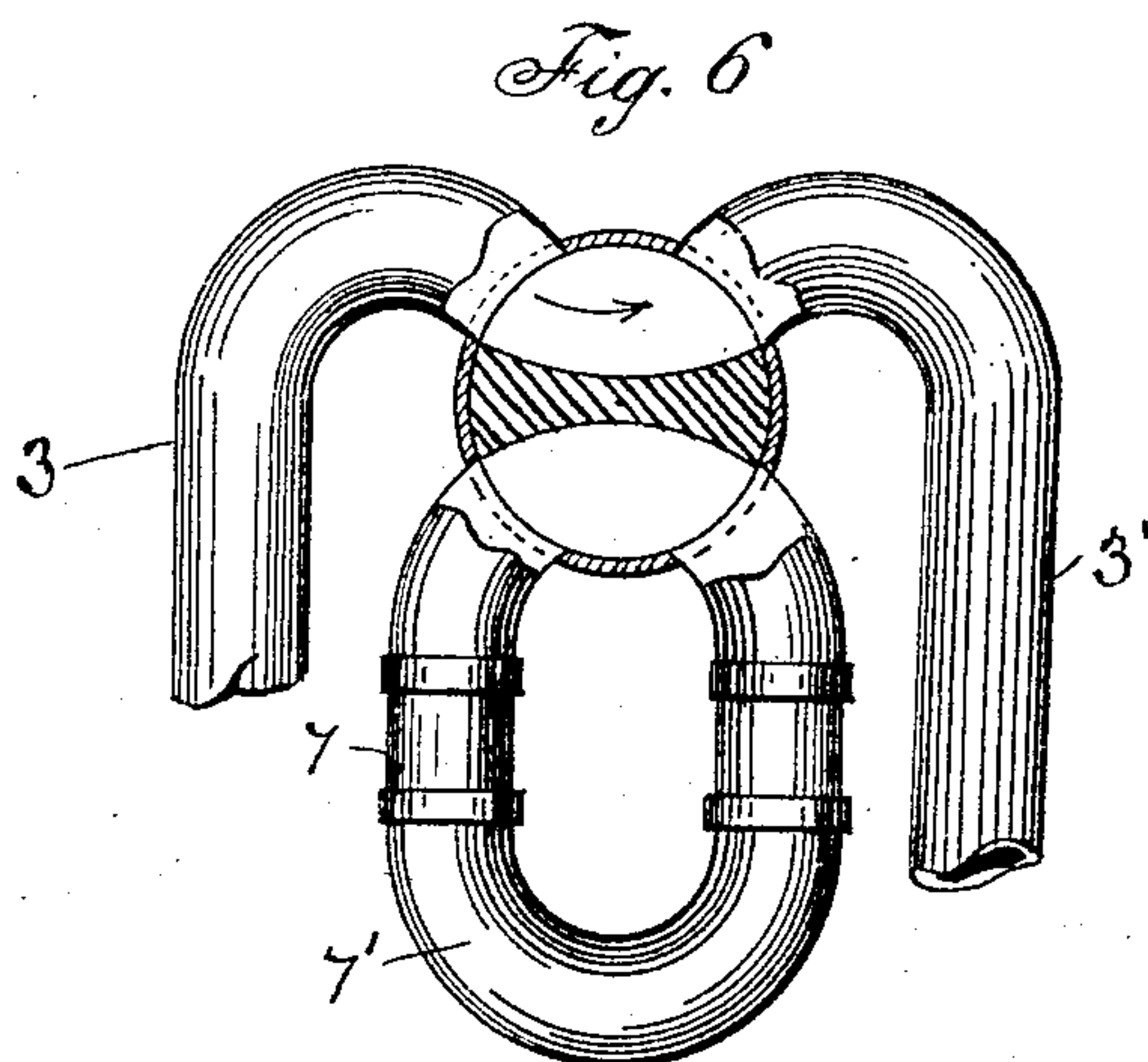
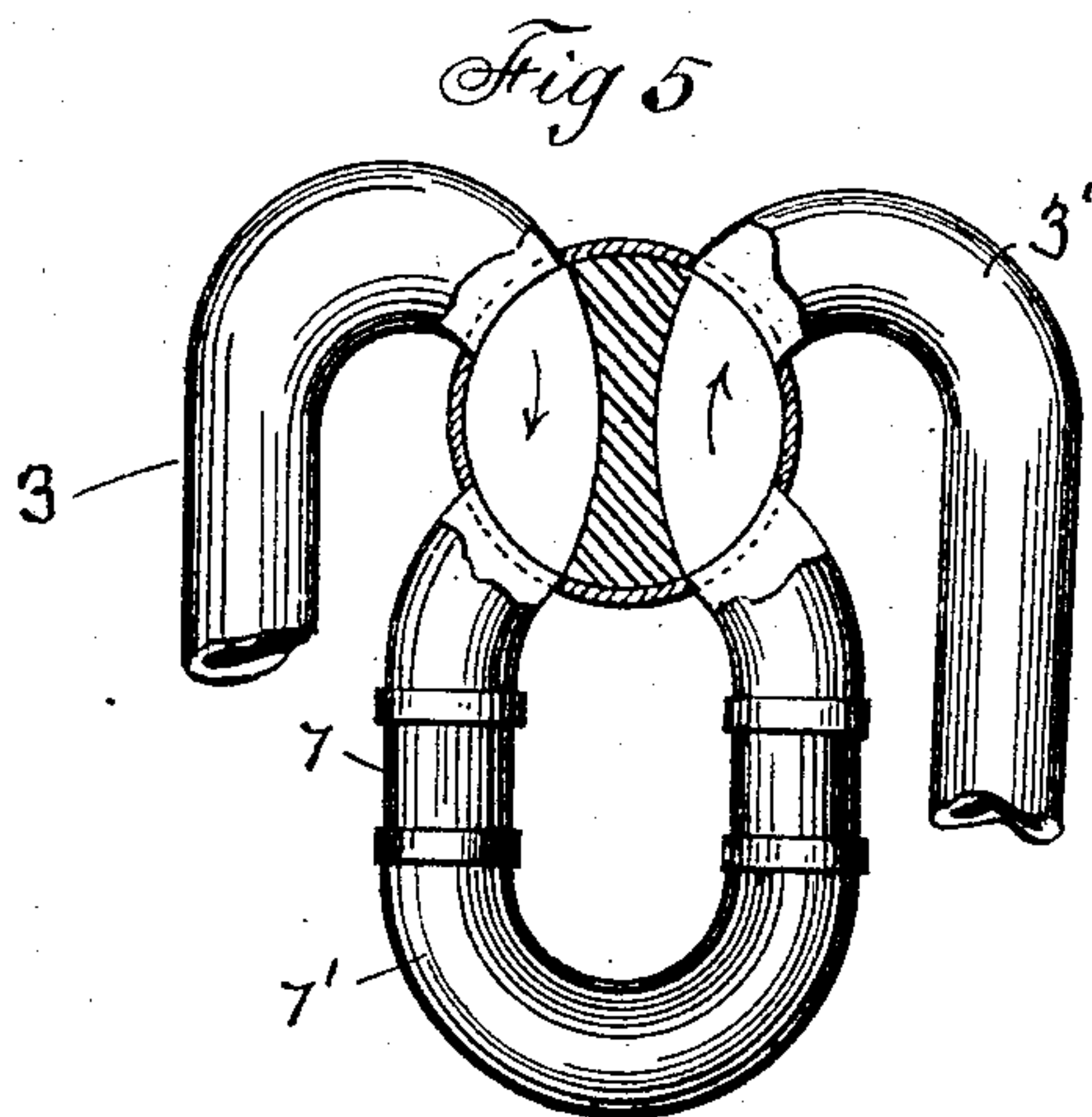
INVENTOR  
Adalbert Riedl  
by Robt. Klotz  
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WITNESSES

J. L. Goosmann  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

ADALBERT RIEDL, OF CHICAGO, ILLINOIS.

## MUSICAL VALVE INSTRUMENT.

No. 879,322.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed August 11, 1906. Serial No. 330,104.

*To all whom it may concern:*

Be it known that I, ADALBERT RIEDL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Musical Valve Instruments; and I do hereby declare the following to be a full, clear, and accurate description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates particularly to musical instruments known as "cornets —A— piston," although it is also applicable to other instruments of a similar nature, and it is the object of my invention to provide simple means whereby the scale of the instrument may be changed quickly and accurately from one key to another, as for instance in the particular case of this instrument from B flat to A and vice versa. This change must sometimes be accomplished very rapidly, in which case it is necessary to move the corresponding slides into a fixed position in a moment, and as this can be done accurately only by mechanical means, I have provided the instrument with a device, which moves three different slides, and simultaneously therewith changes the wind passage by means of one short and simple mechanical movement. These various objects are attained by the device consisting in the novel features of construction and arrangement, which I will now proceed to describe and which are illustrated in the accompanying drawings, in which

Figure 1, is a full side elevation of the instrument embodying my invention with its several parts attached thereto, Fig. 2, is a detail sectional view of the complete rotary valve, whereby the wind passage is changed, showing the valve stop, Fig. 3, shows the rotary valve body and stem, without the valve housing, and Fig. 4, is a partial plan view of that part of the instrument to which the rotary valve with its links is particularly attached. Fig. 5, is an enlarged detail view showing one position of the rotary valve, the valve being in section. Fig. 6, is a similar view showing the valve in the opposite position. Fig. 7, is a top plan view of the washer to the rotary valve. Fig. 8, is a side elevation of the rotary valve. Fig. 9, is an edge view of the flanged retaining cover for securing the washer in position. Fig. 10, is a sectional view of the valve casing, and, Fig.

11, is a plan view of the indicating handle to the rotary valve.

Corresponding parts are referred to in the description, as well as in the various views of the drawing by the same reference characters.

Referring to the drawings, 1 represents the mouth-piece of the instrument and 2 is the rotary valve, which is placed in the mouth pipe 3 before its entry to the third valve. 4, 5 and 6 indicate the second and first valves. The valve stem of rotary valve 2 is provided with a small handle 2', both ends of which are shaped into a lancet-form. Upon the top plate of the valve housing are stamped the letters A and B. When the points of the lancet-handle 2' are turned in the direction of B the wind canal is open from the mouth piece 1 and mouth pipe 3 through rotary valve 2 into the connection 3' located between the rotary valve and valve 4; the continuation of the canal extends through connection 3<sup>2</sup> into valve 5, connection 3<sup>3</sup>, valve 6 and finally into exit tube 8.

By turning the rotary valve so that its lancet-shaped handle points at the letter A, direct communication between mouth pipe 3 and connection 3' through valve 2 is interrupted. In its place communication between mouth pipe 3 with an extra slide 7 through valve 2 is established, which latter passage, after including the return bend 7' of the key slide, again connects valves 2 with connecting pipe 3'. Communication is then open to the exit tube in the same manner as above explained. The extra key slide 7 dispenses with the necessity of replacing the mouthpiece with one of different length for the purpose of changing the key as it lengthens the air passage between the mouth piece 1 and the third valve marked figure 4, whereby the tone is correspondingly lowered. In order to extend the same process of lengthening the air passage for the same purpose of lowering the tone as above stated to the third, second and first valves, marked correspondingly with figures 4, 5 and 6, each of the latter is provided with an extra slide, of which slide 4' connects with valve 4, 5' with valve 5 and 6' with valve 6. Each of these slides is automatically and simultaneously extended by the turning of rotary valve 2, so that whenever the latter is set at A, all air passages connecting with the various valves have been correspondingly lengthened so that the entire scale of the instru-



ment has been lowered in the same proportion throughout.

The movement of the slides is effected in the following manner. Rotary valve 2 is shown in a sectional detail in Fig. 2. It consists of the valve housing 9 which is interposed in the mouth pipe 3, before its entry to the valve 4. Its location is so selected that the first, second and third valve slides can all be moved from the central position of the rotary valve and simultaneously with the turning in either direction of the latter. The valve body 10 is of a conical shape and fitted air-tight into the housing. It is provided with two transverse passages 11 and 12, of which only passage 11 is used when the extra key slide 7 is cut out; *i. e.* when the air issues directly from mouthpipe 3 into connection 3'. Both passages 11 and 12 are utilized when the key slide 7 is connected with the mouth pipe passage, the air then passing through valve passage 11 into the key slide 7 and through the latter's return bend 7' and passage 12 into connection 3'.

The upper face of the valve body is provided with a circular cut-out 10', which leaves only the elevated segmental ring 10<sup>2</sup> to extend above its surface. This segmental ring 10<sup>2</sup> is used as a stop in connection with the top washer 13. The latter is fitted into the valve housing and keyed thereto; at its under side it is provided with a nose 13' which stops segmental ring 10<sup>2</sup> in both directions, that is at the right as well as the left limit of its rotary travel. When stopped at its right limit, direct air passage between mouth pipe 3 and connection 3' is established, and when stopped at its left limit, the air passage leads from mouth pipe 3 into key-slide 7 and after that into connection 3'. A tube 13<sup>2</sup> extending upwardly above the valve is attached to the top washer and serves as a journal wherein the valve stem of the valve is revolved, and a flanged and threaded cover 13<sup>3</sup> which fits over the washer 13 is screwed upon the housing and secures the washer in its place. The valve stem 14 is provided with a shoulder 14' upon which the washer 13 rests. The upper end of the stem 14 has a half round shape upon which the lancet-shaped handle 2' is fitted. A set screw 15 secures the handle with the stem. At its lower end the valve body 10 rests with its shoulder 15 upon and in a flange 16 with which the housing is provided, and at its bottom are located two eccentric pins 17 and 18. These pins are for the purpose of extending the slides 4', 5' and 6' when the rotary valve is turned accordingly. To this end connecting rods 19 and 20 are rotatably connected with their one end to the corresponding pins 17 and 18 and with the other end to the center strap 19' and 20', which connects the two return tubes of each slide. In order to prevent the slipping off of the

connecting rods from the eccentric pins 17 and 18, the latter are provided with holes 17' and 18', into which tapered pins are fitted. The connection at the slides is secured with a round head screw 19<sup>2</sup> and 20<sup>2</sup>. The eccentric pins 17 and 18 are so placed that the slides will be moved through the agency of the connecting rods 19 and 20 an accurately calculated distance whenever the valve is turned one quarter around its own axis. It will thus be seen that two slides, that is the slide 4' which is connected with valve 4, and slide 6' attached to valve 6, are readily moved in an obvious manner.

The slide 5' attached to valve 5 is located about midway of the instrument, but as it moves in a plane different from that of the other plane it is operated in the following manner:—The connecting rod 19 is formed with an inclined portion 19<sup>3</sup> so that when it is moved in the direction toward the slide 5', which is located vertically over it, the nose engages the lower line of the slide's return bend and moves it upward. It will thus be seen that by turning the rotary valve one quarter turn around its axis four different and distinct movements have been obtained. First, the passage between the mouth piece 1 and the lower part of the valves 4, 5 and 6 has been lengthened by connecting the extra slide 7 into the air passage, whereby the tone of the instrument has been lowered without exchanging the mouth piece with one of greater length as must be done with all ordinary instruments; second, the slide 4', which is attached to the third valve 4 has been moved into a corresponding accurate position; third, the slide 6' attached to the first valve 1 has been extended likewise, and fourth, the slide 5' which connects with the second valve 5 has been moved upward in a proper proportion by the incline 19<sup>3</sup> in connecting rod 19. The result of the instantaneous and simultaneous readjustment of the various slides and air passages is a change in the key of the instrument throughout its entire scale.

The key 21 as well as the double key 21' is for the purpose of discharging the saliva from the air passages only. In order to avoid a misunderstanding in the two views of the air passage and slide 6' it may be remarked that this bend is inserted into the instrument at an angle of 45 degrees from the plane of the tuning valves 4, 5 and 6, which explains the fact that this slide is shown in full in the elevation as well as in the plan view.

It will be appreciated, however, that the location of the rotary valve and its connection with the various slides may be varied, or that in place of the simple connecting rods other means for the movement of the slides simultaneously with the turning of the valve may be substituted without departing from the spirit and the scope of this invention. I



therefore do not wish to limit myself to the precise construction set forth, although I prefer same owing to its compactness and slight liability to damage or derangement.

5 Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is—

10 1. A valved wind instrument having a mouth pipe leading to the valves thereof, a tuning crook branching off from the mouth pipe before its entry to the valves, a rotary pitch-changing valve to control the passage to the tuning crook, slides in connection with  
15 each of the valves, two of said slides being arranged longitudinally of the instrument and the other slide arranged transversely thereto, eccentric pins on the back of the rotary valve, links connected with the longitudinal slides and the eccentric pins to force the slides out-  
20 ward upon a partial rotation of the valve, one of said links having an offset inclined portion passing beneath the transverse slide, said inclined portion causing the slide to ride upward on the same when the link is shifted  
25 longitudinally.

2. In a musical valve instrument, the combination with a mouth pipe, a rotary valve located in the mouth pipe, of an extra slide arranged in conjunction with the mouth pipe  
30 so that the air passage of said slide may be added to that of the mouth pipe by means of the rotary valve, eccentric pins on the back

of said rotary valve, a plurality of tuning slides, connecting rods connected between the eccentric pins and tuning slides, a slide 35 movable in a plane at right angles to the movement of the tuning slides, one of the connecting rods having an inclined portion adapted to engage the said movable slide and force the same outward when the rotary 40 valve is operated, and a stop within the rotary valve for limiting the turning movement of the same.

3. A valved wind instrument provided with a mouth pipe, a tuning crook branching 45 off therefrom, a rotary valve located in said crook to control passage through the crook, eccentric pins on the back of said rotary valve, a plurality of tuning slides, connecting rods connected between the eccentric pins 50 and tuning slides, a slide movable in a plane at right angles to the movement of the tuning slides, one of the connecting rods having an angular bent portion adapted to engage the said movable slide and force the same out- 55 ward when the rotary valve is operated, and a stop for limiting the movement of the parts.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADALBERT RIEDL.

Witnesses:

J. C. GOOSMANN,  
HANS KOEHLER.