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F. C. WHITE.

VALVE GUIDE FOR MECHANICAL MUSICAL INSTRUMENTS.

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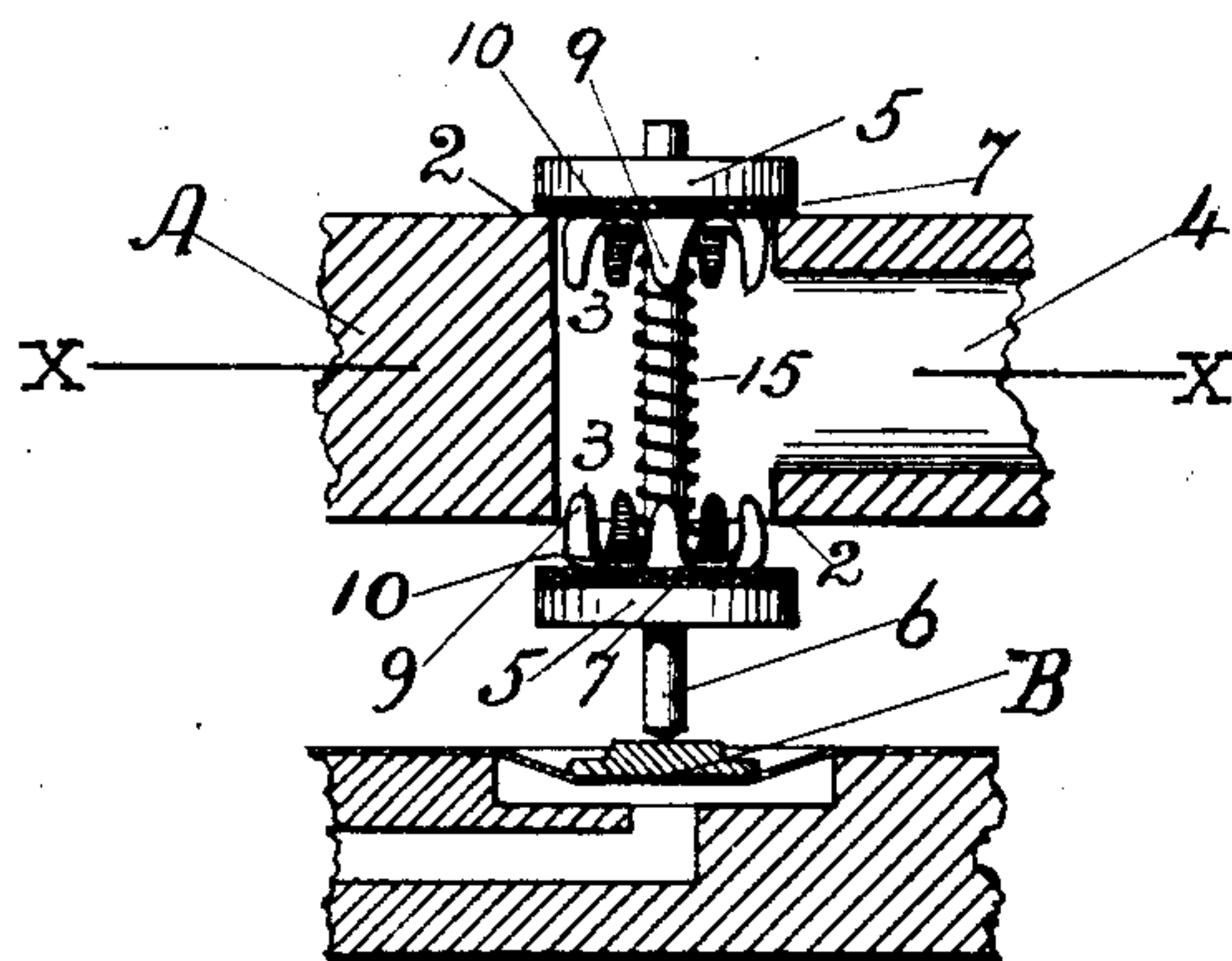
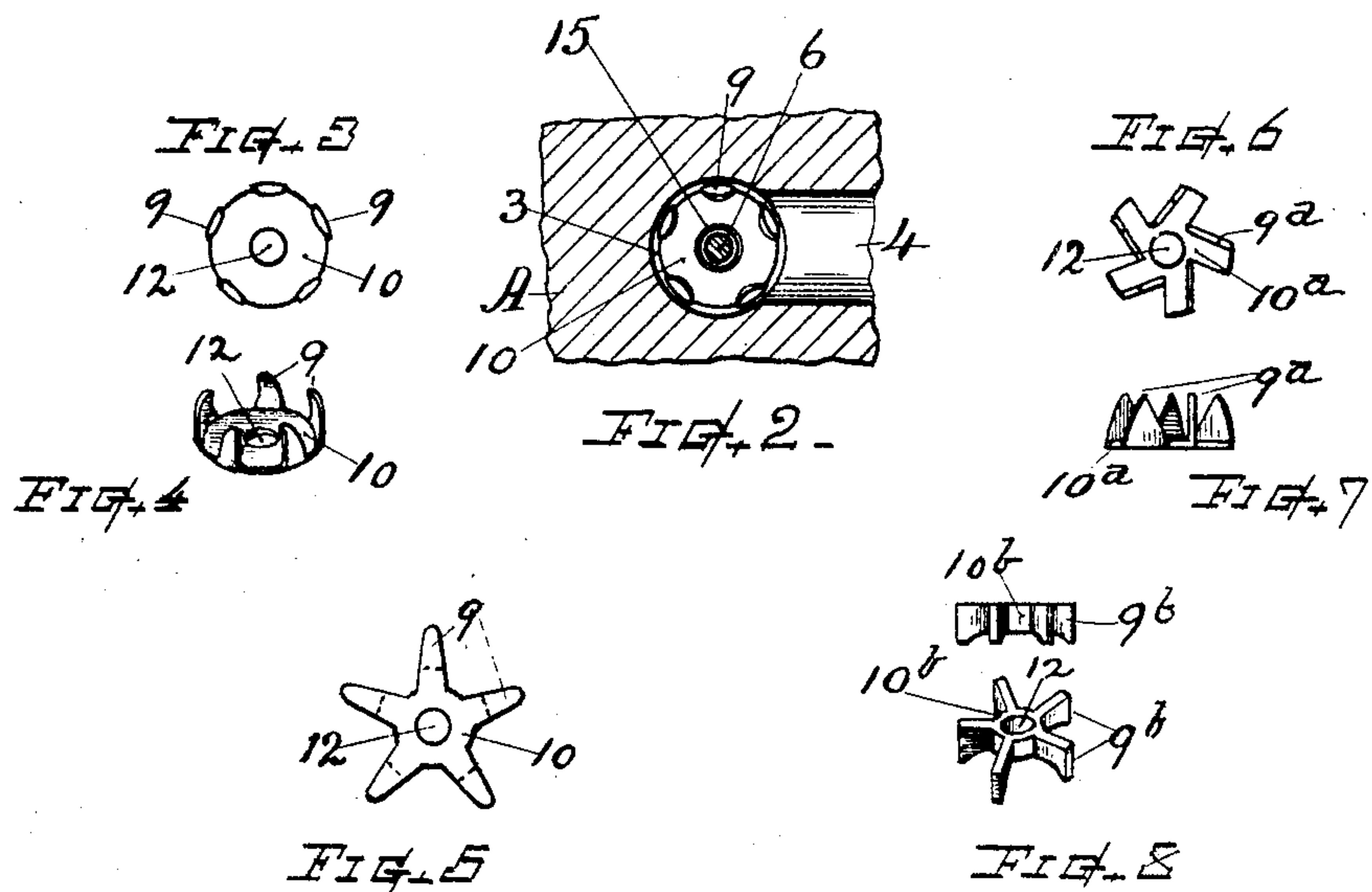


Fig. 1



Witnesses—

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VALVE-GUIDE FOR MECHANICAL MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 785,784, dated March 28, 1905.

Application filed December 17, 1904. Serial No. 237,246.

To all whom it may concern:

Be it known that I, FRANK C. WHITE, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented a new and useful Valve-Guide for Mechanical Musical Instruments, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide a simple, inexpensive, and efficient means for keeping the puppet-valve of a pneumatic musical instrument in proper relation on its seat; and my invention consists in a novel guide device of the character described and in the combination thereof with the valves and pneumatic actuators, as more fully explained in the following detailed description and illustrated in the drawings, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 represents a sectional view showing a primary pneumatic and valves as employed in music-playing instruments and having my invention combined therewith. Fig. 2 is a horizontal section at line X X on Fig. 1. Fig. 3 is a plan view, and Fig. 4 a perspective view, of the guide device. Fig. 5 represents a form of blank from which the guide may be bent up. Figs. 6 and 7 show a modification in the form of the guide, and Fig. 8 illustrates a modification suitable for making the guide of cast metal.

Referring to the drawings, A indicates the valve-board or portion of a music-playing instrument comprising the opposite valve-seats 2, with air-inlet openings 3, and passage 4, leading to a power pneumatic (not shown) or any controlled part of the instrument for which the valves are employed.

B indicates the usual primary pneumatic, of any approved construction, for actuating the puppet, which latter comprises the valve buttons or disks 5, arranged upon the valve-stem 6 above and beneath the valve-seat openings.

As a means for centering and guiding the valves in relation to their seats I provide a guide device consisting of a disk or plate 10, having a series of prongs or arms 9 at the periphery bent up from the plate to stand approximately longitudinal to the valve-stem axis and of a length somewhat greater than the extent of movement for the valve. Said guide has a central opening 12 and is arranged loose upon the valve-stem 6, with the prongs extending into the port or valve-seat opening, the dimension of the guide being somewhat less than the diameter of the opening, so that it will work free therein, while keeping the valve approximately central. The guide is preferably made of thin hard brass, the prongs being bent up in dish form from a star-shaped blank. Each arm or prong is bent slightly rounded and the end thereof bent a trifle inward to prevent sticking or catching on the sides of the opening. The prongs being narrow do not materially interfere with the passage of air under the valve-disk. The guide-disk is unattached to the valve-disk; but a light coiled-wire spring 15 is arranged about the valve-stem, with its ends resting against the guide devices to keep them normally pressed against the washers 7 of the valves with a yieldable force. The guide moves up and down with the valve as the latter is actuated by the primary pneumatic B, the operation of which will be readily understood. This valve-guide allows the whole valve, stem, and buttons to slightly wobble, thus insuring a perfect seating of the valve either when thrown up by the pneumatic or dropped back free.

The peculiar advantages of a guide traveling with the valve are that the valve is enabled to seat perfectly tight even though the skin washer is cut from material of unequal thickness, making a washer thicker at one side than at the other. Also the points of guidance being closer to the center of the puppet allows the valve-disk 5 to fall easily to its seat whether the valve-board is on an angle or otherwise. Another advantage of this improved guide is the inexpensiveness and facility of its manufacture and applica-

tion to the instrument, as it does away with the labor of making and attaching the usual guide members upon each side of the valve-board.

- 5 In Figs. 6 and 7 I have shown a modification of my construction wherein the guide is made from a thin radially-slitted disk 10^a, of sheet metal, having the points 9^a bent upward from the sides of the slits. In Fig. 8 I
10 have shown a modification in the construction suitable to be made as a casting of aluminium and having a central perforated hub 10^b, with radial laterally-flat prongs 9^b, the ends of which serve as guiding-surfaces. In
15 each of these modifications the guide is to be disposed in relation to the valve disk or button the same as that hereinbefore described.

I claim as my invention—

1. In an automatic music-playing instrument, in combination with a puppet-valve, and the opening controlled by said valve, a valve-guide for the purpose specified, consisting of a centrally-perforated disk associated with the face of the valve and having portions
20 of its periphery formed to present guiding-surfaces in a direction approximately perpendicular to the plane of the valve and disposed within and near the walls of the valve-controlled opening.

- 30 2. A valve-guide device for the purpose specified, made from a star-shaped thin metal blank, comprising a series of projecting arms and a central portion having an opening to receive a valve-stem, the series of projecting arms being bent in dishing form and their extremities turned slightly inward and disposed for guiding engagement within a valve-controlled passage.

3. In combination with a musical-instrument valve, a valve-guide consisting of a thin metal body having a central opening, and a series of radially-disposed arms, the end of said arms forming guiding-surfaces concentric with the axis of the valve.

- 45 4. In a pneumatic musical instrument, in combination, with the valve-seat opening, a puppet-valve, valve-stem and the valve-actuating pneumatic; of a valve-guide consisting of a plate provided with a centering-eye
50 mounted upon the valve-stem, and having a series of prongs or arms that coact with the sides of the valve-seat opening to effect a concentric seating of the valve.

5. In a pneumatic music-playing instrument, the combination, with the air-inlet opening leading to an operative pneumatic, of a puppet-valve comprising a central stem with a valve-faced disk fixed thereon, and a movable valve-guide that travels with the
60 valve and which is centered on the valve-stem and guided within the air-inlet opening.

6. In a musical-instrument action, in com-

bination with opposite valve-seats, a free-moving puppet having a pair of valve-disks, a valve-guiding means disposed between said
65 valve-disks and movable therewith, said guiding means coacting with the valve-seat opening to maintain the valve-disks in approximate alinement with the valve-seats.

7. In a pneumatic musical instrument in
70 combination with valve-seats and ports, a valve-puppet provided with a pair of valve disks or buttons, and a pair of valve-guides consisting of centering-disks having peripheral guiding-prongs oppositely arranged
75 upon the valve-stem adjacent to the faces of the valves, and movable with the valve-puppet, for the purpose set forth.

8. In a musical instrument, a detached valve-guide device for the purpose specified,
80 consisting of a thin disk or body having a central opening and a series of peripherally-disposed guiding-prongs; in combination with a valve, and means for sustaining said valve-guide in adjacent relation to the face
85 of the valve.

9. In a musical instrument, the combination with the valve-seat, and valve-seat opening; of a valve-disk having a central stem, a valve-guide arranged on the valve-stem, un-
90 attached to the valve-disk and having peripheral guidance within the valve-seat opening, and a spring that presses said valve-guide toward the face of the valve-disk.

10. In a musical-instrument action, the
95 combination with opposite air-inlet ports and valve-seats, the puppet-valve stem having a plurality of valves thereon, and a puppet-actuating pneumatic; of a guide for each of said valves, consisting of a centrally-perforated plate having guiding-prongs that extend within said air-inlet ports, said valve-guides being loosely mounted upon the valve-stem, and means for yieldingly sustaining the valve-guides against their respective valves.
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11. In an automatic musical instrument, in combination with the valve-board provided with opposite valve-seats and air-ports therein, a valve-stem having a pair of valve-disks mounted thereon for controlling said
105 ports, means for operating said valves, valve-guides mounted on said valve-stem, each comprising a number of prongs or arms that engage and center said valve-guide within the air-port, and a spring coiled about the valve-stem with its ends resting against the opposite valve-guides, for the purpose set forth.
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Witness my hand this 15th day of December, 1904.

FRANK C. WHITE.

Witnesses:

CLARENCE L. PIERCE,
STANLEY B. WHITE.