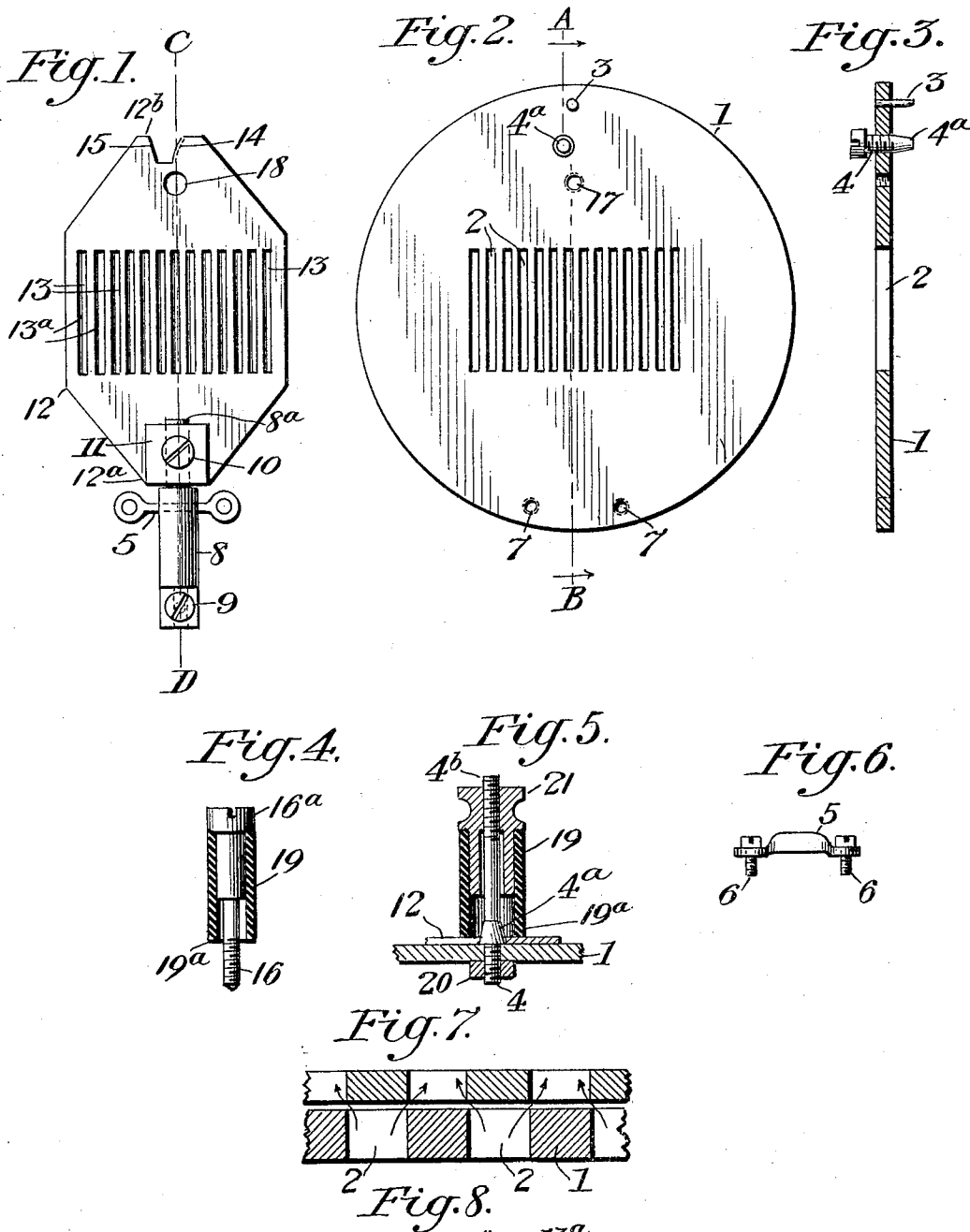


C. K. SIMPSON.
 VALVE FOR THE SOUND BOXES OF TALKING MACHINES.
 APPLICATION FILED MAY 22, 1909.

946,524.

Patented Jan. 11, 1910.



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UNITED STATES PATENT OFFICE.

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VALVE FOR THE SOUND-BOXES OF TALKING-MACHINES.

946,524.

Specification of Letters Patent. Patented Jan. 11, 1910.

Application filed May 22, 1909. Serial No. 497,698.

To all whom it may concern:

Be it known that I, CHARLES K. SIMPSON, a citizen of the United States, residing at Honolulu, county of Honolulu, Territory of Hawaii, have invented certain new and useful Improvements in Valves for the Sound-Boxes of Talking-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to sound-boxes for talking machines, which employ compressed air to produce the sound, and particularly to the construction and action of the valve in such sound-boxes, through which the air is passed; and the objects of my improvements are, to increase the sound and improve the tone produced, and to decrease the compressed air expended.

My invention relates particularly to and is an improvement in that class of sound-boxes illustrated in the French patent, No. 372,225, dated Nov. 24, 1906, in which a gridiron valve is employed, operated by a stylus which travels over the record. In this type, each bar of the gridiron valve exactly covers a slotted opening in the valve seat, when the valve is closed. The stylus in following the record lifts the valve from the seat and in a direction at right angles thereto, allowing air to issue through the openings in the seat in intermittent jets, their character and frequency depending upon the action of the stylus. One end of the valve, to which the stylus is removably attached, is mounted upon the seat in a manner such that the valve may be sprung from the seat by the action of the stylus in following the record; the valve in seating is guided by a pin in the seat passing through a hole or slot in the other end of the valve. The lifting of the valve is aided by the air, and resisted by the mounting at the stylus end and by a cushion at the other end.

My invention contemplates changes in the construction and action of the valve whereby much louder and more perfect tones are produced with the expenditure of less air. The principal changes of construction are: in the spring clamp, which flexibly secures the valve to the seat; in the shape of the guiding pin in the seat, against which the end of the valve rests, the pin being tapered

and the edge of the valve correspondingly beveled; and in the bars of the gridiron valve, one edge of each bar being beveled. The action of the valve is thereby changed, as will hereinafter more fully appear.

In the drawings, Figure 1 is a plan view of my improved gridiron valve. Fig. 2 represents a plan view of its valve seat. Fig. 3 represents a section on the line A—B of Fig. 2. Fig. 4 is a detail of the cushion and its adjusting screw. Fig. 5 is a sectional view of a modification. Fig. 6 is an elevation of the spring clamp. Fig. 7 is a diagram illustrating the passing of the air jets through an ordinary gridiron valve. Fig. 8 is a diagram illustrating the same through my improved valve.

Referring to the drawings; the valve seat plate 1 is provided with the parallel slots 2, a dowel 3 for holding seat plate in place, and a pin 4 having a hardened tapered point 4^a the pin 4 being preferably screwed in said plate. A spring clamp 5 is attached to the seat plate 1 by screws 6 in the holes 7 tapped in said plate. The spring clamp 5 is made weakest in a plane parallel to the seat plate 1. The stylus holder 8, which is secured to the spring clamp 5, is provided with the screw 9 for securing the stylus in the usual manner. The holder 8 has a pin-end 8^a, which is clamped by the set-screw 10 in the block 11. This block 11 is secured to the end 12^a of the valve plate 12. The valve plate 12 is provided with the bars 13, forming a gridiron type of valve, adapted to exactly cover the slots 2 in the seat plate 1, when the valve is closed and at rest. The edges 13^a of the bars 13 are preferably beveled and of greatest width at the inner or lower face of the valve to permit of a freer exit for the air and a sharper cut-off, Figs. 1 and 8. The end 12^b of the valve plate 12 is notched, as shown in Fig. 1, such that the beveled edge 14 engages the taper 4^a of the pin 4, and preferably approximately on the center-line C—D of the valve plate 12. The edge 15 is cut away to clear said pin. The screw 16, which fits the tapped hole 17 in the seat plate 1, passes through the clearance hole 18 in the valve plate 12. A cushion 19, of rubber or other suitable material, is interposed between the valve plate 12 and the head 16^a of the screw 16, by which the tension of the cushion against the valve near its end 12^b is adjusted. The end 19^a of said

cushion, which engages the valve plate 12, is made so as to clear the screw 16, to permit of a freer movement of the valve in following the taper 4^a of the pin 4 when lifting.

- 5 The tapered pin and the cushion arrangement may, if desired, be combined, as shown in the modification, Fig. 5, in which the pin 4 is screwed into the seat plate 1 and is provided with the lock-nut 20, the tapered portion 4^a forming a shoulder. The pin 4 is
10 extended above the tapered portion 4^a and threaded 4^b to receive the adjusting nut 21.

When the valve lifts at right angles to the seat, as has heretofore been the practice,
15 air is permitted to escape through the slots in the seat and pass between the bars of the valve, the jets meeting as indicated by arrows in Fig. 7. With my improvements, however, the valve plate 12 in lifting from
20 the seat plate 1, does not move at right angles to said plate, but moves away from the seat in a direction to the left hand in reference to the view of the valve shown in Fig. 1, being guided by the shape of the
25 edge 14 which engages the taper 4^a of the pin 4. This provides freer passages for the jets of air, as will be noted by reference to Fig. 8.

As a result of my improvements above described, the tone is improved, the volume of
30 sound is increased, while the air expended is reduced.

I claim:

1. The combination with a valve for a
35 sound box, and a seat for said valve from which the latter is lifted, of means to shift the valve laterally as it lifts.

2. In a sound box valve, a lifting valve, a stylus holder carried thereby, a valve seat,
40 and means to guide the valve laterally with

respect to the seat during the lifting movement of the valve.

3. The combination with a valve for a sound box, and a seat for the valve, of a tapered guide member for the valve which
45 causes it to shift laterally during its lifting movement.

4. In a sound box valve, a valve seat, a valve, a stylus holder carried by the valve, and a tapered guide pin on the seat which
50 moves the valve laterally as it rises from the seat.

5. In a sound box valve, a valve seat, a tapered guide pin carried thereby, a valve having a beveled edge engaging said pin,
55 and a stylus holder mounted on the valve.

6. In a sound-box valve, a valve seat, and a gridiron valve, each bar of said valve being beveled at one edge and of greatest
60 width at the inner or lower face of the valve.

7. A sound-box valve having a plurality of parallel bars, one edge of each bar being straight and the other edge beveled, for the purpose described.

8. In a sound-box valve, the combination
65 of a valve seat, a gridiron valve, a screw 16 for adjusting the parts, and a cushion 19, the end of which clears said screw, as described.

9. In a sound-box valve, a valve seat comprising a seat plate 1, a valve plate 12 having a beveled edge 14, and a guide pin 4
70 against which beveled edge 14 abuts.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES K. SIMPSON.

Witnesses:

A. P. McDONALD,
ROBB J. PRATT.