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## VALVE ACTION MECHANISM FOR WIND INSTRUMENTS

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This invention relates, as indicated, to saxophones, but has reference more particularly to the octave key operating mechanism of such instruments.

A primary object of the invention is to provide an octave key operating mechanism for wind instruments of the character described, which operates in a smooth, rapid manner, providing an extremely light action which is necessary for fast execution in the playing of such instruments.

Another object of the invention is to provide an octave key operating or actuating mechanism of the character described, which insures positive closing an opening of the octave keys, and eliminates any and all possibilities of a break in tone, in changing from one register to the other.

A further object of the invention is to provide an octave key operating mechanism of the character described, which is extremely simple in construction, enabling the mechanism to function properly and effectively over long periods, reducing repairs to a minimum, and enabling repairs and adjustments, when necessary, to be made quickly and easily.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a fragmentary side elevational view of the upper portion of a saxophone, having embodied therein the novel octave key operating mechanism of the present invention;

Fig. 2 is a fragmentary front elevational view of the upper portion of the saxophone;

Fig. 3 is a transverse cross-sectional view, taken on the line 3—3 of Fig. 1;

Fig. 4 is a transverse cross-sectional view, taken on the line 4—4 of Fig. 1;

Fig. 5 is a transverse cross-sectional view, taken on the line 5—5 of Fig. 1;

Fig. 6 is a transverse cross-sectional view, taken on the line 6—6 of Fig. 1, and

Fig. 7 is a transverse cross-sectional view, taken on the line 7—7 of Fig. 1.

Referring more particularly to the drawings, the octave key operating mechanism is shown as incorporated in a saxophone which is provided with the usual goose-neck 1 and main pipe 2. The goose-neck 1 is provided with an octave valve 3, which is normally closed by a pad enclosed within a socket 4, mounted on a lever 5. 55

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which comprises the octave key, and is pivotally connected to the instrument as at 6. The octave key 5 is normally held in valve-closing position by means of a flat spring 7, one end of which is secured to the octave key by a screw 8 and the other end of which bears against the goose-neck.

The octave key 5 has rigidly secured to its lower end an arcuate element 10 which partially surrounds the upper end of the pipe 2, and lies closely adjacent the upper end of a lever 11. The lever 11 is mounted for rocking movement towards and away from the main pipe 2, and for this purpose is provided at longitudinally-spaced points with arms 12 and 13 extending laterally therefrom and rigidly secured to a short tubular sleeve 14 which is rotatable about a shaft 15, the ends of which are non-rotatably mounted in supporting brackets or posts 16 and 17 which extend from the pipe 2.

The lower end 14a of the lever 11 is of slightly reduced diameter and extends through a recess 18 in one end of a floating lever 19, which has a recess 20, similar to the recess 18, in its opposite end. The lever 19 is rigidly secured to a short sleeve 21, which is rockable about a screw 22, constituting a shaft, which is rigidly connected, as by a nut 23, to an arm 24, extending from a sleeve 25.

The sleeve 25 is rockable about a shaft 25a, the ends of which are non-rotatably mounted in supporting brackets or posts 26 and 27 which extend from the pipe 2. Extending from the lower end of the sleeve 25 is a thumb-piece 28, by means of which the sleeve 25 is rocked about the shaft 25a.

A wire spring 29, which has its lower end rigidly secured in the post 27, bears at its upper end against an arm 30 which projects from the sleeve 25, and normally maintains the sleeve in the position shown in Figs. 1, 2 and 7.

The key 5, which opens the valve 3, is used for playing the high register. There is also shown, a valve 31, which is opened by an octave key 32 for playing the middle register. However, three registers may be produced, namely, high, when the octave valve or port 3 is open; middle, when the octave valve or port 3 is open, and lower, when both ports are closed.

The octave key 32 extends from a short sleeve 33 which is rotatable about the shaft 15, being interposed between the lower end of the sleeve 14 and the post 17. Extending from the sleeve 33, adjacent its lower end, is an arm 34, which, as shown in Fig. 4, is of V-shaped conformation. Extending downwardly from the base or central