illustrative form of the invention is shown,—

Fig. 1 is a perspective view of the upper part of an E-flat alto saxophone, showing the octave holes with their keys and so much of the connecting mechanisms as required for explanation of this invention, but omitting, for the sake of clearness, other keys and mechanisms with which the instrument is equipped, but which are not directly concerned with the octave key mechanism;

Fig. 2 is a diagrammatic plan view showing a development of the octave key mechanism as resolved into a plane;

Fig. 3 is an end view as seen from above the mouth tube in the direction of the axis of the body tube;

Fig. 4 is a side elevation showing on a larger scale that part of the mechanism which more directly controls the upper octave holes;

Fig. 5 is a cross section taken on a plane parallel and close to the half rings 66 and 71, looking toward the foot of the tube;

Fig. 6 is a fragmentary view showing a modification in which the control of the upper octave key mechanism is in part obtained by a different tone hole key.

Like reference characters designate the same parts wherever they occur in all the figures.

The three octave holes provided with this instrument are shown at 6, 7 and 8, respectively, these reference characters being applied to the stoppers or keys which cover the respective holes. The one at 6 is the lower hole, and those at 7 and 8 are the two upper holes, the one at 8 being located nearer the blowing end, where it facilitates sounding the highest notes, (four in number in this instrument), and the one at 7 being located at the point which enables the best tone quality to be obtained in playing the next lower five notes, (in this instrument the notes from upper C-sharp to A in the second register). The lower tone hole facilitates playing the notes from G-sharp downward to the next lower D natural, in the second register; that is, such is the situation in the E-flat saxophone herein chosen for illustration. With instruments of other pitches and ranges, the specific notes controlled by corresponding holes may be different, but the principle is essentially the same. When any one of these octave holes is opened, the other two are closed, and the opening and closing of the holes is controlled automatically by manipulation of appropriate tone keys in cooperation with depression of a special finger key.

The lower octave hole is located in the side of the body tube 9 of the instrument, while the two upper holes are placed in the detachable curved mouth tube 10, to the end 11 of which the reed, not shown here, is applied.

The lower octave hole cover or key 6 is carried by an arm 12 secured to a sleeve 13, which turns freely on a rod supported in posts or pillars 14, 15, 16, and others. It is normally held in its closed or depressed position by an overlying arm 17 connected to a sleeve 18, which also turns freely about the same rod as the sleeve 13. An arm 19 is secured to sleeve 18, and to this arm is secured one end of a bridge rod 20, the other end of which is secured to an arm 21, also mounted on the same rod on which the sleeves 13 and 18 are mounted, or at least rotatable about the same axis; such axis being substantially parallel to the instrument body. There is also secured to the bridge rod 20 a finger key lever 22, on which is a key marked 3L to indicate that in this instrument it is manipulated by the third finger of the left hand. The arms 21 and 22 form parts of the mechanisms for controlling the G-sharp and A natural tone holes, the covers of which are designated in these drawings as G♯ and A, respectively. It is not necessary to describe these mechanisms further than to say that the G-sharp mechanism includes a spring 23 acting through a lever 24 to apply lifting force on the arm 21, as further described in another application for patent filed by me, and that the A hole cover is equipped with a spring tending to open such cover and acting with the same raising tendency on the arm 21 through interengaged arms 25 and 26, the former of which is connected to the A hole stopper, and the latter to a sleeve 27, to which the arm 21 is secured. The tendency and effect of these springs is normally to depress arm 17 and apply closing pressure to the lower octave hole stopper 6.

It may be here remarked that in this specification the word "depress", and similar words implying downward movement or pressure, when applied to the parts of the key mechanisms herein contemplated, mean movement or pressure toward the instrument body, whatever the absolute direction of such movement or pressure may be with respect to the horizontal, while the words "raise" or "lift", or other words of equivalent import, have the opposite significance. The terms "upper" and "lower", however, when applied to the octave holes and their keys, signify relative distance from the blowing end of the instrument.

A sleeve 28 is pivoted on a rod extending substantially parallel to the body of the instrument and supported by posts or pillars 29, 30, and others, and to this sleeve is connected a key 31 adapted to be pressed upon by the performer's left thumb and thereby depressed until it comes to bear against the instrument body. There are also secured to the sleeve 28, two arms 32 and 33, to which is connected a sleeve or bar 34 parallel to the sleeve 28, and carrying a pivot rod 35.