Dec. 22, 1931. A. LOOMIS 1,837,823

CLARINET

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Fig. 1.

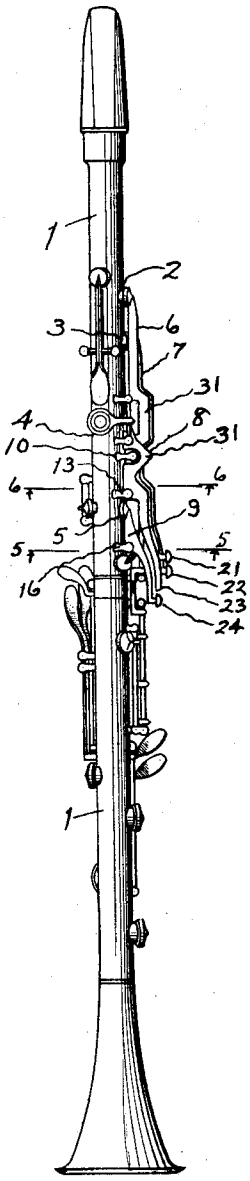


Fig. 2.

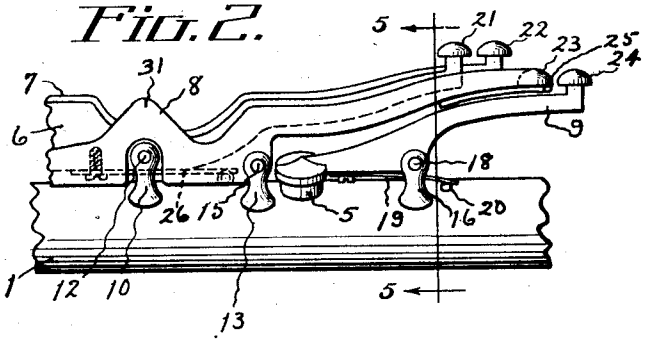


Fig. 3.

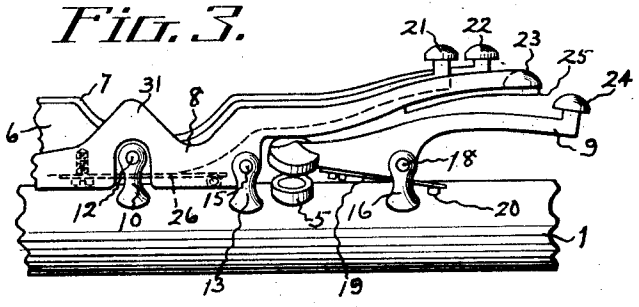
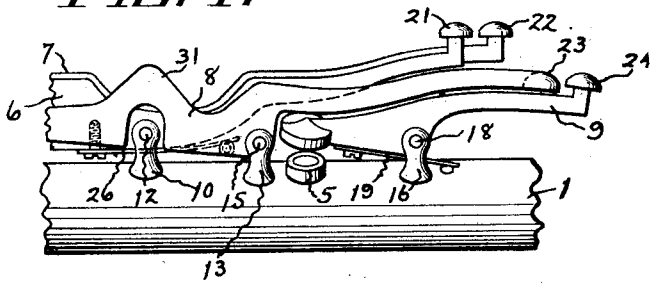


Fig. 4.



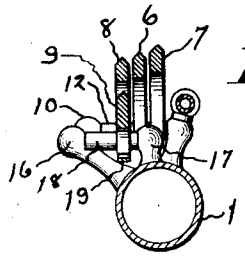


Fig. 5.

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Fig. 6.

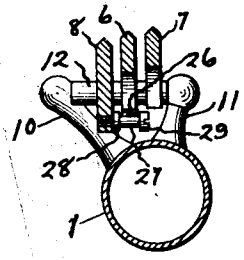


Fig. 7.

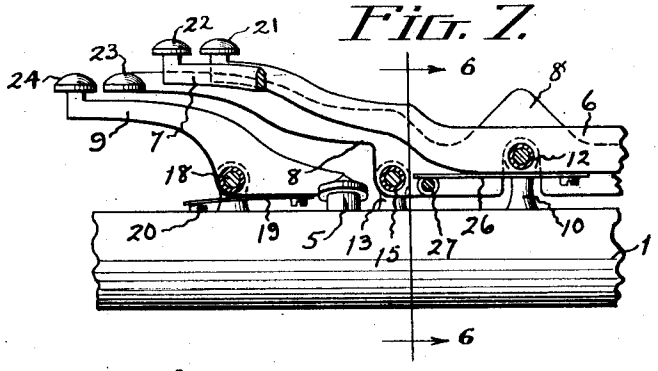


Fig. 8.

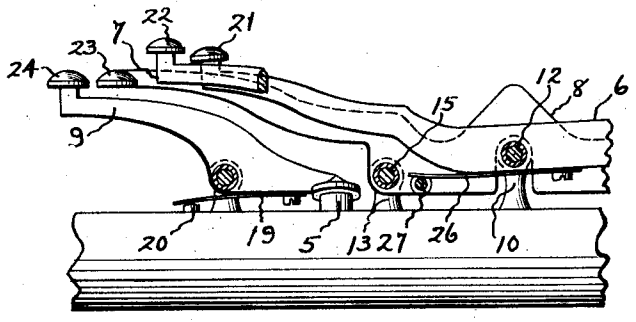


Fig. 9.

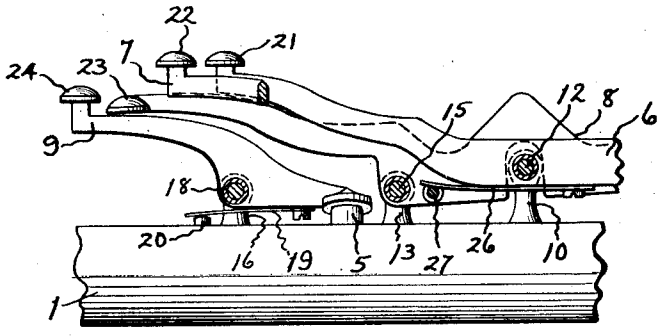
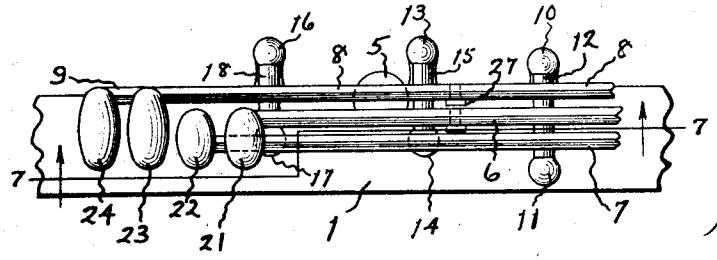


Fig. 10.



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1,837,823

UNITED STATES PATENT OFFICE

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CLARINET

Application filed March 31, 1930. Serial No. 440,227.

This invention is directed to key mechanism for musical instruments of the wood-wind type, and is particularly concerned with the right side keys of a Boehm clarinet.

In the type of instrument referred to, the right side keys are definitely standardized as to position and as to the slope of the plane in which they operate, such keys, four in number, being located side by side with off-set touch pieces and to be manually controlled by the right forefinger of the musician. In Boehm clarinets of special small size or compact proportions, no means have heretofore been provided by which the standard position or lay of these particular right side keys can be maintained, and the present invention is more particularly concerned with the relative dispositions of these keys in a manner to maintain this standardized position or lay in clarinets of the particular type referred to.

A further object of the invention is the provision of means whereby two keys of this group mounted for independent pivotal support upon the body of the clarinet may, following their operation by the musician, be returned to their normal positions through the use of a single spring.

The invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a general view of a clarinet embodying my invention, viewed at right angles to the plane of motion of these keys, the keys being shown in their normal positions to which the springs return them when the touch pieces are not being pressed.

Figure 2 is an enlarged view of a portion of Figure 1, showing the springs.

Figure 3 is a view of the same portion with the lowermost touch piece depressed and the key open.

Figure 4 is a view of the same portion with the lower two touch pieces simultaneously depressed so as to open two holes.

Figure 5 is a cross section at 5—5, Figure 2, much of the background being omitted for clearness.

Figure 6 is a cross section at 6—6, Figure 7, showing in cross section the single spring which actuates two keys.

Figure 7 is a view at 7—7, Figure 10, of the side of the four keys opposite to that shown in Figures 1, 2, 3 and 4, and shows the keys in their normal position, a portion of the one in the foreground being broken away for clearness as it has, in any case, no mechanical connection with the other three.

Figure 8 is a view in the same direction as Figure 7, showing the uppermost touch piece depressed, a portion of the key in the foreground being broken away, as in Figure 7.

Figure 9 is a view in the same direction as Figures 7 and 8, with a portion of the key in the foreground broken away as in those figures and the lower two touch pieces depressed, as in Figure 4.

Figure 10 is a view looking at the outer edges of the four keys in the direction of the arrow shown in Figure 6.

The clarinet of the particular type with which this invention is concerned includes a body 1 formed with tone holes and particularly the tone holes 2, 3, 4 and 5 controlled by the keys 6, 7, 8 and 9 respectively, with which the present invention is more especially concerned. As ordinarily considered, the pitch of the tones of the instrument, when governed by the respective keys referred to are as follows:—

The tone produced by the control operation of the key 6 is B so that the key 6 may be indicated as the B key; the tone controlled by the operation of the key 7 is B so that the key 7 is known as the B-flat key. Correspondingly, key 8 is the F-sharp key and key 9 is either the E-flat or B-flat key. In the conventional standardized arrangement, key 6 is ordinarily located nearer the upper end of the instrument than is key 7, that is, nearer the mouthpiece of the instrument, but it is apparent that the longitudinal position of the tone holes controlled by these keys and the relative dispositions of the touch pieces to maintain the standardized lay are the only real important considerations. A reversal of the location of keys 6 and 7 is a matter of indifference so long as the standardized requirements as to the tone holes and touch pieces is maintained.

The body 1 is provided with outwardly projecting pillars 10 and 11 providing a sup-

port for a rod 12 on which the keys 6 and 7 are mounted for pivotal or swinging movement, the keys being arranged upon the rod in parallel relation longitudinally of the body. Similar pillars 13 and 14 extend outwardly from the body 1, supporting the rod 15 on which the key 8 is pivotally mounted. Further similar pillars 16 and 17 extend outwardly from the body 1 carrying the rod 18 upon which the key 9 is pivotally supported.

An important detail of the present invention is the relative disposition of the keys 8 and 9. It is, of course, apparent that, as above stated, the keys 8 and 9 are independently pivoted with respect to the clarinet body but in order to maintain the standardized lay of the special type of clarinets referred to herein, and bearing in mind the further consideration that it is never necessary to operate the key 8 alone, I have formed the key 8 so that it will directly overlie the key 9. Thus the key 8 from its pivotal support on the rod 15 is reduced in vertical dimension so that it may be projected longitudinally of the clarinet body in a position above and in the same vertical plane as that of the key 9. This relative disposition is illustrated generally in Figures 2, 3 and 4 and more particularly in Figure 5.

The respective keys 6, 7, 8 and 9 are provided with touch pieces 21, 22, 23 and 24 respectively, the relative dispositions of which are in accordance with standardized requirements, the touch piece 23 of the key 8, however, being in the same longitudinal plane as the touch piece 24 of the key 9. It is thus impossible to operate the key 8 singly, both by reason of the relation of the touch pieces 23 and 24 and by the fact that key 8 overlies key 9 in the same vertical plane as the latter. Of course, either key 6 or 7 may be singly operated or in this type of clarinet they may be operated simultaneously by the finger engaging both touch pieces 21 and 22. The operation of key 6 is indicated in Figure 8, while the operation of key 9 simultaneously with the operation of key 8 is shown in Figures 4 and 9.

The relation of the adjacent edges of the keys 8 and 9, that is, the upper edge of key 9 and the lower edge of key 8, is such that when these keys are simultaneously actuated, these relatively adjacent edges are maintained in parallel relation. If desired, and for insuring silent operation, a strip of cork or like resilient material, indicated at 25, may be secured to that portion of the lower edge of the key 8 which overlies key 9, thereby providing a sound-absorbing element between the keys, which element directly engages the upper edge of key 9 in the operation of the key 8.

The key 7 is influenced toward normal position by the usual flat spring (not shown), while key 9 is normally influenced toward closed position by a flat spring 19 secured to the lower edge of the key and cooperating with a spring stop 20 on the body. Keys 6 and 8, however, are influenced toward closed positions by a single spring. This spring, indicated at 26, is secured to the lower edge of key 6 and bears at its free end on a stud 27 which projects laterally from key 8. The stud, if desired, may have terminal enlargements, indicated at 28 and 29 in Figure 6, to prevent lateral freedom of the spring. Thus a single spring serves to control both keys 6 and 8 when free of their manual influence, thus providing for the proper spring control of the key 8 and materially simplifying the arrangement and construction.

The key 8 may be formed with an arch construction to permit it to pass over the mounting of the key 6, as indicated at 30 in Figure 1, keys 7 and 8 being similarly arched at 31 to permit their overlying other parts without interference.

The improved construction provides for so mounting the particular right side keys on a Boehm-type clarinet of special small size in a manner to permit the standardized position or lay of the touch pieces and of the keys.

I claim:—

1. A clarinet or like instrument having a key grouping including a plurality of keys, a pivotal support for each of the keys, and springs for influencing the keys toward normal, inoperative positions, one of said springs being common to at least two of the keys.

2. In a clarinet or like instrument, a key group including a plurality of keys, a pivotal support common to two of the keys, a pivotal support for each of the remaining keys, one of the keys operating in the same vertical plane as another of the keys, and a return spring common to one of the keys mounted on a common pivot and one of the keys of the pair operating in the same vertical plane.

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