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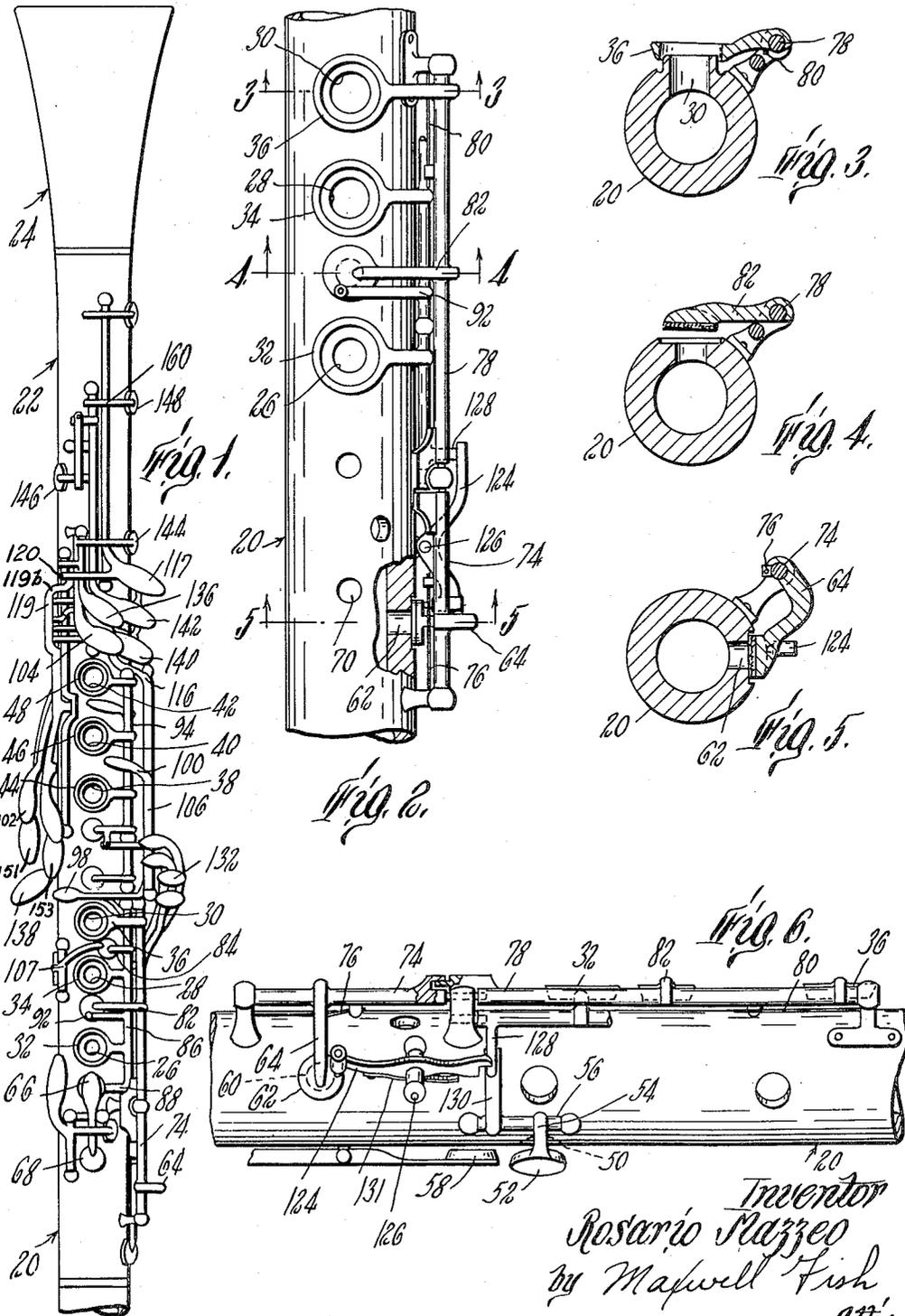
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2,867,146

CLARINET

Filed Aug. 15, 1956

3 Sheets-Sheet 1



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3 Sheets-Sheet 3

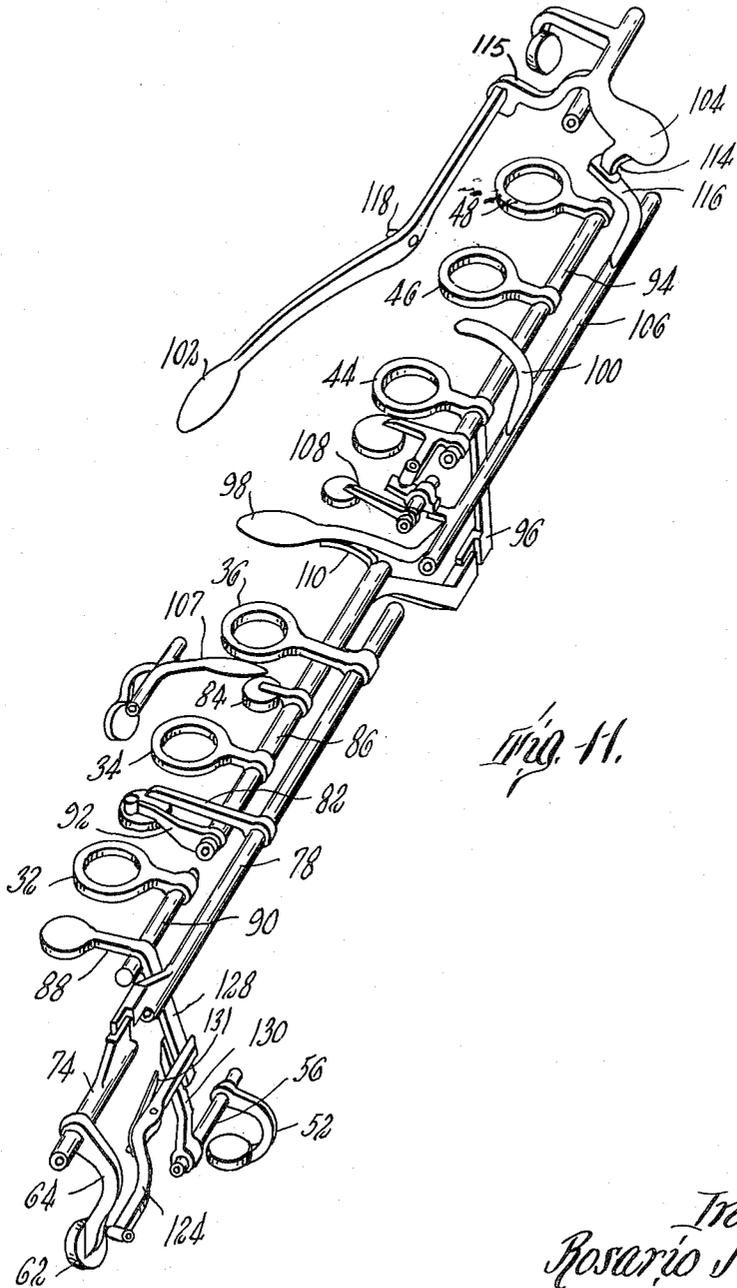


Fig. 11.

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2,867,146

CLARINET

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16 Claims. (Cl. 84—382)

The present invention relates to improvements in a clarinet and more particularly in a Boehm system clarinet.

It is a principal object of the invention to provide an improved control means for musical instruments such as the clarinet.

More particularly it is an object to provide in a Boehm system clarinet a novel and improved construction and arrangement of the parts by means of which certain of the notes may be played in a new manner which is in addition to the way they are at present played upon the instrument, so as to facilitate the performance of certain movements on the instrument which are at the present time extremely difficult to negotiate.

A feature of the invention consists in the re-arrangement and interconnection of certain of the operating parts to provide certain improved alternative and accessible ways of rendering the throat note Bb which is normally written on the third line of the treble clef.

Another feature of the invention consists in the construction and arrangement of the operating mechanism of the clarinet to provide for an alternative way of rendering the forked Eb, Bb on a clarinet which is keyed in accordance with the improved Boehm system.

Another feature of the invention consists in the improved arrangement of the C#, G# key which, in accordance with applicant's improvement, may be activated automatically by the Ab, Eb key lever of either hand little finger.

Another feature of the invention consists in the addition of an additional low Eb, Bb lever which is to be played by the left hand little finger and is freely available as an alternative to the Eb, Bb lever normally played by the little finger of the right hand.

Another feature of the invention consists in the interconnection of the F#, C# lever and the low E, B key. In a Boehm system clarinet the low F#, C# key is normally operated to close one hole and open another. The low E, B key is independently operated. In accordance with the present invention both of these keys have been changed and interconnected so that the present low E, B key not only closes its holes as normally, but also closes the F#, C# tone hole opened by the pressing of the F#, C# key so that the F#, C# key may be held down when the low E, B key is played.

Still another feature of the invention consists in the novel arrangement of the key which overlies the F thumb hole and which normally takes the form of a ring. In the illustrated construction a plate has been substituted for this thumb hole ring.

With the above noted and other objects in view as may hereinafter appear the several features of the invention consist in the devices, combinations and arrangement of parts hereinafter described which together with the advantages to be obtained thereby will be readily understood by one skilled from the following description taken in connection with accompanying drawings in which

Fig. 1 is a top plan view of an improved Boehm system clarinet embodying therein in a preferred form the

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several features of the invention, the upper and lower joints, and bell of the clarinet;

Fig. 2 is a full size view of substantially the entire upper joint of the clarinet, certain of the parts having been removed and sectioned for clarity;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2 showing particularly the C tone hole closed by the third finger left hand, and the overlying ring;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2 illustrating particularly the pad and hole covering lever controlled by the C ring operated by the third finger left hand;

Fig. 5 is a sectional view taken on line 5—5 of Figure 2 illustrating particularly the Bb hole, and its covering lever and pad;

Fig. 6 is a side view of substantially the same parts shown in Fig. 2 looking from the right;

Fig. 7 is a full size plan view of particularly the lower section of the clarinet shown in Figure 1;

Fig. 8 is a section taken on line 8—8 of Fig. 7 looking from the right;

Fig. 9 is a sectional view taken on line 9—9 of Fig. 7 to illustrate particularly the connection between the low Eb, Bb lever operated by the little finger right hand and with the newly added Eb, Bb lever which is operated by the little finger left hand;

Fig. 10 is a sectional view taken on line 10—10 of Fig. 8 illustrating particularly the C#, G# lever operated by the left hand, and the connection provided therefrom to the D ring operated by the second finger left hand; and

Fig. 11 is an exploded view showing the improved organization and articulation of the various operating parts which permit an improved fingering of the instrument for the control of the Bb tone hole and its pad, for the more efficient use of the forked Eb, Bb, an improved finger arrangement for playing the note A second space, treble clef, for the production of an alternative C#, G# when so desired, and for the alternative playing of low Eb, Bb by the little finger of either hand.

The Bb clarinet illustrated in the drawings as embodying in preferred form the several features of the present invention is constructed in accordance with the improved Boehm system, but with the improvements hereinafter more fully described to substantially improve the flexibility and quality of the instrument while permitting the instrument to be played if so desired in the normal and accustomed manner of those skilled in the use of the clarinet.

The Bb clarinet shown in the drawings comprises generally an upper joint 20 and the usual lower joint 22 and a bell 25. The upper joint contains the usual first, second, and third left hand finger holes indicated respectively at 26, 28 and 30 together with their normally raised overlying ring levers. In the lower joint are found the usual first, second and third right hand finger holes, 38, 40, and 42 together with the usual overlying normally raised ring levers indicated respectively at 44, 46 and 48. The instrument is also provided in the upper joint with the usual thumb hole 50, which with the present construction is adapted to be covered by a normally raised thumb plate 52 carried on a rocker arm 54 and pivot shaft 56 and the usual adjacent register key 58. There is also provided in the upper joint of the instrument the usual Bb tone hole indicated at 60 and its covering pad 62, which is mounted on a transversely extending Bb covering lever 64. The usual A key which produces the throat note A is indicated at 66 (Fig. 1) having a pad 68 which normally closes the associated tone hole 70 (Fig. 2).

The Bb cover lever 64 is mounted on a longitudinally extending rock shaft 74 which is biased in a counter-clockwise direction (see Fig. 11) to move the Bb cover

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lever 64 to an open position by means of a light spring 76 (Fig. 2). The Bb cover lever 64 is, however, held normally in a closed position by means of a second shaft 78 which is articulated with relation to shaft 74 to rock both shafts clockwise as viewed in Fig. 11. Rock shaft 78 is acted upon in said clockwise direction by a relatively heavy spring 80 which acts to keep the Bb cover lever 64 closed.

Shaft 78 has secured thereto the C ring lever 36 actuated by the third finger left hand, and associated tone hole cover lever 82, these levers being normally held in open position by the action of heavy spring 80.

The D ring lever 34 actuated by the second finger left hand, and its associated tone hole lever 84 (Fig. 1) are carried on a separate longitudinally extending shaft 86 which underlies the shaft 80. The E ring lever and associated tone hole lever 88 (Fig. 11) are carried on a shaft 90 which is aligned with but separate from the shaft 86. The shafts 78, 86 and 90 are individually biased in a clockwise direction by heavy springs which tend to keep the respective ring levers 36, 34 and 32 mounted thereon raised.

Pressing the ring lever 34 by the second finger left hand permits the Bb tone hole closing lever 64 to be opened. The rock shaft 86 carries at its upper end a detent arm 92 which overlies the pad of tone hole closing lever 82. With this arrangement it will be evident that a counter-clockwise closing movement of the D ring lever 34 and shaft 86 will produce a positive counter-clockwise movement of shaft 78 and permit the Bb tone hole cover lever 64 to open under the influence of the light spring 76.

Each of the right hand finger hole ring levers 44, 46 and 48 are mounted on a rock shaft 94 carried on the lower joint of the clarinet. Shaft 94 is connected by means of an articulated joint generally indicated at 96 with rock shaft 86 so that the pressing of any one of these ring levers by the fingers of the right hand will rock shaft 94 and shaft 86 therewith in a counter-clockwise direction to the closed position of these parts, this as above described, permitting the Bb tone hole cover lever 64 to move to its open position.

With applicant's improved construction, the Bb tone hole covering lever 64 may be released for movement to its open position to open the Bb tone hole 60, also by the pressing of the C#, G# key 98 by the little finger left hand, or by the alternatively available C#, G# key 100 right hand, or by pressing of the low Ab, Eb lever 102 by the little finger left hand, or by pressing the corresponding low Ab, Eb lever 104 by the little finger right hand. Bb tone hole 60 may also be opened by pressing the Eb, Bb lever 107 as hereinafter described. The mechanism by which any of these keys may be rendered operative to open the Bb tone hole 60 will be described in connection with Figs. 7, 8, 9 and 11. The C#, G# lever 98 is mounted on the upper end of a longitudinally extending rock shaft 106 carried on the lower joint 22 of the clarinet. The rock shaft 106 and associated parts including C#, G# levers 98 and 100 are rocked clockwise to a raised position and the usual C#, G# tone hole covering lever 108 is closed by means of a heavy spring, not shown. The C#, G# lever 98 is operatively connected to shaft 86, which carries the D ring 34 actuated by the second finger left hand, by means of an arm 110 which is secured to the lower end of the shaft 86 and engages beneath the C#, G# lever 98. With this arrangement it will be evident that a counter-clockwise movement of the rock shaft 106 is produced by pressing either of the C#, G# keys 98, 100, will correspondingly rock shaft 86, and the action of arm 92 on the D tone hole cover lever 82 will rock shaft 78 counter-clockwise, so that shaft 74 and the Bb tone hole cover lever 64 are permitted to move to open position under the influence of light spring 76.

With the present construction, the low Ab, Eb lever 104, manipulated by the little finger right hand, is available to open the Bb tone hole 60. When lever 104 is pressed a

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lug 114 on the finger pad of lever 104 engages with a curved arm 116 on the lower end of shaft 106, causing the shaft 106 to be rocked in a counter-clockwise direction acting as above to open the Bb tone hole 60.

The associated low Ab, Eb lever 102 controlled by the little finger of the left hand is interconnected in the usual manner with the lever 104 so that the two levers are depressed together by means of a lateral extension 115 of lever 104 which is operatively connected with the tail of lever 102 which turns on a pivot 118 (see Fig. 11). The Bb tone hole 60 can therefore be opened by pressing the left low Ab, Eb lever 102.

With the present construction the Eb, Bb lever played by the third finger of the left hand, and designated at 107 is also available to open the Bb tone hole 60. The Eb, Bb lever 107 overlies the D tone hole covering lever 84 and acts when pressed to engage with lever 84 thus rocking the second finger hole left hand rock shaft to the pressed position, which in turn act through rock shaft 78 to permit Bb cover hole lever 64 to be opened.

With the present construction a second low Eb, Bb lever to be played by the little finger left hand is provided at 119 arranged to turn on pivot 119a (see Figs. 1, 7 and 8). This lever is pivoted intermediate its length and the end thereof designated at 119b, is engaged beneath arm 120 carried by the support shaft for the right hand low Eb, Bb lever designated at 117. This construction has the advantage of allowing greater facility of fingering.

It will be understood that the above description is limited primarily to a description of the newly added parts, the conventional elements of the improved Boehm system clarinet being set forth only so far as is necessary to indicate the connection of the present invention therewith.

As above stated when the Bb tone hole 60 is opened by the raising of the Bb cover lever, as above described, in combination with the pressing of the A throat key 66, the throat tone Bb is produced. In the event that the Bb tone hole 60 is opened by any combination of pressed rings, levers, and keys as above set forth, but without pressing the A throat key 66, the tone A will be produced.

With the improved system above described, the operation of any of the several rings, keys and levers which would permit the Bb hole 60 to be uncovered, will be invalidated, however, whenever the thumb key 52 is pressed or when the E ring 32 is pressed by the first finger left hand. To this end a detent lever 124 is provided supported intermediate its length on pivot pin 126 and arranged at one end to overlie pad 62 of the Bb tone hole cover lever 64. The opposite end of the detent lever 124 is arranged to be engaged by a downwardly extending arm 128 on shaft 90 and also by an upwardly extending arm 130 carried on the pivot pin 56 for the tone key 52. The pressing of ring lever 32 which rocks shaft 90 counter-clockwise will raise the detent lever 124 to press the pad 62 securely against the Bb tone hole 60. Similarly, the pressing of the thumb lever 52 by rocking the pivot pin 56 and arm 130 causes the detent lever 124 to be rocked locking the Bb cover lever 64 and pad 62 in the closed position. A spring 131 secured to the underside of detent arm 124 holds the detent lever 124 at rest against the pad 62 thus eliminating any play in the mechanism.

In order to bring out more fully the operation of the clarinet under various operating conditions in which the several improvements herein disclosed are most advantageously employed the operation of the clarinet under such conditions will be briefly described as follows:

Bb, third line G clef, is now, in accordance with applicant's improved system fingered with the throat note A key 66, and the three rings 44, 46 and 48 of the right hand plus the right hand F, C key 136. This may be regarded as fundamental fingering, which, however, may be varied to suit the particular playing conditions. The idea, for example, for the fingering for this Bb should include the

throat note A key plus any ring or key which has been used in the immediate previous note and which is to be used in the immediately succeeding note. With the construction shown there are a total of 309 ways of playing this B \flat , so that it should be evident that the combinations available are practically limitless for all practical purposes.

The note A, second space, treble clef, though normally fingered with the A throat key, may also be played with the first, second and third rings, 44, 46 and 48, played by the fingers of the right hand plus the right F, C key 136 or, left F, C key 138. Again it will be understood that the theory of the fingering for this alternatively produced note A is exactly the same as that used to play the B \flat described above. In other words, the note A is played with those rings and keys which were used immediately preceding the A note, and which are also to be used for the note immediately following the A.

The arrangement of the C \sharp , G \sharp key which is articulated with relation to the A \flat , E \flat levers 102, 104 played by the little fingers of the left and right hand, respectively, has the particular advantage that it is possible to play C \sharp or G \sharp without the necessity of pressing the C \sharp , G \sharp key 98 with the little finger left hand if the note sequence makes the use of the little finger, left hand awkward.

The arrangement of the C \sharp , G \sharp lever 98, which is articulated with relation to the D finger ring 34 played by the second finger left hand by means of arm 110 on shaft 86 extending against the under side of key lever 98, has the particular advantage that it makes the playing of an E \flat and B \flat possible in the respective registers, pressing also the C \sharp , G \sharp key 98 which produces an alternate sound of more brilliance than the usual forked E \flat , B \flat .

It will be understood that with the improved Boehm system E \flat and B \flat are produced in their respective registers more effectively by the simultaneous pressing of the thumb key 52 and rings 32 and 36 controlled by the first and third fingers respectively of the left hand. When the C \sharp , G \sharp key 98 is used in combination, the result is to close the ring 34 controlled by the second finger left hand and the adjoining cover lever 84 controlled thereby, at the same time to raise the cover lever 108 which is normally opened by the C \sharp , G \sharp key 98.

In the playing of certain passages including low E \flat or throat B \flat , difficulty is sometimes presented because of the necessity of using the little finger right hand for this note. In applicant's improved construction a second E \flat , B \flat lever 119 has been added which is alternatively available for the playing of such passages.

A further improvement consists in the interconnection of the F \sharp , C \sharp lever 140, and the low E, B key 142.

In the improved Boehm system clarinet, the low F \sharp , C \sharp lever 140 is normally operated to close one hole 144 and to open another at 146. The low E, B key 142 is independently operated to close two holes 148, 144.

In accordance with the present invention, both of these keys (low E, B key 142 and low F \sharp , C \sharp key 140) have been changed and interconnected so that pressing of the low E, B key 142 not only closes its holes 148, 144 as normally, but also closes the low F \sharp , C \sharp hole closing lever 146 opened by the pressing of the F \sharp , C \sharp key 140. It will be understood that this instrument is also provided as indicated in Fig. 1 with a usual alternatively operable F \sharp , C \sharp key lever 151 and with a low E, B lever 153 to be pressed by the little finger left hand. The tail of the little finger left hand E, B key lever 153 engages under a laterally extending arm, not specifically designated, secured to the rock shaft 158 which supports the little finger right hand low E, B key lever 142. The tail of the little finger left hand low F \sharp , C \sharp key lever 151 engages beneath a laterally extending arm, not specifically designated, formed on rock shaft 150 which also supports the little finger right hand F \sharp , C \sharp lever 140. With this arrangement it is possible to maintain either finger low F \sharp , C \sharp key lever pressed while the low note E or B is

played by the little finger of the other hand thus making for smoother technique.

The F \sharp , C \sharp key lever 140 is mounted on a rock shaft 150 which is connected by means of a one way connection at 152 with an aligned rock shaft 154 which carries a F \sharp , C \sharp hole closing lever 156 for the F \sharp , C \sharp hole 146. A light spring tends to move the F \sharp , C \sharp hole closing lever 156 to the open position, the lever 156, however, being normally held closed by the overriding bias of F \sharp , C \sharp lever 140 which is normally raised. With the present construction the low E, B lever 142 is mounted on a rock shaft 158 which also has secured thereto the low E, B tone hole closing lever 160 and a short arm 162. When low E, B lever 142 is pressed shaft 158 is rocked, tone hole 148 is closed and tone hole 144 is closed by means of a connector 163 on the low F, C lever 136 which extends beneath and is engaged by the key lever 142. Arm 162 rocks, acting on a detent lever 164 to engage with and move the F \sharp , C \sharp tone hole covering arm positively to its closed position.

A further improvement consists in the substitution of the plate 52 for the usual ring which covers the thumb hole as best shown in Fig. 6. The substitution of the plate for the thumb hole rings has the following advantages: It makes for a nicer quality of sound on open G. It makes for surer manipulation since the thumb is always awkward, and it makes for a clearer change between notes.

A further improvement which may be mentioned consists in the manufacture of the bell with no protecting ring at the bottom. The reason for this change is to give greater resonance to the whole lower joint.

The invention having been described what is claimed is:

1. In a clarinet constructed in accordance with the Boehm system, having tone holes including first, second and third finger holes left hand and first, second and third finger holes right hand, the combination of a B \flat tone hole, a B \flat lever and pad movable between open and closed positions to close said hole, means biasing said B \flat lever to the open position, a first finger hole ring and associated tone hole covering lever actuated by the first finger left hand from a normally open to a closed position, a plurality of other finger hole rings shiftable when actuated from normally open to closed positions, a one-way actuating connection between one of said plurality of rings and said B \flat lever adapted for the open position of said one ring to hold the B \flat lever closed and for the closed position of said one ring to permit the B \flat lever to open, and means overriding said first mentioned biasing means for yieldably maintaining said one ring open and said B \flat lever closed.

2. In a clarinet constructed in accordance with the Boehm system having tone holes including first, second and third finger holes left hand and first, second and third finger holes right hand, the combination of a B \flat tone hole, a B \flat lever and pad movable between open and closed positions to close said hole, means biasing said B \flat lever to the open position, a first finger hole ring and associated tone hole covering lever actuated by the first finger left hand from a normally open to a closed position, a plurality of other finger hole rings shiftable when actuated from normally open to closed positions, means overriding said first mentioned biasing means for yieldably maintaining said first finger hole ring open and said B \flat lever closed, and an interlocking device connected between said B \flat lever and said first finger hole ring operative when the first finger hole ring is pressed to maintain said B \flat lever closed.

3. In a clarinet constructed in accordance with the Boehm system having tone holes including first, second and third finger holes left hand and first, second and third finger holes right hand, the combination of a B \flat tone hole, a B \flat lever and pad movable between open and closed positions to close said hole, means biasing said B \flat lever to the open position, a first finger hole ring and

associated tone hole covering lever actuated by the first finger left hand from a normally open to a closed position, a plurality of other finger hole rings shiftable when actuated from normally open to closed positions, a thumb hole and a thumb key shiftable between open and pressed positions pressed by the thumb in closing said thumb hole, a one-way actuating connection between one of said plurality of rings and said Bb lever adapted for the open position of said one ring to hold the Bb lever closed and for the closed position of said one ring to permit the Bb lever to open, means overriding said first mentioned biasing means for yieldably maintaining said one ring open and said Bb lever closed, and an interlocking device connected between said Bb lever and said thumb key operative when said thumb key is pressed to maintain said Bb lever closed.

4. In a clarinet constructed in accordance with the Boehm system, having tone holes including first, second, and third finger holes left hand and first, second and third finger holes right hand, the combination of a Bb tone hole, a Bb lever and pad movable between open and closed positions to close said hole, means biasing said Bb lever to the open position, a first finger hole ring and associated tone hole covering lever actuated by the first finger left hand from a normally open to a closed position, a plurality of other finger hole rings shiftable when actuated from normally open to closed positions, a one-way actuating connection between one of said plurality of rings and said Bb lever adapted for the open position of said one ring to hold the Bb lever closed and for the closed position of said one ring to permit the Bb lever to open, means overriding said first mentioned biasing means for yieldably maintaining said one ring open and said Bb lever closed, a thumb hole and a thumb key shiftable between open and pressed positions pressed by the thumb in closing said thumb hole, and an interlocking device connected between said Bb lever and each of said first finger hole ring and said thumb key operative when one of said first finger hole ring and said thumb key are pressed to maintain said Bb lever closed.

5. In a Boehm system clarinet having a plurality of tone holes including first, second and third finger holes left hand and first, second and third finger holes right hand, a Bb tone hole, a Bb tone hole closing lever movable between closed and open position, a relatively light spring acting on said Bb lever to move said Bb lever to open position, a thumb hole, a lever system for the clarinet including a thumb key shiftable between a normally open position and a pressed position when pressed by the thumb in closing the thumb hole, a normally raised first finger left hand hole key, an interlocking device rendered operative by finger actuation of one of said first finger hole left hand key and thumb key to maintain said Bb lever closed, an actuating element having a one-way actuating connection with said Bb lever shiftable in one direction to move said Bb lever to the closed position, and a spring means acting upon said actuating element overriding said light spring to hold the Bb lever closed, and operating keys associated with others of said left hand and right hand finger holes arranged to be actuated by the finger closing of said holes, and means rendered operative by the actuation of any of said latter operating keys for moving said actuating element to permit the raising of the Bb lever.

6. In a clarinet constructed in accordance with the Boehm system having tone holes including first, second and third finger holes left hand and first, second and third finger holes right hand, the combination of a Bb tone hole, a Bb lever and pad movable between open and closed positions to close said hole, means biasing said Bb lever to the open position, first, second and third finger left hand hole rings each having associated therewith a tone hole covering lever, separate first second and third supporting shafts for the respective first, second and third rings and levers adapted to be rocked between

normally open and finger pressed positions, a one way actuating connection between said third supporting shaft and said Bb lever adapted for the open position of said third shaft and ring to hold the Bb lever closed and for the pressed position of said third shaft and ring to permit the Bb lever to open, and spring means overriding said means biasing said Bb lever to the open position for maintaining said third shaft and ring open and said Bb lever closed.

7. In a clarinet constructed in accordance with the Boehm system having tone holes including first, second and third finger holes left hand and first, second and third finger holes right hand, the combination of a Bb tone hole, a Bb lever and pad movable between open and closed positions to close said hole, means biasing said Bb lever to the open position, a first finger left hand hole ring and associated tone hole covering lever, and a rock shaft on which said first ring and associated lever are mounted, a second finger left hand hole ring and associated tone hole covering lever, and a second supporting rock shaft for said second ring and lever, a third finger left hand hole ring and associated tone hole covering lever, and a third supporting rock shaft for said third ring and lever, a one-way actuating connection between said third supporting shaft and said Bb lever adapted for the open position of said third shaft and ring to hold the Bb lever closed and for the pressed position of said third shaft and ring to permit the Bb lever to open, spring means overriding said Bb biasing means for maintaining said third shaft and ring open, and said Bb lever closed, and a one-way connection between said second shaft and said third shaft operative when the second ring is pressed to move the third ring to the pressed position.

8. In a clarinet constructed in accordance with the Boehm system as defined in claim 7, the combination of a C#, G# key lever and a tone hole covering lever shiftable from a normally raised closed position to a pressed tone hole position, and a one-way connection between said C#, G# key lever and said second finger left hand hole ring rock shaft adapted to move the second finger left hand hole ring rock shaft to the pressed position upon movement of the C#, G# key lever to the pressed position.

9. In a clarinet constructed in accordance with the Boehm system as defined in claim 7, the combination of a third finger left hand Eb, Bb key lever and an associated tone hole covering lever shiftable from a normally raised tone hole closed position to a pressed tone hole open position, and a one-way connection between said Eb, Bb key lever and said second finger left hand hole ring rock shaft left hand adapted upon movement of said Eb, Bb key lever to the pressed position to move said second finger left hand hole ring rock shaft to the pressed position.

10. In a clarinet constructed in accordance with the Boehm system as defined in claim 7, the combination of first, second and third right hand finger hole rings, a rock shaft to which said rings are secured for movement between raised and finger pressed positions, spring means tending to rock said shaft and right hand finger hole rings to open position, and a one-way connection between said right hand finger ring rock shaft and said second finger left hand hole ring rock shaft adapted to move the second finger left hand hole ring rock shaft to the pressed position upon movement of said right hand finger hole ring rock shaft to the pressed position.

11. In a clarinet constructed in accordance with the Boehm system as defined in claim 7, the combination of an Ab, Eb key right hand little finger, and Ab, Eb key left hand little finger, a rock shaft having a one-way connection with each of said Ab, Eb keys and a one-way connection of said rock shaft with said second finger hole ring supporting rock shaft whereby the pressing of either Ab, Eb key rocks the connected rock shaft and the second

finger hole rock shaft left hand to the pressed position.

12. In a clarinet constructed in accordance with the Boehm system as defined in claim 7, the combination of an Ab, Eb key, a rock shaft having a one-way connection with said Ab, Eb key, a little finger left hand C#, G# key secured to said rock shaft, an arm on said second finger left hand hole ring supporting rock shaft engaging beneath said C#, G# key to provide a one way connection between said C#, G# supporting rock shaft and said second finger left hand hole ring rock shaft adapted when either the C#, G# key or the Ab, Eb key is pressed to rock the second finger left hand hole ring supporting rock shaft to the pressed position.

13. In a clarinet constructed in accordance with the Boehm system having tone holes including first, second and third finger holes left hand and first, second and third finger holes right hand, the combination of a register key, a first finger left hand hole ring and associated tone hole covering lever, and a rock shaft on which said first ring and associated tone hole covering lever are mounted movable between open and closed finger pressed positions, a second finger left hand hole ring and associated tone hole covering lever, and a second supporting rock shaft for said second ring and lever movable between open and closed finger pressed positions, a third finger left hand hole ring and associated tone hole covering lever, and a third supporting rock shaft for said third ring and lever movable between open and closed finger pressed positions, a C#, G# lever shiftable between raised and finger pressed positions, and a C#, G# tone hole closing lever connected to be opened by the pressing of said C#, G# lever, and a one-way connection between said C#, G# lever and said second supporting rock shaft whereby the second ring and its associated lever are moved with the C#, G# lever to said pressed position, and the finger pressing of the thumb hole and the first and third rings left hand and the C#, G# lever produces an improved fork Eb, and with the register key Bb.

14. In a clarinet constructed in accordance with the Boehm system having tone holes including first, second and third finger holes left hand and first, second and third finger holes right hand, the combination of a C#, G# key lever and a tone hole covering lever connected for movement between a raised tone hole closing position and a finger pressed tone hole open position, an Ab,

Eb key lever and a tone hole covering lever connected for movement between a raised tone hole closing position and a finger pressed tone hole open position, and a one-way connection between said Ab, Eb key lever and said C#, G# key lever adapted upon movement of the Ab, Eb key lever to the finger pressed tone hole open position to shift said C#, G# lever key and associated tone hole lever to the pressed C#, G# tone hole open position.

15. In a clarinet constructed in accordance with the Boehm system as defined in claim 14, the combination of a one-way connection between said Ab, Eb key lever and said C#, G# key lever which comprises a rock shaft on which said C#, G# key lever is secured shiftable between a C#, G# lever raised position and a C#, G# lever pressed position, and cooperating abutments carried respectively by said Ab, Eb lever and said C#, G# key lever supporting rock shaft engaged by a movement of the Ab, Eb lever to the pressed position to shift said C#, G# key lever supporting rock shaft and C#, G# key lever therewith to the pressed position.

16. In a clarinet constructed in accordance with the Boehm system as defined in claim 9 having a low Eb, Bb key lever shiftable between a raised inoperative position and a pressed operative position arranged to be pressed by the little finger right hand, the combination of a second low Eb, Bb key lever connected with said first mentioned low Eb, Bb lever shiftable between a raised inoperative position and a little finger left hand pressed operative position.

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