

D. JULLIOT.

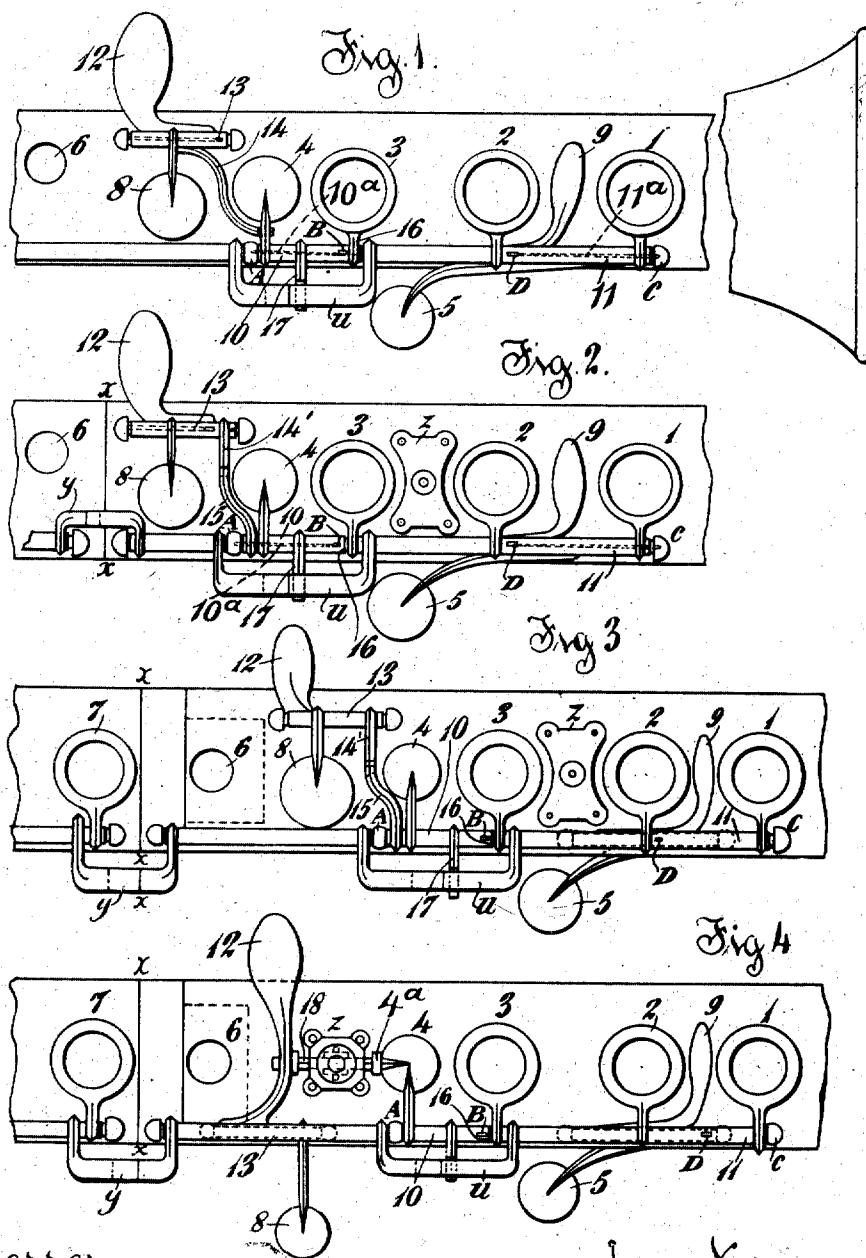
CLARINET.

APPLICATION FILED APR. 8, 1909.

Patented Nov. 7, 1911.

2 SHEETS-SHEET 1.

1,008,272.



Witnesses
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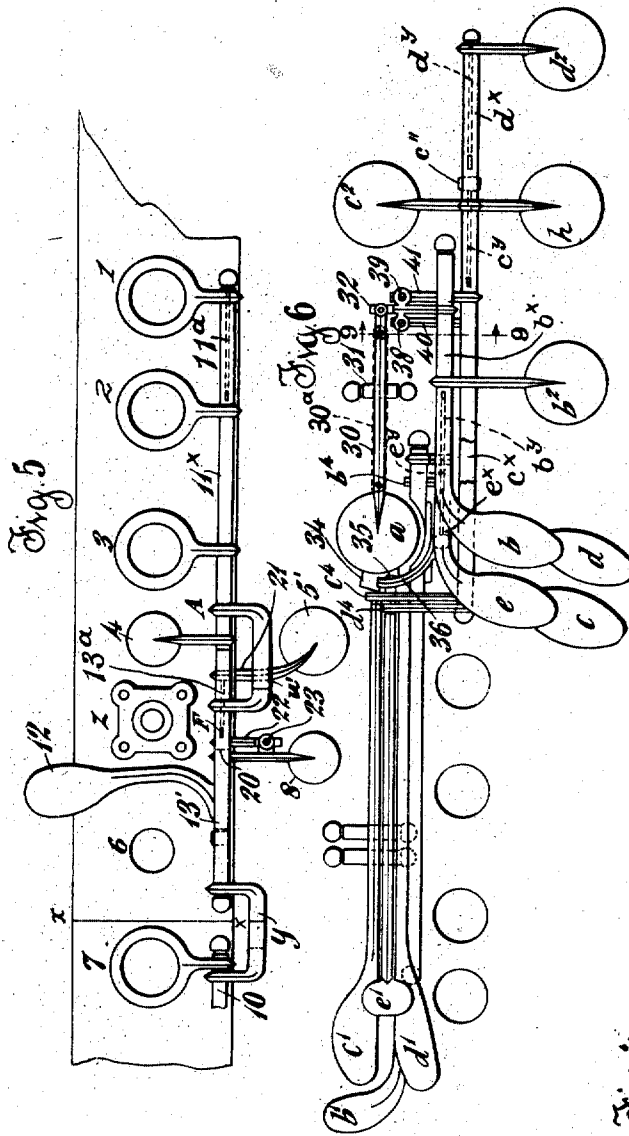
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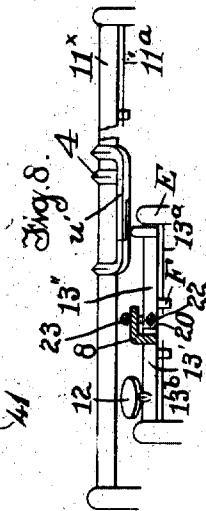
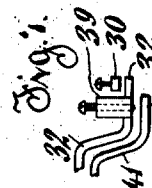
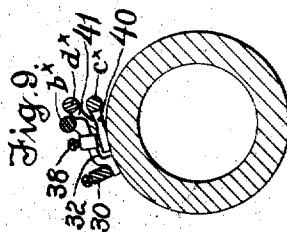
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2 SHEETS—SHEET 2.

1,008,272.



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UNITED STATES PATENT OFFICE.

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CLARINET.

1,008,272.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DJALMA JULLIOT, a citizen of the Republic of France, and a resident of La Couture-Boussey, in the Department of Eure, France, have invented a certain new and useful Improvement in Clarinets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of my specification.

My invention relates to clarinets and its object is to provide the clarinet with certain novel mechanisms to facilitate the playing thereof. These improvements are applicable to the Albert and Boehm system clarinets in one or two pieces.

By the use of my improvements the fingering of the keys near the middle of the instrument, for the combinations producing D#, F#, G#, A#, and the fingering of the three successions, C, Eb; C#, Eb; and B natural Eb, is facilitated, as is also the corresponding fingering for many combinations of the entire scale of the clarinet.

The improvements, which are represented in the drawings attached hereto, may be applied to the Boehm system clarinets, but they can equally well, with slight modifications, be adapted to the ordinary clarinet of thirteen to seventeen keys; for these it is necessary to add three rings on the lower part of the clarinet body, or one additional ring in case one or two are already present.

In the drawings:—Figures 1 to 5, inclusive, show in top elevation my improved mechanism and several modifications thereof of which allow the execution of the fingering of D#, F#, G#, A#, according to whether or not the clarinet is made in one or two pieces. In Fig. 1 it is represented as in one piece. In Figs. 2 to 5, inclusive, it is made in two pieces. Fig. 6 shows improvements applied to a clarinet of the Boehm type, by which is made possible the ready fingering of the three successions,—C natural, Eb; C#, Eb; and B natural Eb, of the Boehm system. Fig. 7 is a detail view to be referred to later. Fig. 8 is a detail side elevation of parts shown in Fig. 5. Fig. 9 is a section through Fig. 6 on the line 9—9 thereof.

In Figs. 1 to 5 the same covers and rings are referred to by the numerals 1 to 8, inclusive. 8 indicates the cover of G#. In Figs. 2 to 5, the line $x-x$ indicates where the two

parts of the clarinet are joined by means of the ordinary attachment $y-z$ represents the plate for the ordinary support of the music rack.

Referring now particularly to Fig. 1, 9 is the finger piece controlling the cover 5. 10 and 11 represent rock shafts rotatably mounted on the clarinet body, each being rotatable independently of the other. The cover 4 is rigidly connected to the shaft 10 and the rings 1, 2 and 3 are rigidly connected to the shaft 11. Under the shaft 10 is located a needle spring 10^a which is attached at one end to a stud A, fixed to the clarinet body and forming one of the bearings for said shaft. The opposite end of said spring engages a lug B located on the under side of the shaft 10, the tendency of said spring being to depress the cover 4. Under the shaft 11 is located another needle spring 11^a which is fixed at one end to a stud C in which said shaft 11 has bearing. The opposite end of said spring engages a lug D on the underside of the shaft 11 and normally tends to rotate the shaft 11 to raise the rings 1, 2 and 3, thus acting in a direction opposite to that in which the spring 10^a tends to rotate the shaft 10 in depressing the cover 4. 12 is a finger piece rigidly connected to a spring-controlled rock shaft 13 to which is secured the arm of the normally closed cover 8. A curved arm 14 is rigidly connected at one end to shaft 13 and at its opposite end engages under the arm of the cover 4. The cover 4 is normally held in raised position with the rings 1, 2 and 3 by means of a bent arm or yoke u which is rigidly connected to the shaft 11 and bears against an arm 17 secured to the shaft 10. For this purpose the spring 11^a is stronger than the spring 10^a. When the rings 1, 2 and 3 are depressed the yoke u is raised from its engagement with the arm 17, and the cover 4 is depressed under the action of its associated spring 10^a. This cover 4 may then be independently raised by pressing down on the finger piece 12. This will, through the arm 14, raise the cover 4 against the action of the needle spring 10^a.

In Figs. 2 and 3 the construction is practically identical with that above described except that it is shown in connection with a two piece instrument, the one illustrating a Boehm and the other an Albert clarinet. In these cases also the arm which operates

to independently raise the cover 4 is of the usual two piece construction, comprising a part 14¹ connected to the rock shaft 13, and a part 15 connected to the rock shaft 10, the free end of part 14¹ engaging under the free end of part 15.

In Fig. 4 is shown still a different means for independently raising the cover 4. In this case the under side of the key 12 is arranged to engage the end of a lever 18 pivoted to the under side of the music rack 2 with its opposite end engaged under a lip 4^a attached to the cover 4.

In Fig. 5 still another modification is shown to produce the same result. In this case the rings 1, 2 and 3, and also the cover 4 are rigidly connected to a shaft 11^a provided with a needle spring 11^a, as before, which normally holds said rings and said cover in open position. The finger piece 12 is, in this case, connected to a part 13¹ of a rock shaft located below the shaft 11^a and divided at 20 (see Fig. 8) into said part 13¹ and a part 13², which parts are independently rotatable. To the part 13¹ is connected the cover 8, while to the part 13² is connected a second cover 5¹ of G#. Under the shaft 13² is located a needle spring 13^a which is attached to a stud E in which said shaft has bearing and which engages a lug F on said shaft in such a way as to normally hold the cover 5¹ open. An arm 22, secured to shaft 13², is engaged from above by a set screw 23 carried by the arm of cover 8 so that the usual spring 13^b which holds said cover 8 in closed position will, through said arm 22, hold the cover 5¹ in closed position against the action of the spring 13^a. A bent arm or yoke w¹ secured to the shaft 11^a engages the arm 21 of the cover 5¹ when the rings 1, 2 and 3 and the cover 4 are in raised position. Upon depressing the rings 1, 2 and 3 and the cover 4, the yoke w¹ will be raised from its engagement with the arm of the cover 5¹, which, however, under the action of the spring 13^b will remain in closed position. Upon pressing down the key 12, the set screw 23 will be raised with the cover 8, thereby releasing the arm 22 and allowing the cover 5¹ to rise under the action of its associated spring 13^a. When the rings 1, 2 and 3 and the cover 4 rise, the yoke w¹ will depress the cover 5¹. It will thus be apparent that the operation is the same as before.

Referring now to Fig. 6,—a indicates the cover for E b. Said cover is adapted to be operated by a finger piece but instead of being directly connected to said finger piece, as in the present clarinet of the Boehm system, said cover is secured to the end of a vertically swinging spring controlled arm 30, pivoted to the clarinet body by means of a lug 31. A spring 30^a secured to the under side of said arm and engaging the clarinet

body at its free end tends to hold the cover a in raised position. b, e, c and d indicate finger pieces, each connected, respectively, to spring-controlled rock shafts b^x, e^x, c^x and d^x which are mounted on the clarinet body so as to be independently rotatable. A cover b² is connected to shaft b^x, a cover d² to shaft d^x, and cover c² to shaft c^x. The shafts b^x and d^x are provided respectively with needle springs b^y and d^y which normally hold the associated covers b² and d² in raised position. A cover h is soldered upon the same shaft as the cover d². This cover however forms no part of my invention, it being common in clarinets, as heretofore constructed. The shaft e^x is provided with a needle spring e^y which is stronger than the spring 30^a of the swinging arm 30 which carries the cover a. The shaft e^x is provided with a needle spring e^y which is adapted to normally hold the cover e² in closed position. As shown in Fig. 6, the shaft d^x is partly broken away to expose the shaft c^x which latter extends from the bearing c¹¹ to the finger piece c. The free end of the arm 30 extends above a cross-piece 32 (see Fig. 9, which represents said cross piece in side elevation), which is rigidly secured to the rock shaft b^x. Said cross piece carries laterally disposed screws 38 and 39 which engage respectively arms 40 and 41 secured to the shafts c^x and d^x. b¹, c¹, d¹ and e¹ are the associated finger pieces for the left hand corresponding to the finger pieces b, e, c, d, and e, and are of the usual construction. They are connected by suitable arms respectively b⁴, c⁴, d⁴ and 36 to the finger pieces b, c, d and e. To the cover a is secured a lip 34 which engages under a lug 35 on said arm 36. Owing to this construction when the pressure of the fingers is removed from the keys b, e, d and b¹, c¹, d¹, the depression of either of the keys e or e¹ raises the lug 35 from its engagement with the lip 34 of the cover a, thereby permitting said cover to rise under the action of its spring 30^a, thus producing E b. While this effect is produced by depressing the finger piece e or e¹, it is then possible to produce the three successions C, E b; C #, E b; B natural E b, by depressing respectively the finger pieces b, c and d or b¹, c¹ and d¹. It is apparent that by reason of the arms 40 and 41, connected respectively to the rock shafts c^x and d^x, having their free ends engaged under the screws 38 and 39 carried by the cross piece 32, that the depression of either of the finger pieces c and d (or their associated finger pieces c¹ and d¹) will operate to depress the finger piece b or its associated finger piece b¹.

I claim as my invention:—

1. A clarinet comprising a body, a rock shaft, rings carried by the rock shaft, a spring tending to hold said rings in raised position, a second rock shaft carrying a

cover, a second normally closed cover, a finger piece connected with the said second cover to open the same, a part carried by the ring shaft for controlling the cover first mentioned, a spring also controlling the said first cover for closing the same, and means controlled by the finger piece for opening the first mentioned cover when the rings are depressed, substantially as described.

2. A clarinet comprising a body, a rock shaft, rings carried by said shaft, a spring tending to hold said rings in raised position, a second rock shaft carrying a cover, a spring tending to swing said cover in one direction, a part rigidly connected with said second shaft, a part carried by the first or ring shaft and arranged to engage the first-named part when the rings are in raised position, and to recede from said part and release said cover from pressure when the rings are depressed, a second normally closed cover, a finger piece connected to open said second cover, and means intermediate said finger piece and said first-named cover for effecting the opening of the latter, substantially as described.

3. A clarinet, comprising a body, a rock shaft, rings carried by said shaft, a spring tending to hold said rings in raised position, a second rock shaft carrying a cover, a spring tending to hold said cover in closed position, means for transmitting movement from the first-mentioned rock shaft to the second to open said cover when said rings rise, a second normally-closed cover, a finger-piece connected to open the second cover, and means intermediate said finger-piece and said first cover, said means raising the said first cover whenever said finger-piece is depressed.

4. A clarinet, comprising a body, a rock

shaft, rings carried by said rock shaft, a spring tending to hold said rings in raised position, a second rock shaft, a cover carried by said second shaft, a spring tending to hold said cover in closed position, an arm carried by the first-named rock shaft, an arm secured to said second rock shaft and engaged by the first-named arm, whereby said cover is opened when the rings rise, a second normally-closed cover, a finger-piece connected to open said second cover, and means intermediate said finger-piece and said first-named cover for raising the latter whenever the finger-piece is depressed, although the rings are depressed.

5. A clarinet, comprising a body, parallel spring-controlled rock shafts b^x , c^x , d^x and e^x rotatably mounted on said body, each rock shaft having two finger-pieces, the finger-pieces being grouped in sets, one for each hand of the player, normally-raised covers carried by said shafts b^x and d^x , a normally closed cover carried by said shaft c^x , a normally-closed cover a , a vertically-swinging, spring-controlled arm carrying said cover a , the spring of said arm tending to open said cover, an arm secured to said rock shaft e^x and normally holding said cover a in closed position, a cross piece secured to said rock shaft b^x with its free end located below the free end of said vertically-swinging arm, and parts secured respectively to said rock shafts c^x and d^x and engaging under fixed parts of said cross piece, whereby each of said rock shafts b^x , c^x , d^x may close the cover a .

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