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EXPRESSION MECHANISM FOR AUTOMATIC PIANOS.

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1,080,424. Patented Dec. 2, 1913.

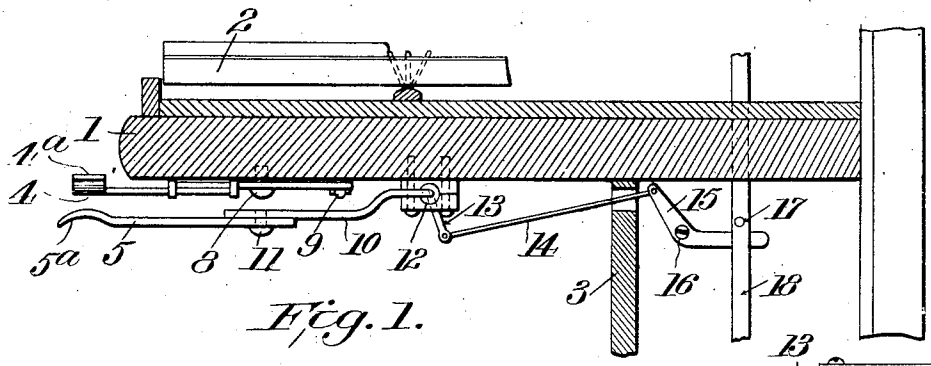


Fig. 1.

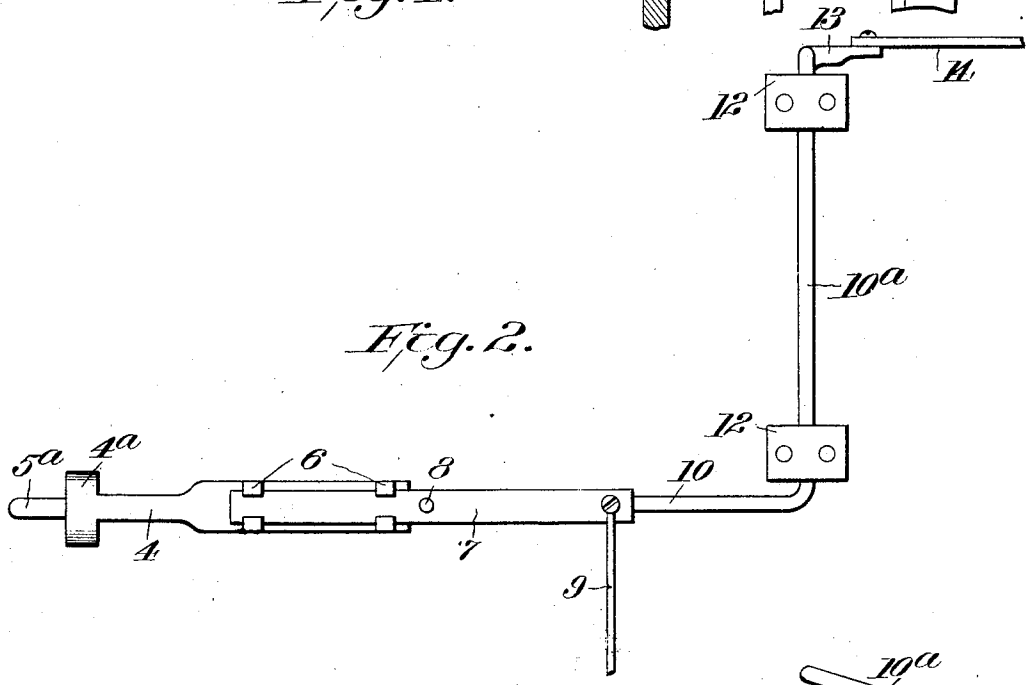


Fig. 2.

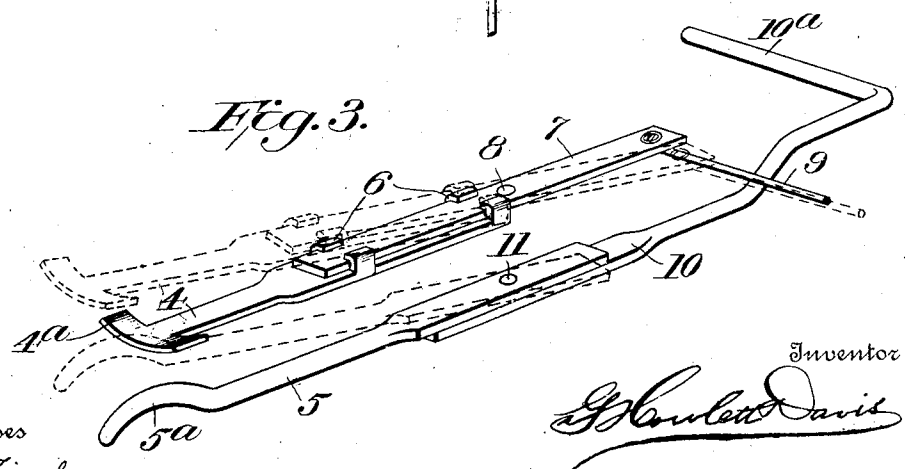


Fig. 3.

Witnesses

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EXPRESSION MECHANISM FOR AUTOMATIC PIANOS.

1,080,424. Specification of Letters Patent. Patented Dec. 2, 1913.

Application filed May 20, 1910. Serial No. 562,540.

To all whom it may concern:

Be it known that I, GEORGE HOWLETT DAVIS, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Expression Mechanism for Automatic Pianos, of which the following is a specification.

My invention relates to automatic musical instruments such as pianos, and more particularly to expression controlling mechanism for such instruments.

In automatic or player pianos it is customary to provide two or more controlling levers arranged at some point convenient to the operator, by means of which the interpretation or expression of the composition may be varied at will. When but two levers are employed, one of them is arranged to control the speed or time of the selection and is known as the "tempo" lever, while the other is designed to control the force or loudness of the tone, and may be designated as the "dynamic" lever.

It is the object of the present invention, therefore, to provide a construction in which these two levers are arranged in a convenient manner and so located as to require a minimum effort on the part of the operator to manipulate them.

To this end, and to improve generally upon the details of such devices my invention consists in the construction and arrangement of parts hereinafter described, and illustrated in the accompanying drawing, in which,—

Figure 1 is a transverse vertical section through the key-bed of a piano showing my improved expression mechanism attached thereto; Fig. 2 is a plan view on an enlarged scale of the controlling levers, the key-bed being omitted for the sake of clearness; and Fig. 3 is a perspective view of the controlling levers on a still further enlarged scale.

Referring to the drawings in detail, 1 designates the usual key-bed of a piano on which are mounted the manual keys 2.

3 designates a portion of the piano case.

My improved controlling levers are designated by the reference characters 4 and 5 the former being the "tempo" lever and the latter the "dynamic" lever. As clearly shown in Fig. 3 the outer end of the lever 4 is provided with a concave thumb rest 4^a and near its other end it is formed with two pairs of up-standing lugs 6. These lugs are bent over so as to embrace the edges of a lever 7 pivoted at 8 to the under side of the key-bed as shown in Fig. 1. The tempo lever is thus formed of the two sections 4 and 7 slidably connected in such a manner that the section 4 when not in use may be pushed back out of sight under the key-bed. From the inner end of lever 7 extends a connection 9 to the motor governor or other device for controlling the speed of the automatic player mechanism. It will be observed that this tempo lever is arranged to swing in a horizontal plane the thumb rest 4^a describing the arc of a circle about the pivot 8.

The dynamic lever is arranged immediately below the tempo lever in the same vertical plane as will be seen by reference to Fig. 2. This lever comprises the sections 5 and 10 pivoted together at 11 in such manner that the section 5 may swing on the pivot 11 in a horizontal plane, the outer end 5^a thereof describing the arc of a circle about the pivot 11 as a center. By reference to Fig. 1 it will be observed that the pivots 8 and 11 lie in the same vertical line thus causing the outer ends of the two levers to move in arcs of the same radius. The section 10 of the dynamic lever is bent at right angles as indicated at 10^a in Fig. 2 and is journaled in bearings 12 secured to the under side of the key-bed. At its extreme end the part 10^a carries a crank arm 13 from which extends a connection 14 to a bell crank lever 15 which is pivoted at 16 to a fixed support (not shown). The other arm of the bell crank lever 15 extends in a substantially horizontal direction and is arranged immediately beneath a pin 17 carried by the damper rod 18 of the piano. It will thus be seen that when the outer end of the lever 5 is moved upwardly the bell crank lever 15 will be rocked on its pivot and will engage the pin 17, thus lifting the damper rod 18 and producing a loud tone. It will be observed, therefore, that while the tempo lever is arranged to operate in a horizontal plane the dynamic lever is designed for operative movement in a vertical plane. It will be further observed that these two levers are so disposed as to be conveniently grasped between the thumb and first finger of the hand of the operator. As the tempo lever is swung on its pivot 8 the pivot 11 permits the lever 5 also to swing freely in a horizontal plane so that the same relative position of the two levers is maintained thus

making it unnecessary for the relative positions of the thumb and finger of the operator to be changed. At any point, however, in the movement of the tempo lever the dynamic lever may be operated by pulling upward on the same, with the fore finger, the thumb rest 4ª serving as a leverage point or support.

When the expression levers are not in use they may be concealed beneath the key-bed, the lever 4 sliding back upon the lever 7 and the lever 5 being given a quarter turn about the pivot 11.

It will thus be seen that I have provided a controlling mechanism comprising a pair of levers so arranged that they may be both simultaneously grasped between the thumb and finger of the operator and manipulated without changing the position of the hand relative thereto and it is thought that the many advantages of my improved arrangement will be readily appreciated by those skilled in such matters.

What I claim is:—

1. In an automatic piano, the combination with the usual manual key bed, of a pair of levers carried thereby, said levers being normally disposed adjacent each other in the same vertical plane, and pivoted about axes in the same vertical line, one of said levers being also pivoted to said key bed on a horizontal axis so as to swing toward and away from the other lever.

2. In an automatic piano, the combination with a suitable support, of a pair of levers carried thereby, one of said levers being pivoted on a vertical axis, and the other of such levers being pivoted on a horizontal axis, and connections whereby said levers serve to operate the expression mechanism of the piano, a section of the second of said levers being also pivoted for movement about a vertical axis without operating the other section of the lever to affect the expression mechanism, whereby said section of the second lever may swing together with the first lever about its vertical axis during the movement of the first of said levers.

3. In an automatic piano, the combination with the usual manual key-bed, of a pair of controlling levers pivotally mounted thereon, one of said levers being movable about a horizontal axis, and the other of said levers being movable about a vertical axis, said levers being normally disposed substantially parallel with each other in the same vertical plane.

4. In automatic piano playing mechanism, the combination with a suitable support, of a pair of controlling levers carried thereby, said levers being pivoted about axes lying in planes disposed at right angles to each other, and said levers normally lying adjacent to and parallel with each other, so that they may be simultaneously grasped between the thumb and forefinger of the operator.

5. In automatic piano playing mechanism, the combination with a suitable support, of a pair of controlling levers carried thereby, one of said levers being pivoted about a vertical axis and the other of said levers being pivoted about a horizontal axis, said levers lying normally substantially parallel to and in close proximity to each other in the same vertical plane, so that the first mentioned lever may serve as a support for the hand of the operator in actuating the second lever.

6. In automatic piano playing mechanism, the combination with a suitable support, of a pair of controlling levers pivoted thereto, one of said levers being constructed to swing in a single plane only, and the other of said levers being constructed to swing in a plane parallel with the first, and also in a plane at right angles thereto.

7. In automatic piano playing mechanism, the combination with a suitable support, of a pair of controlling levers carried thereby, one of said levers being pivoted to the support so as to be capable of operative movement in one plane, and also being provided with a second pivot, about which it may partake of inoperative movements in a plane at right angles to the first, and the other of said levers being pivoted to said support so as to swing in a plane parallel with that of the inoperative movement of the first lever.

8. In automatic piano playing mechanism, the combination with a suitable support, of a controlling lever pivoted thereto, for operative movement in a single plane, said lever being also provided with a pivot at an angle to the first, about which second pivot said lever may partake of inoperative movement in another plane.

9. In an automatic piano, the combination with a suitable support, of a lever pivoted thereto, and a second lever mounted directly below said first mentioned lever and adjacent thereto, said first mentioned lever being pivoted on a vertical axis, and said second lever being pivoted on a horizontal axis, such second lever comprising two sections pivoted together so that the outer section may also swing on a vertical axis, the vertical pivots of the two levers being disposed in the same vertical line, whereby the ends of the said levers move in parallel arcs of the same radius.

In testimony whereof I affix my signature in presence of two witnesses.

G. HOWLETT DAVIS.

Witnesses:
ROBERT WATSON,
J. HANSON BOYDEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."