

PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in and connected with Means for Controlling Expression in Automatic Musical Instruments, Piano Players and the like.

We, M. WELTE & SÖHNE, G.M.B.H., of Freiburg, i/Baden, Germany, a company incorporated under the laws of Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises improvements in and connected with means for controlling expression in automatic musical instruments, piano players, and the like. The object of the invention is to provide means on the music record sheets or rolls to be used in conjunction with correspondingly situated means on the instrument, whereby a person having no musical ability may produce a faithful rendering of a piece of music by the aid of a graphic representation of the expression in the form of one or more expression lines on the record. It is usual to employ an expression or tone accentuation line to guide the person operating the instrument as to the strength of tone at which any passage in a piece of music should be played, but the devices hitherto employed nevertheless involved the exercise of the artistic faculties of the said person. That is to say, he was called upon to operate bellows and expression levers in such a manner as made a demand upon musical instinct or ability.

It has also been proposed to subdivide the music record into base and treble zones bounded by parallel lines, and to place the expression lines in these zones, the arrangement of the parallel lines being such that a central dividing line on the record separated the two zones and indicated fortissimo, while the outer parallel lines, which were constituted by the outer edges of the record, indicated pianissimo. Control levers have also been provided heretofore with scales marked in accordance with different tone

or expression values for facilitating the operation of the levers in accordance with the deviating expression or accentuation line. 50

The present invention is distinguished by the combination with a record having bass and treble zones subdivided by straight lines into expression stages, and each provided with a deviating expression line or graph, of an expression control lever for each zone, each of the two levers having a scale marked to correspond with the zone lines or tone values and the arrangement being such that by adjusting the angular position of the lever so that its scale reading corresponds with the deviation of the expression line the desired strength of tone is obtained. The positions of the levers can thus be adjusted at any instant to correspond exactly with any deviation of the expression lines and therefore demand is made only upon the eye and hand action of the performer and not upon his thinking capacity or musical ability. In every case, the expression control levers are to be moved in the direction and to the extent, as indicated on the scales, corresponding with the expression graph or line and the performer thereby obtains, without any trouble, the correct expressions or tone values from the instrument. 70

A subsidiary feature of the invention consists in a peculiar zig-zag formation of the expression lines whereby they deviate to sharp points. With the present improvements it is important that the performer should know at any moment, how far he must turn the control levers and this is made possible by the improved formation of the expression lines having decidedly sharp indications of the important points. The zig-zag form of the lines, as distinguished from an undulating line, gives sharp bends so that separate wave crests and wave troughs 80 85 90

[Price 1/-]

are not composed of flat bays but of sharp angles.

In order to enable the invention to be readily understood, reference is made to the accompanying drawing which illustrates in plan section a music roll record in the instrument and two expression control levers disposed in relation therewith in accordance with these improvements.

In the upper part of the drawing, the roll record is seen provided with the longitudinal parallel lines bounding what may be called the different expression zones. In the lower portion of the drawing, the two expression control levers A B are seen with their outer ends moving over respective arcs or guide bars. On the record there are three principal parallel lines giving two zones or columns marked I and II respectively. The left hand zone I is for the bass and the right hand zone II is for the treble. In each zone or column there is a middle line marked "MF" which is the mezzoforte line. The two outer lines are marked "PP" and are the double pianissimo lines. The middle principal line marked "FF" is the double fortissimo line, but the said middle line may be the double pianissimo line, if desired. Consequent upon this arrangement, the expression lines A¹ B¹ must deviate in opposite directions for indicating similar effects. Thus the base expression line A¹ deviates to the right hand of its "MF" line for fortissimo and to the left hand for pianissimo, whereas the treble expression line B¹ deviates to the right hand for pianissimo and to the left hand for fortissimo.

The expression control levers A and B are mounted on pivots which are opposite respective "MF" lines on the record, and for mezzoforte effect, the levers A B are adjusted to mid-position in which they are in alignment with the said "MF" lines. The amplitude of adjustment of the levers A B to one side or the other of the said mid-positions corresponds with the width of the zones or columns I II and suitable indications, such as "PP" "FF" may be placed opposite appropriate ends of the arcs or guide bars, as shown on the drawing. Also, the mid-positions of the levers may be indicated by the letters "MF" as shown. Instead of "MF", the letters

"MP" may be used, indicating mezzopianissimo. Other intermediate values may be added, as desired and as will be now readily understood.

It will be noted from the drawing that the "FF" line is situated centrally of the record, so that in addition to dividing the bass expression zone from the treble expression zone, it is also a dividing line between bass note slots and treble note slots or the like on the record.

With expression control levers arranged as illustrated in the drawing, that is to say, closely adjacent to one another, the obtaining of the different correct tone or expression values is an extremely simple matter as it is accomplished by merely causing the respective levers A B to follow the deviations of the expression lines A¹ B¹ in the manner which will be readily understood from the drawing.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. Expression control device for automatic musical instruments, piano players and the like, distinguished by the combination with a record having bass and treble zones subdivided by straight lines into expression stages and each provided with a deviating expression line or graph, of an expression control lever for each zone, each lever having a scale marked to correspond with the zone lines or tone values and the arrangement being such that by adjusting the angular position of the lever so that its scale reading corresponds with the deviation of the expression line the desired strength of tone is obtained, substantially as described.

2. Expression control device as claimed in Claim 1, distinguished by the fact that the expression lines have a zig-zag formation, substantially as and for the purpose described.

3. Expression control device for automatic musical instruments as described with reference to the accompanying drawing.

Dated the 9th day of December, 1921.

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[This Drawing is a reproduction of the Original on a reduced scale.]

