W. S. WRIGHT.

HARMONIC COUPLER FOR PIANO ACTIONS.

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To all whom it may concern:  

Be it known that I, WILLIAM S. WRIGHT, of Dover, in the county of Morris and State of New Jersey, have invented a new and improved Harmonic Coupler for Piano-Actions, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved device for coupling two piano-hammers with one key, thereby producing harmonic sounds by depressing one key.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a plan view of part of a piano-action provided with my improved harmonic coupler. Fig. 2 is a longitudinal sectional elevation of the same.

The first eight white bass-keys A and the five black keys A' between them are secured to the usual pivoted key-levers, B, which act on the hammers C in the usual manner. The rest of the key-levers, B', do not extend to the action-rail D, but are beveled toward their rear ends and downward a short distance in front of the action-rail, and the beveled ends are covered with a layer, a, of felt, leather, or flannel. On the beveled end of each lever B of the downwardly-inclined part E of a lever, E, rests, the rear ends of which levers E pass under the action-rail and are in line with the rear ends of the levers B, and devices for operating the hammers C are provided on the rear end of each lever E. From the front upper end of their inclined parts E' the levers E are inclined toward the left in the horizontal plane, so that their front ends will be above the eighth key-lever to the left from the one on which their inclined parts E' rest—that is, their front ends are above the key-levers of the keys representing tones one octave below that of the said levers E themselves. The front ends of the levers E are beveled downward toward the front, and their ends are each provided with a vertical slit, g, through which a vertical stud, F, passes, driven into the upper surface of the corresponding lever B or B', which studs F are provided at their upper ends with heads 50 F'. The several levers E are pivoted on a rail, G, crossing the levers B B'. On the upper surface of each lever E a sliding block, H, rests a short distance back of the frontend, which blocks are beveled downward and toward the front ends of the levers E, with which levers they are parallel. The blocks H are each provided in the front beveled end with a vertical slit, g. The several blocks H have their rear ends secured to a transverse bar or rail, J, crossing the levers E and resting on the same, which rail is adapted to slide in the direction of the length of the levers B B'. Diagonal bars K are pivoted to the rail J and to the rail G at suitable intervals. A rocking shaft, L, is journaled above the rail G, parallel with the same, and is provided with an upwardly-projecting arm, M, which is connected by a bar, N, with the rail J. A spiral spring, O, or a weight, turns the shaft L in the direction from the keys, and presses the end of a 55 backwardly-projecting arm, P, of the shaft L on the upper end of a vertically-movable rod, Q, extending through the piano-casing and resting on a foot-lever; or the arm P can be connected with the rod Q in any other suitable manner, and the rod Q can be operated by a knee-lever or pull, instead of by a pedal. The operation is as follows: Ordinarily the blocks H are behind the pins F, as shown in Figs. 1 and 2, and are held in this position by 60 the spring O. If a key is depressed, the rear end of the lever B throws the hammer upward, or the rear end of a lever, B', raises the rear end of the lever E, resting on it, and the hammer on the lever E strikes the key. The piano is played in the usual manner, and each key operates one hammer only. If an octave is to be played, by depressing one key the arm P is raised by means of the rod Q, operated by the pedal, and thereby the shaft L is rocked 90 toward the keys, and the rail J will be moved in the same direction, thereby moving the blocks forward in the direction of the levers E, so that the pins F will be in the slits g of the blocks H. If, now, a key is depressed, its le 95 ver raises the hammer on its rear end, or the hammer of the lever E, resting on its rear end, and the head of the stud F also draws down the front end of the lever E, resting on the rear end of the lever B of the eighth white key, above the key depressed, whereby an octave will be sounded. Octaves are played as
long as the arm $P$ remains raised. As soon as the pedal is released, the spring $O$ depresses the arm $P$ and rocks the shaft $L$ in such a manner that it draws the blocks $H$ back again, so that the front ends of the levers $E$ will not be depressed by depressing the key-lever above which they are located.

I have described the harmonic coupler constructed in such a manner as to couple every eighth key; but it can be constructed to couple every third or fifth key.

I have described the first thirteen keys as provided with the coupling-levers $E$; but, if desired, more or less may be constructed with the coupling-levers.

Having thus described my invention, I claim:

1. In a piano-action, the combination, with the key-levers, of coupling-levers resting on the same and extending to other key-levers, and of slitted beveled sliding blocks for coupling the coupling-lever with another key-lever, and thus coupling the key-levers to operate together by depressing the key of one of the above, substantially as herein shown and described, and for the purpose set forth.

2. In a piano-action, the combination, with key-levers having their rear ends beveled, of diagonal coupling-levers resting on the said beveled levers, and having their front ends over other levers, and sliding blocks for coupling the front ends of the coupling-levers with the key-levers above which they rest, substantially as herein shown and described, and for the purpose set forth.

3. In a piano-action, the combination, with key-levers, of coupling-levers resting on the same, and having their front ends over other levers, slitted beveled sliding blocks for coupling the front ends of the coupling-levers to the key-levers above which they rest, and devices for adjusting all the coupling-blocks to couple simultaneously, substantially as herein shown and described, and for the purpose set forth.

4. In a piano-action, the combination, with the key-levers $B$, the coupling-levers resting on them and crossing to other key-levers, which coupling-levers $E$ have slots $d$ in the front ends, the sliding blocks $H$, resting on the coupling-levers and having their front ends provided with slits $g$, and devices for moving all the blocks $H$ forward simultaneously, substantially as herein shown and described, and for the purpose set forth.

5. In a piano-action, the combination, with the key-levers $B'$ of the coupling-levers $E'$, adapted to operate the hammers, the pins $P'$, the sliding blocks $H$, having slits $g'$, the rail $J$, the bars $K$, the rocking shaft $L$, having an arm $M$, and the coupling-bar $N$, substantially as herein shown and described, and for the purpose set forth.

6. In a piano-action, the combination, with the key-levers $B'$ of the coupling-levers $E'$ adapted to operate the hammers, the pins $P'$, the slitted blocks $H$, the rail $J$, the bars $K$, the shaft $L'$, having an arm $M$, the coupling-bar $N$, the arm $P'$, the rod $Q$, and the spring $O$, substantially as herein shown and described, and for the purpose set forth.

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Witnesses:

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