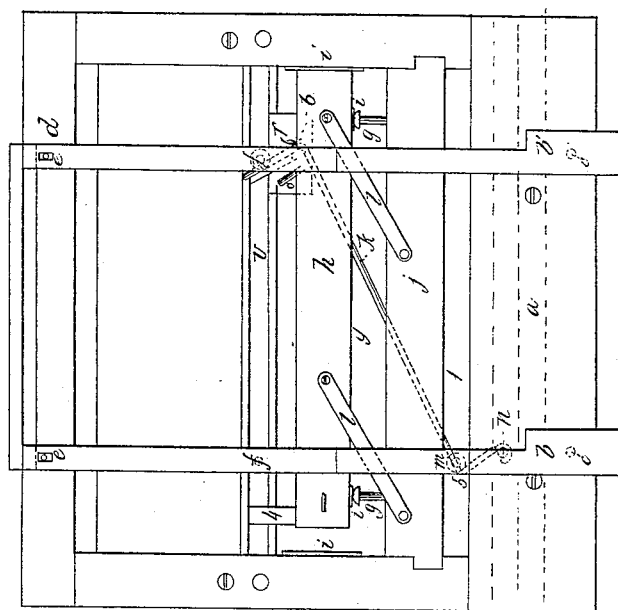
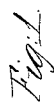
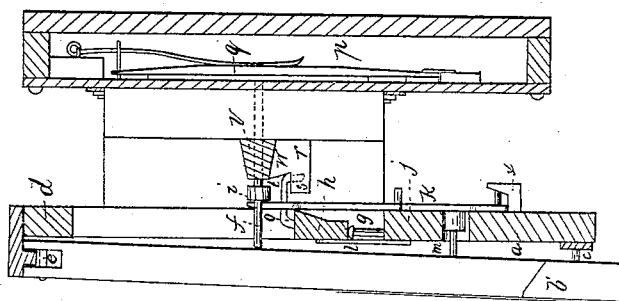


G. Woods,

Coupler for Musical Instruments,
Nº 45,800. Patented Jan. 3 1888.

N^o 45800.

Patented Jan. 3, 1865.

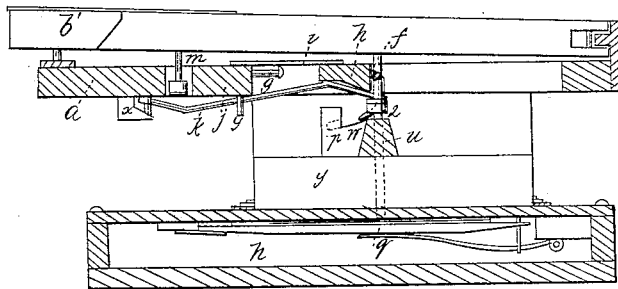


Witnesses:
W Truitt
Thos Tusk

Inventor
George Woods
Per Munn & Co
Attorneys.

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Fig. 3



Witnesses:
W. Brown
Thos. Lusk

Inventor
George Woods
per *Wm. H. C.*
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE WOODS, OF CAMBRIDGE, ASSIGNOR TO MASON & HAMLIN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MUSICAL INSTRUMENTS.

Specification forming part of Letters Patent No. 45,809, dated January 3, 1865.

To all whom it may concern:

Be it known that I, GEORGE WOODS, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Musical Instruments; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a portion of a melodeon with my improvement applied. Figs. 2 and 3 are vertical sections across the instrument, showing my improvement in two different positions.

Similar letters of reference indicate like parts.

This invention consists in a coupling device of a peculiar and novel construction, by which keys of thirds, fifths, octaves, and other notes can be coupled together so as to be played by the depression of only one of the keys, by means of a movable fulcrum and its connections.

My invention is shown, in this example thereof, as applied to a part of a cabinet organ, but it is applicable to all musical instruments which are played by means of banks or rows of keys or equivalent devices for opening valves or striking musical wires or strings.

b b represent two keys supported above the key-board *a*, near the back rail, *d*, of which they are to be secured in the usual way. Each key is guided by a guide pin, *e*, fastened, as usual, in the key-board.

f f are the ordinary valve-rods reaching down to the valves *q* in the wind-chest *h*, and opening them to admit air to the reeds above. A block, *r*, is fixed upon the top of the reed-board *y* in front of the rail *U*. A portion of its surface, *W*, is cut down to an inclination, *W*, the highest part of which is on a level with the top of the rail *U*.

A string piece or bar, *j*, extends from one end to the other of the instrument in the plane of the key-board and separated far enough from the front part thereof to give room for push-pins *m*, attached to the lower side of the keys *b*, to extend down toward the coupling-lever *k*. The bar *j* is rigidly secured to the

frame of the instrument, and it may be part of the key-board, or, as in this example, may be a separate piece of wood.

A bar, *h*, whose lower side is made up of an inclined and a horizontal surface, extends nearly the whole length of the instrument, not coming in contact with its ends, and is attached to the fixed bar *j* by straps *l*, which are free to vibrate upon their points of connection with the bars *j* and *h*. A block, *4*, fixed upon the top of the rail *U* at one side of the instrument, forms a resting-place for the bar *h* at one end when it is moved backward, its other end being supported by the loop or hook *o*, whose lower face rests and slides upon the inclined face *W* of the block *r*. The hook *o* is driven into the back part of the bar *h* near its right-hand end, extending thence downward till it reaches the inclined plane *W*, when it is bent inward at *t*, the hook being received, when the bar *h* is in the position shown in Fig. 2, into a socket, *s*, made for it in the elevated portion of the block *r*.

x is a shelf fastened to the lower surface of the key-board and extending its entire length. It receives the forward end of the coupler *k*, which is there bent into a hook, so as to embrace a pin, *n*, set vertically in the shelf. The contour of the coupler *k* is seen in Fig. 1 in dotted outline. It is made in this example of my invention of stiff wire. It extends from the shelf *x* to the block *r* in a diagonal direction, being bent at each end at right angles to the main body of the wire, the bent parts being in the same plane with each other. The first bend, *5*, occurs at the interval *1*, between the front of the key-board and the fixed bar *j*, where the angle of the bend comes beneath a button fastened to the end of a push-pin, *m*, extending downward from the key *b*. The coupler extends thence beneath the bar *j*, passing between two pins, *y*, fastened in its under surface, which allow it to have motion vertically, but do not permit it to move in a horizontal direction, and is bent again at *6* to a right angle, its limb extending in the same horizontal plane, and also in the same direction with the first bend at the point *5*, and its extremity resting upon a button fixed upon the valve-rod *f* at such a height above the rail *U* as not to touch it when the rod is forced

down by the key to its full extent. The bend 6 of the coupler rests against the undersurface of the movable bar *h*.

The under surface of the bar *h* and all other friction-surfaces and points of contact between any of the movable parts of the devices are covered with suitable materials to deaden and prevent sound, as usual in musical instruments.

The operation of the parts is as follows: When the bar *h* is drawn forward to the position shown in Fig. 2, it abuts against the stops *g*, which are adjustable by screwing them in and out of the bar *j*. The coupler *k* is then caused to take the horizontal position shown in that figure, by reason that the lowest edge of the inclined under surface of the movable bar *h* then rests upon the bend of the coupler at 6, and causes the bend 5 thereof to hug against the button of the push-pin *m*. The key *b* being then played, the push-pin *m* depresses the bend or angle 5 of the coupler and causes the bent end which rests upon the upper face of the button *i* to descend, pushing down the button and its rod so as to open the valve below. The coupler in this motion has two fulcrums—one on the shelf *x* and the other against the edge of the inclined under face of the bar *h*. About these fulcrums the coupler rocks, as it were, and the end of the limb beyond the bend 6 is thereby caused to operate the valve-rod *f* of that key *b'* under which that end of the coupler lies. Thus the valve of both keys will be opened by the impulse given to the key *b*. The bar *h* becomes thus a fulcrum for that end of the coupler which lies beneath it.

If now the key *b* is released, the elasticity of the shank of the key *b'* or the force of the spring (if one is used therewith) returns it to its normal position, and the coupler is thereby restored to its position, as shown in Fig. 2, the button *i* rising with its valve-rod and raising the end of the coupler resting on it.

When it is desired to disconnect the keys *b* *b'*, the bar *h* is pushed back to the position shown in Fig. 3, when it rises gradually as its supporting-hook ascends the inclined plane *W* and the bend 6 of the coupler comes against the highest part of the inclined under surface of the bar, and the coupler being supported upon the shelf *x* at one end and on the button *i* at the other end, its center of gravity is made to fall nearer the angle or bend 5 than the

bend 6, and the latter is caused to rise against the highest part of the inclined under surface of the bar *h*, while the former falls away from the push-pin *m* so as to be out of its reach when the key *b* is played. The bar *h* acts under this arrangement as a movable fulcrum for the part of the coupler which lies beneath and bears up against it.

I have here shown only one coupler and the means of operating it so as to control a second key, for the reason that one is sufficient as an illustration of the way in which it is to be applied for coupling keys throughout the keyboard of musical instruments together, so as to play thirds, fifths, octaves, and other combinations by touching only one of the keys.

The block *r* is not important or necessary to the carrying out of my invention. It may be left out entirely from the perfect instrument without affecting the operation of the movable bar or of the coupler.

The movable bar *h* is described above as being inclined on its lower face; but such inclination is not necessary in order to its successful operation, as its action will be just as perfect without it.

It will be observed that when the movable fulcrum-bar is in certain positions the coupler has no other than a rolling or rocking motion at the time when its inmost end descends with the valve-rod, with which it acts when in full operation.

I do not claim the principle of coupling the keys of musical instruments so as to enable a performer to play chords by touching only one of the notes composing them; but

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The wire coupler *k*, running diagonally from key to key of any chord, having bent arms, as described, one of which is operated upon by the key played while the other operates the other key, under a mode of construction substantially as above set forth.

2. The movable disconnected fulcrum-bar *h*, constructed and operated substantially as described, to effect the connection and disconnection of the couplers with the keys, as above set forth.

GEORGE WOODS.

Witnesses:

J. M. T. HOWARD,
M. H. DURGIN.