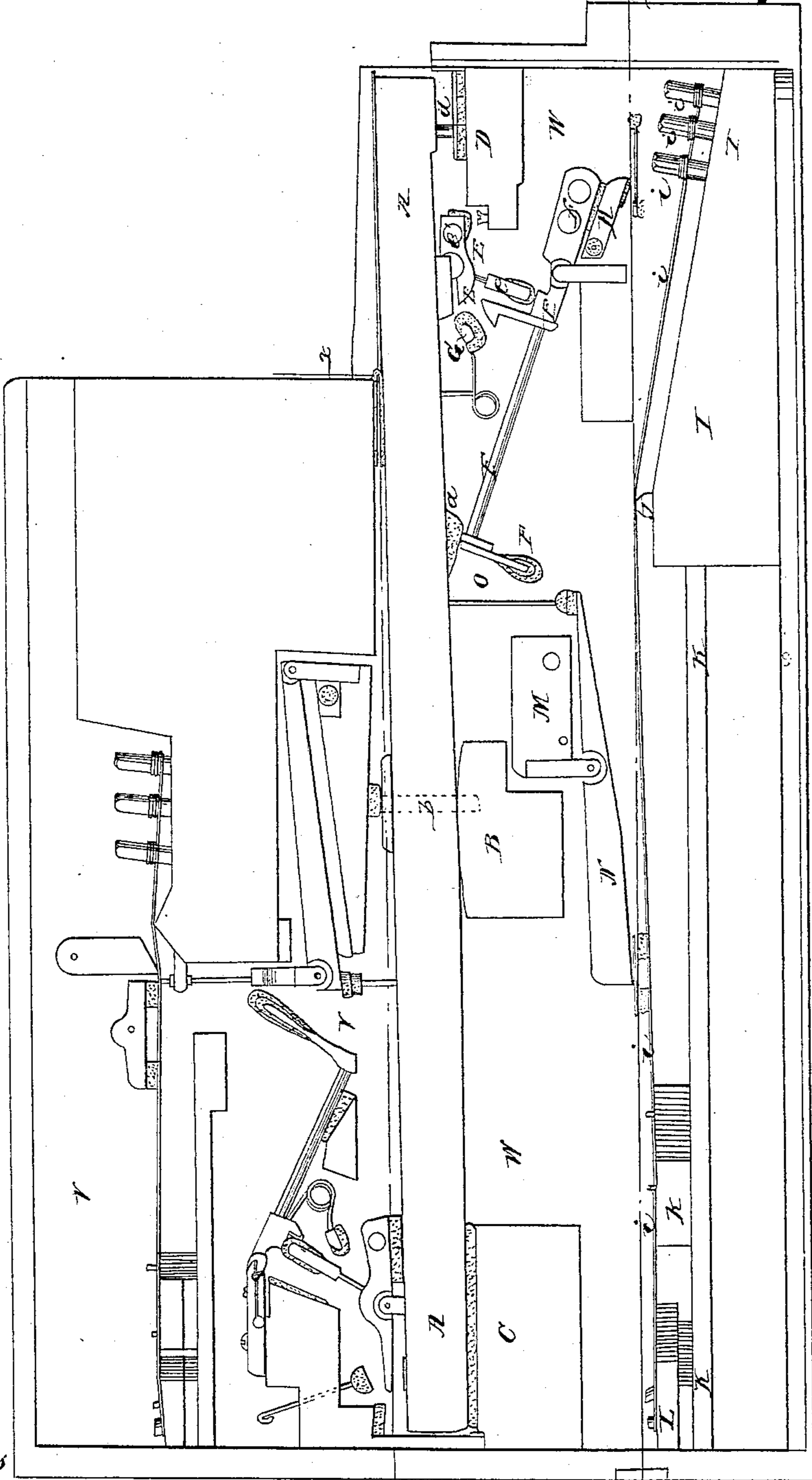


*J. J. Bender,*  
*Piano Action,*

N<sup>o</sup> 57434.

*Patented Aug. 21, 1866.*



Witnesses

Henry J Bangor,  
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*Inventor*

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# UNITED STATES PATENT OFFICE.

JOHN JOSEPH BENDER, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF,  
GEORGE MEULLER, AND HENRY J. BANGS.

## IMPROVEMENT IN DOUBLE-ACTION PIANOS.

Specification forming part of Letters Patent No. 57,434, dated August 21, 1866.

*To all whom it may concern:*

Be it known that I, JOHN JOSEPH BENDER, of the city, county, and State of New York, have invented a new and useful Improvement in Double-Action Piano-Fortes; and I do hereby declare the same is fully described and represented in the following specification and the accompanying drawing, which exhibits a sectional view of the operative parts of a piano-forte with my invention applied to it.

This invention relates to a peculiar kind of piano-forte, in which one set of keys is made to perform the part of playing two piano-fortes at one and the same time, or one or either of them, as desired, said piano-forte being in external shape and size similar to that of an ordinary piano-forte; and this I accomplish by placing in a piano-forte case two sets of strings with their appendages, and between them the set of keys or levers with their hammers, which, on touching the keys, will strike the upper piano-forte or set of strings and the lower piano-forte or set of strings at one and the same time, and thus two piano-fortes are played by one performer, and by one and the same operation, and at the same time.

Having described the nature of my invention, I will now describe its construction and mode of operation.

In the drawing, A represents a piano-forte key, with damper *a*, for reception of the poll of the hammer. B is the balance-rail, with its balance-pin *b*, which sustains the keys; C, the back rail or key-rest; D, the front or stop rail with its pin *d*. E is a player or tripping-lever having an adjusting-screw, *e*, and weighted end *e'*, for the purpose of actuating the hammer or striker F. The striker F, it will be observed, is weighted also at its tail end, *f*, for the purpose of bringing the hammer, after striking, back to its previous position in relation to the key and strings. There is also in connection with the key and striker, but attached to the key, what piano-forte makers term a "catcher," G, the object of the catcher being to retain the hammer F about midway between the strings and keys after the hammer has struck, and while the key A yet rests on the front or stop rail, D.

In connection with the weighted end of the striker F is the pedal-lever H. This pedal-

lever swings on a pivot at its center, while at its inner end it is connected by means of a rod with the pedal-foot below the piano, the object of this lever being to sustain the weighted end of the hammer F when the hammer slips from the catcher G, as well as to bring the hammers of the piano or forte portion of the instrument on their corresponding strings, for the purpose of preventing too much sound while performing on the other portion, said pedal being operated in the usual manner.

I is the bridge-plane, in which the straining-pins *i* are inserted, and to which the strings *i'* are attached. J is a bridge on the bridge-plane I, over which the strings *i'* pass. K is the sound-board, on which is placed the sound-board bridge *k* and the iron pin-plate *l*, in the ordinary manner. M is the damper-rail, to which the damper-lever N is hinged, and O is the damper-lifter attached to the key A, the said damper-lifter being operated by a pedal connected with the damper-rail.

The above description relates to the lower piano-forte or set of strings with their appendages, and to describe the upper piano-forte or upper set of strings with their appendages would be but a repetition, with the exception that the hammers of the upper piano-forte strike upward in the usual manner, while the hammers of the lower piano-forte strike downward on touching the keys, as shown in the drawing.

I would here remark that for the purpose of repairing the machinery of, as well as for tuning, my piano-forte the frame-work is divided into sections, shown by the lines *x x* and *y y*, in which the upper section, V, with the cover, is entirely removed from the frame, and the middle section, W, turned backward on its hinge or pivot *w*, when required, for the purposes already stated.

The operation of my piano-forte is very simple, and is as follows: On touching the key A the weighted player or tripping-lever E of the lower piano, as well as the tripping-lever of the upper piano, actuate the hammers or strikers of the lower piano and the strikers of the upper piano at the same time, the sets of hammers, on rebounding from the strings, being caught by the catchers of the upper and lower pianos, and held between the said strings and

keys until the key is again raised, when the polls of the hammers will rest on or against their respective dampers.

From the above it will be seen that with one set of keys and the appendages connected therewith I produce an instrument equal to two piano-fortes, which can be played together at one and at the same time, or one or either of them, as desired, and by one performer. One of the piano-fortes may be so constructed or tuned as to play a third, fifth, or an octave above or below the other, and thus a powerful body of harmony is obtained, which renders my piano-forte of value and importance to large public concert-halls, theaters, &c.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

The above construction and arrangement of an instrument combining two piano-fortes, which are played together at one and the same time, and by one set of keys, substantially as described and set forth.

In testimony whereof I have hereunto set my signature.

JOHN JOSEPH BENDER.

Witnesses:

HENRY J. BANGS,  
A. NEILL.