

F. MATHUSHEK & D. H. DUNHAM.

Piano-Fortes.

No. 154,062.

Patented Aug. 11, 1874.

Fig. 1.

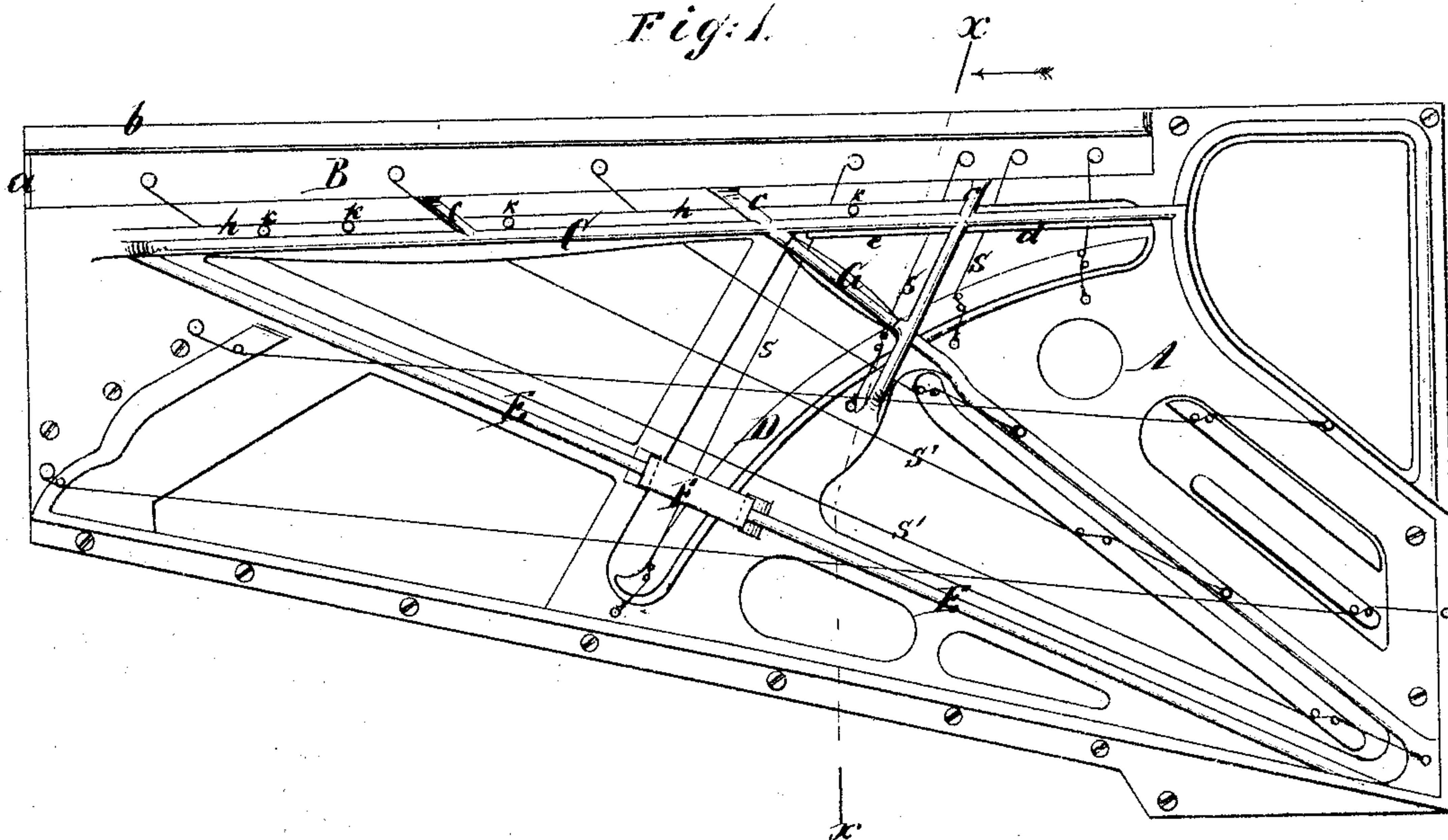


Fig. 2.

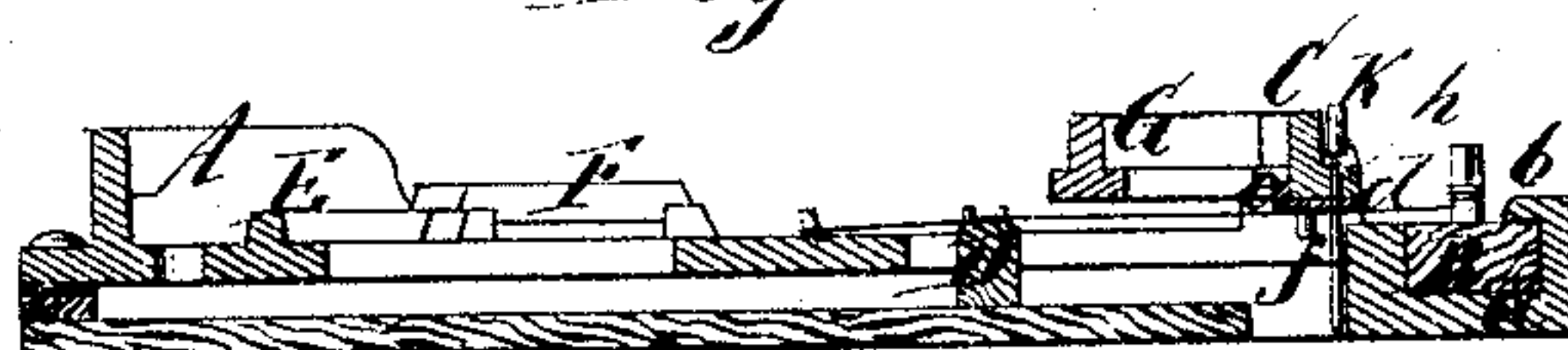
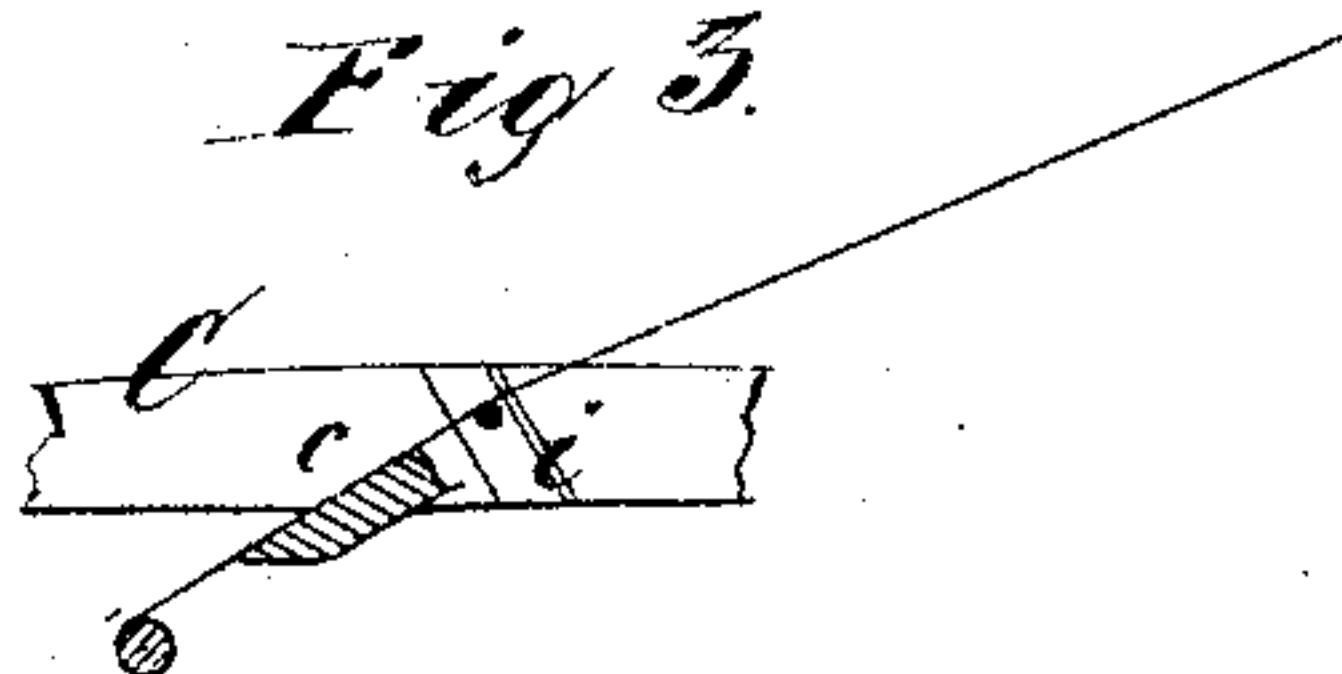


Fig. 3.



Witnesses:

Ernst Bilhuber.

Henry Gentner.

Inventors:

Frederick Mathushek.

David H. Dunham.

per  
Van Santvoord & Hauff.  
attys.



# UNITED STATES PATENT OFFICE.

FREDERICK MATHUSHEK AND DAVID H. DUNHAM, OF NEW YORK, N. Y.

## IMPROVEMENT IN PIANO-FORTES.

Specification forming part of Letters Patent No. **154,062**, dated August 11, 1874; application filed May 9, 1874.

*To all whom it may concern:*

Be it known that we, FREDERICK MATHUSHEK and DAVID H. DUNHAM, of the city, county, and State of New York, have invented a new and useful Improvement in Piano-Fortes; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a plan or top view of our invention. Fig. 2 is a transverse section of the same in the plane  $xx$ , Fig. 1. Fig. 3 is an inverted plan of the wrest-plank bridge.

Similar letters indicate corresponding parts.

This invention consists in the arrangement of a box or trough with an overlapping flange on the metal frame of a piano-forte for receiving and retaining the wrest-plank; further, in the arrangement of a soft-metal angular plate, which contains the screw-pins, and is placed from beneath against the wrest-plank bridge, under the treble string, said soft-metal plate being firmly retained in position by its vertical flange; further, in the arrangement of shoulders formed on projections of the wrest-plank bridge, and cast solid with the same, for the purpose of retaining the strings and to cut off the tone, thereby dispensing with the agraffes; further, in the arrangement of a removable brace extending from the wrest-plank bridge to a transverse brace of the metal frame, so as to obtain access to the parts below when said brace is removed, and to strengthen the wrest-plank and the frame when the brace is inserted; further, in the arrangement of a flange on the wrest-plank bridge, said flange serving as the guide for the damper-lifters.

In the drawing, the letter A designates the metal frame of a piano-forte, which is cast of iron or any other suitable metal, in the form corresponding to the form of the instrument for which the same is to be used. This frame is provided with a box or trough,  $a$ , for the reception of the wrest-plank B, and from the rear edge of this trough extends a flange,  $b$ , which overlaps the edge of the wrest-plank and prevents the same from being raised up by the strain of the strings. By this arrangement the wrest-plank can be readily and firmly

connected to the metal frame, and the durability of the tone of the instrument is increased. To the inner edge of the trough  $a$  is connected the wrest-plank bridge C, the connection being effected by lugs  $c$ , which are cast solid with the bridge and the trough. Said bridge is raised, so that the strings bear against it from below, and under its treble end is placed a soft-metal plate,  $d$ , which is provided with a flange,  $e$ , catching over the inner edge of the bridge, so that said plate is firmly retained in position by the upward strain of the strings. On this plate are secured the screw-pins  $f$ , Fig. 2, and by these means the agraffes are rendered superfluous, the whizzing sound due to the agraffes is avoided, and a pure and singing tone is produced. On the under surface of the wrest-plank bridge are formed projections or shoulders  $i$ , which are cast solid with said bridge, and serve to retain the strings, so as to cut off the tone, whereby the agraffes are dispensed with and construction of the piano-forte is materially cheapened and simplified, while at the same time the tone is improved. The frame A is strengthened by a brace, E, which runs parallel with the last deep steel strings. This brace is made in three sections, the middle section, F, being removable, so that by taking out this section convenient access can be had to the sounding-board bridge D, situated beneath it, and if said movable section is inserted the frame is firmly braced against the strain of the strings in the direction of its length. Said metal frame is further provided with a removable brace, G, which bears at one end against the wrest-plank bridge and prevents the wrest-plank from bending inward. This brace extends over the sounding-board bridge D, and when it is removed convenient access can be had to the parts beneath it. The treble strings  $s$  run at right angles to the long deep steel strings  $s'$ , (see Fig. 1,) so that the sounding-board is exposed to a cross-strain, whereby the fullness of the tone is improved, and at the same time room is obtained for three layers of strings, one above the other, without crowding the strings too close together. By this scale the downward pressure of the strings on the sounding-board is divided over an increased area, whereby the



sounding-board is permitted to swing freely. The wrest-plank bridge C is provided with a flange, *h*, which is perforated with holes, through which work the damper-lifters *k*, so that the entire mechanism is rendered simple, durable, and compact.

What we claim as new, and desire to secure by Letters Patent, is—

1. The box or trough *a*, with an overlapping flange, *b*, in combination with the metal frame of a piano-forte for receiving and retaining the wrest-plank, all constructed and arranged substantially as described.

2. The angular plate *d*, in combination with the wrest-plank bridge C, substantially as and for the purpose set forth.

3. The shoulders or projections *i*, formed on the under surface of the wrest-plank bridge C, substantially as and for the purpose described.

4. The removable brace G, bearing at one end against the wrest-plank bridge C, arranged as described, in combination with the metal frame A and sounding-board bridge D, all constructed and arranged to operate substantially in the manner shown and described.

5. The flange *h* on the wrest-plank bridge C, said flange being provided with holes for the reception of the damper-lifters, substantially as shown and described.

Signed and witnessed this 6th day of May, 1874.

FRED. MATHUSHEK.

DAVID H. DUNHAM.

Witnesses:

JOHN L. BURNETT,

FRANK HOHNSEISTER.