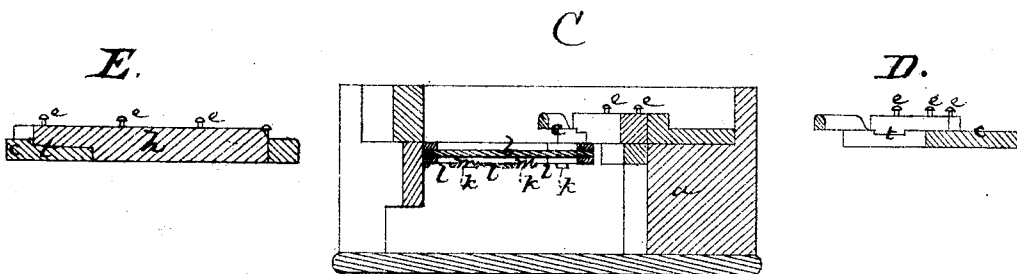
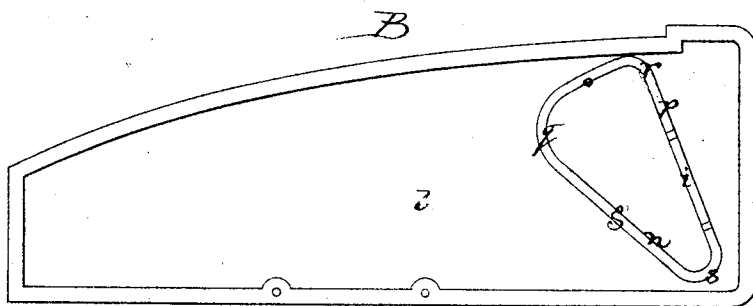
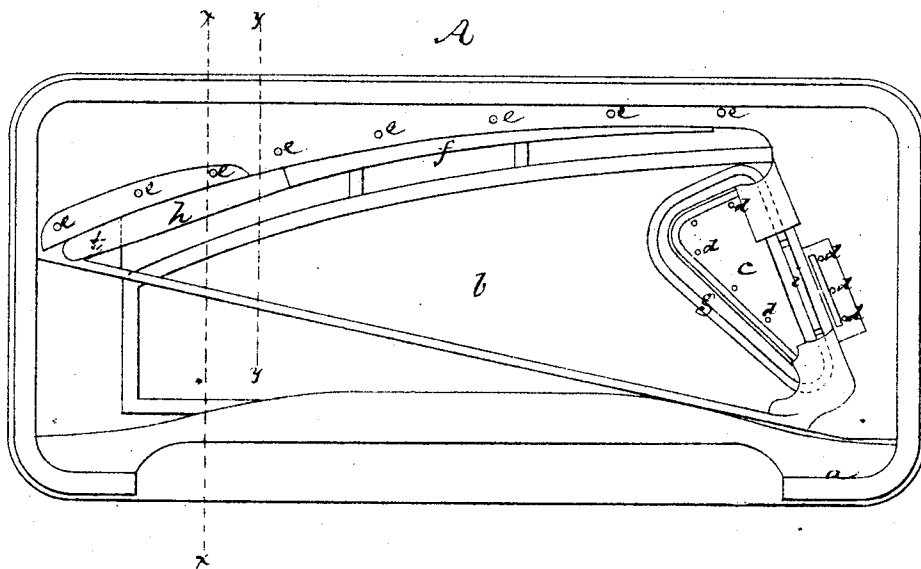


W. F. ULMAN.

## Improvement in Piano-Fortes.

No. 118,407.

Patented Aug. 22, 1871.



Witnesses.  
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By his Attys.  
Crossly & Gould

# UNITED STATES PATENT OFFICE.

WILLIAM F. ULMAN, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN PIANO-FORTES.

Specification forming part of Letters Patent No. 118,407, dated August 22, 1871.

*To all whom it may concern:*

Be it known that I, WILLIAM F. ULMAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Piano-Fortes; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practice it.

My invention relates to certain improvements in the construction of piano-fortes with relation to the support of the sounding-board and the form and disposition of the overstrung bridges.

United States Letters Patent No. 110,940 were granted to me January 10, 1871, for my invention relating to piano-forte construction, and in said patent I claim the support of the sounding-board "upon projections *h*, extending from the frame at intervals." In my present invention I accomplish the same result by forming said supporting projections for the ends of the sounding-board by cutting recesses in the frame, the parts between the recesses forming the sounding-board supports. This specific construction forms one of the features of my present invention, another feature of which consists in filling these recesses with felt or other soft material to preserve the tone of the instrument. In overstrung piano-fortes the overstring bridge at the end of the instrument, adjacent to the hitch-pins, is generally formed as an independent bridge projecting from the sound-board. In my present invention I make such bridge as a continuation of the main bridge, curving the main bridge around so that the compound bridge is an endless band, such construction constituting another feature of the improvement. The other overstring bridge I extend over the end of the metal string-plate, forming a recess in the plate for receiving and supporting the bridge, and this construction constitutes another feature of the improvement.

The drawing represents the frame, sounding-board, and string-plate of a piano-forte embodying my improvements. A shows the same in

plan. B is a plan of the sounding-board. C is a section on the line *x x*.

*a* denotes the frame; *b*, the sounding-board; *c*, the metal string-plate; *d*, the hitch-pins; *e*, the tuning-pins; *f g*, the main bridges; *h i*, the overstring bridges. Where the sounding-board *b* rests on the frame at the opposite ends of the board, the frame is recessed or cut away, as seen at *k*, so that the board rests only at intervals upon the projections *l*, and the spaces *k* are filled with felt or other soft material, *m*, that closes the passages made by the recesses and prevents escape of sound through them. The main bridge *g* and overstring bridge *i* are shown as formed in one piece, the whole bridge being formed as a sort of curvilinear triangle, or a triangle the sides *n o p* of which are joined by curves *q r s*, to which they are tangential, the bridge *i* being simply an upward extension of one part, *p*, of this endless bridge. For the extension of the end of the opposite overstring bridge *h* to the end of the string-plate, so that the last string shall pass over it and its proper support, I form the upper surface of the string-plate with a recess, *t*, into which the bottom of the bridge projects, the bridge being locked firmly in position by setting into this recess and extending over the plate, as seen at A and at D and E, D being a section on the line *y y* and E a longitudinal section of the bridge *h*.

I claim—

1. The sound-board-supporting projections *l*, formed by recessing the frame, substantially as shown and described.

2. The filling *m* in the recesses *k*, formed between the supports *l*, substantially as shown and described.

3. The bridges *g i*, formed as one continuous or endless bridge, substantially as described.

4. The bridge *h*, having its end extending over the string-plate *c* and setting in a recess, *t*, in said plate, substantially as shown and described.

Witnesses:

W. F. ULMAN.

FRANCIS GOULD,  
M. W. FROTHINGHAM.