H. KRANICH & J. BACH.

PIANO-FORTE.

No. 191,444. Patented May 29, 1877.

Fig. 2

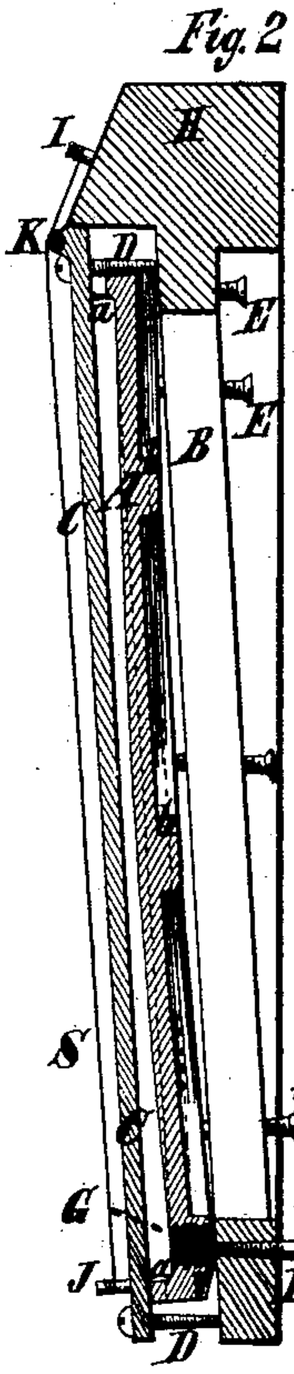

Fig. 1.

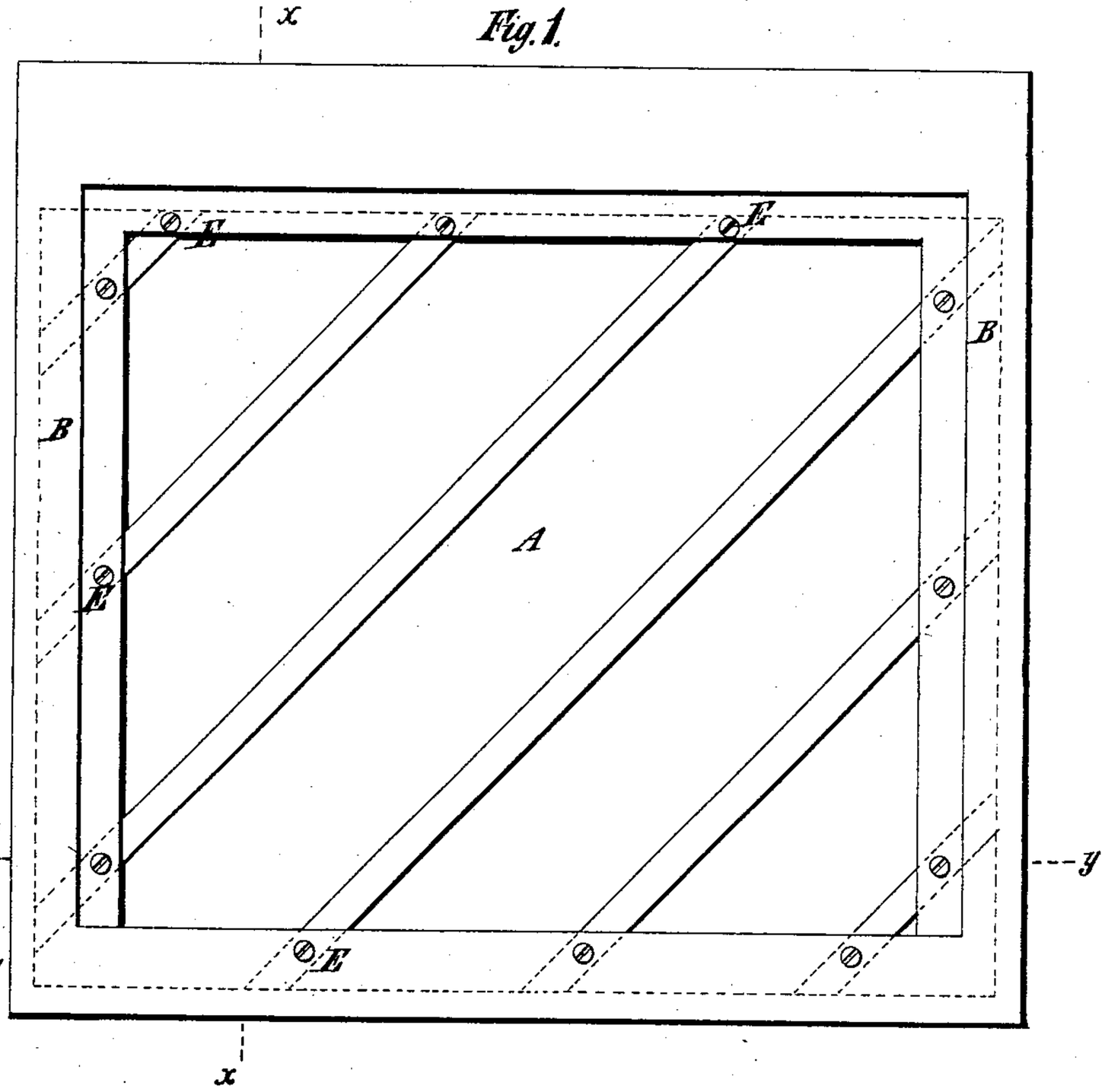

Fig. 3.

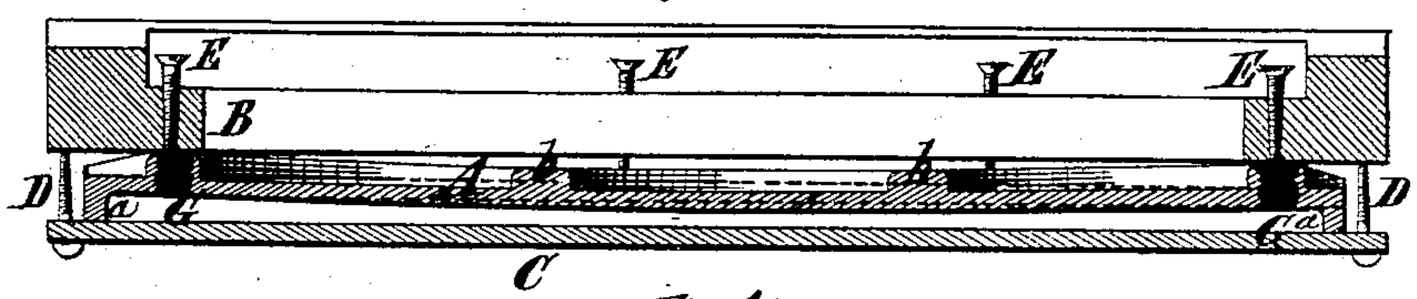

Fig. 4.

Witnesses,

Albin Kranich
John. Forster.

Hellmuth Kranich
Jacques Bach.
by Salmon & Schatz
their attys

UNITED STATES PATENT OFFICE.

HELLMUTH KRANICH AND JACQUES BACH, OF NEW YORK, N. Y.

IMPROVEMENT IN PIANO-FORTES.

Specification forming part of Letters Patent No. **191,444**, dated May 29, 1877; application filed December 29, 1876.

To all whom it may concern:

Be it known that we, HELLMUTH KRANICH and JACQUES BACH, of the city, county, and State of New York, have invented certain Improvements in Piano-Fortes, of which the following is a specification:

These improvements consist in a sounding-board for a musical instrument, made separate from other parts, and provided with heels at intervals along the edges; in the combination of such sounding-board with the iron frame; in a sounding-board secured in place at isolated points on both its upper and lower sides; and in the combination, with a sounding-board, of means whereby, in a very simple and effective manner, it may be sprung and resprung at pleasure.

In the accompanying drawing, Figure 1 is a view of the back or under side of part of a piano-forte embodying our improvements. Fig. 2 is a section thereof, taken on the plane of the dotted line *x x*, Fig. 1. Fig. 3 is a section thereof, taken on the plane of the dotted line *y y*, Fig. 1; and Fig. 4 is an edge view of a sounding-board separate from the piano-forte.

Similar letters of reference designate corresponding parts in all the figures.

A designates a sounding-board of a piano-forte, which may be made in any suitable manner. Instead of being secured in place, in the usual manner, by screws or other devices passing through it, it is preferably held in place by friction between suitable devices and a frame, C, commonly termed the "iron frame" or "iron plate" of a piano-forte. To provide for thus securing a sounding-board in place it is preferably provided along the edges with heels or lugs *a*, projecting from its face, and adapted to bear against the iron frame C without interfering with the vibrations. Though narrow heels *a* are preferable, because their small surfaces produce less friction than more extended projections, the latter may be used, if desirable.

Indeed, it is obvious that heels, or their equivalents, projecting from the iron frame C, and bearing upon the sounding-board, may be used instead of the heels or projections upon the sounding-board, as they will serve to secure the sounding-board properly.

The iron frame C may be secured in place in any suitable manner—for instance, by screws D passing through it at some distance from the edges of the sounding-board, and entering some fixture in the piano-forte—for instance, the part B.

The advantages of securing the sounding-board in place without the aid of any devices passing through it and holding it laterally in place are very great. Thus the sounding-board is enabled to expand, swell, contract, or shrink during atmospheric changes without sustaining injury, and is very durable and long maintains its proper tone; whereas when secured, in the ordinary manner, by devices passing through it and confining it laterally in place, it is very frequently split in expanding, swelling, contracting, or shrinking when affected by atmospheric changes, or, even if it escapes this injury, it frequently loosens the devices for retaining in place, and in either case its tone and general efficacy are seriously impaired.

It is preferred to so secure a sounding-board in place as to afford also provision for respringing it into convex form while in place when desirable. Oftentimes, through atmospheric changes or shrinkage of the material of which the sounding-board is made, this part of a piano-forte, when made and secured in place in the ordinary manner, loses its convex form, and its tone and general efficacy become impaired. By providing for respringing it we provide for returning or reinstating its efficacy. To do this we provide, in addition to the means described for securing a sounding-board in place, a series of adjustable bearing-pieces, which may consist of screws E, projecting from any suitable fixture, and impinging upon the back or under side of the sounding-board, at some distance from its edges, so that by moving them outward they may be made to spring the sounding-board facially outward, or, in other words, toward the strings, into convex form.

Preferably the sounding-board will be provided with bearings of metal, which may consist of screws G where the adjustable bearing-pieces impinge upon it, to prevent it from sustaining injury therefrom.

It is obvious that fixed projecting bearing-pieces might be employed instead of these

adjustable bearing-pieces, and that then the springing of the sounding-board might be effected by forcing down the outer portions or edges of the sounding-board.

In order to enable the sounding-board to be sprung thus, the outer extremities of strengthening-ribs *b*, with which it is provided, are preferably chamfered off, as at *c*, (see particularly Fig. 4,) to allow them to be forced inward without coming in contact with other parts of the piano-forte. Instead of this, however, recesses for the ends of such ribs *b* might be made in that part upon which the sounding-board bears with good results, providing they be made so large as not to interfere with the expansion, swelling, contraction, or shrinkage of the sounding-board.

In Figs. 2 and 3 the sounding-board is shown in bold outline as properly sprung, and in dotted outline as relaxed.

H designates a wrest-plank, wherein tuning-pins I are arranged. This wrest-plank has its face chamfered off or inclined away from the iron frame, and the tuning-pins I are arranged at about right angles to its face. Springs S, fastened at one end to hitch-pins J, are attached at the other to tuning-pins I, and these, owing to their peculiar arrangement, hold the strings down well upon the wire bridge or bead K on the iron frame, so that they are very effectively strained, and are not so liable to tear out or loosen the tuning-pins. It is only necessary to chamfer off or incline the face of the wrest-plank opposite the strings.

Bridges of any kind may be used for the strings.

By our invention we enable a sounding-board to maintain its resonance, its elasticity, and its general efficiency a much longer time than when made and secured in place in the ordinary manner; we enable the sounding-board to be restored or returned to place in case its efficiency should be impaired by its having become relaxed; and we enable the strings to be strained much more effectively than usual, and lessen their liability to draw out or loosen the tuning-pins, and become thereby slackened and untuned.

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

1. A sounding-board for a musical instrument, provided with a series of heels or projections along its edges, substantially as set forth.

2. The combination, with a musical instrument, of a sounding-board secured in place at isolated points on both its upper and lower sides, substantially as set forth.

3. The combination, with a fixed iron frame, of a sounding-board provided with heels or projections for bearing against the iron frame, substantially as set forth.

4. The combination, with a fixed iron frame, of a sounding-board provided on one side with heels or projections for bearing upon the former, and on the other with bearing-pieces, arranged farther inward from the edges than the said heel-pieces, and screws impinging against the said bearing-pieces, substantially as set forth, whereby in a very simple and inexpensive manner provision is afforded for springing and respringing the sounding-board facially at pleasure.

5. The combination, with a stationary iron frame, of a sounding-board provided on one side with heels or projections for bearing against the former, and on the other with metal bearings, of screws for impinging against the latter, and provided with devices for springing and respringing, substantially as set forth.

HELLMUTH KRANICH.
JACQUES BACH.

Witnesses:
ALBIN KRANICH,
JOHN FORSTER.