

W. C. ELLIS.
Piano-String Bridges.

No. 144,842.

Patented Nov. 25, 1873.

Fig. 1

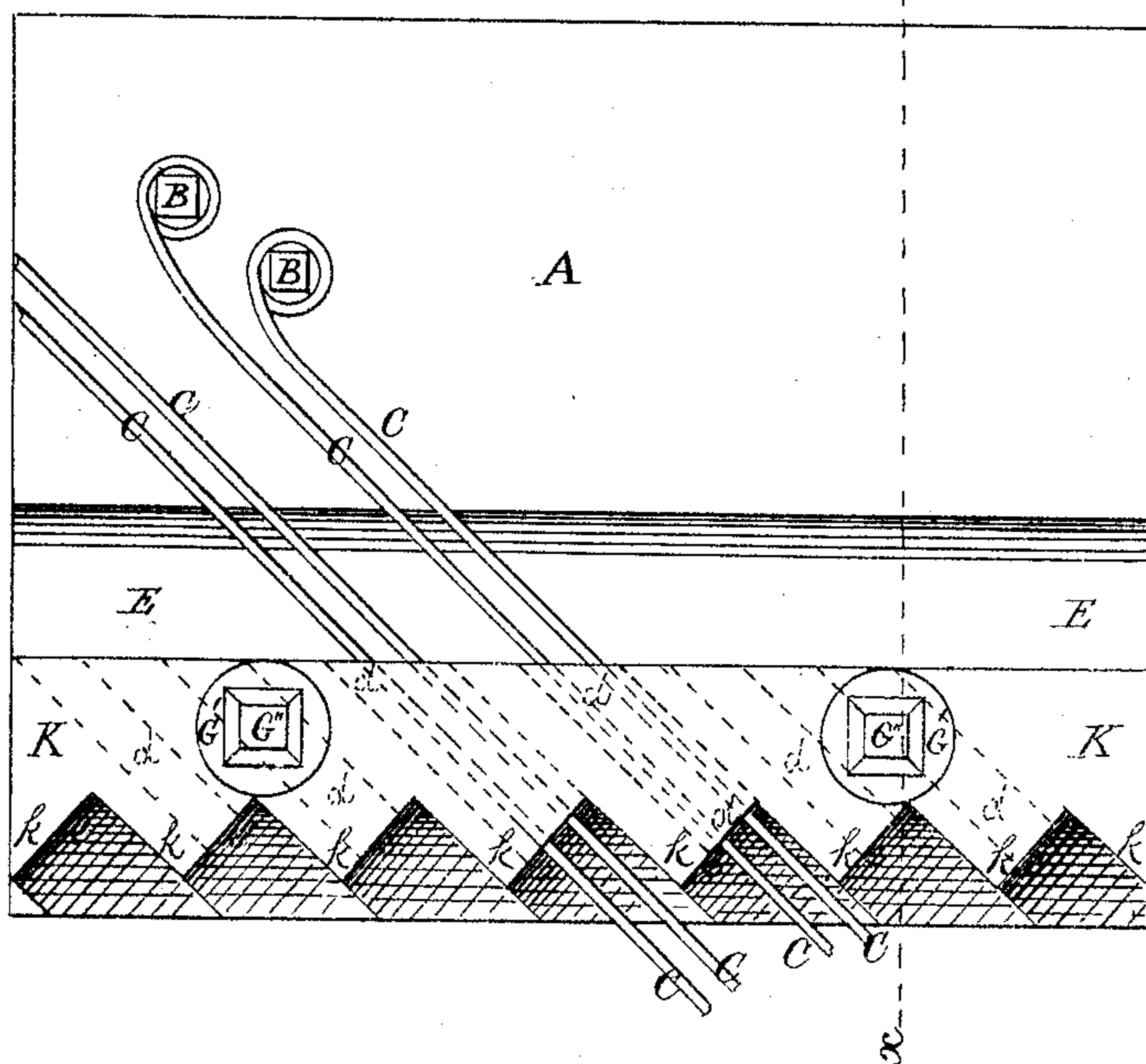
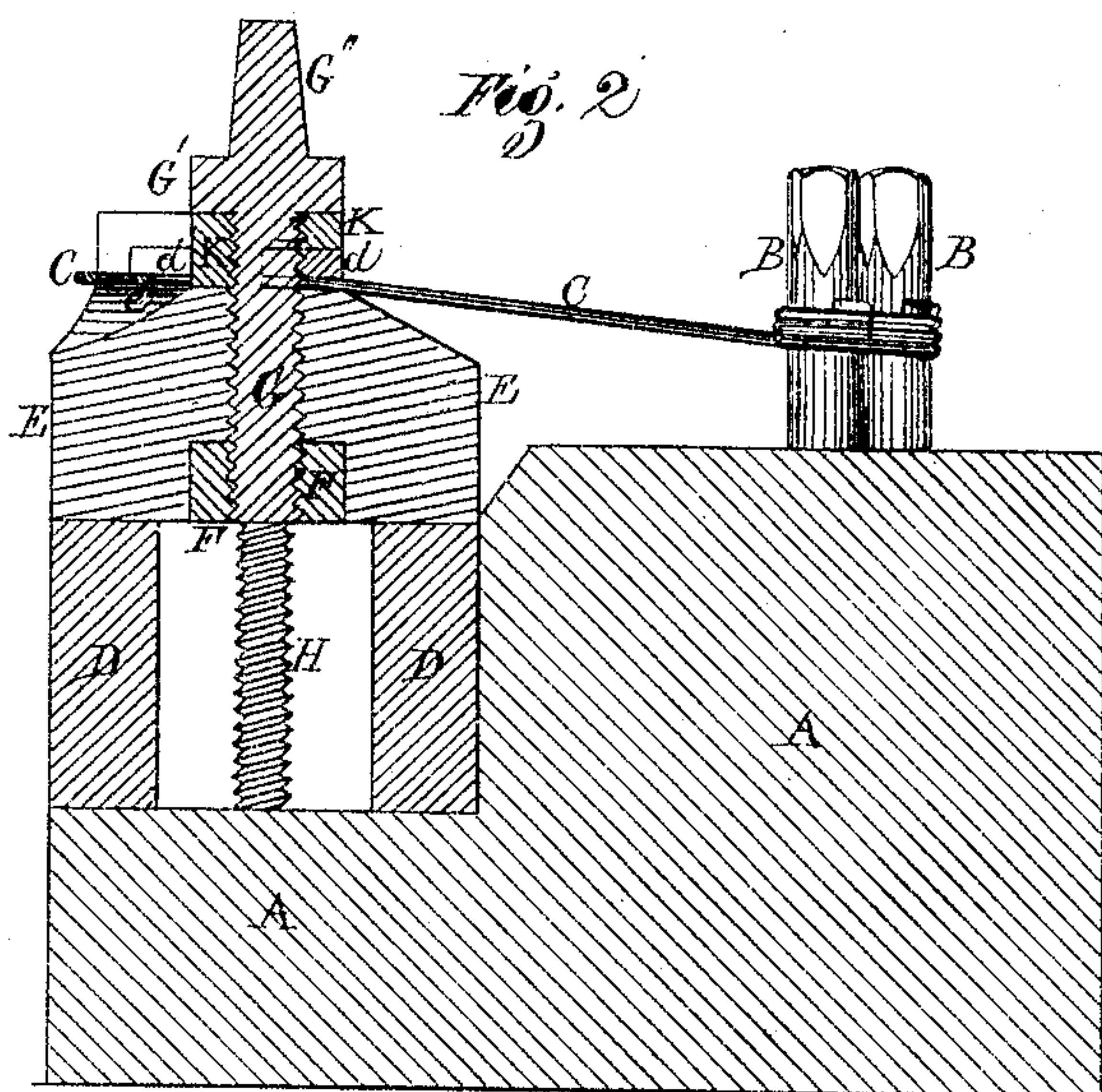


Fig. 2



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WILLIAM C. ELLIS, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN PIANO-STRING BRIDGES.

Specification forming part of Letters Patent No. 144,842, dated November 25, 1873; application filed August 22, 1873.

To all whom it may concern:

Be it known that I, WILLIAM C. ELLIS, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain Improvements in Piano-Forte Bridges, of which the following is a specification:

Figure 1 of the accompanying drawings is a top view, and Fig. 2 is a vertical transverse section taken in line *xy*, of my improved piano-forte bridge.

The present invention relates to certain new and useful improvements in piano-forte bridges, having for their principal objects the securing of a more equal tension on the string between the tuning-pins and sound-board bridge, thus lessening their liability to get out of tune; the obviating of the objections heretofore caused by the wear of the strings against the pins of an ordinary bridge, or against the eye of an "agraffe;" the preventing of absorption, and giving solidity to the tone. My invention consists, mainly, in a wooden bridge extending throughout the scale, on which the strings are held by means of an adjustable metallic clamp bearing on the said bridge, and recessed on the bottom to receive strips of wood, leather, or other non-metallic material that bear upon and hold the strings, which are thus securely held in place by the pressure exerted by the clamp on the bridge, said pressure being induced and regulated by means of screws bearing on the clamp and engaging with a plate or nut extending under the bridge, all of which I will now proceed to describe.

In the drawings, A represents the wrest-plank or pin-block of a piano-forte, provided with pins B, to which are attached strings C. The pin-block A may be cut away on the forward part, as shown, to receive glass or other insulating supports D to a wooden bridge, E, that extends throughout the scale; or the wooden bridge E may be placed directly on the pin-block, in which case the latter is not cut away on the front. The bridge E is recessed on the bottom to receive a nut or metallic plate, F, formed with screw-holes to receive screws G that extend through the bridge E, which on the top at the front is grooved out to form serrations *e*. Located on top of the bridge E is an adjustable metallic clamp, K, formed on

the front with serrations *k*, and recessed in an oblique direction on the bottom to receive strips *d* of wood, leather, or other non-metallic material or substance, that are placed over and bear upon so as to hold the strings C. The screws G are each formed with a head, G', that bears upon the top of the clamp K, and is formed with a suitable stem, G'', to receive a tuning-hammer, or the head of the screw may be otherwise formed to be turned by any other means. The bridge E is held to the block A or insulators D by screws H, or may be otherwise secured.

In the methods heretofore adopted of holding the strings by pins, two bearings, a side one and a downward one, are produced, thereby cramping the string at a certain point, and causing an unequal tension between the tuning-pin and the sound-board bridge; besides, in tuning, the wear of the string against the bridge-pin renders it liable to break at this point. Moreover, the blow of the hammer from underneath forces the string from its bearing, thus throwing it out of tune; further, when pins are used, metal is brought in contact with metal, thus impairing the quality of tone.

In the so-called agraffe method an upward and a downward bearing on the strings are produced, which brings a great strain on the string at the eye of the agraffe, thus rendering the string liable to break at this point. An unequal tension on the string is also produced in this case by the two bearings, and the string is apt to be thrown out of tune. In most cases the agraffe is only used through a portion of the scale, thus producing an uneven quality and quantity of tone in comparison to a bridge of one material.

In my improvements the strings are held by the pressure of the wooden or other non-metallic strips upon them, said pressure being exerted by means of the metallic clamp, which does not come in contact with the strings, being insulated from them by the said strips, but is held tightly to the bridge by the screws G and nut or plate F on its bottom. By holding the strings in this manner only one bearing, and that a downward one, is produced, each string drawing perfectly straight from the sound-board bridge to the tuning-pin; moreover, the

pressure is on top of the string, holding it firmly in resistance to the upward blow of the hammer.

When tuning, the pressure is removed from the top of the string by loosening the screws G, which allows the strings to render easily on the bridge, which presents no point of wear to the strings. By these improvements the strings in no case come in contact with any metal on the bridge to affect the tone.

By means of the clamp K, and under plate F held by the screws G, a pressure is induced on the top and under side of the bridge, which gives solidity to it, and prevents absorption of tone, and lessens the liability of the strings getting out of tune.

Having thus fully described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. A piano-forte bridge, on which strings are held by wooden or other non-metallic strips inserted in recesses formed in the bottom of a metallic clamp adjusted to and bearing upon

said bridge by screws engaging with a metallic plate or nut located in the bottom of the bridge, substantially as specified.

2. In a piano-forte, a metallic clamp, K, having a serrated front edge and formed with screw-holes, and on the bottom with oblique recesses filled with wood or other non-metallic material, substantially as and for the purpose described.

3. In combination with the clamp K and bridge E, a metallic plate or nut, F, and screws G, substantially as specified.

4. The combination of a pin-block or wrest-plank, A, insulators D, bridge E, plate or nut F, clamp K, and strings C, all arranged substantially as herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM C. ELLIS.

Witnesses:

SAML. M. BARTON,
CARROLL D. WRIGHT.