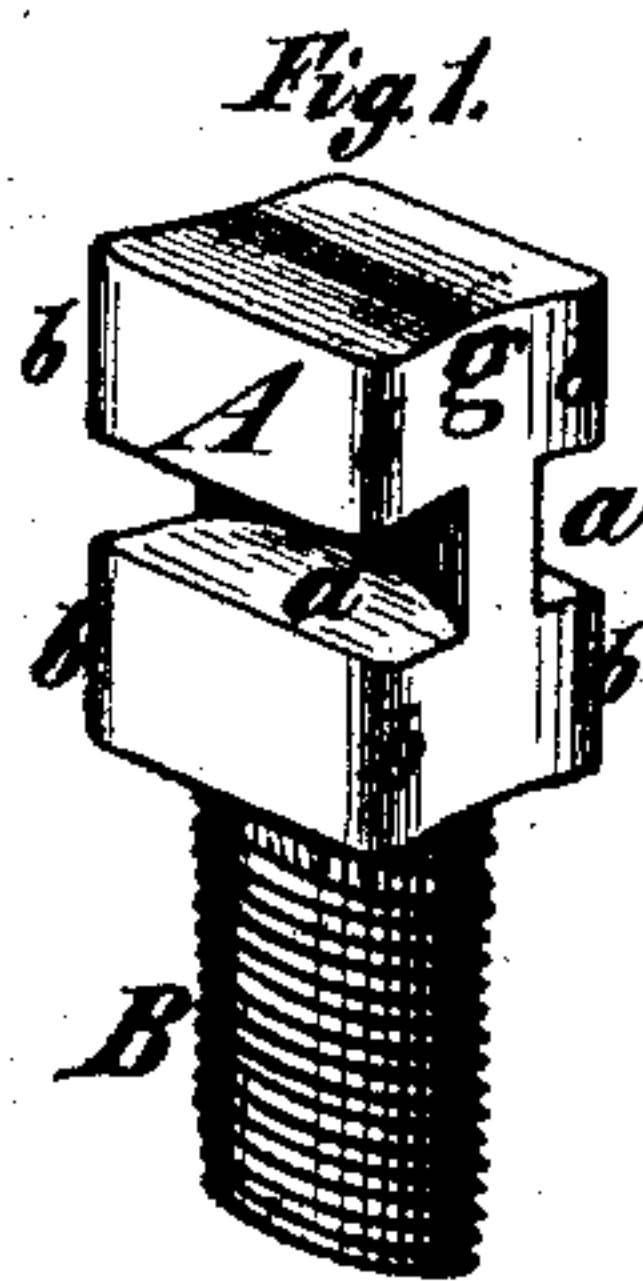
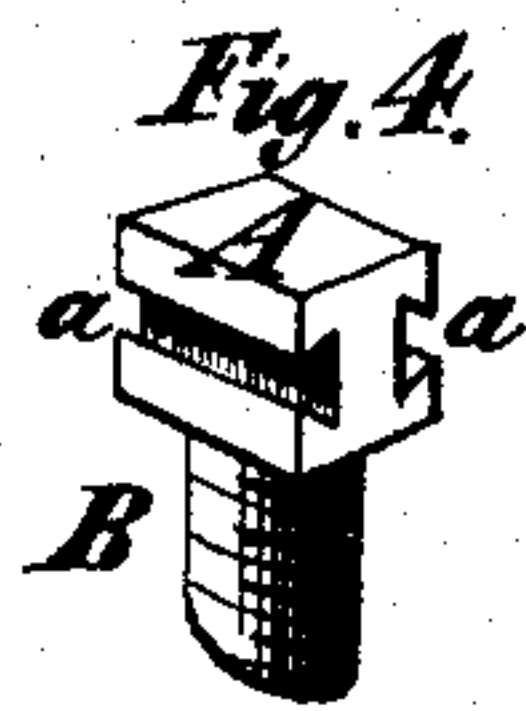
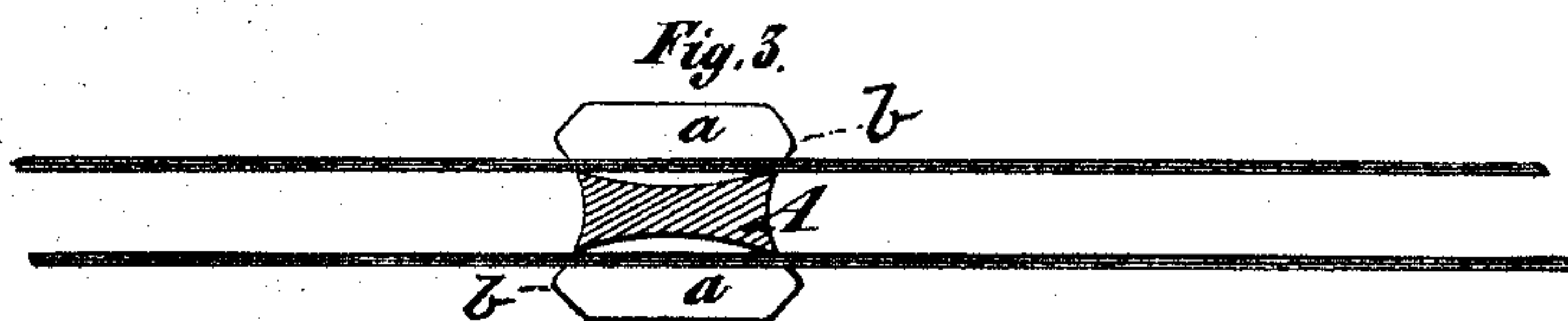
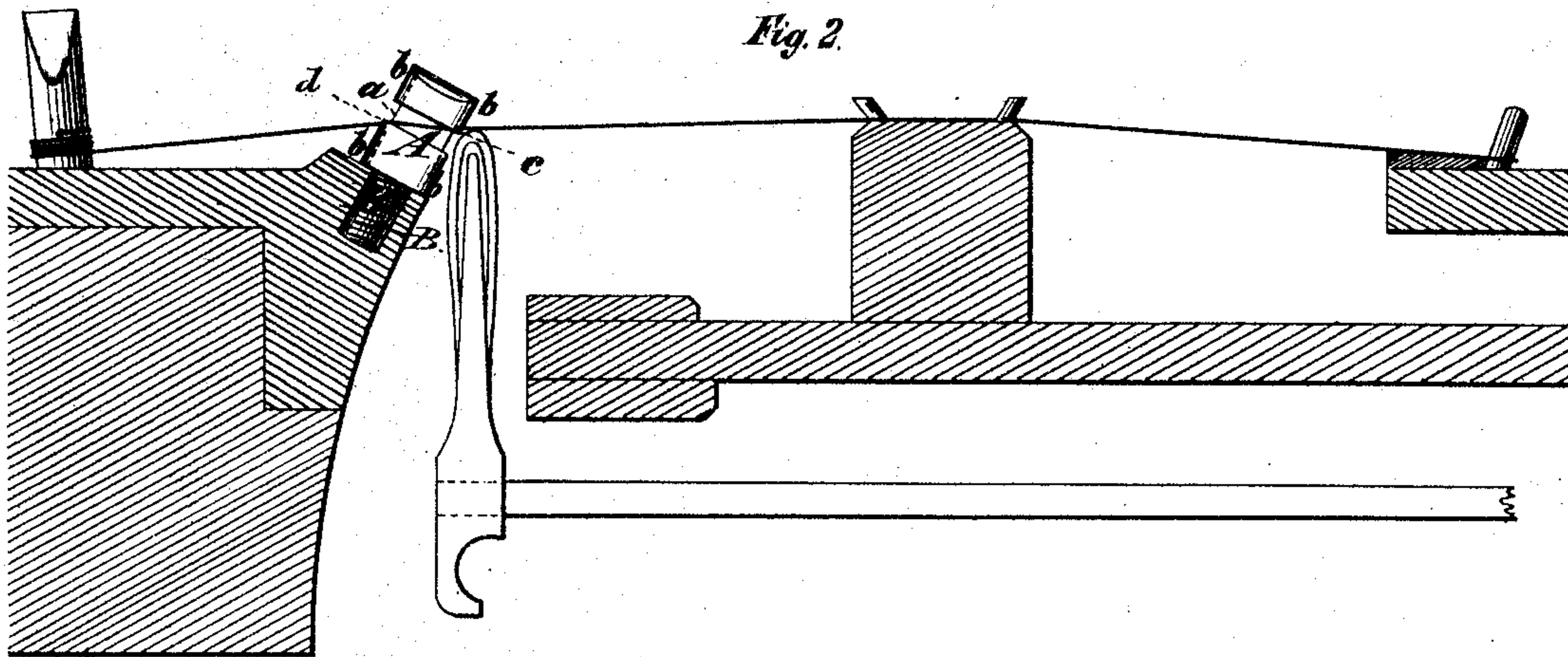


H. KRANICH & J. BACH.

Pianoforte Agraffe.

No. 162,829.

Patented May 4, 1875.



Witnesses:
 Michael Haerisch
 Albin. Franisch.

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 Schatz & Nicoll

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN PIANO-FORTE AGRAFFES.

Specification forming part of Letters Patent No. **162,829**, dated May 4, 1875; application filed January 26, 1875.

To all whom it may concern:

Be it known that we, HELLMUTH KRANICH and JACQUES BACH, of New York, in the county and State of New York, have invented a new and useful Improvement in Piano-Forte Agraffes, of which the following is a specification:

Our invention consists in a piano-forte agraffe of novel construction, provided on two opposite sides with transverse grooves, preferably having longitudinally-concave backs, and on two intervening sides, at the end of said grooves, with ribs or projections, which, when the agraffe is set, so that the grooves extend at an angle to the strings, serve as hooks and cramp the string laterally in place and against the end edges of the concave backs of the grooves, whereby a simple and efficient agraffe is produced, which may be firmly secured in place, which will obviate the necessity for a straining-bridge, and prevent the jingling and rattling of the strings incident to agraffes of ordinary construction. These improvements also cause the strings, when struck by their hammer, to give a full, clear sound, and provide for the speedy removal and replacement of the strings whenever necessary.

Having briefly indicated the prominent features of our invention, we now proceed to describe it in detail, with especial reference to the particular example which is illustrated by the accompanying drawing.

In this drawing, Figure 1 is a perspective view, on an enlarged scale, of an agraffe embodying our invention. Fig. 2 is a transverse section of a portion of a piano-forte, provided with an agraffe embodying our invention. Fig. 3 is a transverse section of such an agraffe, with strings applied to it; and Figs. 4 and 5 are perspective views of agraffes of slightly modified form.

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

An agraffe embodying our invention may be made in various ways, but, preferably, will have a cubical head, like the head A of the agraffe illustrated by the drawing, and a screw-threaded shank, B, for screwing it to its support. Upon two opposite sides its head is

provided with parallel grooves, which, preferably, have right-angled sides, like grooves *a a*, shown in the drawing, Figs. 1, 2, and 4, but which, obviously, may have outwardly-converging sides to prevent the strings, which they receive, from slipping out of place, as illustrated by Fig. 4. When these grooves are made with right-angled sides, as in Figs. 1, 2, and 3, ribs or other suitable projections are, preferably, provided above and below the ends of the grooves on the head of the agraffe, as shown at *b b*. A convenient way of forming such ribs is to hollow out the face of the agraffe-head, at which the grooves terminate, as shown in the drawing *g*, Fig. 1. When the agraffe is set properly, as shown in Fig. 2, with its grooves oblique to the strings, two of the end edges *c* and *d* of such grooves, located diagonally opposite to each other, bear on the strings, one above and the other below, and the projections or ribs *b b* cramp the strings against the backs of the grooves, and thus, securing the strings against lateral displacement, preclude them from rattling or jingling in the agraffe.

These grooves affording the strings two bearing-points, as just explained, obviate the necessity for a bridge, and simplify the construction of the agraffe. Preferably the backs of the grooves are longitudinally concave, as shown in Fig. 3, so that the strings bear only against two isolated edges; and hence, when struck they will resound with a full, clear tone.

It will be readily understood that instead of these grooves with concave backs pairs or sets of projections or hooks *c c* on the sides of the agraffe may be employed, as shown in Fig. 5.

It is obvious that the strings of a piano-forte may more easily and expeditiously be removed from grooves in the agraffes than from holes therein, and that they may be much more easily inserted in such grooves than through holes; and, therefore, that an agraffe provided with grooves as a means for holding the strings is more convenient than one having holes for this purpose.

As this improved agraffe, by affording the strings two diagonally-opposite bearing-points,

obviates the necessity for carrying a bridge, it may be readily adjusted into position for use by simply turning it a half a turn instead of turning it entirely round, as is necessary when a bridge is used to bring it into the proper position. An agraffe of this kind may be set far enough back from the edge of the rail to insure it a firm support, and yet will project so far over the rail that the hammer may strike the strings close to it, and produce a clear intonation.

In order that the grooves may extend obliquely to the strings the agraffe is preferably set at angle, as shown in Fig. 2; but it is obvious that instead its head may be bent, or the grooves arranged so that the same result will be attained.

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

1. A reversible piano-forte agraffe, A B,

provided upon one or more sides with one or more right-angled grooves, *a*, and with ribs or teats *b* at the terminations of the said grooves, substantially as described, and for the purpose herein set forth.

2. A piano-forte agraffe, A B, provided upon one or more sides with one or more grooves, *a*, having concave backs, substantially as herein set forth.

3. An agraffe, A B, provided upon one or more sides with one or more transverse grooves, *a*, having concave backs, and having at the terminations of said grooves ribs *b*, or other projections, substantially as and for the purpose herein set forth.

HELLMUTH KRANICH.
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Witnesses:

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MICHAEL MAISCH.