

UNITED STATES PATENT OFFICE.

FREDERICK MATHUSHEK AND HUGO MATHUSHEK, JR., OF MELROSE, N. Y.

IMPROVEMENT IN PIANO-FORTES.

Specification forming part of Letters Patent No. 212,029, dated February 4, 1879; application filed September 18, 1878.

To all whom it may concern:

Be it known that we, FREDERICK MATHUSHEK and HUGO MATHUSHEK, Jr., both of Melrose, in the county and State of New York, have invented a new and useful Improvement in Piano-Fortes, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan or top view. Fig. 2 is a vertical section in the plan *x x*, Fig. 1.

Similar letters indicate corresponding parts.

This invention consists in the combination, with a sounding-board, the sounding-board bridge, and the bridge-pins or agraffes which retain the strings on the sounding-board bridge, of a hitch-pin block provided with terraces for supporting the hitch-pins at different levels above the sounding-board, one of said terraces being situated above, and the other below, the level of the surface of the sounding-board bridge, so that the downward strain of the strings running to the lower terrace is counterbalanced by the upward strain of the strings running to the upper terrace of the hitch-pin block, and thereby the sounding-board is relieved from the strain of the strings.

Between the strings which run from the sounding-board to the terraces of the hitch-pin block bars of metal, wood, or other suitable material are inserted, to equalize the up and down strain of the strings. The wrest-plank bridge is cast solid with the metal frame, and its bearing-surface is on a level with the upper surface of the sounding-board bridge.

In the drawings, the letter *A* designates the sounding-board of a piano-forte, on which is firmly secured the sounding-board bridge *B*. *C* represents the hitch-pin block, which, in the example shown in the drawings, is cast solid with, and forms part of, the metal frame *D*; but, if desired, the hitch-pin block may be made separate, and secured to the metal frame in any desirable manner. Said hitch-pin block is provided with two terraces, *a b*, in which are secured the hitch-pins *c*.

The terrace *a* is situated below, and the terrace *b* an equal distance, or nearly so, above, the level of the surface of the sounding-board bridge *B*. The strings which run to the lower terrace, *a*, therefore, produce a downward strain upon the sounding-board, while the

strings which run to the upper terrace, *b*, produce an upward strain on the sounding-board; and if the strings are uniformly divided between said two terraces the upward strain of one portion of the strings is counterbalanced by the downward strain of the other portion, and the sounding-board is practically relieved from all strain of the strings, either up or down.

The strings are retained on the sounding-board bridge by agraffes *e*; or, if desired, ordinary bridge-pins may be used; but the agraffes are preferable.

Between those portions of the strings which extend from the sounding-board bridge to the hitch-pins are placed bars *E*, of metal, wood, or any other suitable material, for the purpose of equalizing the up and down strain of said strings. These bars, which we term the "bearing-equalizers," may be retained in position simply by the gripe of the strings; or suitable fastening devices may be applied to regulate their position and retain them securely in any position which they may occupy.

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

1. The combination, with the sounding-board, the sounding-board bridge, and the bridge-pins or agraffes, which retain the strings on the sounding-board bridge, of a hitch-pin block provided with terraces for supporting the hitch-pins at different levels above the sounding-board, one of said terraces being situated above, and the other below, the level of the surface of the sounding-board bridge, substantially as and for the purpose described.

2. The combination, with the sounding-board, the sounding-board bridge, the bridge-pins or agraffes, which retain the strings on the sounding-board, and a hitch-pin block provided with terraces for supporting the hitch-pins at different levels above the sounding-board, of bearing-equalizers inserted between those portions of the strings which extend from the sounding-board bridge to the hitch-pins, substantially as and for the purpose set forth.

In testimony that we claim the foregoing we have hereunto set our hands and seals this 16th day of September, 1878.

F. MATHUSHEK. [L. S.]

HUGO MATHUSHEK, JR. [L. S.]

Witnesses:

J. VAN SANTVOORD,

E. F. KASTENHUBER.