

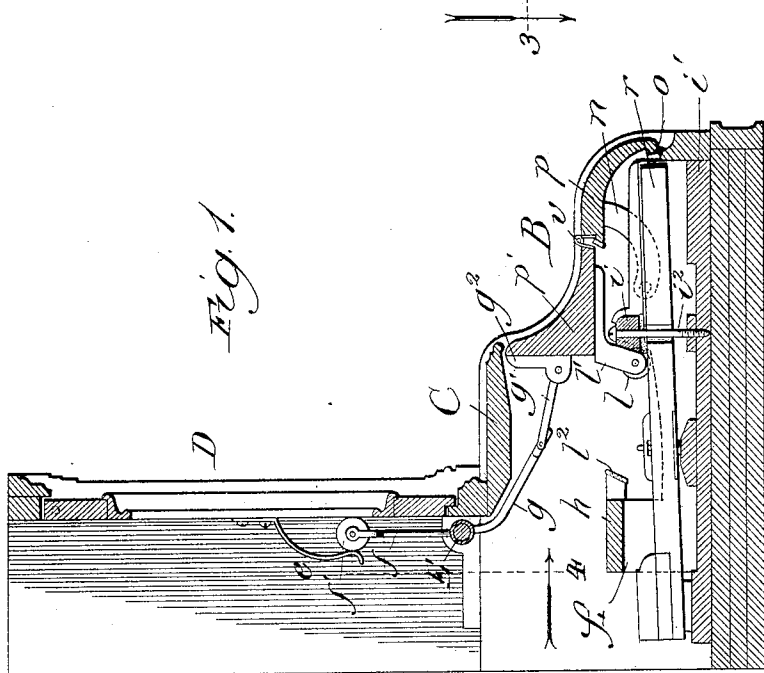
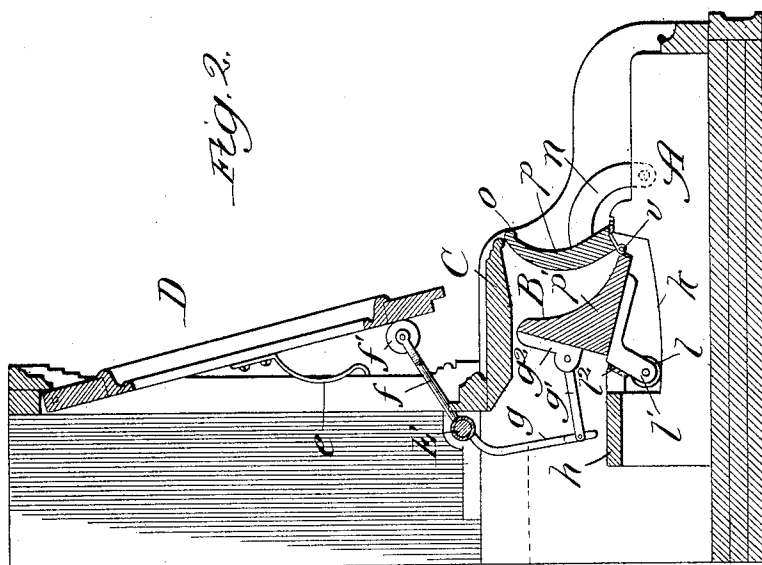
(No Model.)

2 Sheets—Sheet 1.

W. M. BAUER.
PIANO.

No. 604,166.

Patented May 17, 1898.



Witnesses:
Ed. S. Taylor,
A. T. Spencer

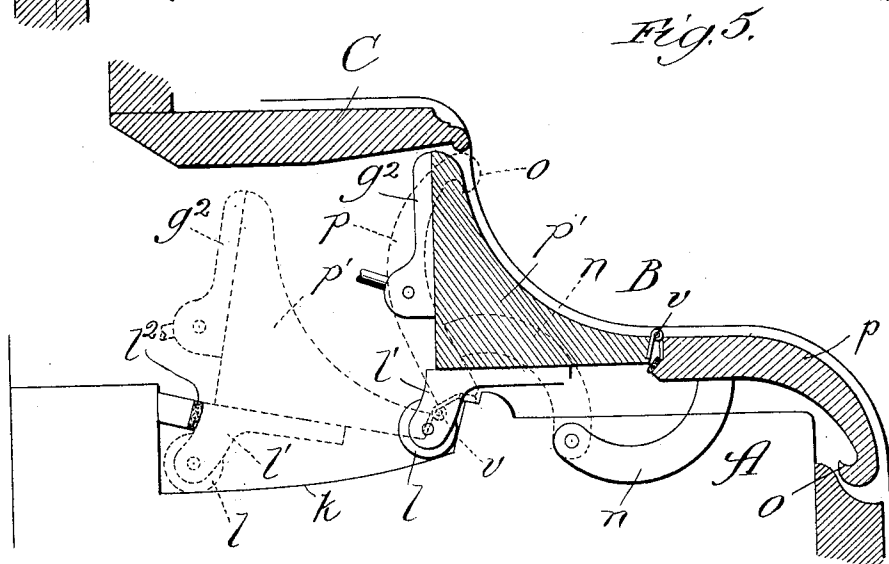
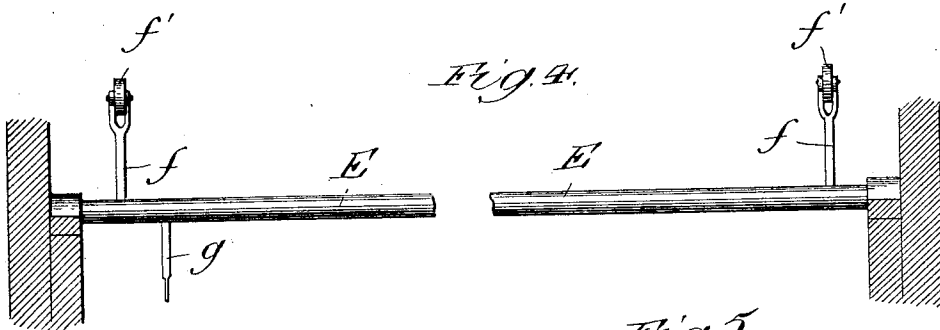
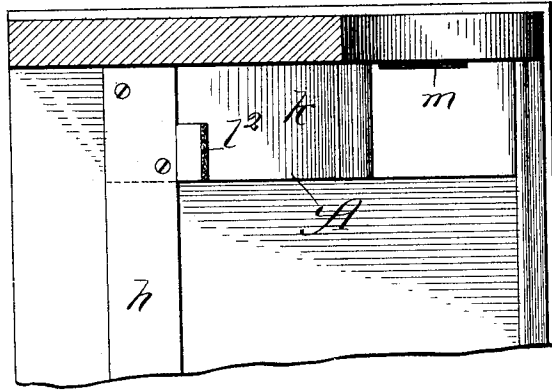
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Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM M. BAUER, OF CHICAGO, ILLINOIS.

PIANO.

SPECIFICATION forming part of Letters Patent No. 604,166, dated May 17, 1898.

Application filed September 11, 1897. Serial No. 651,269. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. BAUER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Pianos, of which the following is a specification.

My invention relates to an improvement in the fall-board of a piano, applicable both to a grand and an upright piano, and it also relates to an improvement, applicable only to an upright piano, in means for opening and closing the swinging front frame or desk portion by opening and shutting the fall-board. Neither of these improvements is necessarily dependent for use one upon the other, as the fall-board construction may be employed with any construction of means adapted to be operated by the fall-board to open and close the swinging front frame or where no such means are provided, and my improved means for opening and closing the swinging front frame may be employed with any construction of fall-board suitable for operating the same other than that involved in my improved fall-board.

With regard to my improvement relating to the fall-board, which is of the variety known as the "Boston" fall-board, comprising two longitudinal sections hinged together to be folded one upon the other for opening it, my objects are, in adapting it to be opened and closed by a single operation in a manner which is not, generally speaking, new with me, first, to enable the forward section to be folded back sufficiently far to completely, or practically so, cover the opening in the piano-frame through which the rear section of the fall-board recedes; second, to so unite the key-blocks, with which the forward section of the fall-board is pivotally connected at its ends, as to form a rigid frame carrying the fall-board adapted to be readily drawn out of the piano and replaced therein; third, to avoid necessity for beveling off the black keys at their rear ends by providing a separate stationary key-strip between the keys and fall-board and fastened in place independently of the key-blocks, and, fourth, to provide a generally improved construction of the fall-board mechanism.

With regard to the feature of my improvement which relates to the means for opening and closing the swinging front frame my primary object is to provide means for the purpose positive in their action and adequately rigid to maintain the true position of the front frame, more especially when it is opened, against deflection therefrom by warping of parts or by, say, overloading, with a heavy music-book or the like, either end of the frame.

My improvements are illustrated in the accompanying drawings, in which—

Figure 1 is a transverse vertical section of an upright piano provided with my improvements, showing the fall-board and front frame in their closed condition; Fig. 2, a similar view of the same, showing the fall-board and front frame in their opened condition; Fig. 3, a broken plan section with the fall-board removed, taken at the line 3 on Fig. 2 and viewed in the direction of the arrow; Fig. 4, a broken section taken at the line 4 on Fig. 1 and viewed in the direction of the arrow, and Fig. 5 a broken enlarged section showing the parts in the relative positions in which they are represented in Fig. 1 by full lines and in the relative positions in which they are represented in Fig. 2 by dotted lines.

A is one of the two key-blocks commonly provided in a piano at the opposite ends of the series of keys, of which one only, a white key *v*, is represented in Fig. 1.

B is the fall-board, formed of the two sections *p* and *p'*, hinged together in a usual or any suitable manner, as represented at *v*. The forward edge of the section *p* is "rolled" or formed in a somewhat hook shape, as shown at *o*, for a purpose hereinafter described. At each end of the fall-board section it is pivotally connected with the outer side of the adjacent key-block A by a link *n*, extending from the section into a recess *m*, Fig. 3, in the side of the key-block, with which latter the end of the link, which is formed preferably of metal and of the curved shape illustrated, is pivotally connected. The rear section *p'* of the fall-board bears, through the medium of guide-rollers *l*, formed, for the sake of noiselessness, preferably of leather and depending from near the opposite ends of the section,

upon sunken ways or tracks *k*, formed in the upper sides toward the rear portions of the key-blocks. These tracks should be formed on a curve suitably related, as to its center, to that described by the links *n* at their outer ends, so that the rollers *l* shall ride regularly in opening and shutting the fall-board.

The key-strip *i*, which extends transversely across the keys just back of the black keys, is separate from the fall-board and is rigidly fastened to the key-frame *i'* by screws *i''*, passed into the same at suitable intervals between the keys.

The fall-board-supporting key-blocks A afford the ends of a rigid frame by connecting them firmly together through the medium of a cross-strip *h*, so that withdrawal and reinsertion of the fall-board may, with other obstructing parts removed, be easily accomplished by merely pulling out and inserting the connected key-blocks.

To open the fall-board from its shut position, it is only necessary to lift the section *p*, thereby turning it upon its hinges *v* into the position wherein it is shown in Fig. 2, with the back of its forward edge bearing against or close to the adjacent edge of the ledge C, thus to completely, or practically so, close the opening below the ledge when the piano is "open." By raising the fall-board section *p* the section *p'* rides backward on the tracks *k*, and in the innermost position of the section *p'* the roller-carriers *l'* encounter and bear against cushioned stops *l''*, stops for these rollers in their forward position being afforded by the adjacent front walls of the recesses.

To close the fall-board, the section *p* may be gripped by the fingers of the operator under the forward hook-shaped or rolled edge *o* and pulled down, the edge *o* affording a grip. By providing this edge *o* it becomes practicable to turn the section *p* back far enough to encounter the ledge C, which would otherwise not be the case, since without a suitable grip for the hand on the section, as is afforded by the edge *o*, if turned so far back there would be no means afforded for taking hold of it to shut it, so that where this construction of fall-board has hitherto been provided in the open condition of the section *p* the arrangement of the parts is such as to prevent the upper edge of the section *p* from being so close to the ledge C as to preclude the insertion of the fingers of the operator behind the edge of the section to get at it for the purpose of turning it down.

The course traversed by the adjacent hinged edges of the fall-board sections in opening and closing the fall-board is arranged to be such as to cause these edges to clear the key-strip *i*, so that they also necessarily clear the black keys, which do not extend above the plane of the key-strip. Therefore the black keys do not require to be beveled off on their upper sides toward their rear ends, there to lower them, as they would have to be were the key-

strip fastened to the section *p* to move with it, as it is in another construction known to me.

D is the front frame, hinged near its upper edge to be opened and closed by swinging, all in a usual or any suitable manner. It is common to provide means for causing this front frame to be opened and closed by opening and closing the fall-board. My improved means for this purpose involve the following construction:

E is a rock-shaft journaled at its opposite ends in suitable bearings inside the piano-case behind the base of the front frame. For the sake of lightness and ornamentation and to prevent warping I prefer to form the rock-shaft of a solid piece of wood confined in a thin hollow metal cylinder, preferably of brass. An arm *g* depends from this rock-shaft and is connected from its free end by a link *g'* with a suitable bearing *g''* on the back of the fall-board section *p'*. Arms *f f* project upward from the rock-shaft near its opposite ends and carry rollers *f'* to engage with sockets afforded by flat metal springs *e*, projecting from the back of the front frame D.

The parts A, *n*, *l*, and *e* and other minor parts, while they are provided each in duplicate in the actual construction of my improved mechanism, are shown singly, owing to the nature of the views selected for illustration. The arrangement of the duplicated parts will be understood, however, from the description.

By opening the fall-board B the connection therewith of the shaft E rocks it forward, thereby turning the arms *f* downward against the rear side of the front frame through the arc of a circle of which the rock-shaft forms the center and causing them to swing the front frame out into the position in which it is represented in Fig. 2. The two arms *f*, owing to their rigidity and the firmness of their rock-shaft support, positively and rigidly hold the front frame in its open condition near its opposite ends, thereby preventing it from sagging toward either end, as it would tend to do under strain of any kind if supported only in or near the middle or near one end.

The diameter of each roller *f'* should be somewhat greater than the normal diameter of the entrance to each socket afforded by a spring *e*, in order that immediately the roller enters or engages the socket in shutting the fall-board it will be gripped by the spring and without lost motion positively pull the front frame toward its position of closure, and in order, furthermore, that the resilient force of the socket-springs shall be exerted against the rollers to tend to counteract any tendency in the fall-board, owing to the weight of the parts to open partially or more or less slightly, when closed.

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

1. In a piano, the combination with the ledge of a fall-board formed of folding sections, the forward section, when raised, extending at its outer edge beneath the corresponding edge of the ledge to close the opening in the piano-frame, and a grip on said forward section, substantially as described.

2. In a piano, a fall-board comprising the section p' supported to ride on ways provided on the piano-key blocks, and the section p hinged to the section p' and having a grip at its forward edge and link connection with said blocks, said section p having a transverse dimension approximately equal to that of the opening between the key strip and ledge, and adapted to close said opening and to present its forward edge against the lower side of the ledge when the fall-board is opened, substantially as described.

3. In a piano, a fall-board comprising the section p' carrying rollers supported to ride on ways provided on the piano-key blocks, and the section p hinged to the section p' and having link connection with the said blocks and a grip at its forward edge, and a stop for the section p' whereby when the fall-board is opened the forward edge of the section p is

brought into close proximity to the lower side of the piano-ledge to cover the opening in the piano-frame, substantially as described.

4. In combination with the fall-board and swinging front frame of an upright piano, mechanism for opening and closing the front frame by operating the fall-board, comprising a rock-shaft extending from side to side of the piano-case behind said frame and means for engaging therewith the fall-board, spring-sockets on said front frame and arms extending from said rock-shaft to engage with said sockets, substantially as described.

5. In combination with the fall-board and swinging front frame of an upright piano, mechanism for opening and closing the front frame by operating the fall-board, comprising a rock-shaft E having a depending arm g to be engaged by the fall-board and arms f carrying rollers f' , and springs e forming sockets on the back of the front frame to be engaged by said rollers, substantially as described.

WILLIAM M. BAUER.

In presence of—

R. T. SPENCER,
E. B. KIRBY.