

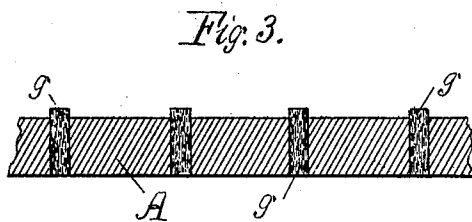
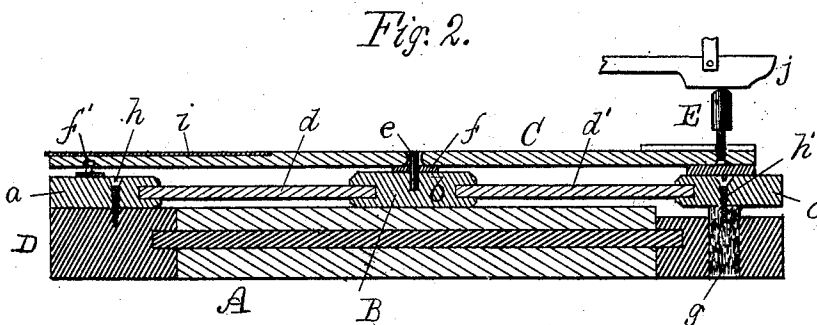
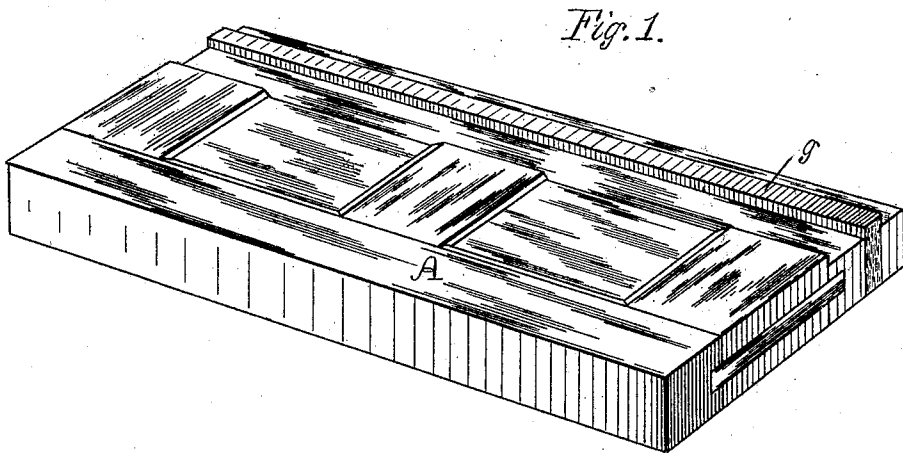
(No Model.)

W. H. IVERS.

KEY BOARD FOR PIANO FORTES.

No. 363,240.

Patented May 17, 1887.



Witnesses.
Hendel Brock
H. C. Long

Inventor.
Wm. H. Ivers.
J. Curtis, Atty.

UNITED STATES PATENT OFFICE.

WILLIAM H. IVERS, OF DEDHAM, ASSIGNOR TO THE IVERS & POND PIANO COMPANY, OF BOSTON, MASSACHUSETTS.

KEY-BOARD FOR PIANO-FORTES.

SPECIFICATION forming part of Letters Patent No. 363,240, dated May 17, 1887.

Application filed March 23, 1887. Serial No. 232,127. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. IVERS, a citizen of the United States, residing at Dedham, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Key-Boards for Piano-Fortes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to piano-fortes; and it consists in the peculiar construction of the "key-board," so called, by which atmospheric changes, particularly humidity, are prevented from influencing the "action" of the instrument. In other words, the object of my invention is to maintain the risers upon the inner end of the keys always in the same relative position with respect to the "action," so termed, of the instrument.

The drawings represent, in Figure 1, an isometric view of a key-board embodying my invention. Fig. 2 is a vertical cross-section of a key-board with the key-frame and key mounted thereon. Fig. 3 represents a modified construction of the key-board.

In the accompanying drawings, and upon reference to Fig. 2, I have represented a vertical transverse section of a key-board and key-frame of a piano-forte arranged as now most generally constructed. First and foremost, and firmly affixed horizontally in the piano-forte case, is the key-board A. Upon and above this rests the key-frame B, while surmounted upon the latter are pivotally secured in proper bearings the keys C, only one of which is here shown. In this general construction the key-board has usually been composed of wood, to render the instrument as light as possible compatible with strength. Upon the key-board, as shown in the drawings, rests and is secured by screws or other suitable fastenings the key-frame B, which carries the keys.

In consequence of the varying humidity or dryness of the atmosphere, the wood compos-

ing the key-board is liable to swell or contract, which act displaces the key-frame and keys, with their risers, from the proper relative positions for which the latter are regulated, and which they should bear to the action of the instrument. Herein arises the difficulty which I have endeavored to overcome in my present improvements. As a result of this slight variation in the position of the key-board a similar but corresponding change is effected in the key-frame B, which alters the position of the keys, also the risers mounted on the latter, and changes the relative position of said risers with respect to the action of the instrument, which, as heretofore constructed, is materially affected by all or any changes in the humidity or dryness of the atmosphere, and the piano-forte must be readjusted.

Upon reference to the drawings, A represents the key-board, made up of several pieces of well-seasoned wood firmly glued and united together. This extends longitudinally and is affixed to the ends of the case of the instrument. (Not shown.) Above this is placed the key-frame B, which is likewise made of wood and constructed with three rails, *a b c*, united by interconnecting panels *d d'*. In the center rail, *b*, is firmly set a series of metallic pins, *e*, which extend longitudinally of and are parallel with the front of the instrument at D, said pins being suitably spaced to accommodate and permit the mounting of the keys, one of which, C, is represented pivotally secured thereon. A ring of felt, *f*, is disposed about said pins to interpose between the key and the key-frame, and thereby cushion the key. Similarly upon the front rail, *a*, of the key-frame B is arranged a second series of pins, *f'*, which serve as guides to maintain each and every key in parallelism, one with the other. Furthermore, it will be observed that the top of the front rail, *a*, in the key-frame is slightly below the level of the upper surface of the center rail, *b*; hence, as each key is nicely balanced upon its central pivot-pin, *e*, a short drop is permitted to the front or finger portion, *i*, of the key C whenever pressure is brought upon the latter. This consequently raises the rear end of said key, which is furnished with a riser, E. The latter acts with the "jack" *j*, so called, (only the

lower portion of which is shown,) to operate the hammer and damper co-operating therewith.

Presuming the above description clearly specifies the relation of said parts mentioned in an ordinarily-constructed piano-forte, it will readily be perceived that the keys are supported on the key-frame, which latter is affixed to the key-board; but by this arrangement, should any expansion of said key-board, however small, occur, it will, as I have before stated, naturally affect the action of the instrument, since that part of the key to which are affixed the risers is raised or lowered. Thus the position of said risers with respect to the action of the instrument is altered, and said action is rendered too hard, or the reverse, dependent upon the position or locality of the piano-forte and the condition of the atmosphere surrounding it. To obviate this difficulty in the shrinking or swelling of the wood composing the key-board at a point beneath the risers, and taking advantage of one of the natural properties inherent in all woody fibers—which is that it does not contract or expand longitudinally of the fibers composing it—I have inserted within the key-board, at the rear and directly beneath the point of support of said key-frame at this particular part, as shown in Fig. 2, a continuous piece of wood, *g*, in which the fibers or grain shall be vertically disposed, and is to project above the level of the rear rail of said key-board, while it is flush with the front rail thereof. In lieu of this single continuous strip, a series of pins may be disposed as represented in Fig. 3, the fibers of which they are composed being also vertically disposed.

Thus the object of my invention, it will readily be understood, is to maintain the positions of the risers always permanent with respect to the action of the instrument after the latter has been properly regulated. The key-frame is now secured to the key-board by screws *h* *h'*, the latter being entered into the strip or series of pins *g*. Thus a fixed support is obtained for the key-frame just beneath the risers, and so long as these remain undisturbed the action continues in its normal condition of adjustment with respect to the risers and keys.

It is, moreover, evident that the slight alteration in the front portion of the key-frame, or of the keys, due to the swelling or contraction of the key-board, is immaterial, provided the riser end of the keys remains stationary. This, I believe, is effectually accomplished by the construction hereinbefore described.

In the above explanation I have premised that the continuous strip *g* is made of wood; but I do not desire to be limited to the par-

ticular material from which said strip or pins are to be made. I consider the gist of my invention to be embodied in the employment with a key-board of wood of a continuous strip or series of posts which shall extend entirely through the key-board. Moreover, the material of which said strips or series of posts are composed is to have a coefficient of expansion or contraction less than that of the wood composing the frame. Hence the heat or cold, humidity or dryness, to which the wood of the key-board may be subjected will not affect materially the material upon which the key-frame rests, and the latter will remain undisturbed. It is evident that only the upper and under exposed portions of the key-board are subject to the varying surrounding atmospheric conditions; but since the strip or posts *g* are located transversely of such movement the relative displacement or change in the fibers of the wood composing the key-board, as they contract or expand laterally, does not alter the position of said strips or posts, as hereinbefore explained.

I am aware that metallic key-boards have been employed; but these are heavy and costly and objectionable, owing to the difficulty in leveling them prior to insertion of the action.

What I desire to claim is—

1. As a new article of manufacture, a key-board provided at its rear portion, beneath the risers, with a strip or series of posts which extend entirely through said key-board, the material composing said strip or posts having a coefficient of expansion or contraction less than that of the material forming the key-board, substantially as and for the purposes specified.

2. As a new article of manufacture, a key-board composed of wood and provided upon its rear portion with a continuous strip or series of strips or pins of similar material having the grain of the wood vertically disposed, substantially for the purposes herein set forth.

3. In combination with a series of keys, *C*, pivotally mounted upon the key-frame *B*, a key-board, *A*, constructed with a strip or series of pins, *g*, disposed as herein described, and the key-frame *B*, supported by said strip or its equivalent at a point beneath the risers, substantially as herein described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. IVERS.

Witnesses:

HANDEL POND,
H. E. LODGE.