No. 812,705.

PATENTED FEB. 13, 1906.

W. C. VOGEL & H. K. SNELL.

PIANO ACTION.

APPLICATION FILED JULY 11, 1904.

2 SHEETS—SHEET 1.

Fig. 1

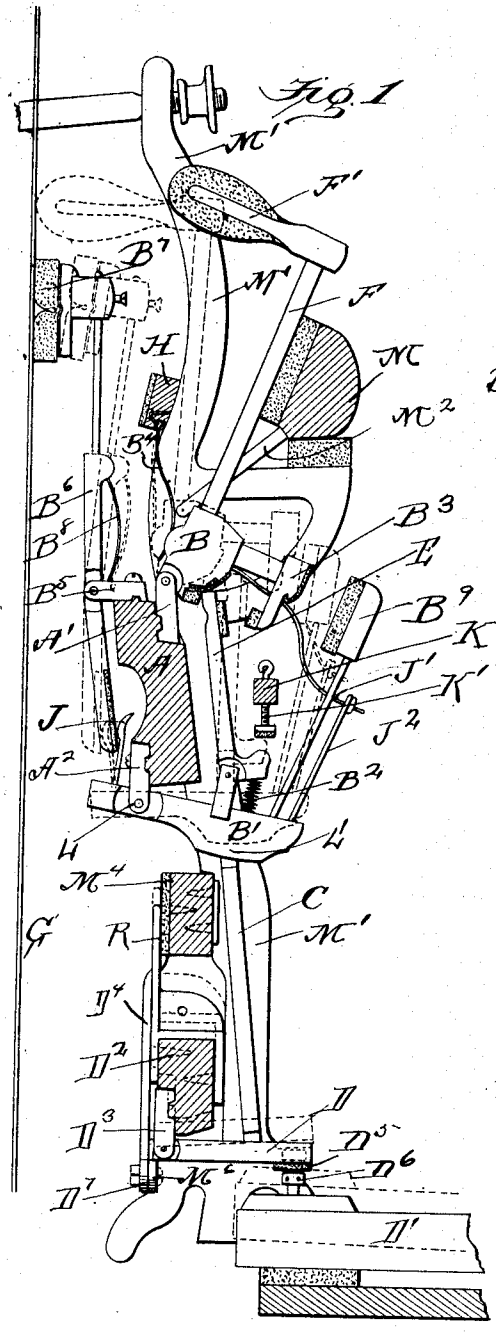
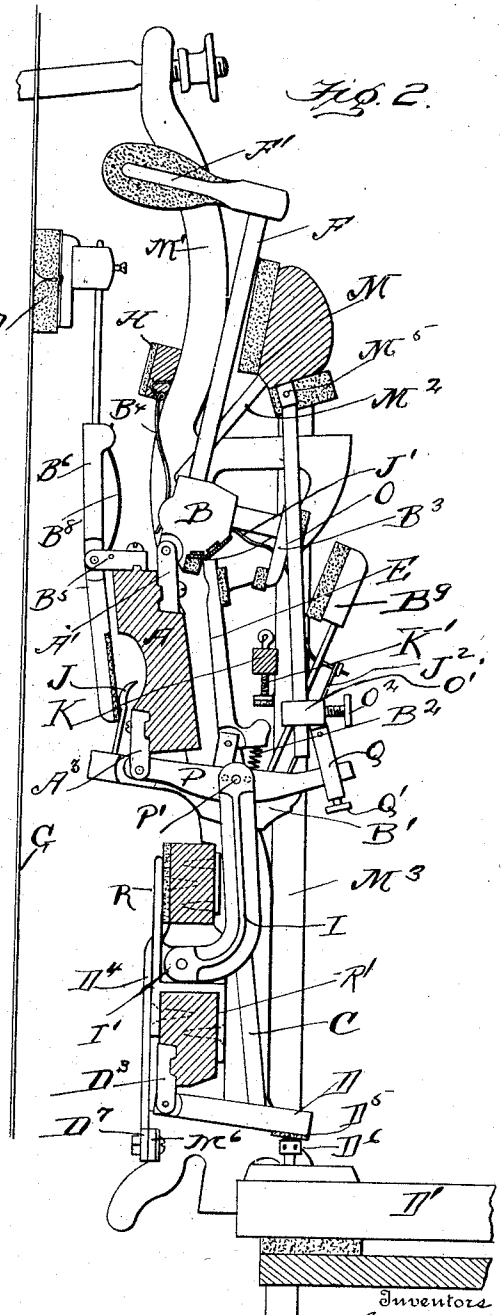


Fig. 2



Witnesses

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2 SHEETS—SHEET 2.

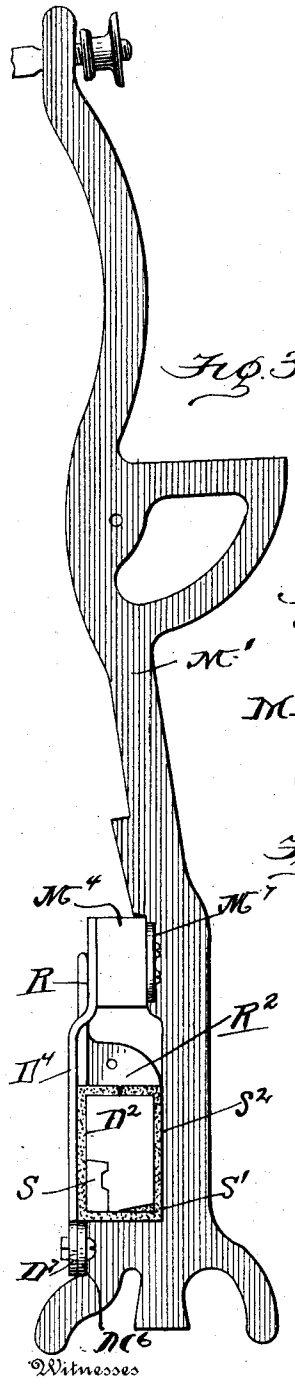


Fig. 3

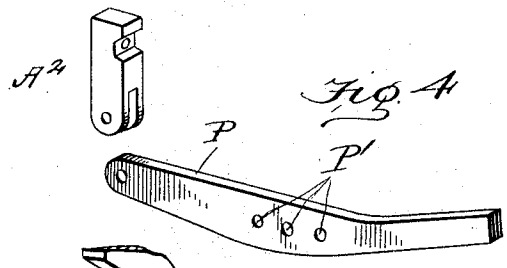
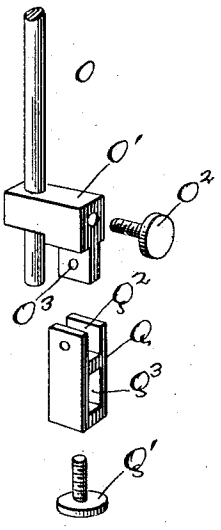


Fig. 4



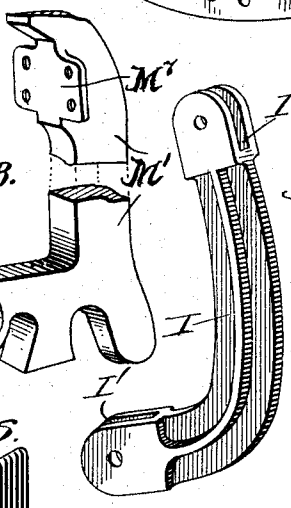


Fig. 8. Fig. 5.

Fig. 6.

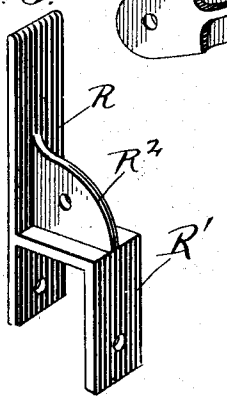
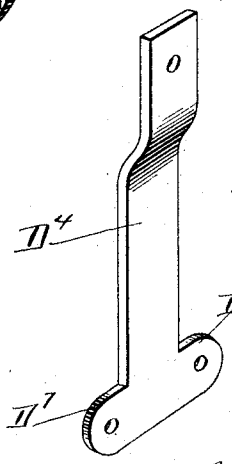


Fig. 7.



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UNITED STATES PATENT OFFICE.

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PIANO-ACTION.

No. 812,705. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed July 11, 1904. Serial No. 216,036.

To all whom it may concern:

Be it known that we, WILLIAM C. VOGEL and HARRY K. SNELL, citizens of the United States, residing at Newcastle, in the county of Henry and State of Indiana, have invented a new and useful Improvement in a Piano-Action, of which the following is a specification.

This invention relates to that type of action known as "upright" actions; and the main object of this invention is an upright-piano action designed to take up lost motion, to permit a rapid repeating action of the same key, and at the same time to decrease the weight and amount of material used without sacrifice of strength and durability.

A further object of our invention is to provide an action in which the key will be maintained in its normal position irrespective of the use of the soft pedal and to keep the jack and hammer-butt in constant contact, so that the key will at all times have the same sweep or limit of travel, thus giving certainty and uniformity of key action.

With these objects in view our invention consists in the novel features of construction and combination of parts hereinafter set forth, particularly pointed out in the claims, and shown in the accompanying drawings, in which—

Figure 1 is a vertical section through our piano-action, showing the parts in full lines in their normal position and showing in dotted lines the positions assumed when both key and soft pedal are depressed. Fig. 2 is a similar section taken adjacent the section shown in Fig. 1 and showing in full lines the positions assumed by the various movable parts when the key is at rest and the soft pedal is depressed. Fig. 3 is a side elevation of the action-bracket with certain parts attached thereto. Fig. 4 is a detail perspective view of the lost-motion lever and certain coacting parts shown detached. Fig. 5 is a perspective view of a connecting-elbow. Fig. 6 is a perspective view of a bracket or tongue lever-rail hanger. Fig. 7 is a perspective view of a stationary guide. Fig. 8 is a detail view showing certain lugs carried by an action-bracket.

In the drawings, A is the center or main action-rail, and to this rail are secured the upwardly-extending flanges A′ and the depending flanges A^2, carried by the front and rear sides of the main action-rail A, respectively. To the flange A′ is pivotally connected the hammer-butt B and to the flange A^2 the whip B′, and to the upper face of the hammer-butt is secured the hammer-shaft F, carrying the usual hammer F′. To the whip B′ is pivotally connected the upper end of the pilot or riser C. The lower end of the bar C, being reduced in thickness, extends into a groove of a lever D, to which the lower end of the bar C is pivoted. The lever D coöperates with a key D′, the whip B′ being actuated through the medium of the key D′, lever D, and pilot-bar C. Pivotally mounted upon the whip B′ is a jack E, which is constantly in engagement with the butt B, being held in such engagement by a spring B^2. The hammer-butt is also provided with the usual stop or buffer B^3, and a restoring-spring B^4 is carried by the butt-spring rail H. The main action-rail A also carries a rearwardly-extending bracket B^5, to which is pivoted a damper-lever B^6, carrying a damper B^7 and provided with a restoring-spring B^8. A spoon J is carried by the whip B′ and actuates the damper-lever B^6. A cushioned hammer-check B^9 of the usual type is also carried by the whip B′, the check B^9 coöperating with the buffer B^3. The whip B′ is connected to the hammer-butt B by the bridle-strap J′ and wire J^2. A regulating-rail K is arranged parallel to and in advance of the main action-rail A and carries an adjustable regulating-button K′, which can be adjusted so that when the jack E is thrown into the position shown in dotted lines in Fig. 1 the toe of the jack will press upon the head of the button K′, relieving the hammer-butt of pressure.

The tongue-lever rail D^2 is beveled along its lower front edge and carries a depending flange D^3, to which the rear end of the lever D is pivoted.

A movable hammer-rest rail M is connected to a vertically-arranged action-bracket M′ by hammer-rest-rail hooks M^2, which have their upper ends screwed or otherwise fastened to the hammer-rest rail M and are pivoted to the action-bracket M′, so that the hammer-rest rail M may be moved toward or away from the strings G by means of a soft-pedal rod M^3. The lever-rail D^2 moves vertically between a stationary guide D^4 and the vertical action-bracket M′. A stationary squared rail M^4 is secured to lugs M^7, extending in opposite directions and laterally from the rear edge of the action-bracket M′, and

the action-bracket M′ has also similarly oppositely and laterally extending lugs M^6, carried by its rear edge, adjacent its lower end, and the guide-bracket D^4 (shown in detail in Fig. 7) is offset at its upper end portion and connected to the rail M^4, laterally-projecting lugs D^7 being formed on its lower end portion, which rest against and are secured to the lugs M^6 of the bracket M′. The connection between the hammer-rail M and the lever-rail D^2 is as follows: The upper end of a rod O is pivoted between lugs M^5, carried by the hammer-rail M, and the lower end portion of the rod O passes through a block O′, perforated at right angles to the bore through which the rod O passes, and binding-screw O^2 works in the perforation, which is threaded and locks the rod O in its adjusted position. From the block O′ depends a lug O^3, and the block is pivotally connected to a second block Q, having upwardly-extending ears Q^2, which fit over the lug O^3. The block Q is also cut out, as shown at Q^3, for a purpose which will hereinafter appear. A lost-motion lever P (shown in detail in Fig. 4) is pivoted at its rear end to a flange A^3 outside of the whip B′, and its forward end is adapted to fit in the opening Q^3 of the block Q, the block being slidable upon the lever. The outer end portion of the lever is slightly upwardly angled, and intermediate its ends the lever P is perforated, as shown at P′. The block Q may be locked in its adjusted position upon the lever P by means of the set-screw Q′.

We further provide a curved elbow I, bifurcated at each end, as shown at I′, and at its upper end the elbow I is pivotally connected to the lever P, the pivot-pin passing through one of the perforations P′, and at its lower end the lower bifurcated portion I′ of the lever I embraces and is pivotally connected to the web R^2 of the lever-rail hanger R. This hanger-rail carries an angled plate R′, the web R^2 connecting the hanger R and the plate R′, and the hanger is secured to the lever-rail D^2 and moves with it. Adjacent its front end the under face of the lever D carries a cushion of felting or other suitable material, and the key D′ carries a capstan-screw D^6, which maintains constant contact with the cushion D^5, and thus serves to maintain the jack E in constant engagement with the hammer-butt B irrespective of the position of the movable hammer-rest rail M, it being understood that the lever D rises as the hammer-rail M is moved out of normal position. Where the rail D^2 passes between the vertical action-bracket M′ and the guide-bracket D^4 it is fitted with a block S to form a square corner, and buckskin S′ is placed under the beveled portion of the lever-rail D^2 also for the purpose of forming a square corner and also to form a cushion. To the buckskin S′ and block S is glued a buckskin covering S^2, which enfolds the lever-rail D^2; but it is understood that the covering S^2 is used only where the said rail D^2 slides between the action-bracket M′ and the guide D^4.

It is obvious that by using the block S and the piece of buckskin S′ the buckskin covering S^2 is more readily fitted into position than would be the case if it followed the inequalities of the surface of the rail D^2. The use of the block S also causes the lower portion of the rear side of the covering to bear on the guide-bracket D^4, which would not be the case if the block S were omitted.

The operation of the various parts may be briefly described as follows: When the soft pedal (not shown) is depressed, the soft-pedal rod M^3 rises and the hammer-rest rail M is moved so as to limit the movement of the hammer F′. As has been described, the lever-rail D^2 is indirectly connected to the hammer-rest rail M, and the movement of the hammer-head F′ upward and toward the strings G causes an upwardly-sliding movement of the lever-rail D^2, and the lever D is lifted at its rear end and occupies the position shown in Fig. 2. The front end portion of the lever D rocks on and remains in engagement with the capstan-screw D^6. The jack E is held always in working contact with the surface of the hammer-butt B, and the key D′ remains in its normal position whatever may be the movement of the hammer-rest rail M. It is understood, of course, that many minor variations of construction and arrangement of parts may be made to accommodate the action herein described to pianos of various makes and sizes without varying the operation and result gained as above outlined, and it is also obvious that the various parts may be made of any suitable material, cushioned and packed where necessary, and made of any desired size.

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

1. In a piano-action, a vertical main action-bracket having upper and lower lugs extending laterally from its rear edge, a block carried by said upper lugs, a guide-bracket connected at its upper end to the block and at its lower end to the lower lugs, and a lever-rail adapted to move vertically between the bracket and the guide, as and for the purpose set forth.

2. A piano-action comprising a main action-bracket, a block carried by the rear edge of the bracket, lugs extending from the bracket below the block, a guide-bracket having an upper offset portion secured to the block, lugs formed on the lower end of the guide-bracket adapted to aline with and be secured to the lugs of the action-bracket, and a lever-rail adapted to move vertically between the action and the guide brackets.

3. The combination with a lever-rail movable vertically, of a movable hammer-rest rail, a soft-pedal rod adapted to lift the hammer-

rest rail upwardly and rearwardly, a depending rod pivotally connected to the hammer-rest rail, a block adjustably secured upon said rod, a main action-rail, a lost-motion lever pivotally hung from said main rail at its rear end, a block pivotally supported from the adjustable block and cut out to receive the forward end of the lost-motion lever, an elbow adjustably pivoted to the lost-motion lever intermediate its ends, a hanger secured to the lever-rail and pivotally connected to the lower end of the elbow, a lever pivotally supported at its rear end from the lever-rail, and a key in constant engagement with the forward end portion of the lever.

4. A piano-action comprising a main action-rail, a hammer, a hammer-rest rail, a vertical main action-bracket, a vertically-movable lever-rail, a lost-motion lever pivotally connected to the main action-rail, a block secured to the hammer-rest rail, a depending rod pivoted at its upper end to the said block, a block adjustably secured on said rod, a block pivotally connected to the adjustable block and cut out to receive the forward end of the lost-motion lever, the said lever being provided with a plurality of perforations, an elbow adjustably pivoted at its upper end to the lost-motion lever, and a hanger pivotally connected to the elbow and also connected to the lever-rail.

5. A piano-action comprising a vertical main action-bracket, a guide-bracket, a lever-rail movable vertically between the main action-bracket and the guide-bracket and cut away along its lower edges, a block fitted to the said lever-rail to form a rectangular edge, a buckskin covering inclosing the said lever rail between the main action-bracket and the guide-bracket, and a strip of buckskin interposed between the said covering and the remaining cut-out edge of the lever-rail.

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