

PIANO ACTION.

Patented Apr. 5, 1910.

2 SHEETS--SHEET 1.

Witnesses
Milton Lenoir
E. M. Klatcher

Fig. 1.

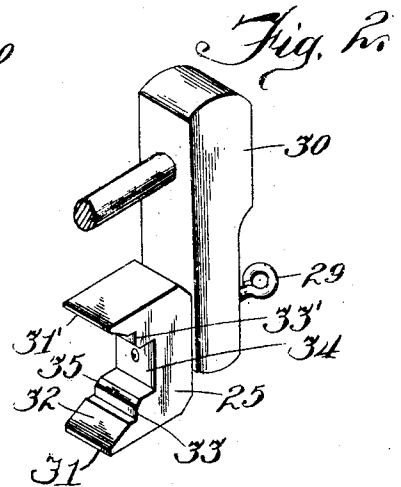


Fig. 2.

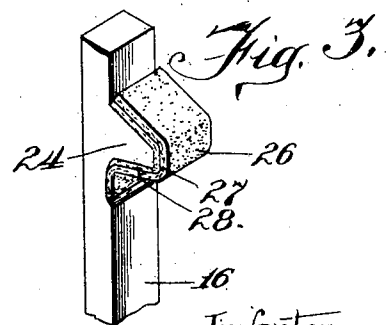


Fig. 3.

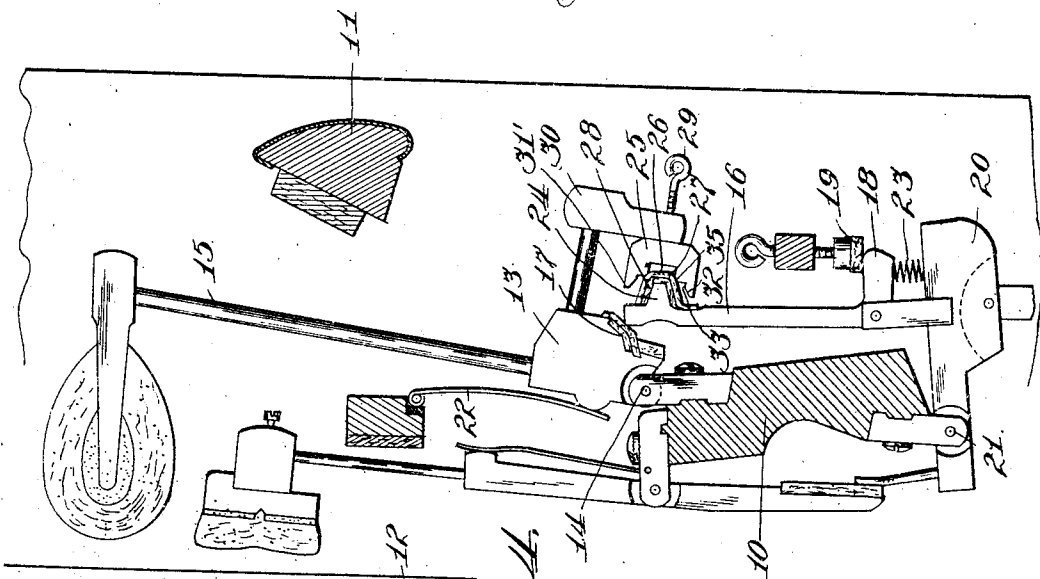
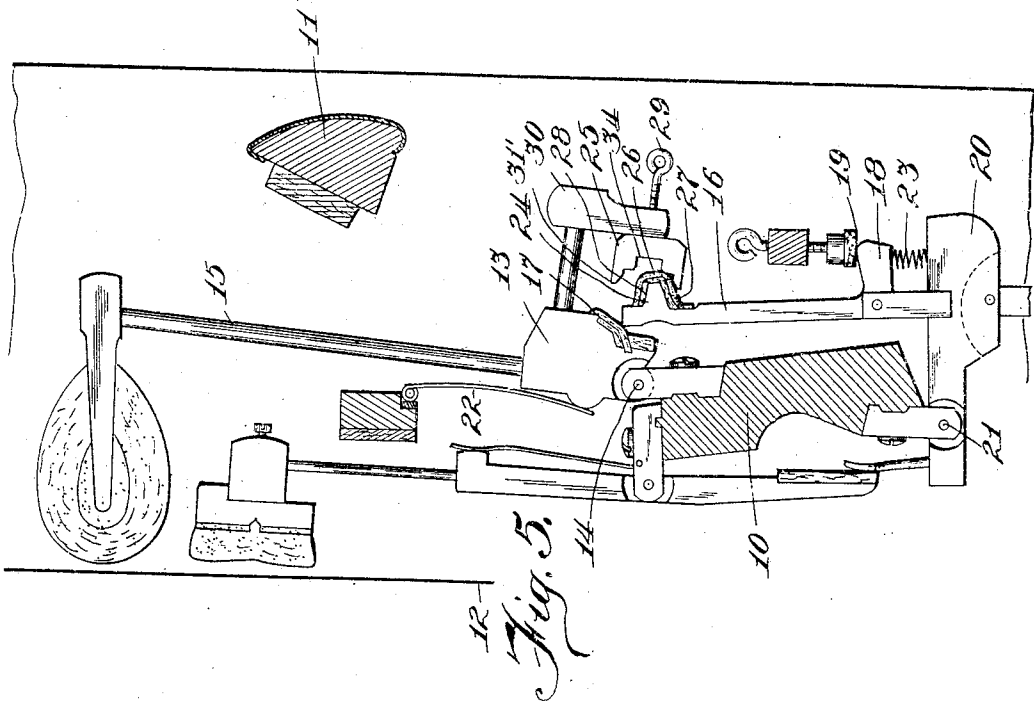
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H. O. CLARK.
PIANO ACTION.
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954,170.

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2 SHEETS—SHEET 2.



Witnesses,
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Fig. 4.
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UNITED STATES PATENT OFFICE.

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PIANO-ACTION.

954,170.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HORACE O. CLARK, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Piano-Actions, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to piano actions, and particularly to those intended for use in upright pianos.

More specifically, the invention relates to piano actions comprising a pivoted hammer and a jack engageable with a shoulder on the hammer-butt for actuating the hammer; and the objects of the invention are to provide means for positively gripping the hammer upon its rebound from a heavy blow against the strings, and to maintain the jack in close relation to the hammer-butt shoulder after light blows of the hammer against the strings in order that a plurality of such light blows may be struck in rapid succession.

The invention is exemplified in the structure to be hereinafter described, and illustrated in the accompanying drawings, wherein—

Figure 1 shows in side elevation the parts of a piano action in their normal position of rest, details of the action frame of the piano being shown in cross-section; Figs. 2 and 3 are perspective views showing details of the hammer and the jack, respectively; and Figs. 4 and 5 are similar to Fig. 1, but illustrate different positions of the parts.

A detail of the action rail of an upright piano is illustrated in the drawings at 10, and the hammer rest rail is shown at 11. One of the piano strings is represented at 12. The hammer-butt 13 is pivoted at 14 to the action rail 10 in the usual manner, and carries the usual hammer shaft 15, which bears upon the hammer rest rail 11 when the hammer is not in use.

The jack is designated by the numeral 16. As is usual in upright piano actions, this jack takes the form of a bell-crank lever, and has one of its arms much longer than the other, one of the arms being substantially vertical and being adapted to engage the hammer-butt shoulder 17 to project the hammer against the string 12, and the shorter arm 18 being substantially horizontal and being adapted to engage an adjustable fixed

stop 19 to swing the higher end of the jack out of contact with the hammer-butt shoulder 17 when the jack has been raised far enough to cause the hammer to strike the string 12.

The usual jack lever 20, adapted to be raised when the operator depresses a piano key (not shown), is also provided. This jack lever is pivotally attached to the action rail at 21, and carries the jack 16 in the usual manner. An action spring 22, bearing against the hammer-butt, and a jack spring 23 acting between the jack lever 20 and the shorter arm or heel 18 of the jack 16, are shown in the drawings. While I prefer to use these springs to give to the parts the familiar spring movement, they are not necessarily required in my improved piano action for insuring the return of the hammer upon the hammer rest rail 11, and for maintaining the higher end of the jack 16 in position to engage the hammer-butt shoulder 17, and both of them may therefore be much lighter than the corresponding springs heretofore employed in piano actions.

In carrying out the invention the jack 16 is provided with a projection 24 adjacent its higher end, and this projection coöperates with an appurtenance of the hammer-butt, such as the check-block 25, for checking the movement of the hammer upon its rebound from the string, for returning the hammer upon the hammer rest rail 11, and for maintaining the higher end of the jack in coöperative relation with the hammer-butt shoulder 17. The projection 24 is preferably of tapered or wedge-shaped form having a blunt end 26. As shown, it is preferably shod with leather at 27, and a cushioning layer of felt 28 is interposed between the body of the projection and the leather facing.

The check-block 25 is most clearly shown in Fig. 2 of the drawings. It is preferably adjustably secured to the hammer, and as shown is carried by a set-screw 29, having a threaded bearing in an arm 30, which extends forwardly and downwardly from the hammer-butt 13. A lip 31, having an inclined upper surface 32, is formed upon the lower edge of the check-block 25 and extends beneath the projection 24 on the jack. This lip insures the return of the hammer upon the hammer rest rail 11 when the jack is lowered, and during the lowering of the jack its inclined upper surface 32 has a sliding

engagement with the projection 24 for returning the higher end of the jack to its place beneath the hammer-butt shoulder 17. Above the lip 31 the check-block 25 is provided with an abrupt shoulder 33, adapted to engage the blunt end 26 of the jack projection 24 to limit the forward movement of the higher end of the jack after a light blow of the hammer upon the string. Upon the rebound of the hammer from such a blow its movement is checked by a frictional contact of the blunt end of the jack lug 24 with this shoulder. The higher end of the jack is thereby maintained in close relation with the hammer-butt shoulder 17, and will be immediately returned to operative position beneath that shoulder by a cam engagement of the inclined surface 32 of the lip 31 with the under side of the projection 24, as soon as pressure upon the corresponding piano key (not shown) is released. A second blow of the hammer upon the string may therefore be made without waiting for the parts to return to their normal position of rest. The check-block 25 is also provided with a notch 34 for receiving the jack-lug 24 upon the rebound of the hammer after a heavy blow against the piano string, as in Fig. 4 of the drawings. The mouth of this notch is preferably of less width than the base of the jack-lug 24. When this lug enters the notch upon the rebound of the hammer from a heavy blow against the string, it is therefore gripped from opposite sides by the walls of the notch to firmly hold the hammer against vibration. As shown, the walls of the notch 34 are angular, and are but slightly chamfered at the mouth of the notch, as shown at 35 (Fig. 2), the gripping of the jack-lug thus being effected by substantially sharp corners or shoulders.

The check-block 25 is adjusted in position by rotating the set-screw 29 in its threaded bearing in the arm 30. To secure the required nicety of adjustment, the check block is preferably made symmetrical with reference to its connection with the set-screw 29, in order that it may be used either side up, and an adjustment is therefore effected by moving the set-screw through but half a turn, if desired. As shown, the set-screw 29 is secured to the check block 25 upon the axis or center line of the notch 34, and the lip 31 and the shoulder 33 are duplicated above the notch, as at 31' and 33' Fig. 2.

The position of the parts after a light blow of the hammer against the string is shown in Fig. 5 of the drawings. In this position the movement of the hammer has been checked when it has rebounded but a short distance from the string 12, by the engagement of the blunt end 26 of the jack-lug 24 with the abrupt shoulder 33 on the check-block 25. If now the piano key (not shown) be released, the higher end of the

jack will be quickly returned to its operative position beneath the hammer-butt shoulder 17, by a sliding engagement of the jack lug 24 with the inclined upper surface 32 of the extended lip 31 of the check-block as the jack falls by gravity. A so-called close repeat of the hammer after such a blow is thereby readily effected.

The position which the parts assume after a heavy blow of the hammer against the string 12 is shown in Fig. 4 of the drawings. The rebound of the hammer from such a blow is so rapid that the jack lug 24 leaps over the shoulder 33 on the check-block 25 and enters the notch 34, where it is firmly gripped upon opposite sides by the walls of the notch to arrest the movement of the hammer. In either case the hammer is returned upon the rest rail 11 when the jack 16 is completely lowered by contact of the jack lug 24 with the extended lip 31 of the check-block.

I claim as my invention—

1. In an upright piano action, in combination, a hammer, a check-block carried thereby, and a jack having a forwardly-facing projection adjacent its higher end, the check-block being provided with a lip extending beneath the projection on the jack, with a stop shoulder above the lip to be engaged by the end of the projection after a light blow of the hammer and with a notch above the stop shoulder for receiving the projection on the jack upon the rebound of the hammer from a heavy blow.

2. In an upright piano action, in combination, a hammer, a check-block carried thereby, and a jack having a forwardly-facing tapered projection adjacent its higher end, the check-block being provided with a notch for receiving the projection on the jack upon the rebound of the hammer, the mouth of the notch being of less width than the base of the projection.

3. In an upright piano action, in combination, a hammer, a check-block carried thereby, and a jack having a forwardly-facing tapered projection adjacent its higher end, the check-block being provided with a notch for receiving the projection on the jack upon the rebound of the hammer, and with a lip extending beneath the projection, the mouth of the notch being of less width than the base of the projection.

4. A piano action comprising a hammer having a pivoted butt, a jack arranged to engage the butt, said jack having a projection thereon, and a back check movable with the butt and having separate spaced shoulders, one or both of said shoulders being arranged for engaging the projection to hold the hammer at different distances from the strings, according to the force of the stroke to which the hammer is subjected.

5. A piano action comprising a hammer

having a pivoted butt, a jack arranged to engage and actuate the butt, said jack being provided with a projection, and a back check movable with the butt and having spaced angular shoulders, one or both of which are designed to be engaged by the projection, according to the force of the stroke to which the hammer is subjected, said shoulders and projection constituting means for holding the hammer at different distances from the strings.

6. A piano action comprising a hammer having a pivoted butt, a jack arranged to engage and actuate the butt, said jack having a projection, a catch arm movable with the butt, and a reversible and adjustable check-block carried by said arm and having spaced angular shoulders, one or both of which are designed to be engaged by the

projection, according to the force of the stroke by which the hammer is actuated.

7. A piano action comprising a hammer having a pivoted butt, a catch arm movable with the butt, a reversible check-block having spaced angular shoulders therein, an adjustable connection between said block and the catch arm, and a jack projecting between the butt and check block and constituting means for actuating the butt, said jack having a projection arranged to engage one or both of the shoulders according to the force of the stroke by which the hammer is actuated.

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