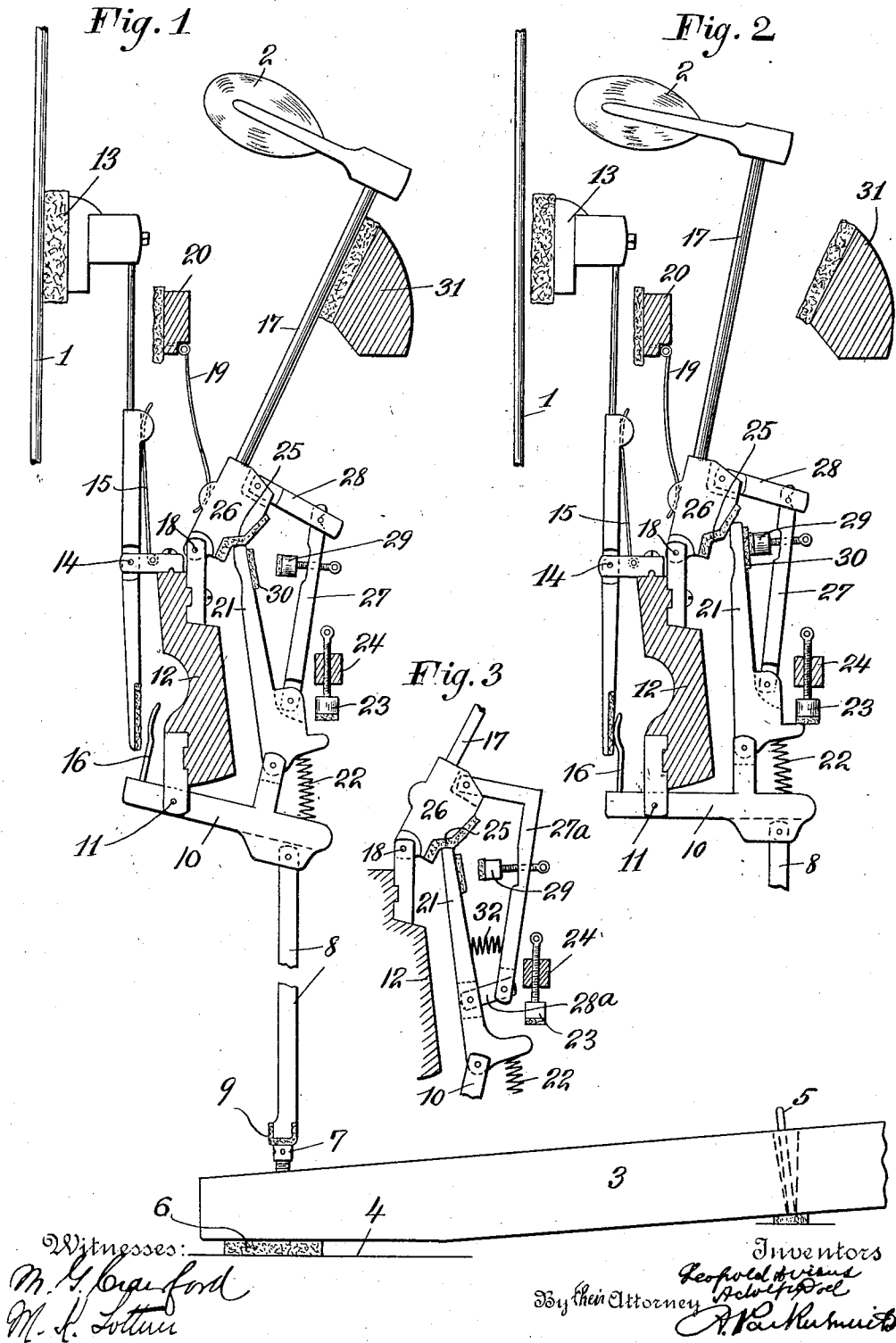


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PIANO ACTION.
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1,014,201.

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PIANO-ACTION.

1,014,201.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, LEOPOLD AVISUS and ADOLPH DOLL, citizens of the United States of America, residing at New York city, county and State of New York, have invented certain new and useful Improvements in Piano-Actions, of which the following is a specification.

Our invention relates to piano actions in general, and more specifically consists of an attachment to upright piano actions designed to render them capable of producing more perfectly a trill or repetition of any given note. The general introduction of self-playing attachments to upright pianos which are usually run at a high tempo, and are often used in rendering elaborate compositions including many trills or repetitions of the same note, has created a necessity for a cheap upright action which is sufficiently sensitive to respond to this rapid manipulation, the average action as now made in the moderate priced pianos being unable to do so. We have invented a simple form of upright action which meets this requirement.

One of the best forms of apparatus embodying our invention at present known to us is illustrated in the accompanying sheet of drawings in which,

Figure 1 is a vertical cross section with portions broken away through an action with our invention attached, the parts being in the position of rest. Fig. 2 is a detail view showing certain of the parts in one of the positions assumed during repetition, and Fig. 3 shows a detail modification.

Throughout the drawings like reference characters indicate like parts.

1 is a piano string, 2 the hammer and 3 the key pivoted on key bottom 4, by balance 5, having cushioned rest 6 and carrying capstan screw 7. This operates sticker 8 provided with cushion 9 at its lower end and pivoted to jack-carrying lever 10 at its upper end. This lever 10 is pivoted at 11 to the lower portion of rail 12. The damper 13 is pivoted at 14 to the upper portion of rail 12, and is controlled by spring 15, and trip 16 carried by lever 10. The hammer 2 is carried by shank 17, set in butt 26, pivoted at 18 to rail 12, and normally forced back against rest rail 31 by spring 19 set in damper-rest rail 20. Jack 21 is pivoted to lever 10, and normally held in engagement with nose 25 on hammer butt 26, by spring 22. The rail 24 carries an adjustable let-off but-

ton 23 coöperating with jack 21. All these parts are of standard construction and constitute no part of our invention, but in place of the old form of hammer check for preventing the hammer from coming all the way back to its rest rail after the string has been struck, and the key is still depressed, and the bridle for pulling the hammer back when the key is allowed to rise, we employ a combined check and bridle formed by the link 27 pivoted at its lower end to jack 21, and at its upper end to link 28 which is also pivoted to the hammer butt 26. The link 27 carries an adjustable button 29 which coöperates with the cushion 30 on jack 21 to form a check for said jack.

In operation when the piano key is depressed and the sticker and jack raised, the latter, engaging the nose 25 on hammer butt 26, throws the hammer forward. Before the hammer strikes the string 1, the jack is tripped out from under the hammer butt by let-off button 23, but the hammer continues its motion and strikes the string 1. The force of the rebound, and of the spring 18, throw the hammer back into the position shown in Fig. 2, where it is caught and held at mid-stroke by the combined action of the pivoted links 27 and 28 and jack 21 whose outward motion has been limited by check button 29 so that it is held against the outer face of the hammer butt. When the key is allowed to rise part way the jack slips quickly under nose 25, and is ready to drive the hammer back against the string upon a downward motion of the key. The limited play of hammer and jack thus secured render rapid vibration of both possible under perfect control of the key, which also needs to vibrate through a portion only of its full stroke to produce this repetition.

When the key is allowed to rise so that its inner end touches rest 6, the pivoted links 27 and 28 act as a bridle to positively pull the hammer back against rest rail 31.

In the modification shown in Fig. 3, the bent link 27^a and the short link 28^a take the places of links 27 and 28, and the spring 32 may also be used to facilitate the return movement of the jack and the bridle action of the links 27^a, 28^a. It is evident also that the link system coöperates with the jack to retract the hammer positively, because after the jack has been tripped from engagement with the hammer butt nose by the action of the let-off button 23, it continues to swing

under the action of said button, and this positive swinging of the jack, after it engages check button 29, positively pulls back the hammer and hastens its retraction until the jack wedges into contact with the hammer butt again, as shown in Fig. 2, and checks the further retraction of the hammer. The use of the spring 32, shown in Fig. 3, increases this hammer retracting action. This positive retraction of the hammer, and positive checking that retraction at half stroke combine to heighten the sharpness and rapidity of the repetition action.

The advantages of our invention comprise its cheapness and simplicity, rapidity of action, ease and delicacy of adjustment through buttons 23 and 29, and facility of application to standard piano actions.

Various other changes in details of construction could be made without departing from the essence of our invention, if the same principles of operation be retained.

Having, therefore, described our invention, we claim:

1. A piano action comprising the combination with a hammer and jack of a hammer check comprising a bent link pivoted to the hammer butt at its bent end, and a shorter link pivoted to the jack and to the other end of the bent link.

2. A piano action comprising the combination with a hammer and jack, of a long link pivoted to the hammer butt, and a short link pivoted to the jack, the other ends of said links being pivotally connected together.

3. A piano action comprising the combination with a hammer and jack, of a hammer check comprising a system of pivoted links connected to the jack and to the hammer butt.

4. A piano action comprising the combination with a hammer and jack, of a hammer check comprising a system of pivoted links connected to the jack and to the hammer butt, together with a spring normally forcing the link system away from the jack.

5. A piano action comprising the combination with a hammer and jack, of a hammer check comprising a system of pivoted links connected to the jack and to the hammer butt with an adjustable check button mounted on one of the links and adapted to cooperate with the jack.

6. A piano action comprising the combination with a hammer and jack of a hammer check comprising a system of pivoted links connected to the jack and to the hammer butt together with a spring normally forcing the link system away from the jack, and an adjustable check button for the jack mounted on one of the links.

7. A piano action comprising the combination with the usual hammer and jack of a system of pivoted links connected to the jack and hammer butt, a let-off button for the jack, and a projection on the jack cooperating therewith.

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Witnesses:

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