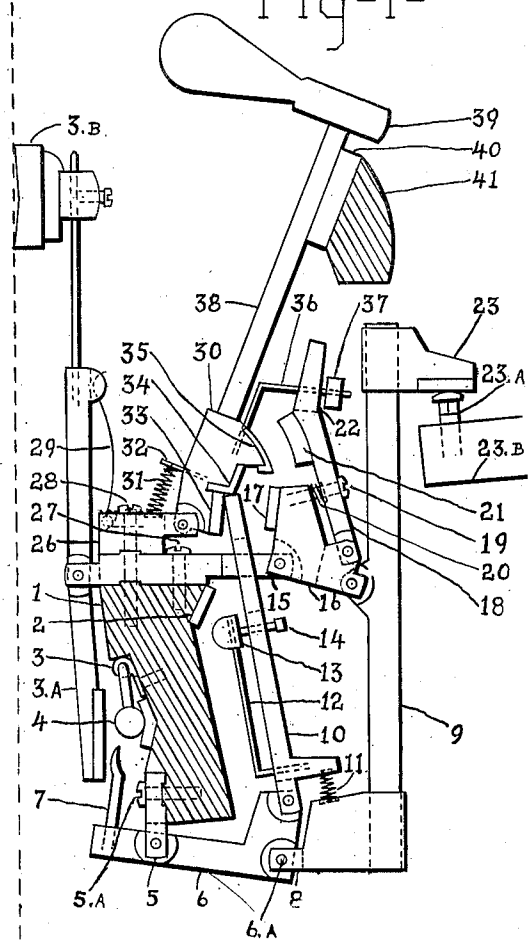
Feb. 17, 1942. A. N. PREVOST 2,273,789

UPRIGHT PIANO ACTION

Filed Aug. 3, 1939 3 Sheets-Sheet 1

Fig-1-



Inventor

Auxance N. Prevost

Feb. 17, 1942. A. N. PREVOST 2,273,789

UPRIGHT PIANO ACTION

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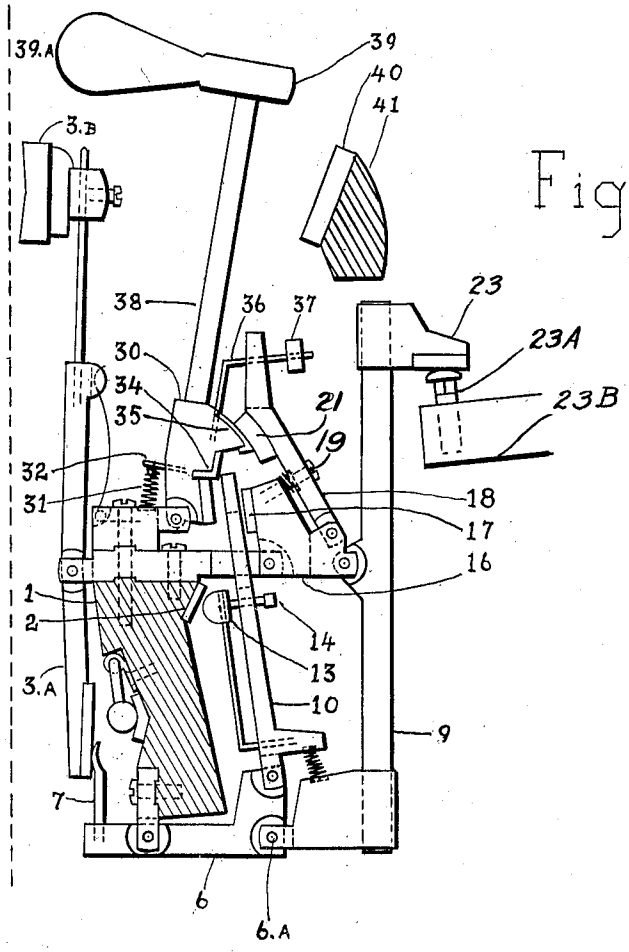


Fig-2-

Inventor

Auxance N. Prevost

Feb. 17, 1942. A. N. PREVOST 2,273,789

UPRIGHT PIANO ACTION

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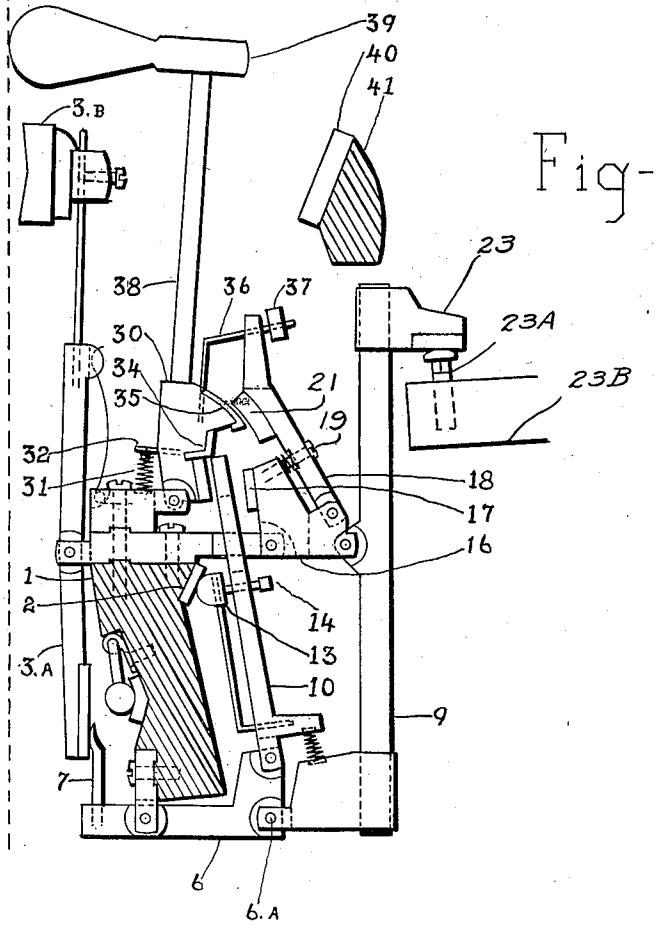


Fig-3-

Inventor

Auxance N. Prevost

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UPRIGHT PIANO ACTION

Auxance N. Prevost, Deep River, Conn.

Application August 3, 1939, Serial No. 288,065

17 Claims. (Cl. 84—240)

The invention relates to actions primarily intended for use in upright types of pianos and has for one of its objects the provision of an action in which the several elements thereof are so constructed and related that they are supported from a single action rail in substantially operative position so that assembly on the rail may be effected outside of the piano, if desired.

Another object is to provide a compact construction particularly adapted for use in so-called "miniature" types of pianos and which is such as to necessitate only a relatively short key movement to effect the necessary hammer movement.

Another object is to provide a construction for a piano such that one of the elements of the action which is moved by the wippen has at least a portion of its movement controlled by a means independent of the wippen.

A further object of the invention is to provide in a piano which includes a fly connecting the hammer and wippen and which slidably engages the action rail to effect disengagement of the hammer from control by the fly, a construction allowing of adjustment of the disengagement mechanism.

Other and further objects of the invention will be apparent from this specification to those skilled in the art.

In the accompanying drawings I have shown the now preferred embodiment of the invention, but it will be understood that the drawings are intended for illustrative purposes only and are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

In the drawings:

Fig. 1 is a side elevation, partly in section, showing an action incorporating the principles of the invention together with associated key mechanism and other related parts, the action being shown in its "at rest" position.

Fig. 2 shows the various parts of the mechanism in their relative positions after rebound of the hammer from the string.

Fig. 3 shows the parts in their relative positions at the instant when the hammer strikes the string.

While the principles of the invention are particularly adapted for incorporation in a piano construction such as shown in the drawings and described hereinafter, it is to be understood that they are susceptible of incorporation in constructions differing in detail from that disclosed.

Referring to the drawings and more particularly to Fig. 1 thereof, an action rail is shown at 1, the rail being mounted in the piano in any desired and known manner. A wippen hanger 5 is secured to the bottom of the rail by screw 5A and pivotally supports a wippen 6. A bracket 8 is pivotally mounted on the forward end of the wippen and the bracket carries an upward extending abstract 9.

Secured to the top of the action rail 1 by means of screws 27 and 28 are brackets 15 and 26, the forward and rearward ends of bracket 26 and the rearward end of bracket 15 being bifurcated. A hammer butt 30 carrying a shank 38 and hammer 39 is pivotally supported between the forward bifurcations of the bracket 26. A hammer rest rail of usual construction is indicated at 41, the hammer being biased to its "at rest" position against rail 41 by spring 31 positioned between the upper surface of bracket 26 and pin 32.

The abstract 9, in addition to being supported by the wippen 6 through the medium of bracket 8, is also movably connected to and supported by the forward end of bracket 15 by means of its connection with a link 16 which is pivoted to the end of bracket 15. An impact member 23 is secured on the abstract and is adapted to be engaged by a capstan screw 23A on the key. The impact member is preferably adjustable longitudinally of the abstract to permit the use of identically dimensioned action parts in pianos having differing relative positions of keyboard and action.

Means, such as a fly 10, are provided connecting the wippen and hammer butt whereby the movement of the former when the key is struck effects movement of the latter. In the illustrated construction the fly is pivoted to an upward projection on the forward end of the wippen, the pivotal axes of the connections of the abstract and fly to the wippen being nearly equidistant from the pivotal connection of the wippen and hanger 5. This relationship of dimensions results in vertical movement of the fly substantially equal to the vertical movement of the abstract, thus reducing capstan screw movement and consequently permitting the use of a keyboard of relatively shallow depth. A spring 11 biases the fly in a clockwise direction so that when the action is in its "at rest" position the fly is engaged beneath a shoulder 34 on the hammer butt. Means for causing clockwise movement of the fly to disengage it from the hammer butt at the proper time are provided. The now preferred means comprises a release member 13 mounted on a

spring wire 12 carried by the fly. An adjusting screw 14 serves to move the release member toward and away from the fly to effect adjustment of the disengaging means. Release member 13 is slidably engageable with a fixed part of the piano such as the action rail 1, a hard felt covering 2 for the surface being shown.

Control of the fly during at least a portion of its movement by the abstract is accomplished through the link 16. Clockwise movement of the fly after being disengaged from the hammer butt is limited by engagement of the fly with link 16, a suitably felt surface 17 thereon being provided to cushion the engagement.

Means are also provided which are mounted independently of the wippen for controlling the hammer during at least a portion of its movement. This means preferably takes the form of a back check 18 carried by link 16. The back check is pivotally mounted on the link for adjustment by means of screw 19 and has a felt cushion 21 thereon engageable with a buckskin catcher 38 on the hammer butt.

A bridal wire 36 is carried by the hammer butt and is provided with threads on the free end thereof allowing of adjustment of a hard felt nut 37. The bridal wire is received in a slot 22 in a projection on the back check and the felt nut 37 is engageable with the projection to assure the hammer being returned to its proper "at rest" position on the hammer rail.

A damper 3A of usual construction is pivotally supported on bracket 15 and is biased to damping position by spring 29. A spoon 7 projecting upward from the rearward end of the wippen moves the damper out of contact with the string when the key is struck. A damper hinge 3 and damper rod 4 of usual and known construction are suitably mounted on the action rail.

The operation of the construction will now be described. With the action in its "at rest" position, the striking of the key lifts the abstract 9 and forward end of the wippen 6. The spoon 7 carried by the wippen, moves the damper 3A free of the string and simultaneously the fly 10 is lifted, moving the hammer 39 counterclockwise toward the string by reason of the engagement of the upper end of the fly beneath the shoulder 34 on the hammer butt. As the fly moves upward the member 13 slides along the surface 2 on the action rail 1 and cams the fly out of engagement with the hammer butt at the desired instant depending upon the adjustment of the screw 14. As the movement of the parts of the action is relatively rapid, the fly is in effect "kicked" out of engagement with the hammer butt into engagement with the surface 17 on the link 16 whereupon its movement is controlled thereby. Due to its momentum, the hammer continues its counterclockwise movement until it strikes the string At this point the parts are in the relative positions shown in Fig. 3.

As the hammer rebounds from the string it engages with the back check 18 and its return movement to its "at rest" position on the hammer rail is controlled by the key through the abstract 9, link 16 and the back check. The relative positions of the parts at the moment the hammer engages the back check is shown in Fig. 2. Upon allowing the key to return to its "at rest" position, the parts return by gravity and under the biasing action of the various springs to the relative positions of Fig. 1.

It will be apparent from the foregoing description and the drawings that the action is such that the several parts thereof can, if desired, be assembled in substantially operative relation on the action rail before the latter is mounted in the piano.

Various changes and modification within the scope of the appended claims will be apparent to those skilled in the art.

I claim as my invention:

1. In a piano, an action rail and an action comprising a wippen, a hammer, a fly connecting the wippen and hammer, and an abstract movable to operate said wippen, the said elements of the action being interconnected for support in substantially operative relationship solely by the action rail.

2. In a piano, an action rail and an action comprising a wippen, a hammer, a fly connecting the wippen and hammer, a back check mounted independently of the wippen, and an abstract movable to operate said wippen, the said elements of the action being interconnected for support in substantially operative relationship solely by the action rail.

3. In a piano, an action rail and an action comprising a wippen, a hammer, a fly connecting the wippen and hammer, a back check mounted independently of the wippen, and an abstract movable to operate said wippen and back check, the said elements of the action being interconnected for support in substantially operative relationship solely by the action rail.

4. In a piano, an action, and an action rail carrying and being the sole support for said action, the action comprising a wippen, a hammer, a fly connecting the wippen and hammer, and an abstract secured to said wippen to impart movement thereto and movably related to and supported by said action rail at a point spaced from its point of securement to the wippen.

5. In a piano, an action, and an action rail carrying and being the sole support for said action, the action comprising a wippen, a hammer, a fly connecting the wippen and hammer, and an abstract pivotally secured to said wippen to impart movement thereto and pivotally related to and supported by said action rail at a point spaced from its point of securement to the wippen.

6. In a piano, a key, a wippen movable by the key, a hammer, and means mounted independently of the wippen and key but movable by the key for controlling movement of the hammer during at least a portion of its movement.

7. In a piano, a key, a wippen movable by the key, a hammer, and means mounted on a fixed part of the piano independently of the wippen and movable by the key for controlling movement of the hammer during at least a portion of its movement.

8. In a piano, a key, a wippen movable by the key, a hammer, and means pivotally mounted independently of the wippen and movable by the key for controlling movement of the hammer during at least a portion of its movement.

9. In a piano, a key, a whippen movable by the key, a hammer, and means including a back check mounted independently of the whippen and movable by the key for controlling movement of the hammer during at least a portion of its movement.

10. In a piano, a key, a wippen, a hammer, means connecting the wippen and hammer, means including an abstract connecting the key and wippen, and means mounted independently

of the wippen connected with the abstract and movable thereby for controlling movement of the hammer during at least a portion of its movement.

11. In a piano, a key, a wippen movable by the key, a hammer, means connecting the wippen and hammer whereby movement of the former causes movement of the latter, and means movable by the key for controlling movement of the first said means independently of the wippen during at least a portion of its movement.

12. In a piano, a key, a wippen movable by the key, a hammer, means connecting the wippen and hammer whereby movement of the former causes movement of the latter, and means mounted on a fixed part of the piano independently of the wippen and movable by the key for controlling movement of the first said means during at least a portion of its movement.

13. In a piano, a key, a wippen movable by the key, a hammer, means connecting the wippen and hammer whereby movement of the former causes movement of the latter, and means pivotally mounted independently of the wippen and movable by the key for controlling movement of the first said means during at least a portion of its movement.

14. In a piano, a key, a wippen, a hammer, means connecting the wippen and hammer, means including an abstract connecting the key and wippen, and means connected with the abstract and movable thereby for controlling movement of the said first named means independently of the wippen during at least a portion of its movement.

15. In a piano, a key, a wippen, a hammer, a fly connecting the wippen and hammer, means including an abstract connecting the key and wippen, and means connected with the abstract and movable thereby for controlling movement of the fly independently of the wippen during at least a portion of its movement.

16. In a piano including a rail, a hammer, a wippen and a fly connecting the hammer and wippen, the combination of cooperating means on the fly and rail having slidably engageable surfaces for disengaging the fly and hammer upon hammer actuating movement of the fly, one of said surfaces being adjustable relatively to the other for controlling the amount of movement of the fly prior to its disengagement from the hammer.

17. In a piano including a rail, a hammer, a wippen and a fly connecting the hammer and wippen, means on the fly slidingly engageable with a fixed surface on the rail to disengage the fly and hammer upon hammer actuating movement of the fly, said means being readily adjustable relatively to the said surface for controlling the amount of movement of the fly prior to its disengagement from the hammer.

AUXANCE N. PREVOST.