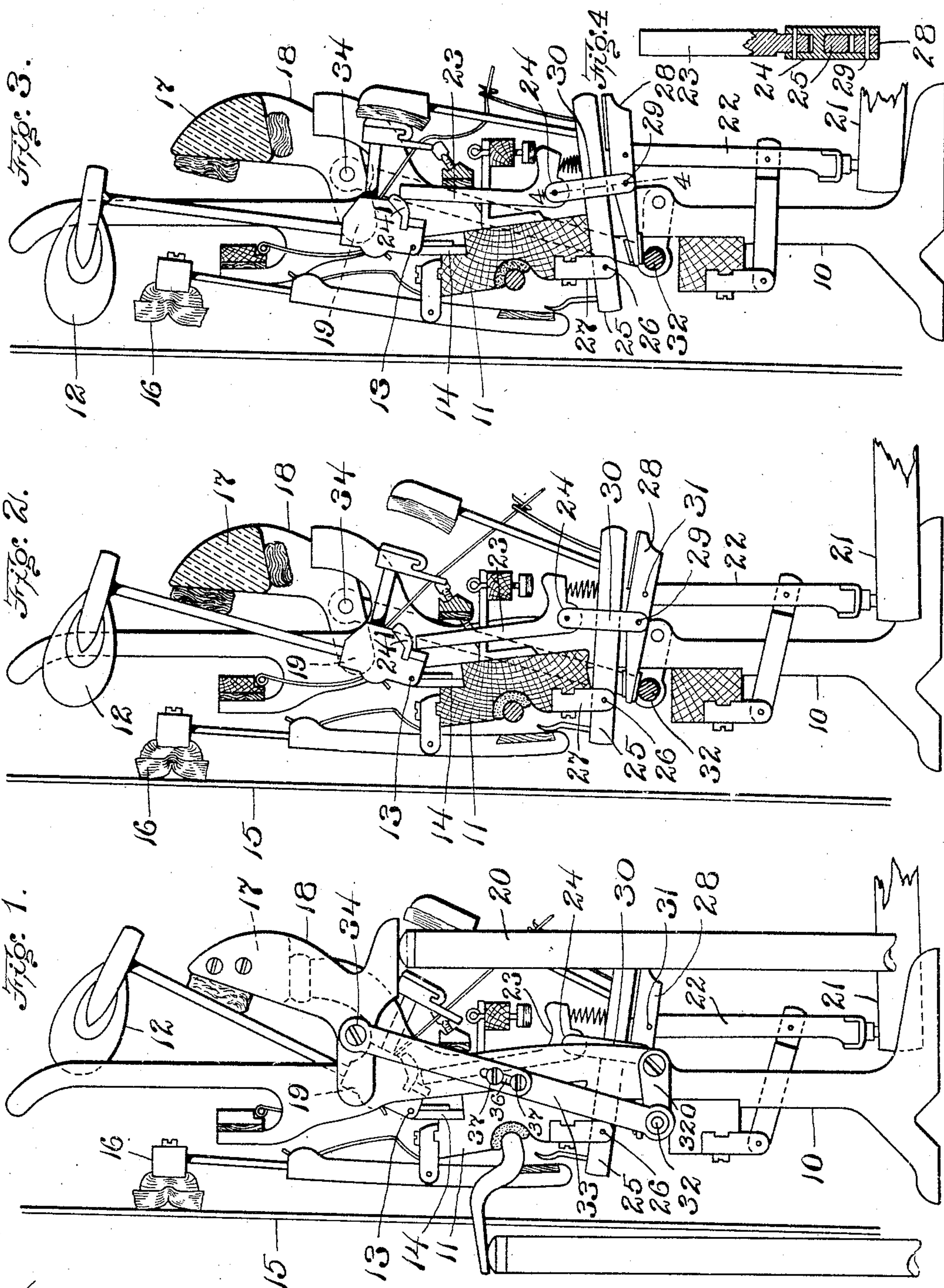


C. P. BLINN.

PIANISSIMO DEVICE.

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UNITED STATES PATENT OFFICE.

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PIANISSIMO DEVICE.

SPECIFICATION forming part of Letters Patent No. 786,186, dated March 28, 1905.

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To all whom it may concern:

Be it known that I, CHARLES P. BLINN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pianissimo De-

5 vices, of which the following is a specification. This invention relates to piano-actions in which the hammers which strike the wires or
10 on the keys when the "soft pedal" is depressed than when the said pedal is released and the action is in its normal condition. It is customary to so construct an action of this
15 class that when the soft pedal is depressed the hammers will be advanced toward the wires by the movable rail which supports them in their retracted positions, so that
20 when a hammer is caused to strike the corresponding string it will have a shorter movement and a less forcible impact than when the soft pedal is released. The jack which transmits the blow from the key to the hammer is commonly adapted to advance with
25 the hammers when the soft pedal is operated, so that the said jack and the corresponding hammer will always be in operative contact. Heretofore the organization has been such that the said movement of the jack with the
30 hammers causes a lost motion between said jack and the key which actuates it, and this lost motion must be taken up before the key can transmit motion to the hammer.

The object of this invention is to provide between the key and the jack an improved
35 connecting means for keeping the aforesaid mechanism in close contact with the hammers and at the same time preventing lost motion between the said key and jack when the soft pedal is depressed.

40 On the drawings, Figure 1 represents an end elevation of a piano-action embodying my invention, the action being shown in its normal condition or the condition which prevails when the soft pedal is released. Fig. 2
45 represents a vertical section showing the action as it appears when influenced by the soft pedal. Fig. 3 represents a vertical section showing the action as it appears when

a key is depressed. Fig. 4 represents a section on line 4 4 of Fig. 3. 50

The same reference characters indicate the same parts in all the figures.

The uprights of the action-frame are indicated at 10 10. To these uprights is secured the stationary main rail 11. The hammers 55 12 are pivoted at 13 to brackets 14, secured to the main rail 11. The strings or wires are indicated at 15 and the usual felt dampers at 16. The hammers when retracted bear against the usual movable hammer-rail 17, 60 which is affixed to arms 18, pivoted at 19 to the uprights 10. A portion of the soft-pedal rod or lifter 20 is shown as bearing on the under side of one of the arms 18. It is evident, then, that an upward movement of the lifter 65 20 will move the hammer-rail toward the strings, and consequently advance the hammers from the position shown in Fig. 1 to that shown in Fig. 2, thus decreasing the distance between the hammers and the strings. 70

The mechanism thus far described is well known and in general use. The keys 21 act as usual on extension 22, located over and bearing on the inner ends of the keys and constituting parts of the hammer-operating 75 mechanism. Each extension is raised by the depression of the corresponding key and imparts motion to the usual jack 23, which is detachably engaged with a hammer-butt 241.

My invention is embodied in the means, 80 hereinafter described, for connecting the key-operated extension 22 with the jack 23 and for maintaining the connection in practically the same condition when the hammers are moved partly forward by the soft pedal as 85 when they are in their normal position, so that in either case the hammers will respond with equal quickness to the movement of the keys and without lost motion. The jack 23 is pivoted, as at 24, to an ear 30, fixed to the 90 upper member 25 of the combined jack-lever, hereinafter described, said upper member being pivoted at 26 to an ear 27, affixed to the main rail 11. The combined jack-lever comprises upper and lower members 25 and 28, 95 respectively, the lower member forming the

connection between the upper member and the extension 22, the lower member being pivoted at 29 to an ear 30, carried by the upper member and being also pivoted at 31 to the extension 22. This construction permits a compensation for the change in position of the hammers by the operation of the soft pedal without causing a lost motion between the upper member and extension. As shown, the ear 30 embraces the upper member and is pivotally connected with both the jack and the lower member, thereby insuring a positive action between these parts. One end of the lower member 28 rests on a movable fulcrum-rod 32, located on the same side of the main rail as the ear 27, thus providing the fulcrum portions of the combined jack-lever on the same side of the main rail and in such position as will not prevent ready access to be had to the jacks and operating mechanism from the front of the piano. The rod 32 is mounted in the swinging ends of arms 320 and is connected by links 33 with the arms 18, supporting the hammer-rail or back-stop 17, said fulcrum-rod being therefore raised and lowered by the movements of said arms caused by the operation and release of the soft pedal. When the soft pedal is released and the hammer-rail 17 is at the backward extreme of its movement, as shown in Fig. 1, the portion of the upper member 25, carrying the ear 30, is depressed and bears on the corresponding end of the lower member 28, the jack 23 being correspondingly depressed, so that the jack conforms to the position of the hammer-butt. When the soft pedal is depressed, the elevation of the hammer-rail not only moves the hammers forward, as shown in Fig. 2, but also raises the fulcrum-rod 32, thus causing the lower member 28 to swing on the pivot 31 in the direction required to raise the upper member 25, with the ear 30 and with it the jack 23, the latter being thus caused to conform to the changed position of the hammer.

As heretofore stated, the ear or connection 30 not only is pivotally connected to the jack 23 and the lower member 28, forming a positive connection therebetween, but also embraces the upper member 25. This construction dispenses with the weakening effect of placing pivots within the upper member, the portion of the ear or connection embracing the upper member forming a support therefor, the result permitting of the use of a relatively narrow member, thereby strengthening and cheapening the structure. In addition to this, however, the fact that the jack, upper and lower members are connected by a single member, thereby providing a substantially unitary member, so far as a vertical movement is concerned, insures the formation of a "quick" action, there being no liability of a separating of the parts

should there be any "sticking" of the hammer or jack, as sometimes occurs, any downward movement of the extension carrying with it all the operating parts in an obvious manner.

It will be seen that in each of the adjustments shown in Figs. 1 and 2 the members 25 and 28 and the ears 24 and 30 constitute a connection between the extension 22 and the jack 23 which is free from lost motion, so that the hammer in either adjustment responds with equal quickness to a movement of the key. It will also be seen that the fulcrum-rod 32 coöperates with the lower member 28 in changing the position of the jack when the soft pedal is operated and released.

The links or hangers 33 are preferably adjustable in length, each being composed of two sections overlapping at their meeting ends. One of the sections has a slot 36, receiving clamping-screws 37, engaged with the other section. This adjustability of the length of the links enables the height of the fulcrum-rod 32 to be varied and the hammer-operating rod to be vertically adjusted, as circumstances may require.

It will be seen that the members 25 and 28 constitute members of a jointed connection between the jack and extension, the rigidity of said members and their pivotal or articulated connection with each other and with the jack 23 and extension 22 enabling them to transmit movement from the extension to the jack under different adjustments without lost motion.

I claim—

1. In a piano - action, the combination with a main rail, an adjustable hammer-rail, a hammer, a jack and an extension, of a jack-lever composed of two members superposed relatively to each other, a connection between the jack and lower member, said connection embracing the upper member and being pivotally connected with the jack and lower member whereby the pivot-points of said jack and lower member will be maintained at a fixed distance; one of said members being pivotally connected with the main rail, said jack and lower member having their movements in common, a movable fulcrum supporting one of the members of the jack-lever, and longitudinally-adjustable links or hangers connecting said fulcrum with the supports of the adjustable hammer-rail.

2. The combination with a main rail, a hammer, an extension, an adjustable hammer-rail, and a jack, of a combined jack-lever composed of two members, the upper member being pivotally connected to and at one side of the main rail of the action, a connecting link or ear pivotally connecting the jack and the lower member of the jack-lever whereby the distance between the pivots of

the jack and lower member is maintained
against change, said ear embracing the up-
per member, the lower member being piv-
otally connected to the extension, and a
5 movable fulcrum or support for the lower
member, said support being adjustably con-
nected to the hammer-rail.

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

CHARLES P. BLINN.

Witnesses:

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