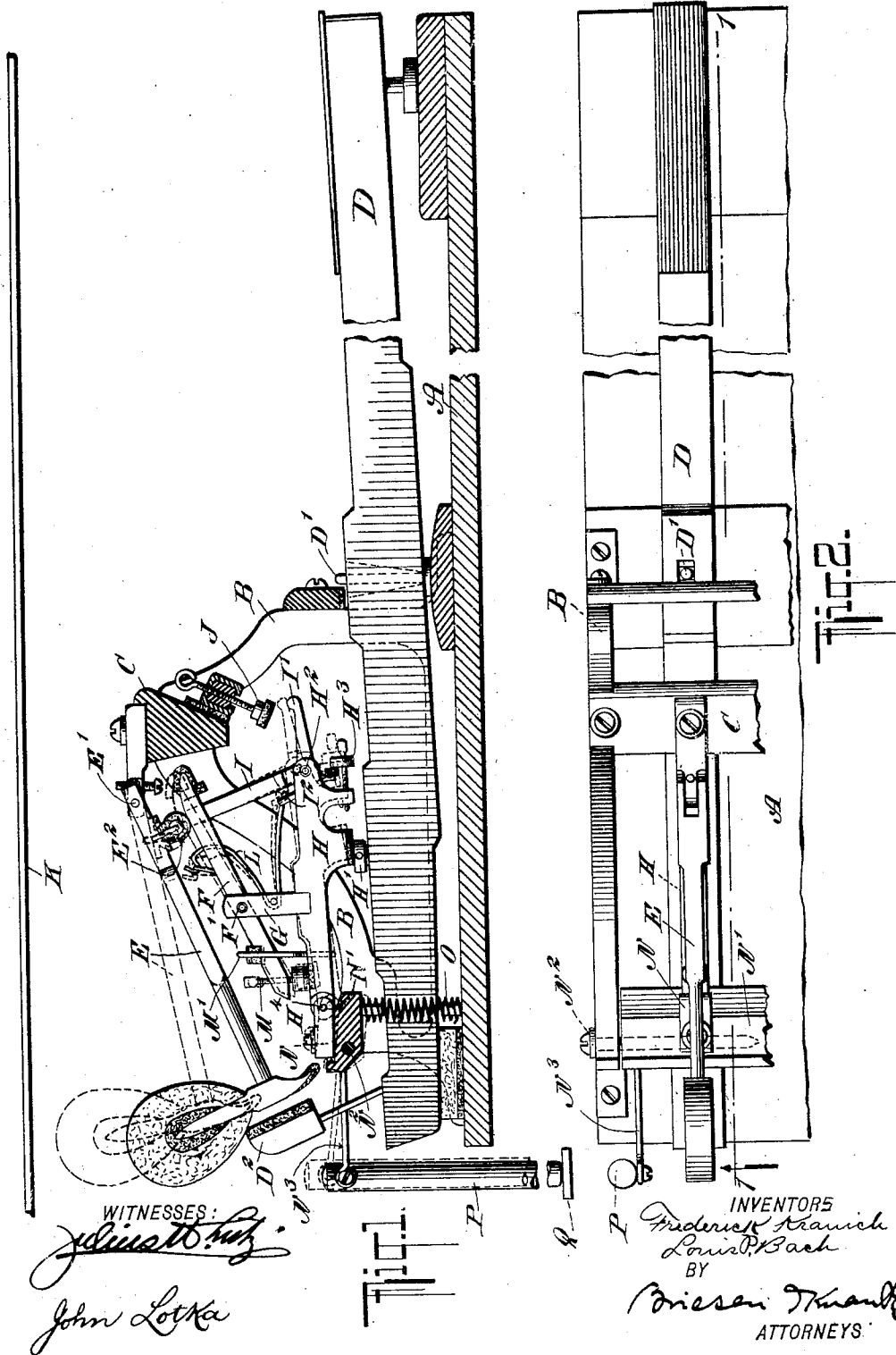


No. 859,232.

PATENTED JULY 9, 1907.

F. KRANICH & L. P. BACH.  
PIANO ACTION.

APPLICATION FILED NOV. 1, 1905.



# UNITED STATES PATENT OFFICE.

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## PIANO-ACTION.

No. 859,232.

Specification of Letters Patent.

Patented July 9, 1907.

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*To all whom it may concern:*

Be it known that we, FREDERICK KRANICH and LOUIS P. BACH, both citizens of the United States, and residents of the borough of Manhattan, 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 and particularly to devices for softening the sound, sometimes called pianissimo devices.

The object of our invention is to provide a construction in which the sound may be graduated very nicely, without employing a shifting key-board or any other construction in which the striking surface of the hammer varies according to the position of the soft pedal which controls the force of the striking action.

In the accompanying drawings, we have shown the application of our invention to a grand piano, the action being substantially the usual one, and to this usual action we have applied our tone-regulating improvement.

Figure 1 is a vertical section on line 1—1 of Fig. 2, and Fig. 2 is a top view of the parts shown in Fig. 1.

A designates the key frame, and B brackets which carry the hammer rail C.

D is one of the keys, fulcrumed at D', and carrying the back check D<sup>2</sup>.

E is one of the hammers, pivoted at E' and provided with a butt E<sup>2</sup>, which normally rests on the repetition lever F, fulcrumed at F' upon a post G. This post is carried by the wippen H engaged by the key at H'.

To the wippen is pivoted at H<sup>2</sup> the jack I, the upper end of which extends through the repetition lever F, and is adapted to engage the hammer butt E<sup>2</sup> during the first part of the key motion when the key is depressed. The lower end, I', of the jack I is adapted to engage the let-off screw or regulating button J, which causes the jack to be thrown away from the hammer butt, as the hammer approaches the string K. A spring L engages an arm I<sup>2</sup> of the jack lever I and normally forces the lower end of said arm against an adjustable stop H<sup>3</sup> carried by the wippen H. The spring L also tends to throw one end of the repetition lever F upward, the movement of such lever being limited by adjustable stops M and M'.

So far as above described, the piano action is substantially old. Instead of pivoting the wippen H upon a stationary fulcrum, as is usually done, I connect the wippen pivotally at H<sup>4</sup> with a support or flange N, rigidly secured to a transverse bar or stop N', which extends across the entire key-board and is fulcrumed at N<sup>2</sup> on the brackets B. One or more springs, such as O, are employed to normally throw the bar or stop N' and the flange N into the upper position shown in the drawings. With the said bar N' is rigidly connected

an operating arm N<sup>3</sup>, which is pivotally connected with a rod P, adapted to be operated in any suitable manner by the pedal Q.

The operation of the action proper, being the usual one, need not here be described in detail. It will be understood that with the parts in the position shown in Fig. 1, the hammer will have its full stroke and the loudest tone will therefore be produced. When it is desired to soften the sound, the pedal Q is operated to lift the rod P more or less, thereby swinging the bar N' on its pivot and raising those parts of the wippen which are forward of its supporting point H', this point forming practically a sliding fulcrum for the wippen during the movement of the bar N'; this adjustment, therefore, causes the hammer butt E<sup>2</sup> and the entire hammer to be raised, as indicated by dotted lines, so that the hammer is nearer to the strings and therefore will strike them with less force. At the same time, the swinging of the bar N' limits the movement of the key D and this again reduces the force applied to make the hammer strike the strings. It will be obvious from Fig. 1 that the throw or movement of the key levers D is limited more or less according to the amount of movement given to the cross bar N'.

Among the advantages of our invention we desire to point out is that the hammers always have the same striking surface and the entire device is relatively fixed as distinguished from arrangements in which the action is shifted to cause the hammers to strike only two of the three strings which correspond to one key. The action of the soft pedal may be graduated with great nicety and the adjustment of the action parts is more permanent than when a shift action is employed. The action of the soft pedal is very reliable and effective in view of the double adjustment performed by our invention, to wit, first, the adjustment of the hammer throw; second, the adjustment of the key throw.

We claim as our invention:

1. The combination of a piano key, a hammer, mechanism for operating the hammer by the movement of the key, a stationary support, and means movably mounted on said support and forming a fulcrum for a member of said mechanism, to vary the hammer's position of rest to a greater or smaller distance from its striking position according to the adjustment of said means, the latter being arranged in the path of the key to limit its movement.

2. The combination of a pivoted piano key, a hammer mechanism engaging the key at a distance from the pivot of said key, and arranged to operate the hammer by the movement of the key, and fixed means capable of being adjusted and adapted to engage the key at a point, a different distance from the fulcrum than the point where said key is engaged by the hammer mechanism, said fixed means being arranged to limit the movement of the key and being connected with the hammer mechanism to vary the hammer's position of rest to a greater or smaller distance from its striking position according to the adjustment of said means.

3. In a piano action, the combination of a key, a wippen adapted to be engaged by the key, a hammer arranged to be operated by the wippen, stationary brackets, and a device adjustably fixed on said brackets and connected with  
5 the wippen and adapted to limit the movement of the key and at the same time vary the hammer's position of rest to a greater or smaller distance from its striking position.  
4. In a piano action, the combination of a hammer, a key, a pivoted cross bar extending over the key, a wippen  
10 engaged by the key and pivotally connected with said cross bar, hammer operating devices carried by said

wippen, and means for swinging the cross bar to limit the throw of the key and at the same time adjust the wippen to vary the hammer's position of rest.

In testimony whereof we have signed this specification 15 in the presence of two subscribing witnesses.

FREDERICK KRANICH.  
LOUIS P. BACH.

Witnesses:

FREDERICK GREBE,  
OTTO J. RICHTER.