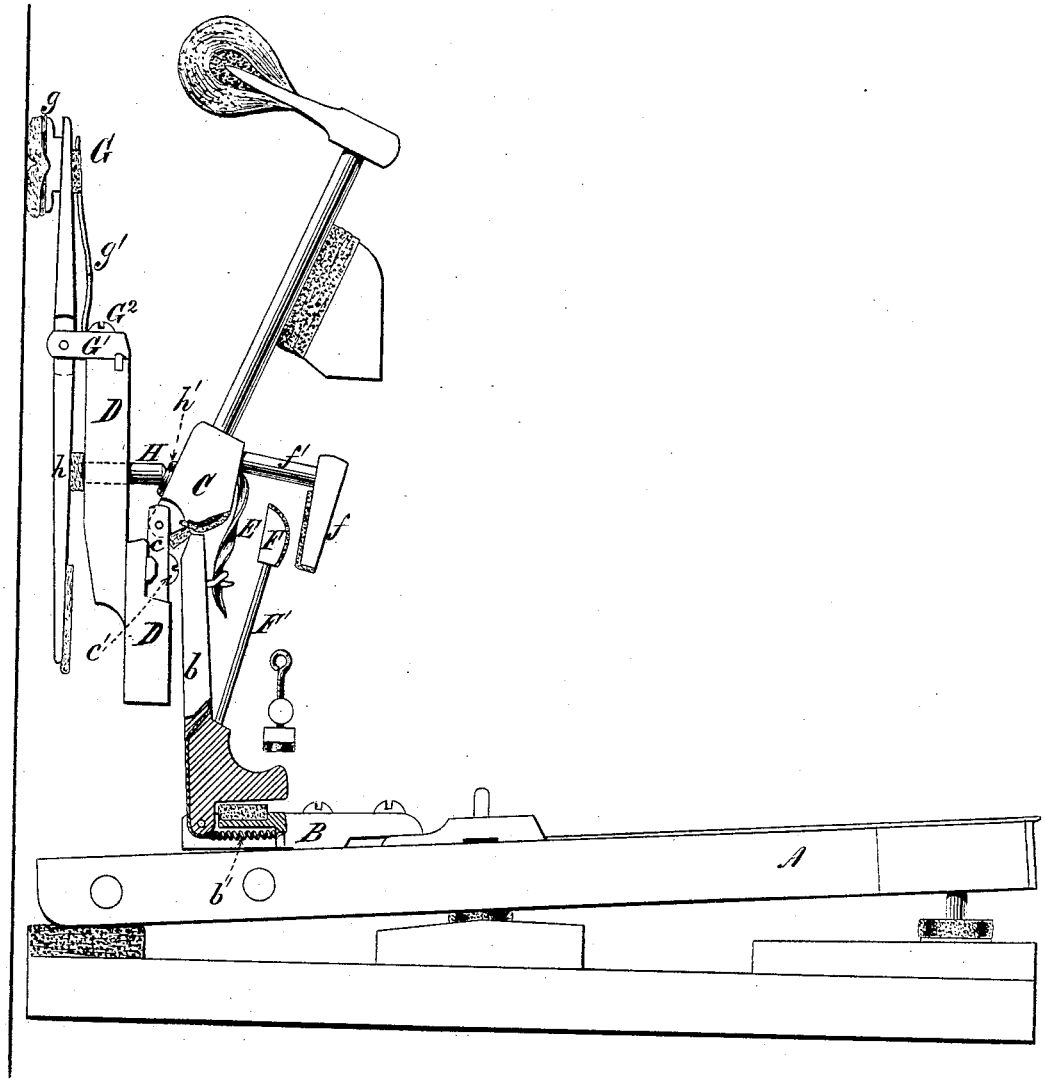
C. F. CHEW.

Upright-Pianoforte Action.

No. 207,946. Patented Sept. 10, 1878.



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IMPROVEMENT IN UPRIGHT PIANO-FORTE ACTIONS.

Specification forming part of Letters Patent No. **207,946**, dated September 10, 1878; application filed March 29, 1878.

To all whom it may concern:

Be it known that I, CHARLES F. CHEW, of Bridgeport, Connecticut, have invented certain Improvements in Upright Piano-Forte Actions, of which the following is a specification:

It is the object of my invention to simplify upright piano actions both in their organization and in their mode of operation. This I accomplish by reducing the number of parts of which such actions are composed, and by so combining the parts as to form a continuous train of mechanism, commencing with the key at one end and terminating with the damper-spring at the other end, the organization being such that when the key is depressed the force exerted by the damper-spring is transmitted through the entire train of mechanism to the key, and hence the damper-spring, in addition to its ordinary function of returning the damper to the string, also acts upon the hammer, and assists in restoring the entire mechanism to its normal position.

One of the features of my invention consists in arranging the damper upon the inner side of the butt-rail, opposite to the side upon which the hammer-butt is centered, as a result of which I am enabled to greatly diminish the vertical dimensions of the action, and thus adapt it for employment in small pianos, which it is desired shall have cases of as little height as possible.

The accompanying drawing represents a side elevation of an upright action embodying my improvement.

The train of mechanism composing my improved action consists of the usual key A, provided with the jack-lever B, to which is centered the jack *b*, the jack-lever and jack being shown partly in section for the purpose of exhibiting the spiral spring *b'*, which, when the key is raised, throws the jack forward into position to engage the butt C. The butt C is pivoted to the butt-flange *c*, which is affixed by the screw *c'* to the lower part of the front side of the butt-rail D.

The jack is connected with the hammer-butt by the flexible saddle E. I employ, in combination with the jack and hammer, an inside check composed of a padded head, F, affixed to the end of the stem F', inserted in the jack, and a padded arm, *f*, affixed by means of the stem *f'* to the hammer-butt. The padded head F is between the arm *f* and the hammer-butt, and thus engages the side of the arm *f* toward the hammer-butt.

My damper G is arranged upon the inner side of the butt-rail D, and is centered in the damper-flange G^1, secured by the screw G^2 to the top of the butt-rail D. The damper-head *g* is pressed against the string by the spring *g'*, secured to the butt-rail. The butt-rail is transversely perforated at a point immediately opposite the hammer-butt to admit the loose pin H, one end of which bears upon a pad, *h*, upon the side of the damper-lever, and the other end bears upon a pad, *h'*, affixed to the inner face of the hammer-butt.

When the key is depressed the jack throws the hammer against the string, and as the hammer-butt swings forward it pushes the loose pin H against the pad *h* on the lower portion of the damper, and thus rocks the damper-head back from the string. When pressure is removed from the key the spring *g'* rocks the damper in the opposite direction, thus pushing the pin H against the hammer-butt and throwing back the hammer. In its backward movement the hammer-butt pushes down the jack, and thus tends to raise the key to its normal position. By this mode of arrangement the several parts composing the action are brought into such connection that a force applied to either end of the train of mechanism is transmitted throughout all the parts of which it is composed, the touch of the key acting in one direction to make the hammer strike the string, and the damper-spring acting in the other direction to assist in returning all the parts to their normal positions.

It is an incidental advantage of my mode of arranging the damper that I am enabled to use a heavy damper-spring, which increases the effectiveness of the damper for employment on strings under great tension. At the same time I utilize the damper-spring, as I have described, to assist in effecting the retraction of the parts. It will, of course, be understood that if it be desired to elevate the action above the key the jack may be centered in the end of an arm pivoted to a transverse rail affixed to the frame, and may be operated

by means of a vertical rod of the desired length extending upward from the inner end of the key.

I claim as my invention in an upright piano action—

1. A jack suitably mounted upon a key and provided with the stem F′, carrying the padded head F and a hammer, the butt of which is provided with the laterally-projecting stem *f′*, carrying the padded arm *f*, in combination with the spring-damper G, arranged to operate substantially as described.

2. The hammer-butt C, centered in a butt-flange affixed to the lower portion of the front side of the butt-rail, and the pin H, loosely contained in a transverse hole in the butt-rail immediately opposite the hammer-butt, in combination with a damper, G, provided with the spring *g′*, and centered in a damper-flange affixed to the upper portion of the butt-rail, and projecting backwardly therefrom, arranged to operate substantially as described.

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Witnesses:

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