

C. F. T. STEINWAY.

Improvement in Piano-Actions.

No. 115,782.

Patented June 6, 1871.

Fig. 1.

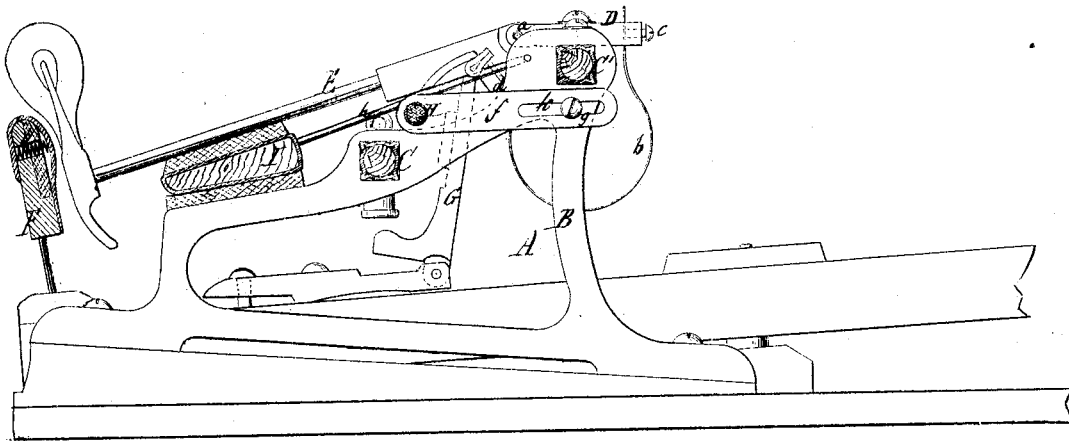
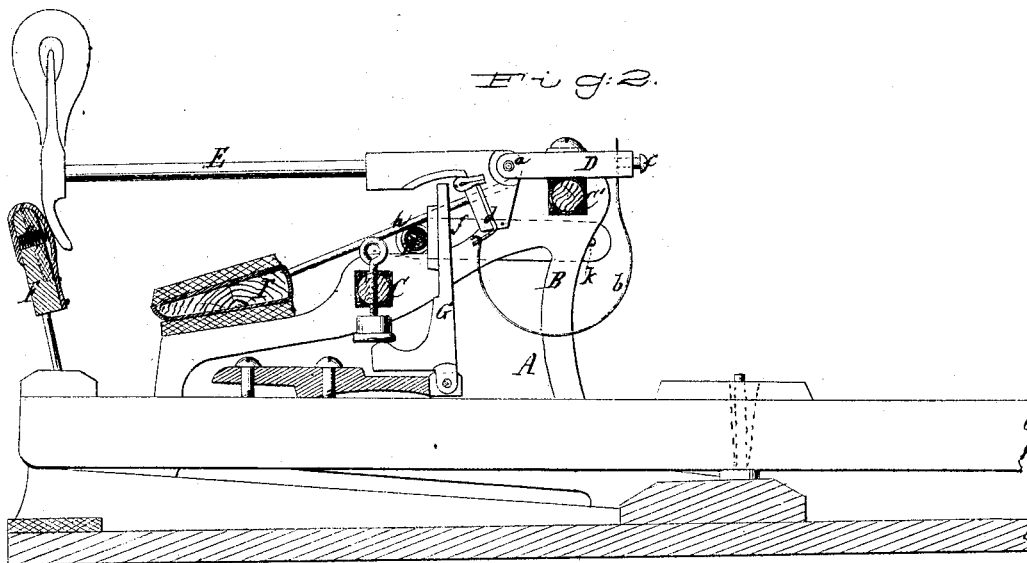


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN PIANO-ACTIONS.

Specification forming part of Letters Patent No. 115,782, dated June 6, 1871.

*To all whom it may concern:*

Be it known that I, C. F. THEODORE STEINWAY, of the city, county, and State of New York, have invented a new and useful Improvement in Piano-Forte Actions; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a sectional side elevation of this invention when the action is at rest. Fig. 2 is a similar view when the key is depressed.

Similar letters indicate corresponding parts.

This invention consists, first, in the arrangement of a balance-spring secured in the projection of the hammer-flange, and connected to the lower edge of the hammer-butt in such a manner that by the action of said spring the weight of the hammer bearing down upon the key can be balanced and reduced to a minimum, and comparatively little power is required to depress the key and to throw the hammer in contact with the string or strings. Second, in the arrangement of one or more springs in the cushion of the back-check in such a manner that the back-check is enabled to retain the hammer in all positions necessary for repeating. Third, in the arrangement of a soft pedal made of a metal tube filled with wood and connected to the action-frame by hooks in such a manner that said pedal requires no support throughout its entire length, and that by its action all the hammers can be raised as close to the strings as may be desirable. Fourth, in the arrangement of a check-bar for the hammer-jacks, said check-bar being made of a metal rod, protected by a tube filled with some soft substance, and secured to the action-frame by adjustable brackets in such a manner that by the soft substance the metal rod or tube is prevented from sounding, and that by said check the exact distance to which the jack is allowed to swing can be determined with the greatest nicety.

In the drawing, the letter A designates a metallic action-frame, composed of standards B and metallic tubular rails C C', filled with wood, as fully described in Letters Patent No. 81,306, granted to me August 18, 1868. On

the rail C' are secured the flanges D, which form the bearings for the pivots *a* of the hammer E. In each of the flanges D is secured a spring, B, one end of said spring being passed through a hole in the flange and clamped therein by the set-screw *c*, while the other end of the spring is hooked into a piece of leather, *d*, projecting from the butt of the hammer, so that by the force of said spring the weight of the hammer is counterbalanced and prevented from bearing down upon the shank of the key. By opening the set-screw *c* and shifting the end of the spring up or down in the flange D the action of the spring on the hammer can be increased or diminished and the spring can be adjusted, so that very little power is required to depress the key and to throw the hammer in contact with its string or strings. In the cushion of the back-check F I place one or more springs, *e*, of any desirable form or material, so that when the hammer falls back it is caught by the back-check and retained while the key falls back a certain distance, and by these means a repeating action is obtained of superior effect. When the hammer rises its tail depresses the spring *e*, and by the pressure of the spring the hammer is retained, allowing the key to fall and the jack to catch under the nose of the hammer-butt without permitting the hammer to drop. The throw of the jack G is regulated by a check-bar, H, which is by preference made of a metal tube, filled with lamp-wick or other suitable soft material to prevent it from sounding, and which has its bearings in brackets *f* secured to the standards of the action-frame by screws *g*. These screws pass through stocks *h* in the brackets, so that the check-bar H can be adjusted toward and from the jack. If desired the check-bar may also be made of a solid metal rod, covered with felt or other suitable material. This check-bar prevents the jack from swinging back any further than desirable, and it serves to retain said jack always in such a position that it is ready to catch under the nose of the hammer-butt at a very slight motion of the key. With the metallic action-frame A is combined a soft pedal, I, which consists of a metal tube filled with wood, and protected on its upper and lower surfaces by soft pads, of felt or other suitable material. The metal tube I rests on the standards B of the action-frame,

and it connects with said standards by hooks *h* catching in holes in said standards, so that said tube can be turned up or down on said hooks. By using a metal tube filled with wood for the soft pedal a device is obtained which combines strength with lightness, so that no support is required between the standards B and that all the hammers which rest on said pedal can be raised simultaneously as close to the strings as may be desirable. The holes which receive the hooks *h* are made as nearly as practicable in line with the fulcrums of the hammers, so that in raising or lowering the soft pedal the sliding motion of the hammer-shanks on said pedal is reduced to a minimum. By means of this soft pedal the player is enabled to produce the softest piano, and, if desired, this device may be combined with an ordinary sliding stop, whereby the hammers are caused to strike only one or two of their strings, as the case may be, and the most effective modulation can be thrown into the play.

What I claim as new, and desire to secure by Letters Patent, is—

1. The adjustable balance-spring *b*, arranged with relation to the hammer E and the fixed

flanges D, as herein set forth and shown, for the purpose specified.

2. The arrangement of one or more springs in the cushion of the back-check F, substantially as set forth.

3. The metallic check-bar H, in combination with the jacks G of a piano-forte action, substantially as and for the purpose described.

4. The arrangement of adjustable supports or brackets *f*, forming the connection between the metallic check-bar and the standards of the action-frame, substantially as described.

5. The arrangement of a filling of lamp-wick or other soft material in the metallic tubular check-bar H, substantially as set forth.

6. The soft pedal I, constructed of a metal tube filled with wood, and connected to the standards B by hooks *h*, substantially as shown and described.

This specification signed by me this 24th day of March, 1871.

O. F. TH. STEINWAY.

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.