H. STEINWAY, Jr.

PIANOFORTE ACTION.

No. 32,386. Patented May 21, 1861.

Fig. 1.

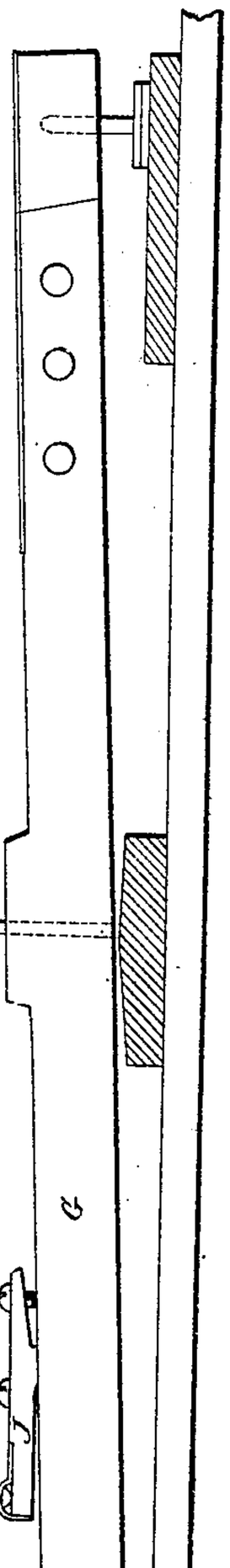
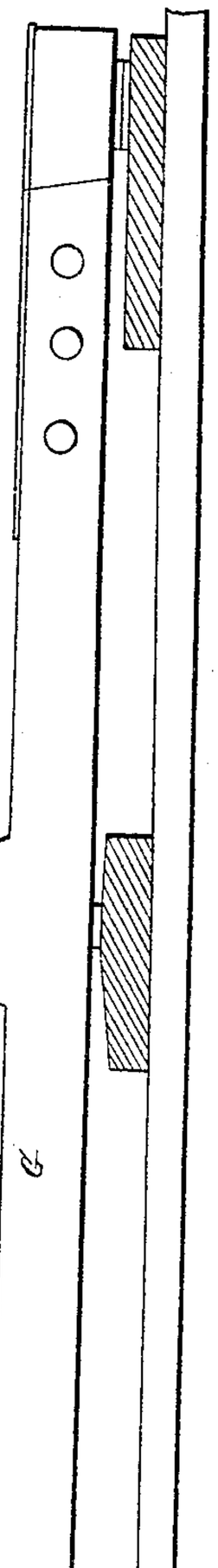


Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY STEINWAY, JR., OF NEW YORK, N. Y.

PIANOFORTE-ACTION.

Specification of Letters Patent No. 32,386, dated May 21, 1861.

To all whom it may concern:

Be it known that I, HENRY STEINWAY, Junr., of the city, county, and State of New York, have invented a new and useful Improvement in Pianoforte-Actions; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a side view of an action constructed according to my invention, representing it at rest. Fig. 2, is a similar view exhibiting it with the key depressed.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in a novel mode of applying the repeating lever in connection with the jack and in combination with the hammer-butt and key, whereby the escape of the jack is effected with an exceedingly small amount of friction and facility is afforded for a very quick and very easy repetition of the blow of the hammer.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, is the hammer pivoted by a pin *a*, to the flanch B, which is secured firmly to the fixed rail C. The hammer is constructed and arranged like the hammer of what is known in this country as the French action except that the under portion of its butt *b*, has no notch provided in it for the reason that a separate stop is provided for the jack in the repeating lever, as will be presently described.

D, is the jack-bottom, which instead of being made straight and rigidly attached to the key, is made with an elbow and pivoted near the angle of said elbow, by a pin *c*, to a flanch E, that is secured rigidly to a fixed rail F. The front and lower end of this jack-bottom rests upon a block J, secured to the key G, and its rear and upper end occupies a suitable position to constitute the hammer rest.

H, is the jack, pivoted to the bottom D, near the front and lower end thereof by a pin *d*. This jack is made with an inclined protuberance *e*, in front, to be acted upon by the regulating screw *f*, to produce its escape from under the hammer-butt, and it has the spring *g*, to throw it under the hammer-butt, applied at its connection with the bottom D. The regulating screw *f*, screws through the hammer rail C.

I, is the repeating lever pivoted to the upper part of the jack-bottom by a pin *h*. This lever inclines upward from the pin *h*, and extends forward beyond the front of the hammer-butt, that it may come in contact with a regulating screw *i*, screwing through the flanch B; and it is slotted as shown at *j*, in Figs. 1, and 2, which represent it partly in section, that the jack may pass through it, the upper part of the jack being made thinner for the purpose. The ends of this slot *j* are cushioned with leather or felt and the front end serves as a stop to the jack when the action is at rest, as shown in Fig. 1, and hence supplies the place of the notch in the hammer-butt in the so called French action. The parts of the said lever on each side of the slot *j* are rounded as shown in both figures of the drawing to constitute an easy working bearing for the hammer-butt. The repeating lever is held up against the hammer-butt by a spring *k*, secured to the jack-bottom.

l, is a wire secured rigidly into the jack-bottom and extending upward through the repeating lever, having its upper part screwed to receive two buttons *m*, *n*, one above and the other below the lever, the upper button *m*, serving to limit the upward movement of the lever under the influence of the spring *k*, and the lower one *n*, serving to prevent the lever from being driven down upon the shoulders *p*, at the bottom of the thinner upper portion of the jack.

To provide for raising and lowering the jack, the block J, before described, on the key, is made adjustable by the two screws *q*, *r*, which secure it to the key, in the same manner as the adjustment of the jack-bottom is provided for when that is secured to the key. The key G, has the back-check K, applied in the usual manner. When the key is at rest as shown in Fig. 1, the repeating lever I, is held by the spring *k*, in contact with the button *m*, which allows it just to touch the hammer-butt; and the jack is held by its spring *g*, under the butt, and in contact with the front end of the slot of the repeating lever. When the front end of the key is struck in playing, the block J, by its action on the jack-bottom D, raises the front and lower end of the latter and throws back the upper and rear end thereof. The up-

ward movement of the front end of the jack-bottom presses up the jack against the hammer-butt and so throws up the hammer, the spring *k*, in the meantime causing the repeating lever to follow the hammer-butt in its upward movement, while the backward movement of the rear end of the jack-bottom, gradually draws back the said lever which by the action of the front end of its slot *j*, against the jack draws the latter so nearly from under the hammer-butt that a mere touch of the jack regulating screw *f*, on the face *e*, is sufficient to effect the escape. The regulating screw *i*, is so adjusted that the repeating lever comes in contact with it and has its upward and backward movement arrested, before it can have drawn the jack entirely from under the hammer-butt, that the escape may always be effected by the regulating screw *f*, which is so set that it will not commence to act upon the jack till the repeating lever is arrested.

Fig. 2 shows in black outline the condition of the parts after the jack has escaped and the hammer has struck the string and fallen upon the back-check, the playing end of the key being still depressed. The force of the recoil of the hammer acting, through its butt, upon the repeating lever has overcome the spring *k*, and depressed the latter away from its regulating screw *i;* but by permitting the playing end of the key to rise, sufficiently to liberate the hammer from the back-check, the spring *k*, is permitted to throw up the repeating lever to the screw *i*, and the said lever is thus caused to raise the hammer to a position near the string as represented in Fig. 2 in red outline, and so to permit the jack to fall partly under the hammer-butt, so that a very slight further rise of the playing end of the key will enable the jack to pass under as far as is necessary to enable the blow to be repeated. When the playing is very light the hammer instead of falling to the back-check is arrested by the repeating lever in the position shown in red outline in Fig. 1.

In this action, by reason of the jack being drawn almost entirely from under the hammer-butt, by the gradual operation of the repeating lever upon it, and being caused to escape by a mere touch of the regulating screw *f*, instead of being suddenly and violently torn from under the butt, by the operation of such screw, as in most other piano-forte actions, the escape is so light and delicate as to be scarcely perceptible to the touch and this peculiarity combined with the certain manner in which the jack is returned under the hammer-butt, by a slight rise of the playing end of the key, gives the action very great advantages as a repeating action.

What I claim as my invention and desire to secure by Letters Patent; is—

1. The arrangement of the repeating lever and the jack in connection with a jack-bottom D, detached from the key, and in combination with the hammer-butt, whereby as the jack is raised by the key in playing the said lever is caused to gradually draw it toward the position for escape, substantially as herein specified.

2. In combination with the repeating lever arranged in connection with the jack and in combination with the hammer as described, I claim the regulating screw *i*, arranged in the hammer flanch B, substantially as and for the purpose herein specified.

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