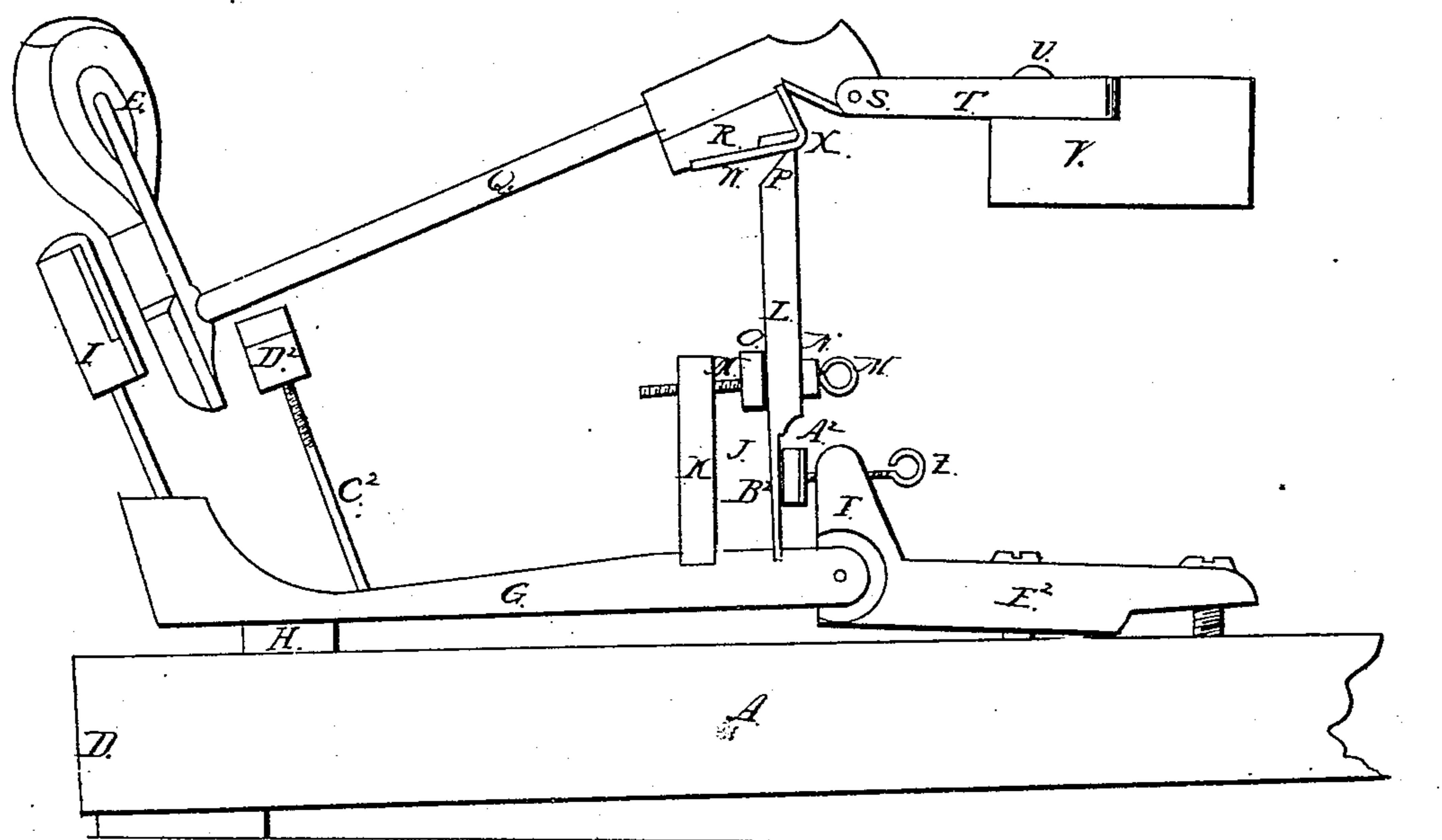
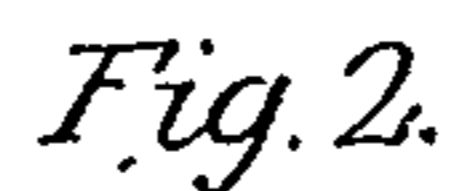


Patented Mar. 30, 1869.



Inventor:

D. A. Sherley



DANIEL H. SHIRLEY, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 88,522, dated March 30, 1869.

PIANO-FORTE ACTION.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that I, DANIEL H. SHIRLEY, of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in "Piano-Forte Actions;" and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements in piano-forte actions, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention relates more particularly to the piano-forte action embraced in Letters Patent granted to me on the 28th day of November, A. D. 1854, and reissued the 21st day of October, A. D. 1856.

And under this invention, the arms and lifting-block referred to in the aforesaid Letters Patent as arranged and disposed between the arm hinged to key-lever and carrying back-catch, and the hammer-stem or arm, are dispensed with; and in lieu thereof, to the said back-catch arm is rigidly fixed an upright frame, by and through which the connection of the key-lever with the hammer-stem is formed, the said frame being constructed in a novel and peculiar manner, for adjustment or regulation.

And in addition to the above, under this invention, the hammer-stem or arm, by a properly-constructed but, disposed between the hammer-head and fulcrum-point of its stem or arm, is arranged to bear directly upon the said upright frame, rigidly secured to the arm-carrying back-catch, for operation as and in a manner to be hereinafter particularly described.

Also, under this invention, the said back-catch arm is provided with an adjustable cushion near its rear end, between the back-catch and the fulcrum-point of the arm, as and for a purpose to be hereinafter explained.

In the accompanying plate of drawings, the improvements in piano-forte actions herein above recited, as well as others, which, in connection with them, will be hereinafter explained in detail, are shown the two figures marked 1 and 2, being side elevations of the same, but with the back-catch arm in the latter figure shown as provided with an arm similar to that employed with the jack in the well-known "French" and "Pleyel actions," so called, for regulating the height of such jack from the key-lever.

A, in the drawings, represents a key-lever, similar to any employed in piano-fortes, and

B, its fulcrum-pin.

C, the end of the key-lever A at which the finger is applied, and

D, the end on which is arranged and fixed the mechanical parts for causing the hammer-head E of the action to strike a string or other proper sound-produc-

ing device, when the finger-end of the said key-lever is depressed.

The mechanical parts above referred to for actuating the hammer-head E are as follows:

F, a post fixed in the key-lever, and G, an arm, pivoted to the rear side of said post F, and extending therefrom toward the rear end of the key-lever, resting on a cushion, H, thereof when the key is at rest.

I, back-catch, fixed in rear end of said arm G, and

J, upright frame, consisting of a post, K, and flexible fly-bar or strip L, fixed in the upper side of arm G, at its end, near to the key-lever post F.

M, a screw-rod, passing from front side of fly L loosely, through the same, to the post K, into which it screws.

N and O, nuts on said rod, the one on the outside, and the other on the inside of fly L.

This fly L extends upward, and has its upper end P bevelled off upon its rear side.

On the upper end to the fly I rests the stem or arm Q of the hammer-head E, through a but-piece, R, suitably covered with leather or cloth, to prevent noise, &c.

This but-piece is applied to the hammer-stem or arm Q, near the fulcrum-point S of the said arm, in the flange T, secured by a screw, U, to a rail, V, and it is constructed with its under side, W, flat, and a slightly rounded corner at its front end X, for the said fly to pass off therefrom in the operation of the action.

With the relative arrangement and construction of parts above described, when the key-lever is depressed at its finger-end, the hammer is thrown up, and thus impelled against the string or other sound-producing device in connection with which it is used, when the fly to the upright-frame J, escaping from the but R, the hammer falls, and is caught by the back-catch, which prevents it from rebounding, and is made ready for another blow upon the string, &c., when the finger is relieved from the key, which affords an opportunity for the said fly to pass into position therefor, under the but of the hammer-stem or arm.

By the screw-rod M, with its two nuts, N and O, the position of the fly under the hammer-stem but, and its escape therefrom at the proper time, in the operation of the parts composing the present improved action, can be regulated and adjusted, as is obvious.

In connection with the operation of the action, as above described, it may be well to here observe that as the rear end of the key-lever moves upward by the depression of its finger-end, it is obvious that the back-catch arm and frame move, up with it, raising the hammer-head, and impelling it against the string, when the fly, passing from the but over its corner X, the back-catch is thus lifted and brought into position for catching the hammer-head as it falls.

It will thus be seen, that in the operation of the parts composing the action, as the fly of the jack is passing along under the hammer-but toward its corner or end X, to escape, the hammer-but is swinging toward it

which is in a contrary direction to the motion or swing of an under-hammer, so called, of a piano-forte action in reference to the movement of the fly, whereby, as is obvious, the greatest amount of power is enabled to be produced by the action.

And in addition to the advantage above named, as secured by my action, there are others, among which may be here mentioned as the most important and prominent, that a perfect "repeat" of a note can be secured, and that also the action is the lightest when the key is first struck, as the leverage on the hammer is then the longest, and continues to shorten as the key goes down, from the fact that the motion of the fly is toward the fulcrum-point of the hammer-but.

In the construction of an action according to the improvements above described, it is best to have the surface of the but, over which the fly to the action travels, as near on a line drawn between the fulcrum of the hammer-stem and the centre of the stem where it enters the hammer-head as possible, as by such means a "lumpy" feeling is prevented, and a freer and easier movement secured.

Z, a screw-rod, screwing through upper end of key-post F; and

A², a washer on said rod Z, in position to bear against the thin part B² of fly L.

By means of this screw, if properly adjusted, the fly can be facilitated in taking its position under the hammer-stem but, after its escape therefrom.

G², a stem, fixed in back-catch arm, near its rear end; and

D², a cushion, screwed on the upper end of same, and in a position under the hammer-stem. This cushion is provided for the hammer-stem in case the back-catch should fail to act upon the hammer-head.

In fig. 2, my improved action is shown as provided with an arm, marked E², similar to that of the jack in a "French" and "Pleyel action," for the purpose of

raising and lowering the fly upon the key-lever by changing the height of its fulcrum-point thereon.

The use of the arm E², however, constitutes no part of this invention, but in the manufacture of the action, it is deemed best to employ it.

By the thin part B² to fly L, the fly is rendered flexible, so that its upper end can be moved under the but R, by the turning of the screw M, which acts thereon through its nuts N and O, the one in the one direction, and the other in the other direction.

Having thus described my improvements, I shall state my claims, as follows:

What I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. The back-catch arm G, hinged to key-lever, and provided with an upright frame, J, consisting of post K and fly L, with adjusting-screws M, substantially as described, for the purpose specified.

2. An arm, hinged to key-lever, and carrying back-catch, and an upright frame, J, or its equivalent, in combination with a hammer-stem, having but R, or its equivalent, when all arranged together for operation, in a manner substantially as described, and for the purpose specified.

3. The screw-rod Z, with washer or head A², in combination with the fly L of upright frame J, substantially as described.

4. The screw M, with washers N and O, in combination with the fly L, or its equivalent, substantially as and for the purpose specified.

5. The cushion D², or its equivalent, applied to the back-catch arm, whether arranged for adjustment thereon or not, substantially as and for the purpose described.

D. H. SHIRLEY.

Witnesses:

ALBERT W. BROWN,
ALONZO WARNER.