

F. FRICKINGER.
UPRIGHT PIANO-ACTION.

No. 172,620.

Patented Jan. 25, 1876.

Fig: 1

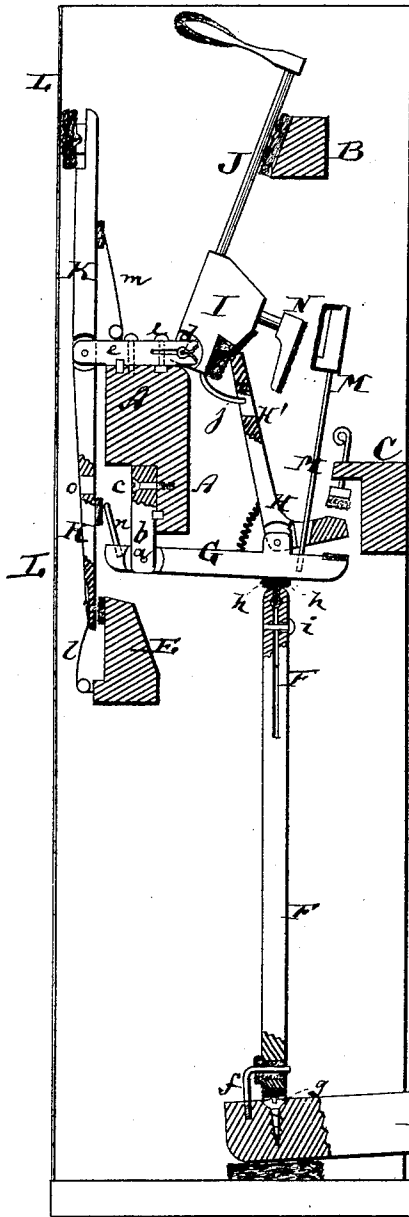
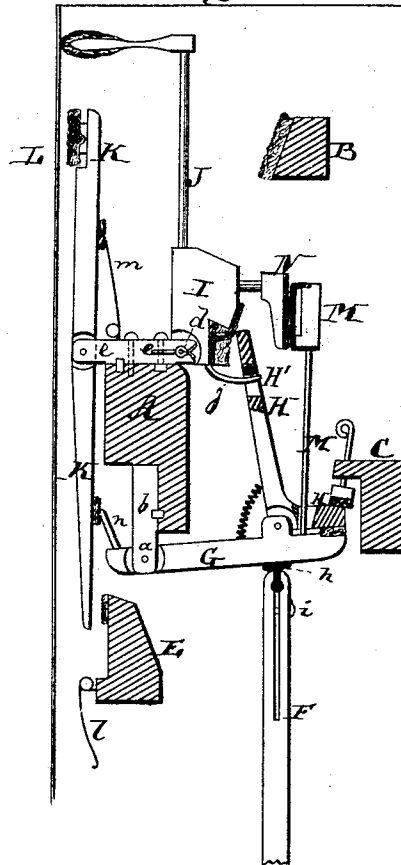


Fig: 2



Witnesses:

A. Moraga.
D. Schneider.

Inventor:

F. Frickinger
by his attorney
A. Briesan

UNITED STATES PATENT OFFICE.

FRIEDRICK FRICKINGER, OF WEST NASSAU, NEW YORK.

IMPROVEMENT IN UPRIGHT-PIANO ACTIONS.

Specification forming part of Letters Patent No. **172,620**, dated January 25, 1876; application filed November 15, 1875.

To all whom it may concern:

Be it known that I, FRIEDRICK FRICKINGER, of West Nassau, Rensselaer county, in the State of New York, have invented a new and Improved Action for Upright Piano-Fortes, of which the following is a specification:

Figure 1 is a side view, partly in section, of my improved piano-action. Fig. 2 is a similar view of the upper part of the same, showing the parts in a different position.

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

This invention has for its object to simplify the construction of upright-piano-forte actions, and at the same time to increase the durability and augment the adjustability of the same.

The invention consists of the various features of improvement hereinafter more fully pointed out.

The letter A in the drawing represents the hammer-rail, B the hammer-rest, and C the inner rail or fly-stop of an upright-piano-forte action, these parts constituting virtually the stationary frame of the action. D is one of the finger-keys of the action, arranged on the instrument in the ordinary or suitable manner. E is the damper-bar, adjustable in suitable or ordinary manner. F is the lifter, which connects the inner end of the key D with the jack or fly-lever G, said jack or fly-lever being at *a* pivoted to an arm, *b*, that is attached by a screw, *c*, to the face of the hammer-rail. H is the fly, made L-shaped, and pivoted at its angle to the fly-lever G. I is the hammer butt or shank, pivoted at *d* to the hinge-piece *e*, which is fastened upon the hammer-rail A. J is the hammer. K is the damper, pivoted to the hinge-piece *e*, and L is the cord or string to be struck by the hammer and damper. M is the back-jack projecting from the fly-lever G, and N the jack-catch on the hammer-butt. The first feature of my improvement consists in connecting the lower end of the lifter F directly to the key D by means of a hook, *f*, which is rigidly secured in the key, and extends with its horizontal arm through a cushioned aperture in the lower part of the lifter, as is clearly shown in Fig. 1. By this connection I am able to dispose

of the system of jointed levers which are now usually employed to connect the lower part of the lifter to a lower rail of the frame.

The second feature of the invention consists in placing a screw, *g*, into the key D, directly below the end of the lifter F, so that said lifter virtually stands on the said screw *g*, as in Fig. 1. I am, by this arrangement, enabled to regulate the distance between the key and fly-lever as occasion may require.

The third feature of my invention has reference to the mode of connecting the upper end of the lifter F with the fly-lever G. I have found that an ordinary pivot-connection between these parts is very objectionable, owing to the peculiar vibratory movement imparted to them, and that flexible joint is here necessary. This joint or connection I form from a piece, *h*, of leather, which has its ends glued or otherwise fastened to the under side of the lever G, while its middle portion is doubled and inserted into a slit of the lifter F. This slit is contracted upon the leather by a screw, *i*. That part of the slit which receives the lower end of the doubled leather is enlarged, so that the leather will be formed into an enlarged head, as shown.

I am aware that a leather packing for pivot-pins has already been used in piano-actions; for instance, as illustrated on the inner end of the hinge-piece *e*, around the hammer-pivot *d*. But as an independent connecting-joint, the leather, formed as described, and fastened with its ends to the lever G, has, as far as I am informed, never before been used.

My invention consists, fourthly, in a new manner of joining the fly H to the hammer-butt I. Heretofore a spring has been usually applied to the hammer-butt to draw the hammer off the cord after it had struck the same. But I simply attach a hook, *j*, to the back of the butt I, and cause it to pass through an aperture, *H'*, in the fly H, as shown. The fly will, in throwing the hammer against the cord, be entirely free to act, and will not come in contact with the hook *j*; but when the fly is drawn down by the lifter and lever *g* it will, by means of the hook *j*, also take hold of the hammer, as in Fig. 2, and draw it off the cord.

This arrangement is positive, reliable, and simpler of construction than the spring arrangement heretofore devised.

The aperture H', through the fly H, is of such form and in such position that its upper end will come in contact with the hook *j* as soon as the inner end of the key D and the free end of the lever G commence to descend, so that the fly will draw the hammer bodily off the string. I thus attain an absolute control over the backward motion of the hammer, and am enabled to repeat with great rapidity and exactness. Heretofore the hammers were thrown off the strings either by means of springs or by their own weight, but not, to my knowledge, were they ever drawn bodily off the string by the fly. I am aware that a curved guide, similar to my hook *j*, is shown in the Patent No. 140,428, of July 1, 1873, but the relative position of said pin to the aperture of the fly is not such that the fly in descending will draw the hammer back by means of said guide.

My invention consists furthermore in applying a second damper-spring, *l*, to the damper-bar E, so that it may be caused to bear against the lower part of the damper, as in Fig. 1, or thrown off the damper, as in Fig. 2. The ordinary spring *m* crowds the upper part of the damper against the cord or string L, while an arm, *n*, of the lever G draws the damper off immediately before the hammer strikes. Some pianists desire the damper to reach the cord instantaneously after the hammer is drawn off, and in this case the spring *l* is applied as in Fig. 1, to aid the spring *m*. Otherwise the spring *l* is turned off as in Fig. 2.

In order to bring the damper within proper reach of the spring *l*, it has to be extended downwardly beyond the lower part of the

arm *b* and lever G, as shown; and the last part of my invention consists in perforating such lower part of the damper K, to give access to the screw *c*, as shown at *o* in Fig. 1. This perforation was heretofore not necessary, as the damper did not extend far enough down to conceal the screw *c*; but as I require such extension for the use of the spring *l*, the aperture is also required.

I claim as my invention—

1. The combination of the key D with the hook *j* and with the lifter F, substantially as herein shown and described.

2. The combination of the key D and supporting-screw *g* with the lifter F, substantially as herein shown and described.

3. The double leather joint *h* attached to the lever G, and inserted in the slit end of the lifter F, substantially in the manner and for the purpose herein shown and described.

4. In a piano-action having the hammer-butt I, key D, and connecting mechanism constructed substantially as described, the arrangement of the hook *j* and slot H' of the fly H relatively to each other, for effecting the return of the hammer, substantially as set forth.

5. The damper K, combined with the spring *m* and with the additional spring *l* on the damper-bar, substantially as herein shown and described.

6. The damper K, perforated opposite the fastening-screw *c* of the arm *b*, and combined with the spring *l* on the damper-bar, substantially as specified.

FRIEDRICK FRICKINGER.

Witnesses:

ERNEST C. WEBB,
G. C. MANNER.