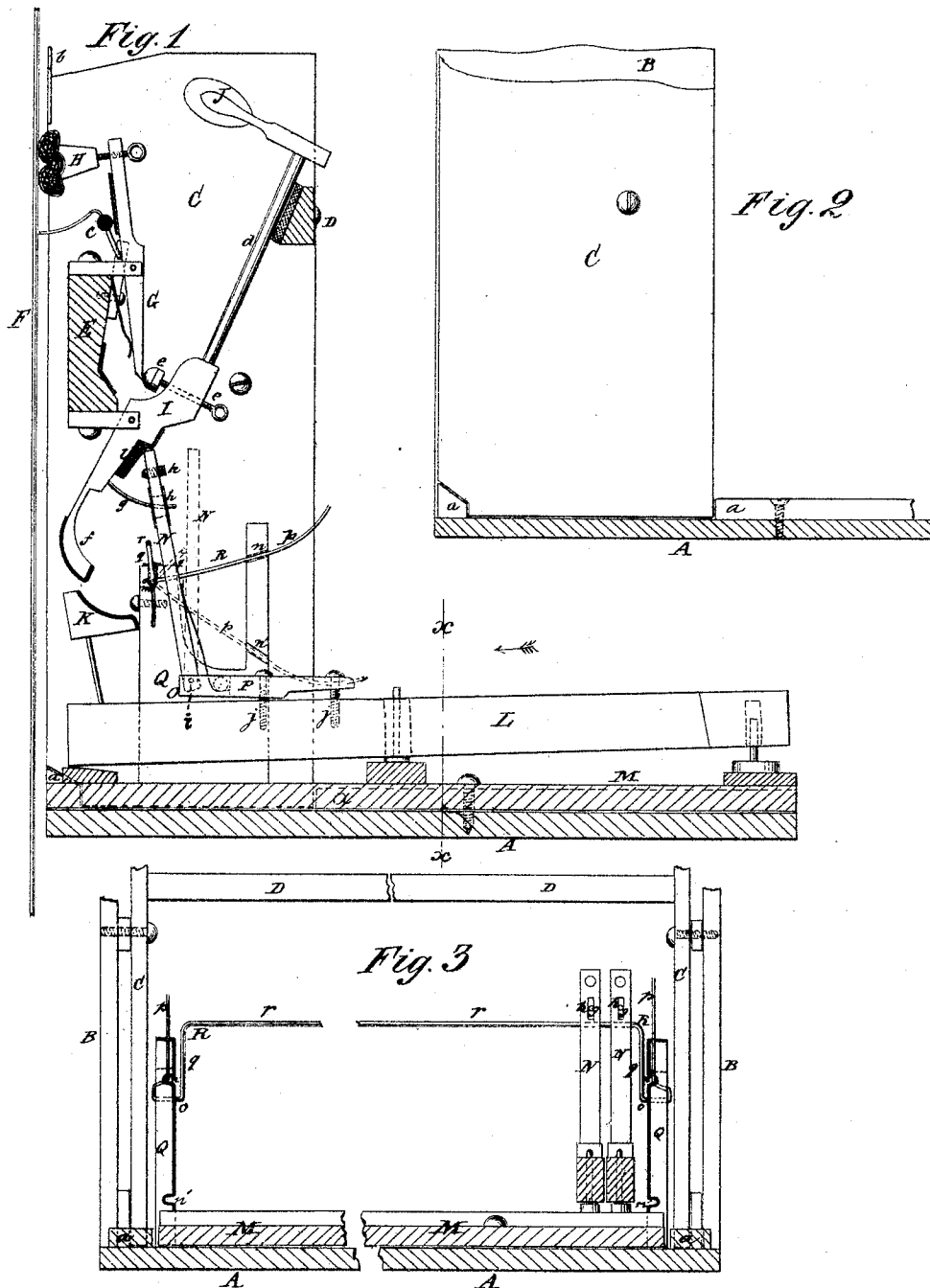


Piano-Actions.

No. 140,428.

Patented July 1, 1873.



Witnesses.

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IMPROVEMENT IN PIANO-ACTIONS.

Specification forming part of Letters Patent No. **140,428**, dated July 1, 1873; application filed April 24, 1873.

To all whom it may concern:

Be it known that we, EDWARD G. NEWMAN and PETER ANDERSON, both of the city of New York, in the county and State of New York, have invented certain Improvements in Upright Piano-Fortes, of which the following is a specification:

The object of our invention is to produce a more durable, simple, compact, and effective action for upright piano-fortes than those heretofore in use; and it consists in an improved construction, combination, and arrangement of the various parts, whereby are effectively regulated the contact and impact of the damper-head and the hammer with the string, the rebound of the hammer is checked, and the lifting-jack or fly is kept in position when required to operate the hammer, and thrown back when it is desired to separate the action from the key-board, all of which will be hereinafter fully described.

In the accompanying drawing, Figure 1 represents in vertical section the key-board and action complete for sounding one note. Fig. 2 is a detail vertical section, showing the attachment of one of the cheeks of the action to the key-board. Fig. 3 is a section through *x x* of Fig. 1, seen from the front or in direction of the arrow.

Similar letters of reference indicate corresponding parts.

A is the key-frame of the piano provided at either end with uprights B, to which are attached by screws the cheeks C of the action, and held in place on the key-frame A by stops *a*. The cheeks C are connected by rails D E, as usual. *b* is a lug for attaching the action to the rest-plank of the piano. F is one of the strings. On the upper side of the rail E is pivoted the damper-lever G, to which is attached by a set-screw the damper-head H. *c* is the forte-lever for withdrawing the damper-head from the string to continue the sounding of the latter. On the lower part of the rail E is pivoted the butt I of the ordinary hammer J, the shank *d* of which rests against the rail D when not in action. The butt I is provided with a set-screw, *e*, acting against the lower end of the damper-lever G, and by which the pressure of the damper-head H on the string F may be regulated when at rest, and released when the hammer J is operated upon by depress-

ing the key L. The lower end of the butt I we provide with a curved elongation, *f*, to act against the back-check K, which is attached to the key L, and thus to prevent the hammer from rebounding when a note is sounded. The key L is attached to the key-board M in the usual manner. *g* is a guide-pin attached to the butt I and passing through a slot, *h*, in the upright portion N of the lifting-jack or fly O, to hold the latter in position to its work against the hammer-butt I. The upright portion N of the fly O is pivoted at *i* to the horizontal portion or bracket P, which is adjustable by two set-screws, *j*, passing through the same into the key L for raising or lowering the upper end of N to its proper point of contact with the butt I. *k* is a set-screw passing through N, and which, by coming in contact with the puncheon *l* on the hammer-butt I at the exact instant when the hammer J has struck the string F, will throw the end N of the fly back, clear of the butt, and allow the hammer to fall back on the rail D, and the damper-head H to be applied in proper time.

As seen in the drawing, the butt I is so constructed and the shank *d* so attached to the butt that the weight of the hammer is always outside the center or pivot of the butt on the side toward the rail D, so as always to insure the proper falling back of the hammer onto the rail D, even where the spring of the damper-lever does not aid such motion, as is the case in the "treble" or high notes, above the fifth octave, where damper-levers and heads are not used.

By the arrangement of securing the fly O directly to the key and the set-screw *k* to the upper end of the fly N, and so that it will work directly on the puncheon *l* of the hammer-butt I, and by placing the back-check also on the key; and by operating the damper-lever directly by the butt I through the interposition of the set-screw *e* we gain the important advantage of requiring only three centers or pivots for the action—viz, the pivots of the fly, hammer-butt, and damper-lever; whereas, heretofore six or more centers have been needed, and the mechanism necessarily been very complicated and far less durable than this present.

When the instrument is to be taken apart

it is necessary in order to separate the action from the key-board, the former being first lifted out vertically and the latter then drawn out horizontally, to simultaneously throw back all the fly-arms N from contact with the guide-pins *g*. This we accomplish in the following manner: At either end of the key-board M we secure an upright, Q, provided with a bearing, *m*, and notches *n n'*, suitable for the reception of the pivot *o* and shank or handle *p* of a lever, R, somewhat similar to a bell-crank lever, the crank *q* of which connects with the crank at the other end by one common crank-pin or rod, *r*, continuous through the whole width of the action.

When the action and key-board are put together the shank *p* of the lever R is lodged in the upper notch *n*, and the rod *r* is in contact with the fly, allowing full play of the latter; but when the shank *p* is moved down and lodged into the lower notch *n'* the rod *r* of the lever R will throw back all the fly-arms N simultaneously out of contact with the guide-pins *g* on the butt I, as indicated by dotted lines in Fig. 1, and thus allow of the action being lifted out and separated from the key-board.

The complicated action of upright pianos, as heretofore constructed, renders it necessary to make the same detachable from the key-board; but the simplicity of this present action presents no hindrance to permanently uniting the two together, as is usual in the

so-called square pianos, if preferred, in which case the lever R and uprights Q may be dispensed with.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The hammer-butt I provided with the elongated end *f*, acting against a back-check, K, placed on the key L, to check the rebound of the hammer J, constructed substantially as shown and described.

2. The set-screw *e*, in combination with the hammer-butt I and damper-lever G, arranged to operate as specified.

3. The guide-pin *g*, in combination with the hammer-butt I, and with the slot *h* in the fly-arm N, as and for the purpose specified.

4. In combination with the slotted fly N, hammer-butt I, and guide-pin *g*, the lever R constructed and arranged to operate substantially as described.

5. The arrangement shown, of the fly O directly on the key L, the set-screw *k* at the upper end of the fly-arm N, the hammer-butt I, its elongated end *f*, and the back-check K, with relation to each other, substantially as specified.

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Witnesses:

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