(No Model.) 2 Sheets—Sheet 1.

G. M. WOODWARD.

Piano Forte Damper Action.

No. 242,732. **Patented June 7, 1881.**

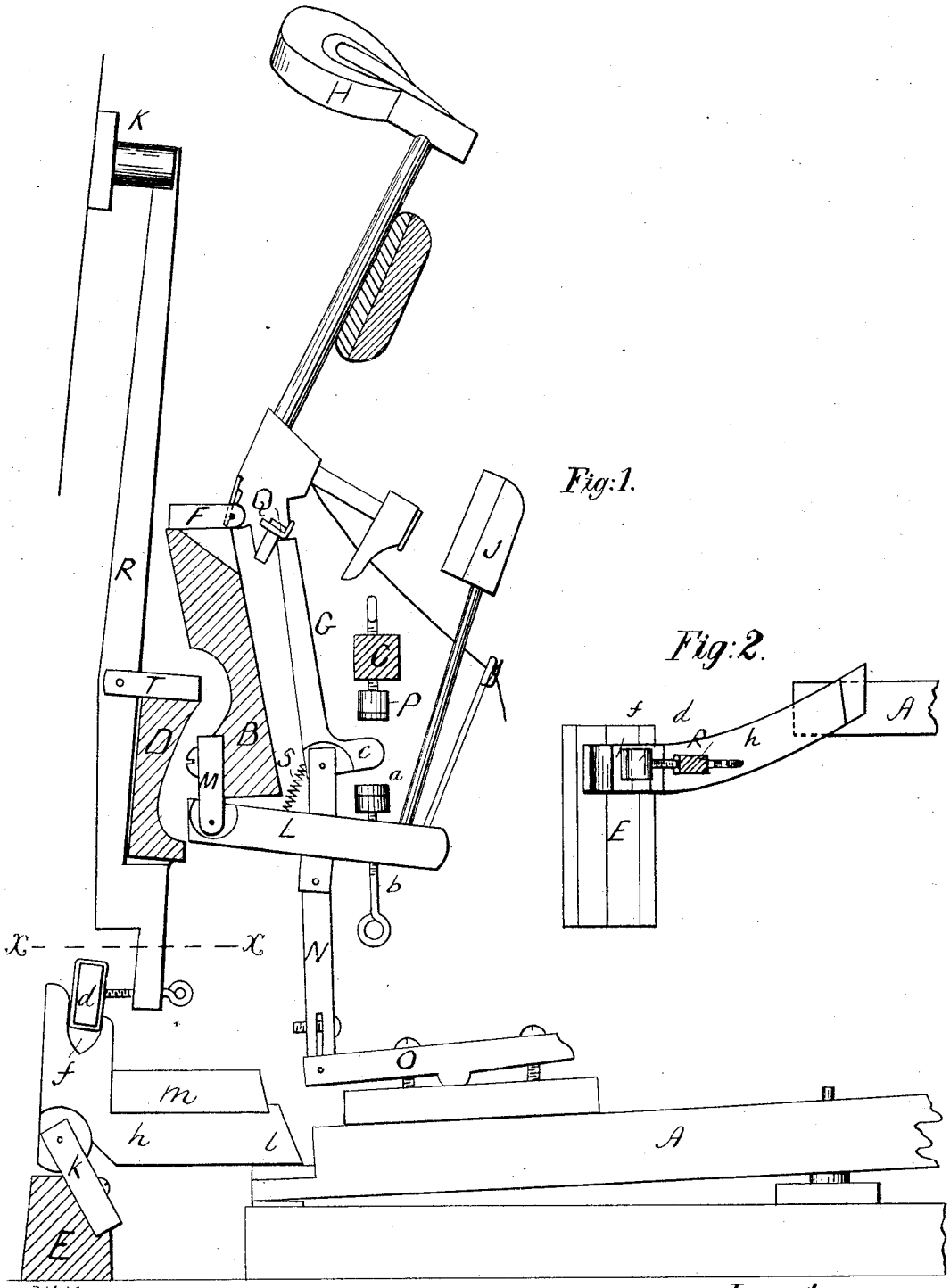


Fig: 1.

Fig: 2.

Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

G. M. WOODWARD.

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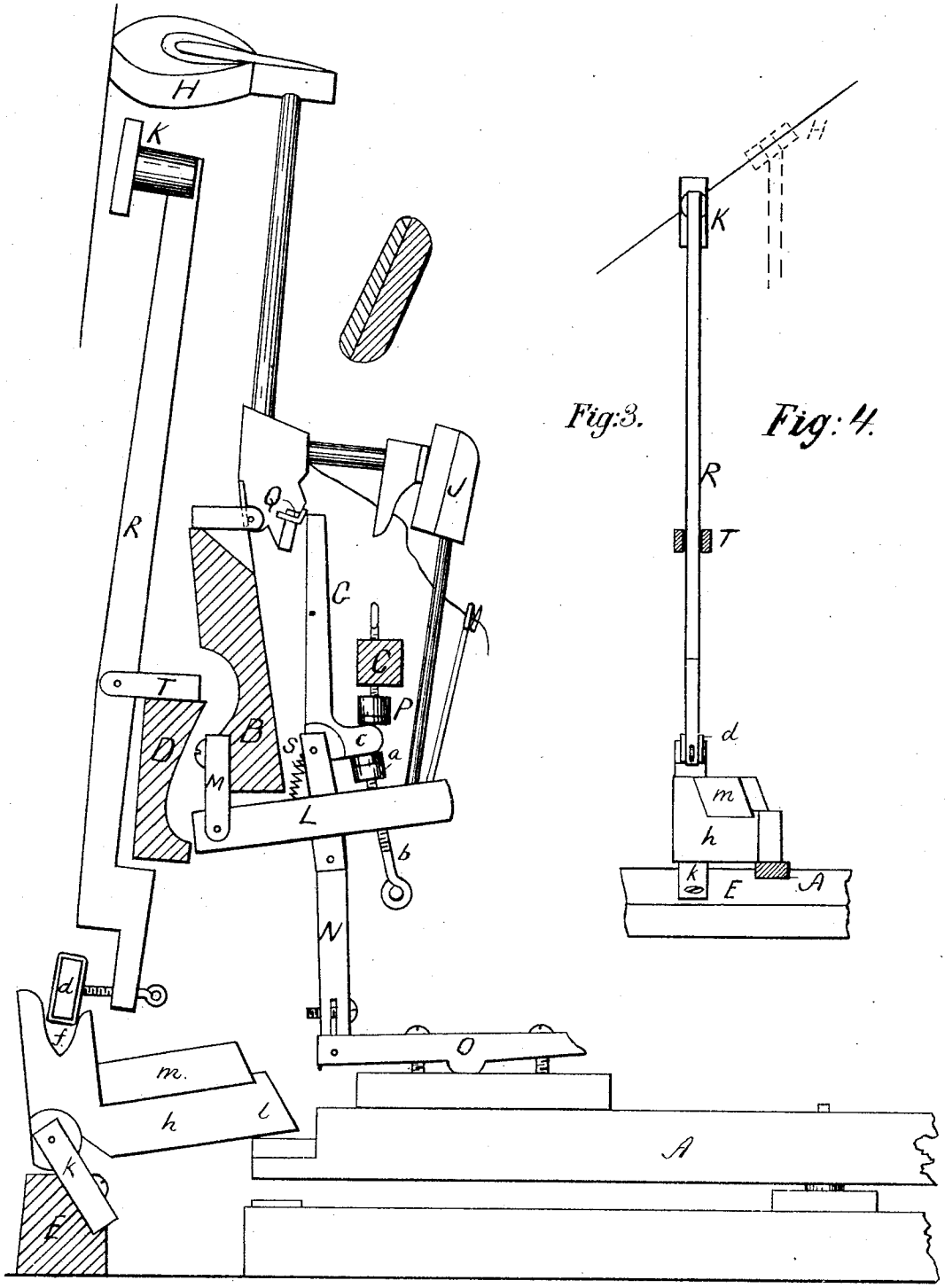


Fig: 3.

Fig: 4.

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UNITED STATES PATENT OFFICE.

GEORGE M. WOODWARD, OF BROOKLINE, MASSACHUSETTS.

PIANO-FORTE DAMPER-ACTION.

SPECIFICATION forming part of Letters Patent No. 242,732, dated June 7, 1881.

Application filed June 30, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. WOODWARD, of Brookline, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Piano-Forte Actions, of which the following is a full, clear, and exact description.

This invention relates to actions for upright piano-fortes; and it consists in the combination, with the damper and its vertical damper-rod, of a piano-key, and a horizontal lever arranged angularly to the damper-rod and adapted to actuate the said rod, all constructed and arranged as hereinafter more fully set forth.

In the accompanying plate of drawings the present invention is illustrated.

Figure 1, Plate 1, is a side elevation of an upright-piano action embodying my invention; Fig. 2, a section on line *x x*, Fig. 1, showing the damper connection, with a portion of the key in plan view. Fig. 3, Plate 2, is a side elevation, with the finger end of the key depressed and the parts of the action in their corresponding positions; Fig. 4, a front elevation of the damper and its parts connecting it with the key.

In the drawings, A represents a key to a piano-forte. This key at its inner end carries and connects with mechanism constituting the piano-action. This action mechanism is repeated for each key, and in some of its parts is attached to horizontal rails B, C, D, and E, running in parallel lines across the several keys, and at each end supported by suitable upright frames. This piano-action consists, essentially, of a jack, G, hammer H, back catch J, and damper R, all of which are arranged as ordinarily.

In the operation of the piano-action the upper edge of the arm *c* to the jack G abuts against the regulating-button P, and thus secures the escape of the jack from the hammer-butt as usual.

The damper K is at the upper end of a vertical rod, R, which swings in a vertical flange, T, of the rail D. The lower end of the rod R has an adjustable cushioned block, *d*, which lies within a notch, *f*, in the upper side of a horizontal lever, *h*. The lever *h* is pivoted to a flange, *k*, of a horizontal rail, E, and it rests by one end, *l*, upon the inner end of a piano-key, A. The depression of the finger end of the key raises its rear end, and thus the end of the horizontal lever *h*, which rests upon the key, and, through this raising of the lever *h*, swings the vertical rod R in the proper direction to take the damper carried by such rod away from the piano-strings. The finger end of the key being released, the damper-operating lever *h* returns to its normal position, and this return is accelerated and insured by weighting the lever with lead, as shown at *m*, the lead being secured to the lever in any suitable manner. The line of direction of the operating-lever *h* for the damper K is shown as at an acute angle to the rod R, and the lever curves in its length. This curve and angular direction of the series of levers varies for the several keys, and its purpose is to secure connection between the keys and dampers in different planes, so that the damper-rods R can be arranged in true vertical lines, in which, obviously, the damper-rods can best operate.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

In a piano-forte action, the combination, with the damper and its vertical damper-rod R, of a piano-key and the horizontal pivoted lever *h*, arranged angularly to the damper-rod and adapted to actuate the said rod, all constructed and arranged substantially as shown and described, and for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEO. M. WOODWARD.

Witnesses:

EDWIN W. BROWN,

WM. S. BELLOWS.