(No Model.)

R. E. LETTON.

PIANO ACTION.

No. 290,692. Patented Dec. 25, 1883.

Fig. 1.

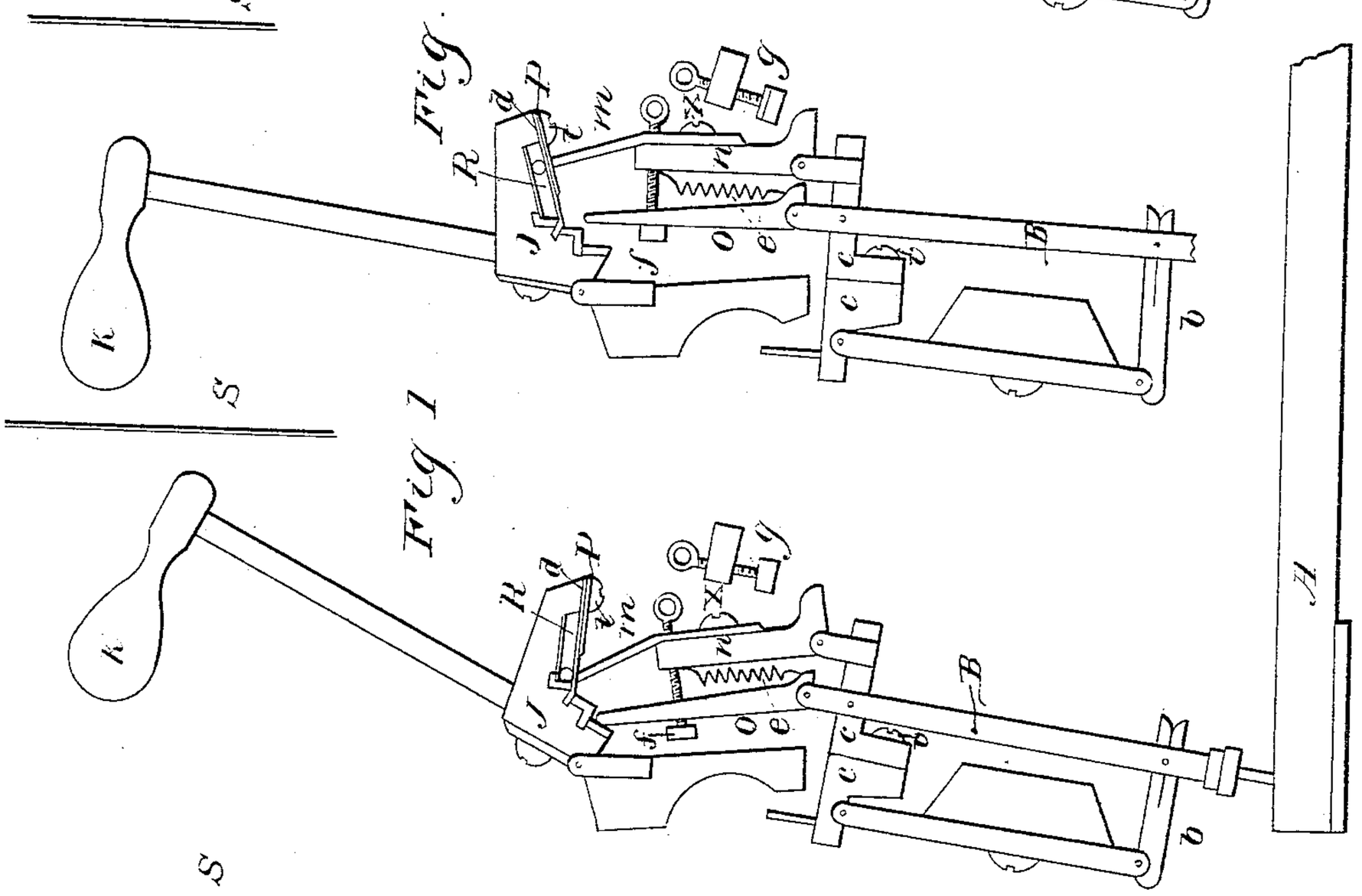

Fig. 2.

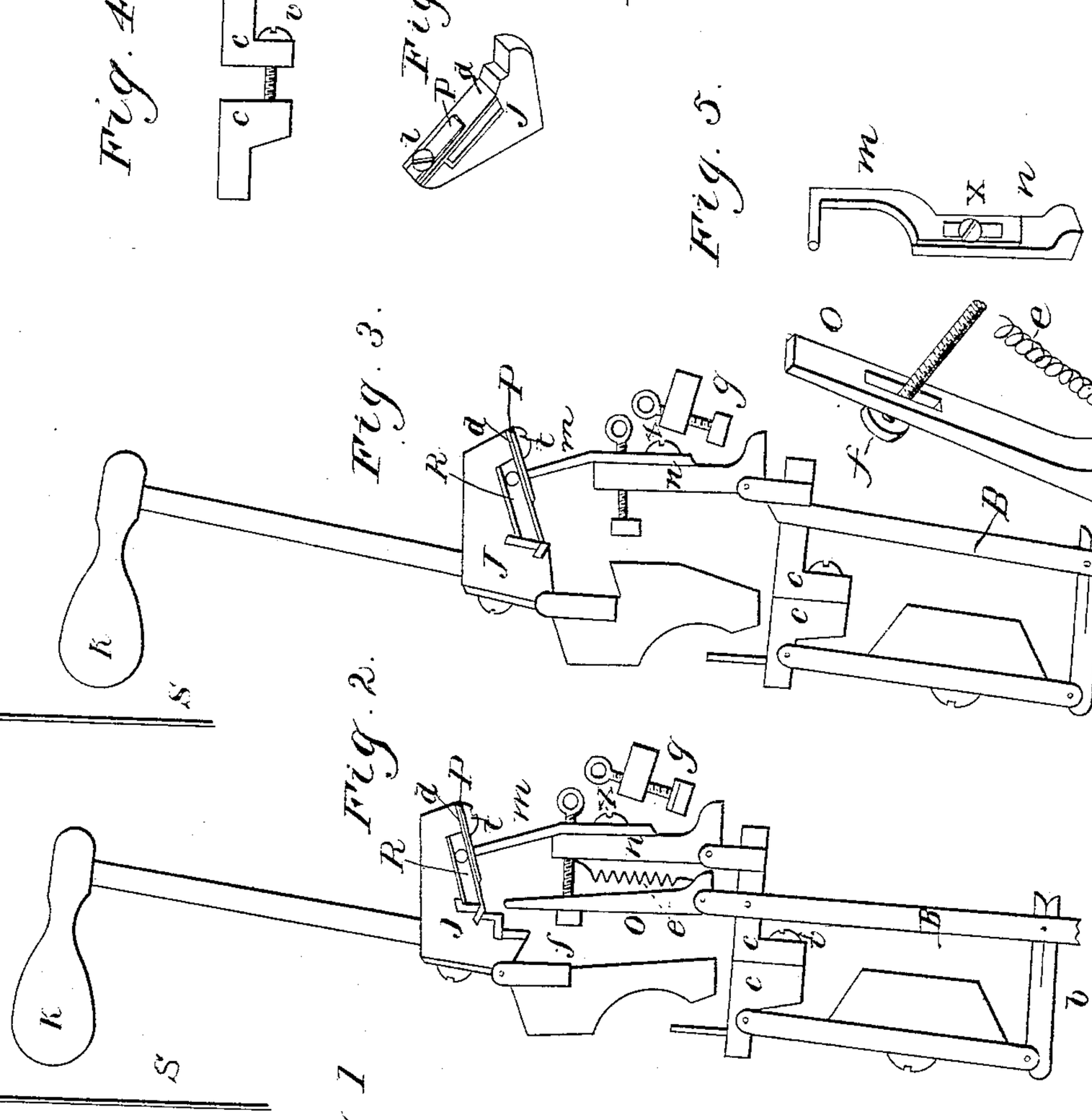

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

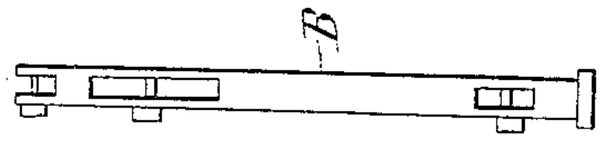

Fig. 8.

Witnesses:
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RAPHAEL E. LETTON, OF QUINCY, ILLINOIS.

PIANO-ACTION.

SPECIFICATION forming part of Letters Patent No. 290,692, dated December 25, 1883.

Application filed February 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, RAPHAEL E. LETTON, of the city of Quincy, of the county of Adams, and State of Illinois, have invented a new and useful Improvement in the Action of Upright Pianos, whereby the hammer, after making a stroke of the string, shall receive a back-check, thereby preventing a further contact of hammer and string, by means of the device, of which the following is a full and exact specification, reference being had to the accompanying drawings.

My first object attained by this device is to actuate the hammer K, in combination with the jack O and oscillating arm *m n*, as shown in Figures 1 and 2. My second object is to back-check the hammer, as shown in Fig. 2, more fully described hereinafter. My third object attained is both to impel and retract the hammer by means of the single oscillating arm *m n*, being operated in conjunction with the stays *d* and P, roof of slot R, and button *g*, hereinafter described.

Fig. 1 is an elevation of the action of the upright piano, having the following parts: the key A, the lifting-post B, pivoted to the arm *b*, and arm *c c*, the jack O, pivoted in the top of the post B, the top of the jack O resting beneath the knuckle of the hammer-butt J. Attached to the arm *c c* in front of the jack is a pivot-block carrying the oscillating arm *m n*, the top of the arm being bent so as to form an axis, which shall have free play in the slot R. The vertical motion of the arm *m n* will be greater than that of the jack O, in proportion to the arc described by the arm *c c*. Above the toe of the arm *m n* is a regulating-button, *g*, the position of which will determine the throw of the arm *m n*, which arm is pierced by a screw passing thence through a slot in the jack, having at the point the button *f*, that will regulate the throw of the jack in conjunction with the arm *m n*. *e* is a spiral spring, the lower end of which is attached to the toe of the jack O and the upper end to the arm *m n*, giving to both jack and arm an inclination in one and the same direction.

Fig. 2 is a view portraying the relative positions of the arm *m n* and jack O subsequent to the recoil of the hammer K, while the key is still pressed.

Fig. 3 represents the action in simplified form, differing from that of Figs. 1 and 2 by the omission of the jack O and its adjuncts. The oscillating arm *m n* is pivoted to the lifting-post B, and yields to a lateral pressure of the spring *e*, which, although not shown in this case, may be attached at its lower end to post B, instead of to toe of jack, and at the top by a thong to arm *m n*.

Fig. 4 represents the sectional damper-arm *c c*, the under surface projected to form shoulder-blocks, which are pierced by the screw *v*, by which the sections are clamped together, and thereby adjusted to relieve the binding of the several pivoted parts.

Fig. 5 is a perspective view of the oscillating arm *m n*, having the part *m* made of metal, and so constructed that it will receive a pressure from the screw X, by which the part *m* is adjusted on and secured to the part *n*. By this device the proper working length of the arm can be had and maintained.

Fig. 6 is a view of the hammer-butt J inverted, having the innermost stay, *d*, made of leather or other soft material, arranged to cover the base of the slot R, and the outer stay, P, made of hard material, and secured to the hammer-butt J by the screw *t*.

Fig. 7 is a front view of the upright lifting-post B, in which are cut longitudinal slots near the top and bottom, pierced crosswise with pivot-pins.

Fig. 8 is a view of the jack O, having a slot cut that will permit a free passage of the regulating-screw *f*.

The working of this device may be described as follows: In Fig. 1 is shown the upright action, having the jack O and arm *m n*, constructed to be operated in combination with the hammer-butt J. At the moment the key A is depressed a sudden vertical impetus is given to the jack O and arm *m n*, forcing the hammer K toward the string S, as shown in Fig. 2, and when in proximity thereto the toe of the arm *m n* is brought in contact with the button *g* and the arm urged to the front, bearing the axis against the stay *d* P. The hammer having recoiled, a further contact with the string is prevented so long as the key is pressed. This condition of the action is termed a "back-check."

The operation of the device, as shown in Fig. 3, may be thus described: When the key

is depressed, a vertical impetus is given to the axis of the arm *m n* against the roof of the slot R, urging the hammer K against the string S. At the moment of recoil of the hammer the foot of the arm *m n* comes in contact with button *g*, and the axis of the arm *m n* is forced against the stays *d* P, thereby restraining the hammer J from a further contact with the string S so long as the key A is pressed by the finger.

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

1. The hammer-butt J, with slot R, having the stays composed of the elastic piece *d* and inelastic piece P, in combination with the oscillating arm *m n* and button *g*, as herein fully set forth.

2. The oscillating arm consisting of the part *m*, having the slot and regulating-screw X, provided with the part *n*, for the purposes herein described.

3. In a piano-action, the sectional damper-arm composed of the pieces *c c*, connected by an adjusting-screw *v*, for the purposes herein fully set forth.

In testimony that I claim the foregoing improvement in upright-piano actions, as above described, I have hereunto set my hand this 27th day of November, A. D. 1882.

RAPHAEL E. LETTON.

Witnesses:

GEO. M. JANES,

CHAS. N. LETTON.