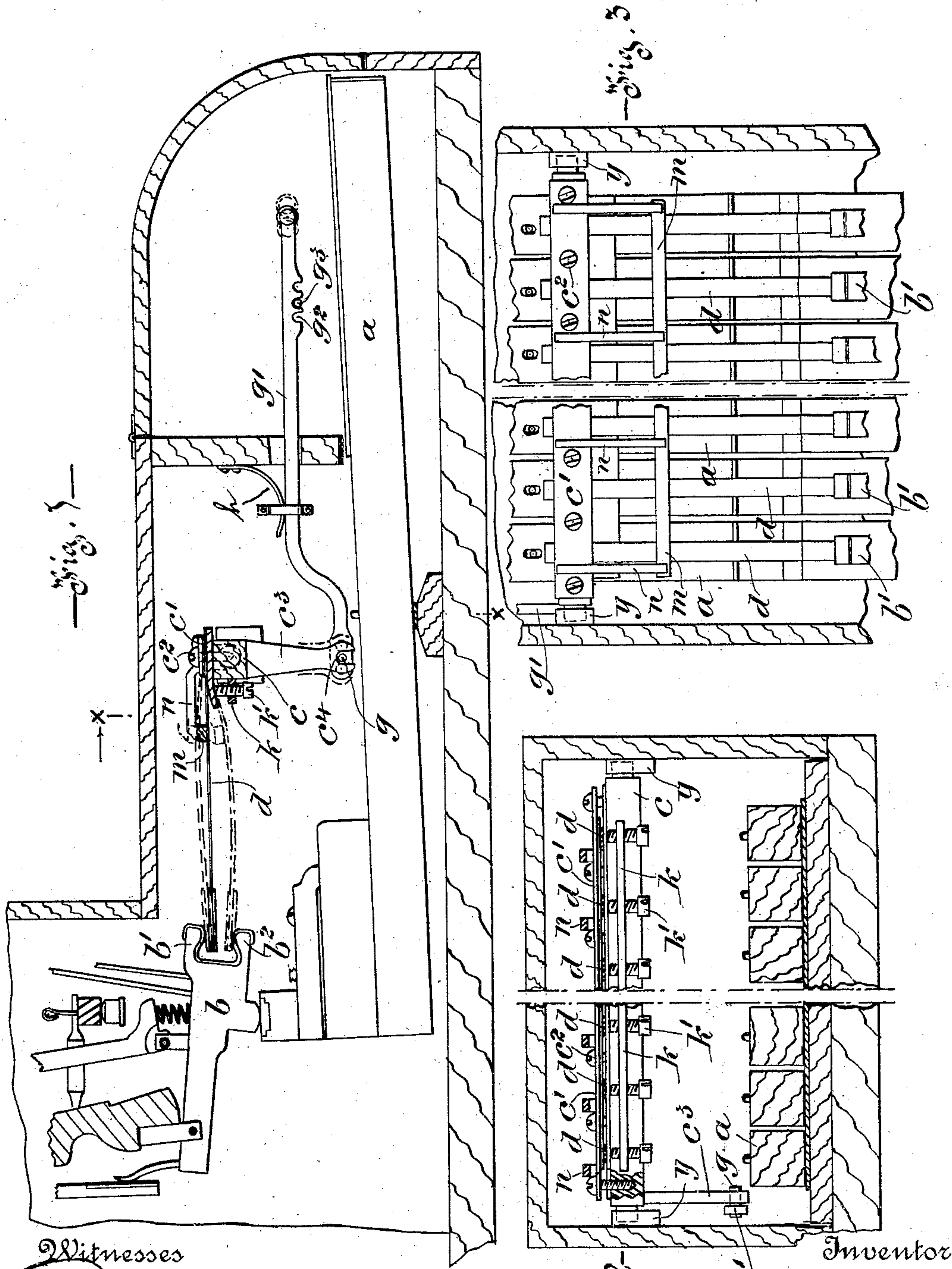


(No Model.)

R. M. SQUIRE.
PIANOFORTE.

No. 555,409.

Patented Feb. 25, 1896.



Witnesses

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ROLAND M. SQUIRE, OF MONTREAL, CANADA.

PIANOFORTE.

SPECIFICATION forming part of Letters Patent No. 555,409, dated February 25, 1896.

Application filed May 17, 1895. Serial No. 549,700. (No model.)

To all whom it may concern:

Be it known that I, ROLAND MONTAGUE SQUIRE, of the city of Montreal, in the district of Montreal and Province of Quebec, Canada, have invented certain new and useful Improvements in Pianofortes; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is to construct a pianoforte so that its resistance of touch will be variable; and it consists of a yielding-resistance device adapted to be adjusted to either increase the resistance of the key to accommodate a heavy touch, reduce the resistance of the key to accommodate a light touch, or be neutral and not influence the resistance of the key one way or the other. A preferable device to carry out this end is a partially-rotatable bar or sill carrying a series of yielding resistances in the form of strips of flat resilient metal, one for each key, mounted rigidly at one end upon such bar or sill, the bar or sill being pivotally carried in a position to allow the free ends of each strip to act preferably upon the forward end of the "rocker" of each hammer-operating mechanism, so that when it is desired to accommodate a heavy touch the strips, by partially rotating the sill or bar in the required direction, should be caused to bear down upon such rocker and thereby increase its resistance and through it the resistance of the key, a light touch being accommodated by the strips being caused to bear upwardly upon the rocker by rotating the sill or bar in an opposite direction.

Having thus referred to the principle and the essential feature of my invention, I will now describe what I consider to be the most practical embodiment thereof, although it will be apparent that the arrangement and form of the device can be changed without departing from the spirit of my invention.

For full comprehension, however, of my invention, reference must be had to the annexed drawings, forming a part of this specification, in which like symbols indicate corresponding parts.

Figure 1 is a transverse vertical section of a part of an ordinary upright-pianoforte casement, showing in elevation a key and a sufficient portion of the mechanism for operating a single hammer to illustrate my inven-

tion, which is applied thereto. Fig. 2 is a vertical longitudinal sectional view of same, taken on line $x x$, Fig. 1; and Fig. 3 a horizontal sectional view taken through the casement of the pianoforte and showing several keys, &c., in plan view and with my invention applied thereto.

To illustrate and describe my invention, so that it will be clear to those skilled in the art, it will only be necessary to refer to the key a and rocker b , which are of the usual construction excepting that the latter has two finger-projections $b^1 b^2$ upon its forward face.

A bar or sill c of a length sufficient to extend over all the keys, and preferably of rectangular form, has its ends diminished and rounded ends removably set in brackets $y y$, secured to the sides of the pianoforte-casement. Upon the upper surface of this sill or bar c are rigidly secured one end of each of a series of strips d , of flat resilient metal, there being preferably one strip for each key in use, and the strips are secured in place preferably by a single clamping-plate c^1 and screws c^2 . I have found that a better effect is secured and the resonance of the strips guarded against by inserting strips of insulating-cloth between the clamping-plate and the strips, and the strips and their adjusting-screws and the sill.

The sill c is mounted in a position, relatively to the rockers b , that will bring the free ends of the strips d to a point between the finger-projections $b^1 b^2$, but in close proximity to the one b^1 .

From the under side of one end of sill c is a downwardly-projecting arm c^3 having a slotted end c^4 which straddles a lateral pin-projection g of a sliding rod g^1 provided with graduated slots g^2 in its under side to take over a pin g^3 , a bow-spring h keeping one of the slots normally in a position registering with pin g^3 .

As a means for adjusting the strips d so as to bring them all to the same level I affix to the face of sill c over which the strips project a bracket-piece k , through which is passed a number of screws k^1 , one to bear under each of the strips d and be vertically adjustable to raise the strips to any level.

It is required that only a very limited degree of spring-pressure to reduce the resist-

ance of touch should be used, as interference with the action of the hammer mechanism of the pianoforte must be guarded against, and as the resistance of touch may
 5 be increased to an unlimited degree it is necessary to have a light spring to act in the former case and a heavy spring or one of greater strength to act in the latter case. To
 10 provide these differing degrees of resistance it is necessary to either use two strips, as may be done if desired, or, as I consider preferable, to use one strip of the lightest required
 15 degree of resistance, allowing it to bend freely in its operation to reduce the resistance of touch, but shortening its bend and thereby stiffening same and strengthening its resisting power in its operation to increase the resistance of touch, which I prefer to do in the
 20 following manner: I place a bar *m* in a position (when the strips are in their normal position) to bear lightly upon the upper sides of the strips at a distance about one-quarter of their length out from the sill *c* to which such bar *m* is rigidly attached by brackets *n*.
 25 This bar, which can have a strip of insulating-cloth upon its bearing-face, besides serving the purpose just mentioned, will effectually deaden any undesirable resonance of the strips, and also serve as a gage to which the
 30 strips may be adjusted to bring them all to the same level.

To diminish the resistance of touch the sliding rod *g'* should be pushed inward until the strips *d* are moved from their normal position (shown in full lines in Fig. 1) to the position shown in dotted line, and to increase the resistance of touch the rod *g'* should be drawn
 35 out until the strips are in the position shown in chain line.

40 What I claim is as follows:

1. In a pianoforte the combination with the keys and the hammer-actuating mechanism thereof, the latter having two bearing-points, of an adjustable yielding-resistance device
 45 adapted upon adjustment to bear upon either of such bearing-points according as it is required to either diminish or increase the resistance of touch and means for adjusting such resistance device.

50 2. In a pianoforte the combination with the keys and the hammer-actuating mechanism thereof, the latter having two bearing-points, of an adjustable yielding-resistance device adapted upon adjustment to either bear upon

either of such bearing-points or remain neutral thereof and means for adjusting such resistance device for the purpose set forth. 55

3. In combination with the actuating mechanism of each hammer of a pianoforte and two bearing-points, in close proximity to each
 60 other, upon such actuating mechanism of a series of resilient strips carried by a rotatable bar or sill, each one of such series of resilient strips adapted to either bear upon either of
 65 such bearing-points or remain neutral thereof and means for partially rotating such bar or sill for the purpose set forth.

4. In combination with the actuating mechanism of each hammer of a pianoforte and two bearing-points upon such actuating mechanism, of a series of resilient strips carried by
 70 a rotatable bar or sill, each one of such series of resilient strips adapted to either bear upon either of such bearing-points or remain neutral thereof, adjusting-screws mounted in a
 75 position to be adjusted to bear upon such resilient strips, and means for partially rotating such bar or sill for the purpose set forth.

5. In combination with the keys and the rocker of the hammer-actuating mechanism
 80 of a pianoforte, such rocker having two projections, of a series of resilient strips carried by a rotatable bar or sill and each one of such series of resilient strips adapted to either bear
 85 upon either of the projections of the rocker of said hammer-actuating mechanism or remain neutral thereof, with means for increasing the pressure of such strips in one direction only and for partially rotating such bar
 90 or sill for the purpose set forth.

6. In combination with the keys *a* and the rocker *b* of the hammer-actuating mechanism of a pianoforte, such rocker having two projections *b'* *b''*, of a series of resilient strips *d*
 95 carried by a rotatable bar or sill *c* having downward projection *c'* with slot *c''* and each one of such series of resilient strips adapted to either bear upon either of the projections *b'* *b''* of the rocker of said hammer-actuating
 100 mechanism or remain neutral thereof, a bar *m* rigidly secured to sill *c* by bracket *n* and a sliding rod *g'* with pin projection *g* and a spring *h* all for the purpose set forth.

Montreal, 8th day of May, 1895.

ROLAND M. SQUIRE.

In presence of—

WILL P. McFEAT,
 FRED. J. SEARS.