(No Model.)

F. BARROUIN.

TOUCH REGULATOR FOR KEYBORDS OF MUSICAL INSTRUMENTS.

No. 593,451. Patented Nov. 9, 1897.

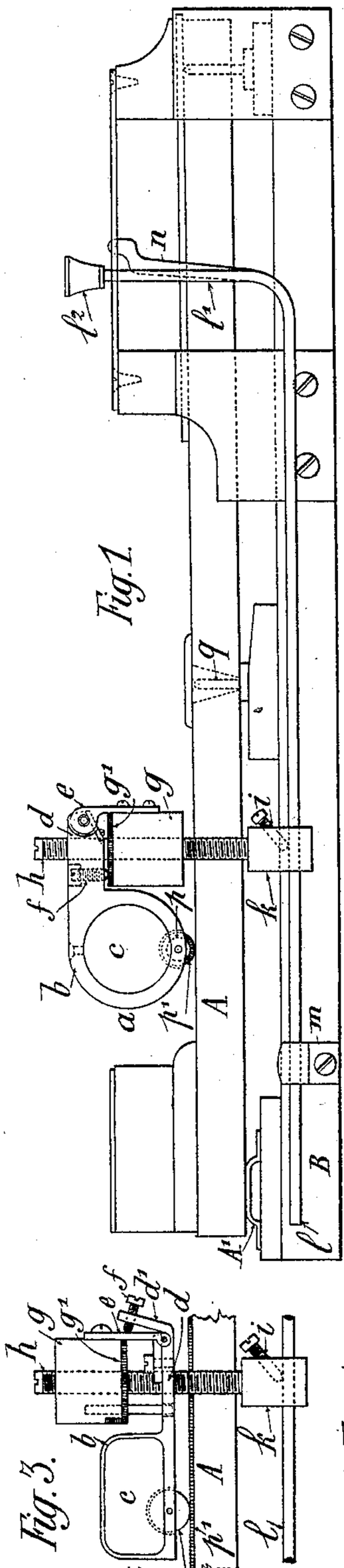

Fig. 1.

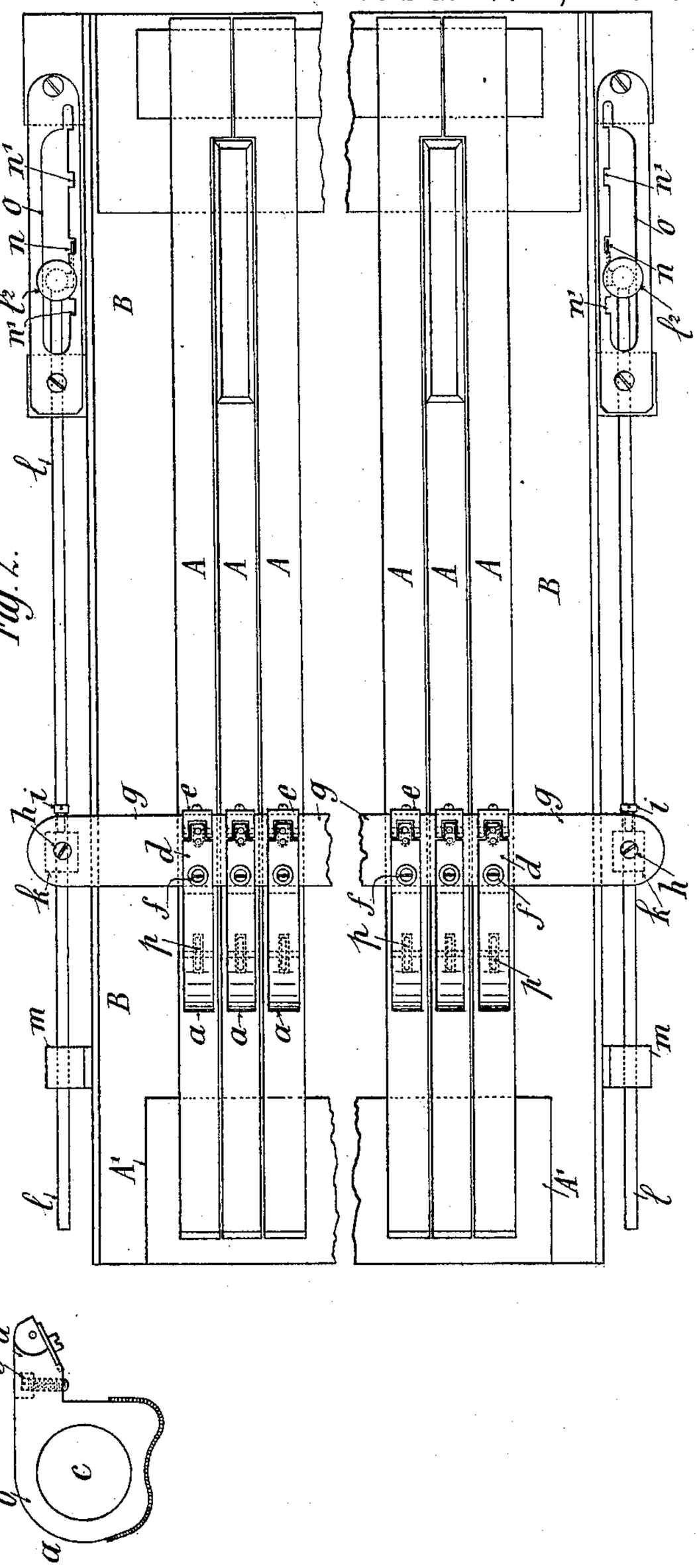

Fig. 2.

Fig. 3.

Fig. 4.

WITNESSES

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FELIX BARROUIN, OF PARIS, FRANCE.

TOUCH-REGULATOR FOR KEYBOARDS OF MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 593,451, dated November 9, 1897.

Application filed June 28, 1897. Serial No. 642,771. (No model.) Patented in Belgium March 17, 1897, No. 127,011, and in England March 23, 1897, No. 7,562.

To all whom it may concern:

Be it known that I, FELIX BARROUIN, a citizen of the Republic of France, residing at 91 Rue de Sévres, Paris, in the Republic of France, have invented certain new and useful Improvements in Touch-Regulators for Keyboards of Musical Instruments, (for which I have received Letters Patent in England, No. 7,562, dated March 23, 1897, and in Belgium, No. 127,011, dated March 17, 1897;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object an apparatus independent of the keyboard permitting the work of the hands of pupil musicians to be regulated by giving to the keyboard when they desire it different degrees of hardness. This apparatus which serves to regulate the hardness or weight of the keyboard in musical instruments is composed of as many loading-pieces of equal weight as there are keys in the keyboard. These pieces bear on the keys, as desired, in greater or less proximity to their axes of oscillation, according to the degrees of hardness which it is desired to obtain. By arranging that these loading-pieces do not rest on the keys this apparatus, being independent of the keyboard, enables the normal touch to be retained for ordinary playing. The annexed drawings show the construction and the mode of attachment of this hardening apparatus on an ordinary straight keyboard and also shows various types of loading-pieces.

Figures 1 and 2 show in longitudinal elevation and in plan, looked at from above, a section of the keyboard to which this hardening apparatus is applied. Figs. 3 and 4 represent two types of loading-pieces.

In the figures the same letters designate the same parts or corresponding portions.

This apparatus is composed of a bar g, fixed transversely with respect to the keys A of the keyboard, and of loading-pieces a, carried by and jointed to this bar, each resting on a different key of the keyboard. The bar g is supported to the right and to the left of the keyboard by screwed rods h, inserted in metal sleeves k, fixed by set-screws i on runner-rods l, which can slide in the guides m, attached to the table B of the instrument. These rods l turn up vertically at l' close to the external edge of the keyboard, where they are surmounted by a knob l^2, which projects above the level of the keyboard. The branches l' are provided with a spring n, which, entering in the notches n' of the guide o, enables the rods l to be stopped and held in place. The notches n' can be numbered to indicate to the player the degree of hardness which he gives to the keyboard.

The loading or pulsating piece a is composed of a cam or disk b of wood, Figs. 1 and 4, or of a metallic ring b with rib, Fig. 3, in the center of which is inserted a washer or disk c, of lead or other heavy material. This cam is provided with a lug or tumbler d, of wood, which is jointed in the branches of a metallic fork e, screwed or otherwise attached to the transverse bar g. A felt strip g', stuck on the bar g opposite the lug d, serves to soften the shock due to the raising of the cam b. A spacing-screw f, fitted on the lug d, Figs. 1 and 4, enables the fall of the weight on the key A to be limited.

In the construction of the pulsator shown in Fig. 3 the lug d is provided outside the fork e with a small plate d', acting as a point of support for the spacing-screw f, which limits the fall of the pulsator a.

The pulsators a, Figs. 1 and 3, are provided at their lower part with a small roller p, of hard wood, horn, or vulcanized rubber or celluloid, the circumference of which may be covered with a rubber ring p', or it may run on a tongue of rubber p', Fig. 3, stuck on the key A. When the keys are at rest—that is to say, when they bear on the saddle A'—the roller p of the pulsator a, Figs. 1, 2, and 3, or the lower surface b' of the cam a, Fig. 4, is tangential to the upper surface of the key A, but the pulsator a is entirely supported by the bar g, this being due to the space-screw f, which will have been suitably regulated for each key A. As soon as the player strikes any one of the keys he raises the pulsator a, the constant weight of which exerts itself in greater or less proximity to the axis or fulcrum q of the key, according

to the degree of hardness which the player has given to the keyboard, by making the distance between the cross-bar *g* and the fulcrum *q* a greater or lesser one.

This hardening apparatus for keyboards may be applied to all musical instruments having keyboards. The bar *g* may be displaced by the hand or by the foot.

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

1. An apparatus to regulate the hardness of the keyboard of musical instruments comprising the combination of a sliding movable bar independent of the keyboard, placed transversely to and above the keys; with loading-pieces jointed to the said bar and supported thereby, equal in number to the keys; the said loading-pieces, of constant weight, sliding or rolling on the keys so as to come in contact therewith in greater or less proximity to their axes of oscillation and to only exert their weight thereon when the key is struck, substantially as described and shown.

2. In a hardening apparatus for keyboards the loading-pieces or pulsators *a* formed of a disk or of a ring *b* in the center of which is arranged a washer *c* and provided with a lug *d* serving to join the said pulsator at the top or bottom of a movable bar *g* transverse to the keys; this lug being provided with a space-screw *f* limiting the fall of the said loading-pieces on the keys A substantially as described and shown and for the purpose specified.

In testimony whereof I have affixed my signature in presence of two witnesses.

FELIX BARROUIN.

Witnesses:

ALBERT MAULVAULT,

EDWARD P. MACLEAN.