(No Model.) 3 Sheets—Sheet 1.

W. P. HAINES.

PIANO.

No. 491,423. Patented Feb. 7, 1893.

Fig. 1.

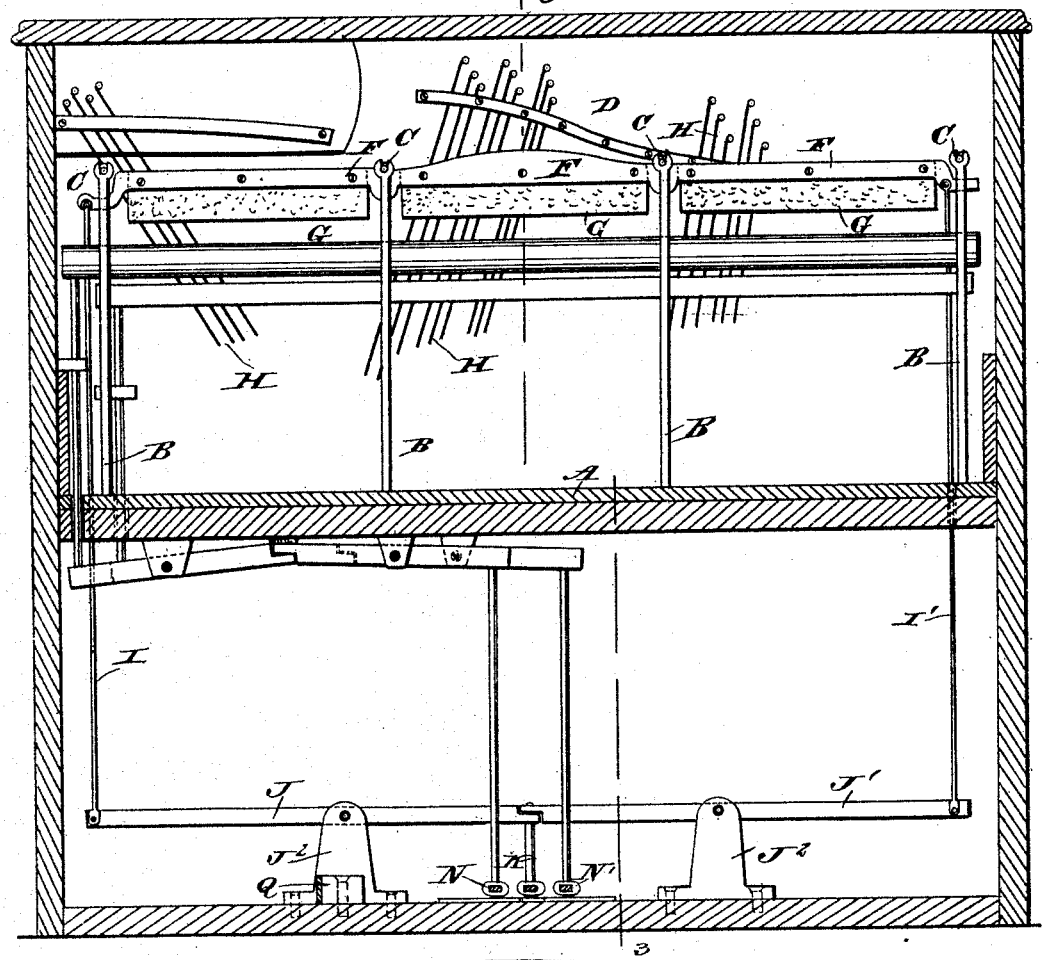
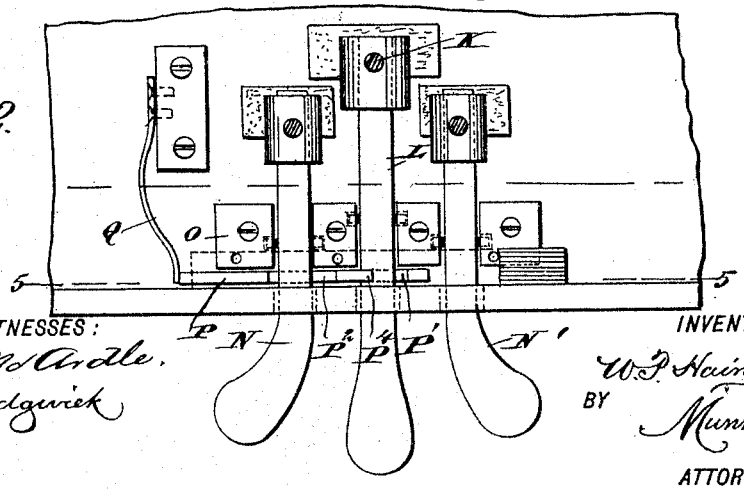


Fig. 2.



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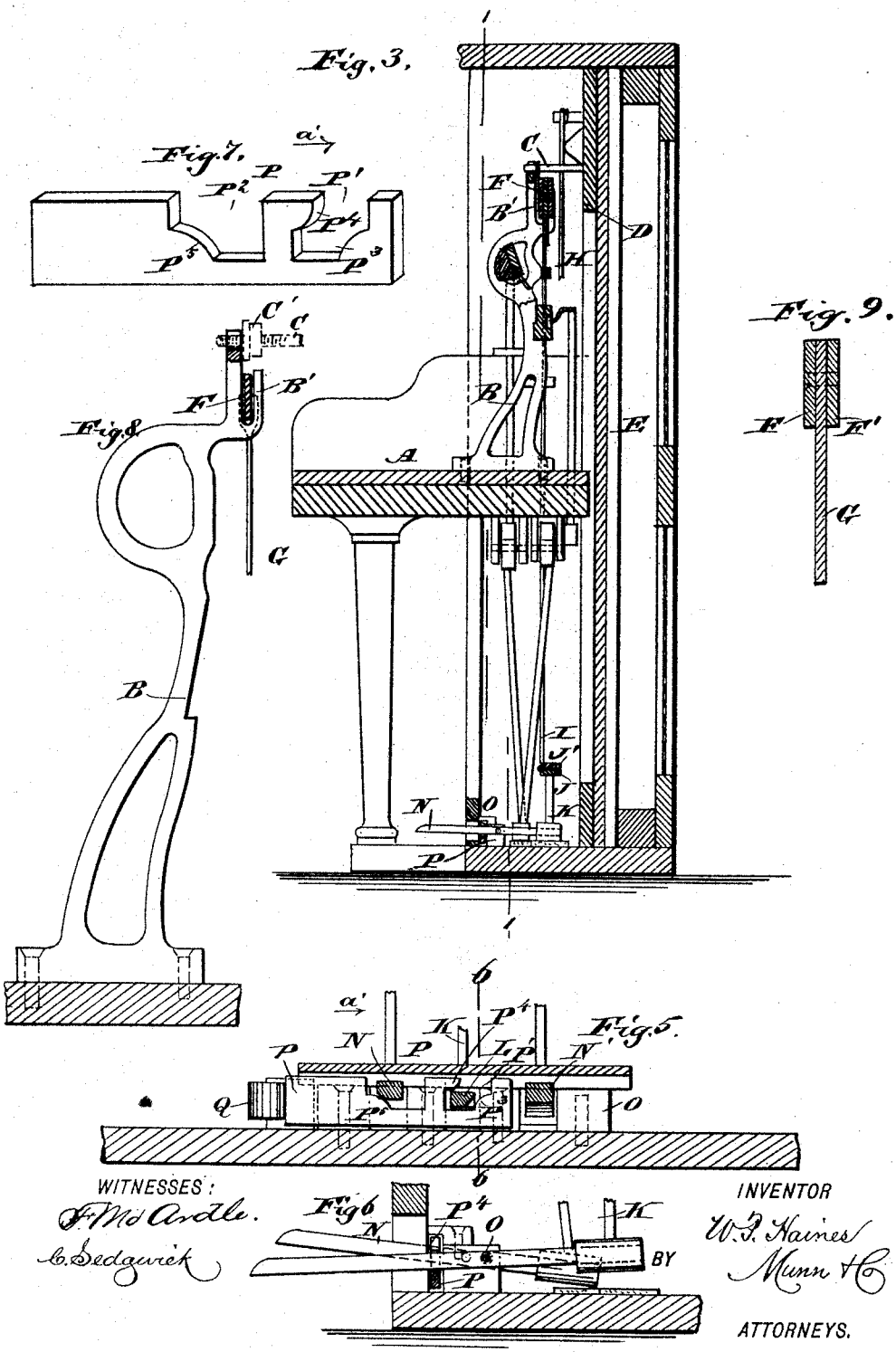

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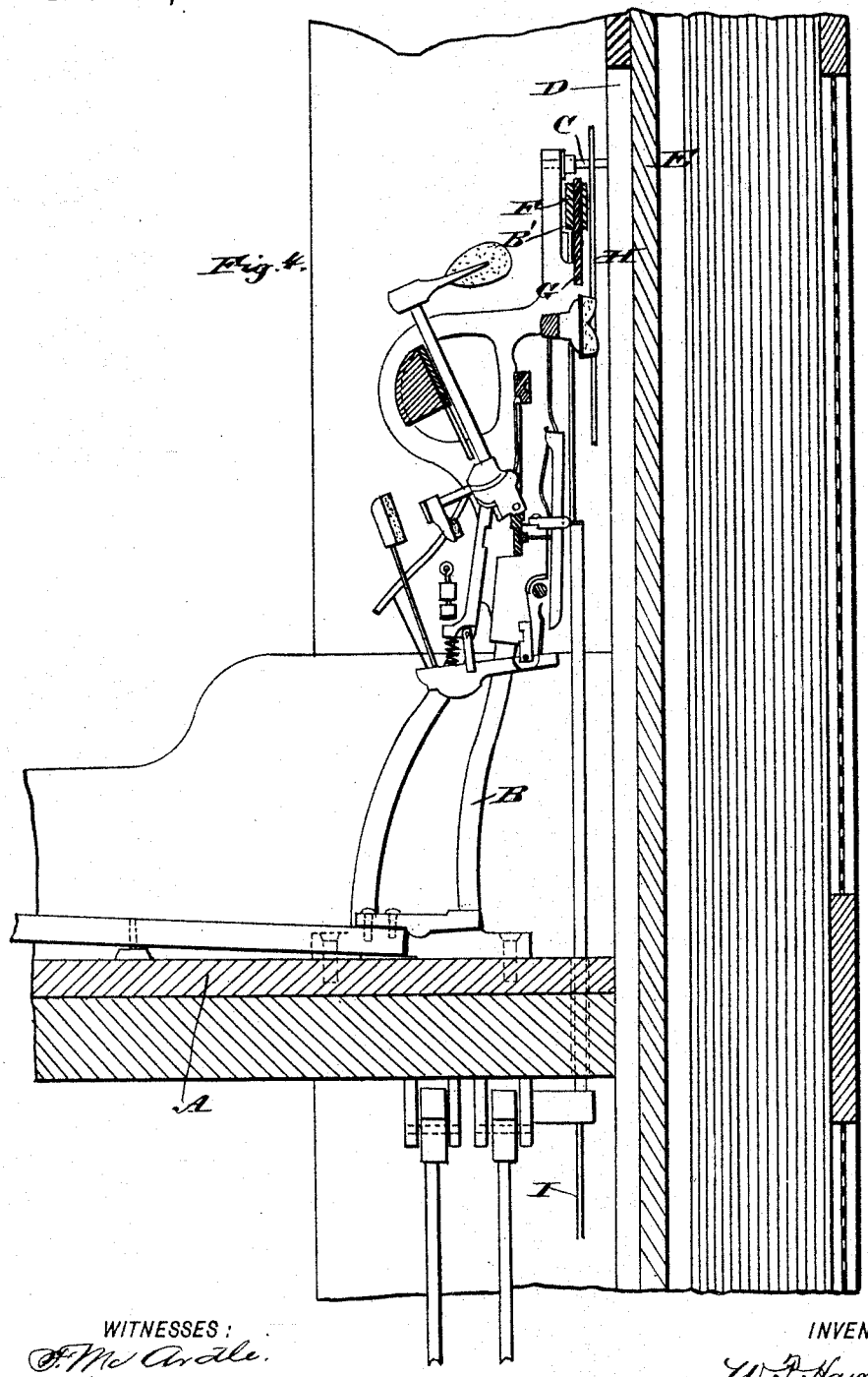
(No Model.) 3 Sheets—Sheet 3.

W. P. HAINES.

PIANO.

No. 491,423. Patented Feb. 7, 1893.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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PIANO.

SPECIFICATION forming part of Letters Patent No. 491,423, dated February 7, 1893.

Application filed May 11, 1892. Serial No. 432,649. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. HAINES, of New York city, in the county and State of New York, have invented certain new and useful Improvements in Pianos, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in pianos, whereby the performer is enabled to conveniently and readily render the piano mute for practicing and other purposes.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front sectional view of the improvement on the line 1—1 of Fig. 3; Fig. 2 is an enlarged sectional plan view of the pedal action; Fig. 3 is a transverse section of the improvement on the line 3—3 of Fig. 1, with the action removed; Fig. 4 is an enlarged transverse section of part of the improvement with the action in position; Fig. 5 is an enlarged sectional front view of the pedal action on the line 5—5 in Fig. 2; Fig. 6 is a transverse section of the same on the line 6—6 in Fig. 5; Fig. 7 is a perspective view of the locking bar for the pedal action; Fig. 8 is an enlarged side elevation of one of the brackets and damper rail, parts being in section; and Fig. 9 is an enlarged transverse section of the damper rail.

The upright piano is provided with the usual keyboard frame A, on which is secured a series of transversely extending brackets B, placed suitable distances apart and connected at their upper ends by bolts C, with the string frame D, held on the sounding board E, in the usual manner. In the several brackets B, at the rear and near their upper ends, are formed forks B′, adapted to support and form guideways for a longitudinally extending rail F, on which are secured pieces of damper fabric G, depending from the said rail F a suitable distance downward in front of the strings H.

Each piece of damper fabric G extends between two brackets and it is preferably fastened in place at its upper end to the rail F by strips F′, made of wood or other suitable material and screwed to the rail, as will be readily understood by reference to Fig. 9. The rail F in its normal position is in the upper end of the forks B′ of the brackets B, so that the depending part of the damper fabric G is out of the path of the hammers of the piano action so that the hammers can strike the strings H, in the usual manner. When the rail F is moved downward, as hereinafter more fully described, then the damper fabrics G are moved in the same direction into the path of the hammers of the action, so that the hammers first strike the fabrics and the latter remain interposed between the strings and hammers at the time the hammers are in their rearmost position. The piano is then mute.

In order to move the rail F up or down in the guideways of the brackets B, the following device is provided:—The ends of the rail F are pivotally connected by vertically extending links I and I′ with longitudinally extending levers J, J′ respectively, pivoted on brackets J^3 supported on the base of the piano frame. The inner ends of the levers J and J′ are connected with a pin K, extending upward from the rear or inner end of a pedal L arranged between the ordinary pedals N and N′, as will be readily understood by reference to Figs. 1 and 2. The several pedals L, N and N′ are fulcrumed in a suitable frame O, in the front of which is fitted to slide longitudinally a locking bar P, pressed on at one end by a spring Q attached to the piano frame. This locking bar P, shown in detail in Fig. 7, is provided with two notches P′ and P^2 through which extend transversely the pedals L and N. The notch P′ is provided, in its lower outermost corner, with a rounded offset P^3, and a lug P^4 is formed on the inner wall of the said notch near the upper end thereof. The other notch or recess P^2 is formed in the rear outer corner with a rounded offset P^5 adapted to engage the under side of the pedal N. Now when the pedal L is pressed its right-hand beveled side engages the rounded off corner P^3, whereby the locking plate P is caused to slide in the direction of the arrow

a'; that is, from left to right, the pedal L at the same time passing to the bottom of the notch P′ under the lug P^4. At the same time that this takes place, the longitudinal sliding of the plate P causes the pedal N to travel up the rounded-off corner P^5, whereby the front end of the said pedal is raised and rests finally on the top of the said rounded-off corner. When the pedal L is pressed, as before described, and locked in place by the lug P^4 of the plate P, then the rear end of the said pedal swings upward and, by the pin K, imparts a swinging motion to the levers J and J′ which, by their outer ends, swing downward and by the links I, I′, cause a downward sliding motion of the rail F, whereby the damper strips G are moved into the path of the hammers. When the operator now plays the instrument the hammers strike the damper cloth or fabric G interposed between the hammers and the strings. The piano is then mute. When the operator desires to change the piano from mute to loud, he then presses the pedal N whereby the latter, on traveling over the rounded-off corner P^5, causes the locking plate P to slide in the inverse direction of the arrow a'; that is, from the right to the left, so that the lug P^4 moves away from the locked pedal L so that the latter is unlocked and swings upward at its front end and downward at its rear end, whereby the levers J and J′ are caused to swing and by the links I, I′ cause an upward swinging of the rail F. The damper fabrics G are thus raised out of the path of the hammers and the operator, by continuing to play, sounds the strings by the hammers striking the same directly.

Thus it will be seen that the operator without changing his position at the piano can almost instantly change the same from loud to mute or vice versa. If changed from loud to mute by moving the rail F downward, as above described, the said rail is locked in position automatically by the locking plate P, as before described.

It is understood that as soon as the locking plate P has shifted from left to right to lock the pedal L, the operator can then remove his foot from the said pedal as the latter is held in place by the lug P^4.

The rear end of the pedal L is weighted sufficiently to overbalance the weight of the levers J, J′, links I, I′, rail F, and the damper fabrics G, so that the rear end of the pedal L swings downward and holds the rail F in an uppermost position whenever the said pedal is unlocked, as before described, and pressure is removed from the front end of the said pedal.

It is understood that the brackets B also serve to carry the rails and other parts of the action, the said brackets being made very thin and extended transversely so as to take up very little room as regards the action.

It will be seen that the rail F is not liable to warp, as the rail is reinforced by the strips F′ which, in addition to their functions of clamping the strips G in place, serve at the same time to strengthen the rail. The rail F engages between the ends of adjacent strips F′, the guideways B′ in the brackets B, so that warping cannot take place at the point where the strips F′ do not fully cover the rail F.

As illustrated in Fig. 8, the bolts C for supporting she upper ends of the brackets B are formed with nuts C′ screwing on the bolts against the inner surface of each bracket B, so that the latter are held the proper distance from the string frame D. A soft material is usually placed between the nut C′ and the end of the bracket B.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent:—

1. A piano provided with brackets supporting the action and formed with guideways, and a rail mounted to slide in the said guideways and carrying strips of damper fabric adapted to be moved into or out of the path of the hammers, substantially as shown and described.

2. A piano provided with a series of brackets for supporting the action, and formed at their upper ends with guideways, substantially as shown and described.

WILLIAM P. HAINES.

Witnesses:
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WILLIAM J. BENTLEY.