O. WESSELL, A. NICKEL, & R. GROSS.

PIANO-ACTION.

No. 188,706. Patented March 20, 1877.

Fig. 1.

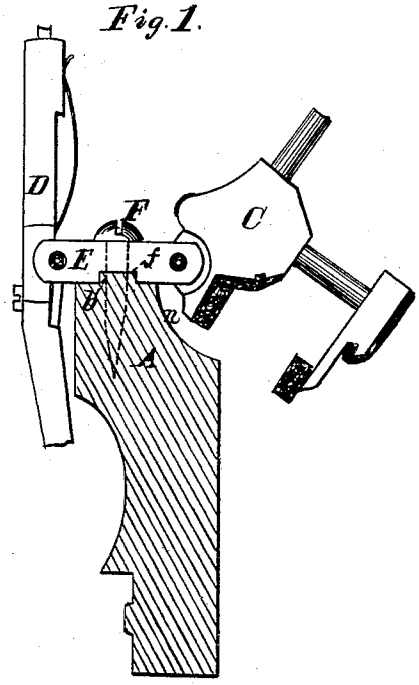


Fig. 2.

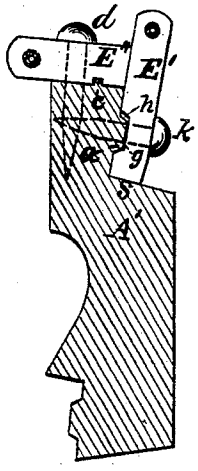
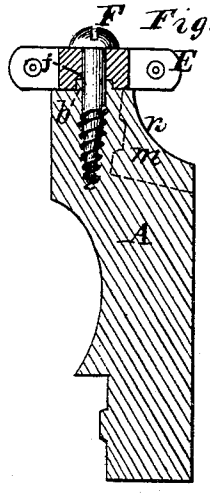


Fig. 3



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IMPROVEMENT IN PIANO-ACTIONS.

Specification forming part of Letters Patent No. **188,706**, dated March 20, 1877; application filed December 27, 1876.

To all whom it may concern:

Be it known that we, OTTO WESSELL, ADAM NICKEL, and RUDOLPH GROSS, all of the city, county, and State of New York, have invented an Improvement in Piano-Forte Actions; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

Our invention relates to the actions of upright pianos, and has for its object the strengthening and re-enforcement of the main rail of such piano-forte actions, and the prevention of the splitting of such main rails through the insertion therein of the screws which attach the flanges thereto.

The invention consists in fitting the flanges, to which the dampers and hammer-butts are pivoted, to the main rail of the action, in such manner that the said main rail is clamped and supported by said flanges, in a direction at or nearly at right angles with the grain of the wood of such main rail, thereby preventing the screws inserted through said flanges from splitting the said main rail.

Figure 1 in the drawing is a sectional view of the main rail of the action of an upright piano-forte, and a side view of other parts of such action comprising our invention. Fig. 2 is a diagram illustrating the ordinary method of fitting and attaching the hammer and damper flanges to such main rail. Fig. 3 is a diagram which will be used to illustrate our improvement, and exhibit the increased strength of the main rail.

A, Figs. 1 and 3, is the main rail of an upright piano-forte as constructed in our invention, and A′, Fig. 2, is a main rail as heretofore constructed. The top of the main rail A, Figs. 1 and 3, has formed thereon a tongue, *b*, preferably of rectangular cross-section. A hammer-butt, C, and a damper, D, are pivoted to each flange E, Figs. 1 and 3, and all the flanges are fitted snugly to the top of the main rail A and the tongue *b* formed thereon, said flanges having transverse grooves *f* on their under sides to receive the said tongues *b*.

Formerly each hammer and damper of upright pianos had separate flanges E′ and E″, as shown in Fig. 2, E″ representing the damper-flange, and E′ the hammer-flange. Each damper-flange E″ was fitted to the top of the main rail A′, as shown in Fig. 2, a small tongue and groove, *c*, serving only to regulate the position of said flange on the top of said main rail, and said flange being attached to said main rail by a screw, *d*, inserted through said flange into said main rail. In this way of attaching the damper-flanges, the insertion of the screws *d* (which are required to enter the wood snugly, one after another at short intervals) was very apt to split the main rail A′. This difficulty is obviated by our invention, in which the flanges E support the fulcra of both the dampers and hammers, and the grooves *f*, in fitting snugly the tongue *b* on the top of the main rail, clamp, bind, and laterally support the grain of the wood in said main rail. The screws F, Figs. 1 and 3, are inserted through the said flanges E, and penetrate the main rail through the central part of the tongue *b*. It is manifest that the clamping action of the flanges E must greatly strengthen the main rail A against splitting by the pressure of the screws.

The hammer-flanges E′ were formerly attached to the main rail, as shown in Fig. 2. On the back of the rail was formed a tongue, *a*, and a groove, *g*, was formed in the flange E′, wider than the said tongue *a*. The tongue *a* was beveled on its under side, and the groove *g* in the flange E′ was correspondingly beveled on its lower side, so that the insertion of the screw *k* would draw the lower end of the said flange firmly down upon the shoulder *s* of the main rail, an open space, *h*, above the tongue *a* being left, to allow the said drawing down of the said flange against the said shoulder. The screw *k* was inserted through the flange E and the tongue *a*; but the flange exerted no clamping action, and consequently did not strengthen the rail as the flanges E do in our invention.

By pivoting the hammer-butts C to the ends of the flanges E opposite the ends of the same to which the dampers D are pivoted, as shown in Figs. 1 and 2, we are enabled to dispense with cutting away that portion of the back of the main rail set off in the dotted outline in Fig. 3, and lettered *m*, and we are only required to cut out a simple concavity, *n*, on the front of said main rail, or to bevel off the up-

per front part of the same to permit the free play of the hammer-butt C on its pivot. The additional wood *m*, Fig. 3, adds greatly to the resisting power of the rail against the splitting action of the screws F, and renders the entire action more firm, strong, and durable.

We claim—

The combination of the flange E, having the groove *f*, with the main rail A, having the tongue *b* snugly fitted and clamped within the said groove *f*, and the screw F, inserted through the flange E and the tongue *b* into the main rail, substantially as and for the purpose described.

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