

UNITED STATES PATENT OFFICE.

THEODORE STEINWAY, OF NEW YORK, N. Y.

IMPROVEMENT IN PIANO-FORTE ACTIONS.

Specification forming part of Letters Patent No. 93,647, dated August 10, 1869.

To all whom it may concern:

Be it known that I, THEODORE STEINWAY, of the city, county, and State of New York, have invented a new and useful Improvement in Piano-Forte Actions; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a sectional end view of this invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a plan or top view of the same. Fig. 4 is a detached sectional view of the mechanism for adjusting the key-rail in the action-frame.

Similar letters indicate corresponding parts.

This invention relates to certain improvements on the metallic action-frame described in Letters Patent granted to me August 18, 1868, and numbered 81,306, said improvements being intended particularly to adapt such metallic action-frame to grand piano-fortes.

These improvements consist in the arrangement of wedges under the standards of the metallic action-frame, and between said standards and the bottom of the key-frame, in such a manner that by means of said wedges the action-frame can be raised or lowered and the hammers brought in the proper position in relation to the strings; also, in the arrangement of a rounded foot on the bottom end of the pilot, which is hinged to the intermediate or "balance" lever of the action, in combination with a concave socket in the bearing-piece attached to each key, in such a manner that the action-frame, together with its actions, is entirely detached from the keys, and can be removed and replaced without disturbing the keys, or, by forcing the pilots out of their sockets, each key can be removed and replaced without disturbing the action, and thereby the adjustment of the action and of the keys is materially facilitated; further, in the arrangement of adjusting-screws in the standards of the metallic action-frame, in combination with the rail, which limits the stroke of the keys in such a manner that said rail can be readily raised or lowered, and the stroke of the keys can be regulated to suit the player; also, in

the arrangement of arms extending upward from the standards of the action-frame, and provided with holes which are tapped to receive the screws, which pass through slots in the hammer-rail in such a manner that said rail can be readily fastened; and also raised or lowered to retain the hammers in the required position.

In the drawing, the letter A designates the bottom of the key-frame, to which is secured the balance-rail B, in which are secured the balance-pins *a*, in the usual manner. The balance-pins form the guides for the keys C, which are entirely detached from the action, each key being provided with a bearing-piece, D, which is provided with a concave socket, *b*, to receive the rounded foot of the pilot *c*. This pilot is hinged to the intermediate or balance lever *d*, which carries the jack *e*, by means of which motion is transmitted to the hammer H. If the intermediate lever *d* is raised up as far as it will go, the pilot *c* can be forced out of its socket *b*, and the key can be taken out without disturbing the action.

By this arrangement the operation of leveling the keys is materially facilitated; and, furthermore, the action-frame can be secured in position independent of the keys, and if the keys move slightly either toward one side or toward the other, under their pilots, their correct action is not impaired.

The action-frame consists of metallic standards D, which are bored out to receive the tubular metallic rails E, to which the several parts of the action are secured, as shown in the drawing. Said standards are provided with feet *f*, which are perforated with holes to admit screws *g*, which serve to fasten the action-frame down upon the bottom of the key-frame.

Under the standards D are placed wedges F, so that by moving said wedges in or out the action-frame is raised or lowered, and the hammer can be adjusted in the proper distance from the strings.

The top bars of the metallic standard D are provided with holes, through which pass the screws *h*. These screws screw into the rail I, which serves to limit the stroke of the keys, and which I have termed the "key-rail" of the action-frame, and the shanks of said screws

are provided with grooves *i*, through which pass the pins *j*, (see Fig. 4,) so that said screws can freely turn in their sockets in the standards, but they are prevented from moving up and down. By turning the screws *h*, therefore, the key-rail is raised or lowered, and the stroke of the keys can be readily adjusted without disturbing any portion of the action.

Under the heads of the screws *h*, I place elastic cushions, so as to deaden the sound if the keys strike the key-rail. From the rear or inner ends of the standards *D* rise arms *k*, to which the hammer-rail *J* is secured by means of screws *l*. These screws are tapped into the arms *k*, and they pass through oblong slots *m* (see Fig. 2) in the hammer-rail, so that said rail can be readily raised or lowered, and the striking distance of the hammers can be easily regulated.

By these improvements an action-frame is produced which can be easily manipulated and regulated by every person of ordinary mechanical skill, and which is so constructed that all its parts can be readily interchanged, and that each action-frame can be inserted into every piano-forte of the same class without requiring any fitting.

I distinctly disclaim everything shown and described in my Patent No. 81,306; but

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

1. The arrangement of wedges *F* under the standards *D* of the metallic action-frame, substantially as shown and described.

2. The arrangement of a rounded foot on the bottom end of a pilot, *c*, in combination with a concave socket in the bearing-piece *D*, attached to each key, substantially as and for the purpose set forth.

3. The screws *h*, passing loosely through holes in the top bars of the metallic standards *D*, and being retained by transverse pins passing through grooves in their shanks, in combination with the key-rail *I*, substantially as described.

4. The arms *k* on the metallic standards *D*, in combination with the hammer-rail *J*, provided with slots to admit the screws *l*, substantially as set forth.

THEODORE STEINWAY.

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.