E. WESTERMAYER.

Grand Pianoforte Action.

No. 214,601. Patented April 22, 1879.

Fig. 2

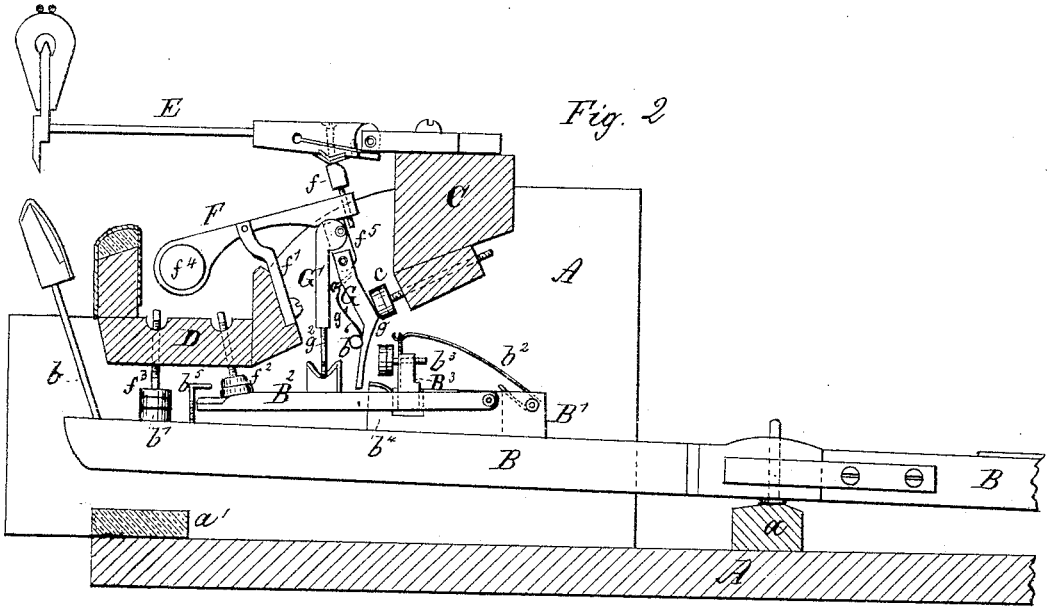
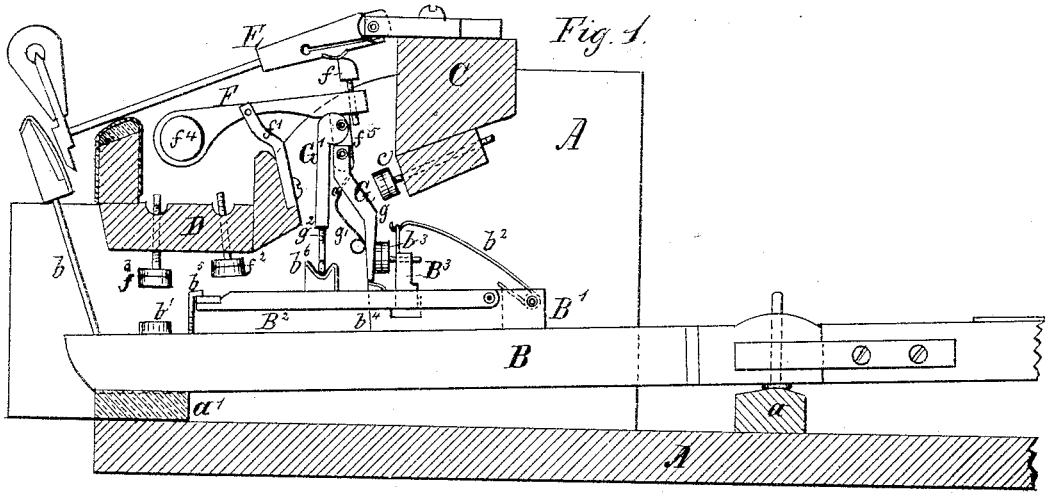


Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

EDUARD WESTERMAYER, OF BERLIN, PRUSSIA, GERMAN EMPIRE.

IMPROVEMENT IN GRAND-PIANO-FORTE ACTIONS.

Specification forming part of Letters Patent No. **214,601**, dated April 22, 1879; application filed February 24, 1879.

To all whom it may concern:

Be it known that I, EDUARD WESTERMAYER, of the city of Berlin, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Grand-Piano-Forte Actions, of which the following is a specification.

My invention relates to certain improvements in the construction, arrangement, and application of parts of grand-piano-forte actions, as hereinafter described, and shown in the accompanying drawings, in which—

Figures 1 and 2 represent in elevation the arrangement of mechanism in the respective positions when the key is in its normal position or depressed.

A is the key-board and frame, *a* the pivot-rail, and *a'* the buffers for the keys B, which carry the usual checks *b*, all arranged to operate in the usual manner. B^2 is a slotted repetition spring-lever pivoted to the lifter-bar B^1, which latter is connected with the key. The repetition-lever B^2 carries a bearing, B^3, and the latter an adjustable button or buffer, b^3, against which the lower end of the main jack G rests when its nose is in contact with the lifter b^4, which is its normal position. b^5 is a check to limit the upward motion of the repetition-lever B^2, the outer end of which is provided with a suitable pad. The check b^5 is screw-threaded, and connected with the key, so that the throw of the repetition-lever may be regulated. b^6 is a forked lifter or bearing for the auxiliary jack, hereinafter to be described, said bearing being attached to the repetition-lever in rear of the lifter b^4. C represents the hammer-rail, to which the hammers are attached in any usual or preferred manner, and D is the jack-rail, upon which all the jacks are mounted. By this arrangement of hammer and jack-rails the construction of the piano-action and the adjustment of the several parts of the mechanism are not only greatly facilitated, but, if subsequent repair or adjustment of any part of the mechanism of the action becomes necessary, this can be readily effected by the facility with which the parts may be removed independently of each other. Thus by removing the hammer-rail access is had to the jack-rail and the jacks, which latter rail may then be lifted out, while the keys and repetition-levers connected thereto and the lifters b^4 b^6 may then be withdrawn through the front of the instrument, as is readily seen by the drawings, and as will be readily understood by those conversant with the manufacture of piano-fortes. The relative arrangement of these parts is therefore of great importance, inasmuch as the construction, mounting, adjusting, and subsequent dismounting and adjusting, or repairing, may be speedily and readily effected, and are greatly facilitated. F is a balance-lever pivoted upon suitable bearings f^1, attached to rail D. It is weighted at one end, f^4, and carries at its opposite end an adjustable lifter-button, *f*, in contact with the butt of the hammer E. The lever F is further provided with a pendent arm, f^5, to which the main jack and the auxiliary jack are pivoted.

G is the main jack, pivoted to the lower end of the arm f^5. It is of angular shape to form an abutment, *g*, and is provided with a spring, g^1, which serves to return the nose of the jack into its normal position upon the lifter b^4 when the key is released from pressure, as will be presently described. G' is an auxiliary jack pivoted to arm f^5 of lever F, above the jack G. The auxiliary jack G' is made adjustable by means of the lower screw-threaded arm, g^2, to regulate its upward throw. The auxiliary jack G' rests upon the forked bearing or lifter b^6, attached to the repetition-lever B^2.

From the position of the two jacks G' G it will be seen that the former will have a greater upward throw than the latter, owing to its greater distance from the fulcrum or pivot of the key B; hence when the latter is depressed the main jack G will lift the end of lever F and hammer until it has reached a certain elevation, when the auxiliary jack G' will commence to act, and finish the throw of the hammer. As soon as the jack G' commences to act the jack G is slightly lifted from off the lifter b^4. Its angle or abutment *g* at the same time comes in contact with the buffer *c*, thereby oscillating the jack G upon its pivot, and moving or pressing its nose outward and clear of the lifter b^4, as shown in Fig. 2.

It will be seen that by this peculiar construc-

tion and arrangement the main jack G starts the upward motion of the lever end and the hammer, and when at a given elevation is relieved by the auxiliary jack G′, to finish the upward throw of the hammer E, at the same time lifting the jack G from and causing it to be thrown out of contact with the lifter b^4, avoiding thereby all friction and speedy wear of the lifter face.

The displacement of the nose of the jack G from the lifter b^4 increases correspondingly as the arm f^5 is made to approach closer to the buffer *c*. By the employment of a weighted lever, F, made to nearly counterbalance the weight of the jacks G G′ they are made to respond more quickly to the touch of the key, and the repetition of the note is thereby greatly facilitated, as the slightest release of the key will withdraw the hammer sufficiently from the strings to permit of this repetition, even while the jack G is out of engagement with the lifter b^4, owing to the yielding of the repetition-lever B^2.

This arrangement also obviates the necessity of giving to the spring b^2 of the repetition-lever so great a tension, as will be readily understood.

f^2 f^3 are adjustable buttons or buffers for limiting, respectively, the downward motion of the rear end of the repetition-lever and the upward motion of the rear end of the key B.

Having now described my invention, what I claim is—

1. In combination with the key, jack, and hammer, an auxiliary jack arranged to not only relieve the main jack of its function, but lift the same out of contact with the key or lifter, and hold it so until the key returns into its normal position, or nearly so, substantially as described, for the purpose set forth.

2. The combination of the key B, the repetition-lever B^2, the lifters b^4 b^6, the jacks G G′, and the hammer E with the weighted lever F, all constructed and arranged to operate as set forth.

3. In combination with the jacks G G′ and the rail D, a counterbalanced lever, F, arranged to practically counterbalance the weight of said jacks when actuated by the key, substantially as described, for the purpose set forth.

4. The combination, with the hammer E, the lever F, and jacks G G′, of the key B, repetition-lever B^2, lifters b^4 b^6, spring b^2, and buffer *c*, all arranged to operate substantially as described.

5. The combination of the rail D and buffers f^2 f^3 with the repetition-lever B^2 and the key B, substantially as described, for the purpose set forth.

6. In combination, the key B, repetition-lever B^2, lifter b^4, lifter b^6, buffer b^3, and spring b^2, with the check b^5, and the jacks G G′, and lever F, and hammer E, all constructed and arranged substantially as shown and described.

In witness that I claim the foregoing I have hereunto set my hand this 3d day of December, 1878.

EDUARD WESTERMAYER.

Witnesses:
GEORGE LOUBIER,
BERTHOLD ROI.