

W. T. WAITE.
Piano Action.

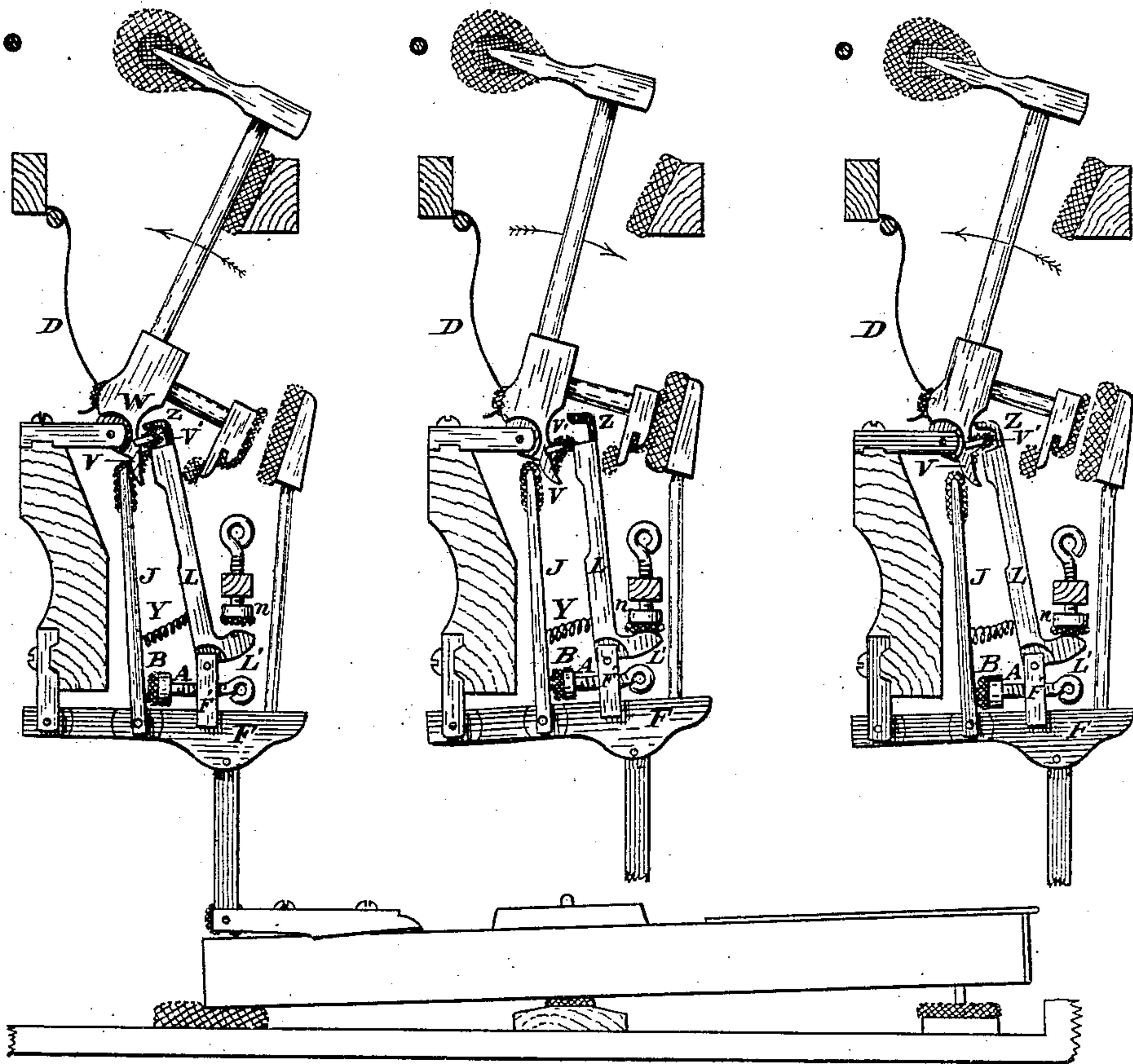
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Fig. 1.

Fig. 2.

Fig. 3.



Attest
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UNITED STATES PATENT OFFICE.

WILLIAM T. WAITE, OF KANSAS CITY, MISSOURI, ASSIGNOR OF TWO-THIRDS
HIS RIGHT TO GEO. H. CONOVER AND JAMES F. CONOVER.

IMPROVEMENT IN PIANO-ACTIONS.

Specification forming part of Letters Patent No. **201,852**, dated March 26, 1878; application filed
December 18, 1877.

To all whom it may concern:

Be it known that I, WILLIAM T. WAITE, of Kansas City, Jackson county, Missouri, have invented a new and useful Improvement in the Actions of Upright Piano-Fortes, of which the following is a specification:

My invention is an improvement in the repeating action for upright pianos, and comprises an adjustable check or stop, which, being "tapped" within a projection on the lever that supports and operates both jack and repeater, is instrumental in regulating the operation of the latter.

My invention further comprises a combination of the above with a specific form of jack-head and hammer-butt.

In the accompanying drawings, Figure 1 is a side elevation of an upright-piano-forte action embodying my improvements, the action being shown in its normal position. Fig. 2 shows the operative parts in the positions they assume at the instant of the hammer's recoil from the wire, the jack being disengaged from the hammer and the repeater in contact therewith, but having its force of impact modified by my adjustable check. Fig. 3 shows the operative parts in the positions they assume on the re-engagement of the jack with the hammer for a repeat note.

I have selected to illustrate my present improvement an upright-piano action substantially such as represented in my Patent No. 173,377, granted February 8, 1876, to which reference may be made. I will therefore confine the description to the parts immediately concerned in my present invention.

F is a vertically-vibrating arm, which may be, in form and functions, substantially identical with the corresponding member described in my said patent, and which, like it, supports and operates the jack L and repeater J; but my present jack, instead of being pivoted directly to the arm F, is pivoted to a post or leg, F', that projects upward from said arm.

Tapped horizontally within the post F' is a screw-threaded rod, A, that terminates in a padded head, B, constituting the check, which, according to its adjustment forward or backward, is made to limit to any desired extent the forcible impact of the repeater J against

the spur V of the hammer. This provision enables the action to be so regulated as to enable the performer, by repetition of the key-movement, to arrest the retreat of the hammer at the precise instant for the re-engagement of the jack in the hammer-butt.

The nice relative adjustment necessary to effect the above object can only be accomplished by a provision which, as above, is a component member of the action proper and moving therewith—that is to say, one constituted by a projection from the jack-lifter F, and forming an adjustable and shifting check upon the advance of the repeating-lever. As in my aforesaid patent, a spiral spring, Y, connects the repeating-lever J with the jack L, and causes the former to oscillate in conjunction with the latter, but subject, in my present improvement, to the control of the adjustable check B upon the jack-lifter.

Z is a metallic hook, which, in conjunction with the point of the jack, engages with a padded spur or projection, V', from the hammer-butt, and acts with these members to insure the proper movement of the hammer, especially in rapid playing, as hereinafter explained. D represents the spring commonly used to force the hammer from the string after the key is struck.

The operation of my repeating device is as follows: The parts being in their normal positions, as shown in Fig. 1, a depression of the key in the usual way elevates the free end of the jack-lifter F, and operates to project the hammer forward against its wire in the ordinary manner. If now the performer, desiring a quick repetition of the note, permits the key to retreat only sufficiently to release the toe L' of the jack from the stop n, the check A B, bearing against the front edge of repeater J, temporarily delays the latter's advance, and enables the spring Y to draw the point of the jack against the spur V' of the hammer-butt; then, as the key is still further depressed, the further descent of the lifter F relieves the repeater J from check-pressure and enables the jack to now act, through the same spring Y, to draw the repeater forward. The thus effected mutual approach of the members L and J causes them to press simultaneously on the

projections V and V' of the hammer-butt, which is thus lifted onto the jack-point, as shown in Fig. 3, so as to enable a repetition of the stroke without waiting for any more than a very slight retrograde movement of the key. In this operation the check A B becomes useful in first holding back the repeater sufficiently to enable the spring Y to draw the jack into contact with the hammer-butt, and then, as the arm F descends, to permit the repeater to approach the jack sufficiently to enable the former, by its pressure on the spur V, in conjunction with that of the jack itself on the spur V', to cause a re-engagement of the jack in the manner already explained. This having been accomplished, the hooked point of the jack, by engaging the spur V', acts to keep the jack-point in intimate contact with the knuckle W, and to prevent not only any feeling of looseness to the touch of the performer, but also to prevent the liability of the hammer to "dance" upon the string, to which loose actions are so subject in rapid playing.

I am aware that it has been proposed to regulate the action of a repeating-lever by

means of a check attached to a stationary portion of the frame; but such a check does not constitute an integral portion of the action, nor is it capable of the advancing and retreating movements which are necessary to effect the purpose in a proper manner.

I claim as new and of my invention—

1. The combination, with arm F, repeater J, and jack L, of the adjustable check A B, tapped into a projection from said arm and vibrating therewith, substantially as and for the purpose set forth.

2. In the described combination with the vertically-vibrated lifter F, the jack L, having the hook Z, the repeating-lever J, spring Y, and oscillating and adjustable check A B, the whole being arranged and adapted to operate as set forth.

In testimony of which invention I hereunto set my hand.

WILLIAM T. WAITE.

Attest:

GEO. H. KNIGHT,
JAMES F. CONOVER.