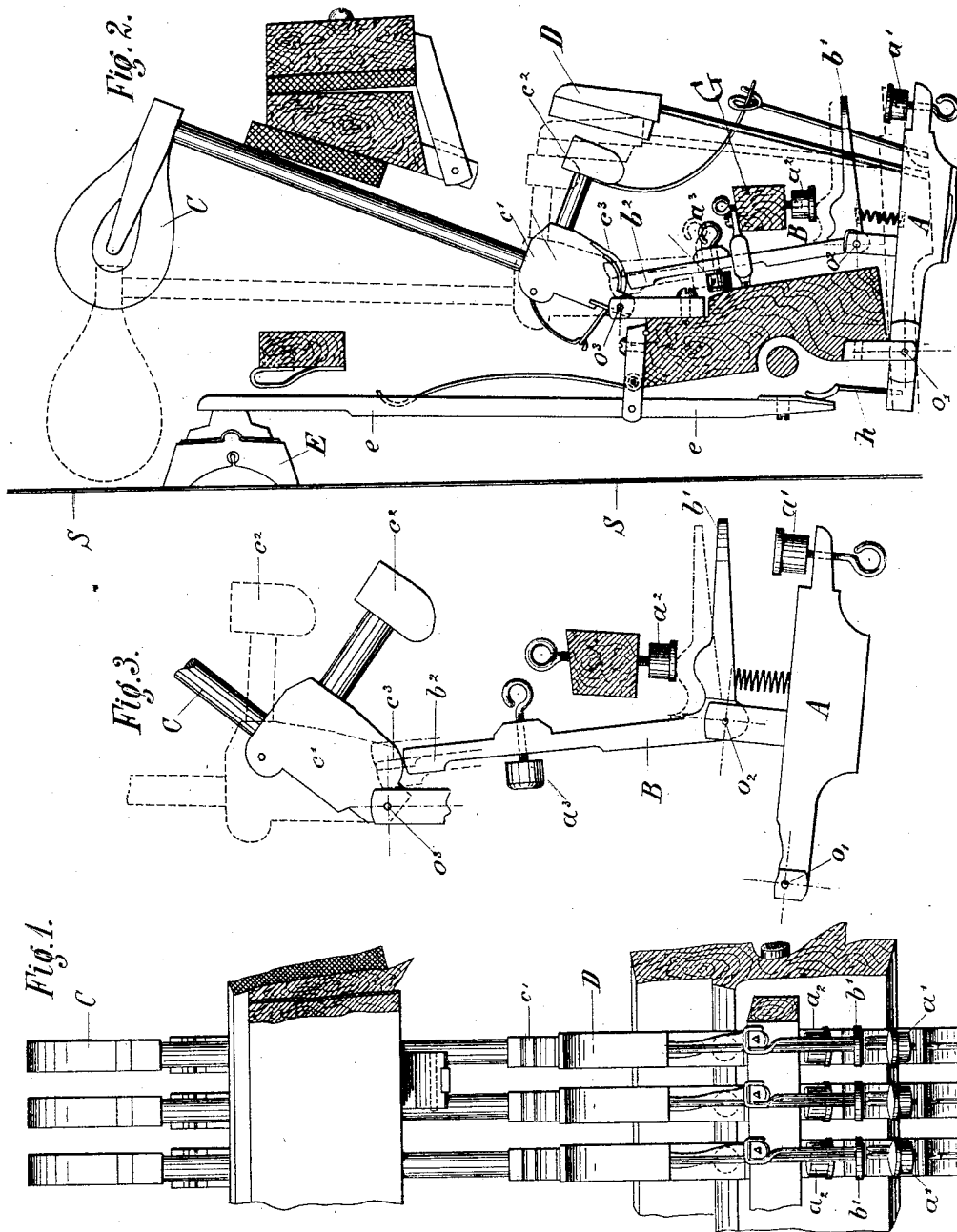


(No Model.)

V. BERDUX.  
REPETITION ACTION FOR PIANOS.

No. 474,112.

Patented May 3, 1892.



Witnesses:

R. E. Child.

E. H. Clark

Inventor:

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by *Max Georgi*  
his Attorney.

# UNITED STATES PATENT OFFICE.

VALENTIN BERDUX, OF HEILBRONN, GERMANY.

## REPETITION-ACTION FOR PIANOS.

SPECIFICATION forming part of Letters Patent No. 474,112, dated May 3, 1892.

Application filed July 22, 1891. Serial No. 400,356. (No model.) Patented in Germany January 8, 1891, No. 58,257; in Switzerland March 19, 1891, No. 3,679, and in England March 28, 1891, No. 5,493.

*To all whom it may concern:*

Be it known that I, VALENTIN BERDUX, a subject of the King of Württemberg, residing at Heilbronn, Württemberg, in the German Empire, have invented a new and useful Improvement in Repetition-Actions for Pianos, (for which I have obtained patents in Germany, No. 58,257, dated January 8, 1891; in England, No. 5,493, dated March 28, 1891, and in Switzerland, No. 3,679, dated March 19, 1891,) of which the following is a specification.

My invention, illustrated in Figures 1 to 3 of the accompanying drawings, relates to a mechanism for upright pianos whose purpose it is to retain a constantly-even power in repeating, no matter how lightly the keys may be struck.

My invention is distinguished by the arrangement whereby the striker-surface lies an equal distance above and below the hammer-pivot in its highest and lowest positions, respectively, and also in the arrangement whereby the said striker-surface may be so adjusted with relation to the covering-leather of the hammer-butt that it always will bear against the said covering-leather and will recede only so far from the hammer-butt as is necessary for the action of said hammer, and so that upon the slightest release of the key the striker-surface will be again brought directly under the covering-leather of the hammer-butt, and a slight pressure on the key will again cause the hammer to strike. In the heretofore customary arrangement the strikers in their positions of rest recline against a felt cushion, which cannot be adjusted and which on account of the partial swelling of the cushion, due to climatic influences, frequently caused the unequal and irregular impingement of the striker-surfaces, resulting in a decrease in the power of the hammer-action exerted by the hammer mechanism. Another defect in the prior piano-action consists in the absence of an effective means for adjusting the individual strikers, inasmuch as in the same all the strikers after actuating the hammer rested against a single felt-covered rail extending across the mechanism. These defects are remedied by my novel arrangement.

The jack or striker B, formed in the shape of a bell-crank or angle lever and which in most actions is journaled on one arm of the lever or riser A, has two arms  $b'$  and  $b^2$ , one of which—to wit, the vertical arm  $b^2$ —is provided with an adjustable projection  $a^3$ , which serves to adjust the distance of the hammer-butt or impact-surface from the hammer-pivot  $o^3$ . The tripping is performed by the familiar arrangement whereby a boss or projection upon the horizontal arm  $b'$  strikes against an adjustable check or contact  $a^2$  on the rail G. A check or contact  $a'$ , adjustably mounted on lever or riser A, serves to regulate the extent of displacement of the vertical striking-arm  $b^2$ . When the riser A is swung upwardly on pivot  $o'$  by the key, (not represented in the drawings,) the damper E is first removed from the string by means of the damper-fly  $h$  acting against the damper-rod  $e$ , and the hammer C is swung on its pivot  $o^3$  until it strikes the string by means of the striker-arm  $b^2$  impinging against the leather covering  $c^3$  of the butt  $c'$ . Just before the impact of the hammer the striker-arm  $b^2$  yields laterally—that is to say, the releasing action begins and the back-catch D and back-catch bunter  $c^2$  begin to act. The lateral yielding motion of the vertical striker-arm is completed as soon as the arm  $b'$  meets the check or contact  $a'$ . The latter being adjustable, the extent of yielding motion may be so regulated that the striking-surface of the striker will lie below the leather covering  $c^3$  of the butt even in its extreme position of displacement, as indicated in dotted lines in Fig. 3. By this arrangement the striker-arm  $b^2$  is enabled to be quickly returned fully under the butt C, and a light pressure on the key will suffice to again actuate the hammer—that is to say, to make the repetition complete.

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

1. In a piano-action, a hammer-butt pivoted at a point intermediate of the extreme upper and lower positions of the striker, substantially as set forth.

2. In a piano repeating mechanism, a striker or jack, as B, formed in the shape of an angle-lever, in combination with an adjustable projection, as  $a^3$ , arranged on the vertical striker-arm, and an adjustable check, as  $a^2$ , ar-

5 ranged to bear on the horizontal arm of jack B, whereby the same may be so adjusted that the striker-arm always bears under the hammer-butt and the displacement of the hammer may be adjusted independently of the projection  $a^3$ , substantially as set forth.

10 3. In a piano repeating mechanism, a pivoted striker, as B, having a horizontal arm, as  $b'$ , in combination with a riser, as A, provided with an adjustable check, as  $a'$ , and an adjustable check, as  $a^2$ , arranged to one side of the check  $a'$ , whereby the displacement of the

striker may be accomplished, so that the slightest pressure on the key will return the striker beneath the hammer-butt to repeat 15 the hammer action, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

VALENTIN BERDUX.

Witnesses:

AUGUST B. DRANTZ,  
CARL DUSSMANNTZ.