



# UNITED STATES PATENT OFFICE.

FERDINAND POLSTER, OF BALTIMORE, MARYLAND.

## IMPROVEMENT IN REPEATING ACTIONS FOR PIANOS.

Specification forming part of Letters Patent No. **159,838**, dated February 16, 1875; application filed October 28, 1874.

*To all whom it may concern:*

Be it known that I, FERDINAND POLSTER, of Baltimore, in the county of Baltimore and State of Maryland, have invented a new and valuable Improvement in the Repeating Action of Pianos; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of a single key-lever with its attachments, showing my spring devices acting in combination with the repeating-standard, the fly and key levers, and the fly-lever bottom; also, the rails and key-board in section. Fig. 2 represents a perspective view of regulating tenon-rocker butt, with its resilient spring and buffer-head.

My invention is a device for producing a ready and rapidly repeating action in pianos; and consists in the novel construction and operation of the same, for the purpose aforesaid, and embraces the following peculiar features: A regulated resilient spring supporting the hammer-standard, and, by means of buffers, rocker-butts, and set-screws, coacting with said standard and the fly and key levers of a piano-forte action; also, a bent and twisted spring, supporting and springing the lower arm of the fly-lever, all of which and their purposes are hereinafter more fully described and illustrated by the accompanying drawings, in which the same letters designate identical parts of my device in the different figures, respectively.

The letter A represents the usual key-board of a piano, suitably supporting the key-lever B. C is the rocker-lever bottom or butt, attached to and regulated upon the aforesaid key-lever, and hinged at its inner end to the fulcrum of the usual fly-lever D, all in the usual manner. Said fly-lever has an elbow shape, with a vertical and horizontal arm, as illustrated. E is the usual hammer back-check. F is the usual hammer, and *b* its butt, resting upon the hammer-rail *c*. H is the hammer-standard, which generally rests, by means of the notch *e*, upon the top of the ver-

tical arm of the said fly-lever. I is one of the musical strings of the piano. K is the usual rail for the support of the hammer F when at rest, and provided with the usual set-screw and buffer *f* to press down the horizontal arm of the fly-lever, and also regulate the extent of the consequent oscillation of its vertical arm.

The above usual elements of the best piano-actions now made have in combination and coaction with them certain new elements, as follows: A spring, L, consisting of a rod of resilient metal of suitable size and length, having one end firmly and tightly inserted into a rocking butt or block, *g*, and the other end similarly inserted into a head or tongue, *h*, as illustrated, the whole forming a resilient and buffer spring under the foot of the aforesaid standard H, and supported and regulated upon the key-lever B by means of the set-screws *i* and the tenon-rocker *k*. The said tongue *h* extends underneath the inner end of the lever-butt C, for the purpose of preventing the said tongue from springing up too high, and thus pressing the hammer F against the string I. Also, inserted into the foot of the said standard H is one end of another set-screw, *m*, the other end of which is passed down loosely through a hole, *n*, pierced through the said tongue *h*, and into another hole made directly underneath the former into the upper edge of the key-lever B. This set-screw *m* is thus arranged for the purpose of keeping the standard H always in a vertical position while raising or lowering the hammer F; and it is provided also with a buffer-block, *l*, which rests upon the tongue *h*, and thus wholly supports said standard when the top of the vertical arm of the aforesaid fly-lever is out of the notch *e*, while it also, by being turned up or down upon the screw-threads, regulates the oscillation and momentum of the aforesaid hammer. The letter *s* represents another spring, consisting of a piece of resilient wire of suitable length and size twisted once or twice upon itself, and bent into an elbow shape, as illustrated. The end of the shorter arm of said elbow is inserted tightly into the top of the outer end of the fly-lever butt C, and the end of the other arm passed underneath the horizontal arm of said fly-lever D, for the purpose of springing the top of the

vertical arm of the same into the notch *e*, when the inner end of the key-lever B comes down, and the hammer F falls into rest.

Hence the operation of the aforesaid springs, as shown, in combination with the said older elements, produces a ready and rapidly-repeating action of the hammer upon the strings, should the performer even press continuously upon the key, and make ever so rapid a trilling vibration of the string—a result much desired, but hitherto unattained; therefore,

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

In piano-forte actions, the resilient spring

L, provided with the tongue *h* and the regulating tenon rocker-butt *g*, in combination with the key-lever B, the buffer-block *l*, on the set-screw *m* of the hammer-standard H, and the fly-lever butt C, with its resilient spring *s* acting on the fly-lever D, substantially as and for the purposes specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FERDINAND POLSTER.

Witnesses:

J. TYLER POWELL,

W. A. BOSS.