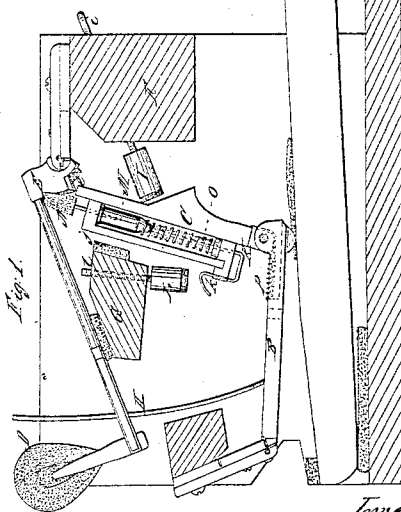


Patented Aug. 30, 1859.



Th Marshall,

UNITED STATES PATENT OFFICE.

THEODORE MARSHALL, OF NEW YORK, N. Y., ASSIGNOR TO LIGHTE & BRADBURY, OF SAME PLACE.

PIANOFORTE-ACTION.

Specification of Letters Patent No. 25,305, dated August 30, 1859.

To all whom it may concern:

Be it known that I, THEODORE MARSHALL, of the city, county, and State of New York, have invented a new and useful Improvement in Pianoforte-Actions; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

The subject of my said invention is an arrangement and combination of devices by which the hammer after striking the string is detained at a fixed and definite height determined by the previous adjustment of the parts, while the jack descends sufficiently to reengage beneath the hammer butt.

In the accompanying drawings, Figure 1 is an elevation representing the parts at rest. Fig. 2 is a similar view exhibiting the position of the various parts at the instant that the hammer strikes the string and the jack escapes from the hammer butt.

A represents the key and B a secondary lever upon which it acts.

C is the jack pivoted to the front end of the lever B.

D is the hammer, E the hammer butt pivoted to the rail F.

G is the rest rail upon which the hammers are supported when not in action.

H is a check to prevent the hammer from rebounding against the string.

I is the escapement button by which the jack is thrown off the hammer butt, the said button is adjustable by means of a set screw *i*.

J is a guard which arrests the backward motion of the jack.

K is a rod or post adapted to slide to a limited extent within the guard J and occupying a position parallel with the jack C, the motion of which it regulates in the manner hereinafter explained. The heel *k* of the said post is turned up in the manner represented so as when the jack and its accessories are elevated to engage with a stud L, which is adjustable in height by means of a set screw *l*.

M is a block attached to the post K within the guard J and serving to limit the upward motion of the said post. The head N of the supporting post is mounted upon a screw shank which screwing into the block M renders the said head adjustable in height.

O is a spiral spring exerting an upward

pressure upon the post K through the agency of the block M.

P is a spiral spring attached at its respective ends to the secondary lever B, and to the heel of the jack and serving to restore the latter to its foremost position, when by its depression it is released from the escapement button I.

The operation is as follows: Upon the key being struck by the performer the jack is elevated through the medium of the secondary lever B and imparts motion to the hammer by engaging in customary manner beneath the shoulder *e* on the hammer butt. At the proper instant the jack is thrown back by the escapement button I so as to release the hammer, which rebounding from the string is received by the head N, of the post K and prevented by the check H from rebounding or "dancing" upon the string.

The slightest elevation of the front end of the key (and consequent depression of the secondary lever B) suffices to withdraw the check H from the hammer, and it will now be seen that the hammer is, by the upward pressure of the spring O, supported at any desired height determined by the previous adjustment of the stud L. The consequence is that upon or very slight elevation of the playing end of the key the jack C descending from its contact with the escapement button I is drawn forward by the action of the spring P and engages beneath the shoulder *e* of the hammer but in readiness for a repetition of the blow, the hammer being for this purpose supported in its elevated position by means of the post K and spring O as before stated. In this action the hammer is (immediately on its release by the back check) held firmly at any desired elevation by means of the supporting post K, the height of which is determined by the previous adjustment of the stud L, which being mounted in a fixed rail is entirely free from influence by any of the moving parts. The superiority of such an arrangement, to any in which the height at which the hammer is supported is adjustable only in relation to the jack, is evident.

By a strong downward pressure of the front end of the key the jack is thrown higher than with a light pressure. By my arrangement such variation in the height of the jack has no influence upon the height at which the hammer is supported for repeat-

ing and I can therefore support the hammer
in closer proximity to the string without
danger of their vibrating in contact, than is
possible with any arrangement in which the
5 height at which the hammer is supported
bears a definite relation to that of the jack.

The adjustability of either of the parts L
and N would alone enable the detention of
the hammer at any desired height independ-
10 ently of the height of the jack, but by ren-
dering both adjustable as shown the post
may be adapted to operate in combination
with the jack with better effect.

I claim as new and of my invention herein
15 and desire to secure by Letters Patent—

The spring supporting post K M N O
when used in the described combination with
a stud L separate and distinct from the mov-
ing parts to detain the hammer at any de-
termined height while the jack descends 20
sufficiently to reëngage beneath the hammer
butt.

In testimony of which invention, I here-
unto set my hand.

TH. MARSCHALL.

Witnesses:

JAMES H. GRIDLEY,
W. WURZBACH.