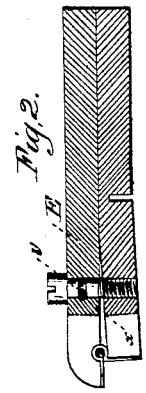
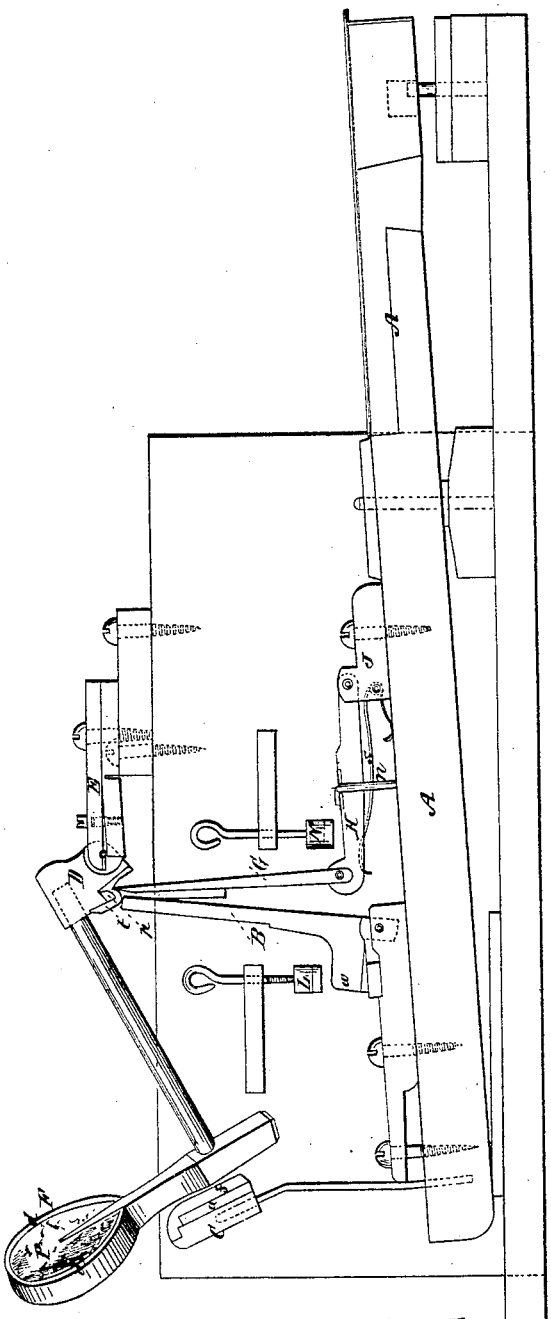
F. KOTH.

PIANOFORTE ACTION.

No. 48,565. Patented July 4, 1865.





Witnesses.

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FREDERICK KOTH, OF NEW YORK, N. Y.

PIANO-FORTE ACTION.

Specification forming part of Letters Patent No. 48,565, dated July 4, 1865.

To all whom it may concern:

Be it known that I, FREDERICK KOTH, of New York, in the county and State of New York, have invented a new and Improved Piano-Forte Action; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the arrangement of a second jack on the key-lever acting upon the hammer-butt in such a manner as to hold the hammer near the string to allow the usual jack to pass readily by the least motion of the key under the hammer-butt, so as to operate said hammer in such a manner as to produce a repetition of blows by a very slight rise of the end of the key.

In the accompanying drawings, A represents the key-lever, to which the usual jack, B, and back check, C, are attached and arranged in the usual manner.

E is the flange, to which the hammer-butt D of the hammer F is pivoted.

G is a second jack hinged on the end of a lever, H, the other end of which lever is hinged on the projection J fast to the key-lever A.

s is a spring situated below the lever H to hold the same, as well as this second jack G, up.

n is a stop fast to the key A, the upper end of which projects over the top of the lever H to prevent the action of the spring *s* forcing said lever H, and consequently the jack G, too far upward.

L is a stop capable of being regulated and acting upon a projection, *w*, on the end of the jack B, whereby said jack is moved away from under the hammer-butt D.

N is a stop capable of being regulated and acting against the top side of the lever H, to regulate and fix the upward motion of said lever H, and consequently of the jack G.

M represents one of the strings.

The operation is as follows: By the motion of the key A the jack B as well as the jack G are moved upward, and act together on the hammer-butt D. The jack G is stopped by its stop N when the hammer has arrived at a certain height a short distance from the string M, but as said jack G works in a deep recess or notch in the hammer-butt the same can never come out of said recess. The jack B acts, therefore, on the hammer-butt so as to cause the hammer F to strike the string M in the usual manner when the projection *w* on the lower end of said jack B comes in contact with the stop L, so as to move the upper end of said jack away from the under side of the hammer-butt D when the hammer falls again, and is caught in its fall by the back check, C, and the jack G forcing the latter a little downward. The least motion of the key A will cause the back check, C, to liberate the hammer, when the action of the spring *s* will force the jack G upward until stopped by the stop N, and moving thereby the hammer F upward till within a short distance of the string, and in such a position that the bottom of the hammer-butt D will be in a line with the top of the jack B, when, by a slight motion of the end of the key A, the projection *w* of the jack B will be brought clear of its stop L and said jack B will be moved under the bottom of the hammer-butt D, ready to force the hammer F upward that short distance to strike the string, and permit thereby a quick repetition of blows with only a very slight motion of the end of the key.

Figure II represents an enlarged view of the flange to which the hammer-butt is pivoted. The screw which tightens the lower part to the upper has a small groove, *v*, turned on in its upper part, into which a stationary pin, *x*, is fitted in such a manner as to allow the screw to turn freely, but at the same time prevent the same from moving. The thread is in that case only cut on the lower part of the screw, and by which arrangement the pivot-pin of the hammer-butt can be regulated with greater nicety and accuracy.

The hammer is made by the use of cork P, cut or shaped in the required manner and then covered with very soft leather or cloth *d*. The back check, C, has likewise a thickness of cork, *a*, on its face covered with soft leather or cloth *f*, and in the same manner is the bottom of the hammer-butt D made, where *p* represents a piece of cork covered with leather or cloth *t*.

The substitution of cork in piano-actions in places where felt has always been used at present presents many advantages independent of its very great saving in the expense. When felt is bent around the end of the hammer-stem the inner side is naturally very much com-

pressed, and by which it loses a great deal of elasticity, while cork, being cut out of a solid piece, retains its elasticity throughout its whole thickness. In places where felt is only applied in thin layers, as at the bottom of the hammer-butt, or on the face of the back check, its elasticity is very often completely destroyed by the application of too much glue, with which the felt is attached to the wood, and in which case the porous nature of the felt allows the glue to penetrate and absorbs the same, so as to become quite hard, instead of being soft and elastic, while from the nature of cork the glue can never penetrate the same, and can consequently not destroy its quality.

Instead of making the end of the hammer altogether of cork, a small piece of felt may in some cases be inserted at the top, and the covering of leather or other soft material may in most cases be dispensed with, except when used to produce a slight friction, as is the case on the back check.

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

The arrangement of the jack G, lever H, spring *s*, and stop *n*, attached to the key A, in combination with the adjustable stop N, and operating on the hammer-butt in the manner and for the purpose substantially as described.

FREDERICK KOTH.

Witnesses:
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