

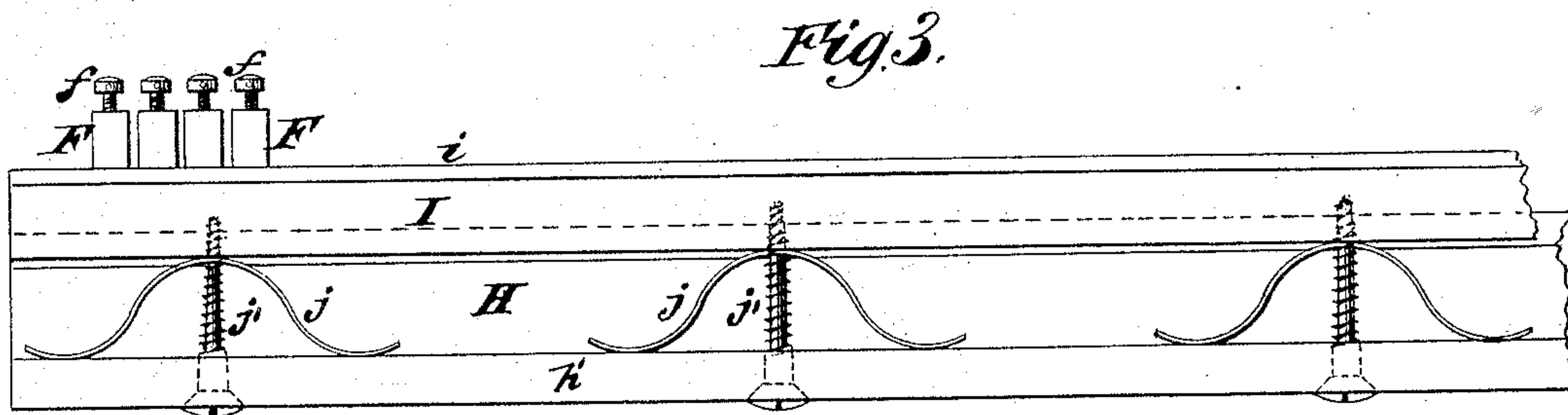
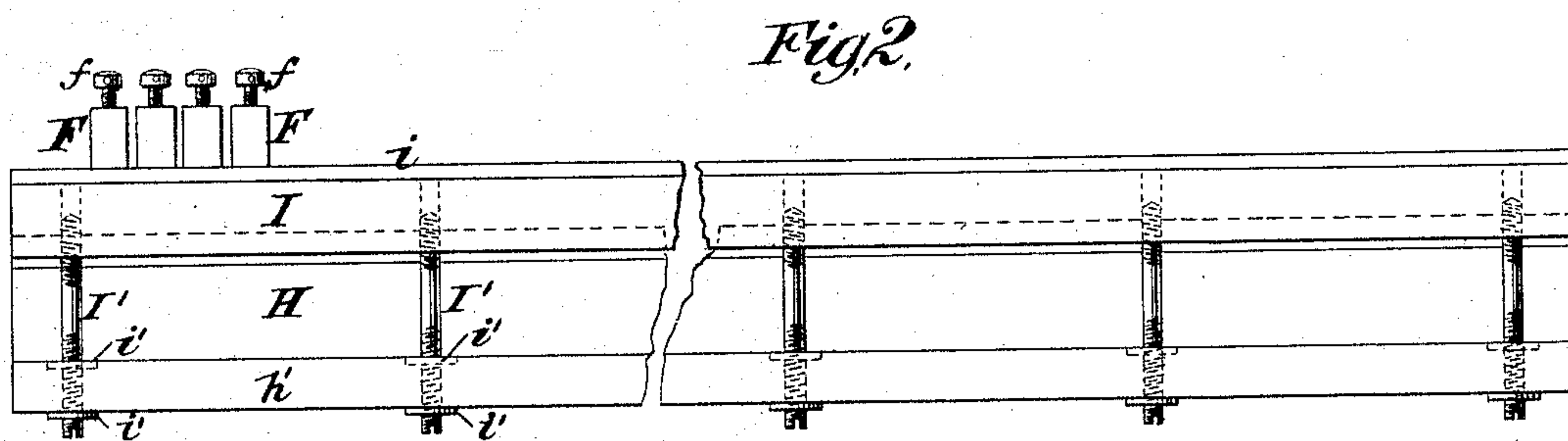
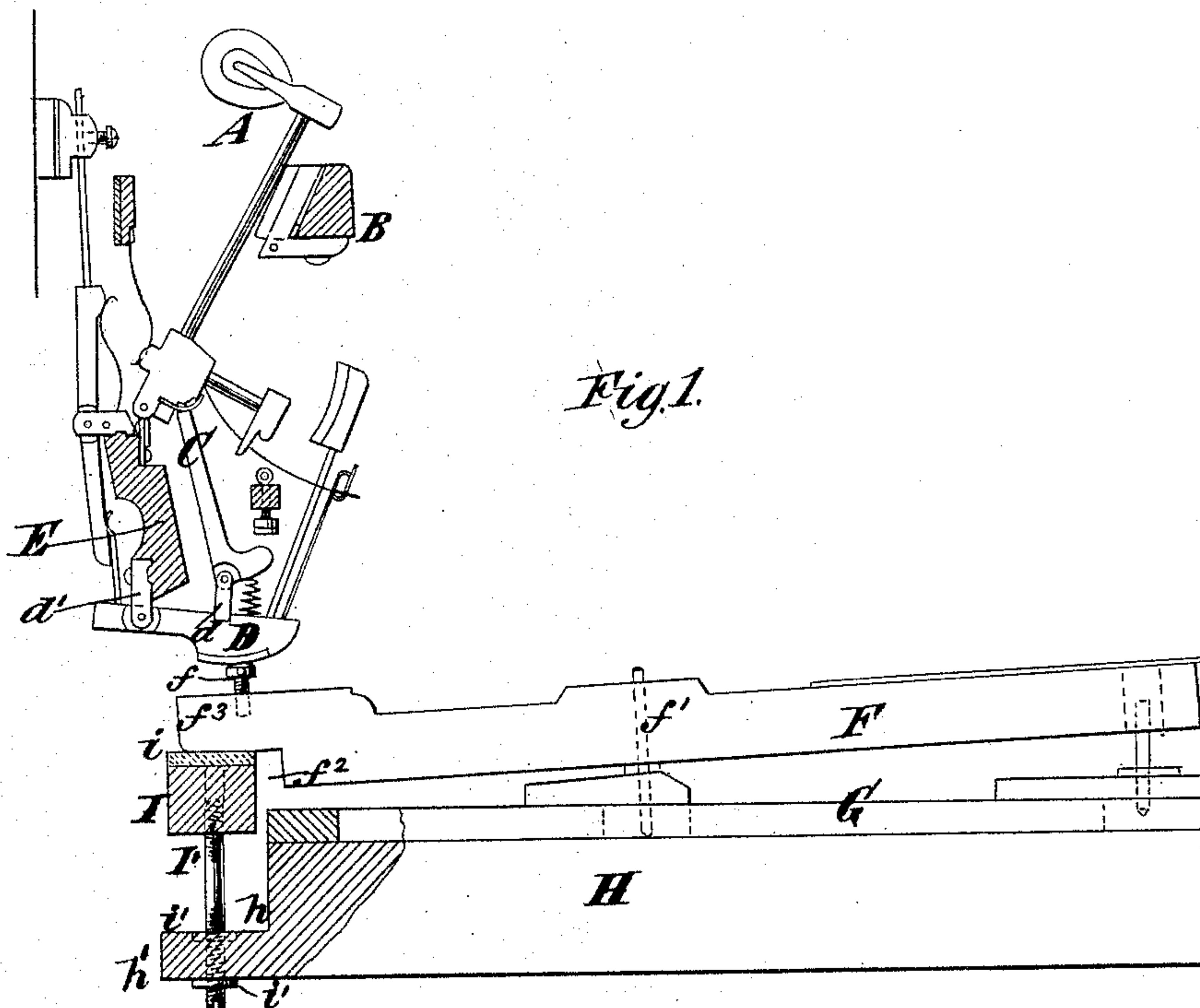
(No Model.)

E. STROUD.

KEY BOARD FOR MUSICAL INSTRUMENTS.

No. 351,477.

Patented Oct. 26, 1886.



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UNITED STATES PATENT OFFICE.

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KEY-BOARD FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 351,477, dated October 26, 1886.

Application filed August 3, 1886. Serial No. 209,842. (No model.)

To all whom it may concern:

Be it known that I, EDWARD STROUD, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Pianos and other Musical Instruments, of which the following is a specification.

My invention is more particularly intended for pianos, although it may be embodied in other musical instruments. The keys of a piano-forte are usually supported by a key-frame, which in turn is secured to a thick plank of wood, called a "key-bottom." In pianos as usually constructed the back ends of the keys are supported directly upon the key-frame or key-bottom, and by extreme dampness or extreme dryness of the atmosphere the wood of the key-bottom and keys is caused to swell or shrink, and thereby produce what is commonly called "long and short jacks," and also changes the "depth of touch" or the range of vertical movement of the keys at their front ends. To correct this difficulty in a measure, the keys have been provided at their back ends with screws inserted in their upper surfaces, and through which they operate upon the action; but although the adjustment of these screws will correct what is technically known as "long or short jacks" it will not have any effect in changing or varying the depth of touch, and hence will not correct the changes in the depth of touch, which are produced by the swelling and shrinking of the keys and the key-bottom.

The object of my invention is, first, to reduce to a minimum the changes which would be produced by the swelling or shrinking of the wood in a key-bottom and keys, and, secondly, to provide an adjustable key-rest for the back end of the keys, which is so constructed and arranged that it may be adjusted vertically relatively to the key-bottom, and will by its adjustment prevent long and short jacks, and also maintain a uniform depth of touch. Heretofore the swelling or shrinking of the full depth or thickness of wood both in the key-bottoms and keys have resulted in maximum changes in the vertical position of the keys; and in order to reduce such changes to a minimum I reduce as much as is possible the

depth or thickness of wood both in the back ends of the keys and in a portion of the key-bottom from which the adjustable key-rest is supported, as will be understood from the description hereinafter contained.

The invention consists in novel features of construction and combinations of parts, which are hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a transverse section of a piano-action, and an end elevation, partly in transverse section, of a key-bottom with keys supported thereon. Fig. 2 represents a rear elevation of a key-bottom and a key-rest with keys supported thereon, a portion of the parts between the ends being removed to reduce the length of the figure; and Fig. 3 represents a rear elevation of one end portion of a key-bottom and key-rest with keys supported thereon, illustrating a slight modification of my invention.

Similar letters of reference designate corresponding parts in the several figures.

My invention does not in any way relate to the action, and it will therefore be necessary to but briefly refer to its principal parts.

A designates the hammer; B, the hammer-rest rail; C, the jack; and D, the lever provided with a flange, *d*, to which the jack is pivoted, and which itself is secured by a flange, *d'*, to the action-rail E.

F designates the keys, which at their rear end are provided with screws *f*, secured in their upper surfaces and forming adjustable projections, which act upon the levers D to lift the jacks C.

G designates the key-frame, on which the keys are pivotally supported at *f'*, and H designates the key-bottom, which may be made of a thick plank of wood, as is usual. Instead of supporting the rear end of the keys upon the key-frame or key-bottom, as is usually done, and which results in the keys being raised or lowered, as the wood in them and in the key-bottom shrinks or swells, I support the rear ends of the keys upon a bar, I, extending parallel with and at the rear of the key-bottom H, and which is faced with felt *i*, and is preferably vertically adjustable, as I shall

hereinafter describe, relatively to the key-bottom. This bar I constitutes a key-rest, whereby the back ends of the keys are supported, and whereby the downward movement of the
5 keys at the back end is limited.

I have here represented the key-bottom H as rabbeted at the rear edge and from its upper surface downward, as represented at h , so as to form a rearwardly-extending lip or flange,
10 h' , at the bottom of the key-bottom, and by means of the rabbet h this lip or flange is in this example of my invention formed integral with the key-bottom. I have also represented the rear ends of the keys as rabbeted at f^2 from
15 the under side upward, so as to form rearward projections, f^3 , from the upper portions of the keys, and through these rearward projections f^3 the keys are supported by the key-rest I.

I have in Figs. 1 and 2 represented the key-rest bar or rail I as held in vertical position by posts I', the upper ends of which are screwed into the bar I and the lower ends of which are screw-threaded and passed through the lip or flange h' . The lower ends of these screw-
25 threaded posts I' may be nicked or notched, so as to receive a screw-driver, as shown in the drawings, and nuts I' may be applied to them above and below the lip or flange, so as to hold them securely in place after they have
30 been adjusted or turned by the screw-driver applied to their lower ends. I have here represented the posts I' as provided with reverse screw-threads, right and left, at their opposite ends, so that a given degree of turning of a
35 post will produce twice the vertical adjustment of the bar I that would be secured if the post were screw-threaded only in one part, I or h' , and had a swivel-connection with the
40 keys are deranged by the swelling or shrinking of the small thickness of wood in the lip or flange h' and rearward projection, f^3 , from the key, it is only necessary to slightly turn the screw-threaded posts I' in order to raise or
45 lower the key-rest bar I to the proper degree, and by such adjustment long and short jacks will be prevented, and the uniformity in the depth of touch, which is so desirable, will be preserved.

50 It will be understood that the advantages of my invention may be secured in a degree by supporting the rest-bar I from a thin lip or flange of wood or metal extending rearward from the key-bottom H, or by supporting the
55 keys on the bar I, through rearward projections either of wood or metal from their upper portions, or by both these features of construction and without any provision for the vertical adjustment of the bar I; but in order
60 to secure the advantages of my invention to the fullest extent I provide additionally for the adjustment of the bar I relatively to the flange or lip h' , from which it is supported.

In the example of my invention shown in
65 Fig. 3 I have represented the key-rest bar I as supported from the lip or flange h' of the

key-bottom h by means of springs j , and I have also represented ordinary wood-screws j' , which are inserted loosely through and are capable of turning in the lip or flange h' , and
70 which screw into the bar I. When the screws j' are turned in one direction, the bar I will be lowered or drawn downward against the force of the springs j , and when said screws are turned in the other direction the bar I will be
75 relieved and will be raised proportionate to the extent to which the screws are turned by the action of the spring j .

It will be seen that by the vertical adjustment of the bar I, I provide not only for raising or lowering the keys to bring them into proper relation to the levers D on which they operate, but I also provide for maintaining a uniform depth of touch, which is, as well known, very desirable. The screws f may be
85 employed, as heretofore, to bring the bearing-points of the individual keys in proper relation to the levers D, on which they operate.

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

1. The combination, with the keys, key-frame, and key-bottom of a musical instrument, of a vertically-adjustable key-rest arranged beneath the keys at their back ends, and which limits the downward movement of
95 the keys at the back ends, substantially as herein described.

2. The combination, with the keys of a musical instrument and a key-bottom having at the back a flange or lip projecting from its lower portion, of a key-rest supported from
100 said flange or lip, substantially as herein described.

3. The combination, with the keys of a musical instrument and a key-bottom rabbeted at the back and upon its top, so as to form an integral flange projecting from its lower portion, of a key-rest for the back ends of the keys supported from said flange, substantially
105 as herein described.

4. The combination, with the key-bottom of a musical instrument, of keys having at their rear ends projections from their upper portions, and a key-rest on which the rear ends of the keys are supported through said pro-
115 jections, substantially as herein described.

5. The combination, with the key-bottom of a musical instrument, of keys rabbeted from the under side at their rear ends, so as to form integral rearward projections from the upper
120 portions of the keys, and a key-rest on which the rear ends of the keys are supported through said projections, substantially as herein described.

6. The combination, with the keys and key-bottom of a musical instrument, of a key-rest and supports whereby the key-rest is supported from and capable of vertical adjustment relatively to the key-bottom, substantially as
125 herein described.

7. The combination, with the keys and key-bottom of a musical instrument, of a key-rest
130

and screw-threaded posts supporting the key-rest from the key-bottom and adjustable to vary the height of the rest, substantially as herein described.

- 5 8. The combination, with the keys rabbeted at the rear end to form rearward projections from their upper portions, of a key-bottom rabbeted at the back to form a projecting lip

or flange from its lower portion, a key-rest, and screws whereby the key-rest is adjustably supported from said lip or flange, substantially as herein described.

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