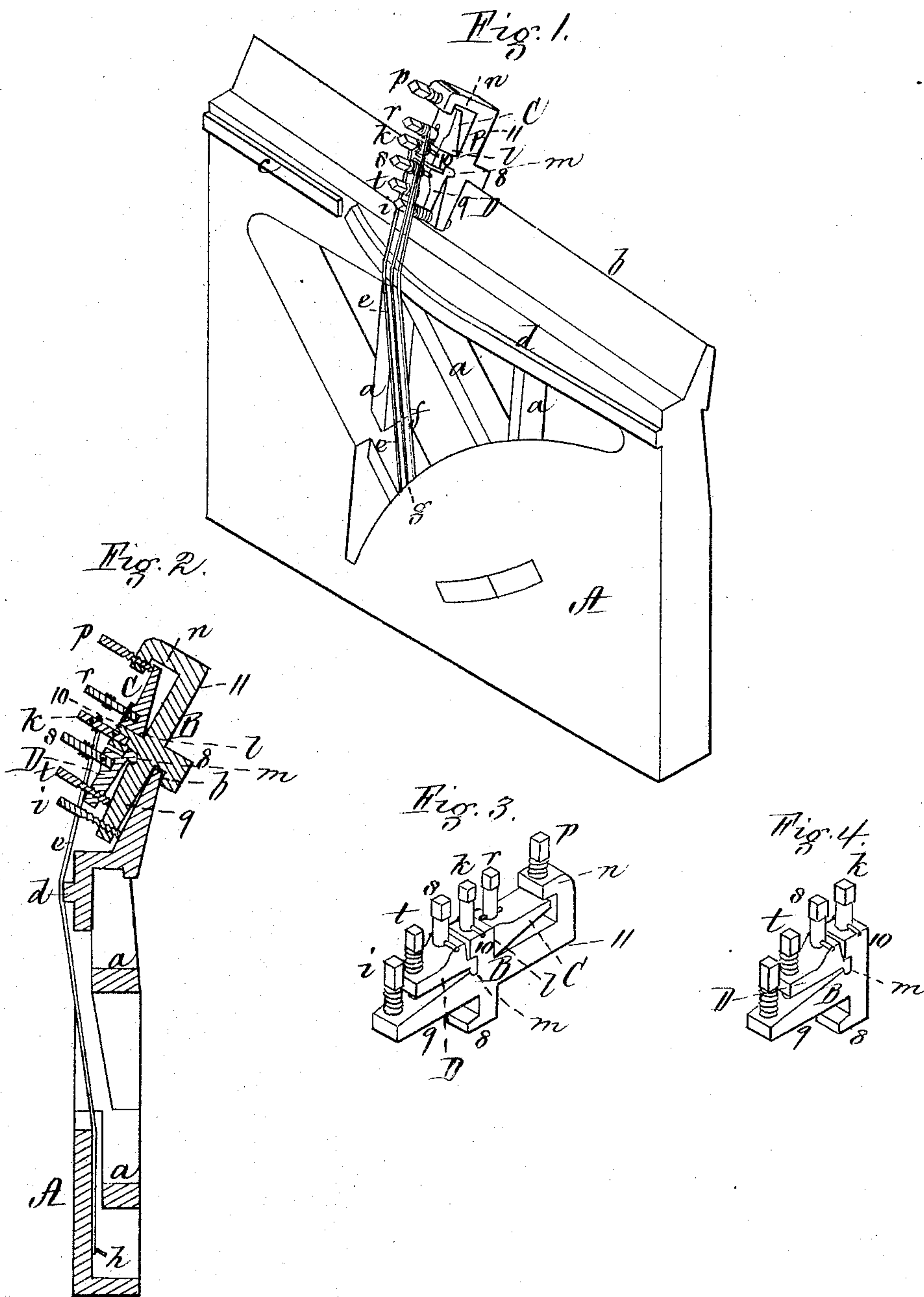


C. E. ROGERS & A. E. MANNING.

Apparatus for Stringing and Tuning Piano-Fortes.

No. 156,674.

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UNITED STATES PATENT OFFICE.

CHARLES E. ROGERS AND ALBERT E. MANNING, OF BOSTON, MASS., ASSIGN-
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IMPROVEMENT IN APPARATUS FOR STRINGING AND TUNING PIANO-FORTES.

Specification forming part of Letters Patent No. **156,674**, dated November 10, 1874; application filed August 25, 1874.

To all whom it may concern:

Be it known that we, CHARLES E. ROGERS and ALBERT E. MANNING, both of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Devices for Tuning Pianos, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view, representing the string-plate of an upright piano with our improved tuning devices applied thereto. Fig. 2 is a transverse vertical section through the same. Fig. 3 is a perspective view, illustrating the subject of our invention, enlarged; Fig. 4, modification of the same.

In the ordinary practice of tuning pianos it has been customary to drive a metal tuning-pin into a wooden pin-block, which is objectionable, for the reason that the changes in the atmosphere from dry to humid, or vice versa, cause the wooden block to contract and expand, the strings oftentimes becoming so slack as to require frequent retuning.

To overcome the above-mentioned difficulty is the object of our invention; which consists in the employment of a set-screw for changing the inclination of the tuning-pin, to which the outer end of the string is secured, which thus increases the effective distance of this pin from the stationary, to which the inner end of the string is secured, whereby, should any string become slack it may be tightened, in a ready and convenient manner, by simply turning the set-screw connected therewith, as hereinafter more fully set forth. Our invention also consists in one or more levers, applied directly or indirectly to a string-frame of metal or other material not affected by moisture, in combination with a set-screw for changing the position of the outer or tuning pin with respect to the stationary or inner pin, between which the string extends, each tuning-pin being seated in one of the levers, and the latter being inclined, more or less, by the turning of the set-screw, in such manner that the outer or tuning pin is made to recede slightly from the inner or stationary pin, which causes the slackness of the string to be taken up as required, thus

avoiding the necessity of frequent retuning, as heretofore.

To enable others skilled in the art to understand and use our invention, we will proceed to describe the manner in which we have carried it out.

In the said drawings, A represents the metal frame of an upright piano, to the front of which the sounding-board (not shown) is intended to be secured. The frame is made open at and near its center; and is provided with cross-bars *a*, cast in one and the same piece therewith, which serve as braces to strengthen it, the upper or projecting portion of the frame being inclined at a slight angle thereto. *c* is the bass-bridge, and *d* the treble-bridge, over which the strings *e f g* are conducted from stationary pins *h* projecting out from the back of the frame A. B is a lever, of the form seen, hooked over the upper or inclined edge *b* of the string-frame, being held in place thereon, by a bent portion, 8, in such manner that it is free to be tipped or inclined by turning a set-screw, *i*, which passes through its lower portion 9, the point of the set-screw bearing on the string-frame. Extending out from the front of the lever B, at or near its center, is a projection, 10, into which is placed a tuning-pin, *k*, through the head of which is formed a hole for the passage of the outer end of one of the strings or wires which is wound around the head of the pin, the latter being provided with a projection at or near its lower end, to prevent it from turning within the lever B.

When the string of the pin *k* becomes slack and requires tightening, it is simply necessary to turn the set-screw *i* down upon the string-frame *b*, which operation causes the lower portion 9 of the lever B to recede therefrom, and the head of the pin *k* in the projection 10 to move or incline back toward a vertical position, thus increasing the distance between the points where the ends of the string are secured, and drawing it tight, as required.

Where there are three strings to a note, as represented in the drawing, two other smaller levers, C D, are pivoted to the lever B on opposite sides (above and below) of its projec-

tion 10, the lower end of the upper lever C being pivoted thereto at *l*, and the upper end of the lower lever D being provided with a projection, *m*, fitting into a groove of corresponding form in the upper end of the lower portion 9 of the lever B. The upper portion 11 of the lever B is bent over at *n*, so as to project in front of the upper end of the upper smaller lever C, and through this bent portion *n* passes a set-screw, *p*, having its point bearing against the upper end of the lever C. Into the lower end of the lever C passes a tuning-pin, *r*, to and around which is secured one end of the string *f*. This pin *f* is of similar construction to the pin *k*, and is tipped or inclined toward the back, to tighten its string by turning the set-screw *p* down on the upper end of the lever C. Into the upper end of the lever D passes a tuning-pin, *s*, to and around which is secured a string, *g*, which, when slack, can readily be tightened by turning the set-screw *t* which passes through the lower end of the lever D, and bears against the upper surface of the lower portion 9 of the lever B.

Where the note—for instance, a bass-note—requires but one string, the levers C D, with their tuning-pins *r* and *s*, and set-screws *p* and *t*, may be dispensed with, and only the lever B, with its tuning-pin *k* and set-screw *i*, be retained, in which case the upper portion 11 of the lever may also be dispensed with; and, if the note is one of two strings, the upper lever C, with its tuning-pin *r* and set-screw *p*, to-

gether with the upper portion 11 of the lever B, may be dispensed with.

From the foregoing it will be seen that, by the employment of a set-screw and one or more levers or other devices, in connection with a string-frame of metal or other material not affected by moisture, the several strings are seldom liable to become loose, and, when required, may be tightened with extreme facility.

It is also evident that the effect would be similar if the edge *b*, instead of being inclined, as shown, were placed in the same plane with, or at a right angle to, the frame; but we prefer the inclined arrangement.

We claim—

1. The lever B, with its set-screw *i*, in combination with the edge *b* of the string-frame A, substantially as and for the purpose set forth.

2. The lever B, provided with the sub-levers C D, or either of them, the levers being operated by set-screws, substantially as and for the purpose set forth.

3. In combination with the lever B and its set-screw *i*, the tuning-pin *k*, provided with a projection to prevent it from turning, substantially as described.

Witness our hands this 21st day of August, A. D. 1874.

CHARLES E. ROGERS.
ALBERT E. MANNING.

In presence of—

N. W. STEARNS,
W. J. CAMBRIDGE.