(No Model.)

L. ORSER.

TUNING DEVICE FOR PIANOS.

No. 538,198. Patented Apr. 23, 1895.

Fig. 1.

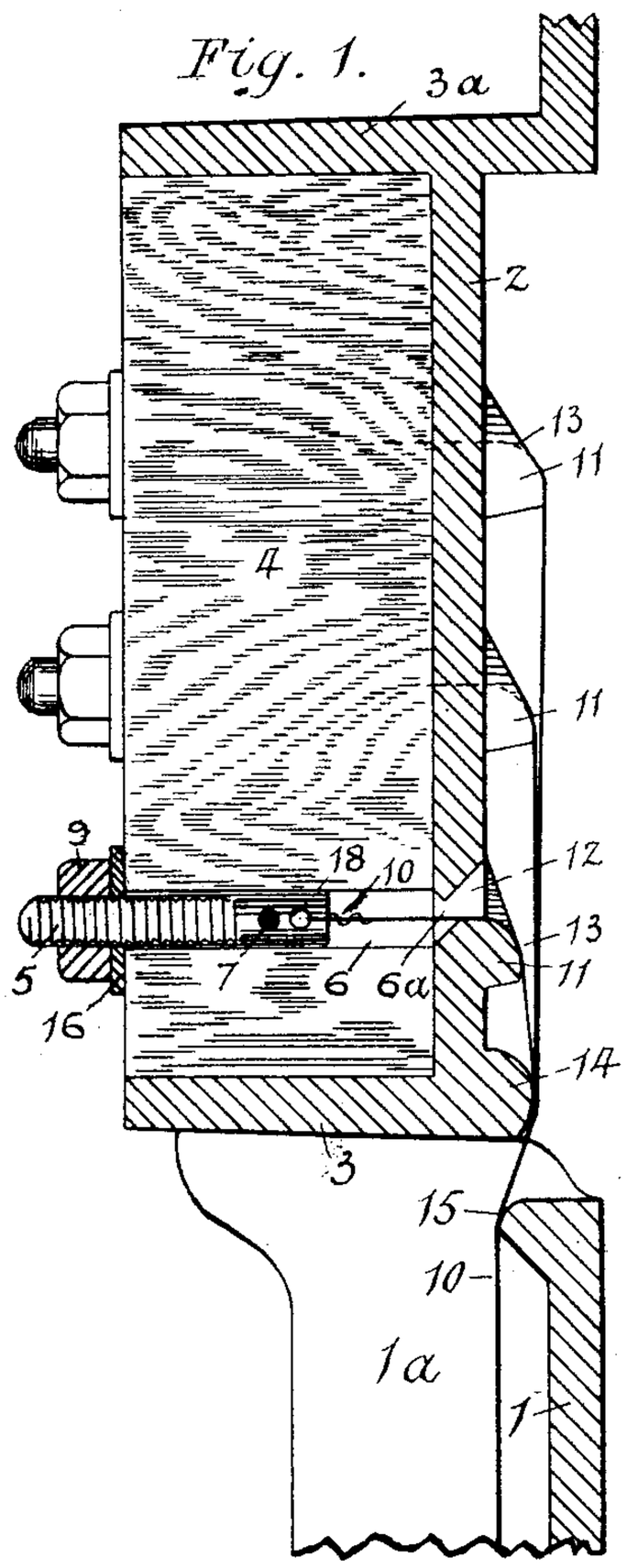


Fig. 2.

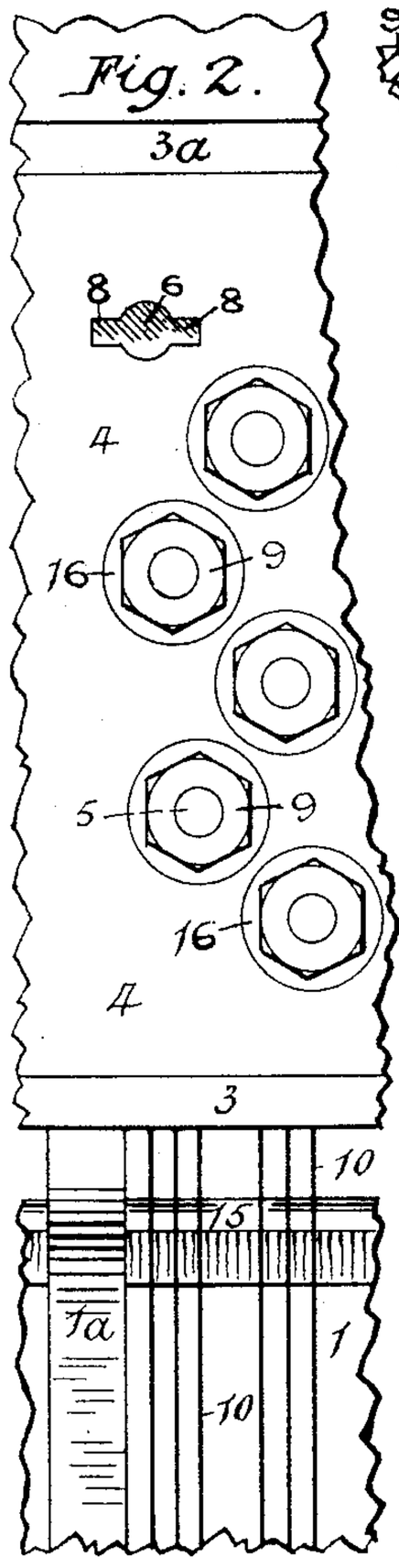
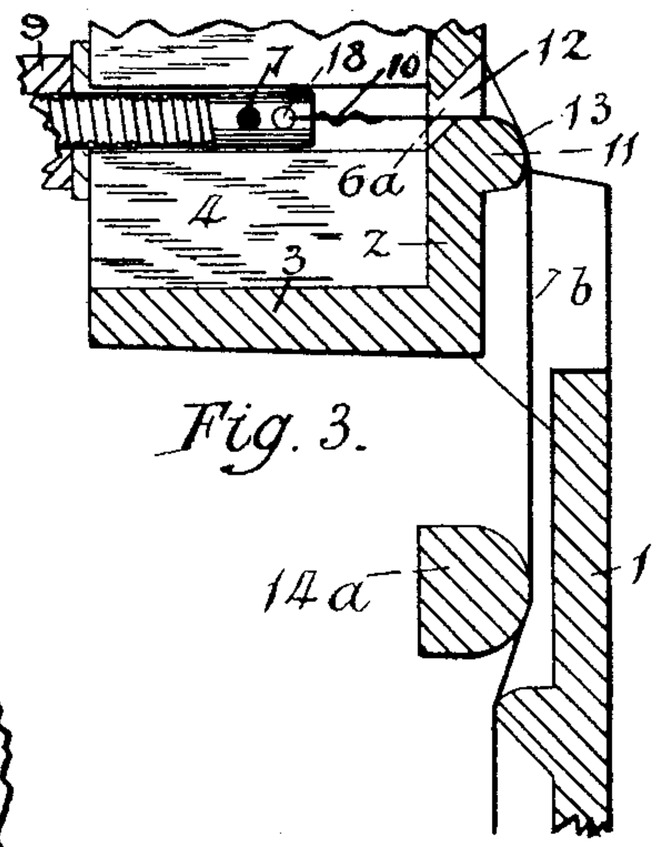


Fig. 3.



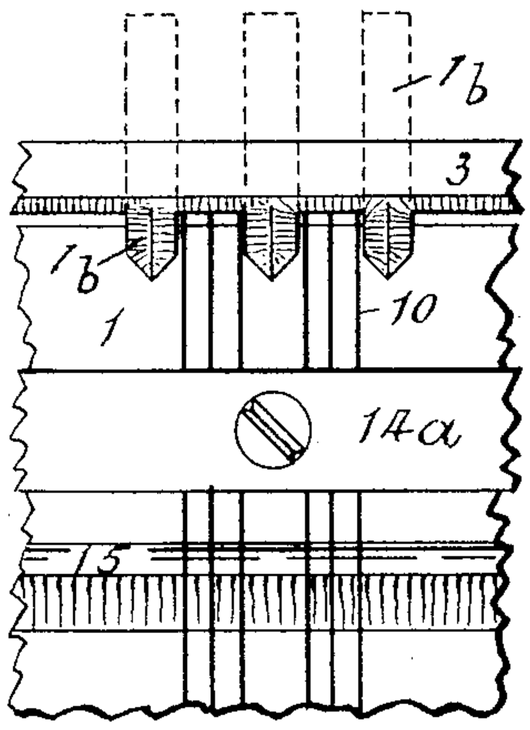


Fig. 4.

Fig. 6.

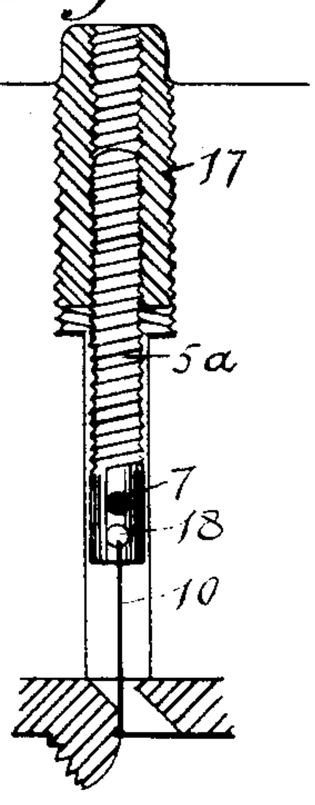
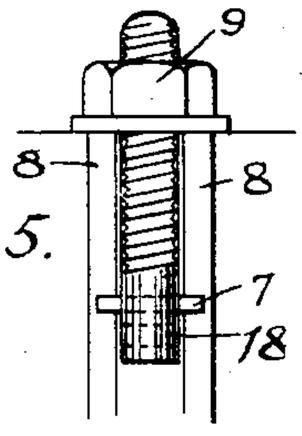


Fig. 5.



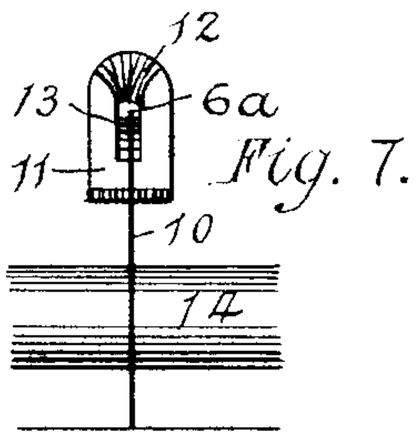


Fig. 7.

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TUNING DEVICE FOR PIANOS.

SPECIFICATION forming part of Letters Patent No. 538,198, dated April 23, 1895.

Application filed March 14, 1894. Serial No. 503,611. (No model.)

To all whom it may concern:

Be it known that I, LEVI ORSER, a citizen of the United States, residing at Galveston, in the county of Galveston and State of Texas, have invented a new and useful Tuning Device for Pianos, of which the following is a specification.

One of the principal objections to the piano is the annoyance and expense of keeping it in tune. The wire strings of the instrument are wound around metal pins which are driven into wood, the friction of the fiber of the wood against the pin being depended upon to hold the string in tune. Such an arrangement at best is ill suited to hold strings at high tension, where the very slightest yield is sufficient to throw the string out of tune. In tuning a string the tuner has to exert a force equal to the tension of the string plus the friction of the wood upon the pin. When the inertia is overcome and the pin moves it is almost sure to move too far and raise the pitch of the string too high. It has then to be moved back. This moving the pin back and forth weakens its hold in the wood and increases its liability to yield under the strain. Probably the greatest source of the difficulty is the yielding of the wrest plank itself in which the pins are fastened under the combined strain of all the strings. Several devices have been invented to obviate this difficulty but in all cases the metal parts of which they are composed come more or less in contact, being thereby liable to cause a jarring which would injure the tone of the instrument.

The object of my invention is to provide a means whereby the strings of a piano may be easily and deliberately tuned, and when tuned they will be held absolutely rigid and unyielding under all circumstances while the pins are set in wood, thus avoiding any possibility of the jarring of the parts.

The wrest plank in which the tuning pins are set is held upon a wrest plate consisting of a raised portion of the iron frame. The strings pass under the wrest plate thence turning at right angles upon a curved bearing pass through openings made in the wrest plate and are made fast to the inner ends of the tuning pins which are set in holes made in the wrest plank to receive them. The pins are thread cut and are drawn outward by a nut which takes its bearing upon the surface of the wood thereby tightening the string.

Referring to the drawings, Figure 1 is a sectional side elevation of the upper part of the iron frame of an upright piano near the treble end, showing wrest plank and tuning pin in position; Fig. 2, a plan view of the same, with one of the tuning pins removed to show the hole made in the wrest plank; Fig. 3, a modification of Fig. 1; Fig. 4, a plan view of same; Fig. 5, a front view of tuning pin, showing guide in position; Fig. 6, a modification of the same; Fig. 7, a plan view of the lug-cavity, and bearing by which the wire enters the wrest plate at the rear side.

Referring to the drawings forming a part of this specification in which similar figures of reference indicate corresponding parts in all the views: 1, Fig. 1, indicates a part of the iron frame of an upright piano above the bridge near the treble end; 1^a, one of the braces of the same; 2, the wrest plate being a raised portion of the frame 1 and having two flanges 3 and 3^a, at right angles to it. Resting upon the wrest plate 2 and occupying the space between the flanges 3 and 3^a is the wrest plank 4, preferably of hard wood cut crosswise of the grain so that the grain of the wood shall stand at right angles to the wrest plate 2. The tuning pins 5 are set in holes 6 bored into the wrest plank 4 lengthwise of the grain. Near the inner end of the tuning pin 5 and passing transversely through it is a guide pin 7, Fig. 5, being firmly fastened therein its ends projecting in opposite directions into slots 8 cut in the wrest plank 4, Fig. 2, on opposite sides of the hole 6. The tuning pin 5 is thread cut and a nut 9 is screwed upon it, Fig. 1.

A hole 18, Fig. 1, is bored transversely through the tuning pin 5 near its inner end to which the string 10 is made fast as shown.

On the rear side of the wrest plate 2 are lugs 11, and adjoining each of which are cavities 12 cast in the plate. The upper surfaces of the lugs 11 form curved bearings 13. The hole 6 is bored through the wrest plank 4 and into the wrest plate 2 a sufficient distance so that the point of the drill will cut an opening 6^a into the cavity 12 on the opposite side of

the plate, the center of the hole 6 being in line with the curved bearing 13 of the lug 11. A molding 14 is formed on the lower edge of the wrest plate 2.

The wrest plate 2 is supported by the braces 1^a of the frame 1, and stands in such a position with reference to the bearing 15 that the molding 14 will serve as an agraffe bar. The wires 10 pass from the bearing 15 under the molding 14, thence turning upon the curved surfaces 13 of their respective lugs 11 pass into the center of the holes 6 and are made fast to the inner ends of the tuning pins 5. The nut 9 takes its bearing upon the surface of the wrest plank 4. A washer 16 serves to prevent the surface of the wrest plank from being chafed. When the nut 9 is turned to the right it operates to draw the tuning pin 5 outward thus tightening the string.

A striking feature of my invention is that it affords a means whereby the strings of a piano may be tuned deliberately and easily without undue strain and when tuned they are held absolutely rigid and unyielding under all circumstances.

As the grain of the wood in the wrest plank 4 is parallel to the tuning pins 5 the shrinking or swelling of the wood can have no effect upon them thus taking advantage of the fact that wood does not shrink or swell lengthwise of the grain.

The tuning pins 5 are distributed so as to afford ample bearing surface upon the wrest plank 4. See Fig. 2. The lugs 11 vary a little in depth so that each of the strings 10 will pass directly from the molding 14 to its respective lug 11 without touching either of the others.

Where the braces 1^a of the frame 1 are not sufficient to support the wrest plate 2, webs 1^b, Figs. 3 and 4, may be located between the notes connecting the frame 1 with the wrest plate 2 or enough of the webs may be made to afford the required strength without the aid of the braces 1^a; or the wrest plate 2 with its flanges 3 and 3^a may be cast in a separate part from the frame 1 and may be supported by being bolted or screwed to the wooden frame of the instrument, (not shown.)

Where the agraffe bar 14^a is used the molding 14 is dispensed with.

Instead of taking its bearing upon the surface of the wrest plank 4 the nut 9 may have a left hand thread cut upon its outer surface 17, Fig. 6, and a corresponding thread cut into the wrest plank 4. When the nut is turned to the right the pin 5^a will be drawn outward.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a tuning device for pianos the wrest plate 2 being a part of the iron frame 1 but being elevated above the main part thereof so that the strings 10 can pass under it and carrying upon its outer side flanges 3 and 3^a and having on its inner side lugs 11 cavities 12 curved bearings 13 and molding 14 and being supported by braces 1^a which are joined to the flange 3 in the manner and for the purpose substantially as described.

2. In a tuning device for pianos in combination with the wrest plate 2 flanges 3 and 3^a and curved bearings 13, a wooden wrest plank 4 resting upon the outer side of the wrest plate 2, the wood being cut cross-wise of the grain so as to stand parallel to the tuning pin 5, having holes 6 bored lengthwise of the grain, with slots 8 cut in opposite sides thereof and openings 6^a in the manner and for the purpose substantially as described.

3. In a tuning device for pianos in combination with the wrest plate 2 flanges 3 and 3^a curved bearings 13 wooden wrest plank 4 holes 6 with slots 8 and openings 6^a, a tuning pin 5 with guide pin 7 fastened into it, hole 18 through which the string 10 is made fast washer 16 and nut 9 taking its bearing upon the surface of the wrest plank 4 and acting upon the tuning pin 5 in the manner and for the purpose substantially as described.

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Witnesses:
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T. E. LINCOLN.