(No Model.)

A. FELLDIN.

PIANO TUNING PIN.

No. 343,805. Patented June 15, 1886.

Fig. 1.

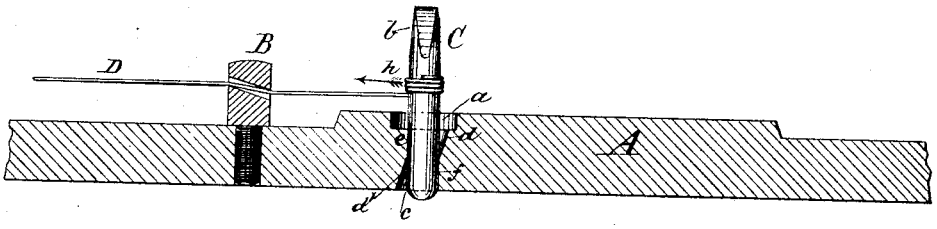


Fig. 2.

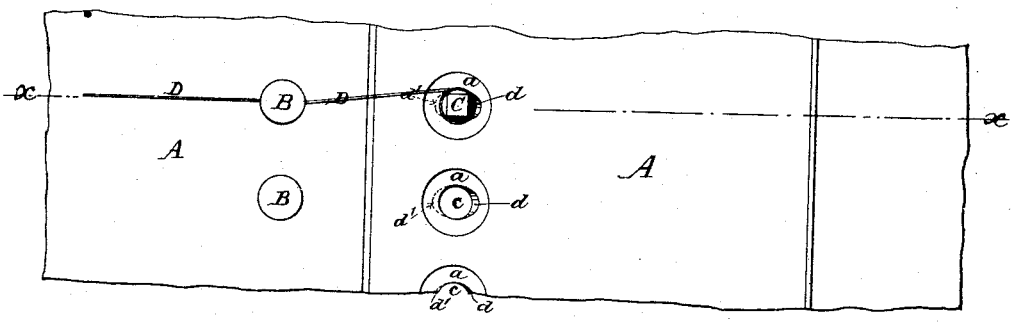
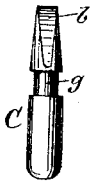


Fig. 3.



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ABRAHAM FELLDIN, OF ITHACA, NEW YORK.

PIANO TUNING-PIN.

SPECIFICATION forming part of Letters Patent No. 343,805, dated June 15, 1886.

Application filed May 29, 1885. Serial No. 167,031. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM FELLDIN, a citizen of the United States, and a resident of Ithaca, in the county of Tompkins and State of New York, have invented a new and useful Improvement in String Stretching and Tuning Devices, of which the following is a specification.

The object of my invention is to provide a simple, durable, and inexpensive device, applicable in general for the purpose of stretching strings and wires, keeping them taut, and adjusting the tension, but especially adapted to replace the old tuning-pin fastening device in string instruments, particularly pianos.

The ordinary tuning-pins are more or less conical, and provided on their surface transversely with fine parallel thread-like grooves, to increase the friction between them and the holes or sockets of the wooden frame, in which they are tightly fitted, to prevent them from turning and from getting loose by rising in their sockets.

By my present invention the tuning-pins need not be made conical, have no tendency to rise from the sockets, may be inserted without applying any force, and become loose to be readily lifted out of the sockets as soon as there is no longer any tension on the string.

The invention will be plainly understood by reference to the accompanying drawings, in which Figure 1 represents a section of a portion of the iron frame of a piano having the tuning-pin secured according to my present invention, the frame being sectioned on the line *x x* of Fig. 2. Fig. 2 is a plan view of a portion of the same. Fig. 3 shows a slight modification of the tuning-pin, it being provided with a groove or rabbet wherein to coil the end of the string.

A is the iron frame, B is an agraffe, and C the tuning-pin.

In order to insure friction, as aforesaid, the portion of the frame in which the tuning-pins are fastened has heretofore been made of wood, as aforesaid. I make it of iron in one casting with the rest of the frame. The portion of the frame in which the tuning-pins are inserted is about five-eighths of an inch thick. A hole, *c*, to receive the pin, is bored cylindrical, not tapering, and the tuning-pin C is also cylindrical, to fit the hole *c*, and is smooth upon its surface, its upper end, *b*, being, however, square, as usual, to adapt it to be turned by the tuning-wrench. Concentric with and of larger diameter than the hole *c* is bored, at its upper end, a flat-bottomed recess, *a*, in the frame A, as shown in Fig. 1. A drill of the same size as the hole *c* is then run down at an inclination to the axis of the hole *c* in such a manner that a portion is cut away at *d* from the rear wall at the upper end of the hole *c*, and also at *d'* from the front wall of the lower end of the hole *c;* or the rabbets may be made by a file or a reamer, or in some other manner. By this construction the friction due to the tension of the string D is not equally divided between the surfaces of the tuning-pin and the hole *c*, but is condensed, so to say, at the points *e f* only, the tuning-pin acting as a lever of the first class, with its fulcrum at *e*, the weight or resistance at *f*, and the force acting at *h* in direction of the arrow, and being the tension of the string.

It is evident that the pull of the string must not be applied too near the fulcrum *e*, (which is the upper part of the front wall of the hole *c*, or that nearest the agraffe,) for in that case it may not get sufficient leverage and insure sufficiently tight grip to prevent slipping. It is for this purpose that I make the aforesaid recess *a*, which prevents contact between the pin C and the front wall of the hole *c*, except at a point determined by the depth of the recess *a*, and also prevents the coil of the string D from going too near the fulcrum *e*. A groove, *g*, may be made around the pin C by reducing its diameter at that point, as in Fig. 3, for the purpose of retaining the coiled portion of the string within the limits of the said groove, and in that case the recess *a* may even be dispensed with, though I prefer to use the recess with or without the groove *g*.

It is evident that contact between the pins C and the frame A may be obtained at diagonally-opposite points, *e f*, at the extreme upper and lower edges of the hole *c* by simply drilling a hole of slightly-larger diameter than the pin; but as that would induce wear by giving too little contact-surface, the construction shown in the drawings is preferred.

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

1. In a string stretching or tuning device,

the combination of the pin C with a frame, A, provided with a hole or socket, *c*, larger at *d d'* than the said pin, to insure contact between the pin and frame at the points *e f* only of the said hole when the string is stretched, substantially as and for the purpose set forth.

2. In a string stretching or tuning device, the combination of the cylindrical pin C with the frame A, having a correspondingly-cylindrical hole, *c*, enlarged at *d d'*, in order to insure contact at *e f* only while under the strain of the string-tension, substantially as and for the purpose set forth.

3. In a string stretching or tuning device, the combination of the pin C with the frame A, having hole *c*, to receive the said pin, the said frame A, having a recess, *a*, at the upper end and concentric with the said hole, and the said hole being enlarged at *d d'*, to insure contact at *e f* only while under the strain of the string-tension, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of February, 1885.

ABRAHAM FELLDIN.

Witnesses:
A. W. ALMQVIST,
CARL GULLBERG.