W. SIEDERSLEBEN.

Tuning-Pin for Pianofortes.

No. 215,486. Patented May 20, 1879.

Fig: 7.

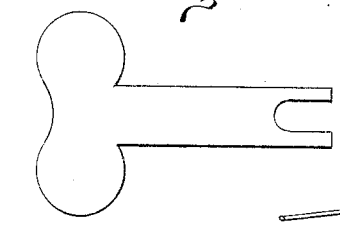


Fig: 1.

Fig: 2.

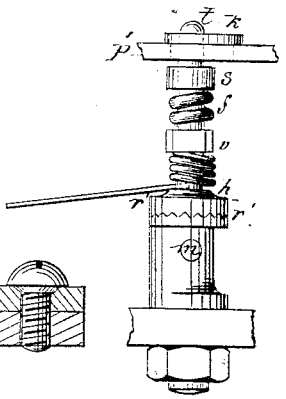


Fig: 5.

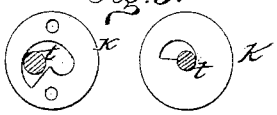


Fig: 3.

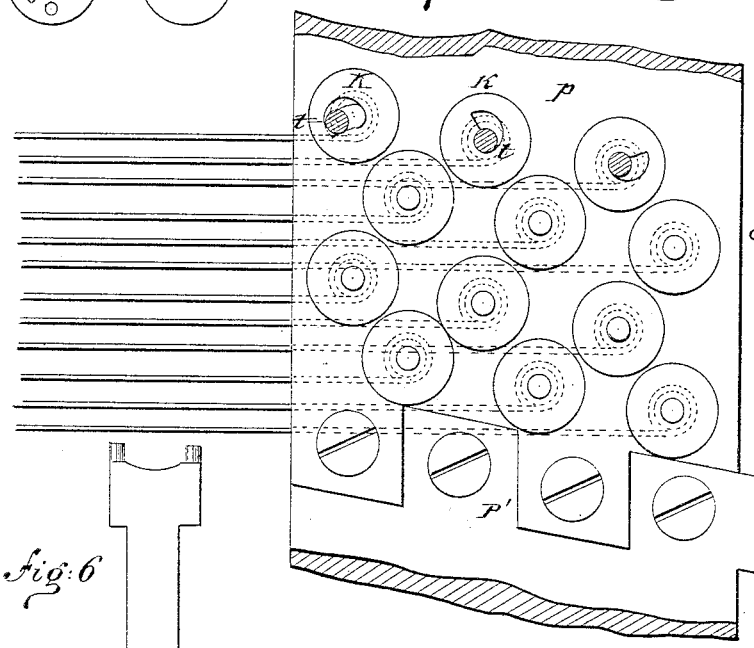


Fig: 4.

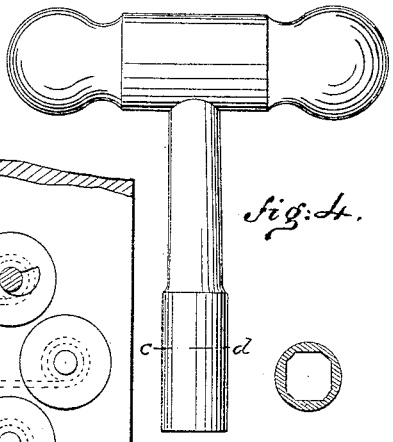


Fig: 6

Witnesses:
Carl Karp
Otto Risch

Inventor:
Wilhelm Siedersleben
by Paul Goepel
Attorney

W. SIEDERSLEBEN.

Tuning-Pin for Pianofortes.

No. 215,486. Patented May 20, 1879.

Fig: 7.a

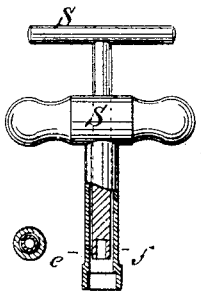


Fig: 8

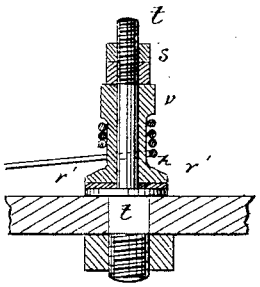


Fig: 9.

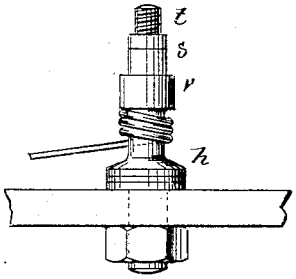


Fig: 10.

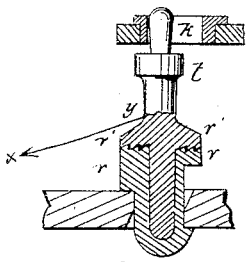


Fig: 11.

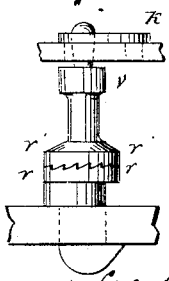


Fig: 12.

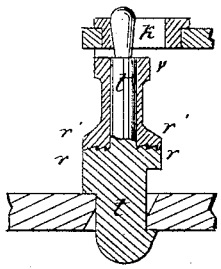


Fig: 13.

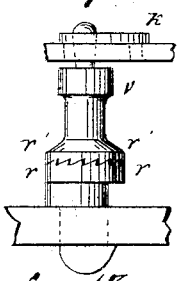


Fig: 14.

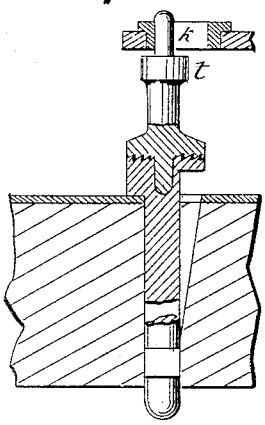


Fig: 15.

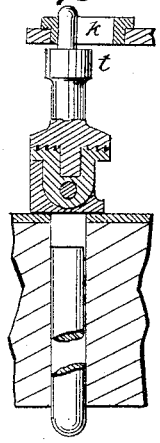


Fig: 16.

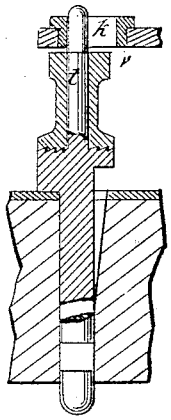
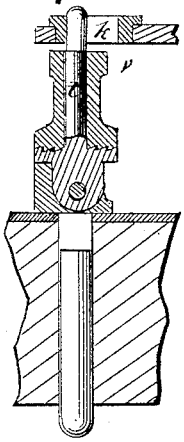


Fig: 17.



Witnesses:
Carl Karn
Otto Pisch

Inventor:
Wilhelm Siedersleben
by Paul Goepel
Attorney

UNITED STATES PATENT OFFICE.

WILHELM SIEDERSLEBEN, OF BERNBURG, GERMANY.

IMPROVEMENT IN TUNING-PINS FOR PIANO-FORTES.

Specification forming part of Letters Patent No. **215,486**, dated May 20, 1879; application filed March 28, 1879.

To all whom it may concern:

Be it known that I, WILHELM SIEDERSLEBEN, of the city of Bernburg, Duchy of Anhalt, and Empire of Germany, have invented a new and Improved Tuning-Pin, of which the following is a specification.

The tuning-pins at present employed in pianos are defective, as by their present mode of attachment to the frame they are not sufficiently able to resist the strain of the strings and keep them in proper tune, the more so as by repeated tuning the support of the pins in the frame is more or less weakened.

The object of my invention is to furnish an improved tuning-pin which is not only capable of resisting in a more reliable manner the strain exerted thereon by the string, but by which the tuning of the strings is facilitated to a high degree of exactness and accomplished at a saving of time.

The invention consists of a tuning-pin that is arranged to oscillate either on a fixed base-post of the frame or in an oblique recess of the same, in the direction of the strain of the string, in connection with a sleeve to which the string is applied, said sleeve being retained either by toothed intermeshing or friction disks of the pin and sleeve, whose frictional action is secured either by direct screw or other pressure or by the direct strain of the string.

The upper end of the tuning-pin is engaged by a flanged disk of a fixed auxiliary bracket-plate of the frame, said disk having an eccentric recess for gradually adjusting the pin when the disk is turned.

The sleeve of the tuning-pin has a head in the shape of a nut, for being set by the tuning-key before the minute adjustment by the flanged disk.

In the accompanying drawings, Figure 1 represents a vertical central section of my improved tuning-pin, shown as pivoted to its base-post; Fig. 2, a side view of the same; Fig. 3, a top view, showing a number of pins and their supporting bracket-plate. Fig. 4 represents a side view and section on line *c d* of a tuning-key. Fig. 5 are top views of the recessed disk for adjusting the tuning-pin. Figs. 6 and 7 are side views of a compound key for adjusting a modified form of the tuning-pin. Figs. 8 and 9 show, respectively, a section and side view of this modified form of pin; and Figs. 10 to 17 are various modifications of the tuning-pin shown in Figs. 1, 2, and 3, so as to render the same simpler and less expensive.

Similar letters of reference indicate corresponding parts.

In the drawings, *t* represents my tuning-pin, which is secured either rigidly by its base part into the frame or jointed by a pivot-connection to a fixed base portion, so as to oscillate in the direction of the strain; or the base part is made with a hook-shaped lower end and set into an oblique slot of the frame, so that the pin is able to oscillate in the direction of the strain.

The tuning-pin *t* is provided either with a toothed disk, *r*, whose teeth have equal inclinations at both sides, as shown in Figs. 1 and 2, or the teeth of the disk *r* are inclined against the direction of the strain exerted by the string, or the disk is not toothed at all, but simply arranged with a facing of soft metal, as in Figs. 8 and 9.

A sleeve, *h*, is placed on the tuning-pin *t*, and arranged either with a toothed base-disk, *r*, that meshes with the disk of the tuning-pin, or it is made with a notched or roughened base-disk, *r'*, that resists, by its friction with the soft-metal facing of the disk *r*, the strain exerted thereon by the string. In the latter case the sleeve *h* is held tightly in contact with the facing of the pin by means of a screw-nut, *s*, which turns on the upper threaded end of the tuning-pin *t*, as shown in Figs. 8 and 9. A double key (shown in Fig. 7[a]) serves to screw the nut down on the sleeve, then to impart the required tension to the string by turning the sleeve with the larger key, and finally to screw the nut down on the sleeve by the smaller key while holding the sleeve with the larger key.

In case the teeth of the intermeshing disks are made with equal inclination, as in Figs. 1 and 2, a spiral retaining-spring, *f*, and a screw-nut, *s*, have to be employed to produce the proper degree of friction between the disks.

By giving the teeth of the intermeshing disks an inclination against the direction of strain the downward strain *x y* of the strings,

Fig. 10, may be employed for securing the direct intermeshing of the disks, and imparting thus a positive resistance to any axial motion. This construction dispenses with the spiral spring and screw-nut, and forms a better, simpler, and cheaper connection of the sleeve and tuning-pin.

For the purpose of tuning the string, the same is brought as near as possible to the required pitch by turning the sleeve with a key, which is placed on the square or hexagonal head *v* of the sleeve. The exact degree of the tuning of the string, however, is obtained by means of an auxiliary adjusting mechanism. This mechanism consists of a bracket-plate, P P′, which is secured to the string-frame and arranged above the tuning-pins, with openings of sufficient size to admit the passage of the tuning-key down to the sleeve *h*. Into each opening is placed a loosely-fitting flanged disk, *k*, which has an eccentric recess of cam or spiral shape, as shown in Figs. 3 and 5. The upper end of the tuning-pin passes through the eccentric recess, and is engaged by the same when the disk is turned by means of a forked key, Figs. 6 and 7, that enters into holes at diametrically-opposite points of the disk. By turning the disk the tuning-pin is slowly and gradually oscillated in the direction of the string, so as to slightly increase the pitch by the greater or less tension imparted to the string. In case the pitch is too high the tuning-pin may be readily turned back after removing the disk, the exact pitch desired being finally obtained by replacing the disk and turning it until the string is tuned to the exact pitch.

To enable the tuning-pin to follow the pressure of the adjusting-disk it is either pivoted to its fixed base portion, so as to oscillate in the direction of the string, as shown in Figs. 1 and 2, or the pin is set into an obliquely-cut recess of the string-frame, and provided with a hook-shaped retaining end, as shown in Figs. 2 to 13. In either case the tuning-pin is secured against axial or side motion by means of a square bottom part or guiding side cheeks.

The tuning-pin may be made of one piece from its lowermost point to its head, and the sleeve placed thereon; or the sleeve may be made solid with the pin, and the latter arranged to turn in the socket-shaped base portion, as shown in the modified forms, Figs. 10, 11, 14, and 15. In Figs. 14 to 17 the tuning-pin is shown as adapted to a wooden stock.

My improved tuning-pins admit the use of strings of extra size, and furnish, consequently, instruments with a highly-increased volume of sound and tone-bearing capacity. The facility with which the strings may be tuned to the utmost nicety of pitch forms, together with the rigid position of the pins, a main advantage of my improved device.

I am aware that tuning-pins consisting of two parts, of a pin and of an exterior sleeve, turning thereon and interlocking with the pin, have been used heretofore, and I therefore do not claim this arrangement broadly.

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

1. The combination of a tuning-pin adapted to oscillate in the direction of the strain of the string and of an axially-turning sleeve supported thereon with a frictional or locking mechanism between pin and sleeve, and with an auxiliary adjusting mechanism of the pin, substantially as described.

2. The combination of a fixed tuning-pin having a toothed disk and of an axially-turning sleeve having a similarly-toothed disk with mechanism that is adapted to secure the interlocking of the disks for resisting the strain of the string, substantially as set forth.

3. The combination of a tuning-pin adapted to oscillate in the direction of the strain with an auxiliary adjusting mechanism formed of a supporting bracket-plate and of an eccentrically-recessed disk, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILHELM SIEDERSLEBEN.

Witnesses:
JOS. BRAUN,
AUG. EDEL.

1,500 words.