

(No Model.)

C. VAN HAAGEN.
PIANO.

No. 469,876.

Patented Mar. 1, 1892.

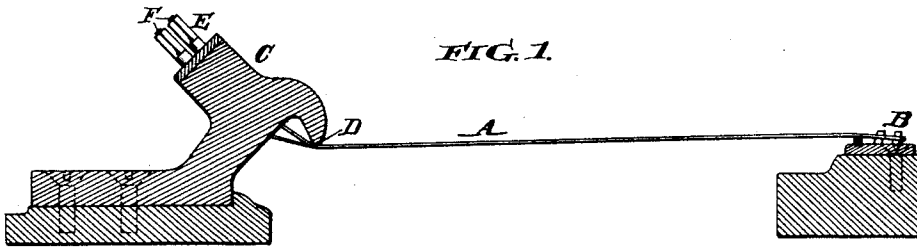


FIG. 2.

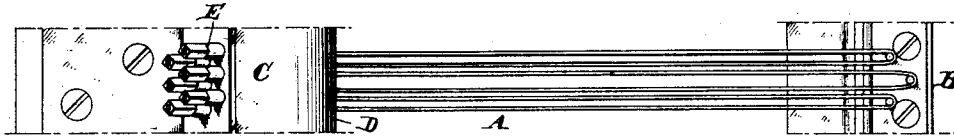


FIG. 4.

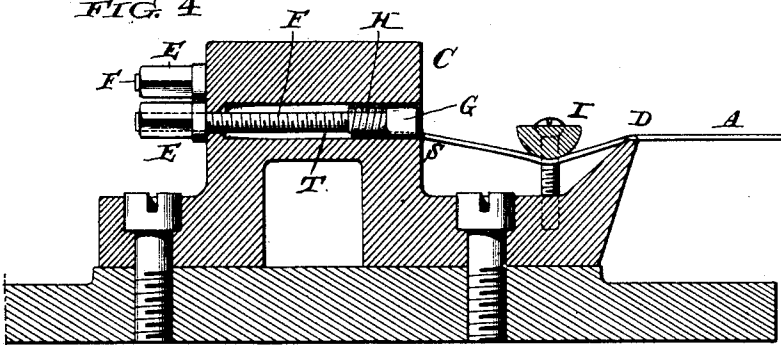


FIG. 5.

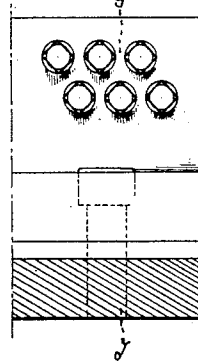


FIG. 8.

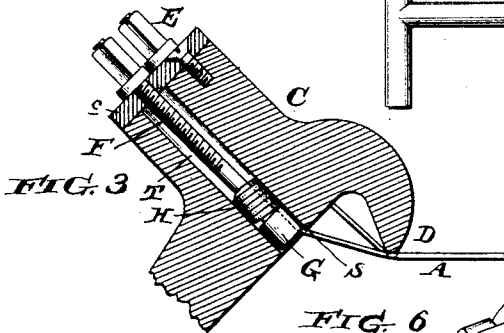
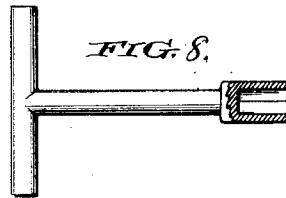


FIG. 6.

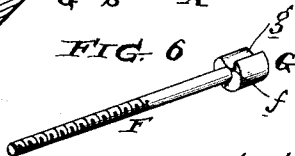
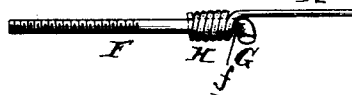


FIG. 7.



Witnesses:

Harry Dwyer
Jesse Heller

Inventor:

Claus Van Haagen

By *Wm. H. Allen*

Wm. H. Allen

UNITED STATES PATENT OFFICE.

CLAUS VAN HAAGEN, OF CHESTER, PENNSYLVANIA.

PIANO.

SPECIFICATION forming part of Letters Patent No. 469,876, dated March 1, 1892.

Application filed April 30, 1891. Serial No. 391,101. (No model.)

To all whom it may concern:

Be it known that I, CLAUS VAN HAAGEN, of the city of Chester, in the county of Delaware and State of Pennsylvania, have invented an Improvement in Pianos, of which the following is a specification.

My invention has reference to pianos; and it consists of certain improvements which are fully set forth in the following specification, and shown in the accompanying drawings, which form a part thereof.

My improvements have particular reference to means for stringing and tuning pianos, and comprehends certain improvements for taking up the wire or string and bringing it to the proper tension.

My object is especially directed to increasing the durability of the structure in use and causing the instrument to remain for a longer period in tune with a given amount of use.

My object is also to provide a construction which permits the tuner to readily tune the instrument in most accurate manner.

In carrying out my invention I secure the tension devices in a metal frame, which is preferably the frame provided with the pressure bar or bridge over or under which the wires are passed, and also in so constructing the tension devices that the wires are easily and positively secured to them, and said tension devices operating to draw the wires taut with a slow movement which permits, in the ordinary tuning, a number of revolutions of the key. The bridge or pressure bar is preferably notched, as are also the apertures through which the wires pass to the tension devices, so that the wires are readily distanced and the labor and time necessary in properly stringing and tuning an instrument reduced.

My invention also comprehends certain specific improvements in the means for securing the wire to the tension device, all of which is more clearly set out hereinafter, and shown in the accompanying drawings, in which—

Figure 1 is a cross-section through a piano-frame embodying my invention. Fig. 2 is a plan view of a portion of the same. Fig. 3 is an enlarged sectional view of a portion of Fig. 1. Fig. 4 is an enlarged sectional elevation of a modification taken on line Y Y of Fig. 5. Fig. 5 is an end view of the same.

Fig. 6 is a perspective view of the preferred construction of take-up screw. Fig. 7 is a modification of the take-up screw and its connection with the wire; and Fig. 8 is an elevation, partly in section, of the key employed in tuning.

A represents the wires, which are secured at one end of the piano-frame at B in the well-known manner. The other ends of these wires pass over the bridge B and are connected to the tension-screws F. The tension-screws F are guided in the metal frame C, with which the bridge D is secured or formed integral, and said screws are adjusted in their bearings in a longitudinal direction by means of nuts E, having square or polygonal ends for receiving the key. The bridge D is notched slightly to receive each of the wires A, so that they are readily brought to their positions, the notch being indicated by dotted lines in Figs. 3 and 4.

The screws F are provided with heads G, which are preferably notched, as at *g*, Fig. 6, and formed with a shoulder *f* for the wire to pass about, as indicated in these several figures. The wire A is coiled at its end and fits about the screw F, adjacent to the head G, and passes around the shoulder *f* and through the notch *g*, thence under the shoulder S, which may be notched as in the case of the bridge D, and finally passes under the bridge D into position to be operated by the hammers. The diameter of the holes or guides T in the metal frame C is just sufficient to receive the heads G and the coiled wire H, so that the latter are guided thereon against lateral movement, while the nuts E are operated to draw the screws longitudinally.

The action of the wires A on the heads G and their passage about the shoulders D and S prevent the screws F from revolving, and the friction of the coiled part H upon the screw and its head is such that the greatest tension necessary to put upon the wire cannot possibly loosen it in its connection with the said screw. To obtain this tension, so that the wire will be held firmly to the shank of the tension-screw without other fastening, the coil H is made of considerable length and of a normal diameter smaller than that of the shank of the tension-screw, so that when the coil is forced upon the screw it binds tightly

thereon by the contractile force of the coil in tending to assume its normal diameter. To enable a large number of wires to be arranged in a small space, these screws F and their nuts E may be arranged in two or more rows, as indicated in the various figures. This permits the screws to be arranged close together without experiencing any difficulty in acting upon the nuts with the key.

In practice the wires A would be made in given lengths and the ends coiled, as at H. From these coiled ends H the screws F are thrust, making a tight fit, which is all that is necessary. The wires A are coiled upon a mandrel preferably smaller than the diameter of the screw-shank F, so that when the screw-shank is thrust through the coil the coil binds firmly upon the said shank and creates the necessary friction to prevent it unwinding and looseness in the connection. In this construction the several coils will bind upon the shank with different degrees of pressure, the coil adjacent to the shoulder f having the greatest pressure and that farthest from the shoulder f having the least pressure.

In place of making the head G of the screw circular, as indicated in Fig. 6, the screw may be formed with a bent head G, as indicated in Fig. 7, around which bent head the wire passes, as in the case of the other constructions. In this case the coil of the wire H is relied upon for centering the screw if at its lower end, or that end which is adjacent to the bridge. By this construction the nuts E may be turned a number of times for a very small adjustment in the length of the wire A, and consequently it is easy for the tuner to tune the piano without any backward motion or loosening of the wires. He can gradually and positively increase the tension and raise the pitch of the string or wire to the desired degree, and a very slight movement of the key would not be materially perceptible in the pitch of the tone, thus permitting rapid work. Furthermore, all of the parts are secured to metal, and variations and changes in the atmospheric condition do not materially affect the tone of the instrument and do not act directly in reducing its pitch permanently.

In Figs. 1 and 3 the screws are arranged at an angle to the wires A, which is desirable in that it is easier for a tuner to apply the key to the nuts E than if the said screws were arranged horizontally, as shown in Fig. 4. However, if desired, the screws may be arranged horizontally or parallel to the wires A, as indicated in Fig. 4. In this case the wires are shown as passing over the bridge D and under the pressure-bar I.

My invention is one which can readily be adapted to pianos at small expense, with all the advantages enumerated in the foregoing part of this specification, and obviate the in-

herent defects of the old method of stringing pianos. Furthermore, my improvements permit the ready repairing and adjusting of the instrument from time to time.

While the keys T may be bored into the metal frame C, having two diameters, so as to form a support for the nuts E integral with the casting C, as shown in Fig. 4, the said guides T may be bored all the way through, as indicated in Fig. 3, and a suitable steel plate c, having holes for the passage of the screws F, be employed to receive the nuts E.

While I prefer the construction shown, I do not limit myself to the minor details thereof, as they may be modified without departing from the principles of my invention.

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

1. In a piano, the combination of a frame having a series of holes formed therein, a series of tension-screws provided with heads fitting said holes and guided therein and having screw-threaded shanks extending from said heads, and a series of wires extending into said holes past the heads of the tension-screws and having their ends for a considerable distance coiled about the shanks thereof adjacent to the heads, said coiled portions being within the holes and substantially fitting the diameter of the same, whereby the heads of the tension-screws and the coiled portions of the wires are guided in said holes when the tension-screws are moved in tuning the instrument.

2. In a piano, the combination of a frame C, provided with a series of tubular guides T, a series of tension-screws F, having heads G located within and guided in said tubular guides T, and the wires A, having their ends connected with the tension-screws within the tubular guides T and beyond the heads of the screws.

3. The combination of a tension-screw for pianos, having a long screw-threaded shank and a head or projection forming a shoulder or offset with the shank, and a wire or string having its end coiled for a considerable depth with the normal internal diameter of the coiled portion smaller than the diameter of the shank of the screw adjacent to the head and shoulder, the coiled portion being forced upon the shank adjacent to said head, whereby the coiled portion of the wire surrounds said shank and binds upon it by the contractile action of the coil tending to assume its normal diameter.

In testimony of which invention I have hereunto set my hand.

CLAUS VAN HAAGEN.

Witnesses:

ERNEST HOWARD HUNTER,
S. T. YERKES.