(No Model.) 2 Sheets—Sheet 1.

G. J. COUCHOIS.

AGRAFFE FOR PIANOS.

No. 500,562. Patented July 4, 1893.

Fig. 1.

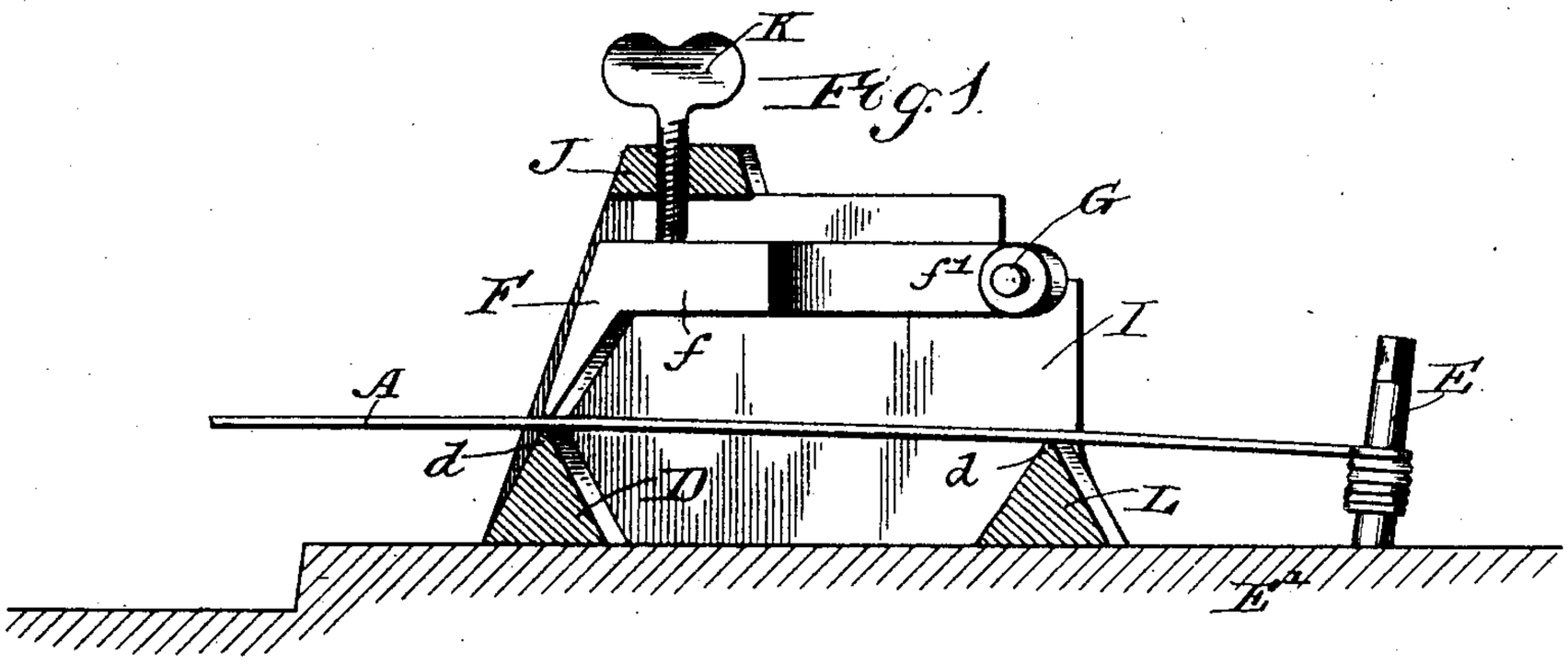


Fig 2.

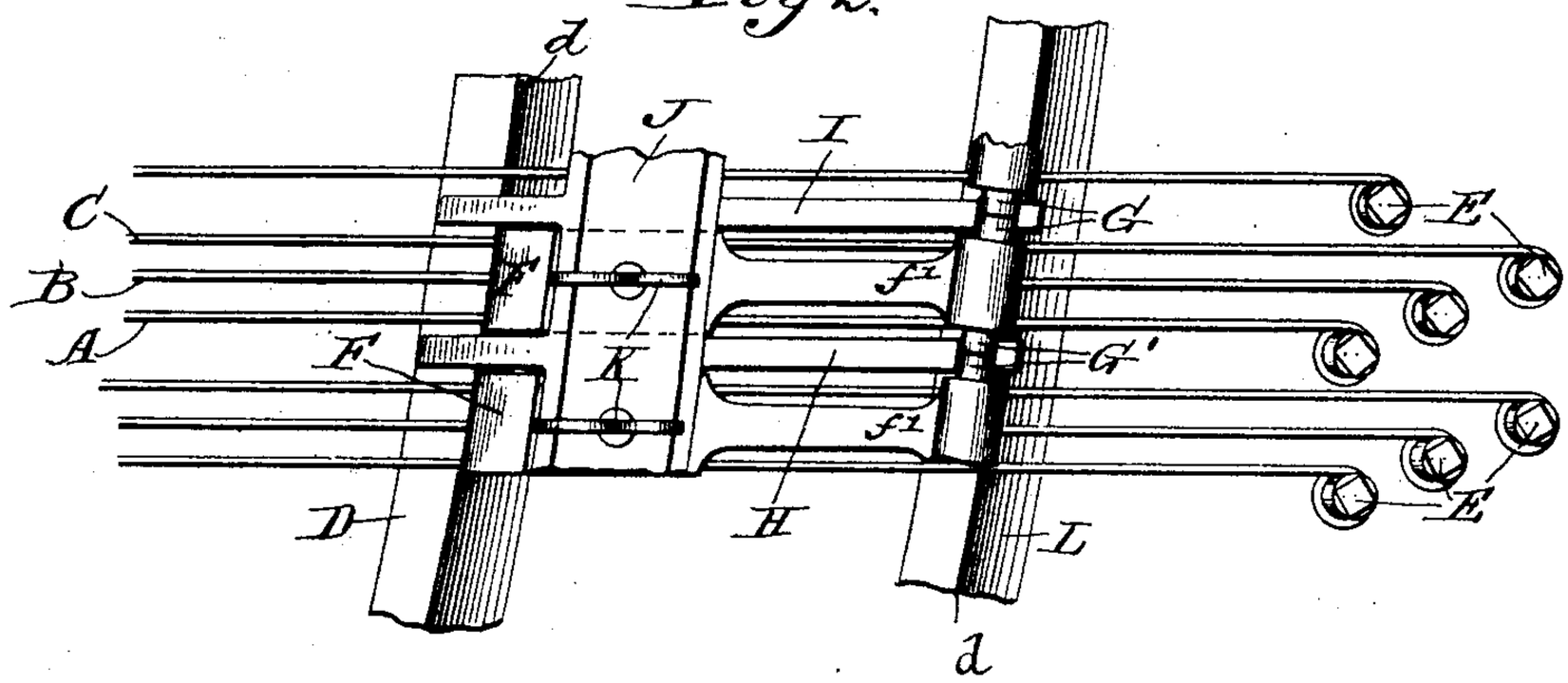
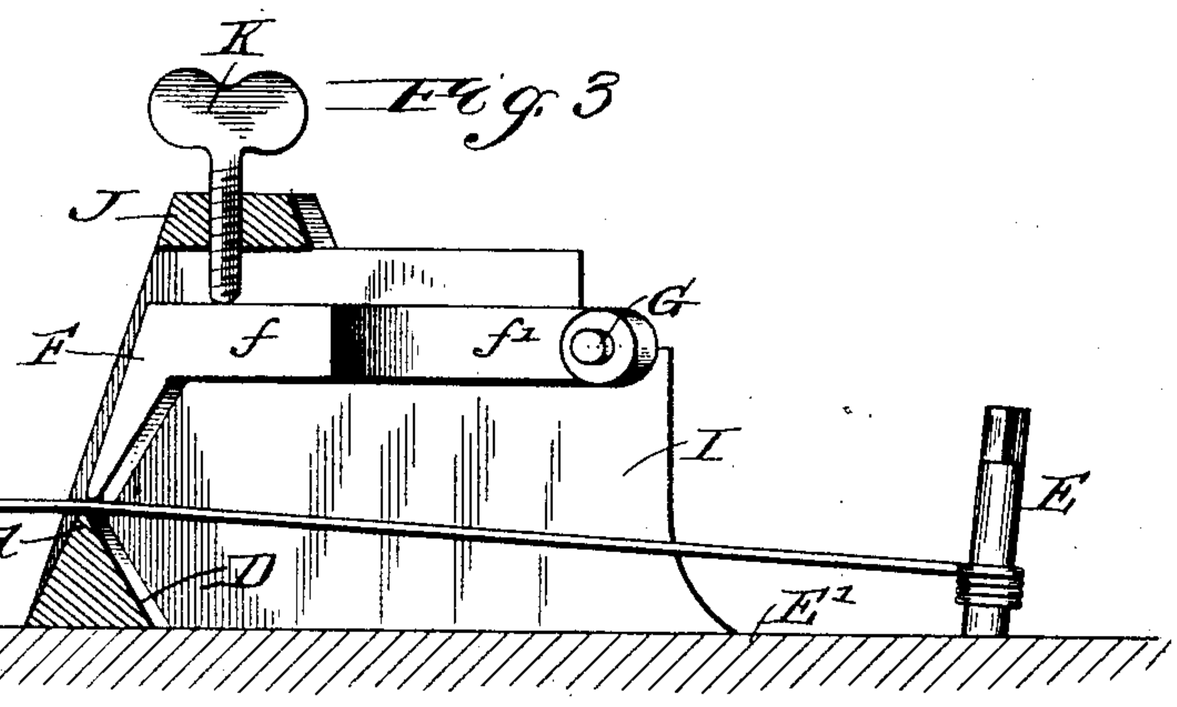


Fig. 3



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(No Model.) 2 Sheets—Sheet 2.

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AGRAFFE FOR PIANOS.

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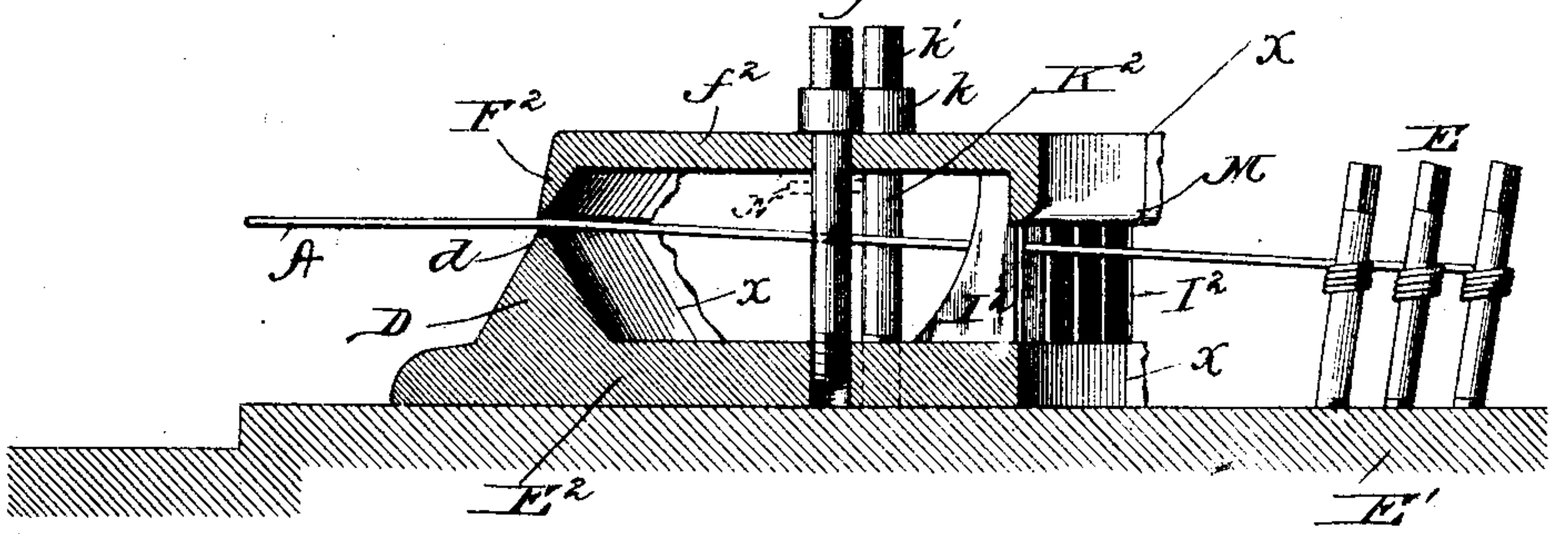
Fig. 4.



F^2 Fig. 5.

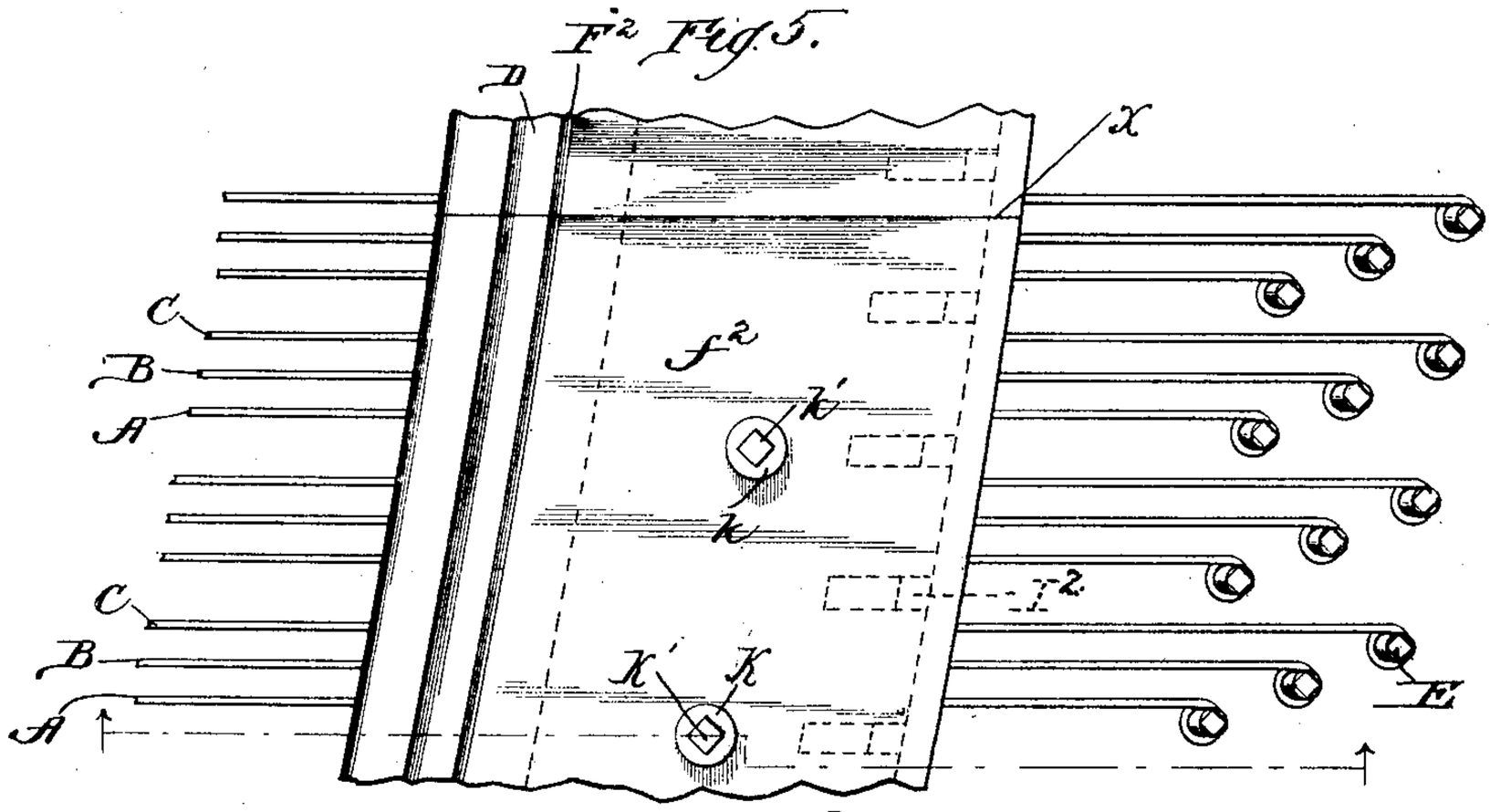
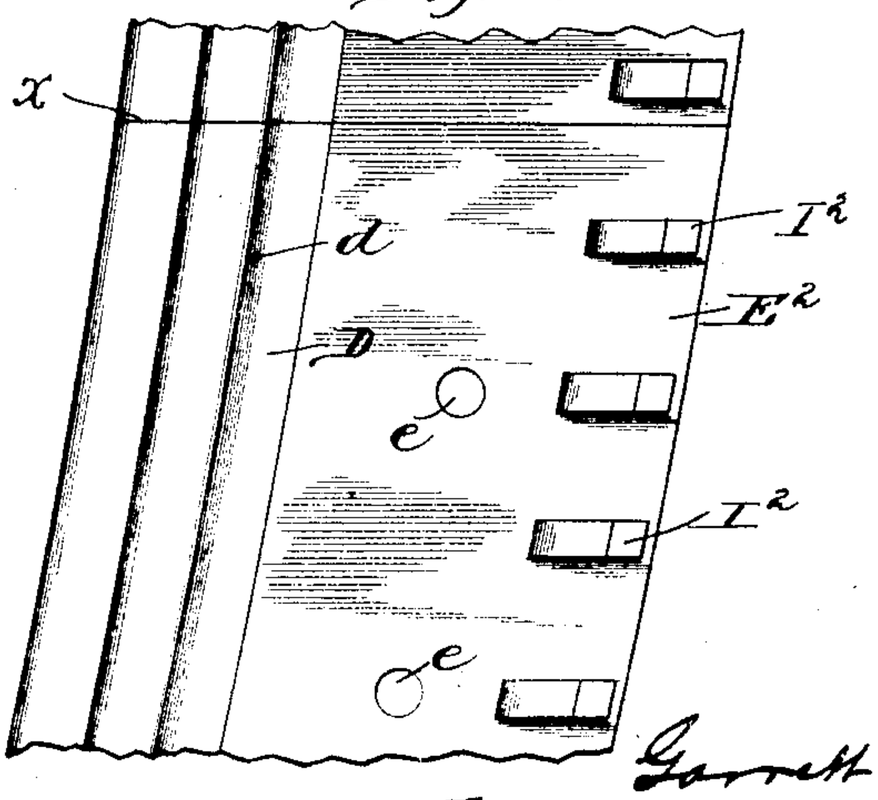


Fig. 6.



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UNITED STATES PATENT OFFICE.

GARRETT J. COUCHOIS, OF CHICAGO, ILLINOIS.

AGRAFFE FOR PIANOS.

SPECIFICATION forming part of Letters Patent No. 500,562, dated July 4, 1893.

Application filed September 26, 1892. Serial No. 446,865. (No model.)

To all whom it may concern:

Be it known that I, GARRETT J. COUCHOIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Agraffes for Pianos, of which the following is a full, clear, and exact specification.

My invention relates to agraffes or means for holding the strings of a piano from rapping or jingling on the bridge when struck by the hammers.

Heretofore, the construction of devices for this purpose has been such as to entail considerable friction on the strings when drawn over the bridge or bridges through the agraffes in tuning, and yet, such friction is not sufficient to prevent the strings from unevenly working loose, thus destroying the uniformity of pitch of the various strings of the same unison.

The primary object of my invention, therefore, is to make it possible to reduce the friction on the strings while they are being tuned, to a minimum, and to hold them from working loose after tuning.

In a more limited sense, the object of my invention is to clamp the strings firmly against the bridge in such a manner as to avoid destroying the vibration of that portion of the strings between the bridge and the wrest pins, and yet hold them so firmly as to prevent their retrograde movement, even though the wrest pins should work loose, thus preventing them from getting out of tune.

With these ends in view, my invention consists in certain features of novelty, in the construction, combination and arrangement of parts by which the said objects and certain other objects hereinafter described are attained, as fully explained with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1, is a vertical transverse section of my device, taken longitudinally of the strings. Fig. 2, is a plan view thereof, showing the complete agraffe of one unison, and illustrating portions of the adjacent agraffe on either side. Fig. 3, is a view similar to Fig. 1, but of a modification in which a single bridge is used. Fig. 4, is a view similar to Fig. 3, but of a still further modification of the agraffe, showing a much simplified form. Fig. 5 is a plan view thereof, and Fig. 6, is a plan view of the base-plate and bridge alone, the strings and the clamping dog and set-screws being omitted.

Like signs of reference indicate like parts throughout the several views.

In carrying out my invention, I pass the strings A, B, C, of each unison, over the edge of the bridge D, and wind them upon their respective wrest pins E, planted in the pin-block or wrest plank E′, in the usual or any suitable manner. The bridge D, is provided throughout the length of its upper side, or, at least, throughout those portions where the strings cross, with an angular edge, *d*, upon which the strings rest, and which is sufficiently acute to offer no interruption to their vibration, and yet is not so sharp as to cut or damage the strings. This bridge D, is best adapted to perform its intended functions when the apex of the angular edge is slightly rounded, as shown in the drawings. Arranged over this angular edge, *d*, of the bridge, is a jaw or dog F, which, together with the bridge D, constitutes a clamp for pinching the wires and holding them against endwise movement. This dog F, may be adjustably mounted above the bridge D, in any suitable manner, and provided with means whereby it may be caused to impinge the wires, as they rest upon the bridge, with the requisite degree of pressure. As a convenient means for accomplishing this, I provide the jaw or dog F, with a head *f*, which terminates in an arm or stem *f′*, having a short transverse shaft or journal G. The shaft G, rests in journal bearings formed in the side pieces H, I, of the casting, which rise between the strings, preferably at each side of each unison, as shown more clearly in Fig. 2, and are provided at their upper edges with a cross-bar J, provided immediately over the head *f*, with a threaded perforation, through which passes a thumb screw K, whose lower end is adapted to impinge the head and serve to force the jaw or dog F, against the wires with any desired degree of pressure.

I prefer to interpose between the bridge D, and the wrest pins E, a second bridge L, as I find that with this arrangement the singing quality or length of time which the string will vibrate, is improved. The strings, after

passing over the bridge D, are slightly deflected, in order to guard against the possibility of their jingling while they are being tuned. To this end, the bridge D, is slightly higher than the bridge L. The second bridge L, may be a counter-part of the bridge D, and the strings, after passing over the bridge L, may be slightly deflected, in order to guard against any possibility of their rapping or jingling on the second bridge, when the vibration takes place. In order that the friction on the wires may be reduced to a minimum, their deflection, after passing the bridge L, might be even less than the degree shown in the drawings, the drawings being exaggerated for the sake of illustration. Thus, it will be seen, that when the jaw or dog F, is loosened, releasing the wires, they may be tightened up or tuned, by means of their respective pins E, and the degree of friction afforded by the bridges D, L, will be inconsiderable, since it is dependent upon the slight deflection which the wires take after passing the first and second bridges. On the other hand, when the strings or wires have been properly tuned or drawn to the desired tension, the jaw or dog F, may be again forced down upon them, by means of the thumb screw K, and the whole unison, or the wires composing the unison, will be held at the tension to which they were drawn by the pins. The lower edge of the jaw or dog F, is formed substantially like the upper edge of the bridge D, and it is also so constructed as to be parallel with the edge of the bridge, so as to impinge all the wires of the same unison with an equal degree of pressure.

The journal bearings for the support of the journal G, may, if desired, be open at the top, as shown in Fig. 2, so that the jaw or dog may be slipped in with the jaw-end fore-most from the rear side, the head *f*, being preferably of sufficient width to cross the space between the side pieces H, I, and thus steady and guide the dog in its movement. Each of the side pieces H, I, if desired, may constitute a support for the journal of the adjacent dog or jaw, the end of the journals or shafts of such dogs being shown at G, in Fig. 2. A convenient mode of construction, is to form the bridges D, L, and the cross-bar J, in one, with the side pieces H, I, of a number of the agraffes. But, these details of construction are immaterial and may be altered at will, without departing from the spirit of my invention.

In the modification shown in Fig. 3, the construction will be the same as that already described, with the exception that the bridge D, alone, is employed for supporting the strings.

In the form shown in Figs. 4 to 6, instead of using a separate clamping dog for each unison, I employ a continuous clamping dog F^2, which, if desired, may extend throughout the entire length of the bridge D, but this dog F^2, is preferably made in a number of sections of convenient length, each of which will extend across a great number of strings. The bridge D, in this instance, may be cast with the base-plate E^2, which, together with the bridge, may be divided into a number of sections, equal in length to the length of the sections into which the dog F^2, is divided, and, if desired, the sections of the bridge and dog may be conterminous, as represented by the lines, *x*. In this instance, H, I also do away with the side members I, of the casting, and in their stead, employ standards I^2, which may be formed on the base-plate E^2, throughout its length, at suitable intervals, on both sides of each unison, for instance, and which rise above the strings, as shown in Fig. 4, and serve as a firm support for the arm of the dog F^2. The arm of the dog F^2, consists of the plate f^2, whose rear edge is provided with a depending flange M, which engages with the upper ends of the standards I^2, and thus prevents the strings from pulling the dog away from the bridge.

Instead of the set-screw K, and cross-bar J, employed in the form before described, I pass set-screws K^2, directly through the plate f^2, and screw them into threaded perforations *e*, in the base-plate E^2. The upper ends of the screws K^2, are provided with squared or prismatic heads, *k'*, whereby the wrench or key by means of which the wrest pins E are turned, may also be employed for tightening the screws K^2, the latter being provided with shoulders *k*, which abut against the top of the plate, and thus cause the dog F^2, to impinge the wires with the requisite degree of pressure. The screws K^2, may be arranged throughout the length of the plate f^2, at suitable intervals, between the strings, and, if desired, two or more of them may be provided with pins immediately under the plate f^2, as shown in dotted lines, at N, in Fig. 4, whereby the dog F^2, may be raised clear of the strings, when desired.

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

1. The combination with a bridge over which the strings are adapted to pass, of a jaw for clamping the strings upon said bridge, substantially as set forth.

2. The combination with the strings and the wrest pins by which they are tightened, of a clamp adapted to hold said strings against endwise movement, substantially as set forth.

3. The combination with the strings, of the bridge having a reduced edge over which the strings pass, and a jaw having a reduced edge arranged to pinch the strings upon said bridge, substantially as set forth.

4. The combination with the strings of a unison, a bridge over which said strings pass, and a jaw having a reduced edge extending across all of said strings of the unison, and adapted to bind them upon the bridge, substantially as set forth.

5. The combination with the strings, and a bridge over which said strings pass, of a piv-

oted jaw or dog arranged to rest upon said strings above said bridge, and a set-screw for causing said jaw to impinge the strings, substantially as set forth.

6. The combination with the strings, of the bridges D, L, over which the strings pass, the wrest pins to which the strings are secured, and a gripping jaw arranged over one of said bridges, substantially as set forth.

7. The combination with a bridge over which the strings are adapted to pass, a movable dog arranged above said bridge, a cross-bar arranged above said dog and a set screw passing through said cross bar and adapted to impinge said dog, substantially as set forth.

8. The combination with the strings, of a bridge over which said strings pass, the side pieces H, I, rising from said bridge between said strings, a gripping dog or jaw arranged between said side pieces and being journaled therein, a cross-bar extending across said side-pieces, a set screw passing through said cross-bar and adapted to impinge said dog or jaw, for gripping the strings between the bridge and jaw, substantially as set forth.

GARRETT J. COUCHOIS.

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