

No. 673,149.

Patented Apr. 30, 1901.

A. L. WHITE.

TUNING APPARATUS FOR STRINGED INSTRUMENTS.

(Application filed June 27, 1900.)

(No Model.)

Fig. 1.

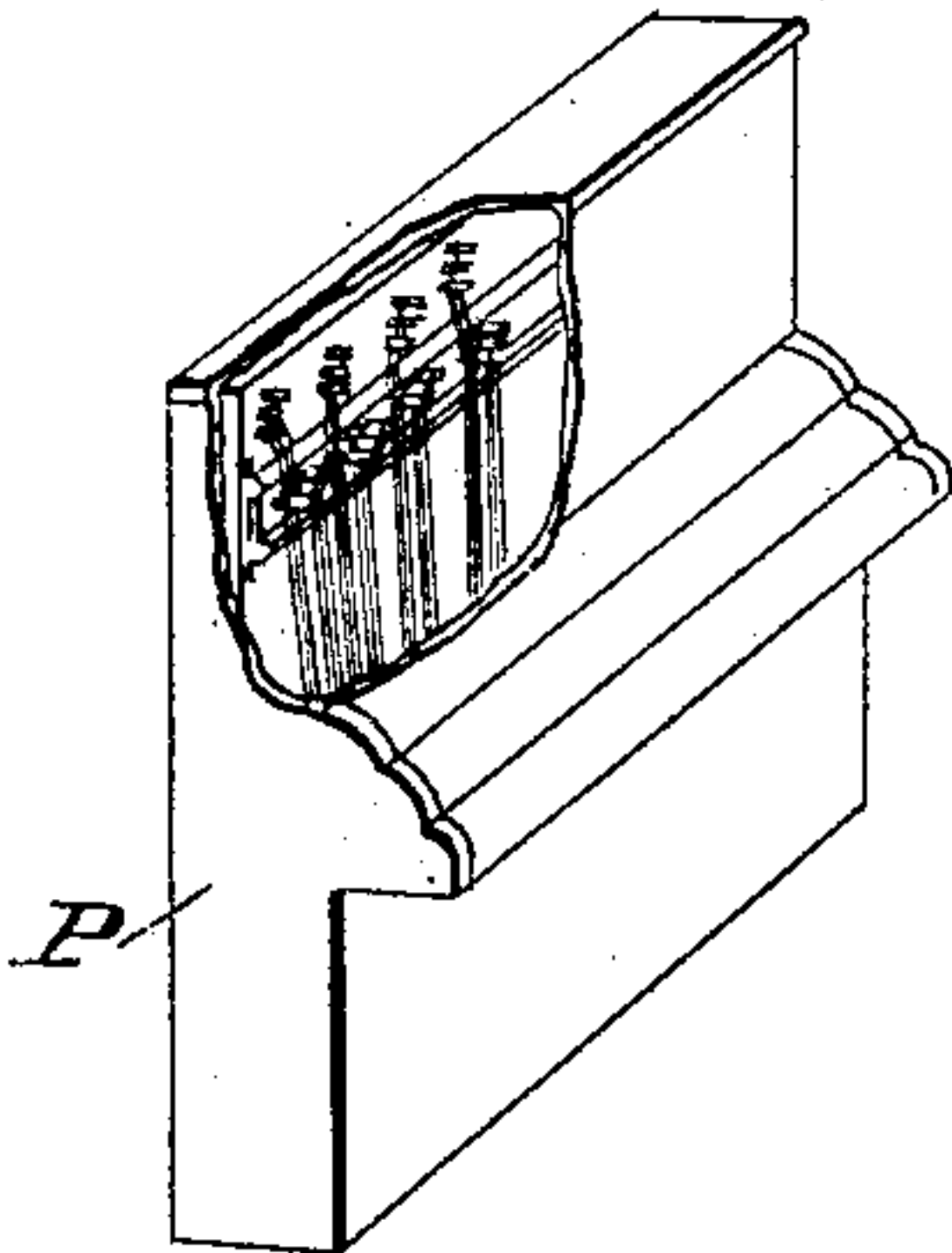


Fig. 3.

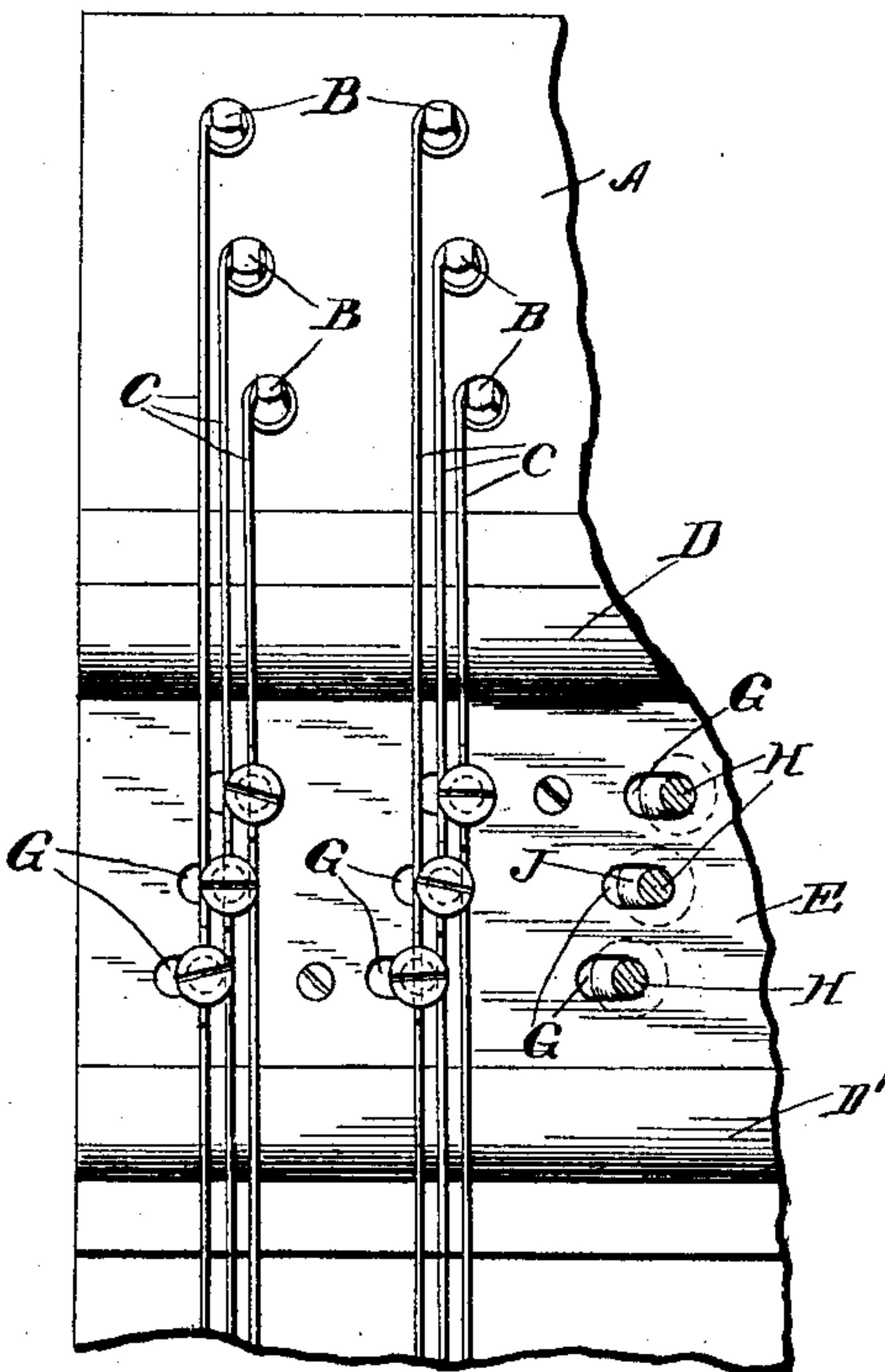


Fig. 2.

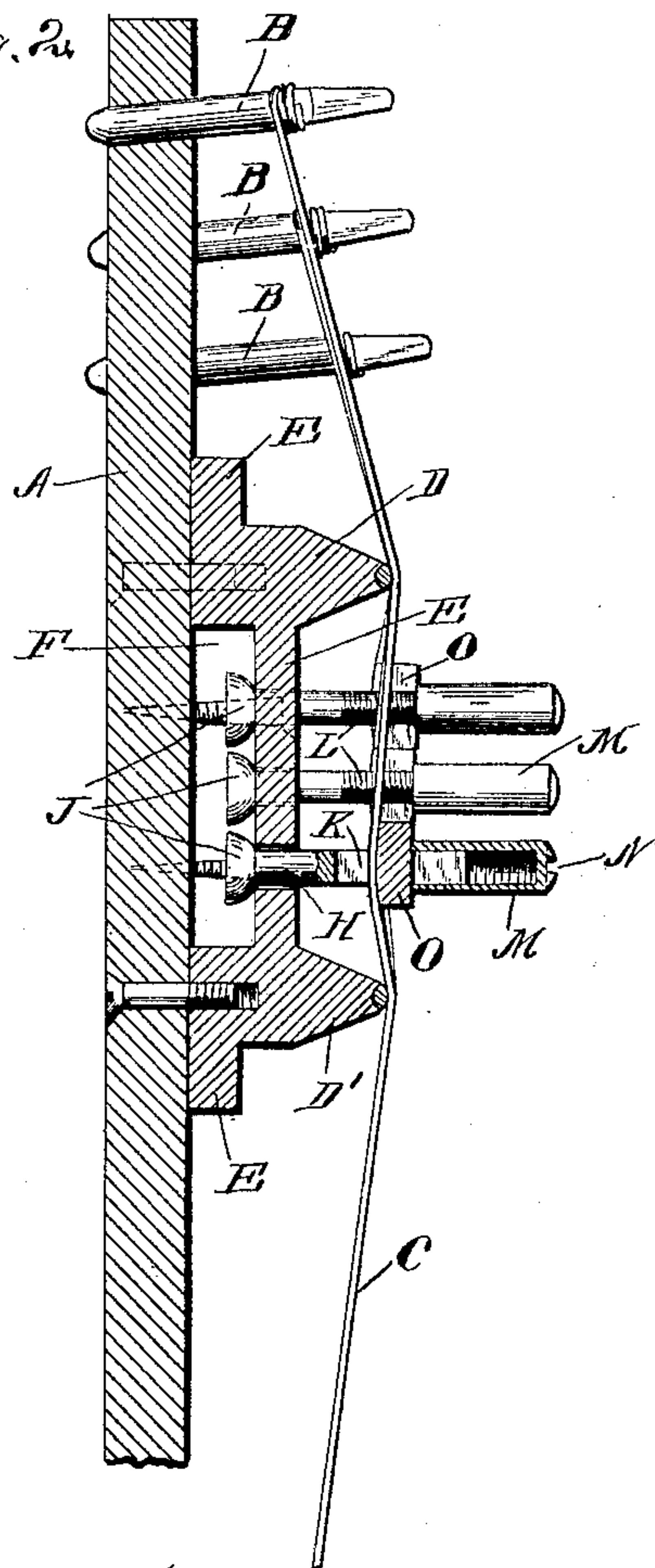
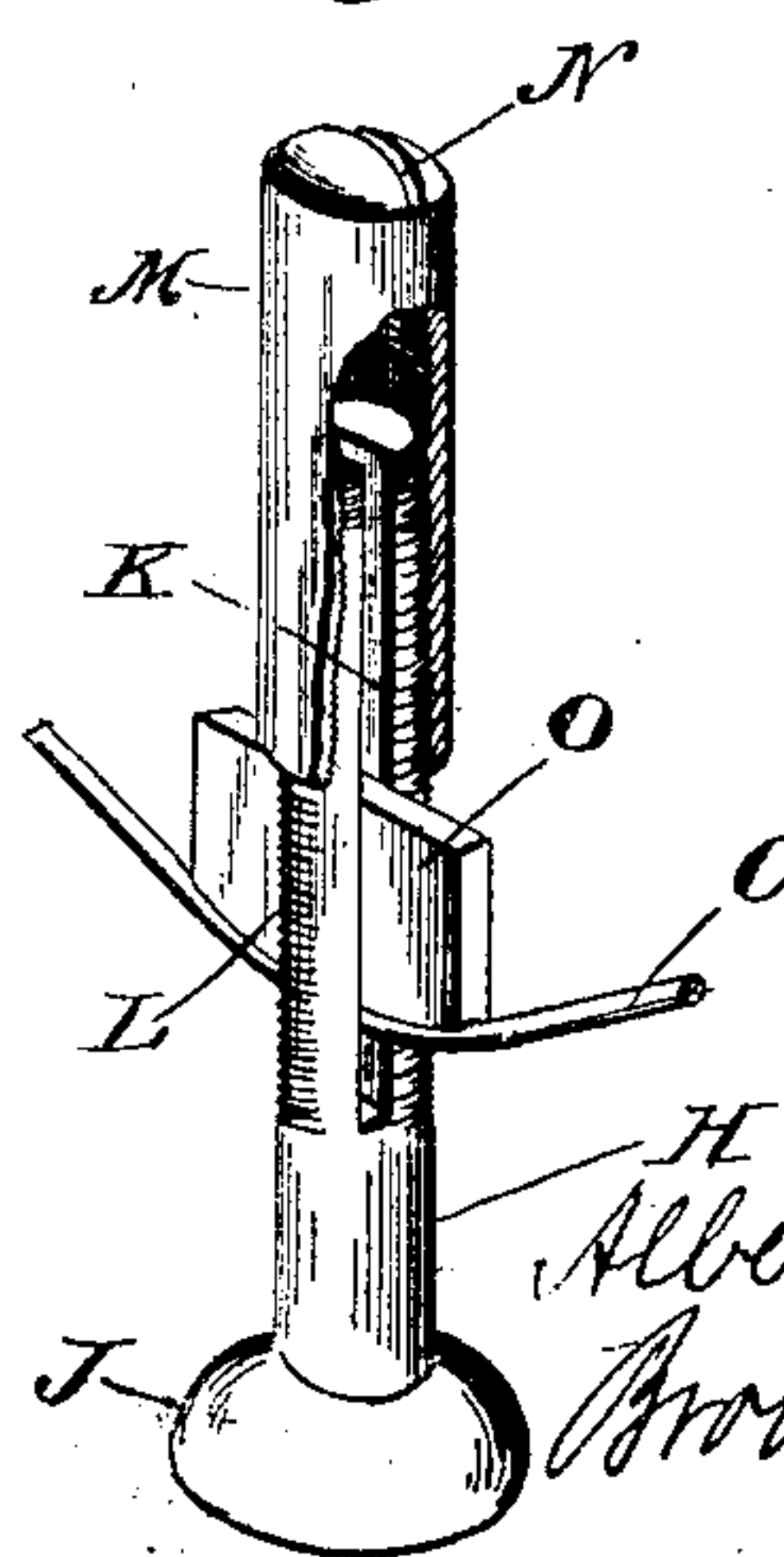


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## TUNING APPARATUS FOR STRINGED INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 673,149, dated April 30, 1901.

Application filed June 27, 1900. Serial No. 21,725. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT L. WHITE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Tuning Apparatus for Stringed Instruments, of which the following is a specification.

This invention relates to tuning apparatus for stringed instruments.

One object of the invention is to provide a construction and arrangement of tuning apparatus for stringed instruments wherein nice fine tuning adjustments of the strings may be effected readily and easily.

Another object of the invention is to provide a construction of the character referred to wherein provision is made for adjusting the strings laterally with respect to each other.

Another object of the invention is to provide means whereby the quality of the sound of the strings is not impaired by undue rigidity.

Another object of the invention is to provide a construction of the character referred to which is simple, economical of manufacture, and efficient in operation.

Other objects of the invention will appear more fully hereinafter.

The invention consists, substantially, in the construction, combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a view in perspective and upon a reduced scale of a part of a piano, a portion of the casing thereof being broken out to reveal the application of a construction embodying the principles of my invention. Fig. 2 is a sectional elevation of a tuning attachment for stringed instruments embodying the principles of my invention. Fig. 3 is a broken front elevation or plan view of the construction shown in Fig. 2. Fig. 4 is an enlarged broken detail view of the auxiliary tuning-pin, showing the manner of operation thereof.

The same part is designated by the same

reference-sign wherever it occurs throughout the several views.

In the construction of stringed instruments it is the usual custom to secure one end of each string to the tailpiece or other convenient support, and the other end thereof after passing over an agraffe or bridge is secured to the tuning-pin, and the desired tuning adjustment is effected by rotating the tuning-pin so as to wind the string upon or unwind it from the tuning-pin to vary the degree of tension imposed thereon. In such construction, however, it is exceedingly difficult to secure nice adjustments of the tension of the string for the reason that a comparatively slight rotative movement of the tuning-pin would very greatly vary the tension of the string, and hence the pitch of the sound produced thereon, and it is difficult to nicely judge the exact degree of rotative movement to be given the tuning-pin in properly tuning the instrument. It has heretofore been proposed to employ auxiliary tuning-pins to engage the strings at a point between two bearings for the string, so that after an approximate tuning has been effected by the ordinary tuning-pin a finer and more accurate tuning may be effected by the auxiliary tuning-pin. My present invention relates to an apparatus of this nature.

Referring to the accompanying drawings, reference-sign A designates the pin-plank backing or other suitable support or part of the instrument, which may be of the usual or any well-known, suitable, or desirable construction and arrangement. In this pin-plank or base-board are mounted the tuning-pins B, to each of which is secured one end of a string C and by which the approximate adjustment of the tension or tuning of the string is effected in the usual or ordinary manner. Suitably secured to the pin-plank or base A is an integral casting comprising two bearing edges or bridges D D', joined by an integral connecting-web E. The casting is provided with the feet E', affording a bearing therefor upon or against the pin-plank or base A and serving to offset the connecting-web E from the surface of said pin-plank or base, thus providing the space F between such web and pin-plank or base.



The strings C extend from their tuning-pins over the bearings or bridges D D' to the tail-piece or other point, where they are permanently secured. Formed in the web E of the 5 agraffe are a series of elongated slots or openings G, extending in a direction transverse to the length of the strings, as clearly shown in Fig. 3. Arranged to project through each elongated slot G is a pin H, each having a 10 rounded head J, said heads being received within the space F and the rounded or convexed surfaces thereof bearing against the inner surface of the web E for a purpose presently to be more fully explained. The 15 outer projecting ends of pins H are longitudinally slotted, as shown at K, Figs. 2 and 4, and said projecting ends of said pins are exteriorly threaded, as at L, an interiorly-threaded sleeve M being adapted to screw 20 on the threaded end of each pin H, as clearly shown, each sleeve being so constructed as to adapt it to be rotated—as, for instance and by way of illustration, by providing the same with a transverse slot N in the end 25 thereof, adapted to be engaged or to receive a screw-driver or other suitable tool for effecting such rotation. Arranged within the slot K of each pin H is a plate O, adapted to rest upon the string C, as clearly shown in Figs. 2 30 and 4, the sleeve M bearing upon the outer edge of said plate.

In practice I prefer to make the double agraffe, which comprises the two bearing edges D D' and integral connecting-web E, 35 of iron or steel or other suitable material adapted to afford a suitable and efficient support, and it will be seen that this double agraffe forms a bearing for each string at two points in the length of each string, so that 40 when the approximate tuning or tension is effected by the tuning-pin B the string will be stretched over these two bearing points or bridges, and by mounting the auxiliary tuning-pins H in the web E and between the bearing points or bridges D D', with the strings 45 passing through the slots K of such pins and the plates O bearing on the strings, an exceedingly fine adjustment of the tension of the string may be effected by turning up or back- 50 ing off the sleeves M. It will be observed that whereas a rotative movement of a tuning-pin B through one-sixtieth of its revolution would effect a certain tension of the string it would require one-half or a complete rotation of the 55 sleeve M to effect the same tension of the string, and it is much easier to regulate one-half of a revolution or complete rotation than it is one-sixtieth part of a complete revolution or rotation, and hence in a construction such as 60 above described I am enabled to secure an exceedingly fine and accurate adjustment of the tuning of the strings, and by arranging the pins H to pass freely through the slots or openings G, I secure the desired fineness of 65 adjustment without the disadvantage of undue rigidity, which impairs the quality of the tone produced by the string, and by forming

the slots G elongated in the direction transverse to the length of the strings I am enabled to effect a lateral adjustment of the 70 strings with respect to each other. This is an important feature, for the reason that thereby I am enabled to so adjust the lateral position of the strings as to insure the hammer coincidentally or simultaneously striking all 75 the strings in its own set in that class of stringed instruments, for instance, where each hammer strikes a plurality of strings, and by providing the heads J of the pins with rounded or convexed surfaces which bear 80 against the inner surface of the connecting-web E a desired flexibility is secured, which enables me to avoid the disadvantage of rigidity and consequent metallic character of the tone; and, moreover, the auxiliary pins are 85 located at different distances from the bearing edges or bridges D or D', and hence are subjected to greater strain from one edge or bridge than the other, according to the relative position of the pin, so that the pins are 90 permitted by the construction above described to slightly rock without being bent to accommodate this variation in tension.

By the provision of the thin bearing-plates O the edges of the tension-adjusting sleeves 95 M are arranged out of possible contact with adjacent strings. It is obvious, however, that the plates O may be dispensed with and the sleeves bear directly upon the strings. It is also obvious that the specific construction of 100 the auxiliary tension-adjusting sleeves M is unimportant, the essential feature being the provision of a movable piece, in combination with the pins H, to effect an auxiliary tension upon the strings. It is also obvious that the 105 slots K in the pins may be formed centrally of the pins so far as the spirit and scope of my invention is concerned; but the construction shown embodies an operative construction illustrative of the principles of my in- 110 vention which I have found efficient and which is the best form in which I at present contemplate carrying my invention into practical operation.

It is obvious that a construction embodying 115 the principles of my invention may be applied to any form or type of stringed instrument, and in Fig. 1 I have shown my invention applied to a piano P.

In the practical operation of tuning stringed 120 instruments it is obvious that the greatest strain may be imposed upon the usual tuning-pins. It is also obvious that the auxiliary tuning-pins exert a greater or less pressure or tension upon the strings. In some instances 125 if the entire tension or the greater amount thereof is imposed upon the ordinary tuning-pin the sweetness and purity of the sound may be impaired by reason of the rigidity of the tuning-pin and of a metallic harshness, 130 which objection may be remedied without relieving the tension on the string by transferring the point of application of the tension from the tuning-pin to the auxiliary tuning-



pin. This result I am enabled to accomplish, hence securing a very clear, sweet, and non-metallic sound.

Many variations and changes in the details of construction and arrangement would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details shown and described; but,

Having now set forth the objects and nature of my invention and a construction embodying the principles thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

1. In a tuning attachment for stringed instruments, a base or pin board and the usual tuning-pins mounted therein, in combination with a casting comprising bearing edges or bridges, and an integral web connecting the same, the strings of the instrument passing over said bearing edges or bridges and connected to said tuning-pins, and auxiliary tuning-pins mounted in said casting and arranged between said bearing edges or bridges and operating upon the strings, as and for the purpose set forth.

2. In a tuning attachment for stringed instruments, a base-board or pin-plank and the usual tuning-pins, in combination with a casting having bearing edges or bridges, auxiliary tuning-pins arranged between said bearing edges or bridges, the strings arranged to pass over said bearing edges or bridges and to be secured to the usual tuning-pins, and adapted to be engaged by said auxiliary tuning-pins, and means whereby said auxiliary tuning-pins may be adjusted laterally with respect to the direction of the length of said strings, as and for the purpose set forth.

3. In a tuning apparatus for stringed instruments, a base-board or pin-plank and the usual tuning-pins mounted therein, in combination with a casting having spaced bearing edges or bridges upon which the strings of the instrument bear, auxiliary pins loosely mounted in said casting for independent movement relatively to each other, and arranged between said bearing edges or bridges, and adapted to engage the strings, as and for the purpose set forth.

4. In a tuning apparatus for stringed instruments, a base-board or pin-plank and the usual tuning-pins, in combination with suitably-spaced bearing edges or bridges over which the strings pass, auxiliary tuning-pins arranged between said bearing edges or bridges, and adapted to engage the strings, said auxiliary tuning-pins being independently adjustable laterally with reference to each other, as and for the purpose set forth.

5. In a tuning apparatus for stringed instruments, a base-board or pin-plate and the

usual tuning-pins mounted therein, in combination with bearing edges or bridges over which the strings pass, a web connecting said bearing edges or bridges, said web provided with elongated slots, and auxiliary tuning-pins mounted in said slots and arranged to engage said strings, as and for the purpose set forth.

6. In a tuning apparatus for stringed instruments, a base-board or pin-plate and the usual tuning-pins, in combination with bearing edges or bridges over which the strings pass, a web connecting said bridges and provided with elongated openings therethrough, auxiliary tuning-pins arranged to pass loosely through said openings and adapted to engage the strings, said auxiliary pins provided with heads having rounded or convexed surfaces arranged to bear against the under surface of said web, as and for the purpose set forth.

7. In a tuning apparatus for stringed instruments, a base-board or pin-plate and the usual tuning-pins mounted therein, in combination with a casting having integral bearings or bridges, over which the strings pass, auxiliary tuning-pins mounted in said casting and each provided with a slotted and exteriorly-threaded end through which a string passes, and a follower mounted on said pin and engaging the string, as and for the purpose set forth.

8. In a tuning apparatus for stringed instruments, a base-board or pin-plate and the usual tuning-pins mounted therein, in combination with a casting having integral bearings or bridges over which the string passes, auxiliary tuning-pins mounted in said casting and each having a slotted and exteriorly-threaded end, a string adapted to be passed through the slot in said pin, a bearing-plate arranged in said slot to engage the string, and a follower mounted on the threaded end of said pin to engage said plate, as and for the purpose set forth.

9. In an apparatus of the class described, a pin-plate or base-board and the usual tuning-pins, in combination with a casting comprising bridges and an integral connecting-web therefor, said casting provided with feet arranged to bear upon said base-board or pin-plate to raise or offset said web from said base-board or pin-plate, and auxiliary tuning-pins mounted in said web and adapted to engage the strings, said auxiliary pins having heads within the space formed by offsetting said web, as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 25th day of June, 1900, in the presence of the subscribing witnesses.

ALBERT L. WHITE.

Witnesses:

W. D. WOOD,

FRANK T. BROWN.