June 25, 1957 J. A. BACH 2,796,795

STRINGED MUSICAL INSTRUMENT

Filed March 27, 1956

Fig. 1

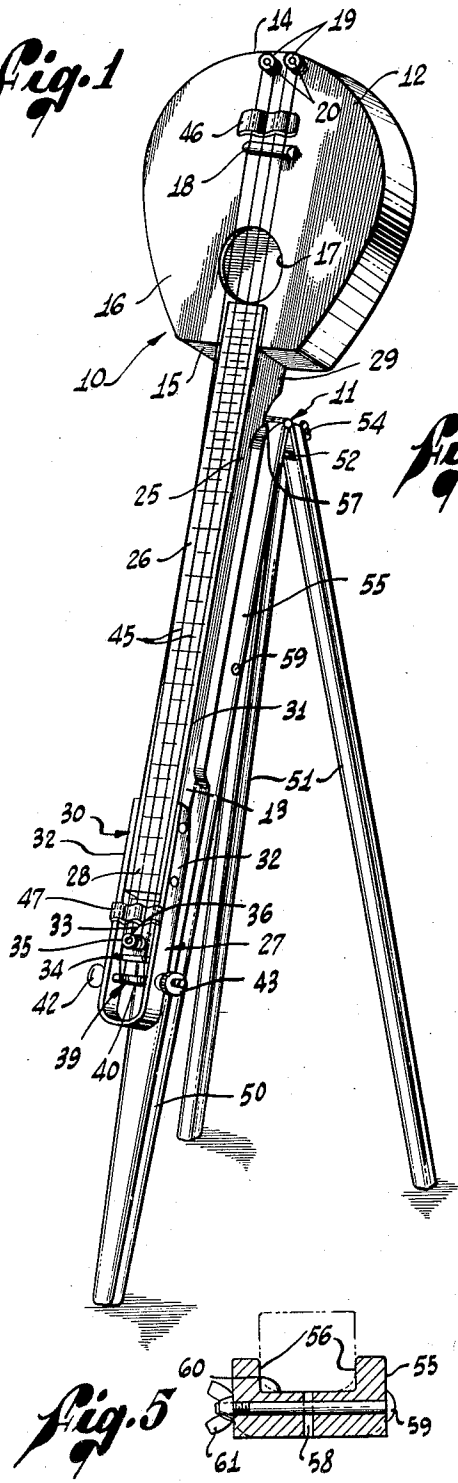



Fig. 2

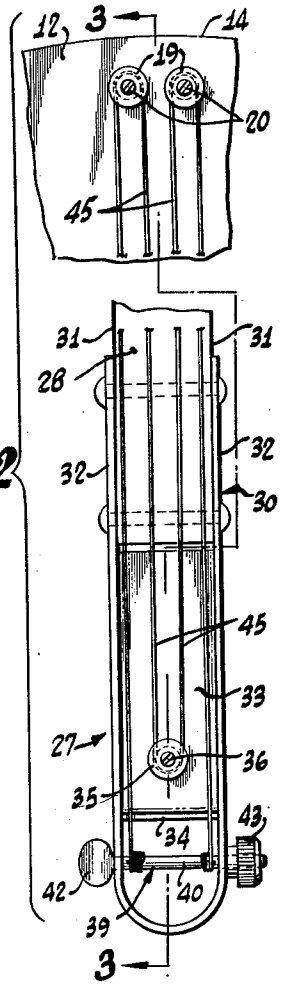



Fig. 3

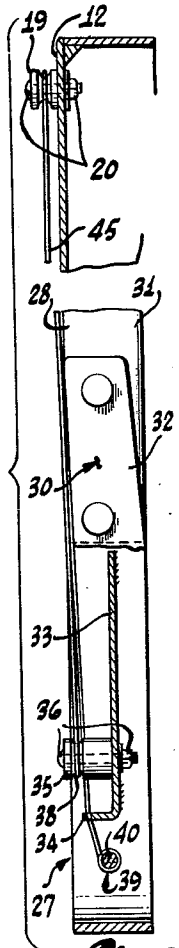



Fig. 4

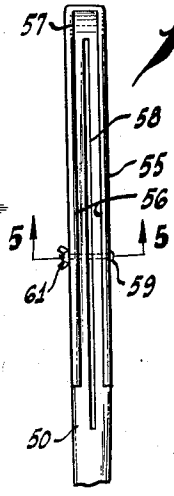



Fig. 6

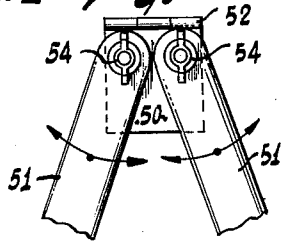



Fig. 5




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# STRINGED MUSICAL INSTRUMENT

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6 Claims. (Cl. 84—173)

This invention relates to stringed musical instruments and is particularly related to improvements for the stringed musical instrument described in my Patent No. 1,152,925, entitled "Stringed Musical Instrument," issued September 7, 1915.

I have found, through experience and experimentation, that if the sounding box of the above-identified prior art instrument is shortened and rounded, increased resonance per unit volume is obtained.

Secondly, I have found that if the neck of my prior musical instrument is greatly lengthened, only one row or plane of strings need be used to provide the same range of notes as was provided by the three rows or planes of strings of my prior musical instrument. In the above-identified instrument each plane of strings was spaced below the other, each plane comprising a number of musical strings of a heavier gauge and, consequently, of a lower pitch than the one spaced immediately above. The advantage of lengthening the neck to achieve the same range of a number of octaves lies in the elimination of the necessity of inserting the bowing device between an upper and lower plane of strings.

I have further found that the conventional key structure, used to obtain a uniform and equal tension for each string in the prior instrument, is not an accurate means for obtaining the desired uniform and equal tension and pitch in the strings.

Accordingly, it is a major object of this invention to provide an improved means for obtaining a uniform and equal pitch in any number of musical strings.

It is another object of my present invention to provide an improved sounding box for a musical instrument.

It is also an object of this invention to provide a musical instrument having an elongated neck relative to the length of the sounding box.

It is still a further object of my invention to provide an improved clamping tripod means for a musical instrument.

Other objects and advantages of this invention will become apparent by reference to the following detailed description, and the accompanying drawings, in which:

Figure 1 is a perspective of the improved musical instrument of the present invention shown mounted on a clamping tripod stand;

Figure 2 is an enlarged plan view of the extreme ends of the musical instrument;

Figure 3 is a cross-section along the line 3—3 of Figure 2;

Figure 4 is an elevation of the clamping section of the tripod;

Figure 5 is a cross-section along the line 5—5 of Figure 4; and

Figure 6 is an enlarged elevation of the rear upper end of the tripod stand.

Referring now to Figure 1, the improved musical instrument indicated generally by the numeral 10 is shown mounted on a clamping tripod stand generally indicated by the numeral 11.



The musical instrument comprises a sounding box 12 and a neck 13 affixed to one end thereof.

The sounding box 12, made of any suitable wood, is generally rectangular in cross-section and has an outer curved end 14 tapering inwardly to a truncated inner end 15. The front face 16 of sounding box 12 has an opening 17 formed therein near the truncated end 15, the center of which lies on the longitudinal axis of the instrument 10. A straight, narrow bridge 18, preferably having an upper rounded edge, is transversely affixed to the sounding box 12 beyond the opening 17, the center of the bridge being preferably aligned with the center of the opening.

Referring now to Figure 3, as well as to Figure 1, a pair of circumferentially grooved studs 19 are rotatably mounted near the outer end 14 of the front face 16 of sounding box 12 above the bridge 18, as by a nut and bolt arrangement 20. The studs 19 are provided with grooves so as to enable a string surrounding a section of the periphery thereof to be initially slightly movable in the axial direction of the stud toward the central portion of the groove.

The elongated neck 13 is affixed to the inner truncated end 15 of sounding box 12 and coaxially aligned therewith; the neck comprises an elongated body 25, a scale 26 affixed to the upper face of the body, and a head piece 27 affixed to end 28 of the body remote from inner end 15. The body 25 is substantially rectangular in transverse cross-section, and is thickened at its end 29 adjacent end 15 of the sounding box 12.

The underside of the thickened end 29 of the neck 13 is concave in shape, tapering into the generally flat underside of the body 25, the concavity conforming to the convex rounded upper end of a tripod to be described.

The scale 26, generally designating at least three octaves, is affixed to the flat upper face of body 25 and runs axially substantially along the entire length thereof extending onto the front face 16 of the sounding box 12 to terminate adjacent the opening 17 therein.

Referring now to Figures 2 and 3, as well as to Figure 1, the head piece 27 consists preferably of a U-shaped metal frame 30, the ends of which are riveted to the sides 31 of the end 28 of body 25. The legs 32 of frame 30 run parallel to the body 25, the transverse diameter of the frame being substantially equal to the transverse diameter of the body.

A flat floor plate 33 is affixed to the inner faces of legs 32 of frame 30, said floor plate being bent at right angles at one end to form a transverse bridge 34. The bridge 34 preferably terminates below the plane of the upper surface of scale 26.

A cylindrical post 35 is affixed along the axis of frame 30 to the floor of floor plates 33 as by a nut and bolt 36. The post 35 is provided with a peripheral groove 38 which lies approximately in the plane of the scale 26.

A key 39 is rotatably and transversely mounted in the lower section of frame 30 and comprises a shaft 40, threaded at one end, and a thumbpiece 42 affixed to the other end. The key 39 is rigidly positioned by means of clamping screw 43 which is screwed onto the threaded end of the shaft 40.

A musical wire 45, approximately five times the axial length of instrument 10, is folded once loosely to form a large loop section. The closed end of the loop of wire surrounds the groove 38 of post 35. The loop of wire 45 is then extended and is positioned beyond the opening 17 and on bridge 18, each leg of the wire contacting the adjacent portions of each of the central portions of studs 19. Each leg of the wire 45 is then reversed in direction and drawn downwardly, parallel to the axis of the instrument 10, and parallel to the strings already formed. The

ends of wire 45 are removably affixed to key 39 in any suitable manner; the key is then rotated to place the wire 45 under suitable tension, and fixed in place by clamping screw 42. Only one key 39 is necessary to adjust and maintain the tension of the musical wire 45 which forms four musical strings of equal pitch. The plurality of strings formed by following the above procedure all lie in the same plane, preferably parallel to the scale 26.

In the procedure outlined above for forming and securing the musical strings, it is sometimes found that the outer strings are initially under a higher tension than the inner strings. In order to equalize the tensions of each strings so that the instrument will be perfectly tuned, the rotatable studs 19 are each given a slight turn either clockwise or counterclockwise.

A flat rectangular rubber or other flexible damping device 46 is transversely inserted between the musical strings between the bridge 18 and the studs 19 to damp any vibration that might occur beyond the bridge. A similar damping device 47 is transversely inserted between the musical strings adjacent post 35.

The instrument is usually played in the position shown; by drawing a bowing and plucking device (not shown) across the strings, the damping device 47 causes the vibration of the strings to be damped along that portion of the strings from the point of contact of the bowing device downward. The change in position of the bowing device acts itself as a means of shortening or lengthening the vibrating upper section of the strings, as described in detail in the aforementioned patent. It should be apparent that as the length of the strings is increased by increasing the distance between studs 19 and post 35, the range of the instrument 10 increases.

The tripod 11 comprises a front clamping leg 50 movably mounted to two rear legs 51 by a double leaf hinge 52. As is best seen in Figure 6, each of the rear legs 51 is pivotally mounted to the hinge 52 by means of a single bolt and wing nut assembly 54, thus allowing these rear legs to be spread apart any desired amount.

The front clamping leg 50 is provided with parallel clamping members 55 affixed to the sides of the upper section thereof, thereby forming a longitudinally extending groove 56. The length of the groove 56 is preferably less than the length of body 25, the width of the groove being slightly greater than the width of the body 25. The upper end 57 of front leg 50 is curved in a convex fashion and merges into the convexly curved upper end of the raised side clamping members 55 to form preferably one continuous curve. The convexly curved upper end 57 conforms to the curvature of the underside of the upper thickened end 28 of body 25.

A narrow, longitudinal slot 58 is provided in the front clamping leg 50 which extends preferably along the axis of the leg and parallel to the clamping sides 55 thereof. The length of slot 58 is preferably slightly longer than the clamping members 55.

Referring especially to Figure 6, a bolt 59, threaded at one end, passes transversely through the sides of the upper section of leg 50 below the floor 60 of groove 56, preferably being positioned at the approximate mid-point of the slot 58.

The width of the groove 56 is then narrowed to provide a clamping action by applying an inward pressure on the sides 55 of leg 50, as by a wing nut 61 engaging bolt 59.

The body 25 of instrument 10 is placed within the groove 56 of tripod 11, the head piece 27 lying below the clamping members 55, and the sounding box 12 being in the uppermost position. When using the instrument, the concave curved underside of the inner end 29 of body 25 rests on the convex upper end 57 of front leg 50. (In Figure 1, the end 29 of base 25 is not shown resting on the upper end 57 of leg 50 for purposes of clarity.)

The sides 31 of body 25 are thus contained within the sides 62 of groove 56; and by tightening the wing nut 61, the body 25 and therefore instrument 10 are securely held in place.

The player then seats himself in front of the scale 26 of the instrument 10 and may easily reach all points thereon with his bowing device.

One preferred embodiment of my improved stringed musical instrument has been shown, as well as one preferred embodiment of the tripod. Other modifications fall within the scope of this invention; for instance, adapting the apparatus and principle herein shown and described for applying and equalizing tension on any multiple number of musical strings merely by the use of a greater number of studs and posts in conjunction with a single key. The invention is limited only by the claims which follow.

I claim:

1. In a stringed musical instrument having a sounding box and an elongated neck attached thereto in which the musical strings are all of equal pitch, the improvement which comprises: a plurality of rotatable projections affixed to the front face of the sounding box of said musical instrument; at least one projection affixed near the lower end of the neck of said instrument; a key rotatably mounted in the lower end of the neck of said instrument; and a continuous musical wire looped to engage each of said projections and wound onto said rotatable key to form thereby a plurality of musical strings, traversing said sound box opening, having equal pitch.

2. A stringed musical instrument which includes: a sounding box, having an opening formed in the front face thereof; an elongated neck affixed to said sounding box; a plurality of projections affixed to the front face of said sounding box and to the front face of said neck near the upper and lower ends thereof, respectively, said sounding box projections being rotatable; a key rotatably and transversely mounted near the end of said neck remote from said sounding box; and a continuous musical wire looped about said neck and sounding box projections and being wound onto said key, to form thereby a plurality of musical strings, traversing said sound box opening, having equal pitch.

3. A stringed musical instrument which includes: a sounding box having an inner and an outer end and an opening formed in the front face thereof; a plurality of rotatable studs affixed to the front face of said sounding box; an elongated neck, one end of which is affixed to the inner end of said sounding box; at least one post affixed near the end of said neck remote from said sounding box; a key rotatably and transversely mounted near said post; clamping means for clamping said key in a fixed position; and a continuous musical wire looped to engage each of said studs and posts alternately and wound onto said key, to form thereby a plurality of musical strings, traversing the sound box opening, having equal pitch.

4. A stringed musical instrument which includes: a sounding box having an inner and an outer end and an axial opening formed in the front face thereof; a plurality of rotatable, cylindrical studs affixed to the front face of said sounding box near the outer end thereof, said studs being affixed symmetrically about the longitudinal axis of said sounding box; an elongated straight neck, one end of which is axially affixed to the inner end of said sounding box; a musical scale mounted on the front face of said neck; at least one cylindrical post symmetrically affixed about the axis of, and near the end of said neck remote from the sounding box; a key rotatably and transversely mounted near one end of said neck between said post and said end remote from said sounding box; clamping means clamping said key in a fixed position; and a continuous musical wire wound to engage each of said studs and posts alternately and then wound around said key, each of the musical strings formed thereby lying in a plane and being subjected to equal tension.

5. A stringed musical instrument which comprises: a sounding box having an axial opening formed in the front

face thereof; a plurality of rotatable studs affixed to the front face of said sounding box, said studs being affixed symmetrically about said axis and each having a circumferential groove formed therein; an elongated straight neck which comprises an upper body portion and a lower head piece; the upper end of said body being axially affixed to said sounding box, said head piece having an axial opening formed therein; a musical scale axially mounted along substantially the entire length of said body; at least one cylindrical circumferentially grooved post affixed symmetrically about said longitudinal axis within said opening of said head piece so that all said grooves lie approximately in the same plane; a bridge affixed transversely within said head piece between the lower end thereof and said post; a continuous musical wire looped to engage first one of said posts and second a pair of said rotatable studs, and alternately engaging thereafter the remaining posts and studs, to form thereby axially parallel musical strings; a rotatably mounted key around which is looped the two ends of said musical wire, said musical strings being subjected to equal tension; and a damping means inserted between said strings adjacent said posts.

6. A stringed musical instrument which comprises: a sounding box having a curved outer end tapering inwardly to a truncated inner end and having a front and rear face, said front face having an axial opening formed therein; a plurality of rotatable studs affixed to the front face of said sounding box near said outer curved end thereof, said studs being affixed symmetrically about the longitudinal axis and each having a circumferential groove formed therein parallel to said front face, each of said grooves lying in a plane; an elongated straight, substantially rectangular body, one end of which is axially affixed at right angles to the inner end of said sounding box; a musical scale axially mounted along substantially the entire length of said body on the front face thereof; a U-shaped frame, the ends of which are affixed to the sides adjacent said front face of said body at the end remote from said sounding box; a flat floor plate affixed within said frame having the end adjacent the crosspiece of said U-shaped frame curved upwardly to form a ridge; at least one cylindrical circumferentially grooved post affixed to said floor plate symmetrically about said longitudinal axis; a key rotatably and transversely mounted in said frame between said ridge and said crosspiece of the U-shaped frame; means attached to said key for clamping it in a fixed position; a continuous musical wire wound to engage the grooves of each of said studs and posts and onto said key to form thereby musical strings of equal tension and pitch, the axial distance between said studs and posts being sufficiently great to provide at least a three-octave playing range; and a resilient cushioning means inserted between said musical strings immediately adjacent said posts.




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