Dec. 20, 1949 W. B. STRATON 2,492,017

VIOLIN BOW CONSTRUCTION

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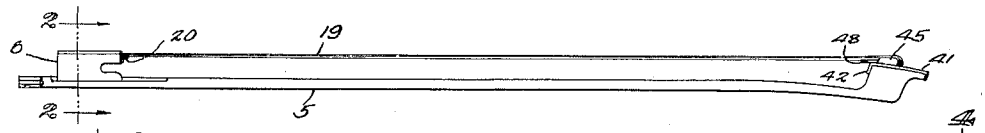
Fig. 1.



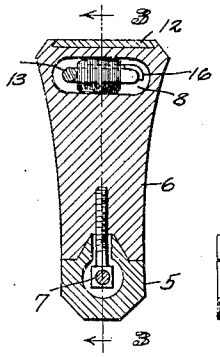


Fig. 2.

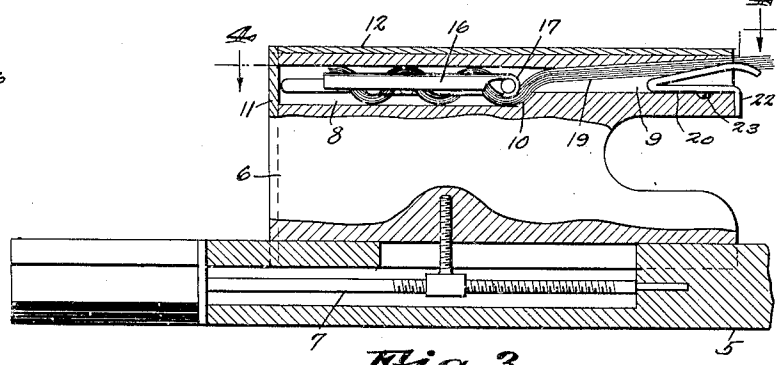


Fig. 3.

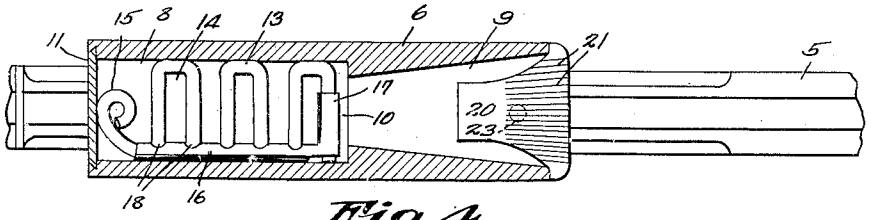


Fig. 4.

Fig. 5.

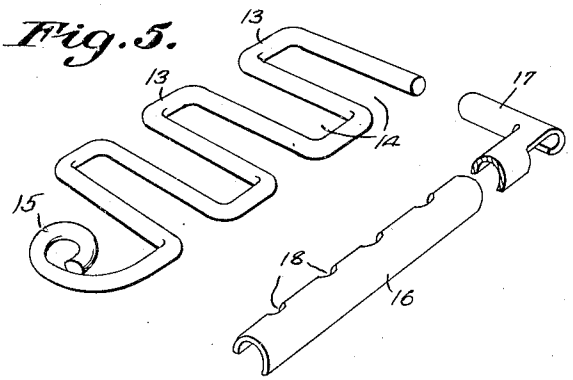


Fig. 6.

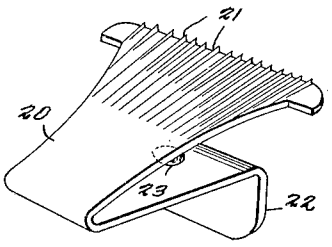


Fig. 7.

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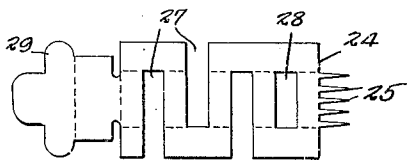
Fig. 8.



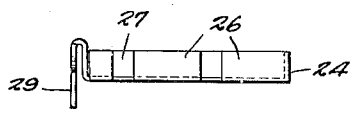


Fig. 9.

Fig. 10.

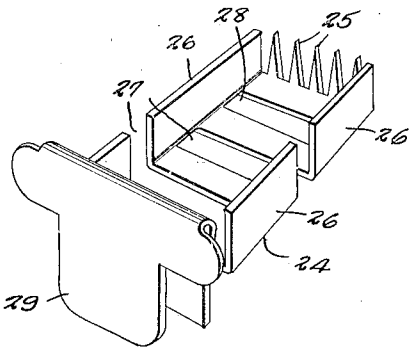


Fig. 11.

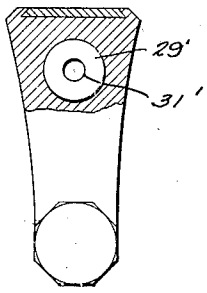


Fig. 12.

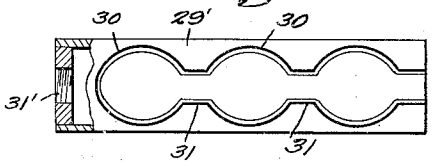


Fig. 13.

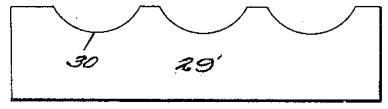
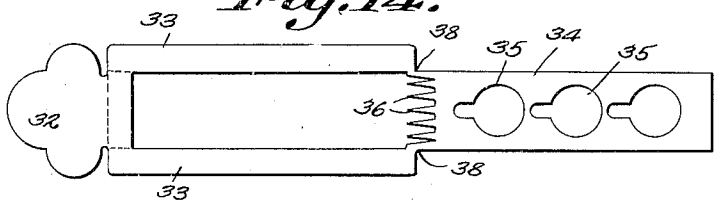


Fig. 14.



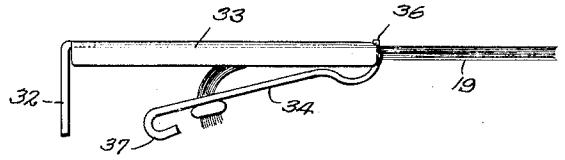


Fig. 15.

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Fig. 16.

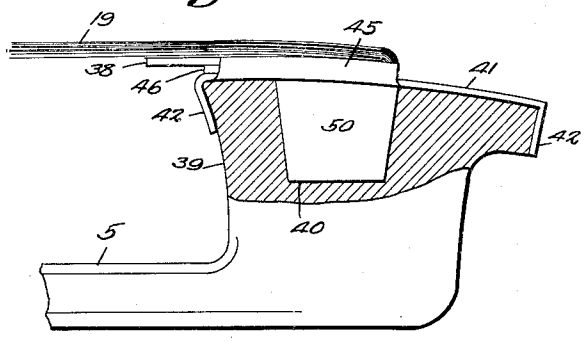


Fig. 17.

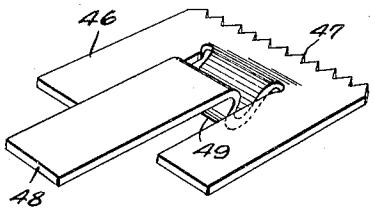


Fig. 18.

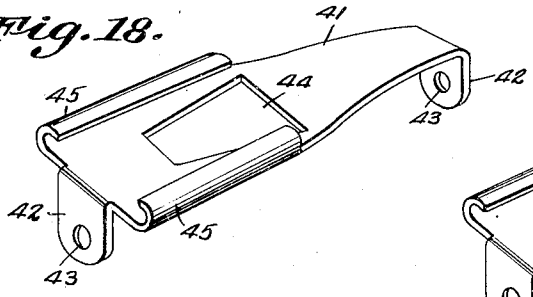


Fig. 19.

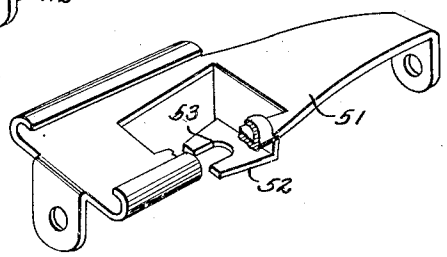
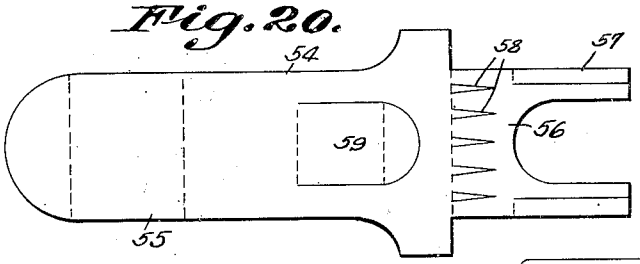


Fig. 20.



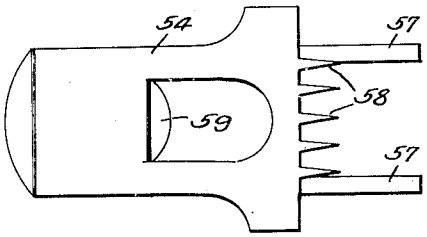


Fig. 21.

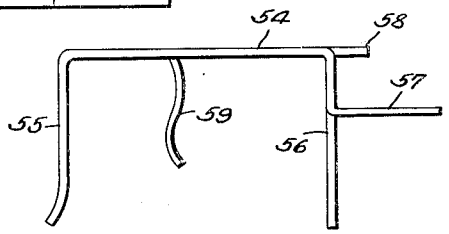


Fig. 22.

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Patented Dec. 20, 1949

2,492,017

UNITED STATES PATENT OFFICE

2,492,017

VIOLIN BOW CONSTRUCTION

Warren B. Straton, Brooklyn, N. Y.

Application February 19, 1948, Serial No. 9,489

5 Claims. (Cl. 84—282)

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This invention relates to a novel construction for a bow such as is used in playing violins, cellos, basses, and the like.

It is well known in the art to which the invention relates that the rehairing and adjustment of a bow has long been a serious problem. Rehairing a bow, and adjusting the hair to a proper degree of tension, has required excessive time, special equipment, and training. Additionally, using conventional methods, the possibility of breakage of a fine bow tip and frog has been a serious matter.

Attempts have been made to solve this problem but so far as I am aware, these attempts have resulted only in the provision of more complicated and delicate mechanisms which have been prohibitive of practical usage.

It is an important object of this invention therefore to provide a bow construction wherein the strands of hair may be secured to the opposite ends of a bow by a simplified and novel method adapted to hold the strands firmly and in the ribbon-like arrangement desired. In close relation to this purpose, it is an object to provide such a construction as will permit the owner of a bow to rehair his instrument himself, without the need of a special technician.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings

Figure 1 is a side elevational view of one form of bow constructed in accordance with the invention.

Figure 2 is an enlarged transverse section, taken on line 2—2 of Figure 1, of the frog.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a section on line 4—4 of Figure 3.

Figure 5 is an enlarged perspective view of the hair holder of Figure 4.

Figure 6 is a perspective view, portions being broken away, of a lock member for the hair holder.

Figure 7 is a perspective view of a spring clip mountable in the frog.

Figure 8 is a plan view of a blank from which another form of hair holder is fashioned.

Figure 9 is a side elevational view of said modified form of hair holder.

Figure 10 is a perspective view thereof.

Figure 11 is a view partly in end elevation and partly in section of a frog, showing another form of hair holder in end elevation.

Figure 12 is a view partly in top plan and partly in longitudinal section of the hair holder of Figure 11.

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Figure 13 is a side elevational view of the hair holder of Figure 11.

Figure 14 is a plan view of a blank from which still another form of hair holder is made.

Figure 15 is a side elevational view of the hair holder of Figure 14.

Figure 16 is a view partly in side elevation and partly in section of the bow tip.

Figure 17 is a perspective view of a latch plate which is part of said bow tip.

Figure 18 is a perspective view of a lock plate which is a part of said bow tip.

Figure 19 is a perspective view of a modified form of lock plate.

Figure 20 is a plan view of a blank from which another modified form of lock plate is fashioned.

Figure 21 is a plan view of the completed lock plate of Figure 20.

Figure 22 is a side elevation of the lock plate of Figure 20.

Referring to the drawings in detail, at 5 I have designated a bow-stick, and at 6 a frog-block therefor. The frog-block is mounted removably on the bow-stick, and is adjustable longitudinally thereof, by means of an adjusting screw 7, this being a conventional construction.

Extending longitudinally of the frog-block 6 is a chamber 8. Communication is had with this chamber through either end of the frog-block 6. The chamber opens at the inner end of the block through a flared throat 9. A shoulder 10 is defined between the chamber and the throat, for the purpose of preventing undesired longitudinal movement of a hair holder to be described. Access to the chamber 8 through the outer end of the frog is had through removal of a slide 11 that normally closes the outer end of said chamber. A top slide 12 is also provided, and is adapted to cover the open end of the throat 9.

The conventional method of mounting hairs in a frog-block involves considerable technical training, the hair being glued, cemented or wedged into the frog-block. This is highly dangerous because of the possibility of breakage to the delicately formed instrument. In the present invention, the means for mounting the hair in the frog-block can best be termed as a friction means. To this end, I provide one form of hair holder, illustrated in Figures 2 through 6, the hair holder proper being shown separately in Figure 5. This can be formed from any of various materials, such as beryllium copper, gold, silver, or the like. Stainless spring steel, I have found, well serves the intended purpose.

Said material is bent to shape, so as to have the appearance illustrated in Figure 5, wherein it is seen that the hair holder comprises spaced convolutions 13, that define hair-receiving recesses 14. The recesses 14 are each open at one end, and thus it is seen that the hair can be threaded readily into and out of the various recesses by en-

tering it through the open ends thereof. This can be readily observed as permitting threading of the hair in a minimum of time, and without requirement of any technical training whatsoever.

One end of the hair holder is preferably formed with a loop 15, this end being disposed toward the outer end of the frog-block as best shown in Figure 4. Thus, the adjusting screw 7 can be entered into the loop 15 after removal of slide 11, so as to withdraw the hair holder from the chamber 8. Any kind of a rod or pin that would fit within the loop 15 could, of course, be used for the same purpose.

Swingably mounted on the hair holder is a lock member 16, having at one end the hinge 17. Hinge 17 can be placed over the inner end of the hair holder, so as to permit relative swinging movement thereof. In threading the hair on the hair holder, it is understood that the lock member would be raised or removed entirely. Then, it is swung down upon the hair holder, the lock member being formed with spaced indentations 18 that fit over the various courses of the holder. Thus, the hair is locked within the hair holder, and there is no possibility of its slipping therefrom, either within the frog-block or after removal of the holder from the block, until it is freed by relative separation of the two parts.

The hair is designated at 19. At 20 (see Figures 3 and 7) I have illustrated a spring clip the upper surface of which is formed with longitudinally disposed and closely spaced thin ribs 21. These constitute a comb surface adapted to spread the hair in a ribbon-like arrangement over the spring clip.

The spring clip also has a depending lip 22, and a down-struck lug 23 on its lower portion. Lug 23 is adapted to spring into a correspondingly shaped recess in the throat thus holding the spring clip tightly therein.

In rehairing a bow, after the hair has been threaded through the hair holder and the hair holder placed within the frog-block, the spring clip 20 can be run from the bow tip to the frog, thus combing the hair as is necessary in every instance. When the spring clip is brought to the throat opening, it is simply snapped therein, and the hair is thus retained properly combed.

In Figures 8 through 10, I have illustrated another form of hair holder capable of being mounted in chamber 8. This form is a combined comb and hair holder. At one end thereof, comb teeth 25 are provided. The hair holder also is formed with side walls 26, and open ended recesses 27 through which the hair can be threaded in the manner possible with the first form. Preferably, at the comb end of the hair holder, I provide an opening 28. The other end of the hair holder is provided with a tongue 29 which is adapted not only to prevent play of the hair holder within the chamber 8, but also, is readily grasped for the purpose of removing the holder from the block.

It may be noted that the hair holder 24 can be readily stamped from a flat piece of material, so that in blank, it appears as in Figure 8. Then, the comb teeth and side walls are formed by bending the proper portions of the blank upwardly, and the tongue 29 is bent to shape as shown.

This modified form of hair holder can serve as means for combing the hair from end to end, after which the hair holder can be inserted in the chamber 8, the unit thus serving both as a comb and a means for retaining the hair within the frog-block. The spring clip 20 would, of course, be used after the hair has been combed in ribbin-like form, for the purpose of retaining it in ribbon shape during use.

Figures 11 through 13 show another form of hair holder, this being of hollow construction. This is formed with a hollow body 29', in which is formed spaced eyelets 30. Slots or channels 31 communicate between the eyelets. The outer end of the holder may be formed with a threaded opening 31', for the purpose of facilitating removal of the holder from the block. The opening 31' is adapted to receive the conventional frog adjustment screw 7.

In use of this form of hair holder, the hair can be knotted or otherwise formed with what may be termed a button end. For example, the hair could be embedded or molded in a plastic ball or button. It is received in any of the eyelets 30, and when the hair is tightened, the narrow slots or channels 31 prevent its removal.

Figures 14 and 15 illustrate another form of holder. This has a tongue 32 at one end for ready removal of the holder and for preventing play thereof within the block. The holder is also provided with longitudinal side flanges 33 and a spring plate 34. The spring plate is formed with spaced button hole openings 35, and at one end, has the comb teeth 36. In blank, this form of holder appears as in Figure 14, and it is readily seen that it can be stamped from a flat blank of metal material. In forming the holder, tongue 32 is bent to the position illustrated in Figure 15. Additionally, a curled end 47 is formed on the free end of the spring plate 34, this engaging tightly against the bottom of chamber 8 of the frog-block. Flanges 33 are formed as illustrated in Figure 15, and to complete formation of the holder, it is necessary only that the spring plate 34 be turned under the flanges by being bent at the portions 38. The hair, embedded in a button or the like, can then be inserted in any of the button hole openings 35. The comb teeth 36 as readily seen, spread the hair into ribbon-like form, and it may be noted that this holder also can serve as a comb device and holder combined.

Referring now to Figures 16 through 18, one form of bow tip is there illustrated mounted on the tip end 39 of the bow-stick 5. The usual recess 40 is formed in said end. However, in the invention, I provide a lock plate 41 that overlies the tip end 39, and which has depending ears at either end adapted to lap the ends of the tip end so as to prevent relative movement of the parts. Openings 43 can be formed in the ears 42 for the purpose of receiving pins, not shown, that can be used for the purpose of holding the lock plate to the tip end 39 while the plate is being cemented or otherwise permanently attached thereto. The pins, after completion of the operation, can be removed.

Intermediate the ends of the lock plate 41, there is formed therein an opening 44 that registers with the recess 40 of the tip end. The lock plate is also formed with side flanges 45.

Referring now to Figure 17, a latch plate 46 is used in conjunction with the lock plate. This is also readily stamped from a flat piece of material, and at one end, has the teeth 47. A spring tongue 48 is fashioned into the lock plate 46, this being shaped near its inner end to provide a latch or offset 49.

Hair 19 is embedded or vulcanized in a ribbon-like arrangement in a plastic block 50, which

block could, of course, be of any other material adapted to be readily molded or formed to shape. This block is dropped through opening **44** into recess **40**. The latch plates **46** is then entered between the flanges **45**, and when pressed rearwardly a suitable distance, the latch **49** thereof springs into opening **44** of the lock plate, at the same time engaging the hair tightly between the teeth **47** and the rear edge of the opening **44**. This keeps the hair spread properly in ribbon-like arrangement, and holds it tightly to the bow tip.

In Figure 19 another form of lock plate is illustrated, the use of which eliminates the necessity of embedding the hair in a plastic block or the like. This form of lock plate is also rigidly attached to the tip end. It differs from the first form only to the extent of the provision of a depending tongue **52** that projects downwardly into the recess **40**. The tongue **52** is provided with a slot **53**. Thus, the hair can be knotted, entered in the slot **53**, and on insertion of the latch plate **46** between the side flanges, the hair will be tightly held.

Figures 20 through 22 illustrates a lock plate formed in one piece, rather than in the relatively movable parts described above. This is also formed from a flat piece of metal material, which on being bent to shape has a top portion **54** that overlies the tip end. This also has a depending front flange **55**, that overlies the front wall of the tip end, in the manner of that ear **42** illustrated at the left of Figure 16.

The other end of top portion **54** is also formed as a depending flange **56**, and outstruck from this flange are spaced fingers **57**. The bending of flange **56** to shape defines comb teeth **58**. Intermediate the ends of the top portion **54**, there is provided a depending spring tongue **59**.

This form of lock plate is removably attached to the tip end **39**. As stated, flange **55** overlies the inner wall of the tip end. Spring tongue **59** extends into recess **40** and engages against the side wall thereof illustrated at the left in Figure 16. Flange **56** lies against the opposed side wall of the recess. In use of this form of lock plate, said opposed wall of the recess **40** is provided with two small inwardly extended openings that are readily drilled therein. Fingers **57** are received in these openings. Thus, the hair is readily knotted or formed with a button on its end, and passed between the legs of flange **56**. Thus, the hair is tightly engaged between said flange and one of the walls of the recess **40**, and is readily combed and retained in ribbon-like form by the comb teeth **58**.

The advantages of a violin bow construction as described above can now be readily perceived. It is not necessary that anyone be technically trained for the purpose of securing the ends of the hair to the frog and tip respectively and proper adjustments necessary because of atmospheric conditions or the desire of the player can be readily made. The possibility of breakage of the frog or tip, or serious damage thereto, is fully eliminated. Additionally, the construction provides a means both for combing the hair and for retaining it at both ends of the bow in a ribbon-like form during use. Loosening of the hair during continued use is effectively prevented, by reason of the strong yet simple connection of the hair to the opposite ends of the bow-stick.

What is claimed is:

1. A violin bow construction including a bow-stick, a frog removably mounted at one end thereof, there being a chamber formed in the frog, strands of hair, hair-holding means removably seated in the chamber, said means and chamber being shaped to prevent relative movement of said means and the frog when hair is being held by said means, a spring clip insertable in one end of the frog and adapted to engage the hair tightly against the frog, and means removably connecting the hair to the tip end of the bow-stick.

2. A violin bow construction including a bow-stick, a frog removably mounted at one end thereof, there being a chamber formed in the frog and a throat opening from the chamber at the inner end of said frog, a hair holder removably mounted in said chamber, said hair holder being formed with spaced convolutions, strands of hair threaded through said convolutions, a spring clip insertable in the throat, said clip being formed with a comb surface and adapted to retain the hair in ribbon form tightly against the wall of the throat, and means at the tip end of the bow-stick removably connecting the hair to said tip end.

3. A violin bow construction including a bow-stick, a frog removably mounted at one end thereof, there being a chamber formed in the frog, a hair holder removably mounted in said chamber, said hair holder being provided with spaced openings, comb teeth at one end of the hair holder, and means at the tip end of the bow-stick adapted to removably connect strands of hair to said tip end.

4. A violin bow construction including a bow-stick, a frog removably mounted at one end thereof, hair-holding means carried by the frog, a tip end at the other end of the bow-stick, there being a recess formed in said tip end, and plate means overlying the tip end and having a portion engaged in the recess in a manner to permit removal of said portion bodily from the recess, said means adapted to engage strands of hair removably and to bind said hair against a wall of the recess when said portion is engaged in the recess.

5. A violin bow construction including a bow-stick, a frog removably mounted at one end thereof, a hair holder removably mounted in the frog, a tip end on the bow-stick, there being a recess formed in said tip end, plate means overlying the recess and having a portion engaged in the recess in a manner to permit removal of said portion bodily from the recess, said means adapted to engage strands of hair removably and to bind said hair against a wall of the recess when said portion is engaged in the recess, and comb teeth associated with said plate means.

WARREN B. STRATON.

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