Oct. 15, 1968 YOSHIYUKI KOISHIKAWA 3,405,586

MOUNTING MEANS FOR MOUNTING A SHEET ON A MUSICAL INSTRUMENT

Filed Oct. 25, 1967 2 Sheets-Sheet 1

FIG. 1

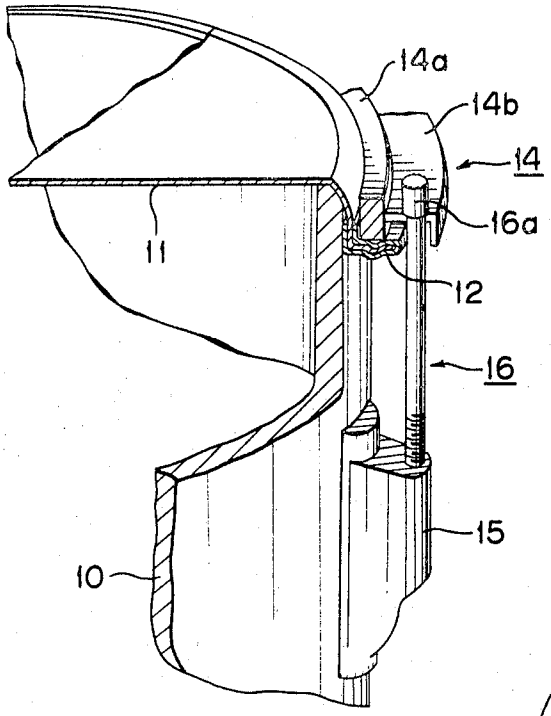


FIG. 3

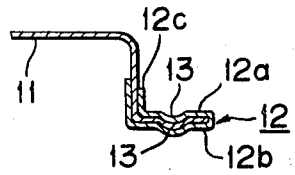


FIG. 4

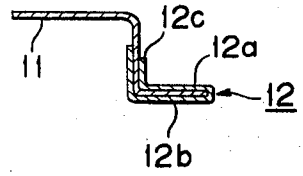


FIG. 7

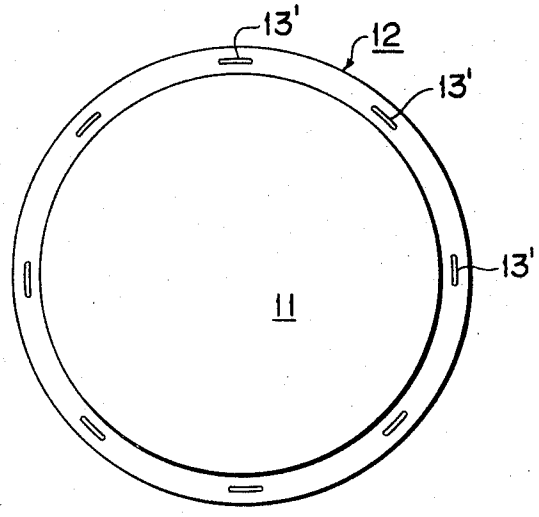
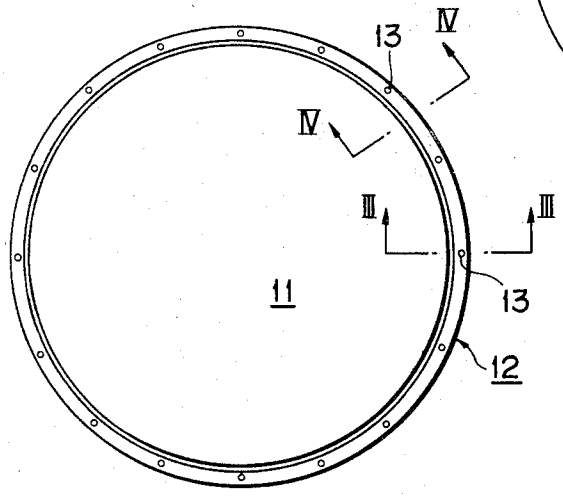


FIG. 2



Yoshiyuki Koishikawa,

INVENTOR.

BY Wenderoth, Lind and Ponack, attorneys

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MOUNTING MEANS FOR MOUNTING A SHEET ON A MUSICAL INSTRUMENT

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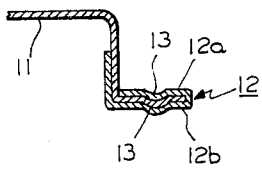


FIG. 5

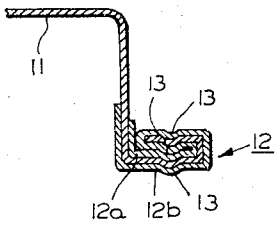


FIG. 6

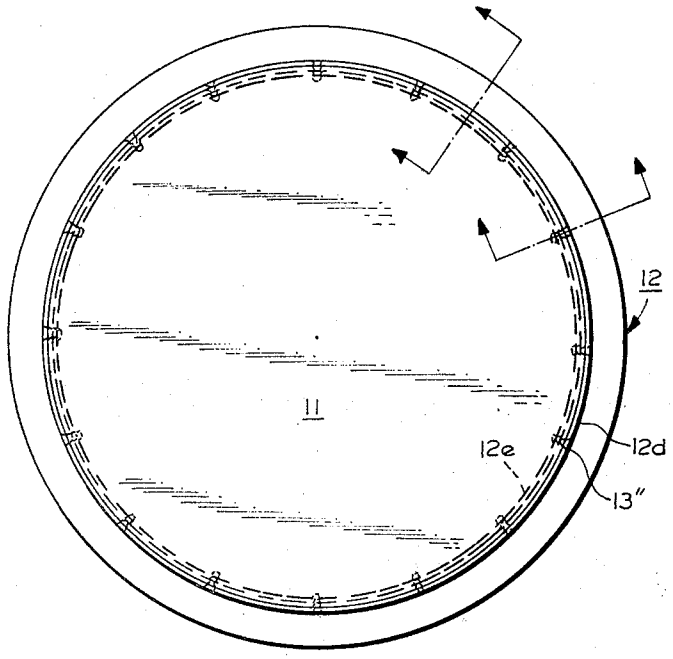


FIG. 8

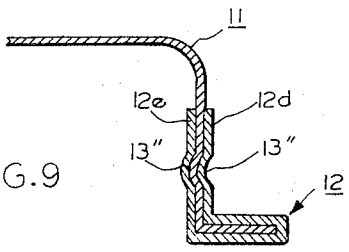


FIG. 9

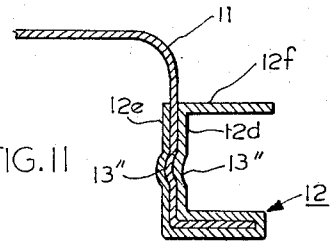


FIG. 11

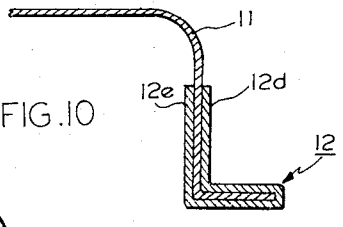


FIG. 10

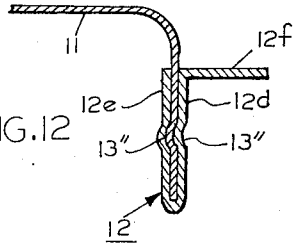


FIG. 12

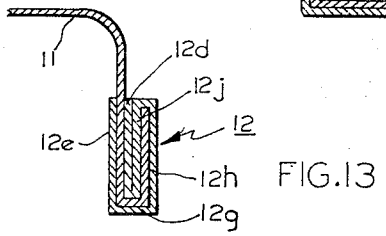


FIG. 13

INVENTOR

Yoshiyuki Koishikawa

BY Wenderoth, Lind & Ponack

ATTORNEYS

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3,405,586

MOUNTING MEANS FOR MOUNTING A SHEET ON A MUSICAL INSTRUMENT

Yoshiyuki Koishikawa, 2365 Kawaradacho, Mie Prefecture, Yokkaichi, Japan

Continuation-in-part of application Ser. No. 601,085, Dec. 12, 1966. This application Oct. 25, 1967, Ser. No. 695,811
Claims priority, application Japan, Oct. 28, 1966, 41/99,402, 41/99,403
7 Claims. (Cl. 84—414)

ABSTRACT OF THE DISCLOSURE

A combination sheet and mounting means for mounting on a musical instrument, comprising a sheet for forming part of the musical instrument and an annular peripheral frame having a U-shaped cross sectional configuration, the outer peripheral edge of said sheet being positioned between and tightly held by the leg portions of the peripheral frame, both the front and back leg portions of said peripheral frame and said sheet positioned therebetween having concave depressions at predetermined intervals in the circumferential direction of said peripheral frame, whereby said sheet is tightly fixed to said peripheral frame.

This application is a continuation in part of application Ser. No. 601,085 filed Dec. 12, 1966.

This invention relates to an improvement in an apparatus for mounting a sheet forming part of a musical instrument.

More particularly, this invention relates to an improvement in an apparatus for mounting a sheet relative to the peripheral frame of a drum or a tambourine.

Heretofore, animal skin has been used for drumheads or for tambourines. Recently, however, as a substitute for said skin, a synthetic resin film such as, for instance, a polyester film, has been used. Such a synthetic resin film has good moisture resisting characteristics and is suitable as a material for such a sheet. However, its thickness is extremely small, being only 0.075–0.35 mm., and it is very slippery. Upon mounting the peripheral edge of a drumhead sheet on a drum body, said sheet tend to be broken and to slip relative to the peripheral frame, and it has been found to be difficult to fix the sheet to said frame tightly.

The present invention has been proposed in order to eliminate such defects.

A primary object of this invention is to provide an improved apparatus for mounting a sheet forming part of a musical instrument, whereby a sheet can be mounted on the peripheral frame of a drum or a tambourine by a simple structure and the sheet is not damaged by rough use.

One of other objects of this invention is to simplify mounting of a slippery synthetic resin sheet on a peripheral frame, to prevent occurrence of extension and contraction of the sheet due to moisture by making use of the moisture-resisting properties of synthetic resin film constituting the sheet, whereby the sheet can be always maintained in a uniformly tensioned state.

Another object of this invention is to provide an improved apparatus for mounting a sheet forming part of a musical instrument, the structure of which apparatus is simple and which is suitable for mass production.

In order to achieve the aforesaid objects, the apparatus for mounting the sheet forming part of a musical instrument according to this invention comprises a sheet and an annular peripheral frame having a U-shaped cross sectional configuration for tightly fixing the peripheral edge of said sheet. The outer peripheral edge of said sheet

is inserted into said peripheral frame, and both the front and back pieces of said U-shaped peripheral frame are pressed toward each other and said sheet therebetween to press them together, and to form concave depressions at predetermined intervals along the circumference of said peripheral frame, thereby tightly fixing said sheet to said peripheral frame.

In this invention, as mentioned above, because the front and back of the outer peripheral edge of the sheet are positioned in the annular peripheral frame having the U-shaped cross sectional configuration, the outer peripheral edge of said sheet is uniformly pressed in contact with said peripheral frame over a broad area extending the entire circumferential length of said edge. Further, because both the front and back pieces of said peripheral frame together with said sheet inserted therebetween are pressed together and have concave depressions formed therein at predetermined intervals along the circumferential length of said peripheral frame, the outer peripheral edge of said sheet is uniformly and tightly fixed to said peripheral frame and is prevented from slipping, thus slip of said sheet relative to the peripheral frame due to an outside force applied to said sheet and expansion and contraction of said sheet caused by dryness and moisture are completely prevented. Because the outer peripheral edge of said sheet is tightly fixed to the peripheral frame under a roughly uniform tension for the entire length thereof, there is no danger of wrinkles being formed on the surface of the sheet and that the instrument is caused to get out of tune.

Also in this invention, because the outer peripheral edge of said sheet is protected by said peripheral frame by being inserted in the frame for the entire width from the radial inner edge to the radial outer edge of said peripheral frame, the outer peripheral part of said sheet is reinforced and there is no fear that the sheet will be torn from the frame.

Furthermore, according to this invention by adjusting the interval, length and shape of said concave depressions, said sheet can be properly anchored in the peripheral frame.

In the drawings:

FIG. 1 is a fragmentary perspective view showing a drumhead mounted on a drum by one good embodiment of this invention;

FIG. 2 is a plan view of the drumhead shown in FIG. 1;

FIGS. 3 and 4 are sectional views taken along line II—II and line III—III of FIG. 2, respectively;

FIGS. 5 and 6 are sectional views similar to FIG. 3 showing other embodiments of this invention;

FIG. 7 is a plan view showing still another embodiment of this invention;

FIG. 8 is a plan view showing a further embodiment of this invention;

FIGS. 9 and 10 are sectional views taken along line IV—IV and line X—X of FIG. 8, respectively;

FIGS. 11–13 are sectional views similar to FIG. 9 showing further different embodiments of the invention.

FIGS. 1–4 show this invention applied to a drumhead of a drum.

In FIG. 1, a drum body **10** has an edge over which is mounted a drumhead **11** the outer peripheral edge of which is fixed to an annular frame **12** of metal, such as aluminum, having a cross section of a U-shaped configuration.

As will be apparent from FIGS. 2–4, the outer peripheral edge of the sheet **11** is positioned in and tightly clamped between the front and rear portions of the U-shaped peripheral frame **12**. In order to increase the anchoring strength of the frame, the outer part of said peripheral frame **12** is bent outwardly at a 90° angle

with the sheet **11** clamped therein and the horizontally bent part thus formed provides a pressure receiving surface for a pressing member for mounting a drumhead on a drum body as will be described later.

The upper part **12***a* and the lower part **12***b* of the horizontally bent part of said peripheral frame and the sheet **11** inserted therebetween are pressed together and concave depressions are formed therein having a cross-section in the shape of small spheres at predetermined intervals in the circumferential direction, and by said concave depressions **13**, the outer peripheral edge of said sheet **11** is tightly fixed to the peripheral frame **12**.

Upon mounting the drumhead constituted as described above on a drum body **10**, as shown in FIG. 1, the drumhead sheet **11** is positioned over the opening of the drum body **10** so as to close said opening, and on the horizontal part of said peripheral frame projecting outwardly from the outer periphery of the body **10** is mounted an annular pressing member **14** having an internal annular piece **14***a* and a rod **16** having a head **16***a* thereon extending through an outer annular piece **14***b* horizontally projecting from said inner annular piece **14***a* and the lower end of which is threaded into a hole provided in a mounting member **15** extending outwardly from the drum body **10**. The lower surface of the head **16***a* presses down the outer annular piece **14***b* of said annular pressing member **14** so that the internal annular piece **14***a* presses down the horizontal part of said peripheral frame **12** together with the sheet **11** clamped in the peripheral frame, whereby said sheet **11** is mounted over the open end of the drum body **10** under tension so as to close said open end.

In the aforesaid embodiment, the internal free end of the upper horizontal piece **12***a* of the peripheral frame **12** is in a perpendicular position at **12***c*, said perpendicular piece **12***c* holding said sheet **11** between it and the perpendicularly bent end piece of the internal free end of the lower piece of said horizontal member **12***b*. The embodiment shown in FIG. 5 differs from that of FIGS. 3 and 4 in that said perpendicular piece **12***c* is omitted. Otherwise the embodiment of FIG. 5 is the same as that of FIGS. 3 and 4. In FIG. 5, the parts the same as those of the earlier described embodiments are designated by the same reference numerals.

In the embodiment shown in FIG. 6, the peripheral frame **12** having the U-shaped cross section and holding the peripheral edge of a drumsheet **11** is first bent at 90° outwardly, and thereafter the bent out horizontal part has the end portion so that it lies on top of original outwardly bent part, and the two horizontal parts are pressed together and acted on so as to be given the small spherical concave depressions **13** at the necessary intervals, and by means of these concave depressions **13** the peripheral edge of said sheet is tightly held in the peripheral frame **12**.

In the embodiment shown in FIG. 7, the horizontally outwardly bent part of said peripheral frame **12** is pressed so as to clamp the edge of the sheet **11** and concave grooves **13'** extending in the circumferential direction are formed at predetermined intervals, and by these concave grooves **13'** the sheet **11** is tightly held in the peripheral frame **12**.

In the embodiments shown in FIGS. 8–10, in contrast to the embodiments shown in FIGS. 1–4 wherein in the horizontally bent part of the annular peripheral frame **12** having a U-shaped cross sectional configuration concave depressions are formed, both the outside and inside parts **12***d* and **12***e* of the perpendicular part of said peripheral frame **12** together with the sheet **11** held therebetween are pressed together and have depressions **13"** formed therein spaced in the circumferential direction of the peripheral frame at intervals, whereby the sheet **11** is tightly held in the peripheral frame **12**. Said concave depressions **13** "can be concave grooves.

In the embodiment shown in FIG. 11, the upper end **12***d* of the outside perpendicular part of the peripheral

frame **12** has an outwardly and horizontally bent end **12***f* thereon which forms a pressure receiving surface for said pressing member **14**. In FIG. 11, the parts equivalent to those of the preceding embodiments are designated by the same reference numerals.

In the embodiment shown in FIG. 12, the horizontally bent lower end **12** of the peripheral frame is omitted. In FIG. 12, the parts equivalent to those of the preceding embodiments are designated by the same reference numerals.

In the embodiment shown in FIG. 13, in which the same reference numerals designate similar parts, the lower end of the U-shaped peripheral frame **12** with the edge of the sheet **11** clamped tightly therein is bent back up along the outside of the outside part **12***d*, the inside part extending along the bottom of the frame at **12***g* and upwardly at **12***h*, and the outside part being doubled back and extending upwardly at **12***j*.

The invention has been described with reference to particular embodiments; however, the invention is not limited to these embodiments, but various changes of design are possible without departing from the spirit and scope of this invention as defined in the appended claims.

What is claimed is:

1. A combination sheet and mounting means for mounting on a musical instrument, comprising a sheet for forming part of the musical instrument and an annular peripheral frame having a U-shaped cross sectional configuration, the outer peripheral edge of said sheet being positioned between and tightly held by the leg portions of the peripheral frame, both the front and back leg portions of said peripheral frame and said sheet positioned therebetween having concave depressions at predetermined intervals in the circumferential direction of said peripheral frame, whereby said sheet is tightly fixed to said peripheral frame.

2. The combination as claimed in claim **1** in which said frame and the sheet tightly held thereby is bent into a shape having an L-shaped cross sectional configuration, the front and back leg portions of the horizontally bent part of said L-shaped frame together with the sheet therebetween having said concave depressions therein.

3. The combination as claimed in claim **1** in which said peripheral frame and the sheet inserted tightly therein and held thereby is bent into a shape having an L-shaped cross sectional configuration, the front and back leg portions of the vertical part of said L-shaped frame together with said sheet therebetween having said concave depressions therein.

4. The combination as claimed in claim **1** in which the upper portion of the center leg portion is bent horizontally and outwardly to form an abutment means for a clamping means for tightly fixing the combination to the musical instrument.

5. The combination as claimed in claim **1** in which said depressions are spherical.

6. The combination as claimed in claim **1** in which said depressions are circumferentially extending concave grooves.

7. The combination as claimed in claim **1** in which said peripheral frame and the sheet inserted tightly therein and held thereby has the closed end of the U-shaped portion extending back up along the downwardly extending upper portion of said U-shaped portion and lying tightly against said upper portion.

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RICHARD B. WILKINSON, *Primary Examiner.*

L. R. FRANKLIN, *Assistant Examiner.*