RE 24733

April 15, 1958 J. V. ERWIN 2,830,484

HEAD FOR MUSICAL INSTRUMENT OF THE DRUM TYPE

Filed June 28, 1955

FIG. 1

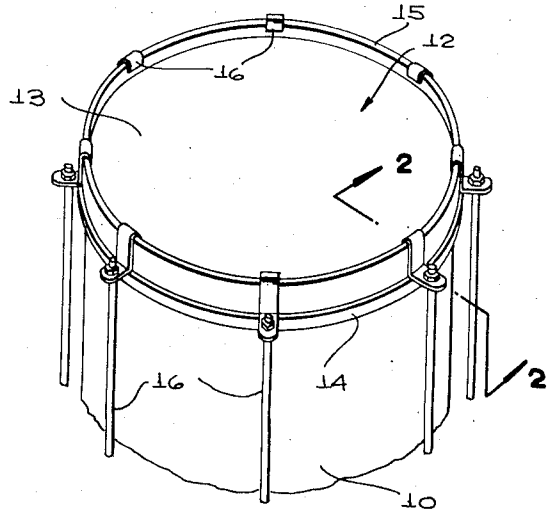


FIG. 2

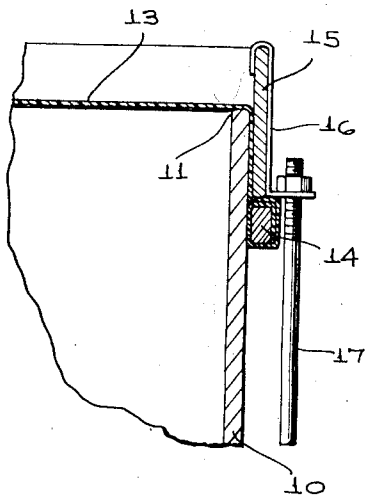


FIG. 3

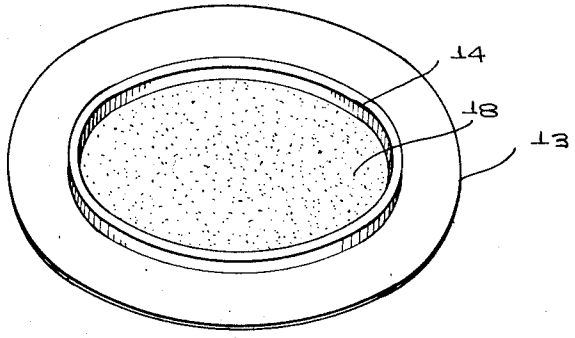
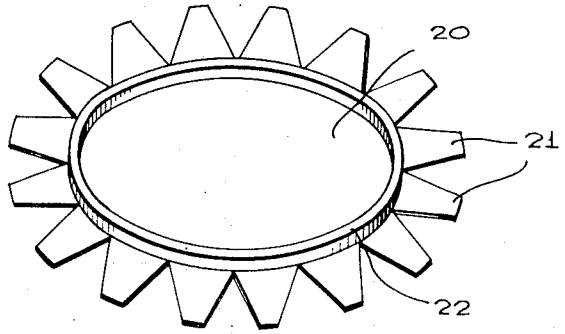


FIG. 4



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HEAD FOR MUSICAL INSTRUMENT OF THE DRUM TYPE

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2 Claims. (Cl. 84—414)

This invention relates to a head for a musical instrument.

An object of the present invention is to provide a head for a musical instrument which replaces the head fabricated wholly of animal skin.

Another object of the present invention is to provide a head for a musical instrument which is not susceptible to moisture absorption, and which does not require constant adjustment for tension when in use.

A further object of the present invention is to provide a head for a musical instrument which is flexible over a wide temperature range, is resistant to the action of oil or grease, and gives a constant tone.

Other objects and advantages of the present invention will become apparent from the following description taken in conjunction with the accompanying drawings, in which:

Figure 1 is a fragmentary perspective view of a drum having a head of the present invention applied thereto.

Figure 2 is an enlarged fragmentary sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a bottom perspective view of the polyester resin sheet of the present invention having the hoop in position thereon, but before it is attached to such hoop.

Figure 4 is a bottom perspective view of the polyester resin sheet of the present invention, but with the boundary provided with projecting tabs, and the hoop in position thereon, but before the tabs are attached to such hoop.

Referring to the drawing the numeral **10** designates a percussion musical instrument such as a drum which has an open top **11**. Stretched over the open top **11** of the instrument or drum **10** is a head of the present invention designated by the numeral **12**, the head being attached to the instrument or drum as shown in Figure 1. The head **12** embodies a sheet **13** fabricated wholly of a thermoplastic polyester resin such as the condensation polymer of ethylene glycol and terephthalic acid. The sheet marketed under the trademark "Mylar" by the E. I. du Pont de Nemours & Co., Inc., of Wilmington, Delaware, has been found satisfactory for producing the head of the present invention.

Preferably, the sheet **13**, Figure 3, is stretched over a hoop **14** with the portion adjacent its boundary wrapped about the hoop and then heat is applied to such portion of a temperature and for a sufficient time to cause it to soften and form and heat seal to itself with the thus formed seal looped about the hoop. A temperature of from 240° to 245° centigrade causes the heat sealing of the aforesaid portion to itself. It is to be understood that care must be taken in the heat sealing operation to keep the sheet from shrinking. Also, the thermo-plastic polyester resin should be treated so as to give a sheet having the necessary physical properties. The sheet **13** has a tensile strength in the order of 25,000 pounds per square inch. This figure for an unsupported sheet is placed in its proper significance when it is considered that for spring steel the tensile strength is 75,000 pounds per square inch. The impact strength of the sheet **13** is about 75 kilogram per cubic meter for a one mil thick section. In

stretching the plastic sheet **13** to the yield point of 13,000 pounds per square inch, the stress is from 3 to 4%.

The thus obtained sheet and hoop assembly is placed over the open top **11** of the drum **10** so that the sheet is stretched over the open top with the hoop embracingly engaging the instrument or drum **10** adjacent the open top thereof, Figure 2. Means is provided for detachably securing the sheet and hoop assembly to the instrument or drum **10**, such means comprising a draw ring **15**, Figure 1, which extends about the open top of the drum and has its lower end resting upon the hoop **14** with the upper end above the open top **11** of the drum **10**, and a plurality of clamps **16** arranged in spaced relation, each having the upper end portion embracingly engaging the upper end of the ring **15** with the lower end portion detachably secured to bolts **17** carried by the drum base, not shown.

The portion of the under face of the sheet **13** within the open top **11** of the instrument or drum **10** is coated with a decorative material **18**. The decorative material may be a paint, pigment or a deposit of metal, such as aluminum.

In place of the sheet **13** being applied to the hoop **14** by application of heat to the portion inwardly of the boundary as above described, the sheet may be fixedly attached to the hoop without the application of heat. By reference to Figure 4 it will be seen that sheet **20** is provided with a plurality of tabs **21** which project from the boundary thereof. Such sheet may be attached to a hoop **22** by placing the hoop upon the sheet so that it is just inwardly of the tabs, Figure 3, and then wrapping the respective tabs about the hoop **22**. The thus formed sheet and hoop assembly is placed over the open top **11** of the drum **10** in the same manner as previously described in connection with the sheet **13** and hoop **14** assembly. Preferably, the hoop **22** is covered with a pressure sensitive or heat sensitive adhesive to hold the tabs in place while they are being wrapped to their final position.

The head of the present invention is not susceptible to moisture absorption, does not require constant adjustment for tension as in the case of a head made of animal skin, is flexible over a wide range of temperature, for example, from minus 80° to 300° Fahrenheit, is not affected by oil or grease, and gives a more constant and uniform tone than in the case of heads made of animal skins.

This invention has been described in connection with a drum, but it is to be understood that it is also applicable for a head for a banjo.

In the case of a toy drum, the head plastic sheet of the present invention should be 0.00025 inch thick, for the snare side of a drum from 0.001 to 0.002 inch thick, for the front side of a snare drum or bass drum from 0.005 to 0.0075 inch thick.

Having thus described the invention what is new and desired to be secured by Letters Patent is:

1. A head for use on drums, banjoes and the like, said head comprising a sheet of homogeneous material, said sheet being resistant to water, having substantially uniform flexible characteristics over a wide range of temperature, and retaining its set tension when in use, said material comprising a thermoplastic polyester resin.

2. A head according to claim 1 in which the thermoplastic polyester resin is a condensation polymer of ethylene glycol and terephthalic acid.

References Cited in the file of this patent

UNITED STATES PATENTS

2,018,182	Logan	Oct. 22, 1935
2,110,029	Shastock	Mar. 1, 1938
2,497,376	Swallow et al.	Feb. 14, 1950
2,667,098	McMullen	Jan. 26, 1954