Jan. 9, 1968 H. HERZOG 3,362,595

WATCHBAND

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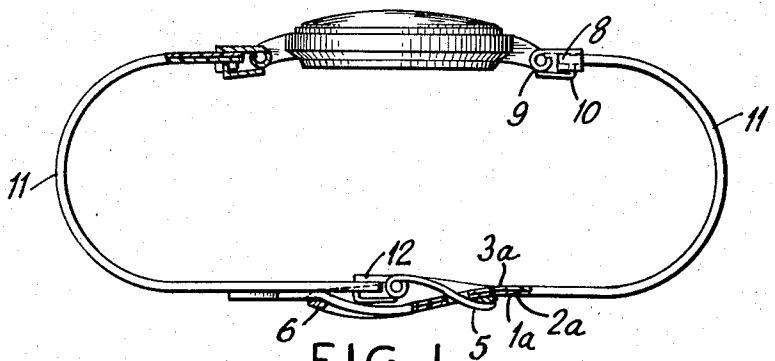


FIG. 1

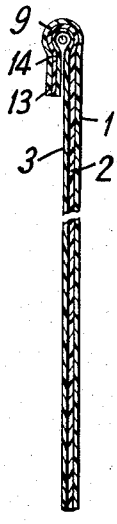


FIG. 2

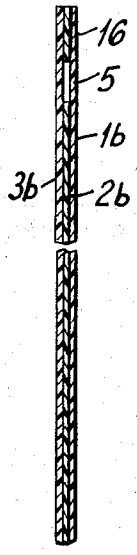


FIG. 3

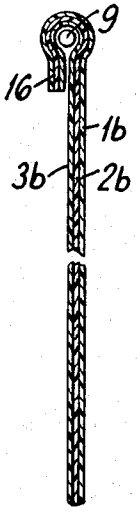


FIG. 4

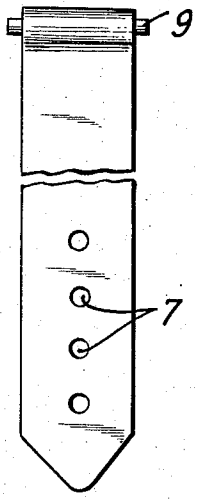


FIG. 5

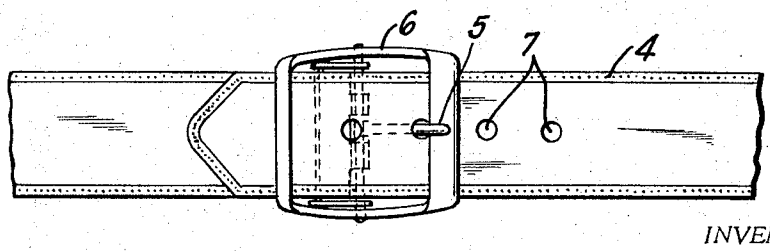


FIG. 6

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WATCHBAND

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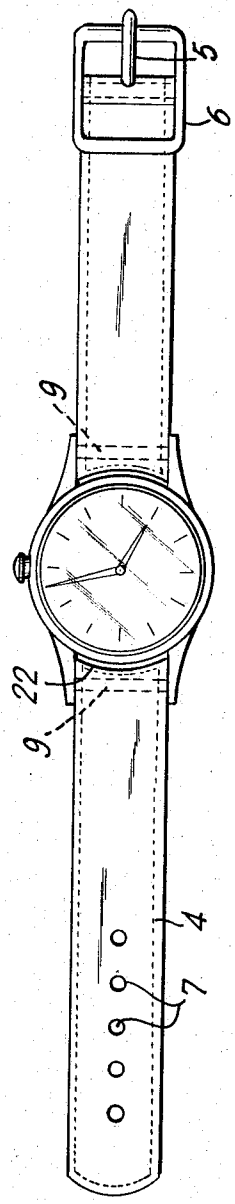


FIG. 7

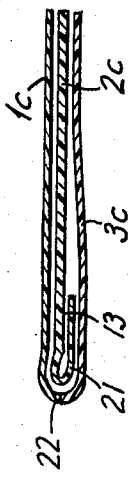


FIG. 8

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WATCHBAND

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7 Claims. (Cl. 224—4)

The present invention relates to a watchband and more particularly to a watchband made of plastic. This application is a continuation-in-part of the applicant's U.S. application Ser. No. 451,474, filed Apr. 28, 1965, and entitled, "Method and Apparatus for Continuous Production of Multi-Layer Watchbands and Watchbands Produced Thereby."

Wristwatch straps of natural leather have been used for many years. Leather is porous to water vapor, so that perspiration does not collect under the strap. However, leather straps become discolored and unsightly when contacted by oil, grease and the like. Soft leather, which would be desirable to use in straps due to its feeling of quality, stretches in usage and has proven unsatisfactory. In addition, leather is relatively expensive to purchase and difficult to form on machines due to its lack of uniformity.

Watch straps made from a flexible thermoplastic sheet material known as polyvinylchloride (PVC) have been proposed. These straps, compared to natural leather, are relatively resistant to oil and grease. However, the plastic material lacks dimensional stability under tension. It would become flabby and may even stretch. In addition, the plastic sheet is practically imporous and presents a smooth surface to the skin, so that perspiration would collect under the strap. Such straps would tear relatively easily so that it would be necessary to provide them with a weld bead or a similar reinforcement along the edge. Such weld beads would add to the thickness of the straps. To avoid having the straps appear too thick with such beads, it would be necessary to limit the effective thickness of the strap material.

It is the objective of the present invention to provide a watchband which is relatively resistant to oil and grease, prevents the collection of perspiration under the band, is dimensionally stable so that it does not stretch or otherwise become distorted, which is made from plastic sheet material, and which is relatively inexpensive.

In accordance with the present invention, a watch band is provided having three individual layers. The top layer is of a plastic material embossed to resemble leather. The center layer, used to provide dimensional stability, is of a plastic or glass cloth woven of high tensile strength threads, whose threads may be joined by a plastic web. The ends of the center layer are looped so that it is the center layer which holds the watch case pins and the buckle. The bottom layer, which is next to the skin, is a plastic material which is flocked to form a velour-like surface. The three layers are joined by heat sealing along their edges and through the holes in the strap. In one modification, the ends of the strap through which the watch pins are inserted are curved to conform to the exterior shape of the watch case.

Other objectives will be apparent from the detailed description of a preferred embodiment of the present invention, which is to be understood in relation to the accompanying drawings. In the drawings:

FIGURE 1 is a side view of a watch and a strap of the present invention, with some portions of the strap cut away to show its internal structure;

FIGURE 2 is a sectional side view of a modification of the strap;

FIGURE 3 is a sectional side view of another modification of the strap;

FIGURE 4 is a sectional side view of still another modification of the strap;

FIGURE 5 is a top plan view of a portion of the strap shown in FIGURE 4;

FIGURE 6 is a top plan view of still another modification of the strap;

FIGURE 7 is a top plan view of still another modification of the strap; and

FIGURE 8 is a sectional side view of a portion of the strap shown in FIGURE 7.

The layers of sheet material which form the watch strap of the present invention are composed of plastic sheet material. A suitable material is polyvinylchloride (PVC), which is a relatively inexpensive material which is easily die cut, retains its color over time, and is resistant to oil and grease.

The top layer, designated **1***a*, **1**, **1***b*, **1***b* and **1***c* in FIGURES 1, 2, 3, 4 and 8, respectively, is preferably embossed or stamped on its top surface with an ornamental design to resemble natural leather. For example, the embossing may be in the form of a reptile-like surface. Alternatively, the top surface of layer **1** may be flocked or otherwise treated to give it the appearance of a fabric material. An additional stamping **4**, see FIGURES 6 and 7, runs along the edge and gives the impression of a seam.

The middle layer, designated **2***a*, **2**, **2***b*, **2***b* and **2***c* in FIGURES 1, 2, 3, 4 and 8, respectively, is a reinforcement and provides dimensional stability. The middle layer consists of a cloth of high tensile threads which is impregnated with a plastic. The plastic forms a web to hold the threads. The threads are widely spaced apart in the cloth. Preferably the threads are composed of filaments of nylon, perlon, silk or glass fiber. The impregnating plastic is suitably polyvinylchloride.

The inner layer, designated **3***a*, **3**, **3***b*, **3***b* and **3***c* in FIGURES 1, 2, 3, 4 and 8, respectively, contacts the skin of the one who wears the band. Suitably this layer is composed of polyvinylchloride. The bottom surface of this layer, the surface which contacts the skin, is flocked to give it the velour feel of textile. The flocking permits air circulation under the band and prevents the accumulation of perspiration under the band. The band itself is not porous to water vapor.

By utilizing a strong central layer, it is possible to choose the top and bottom layers wholly because of their aesthetic or hygienic properties.

In a typical strap, each layer is 0.4 mm. thick and the total thickness of the band may be 2.0 mm.

The three layers are sealed along their edges by heat sealing, for example high frequency welding. The lines of the weld run along the outer edge of the strap. The center layer **2** is sealed both to the outer layer **1** and inner layer **3** to provide a unitary structure which resists stretching. The layers, in effect, form a hose. They are free to flex and bend individually, which permits relatively greater flexibility.

Straps which are closed with a tongue **5** which cooperates with a buckle **6**, see FIGURES 1 and 6, have a series of holes through which the tongue **5** may fit. These holes are punched through the layers of the strap, after their assembly, and the holes are then heat sealed to provide a passageway having sealed walls.

FIGURES 1–5 illustrate different methods of attaching the watchband to the watch case. The watch case has two spring pins or "spring bars." They are usually threaded through channels in opposite ends of a watch strap and connect the strap to the watch case.

In the construction shown in FIGURE 1, the two ends of the strap **11** are connected to the spring pins **9** by means of connection pieces **8**. The connection pieces **8**

each have a tiltable cover 10. The tongue buckle is connected to strap 11 by similar connection piece 12.

In FIGURE 2 the upper layer 1 is looped around the pin 9 and is welded at its portion 13 which is turned back on itself. The middle and bottom layers are flush at 14.

In the constructions of FIGURES 3 to 5, the middle layer 2*b* is interrupted at 15. That is, layer 2*b* is not continuous but has a groove 15. The protruding end part 16 of the strap, see FIGURE 3, is twisted or looped around pin 9. The end part 16 is returned and fastened down, for example by a metal clamping device on inner layer 3*b*. The loop about pin 9 is only two layers thick.

The preferred method of attaching the strap to the spring bar is shown in FIGURES 7 and 8. In these drawings the central reinforcement layer is formed into loops to anchor the buckle and the two case spring pins 9. In this construction the strongest layer 2*c* is securely fixed by its loops at its ends, and yet the strap itself is not thick at its ends. A loop 21 in layer 2*c* is provided for a spring pin 9. After forming the loop 21, the top layer 1*c* and bottom layer 3*c* are welded together in a portion 22 which corresponds to the shape of the watch case when viewed from above, as in FIGURE 7. The open end of the loop 21 may be tacked down on itself at 13 or may simply be held in place by the bottom layer 3*c*. A similar loop is provided to hold buckle 6.

It is hereby claimed:

1. A two-piece watch band, each piece comprising:
a top layer of relatively low tenacity plastic sheet material,
a middle layer of cloth woven of relatively high tensile strength threads,
a bottom layer of relatively low tenacity plastic sheet material,
a loop adapted for insertion of a spring pin formed at one end of the piece,
wherein the layers are sealed together along the predominant portion of their edges, wherein the said loop is formed only by the middle layer and wherein the turned-back portion of the middle layer is retained in place only by being held between the other layers.

2. A two-piece watch band, each piece comprising:
a top layer of relatively low tenacity plastic sheet material,
a middle layer of relatively high tenacity sheet material, a loop adapted for insertion of a spring pin formed by the middle layer at one end of the piece, and
a bottom layer of relatively low tenacity plastic sheet material,

wherein the top and bottom layers have their ends which are immediately adjacent the loop joined to each other at the outside of the loop so that the joint would be located between the loop and the watch case.

3. A band for a watch comprising:
a top layer of relatively low tenacity plastic sheet material,
a middle layer of relatively high tenacity sheet material,
a bottom layer of relatively low tenacity plastic sheet material,
all layers having outwardly extending edges,
a strength loop adapted for insertion of a spring pin or connection to a buckle or the like formed at one end,
wherein the layers are sealed together along the predominant portion of their edges to form sleeve-like portions between the top layer and the middle layer and between the middle layer and the bottom layer, wherein said strength loop is formed only of the middle layer, and wherein a combination of the top and bottom layers extends beyond the strength loop to cover the strength loop.

4. A band as in claim 3 and wherein the top and bottom layers have their ends joined to each other so that the joint would be located adjacent the watch case.

5. A band as in claim 3, wherein the middle layer is of a cloth woven of relatively high tensile strength threads.

6. A band as in claim 3, wherein the bottom layer on its exposed surface is flocked.

7. A band as in claim 3, wherein an end portion has a plurality of holes, the peripheries of which are sealed together.

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