Aug. 4, 1970 S. A. NILSSON 3,522,635

RUBBER STRAP

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Fig. 1.

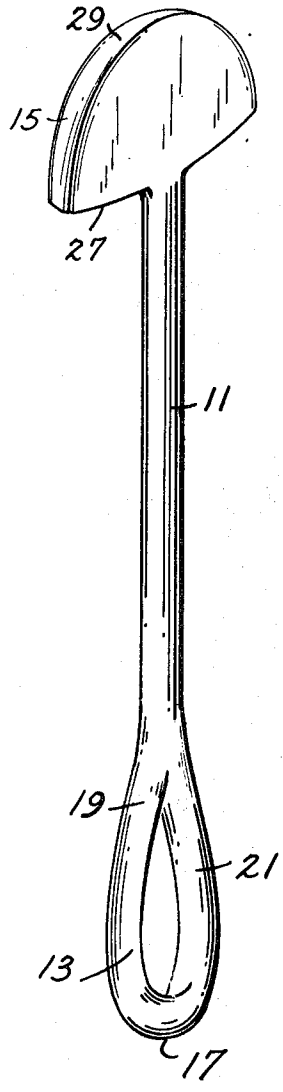

Fig. 2.

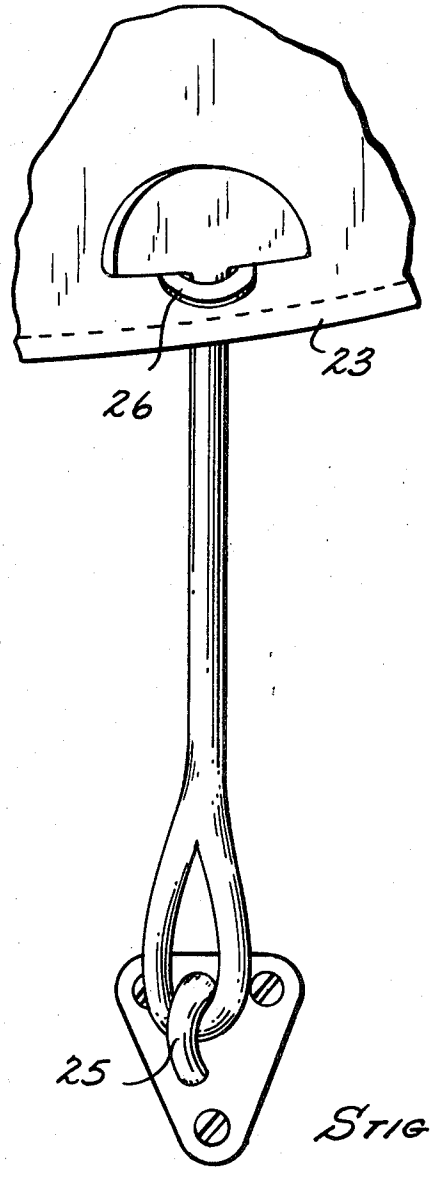

Fig. 3.

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RUBBER STRAP

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U.S. Cl. 24—73 1 Claim

ABSTRACT OF THE DISCLOSURE

The invention concerns a rubber strap, by means of which a tarpaulin etc. may be fastened. The strap consists of a long straight resilient portion with a head at one end and a loop at the other end. The loop can be pulled through an eyelet in the tarpaulin, but only with difficulty, and the head cannot be pulled through at all. Therefore the strap is anchored to the tarpaulin when the loop is let loose.

The present invention relates to a strap adapted particularly for fastening and stretching of a canvas, such as a cover, tarpaulin etc., having preferably metal-lined eyelets.

The object of the invention is to create an article of said kind, which is practically shaped and easy to manufacture and which also is anchored to the canvas in a simple and secure manner also when the strap is not stretched, so that there is no risk of the same getting lost.

The strap according to the invention consists of a single piece of resilient rubber having a long straight middle portion of approximately uniform width and thickness, one end of which portion merges into a loop suitable for being hung up on an attachment hook and the other end of which merges into a head, the width of which is considerably greater than the width and thickness of the long middle portion and also greater than the maximum transverse dimension of the loop after its parts having been closely brought together, for the purpose of preventing the head from being pulled through an eyelet of a width barely sufficient for allowing the compressed loop to pass therethrough.

Further features of the strap according to the invention will be evident from the following description, wherein reference is had to the accompanying drawings. FIG. 1 is an oblique perspective view of strap, FIG. 2 shows the same in its use for stretching a canvas, and FIG. 3 shows the strap applied in a somewhat different manner.

The strap shown consists of a single piece of soft and resilient rubber. The term "rubber" is meant to comprise not only natural rubber but also various kinds of artificial rubber or similar material having good strength and such resiliency as allows extension of the material at least to its double length without breakage and which material will then resume its original shape without having been subjected to permanent elongation.

The strap comprises three integrated portions, viz a middle portion **11**, a loop **13** and a head **15**. The middle portion **11**, which is long and straight, is of a length of the order of 4 to 20 inches and a width and thickness of the order of .4 inch. Preferably the width is somewhat greater than the thickness. If a width of about ½ inch is chosen, the thickness may be about ⅜ inch. Preferably the edges are rounded, so that the cross section is approximately circular or elliptical.

The loop **13** is symmetrical about the longitudinal centre line of the strap. It consists of an outer half-circularly curved portion **17** and two equal lateral portions (strands) **19, 21**, which are less curved or may be straight, at least in part, even in their relaxed condition. The lateral portions **19, 21** approach each other gradually and form an acute angle between themselves at the point where they are joined to each other and to the long portion **11** of the strap. Said last-mentioned portion is somewhat widened near the split in order gradually to increase the total cross-sectional area and avoid concentration of stresses. The cross section of the material of the loop may be uniform throughout and approximately equal to the cross section of the long straight middle portion. Preferably however, the width dimension of the various parts of the loop is made somewhat smaller than the width dimension of the long middle portion, whreas their thicknesses may be quite equal. For instance, the cross section of the material of the loop may be circular with a radius of about ⅜ inch. The cross-sectional area should be made greater than half of the cross-sectional area of the long middle portion, and preferably at least equal to two-thirds thereof, so that the two strands of the loop are stronger together than the long middle portion and therefore are not extended proportionately as much as the latter when the strap is stretched. The eye of the loop which is pointed in the direction towards the long middle portion, may be e.g. 1 to 2 inches long and .4 to .8 inch wide when the rubber is relaxed.

When the strap, as shown in FIGS. 2 and 3, is used for keeping a cover **23** applied over the loading platform of a truck, the loop **13** is put over a hook **25** attached to the chassis of the truck. According to the stretch required and the pertaining pulling force of the strap, the loop will be more or less deformed.

At the opposite end of the long middle portion **11** the same merges into the head **15**. Said head serves to transfer the force of the strap to the cover **23** and therefore it is given such a shape that it cannot be pulled through a metal ring **26** lining an eyelet in the cover. Therefore, on its side facing the long middle portion of the strap the head, which is symmetrical about the longitudinal centre line of the strap, has an edge **27** extending transversely in opposite directions from the long middle portion **11**. The angle formed between said edge and the longitudinal centre line preferably is about 90 degrees, but may deviate therefrom some ten degrees upwards or downwards. The length of the edge **27** on either side of the middle portion **11** is at least equal to or preferably greater than two or more times the dimension of the middle portion as measured in the same direction. Thus, when the long middle portion is of a width of e.g. ½ inch, the head should be of a width of at least 1.5 inches. In the other transverse direction, the direction of the thickness, the dimension of the head preferably is about the same as that of the middle portion **11**, which involves that the head is flattened. For the rest the head is limited by a curved and rounded edge **29**. As shown in FIG. 1, the head then takes the approximate shape of a half-circular disk. The middle part of the straight edge of said disk is integral with the long middle portion of the strap. The square corners may be somewhat rounded in order to relieve the stress there.

Of course, the above-described appearance of the head may be modified, and the shape may be made more rounded, e.g. approximately spherical. However, the flat shape shown involves certain advantages. As shown in FIG. 2, the flat head serves to keep the parts of the cover **23** next to the lined eyelet **25** tightly pressed against the support back of it. When, as shown in FIG. 3, the head is placed on the inner side of the cover, which may help to prevent the edge thereof from fluttering, it is obviously an advantage to have the head flat.

Straps having the above-mentioned measurements are suitable for stretching up a canvas having eyelets of a

diameter of about ¾ inch. After the loop **13** has been flattened sidewise so that its two strands **19, 21** abut, the loop can be pulled through the eyelet but only with difficulty and with elastic deformation also of the cross-section of the strands of the loop. Thus the strap will be safely anchored to the canvas and it has no tendency of working itself loose, e.g. due to its resiliency, but instead, if the loop has been partially drawn into the eyelet for some reason, it tries to move back out thereof due to the fact that the cross-section of the strap at the place of mergence of the loop and the long straight middle portion tapers in the direction towards the head. Therefore, there is no risk of inadvertent release and loss of the strap, when unhooked.

Of course, the above-mentioned measurements may vary in accordance with the use of the strap and the size of the eyelets into which it should be inserted.

The strap may comprise a portion beyond the loop which forms a handle, whereby the hooking and unhooking is made easier, and two or more loops in series may be provided at the end of the strap opposite to the head.

I claim:

1. A resilient strap for fastening and stretching of canvas having eyelets, such as a cover, tarpaulin, etc., said strap comprising:

a single piece of resilient material having a long straight middle portion of a substantially uniform width and thickness, one end of which merges into a loop and which at the other end of said middle portion merges into a head the width of which is considerably greater than the maximum transverse dimension of the loop when its strands are brought closely together, for the purpose of preventing the head from being pulled through one of said eyelets;

said head having an edge transverse to the middle portion and extending over a total distance at least four times the dimensions of the middle portion measured in the same direction to bear large forces and to transfer said forces from the strap to the canvas;

said loop including a half-circularly curved part and two less curved parts integral therewith and forming an acute angle with each other at the point where they are joined to each other and to the middle portion, the cross-sectional area of the parts of the loop being greater than one-half of the smallest cross-sectional area of the middle portion so that said two less curved parts are stronger together than the middle portion to extend proportionately less than the middle portion when the strap is stretched; and

the cross-sectional area of said middle portion gradually increasing where the middle portion merges into the two less curved parts to strengthen the strap and to avoid the concentration of stresses therein.

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