(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 080 697**
B1

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **13.11.85**

(51) Int. Cl.^{4}: **A 44 B 13/00**

(21) Application number: **82110872.7**

(22) Date of filing: **24.11.82**

(54) **Grommet.**

(30) Priority: **26.11.81 JP 175584/81 u**
07.12.81 JP 181929/81 u

(43) Date of publication of application:
08.06.83 Bulletin 83/23

(45) Publication of the grant of the patent:
13.11.85 Bulletin 85/46

(84) Designated Contracting States:
BE DE FR IT

(56) References cited:
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DE-A-1 900 465
DE-U-7 013 013
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(73) Proprietor: **NIPPON NOTION KOGYO CO., LTD.**
13, 2-chome, Kanda-Sakuma-cho Chiyoda-ku
Tokyo (JP)

(72) Inventor: **Ida, Kazuo**
635, Ashizaki Nyuzen-machi
Shimoniikawa-gun Toyama-ken (JP)

(74) Representative: **Patentanwälte Leinweber & Zimmermann**
Rosental 7/II Aufg.
D-8000 München 2 (DE)

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Courier Press, Leamington Spa, England.

Description

The invention relates to a grommet for use on a sheet material comprising: an eyelet of a resilient material and including a cylindrical barrel with one end open and an annular flange extending around the other end of the barrel; and a washer of a resilient material having a central bore of a diameter substantially equal to the outside diameter of the barrel and slidably receivable on the barrel; said open end of said barrel being radially bendable so as to be directed toward said flange in engagement with said washer to effect permanent securing.

An example of a grommet of this type is disclosed in AU—A—428 493. After the piercing of the eyelet's barrel through the sheet material such as textile articles the washer is placed on the barrel whereupon the open end thereof is curled or deformed otherwise, so as to fit securely over the washer. Prior to this coupling or clamping operation the washer is often liable to get loose and fall apart from the eyelet requiring the user to hold these parts together all way until the moment they are clamped into place by a tool.

DE—A—1 610 352 discloses another type of a grommet for use on a sheet material comprising an eyelet of a resilient material and including a cylindrical barrel with one end open and an annular flange extending around the other end of the barrel; a washer of a resilient metal having a central bore of a diameter substantially equal to the outside diameter of the barrel and slidably receivable on the barrel; said eyelet having a projection projecting radially outwardly from the barrel and extending around thereof. In this prior art grommet the projection of the eyelet's barrel serves for connecting the eyelet to the washer permanently. In other words, the washer is just slipped on the barrel of the eyelet until the front side of the washer bears against a piece of fabric, e.g. a piece of garment, and the projection of the barrel engages over the rear side of the washer. For using the grommet on fabrics of different thickness the periphery of the barrel must be formed with a plurality of radially extending projections disposed at different spacings from the flange of the eyelet.

It is an object of the invention to provide an improved grommet of the type mentioned above having means for preventing the washer from falling off from the eyelet's barrel before deformation thereof.

According to the invention this object is achieved with a grommet which is characterized in that the outside of the barrel or the central bore of the washer is provided with a temporary retaining means for preventing the washer from falling off from the barrel when the washer has been placed thereon.

The features and advantages of the present invention will be better understood from the following description in conjunction with the accompanying drawings in which preferred structural embodiments incorporating the principles of the invention are shown by way of example.

Figure 1 is an exploded, cross-sectional view of a grommet embodying the invention, with an eyelet, a sheet of fabric and a washer arranged in this order;

Figure 1A is a cross-sectional view of a modified form of the eyelet;

Figure 2 is a cross-sectional view of the grommet of Figure 1 which has been assembled and set in the fabric;

Figure 3 is a view similar to Figure 1 but showing a modified form of grommet embodying the invention;

Figure 4 is a cross-sectional view of the grommet of Figure 3 which has been assembled and set in the fabric;

Figure 5 is a plan view of the eyelet taken along the arrowed lines V—V of Figure 3; and

Figure 6 is a plan view of the washer taken along the arrowed lines VI—VI of Figure 3.

Referring now to Figure 1, there is a preferred form of grommet 10 which is made up from an eyelet part 11 and a washer part 12, both parts being made of a resilient, deformable material such as plastics, rubber and the like. The eyelet 11 includes a cylindrical barrel 13 with one end open and an annular flange 14 extending around the other end or bottom of the barrel 13. The annular flange 14 has a tapered prong 15 for biting engagement with a sheet of fabric F.

According to an important feature of the present invention, there is provided a retaining means 16 for preventing the washer part 12 from falling off from the eyelet part 11 once both parts have been brought into engagement.

The retaining means 16 is embodied in the form of a plurality of discrete projections projecting radially outwardly from the barrel 13 and arranged around thereof. Each projection 16 has a first surface 16*a* obtusely slanting toward the flange 14 and a second surface 16*b* acutely slanting toward the open end of the barrel 13 or in a direction opposite to the flange 14. Alternatively, the retaining means may be in the form of an integral annular projection 16' (Figure 1A) of the same cross section as that of the discrete projections of Figure 1.

The washer part 12 is in the form of a circular plate having a central bore 17 which has a diameter nearly equal to the outside diameter of the cylindrical barrel 14 and slightly smaller than an outside diameter defined by the projections 16. A prong 18 similar to the prong 15 extends from the bottom of the washer 12 and similarly functions to anchor the fabric F against movement.

Now, when assembling the eyelet 11 and the washer 12 together, the eyelet 11 is first inserted with its barrel 13 through an opening F_1 in the fabric F and then through the bore 17 of the washer 12, when the washer 12 undergoes elastic deformation as the peripheral wall of the bore 17 rides over and past the projections 16. The washer 12 can thus be retained in engagement with the eyelet 11 between the fabric F and the projections 16 until the two grommet parts are

assembled in the well known manner as illustrated in Figure 2.

Referring to Figures 3—6 inclusive, there is shown a modified form of grommet which is identical in construction with the above described grommet 10 except for the details of a retaining means embodying the invention and except that there are provided a plurality of prongs 15 and 18 on the eyelet 11 and the washer 12, respectively, and that an annular recess 21 is formed in and around the outer periphery of the barrel 13 of the eyelet 11 at the open end thereof to facilitate the insertion of the eyelet 11 through the fabric F as well as the washer 12. The modified form of retaining means comprises a plurality of radial projections 19 extending radially inwardly from the peripheral edge of the bore 17 in the washer 12 and each having a tapered surface 20 directed toward the eyelet 11. The diameter defined by the radial projections 19 is slightly smaller than the outside diameter of the barrel 13, so that when the eyelet 11 is inserted through the bore 17 of the washer 12, the radial projections 19 are flared up in contact with the outer wall of the barrel 13 in a direction in which the eyelet 11 is inserted and lock the washer 12 against backward movement, thus preventing accidental separation of the washer 12 from the eyelet 11. Because of the structural features of the radial projections 20, the eyelet 11 and the washer 12 upon being assembled as shown in Figure 4 can be retained in position against relative movement, thus ensuring firm setting of the grommet 10 in the fabric F.

Claims

1. A grommet (10) for use on a sheet material (F) comprising: an eyelet (11) of a resilient material and including a cylindrical barrel (13) with one end open and an annular flange (14) extending around the other end of the barrel (13); and a washer (12) of a resilient material having a central bore (17) of a diameter substantially equal to the outside diameter of the barrel (13) and slidably receivable on the barrel (13); said open end of said barrel (13) being radially bendable so as to be directed toward said flange (14) in engagement with said washer (12) to effect permanent securing, characterized in that the outside of the barrel (13) or the central bore (17) of the washer (12) is provided with a temporary retaining means (16, 16'; 19) for preventing the washer (12) from falling off from the barrel (13) when the washer has been placed thereon.

2. A grommet (10) as claimed in claim 1 wherein said means (16) is a plurality of discrete projections projecting radially outwardly from said barrel (13) and arranged therearound in series, each projection having a first surface (16*a*) obtusely slanting toward said flange (14) and a second surface (16*b*) acutely slanting toward the open end of said barrel (13), the diameter defined by said projections being slightly larger than the diameter of said bore (17).

3. A grommet (10) as claimed in claim 1 wherein said means is an integral annular projection (16') projecting radially outwardly from said barrel (13) and extending therearound and having a first surface (16*a*) obtusely slanting toward said flange (14) and a second surface (16*b*) acutely slanting toward the open end of said barrel (13), the outside diameter of said annular projection (16') being slightly larger than the diameter of said bore (17).

4. A grommet (10) as claimed in claim 1 wherein said means (16) is a plurality of radial projections (19) extending radially inwardly from the peripheral edge of said bore (17) in said washer (12) and having a tapered surface (20) directed toward said eyelet (11), the diameter defined by said radial projections (19) being slightly smaller than the outside diameter of said barrel (13).

5. A grommet (10) as claimed in claim 1 wherein said barrel (13) is provided at its open end with an annular recess (21).

Revendications

1. Oeillet (10) destiné à être utilisé sur une matière en feuille (F), comportant: un corps d'oeillet (11) formé d'une matière élastique et comprenant une partie cylindrique (13) pourvue d'une extrémité ouverte et d'un rebord annulaire (14) s'étendant autour de l'autre extrémité de la partie cylindrique (13); et une rondelle (12) en matière élastique comportant un trou central (17) d'un diamètre sensiblement égal au diamètre extérieur de la partie cylindrique (13) et pouvant coulisser sur cette partie cylindrique (13); ladite extrémité ouverte de ladite partie cylindrique (13) pouvant être recourbée radialement de manière à être dirigée vers ledit rebord (14) contre ladite rondelle (12) pour effectuer une fixation permanente, caractérisé en ce que l'extérieur de la partie cylindrique (13) ou le trou central (17) de la rondelle (12) est pourvu d'un moyen de retenue momentanée (16, 16'; 19) destiné à empêcher la rondelle (12) de se séparer de la partie cylindrique (13) quand elle a été placée sur cette dernière.

2. Oeillet (10) selon la revendication 1, dans lequel ledit moyen (16) est constitué par une pluralité de protubérances discrètes faisant saillie radialement vers l'extérieur depuis ladite partie cylindrique (13) et disposées en série autour de cette dernière, chaque protubérance comportant une première surface (16a) inclinée suivant un angle obtus en direction dudit rebord (14) et une seconde surface (16b) inclinée suivant un angle aigu en direction de l'extrémité ouverte de ladite partie cylindrique (13), le diamètre défini par lesdites protubérances étant légèrement plus grand que le diamètre dudit trou (17).

3. Oeillet (10) selon la revendication, 1, dans lequel ledit moyen est constitué par une protubérance annulaire intégrée (16') qui fait saillie radialement vers l'extérieur depuis ladite partie cylindrique (13) et qui s'étend autour de cette dernière et comporte une première surface (16a) inclinée suivant un angle obtus en direction dudit rebord (14) et une seconde surface (16b) inclinée

suivant un angle aigu en direction de l'extrémité ouverte de ladite partie cylindrique (13), le diamètre extérieur de ladite saillie annulaire (16') étant légèrement plus grand que le diamètre dudit trou (17).

4. Oeillet selon la revendication 1, dans lequel ledit moyen (16) est constitué par une pluralité de protubérances radiales (19) s'étendant radialement vers l'intérieur depuis le bord périphérique dudit trou (17) de ladite rondelle (12) et comportant une surface (20) inclinée dirigée vers ledit corps d'oeillet (11), le diamètre défini par lesdites protubérances radiales (19) étant légèrement plus petit que le diamètre extérieur de ladite partie cylindrique (13).

5. Oeillet (10) selon la revendication 1, dans lequel ladite partie cylindrique (13) est pourvue à son extrémité ouverte d'un évidement annulaire (21).

Patentansprüche

1. Öse (10) für ein blattartiges Material (F), bestehend aus einer Hülse (11) aus einem elastischen Material, die eine einseitig offene zylindrische Buchse (13) und einen sich um das andere Ende der Buchse (13) erstreckenden ringförmigen Flansch (14) aufweist, und einer Unterlegscheibe (12) aus einem elastischen Material, die eine runde Platte mit einer zentralen Bohrung (17) aufweist, deren Durchmesser fast dem Außendurchmesser der Buchse (13) gleicht, und auf die Buchse (13) aufschiebbar ist, wobei das offene Ende der Buchse (13) radial verformbar ist, so daß es dem Flansch (14) zugekehrt ist und mit der Unterlegscheibe (12) in Eingriff steht, um eine dauerhafte Festlegung zu bewirken, dadurch gekennzeichnet, daß die Außenseite der Buchse (13) oder die zentrale Bohrung (12) der Unterlegscheibe (12) mit vorübergehend wirksamen Haltemitteln (16, 16'; 19) versehen ist, um ein Abfallen der Unterlegscheibe (12) von der Buchse (13) zu verhindern, nachdem die Unterlegscheibe auf derselben angeordnet wurde.

2. Öse (10) nach Anspruch 1, dadurch gekennzeichnet, daß die Mittel (16) aus mehreren einzelnen Vorsprüngen bestehen, die von der Buchse (13) radial nach außen abstehen und in Gruppen um diese herum angeordnet sind, wobei jeder Vorsprung eine erste Fläche (16a) aufweist, die zum Flansch (14) hin stumpfwinklig geneigt ist, und eine zweite Fläche (16b) aufweist, die zum offenen Ende der Buchse (13) hin spitzwinklig geneigt ist, wobei der durch die Vorsprünge definierte Durchmesser geringfügig größer ist als der Durchmesser der Bohrung (17). (Fig. 1)

3. Öse (10) nach Anspruch 1, dadurch gekennzeichnet, daß die Mittel aus einem integrierten ringförmigen Vorsprung (16') bestehen, der von der Buchse (13) radial nach außen vorspringt und sich um diese herum erstreckt und eine erste Fläche aufweist, die zum Flansch (14) hin stumpfwinklig geneigt ist, und eine zweite Fläche aufweist, die zum offenen Ende der Buchse (13) hin spitzwinklig geneigt ist, wobei der Außendurchmesser des ringförmigen Vorsprungs (16') geringfügig größer ist als der Durchmesser der Bohrung (17). (Fig. 1 und 2)

4. Öse (10) nach Anspruch 1, dadurch gekennzeichnet, daß die Mittel (16) aus mehreren radialen Vorsprüngen (19) bestehen, die vom Umfangsrand der Bohrung (17) der Unterlegscheibe (12) radial nach innen vorstehen und eine der Hülse (11) zugekehrte abgeschrägte Fläche (20) aufweisen, wobei der durch die radialen Vorsprünge (19) definierte Durchmesser geringfügig kleiner ist als der Außendurchmesser der Buchse (13). (Fig. 3 bis 6)

5. Öse (10) nach Anspruch 4, dadurch gekennzeichnet, daß die Buchse (13) an ihrem offenen Ende mit einer ringförmigen Ausnehmung (21) versehen ist.

FIG. 1

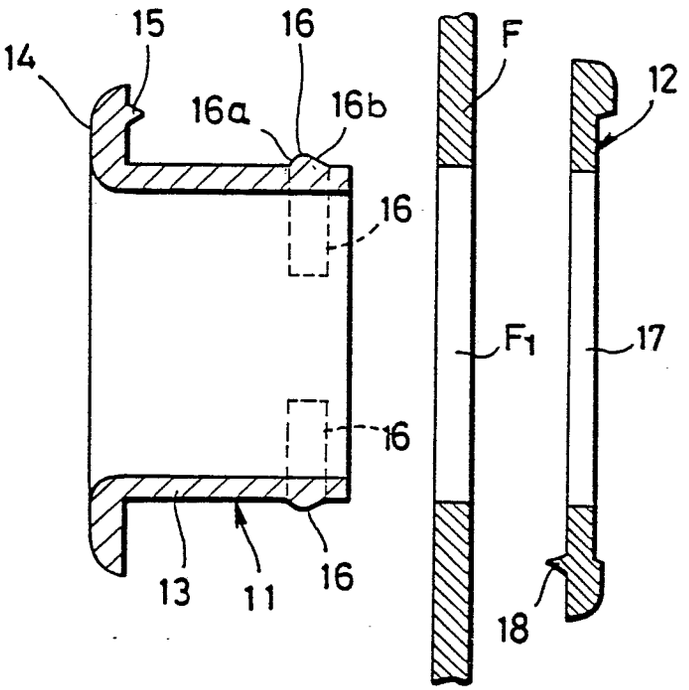


FIG. 1A

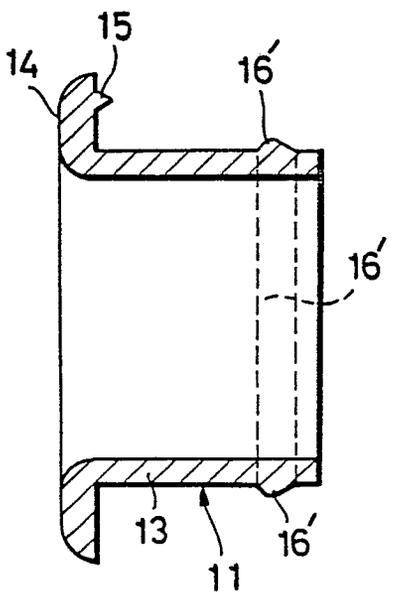


FIG. 2

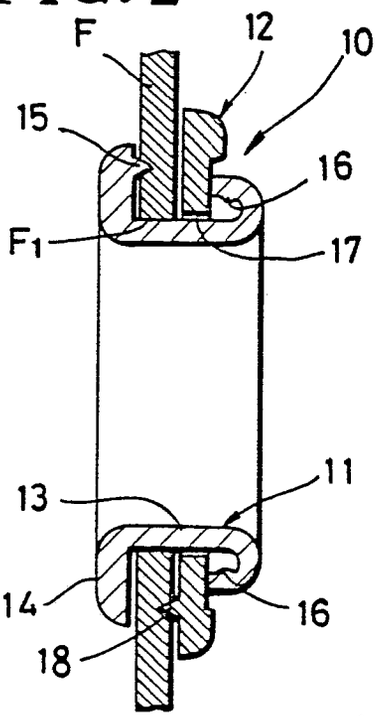
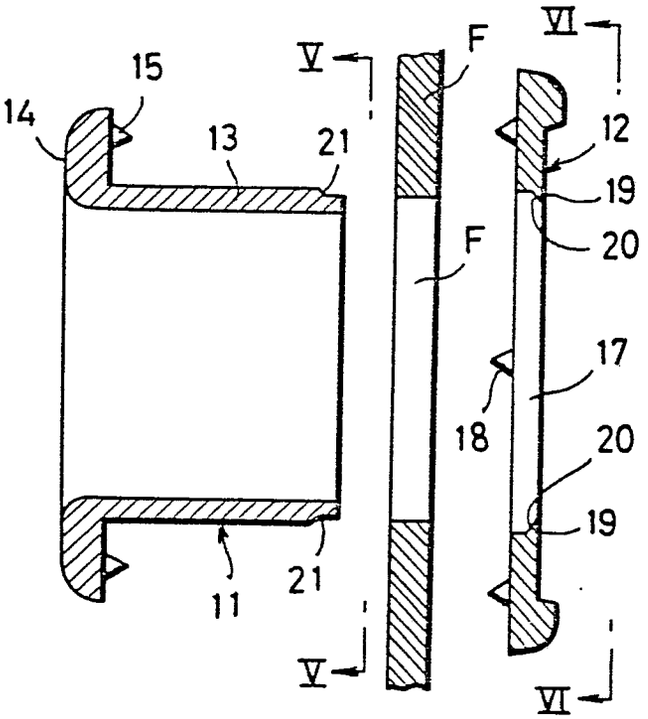


FIG. 3


15
14
13
21
V
F
VI
12
19
20
F
17
18
20
19
11
21
V
VI

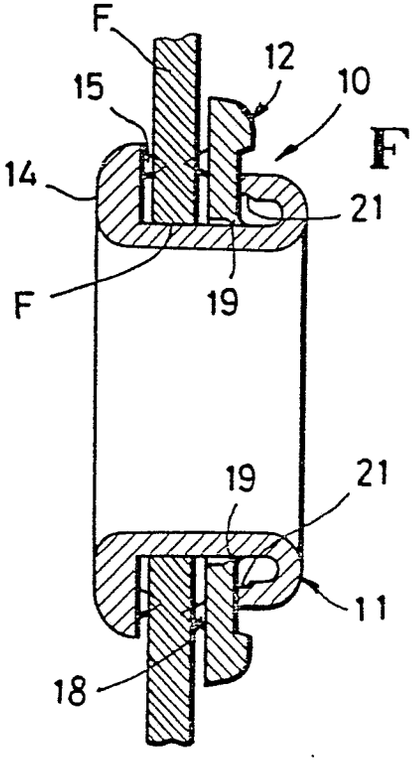

F
12
15
10
14
21
F
19
19
21
11
18

FIG. 4

FIG. 5

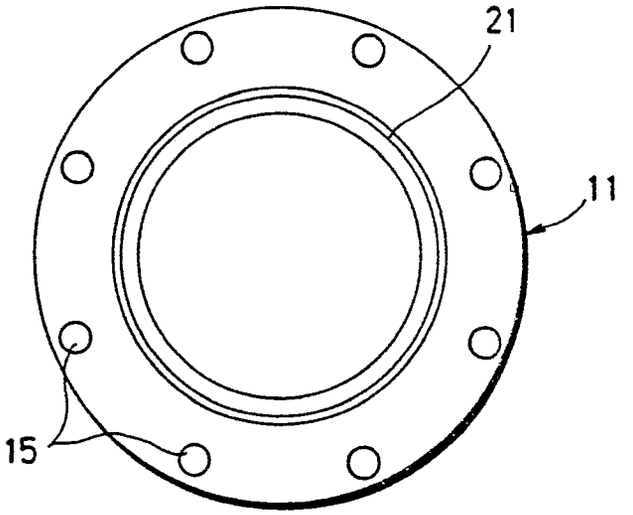


FIG. 6