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(71) Applicant: **Ambrosetti S.r.l.**
21100 Varese (IT)

(72) Inventor: **AMBROSETTI, Davide**
21100 VARESE (IT)

(74) Representative: **Mittler, Andrea et al**
MITTLER & C. s.r.l.
Viale Lombardia, 20
20131 Milano (IT)

(54) EYELET WITH HIGH EDGE AND METHOD OF MANUFACTURING THE SAME

(57) There is described a method for obtaining an eyelet (1) consisting of a cylindrical portion (2) with a circular head crown (3) having a a straight edge (4) made in one piece, the height (h) of which is equal to at least 1.8 mm, which includes a series of in-line processes from a metal sheet (20) having a thickness from 0.25 to 0.40 mm, to obtain an intermediate eyelet (9) with flat head crown (10), and a further off-line process on said intermediate eyelet (9) with flat head crown (10), consisting in folding (30) the edge (4) of the flat head crown (10) by means of the combined action of a punch (11) and a die (12).

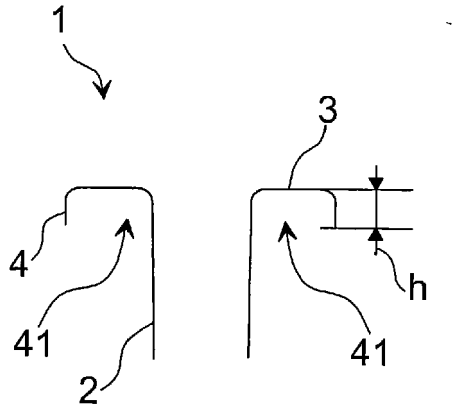

Fig.4

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Description

[0001] The present invention relates to an eyelet with a high edge and to the method of manufacturing the same.

[0002] Eyelets are known for clothes, footwear or other supports of various material, for example leather or fabric, which include a cylindrical portion defining a through hole, and a circular head crown which extends orthogonally outwards with respect to said cylindrical portion.

[0003] Said circular crown normally has an outer edge, which is flat or slightly folded downwards and has a height which is less than or equal to 1 mm. The fold serves for coupling with a holding washer for the connection to the support; however, the washer has a minimum thickness coming out of said fold, with an unpleasant appearance. By reducing the thickness of the washer, the capacity of the connection disadvantageously decreases.

[0004] Said known eyelet is obtained from a metal sheet having a thickness from 0.25 to 0.40 mm with an in-line process which comprises a series of drawing operations for obtaining a cylindrical cavity inferiorly closed, and a punch-die cutting operation on said bottom, thus forming a cylindrical portion defining a through hole.

[0005] In order to obtain said slightly folded edge, a shaping of about 1 mm is carried out on the same line, followed by subsequent cutting and ejecting operations by means of punch-die cutting.

[0006] Disadvantageously, the action of the punch and die during the step of cutting generates a fold facing outwards, i.e. an edge which is oblique outwards and imposes a larger horizontal volume if the edge height (vertical, in the direction of the cylindrical portion) is to be increased.

[0007] Moreover, the cutting quality is poor when using said eyelets in the fashion industry.

[0008] In order to obtain an eyelet with a high edge, e.g. about 2 mm, a round can be machined, which method is however much more expensive and involves manufacturing a much heavier product, the dimensions being equal.

[0009] It is the object of the present invention to carry out an affordable method for obtaining an eyelet with a high edge which is easier to be connected to a support and reduces the wear of said support.

[0010] It is a further object of the present invention to provide a method which allows an eyelet to be obtained, having an edge which forms a suitable cavity underneath or above the circular head crown to facilitate the coupling with a connection washer or with a decorative or functional insert.

[0011] According to the invention, these and further objects are achieved by a method for obtaining an eyelet consisting of a cylindrical portion with a circular head crown with a straight edge made in one piece, the height of which is equal to at least 1.8 mm, which provides a series of in-line processes from a metal sheet having a thickness from 0.25 to 0.40 mm,

said series of in-line processes comprising in sequence:

- a first series of drawing operations to obtain an intermediate cavity,
- a second series of drawing operations on said intermediate cavity to obtain said cylindrical portion inferiorly closed by a bottom,
- cutting and extracting the bottom so that the cylindrical portion defines a through hole,
- cutting and ejecting an intermediate eyelet with flat head crown,

characterized in that it includes a further off-line process on said intermediate eyelet with flat head crown, consisting in folding the edge of the flat head crown by means of the combined action of a punch and a die.

[0012] The features of the present invention will become more apparent from the following detailed description of one of the non-limiting practical embodiments thereof shown in the accompanying drawings, in which:

figure 1 shows a vertical section of a standard method for obtaining an eyelet with circular head crown having an oblique edge with a height of about 1 mm;
figure 2 shows a vertical section of a standard method for obtaining an eyelet with flat circular head crown;
figure 3 shows a step of folding the edge of the circular head crown;
figure 4 shows an eyelet with circular head crown having a straight edge with a height of about 2 mm;
figure 5 shows an eyelet with the edge folded upwards;
figure 6 shows the eyelet in figure 4, before the connection to a support;
figure 7 shows the eyelet in figure 6, connected to the support;
figure 8 shows the eyelet in figure 5, with decorative insert;
figure 9 shows a pair of eyelets as in figure 5, connected to the support;
figure 10 shows the eyelet in figure 8, connected to the support;
figure 11 shows an eyelet with circular head crown having a serrated end.

[0013] A method for obtaining an eyelet 1 consisting of a cylindrical portion 2 with a circular head crown 3 having a straight edge 4 made in one piece, includes a series of in-line processes from a metal sheet 20 having a thickness from 0.25 to 0.40 mm, and a further off-line process.

[0014] Said series of in-line processes comprises in sequence (figure 2):

- a first series of drawing operations 5 to obtain an intermediate cavity 6;
- a second series of drawing operations 7 on said in-

termediate cavity 6 to obtain said cylindrical portion 2 inferiorly closed by a bottom 8;
- cutting and extracting 21 bottom 8 so that the cylindrical portion 2 defines a through hole;
- cutting and ejecting 25 an intermediate eyelet 9 with flat head crown 10; the cutting occurs by means of a combined punch-die action.

[0015] The edge 4 of said intermediate eyelet 9 with flat head crown 10 is folded 30 off-line by means of the combined action of a punch 11 and a die 12.

[0016] As compared to the standard method in figure 1, it is noted that in figure 2 there is no step 22 of shaping the head crown 3, which is followed by a cutting operation 25, which allows a standard eyelet 23 to be obtained with an oblique edge 24 slightly folded having a height k of about 1 mm.

[0017] The eyelet 1 obtained by the method according to the invention has a straight edge 4, i.e. parallel to the cylindrical portion 2, having a height h of at least 1.8 mm.

[0018] The height of the edge depends on the dimension of punch 11 and die 12, in addition to the centering of the intermediate eyelet 9 with the flat head crown 10 on punch 11 (figure 3).

[0019] An edge 4 folded upwards may be easily obtained by simply inverting punch 11 and die 12.

[0020] The eyelet 1 thus obtained advantageously grips better a connection portion 55 of a support 51, for example clothes or footwear, and has a compartment 41 defined by edge 4 and by the head crown 10 which is best adapted to be coupled with a closing washer 52, by concealing it completely in the case of downwards fold.

[0021] In greater detail, if edge 4 is folded downwards (figure 4), the cross-section of said compartment 41 has the geometrical shape of a circular crown delimited by the cylindrical portion 2 inside and by edge 4 outside.

[0022] Instead, if edge 4 is folded upwards (figure 5), compartment 41 simply corresponds to the space delimited by edge 4 at the head crown 10.

[0023] Moreover, the increased height of edge 4 reduces the wear of leather or fabric laces, which do not touch the support when easily sliding on the shiny metal material of eyelet 1 (figure 9).

[0024] If edge 4 is folded upwards, eyelet 1 is adapted to embed inserts 54 made of different material, the outer connection surface of edge 4 being larger. For example, it is noted in figure 8 how insert 54 in the compartment 41 of an eyelet 1 folded upwards is blocked by the free end of edge 4 (figure 10). The blocked insert 54 remains visible, albeit contained, in compartment 41. In order to block insert 54, an eyelet with edge 4 according to the present invention is required, having a height which is greater than 1.8 mm. By reducing the thickness of insert 54, the breakage thereof in the blocking step may become a risk.

[0025] Therefore, it is apparent that, in the case of an upwards fold of edge 4, the increased height does not serve to conceal insert 54, which instead is to be seen because it is made of a precious decorative material, for example, rather it serves to better block insert 54. At best, it would be unpleasant for insert 54 to come out of compartment 41 due to an accidental impact.

[0026] In figure 7, it is noted that in the case of downwards fold, eyelet 1 can include a blocking washer 50 to be inserted into compartment 41 above support 51. Said washer 50 is made of a plastic material and serves to increase the friction between eyelet 1 and support 51.

[0027] In order to further improve the connection to the support, said edge 4 can have a serrated end 42 (figure 11).

Claims

1. A method for obtaining an eyelet (1) consisting of a cylindrical portion (2) with a circular head crown (3) with a straight edge (4) made in one piece, the height (h) of which is equal to at least 1.8 mm, including a series of in-line processes from a metal sheet (20) having a thickness from 0.25 to 0.40 mm,
said series of in-line processes comprising in sequence:

    - a first series of drawing operations (5) to obtain an intermediate cavity (6),
    - a second series of drawing operations (7) on said intermediate cavity (6) to obtain said cylindrical portion (2) inferiorly closed by a bottom (8),
    - cutting and extracting (21) the bottom (8) so that the cylindrical portion (2) defines a through hole,
    - cutting and ejecting (25) an intermediate eyelet (9) with flat head crown (10),

    characterized in that it includes an further off-line process on said intermediate eyelet (9) with flat head crown (10), consisting in folding (30) the edge (4) of the flat head crown (10) by means of the combined action of a punch (11) and a die (12).

2. A method according to claim 1, **characterized in that** said folding operations (30) may occur either upwards or downwards.

3. An eyelet (1) for clothes, footwear or other supports of various material, for example leather or fabric, obtained from a metal sheet (20) having a thickness from 0.25 to 0.40 mm, and consisting of a cylindrical portion (2) with a circular head crown (3) made in one piece, **characterized in that** said circular head crown (3) has a straight edge (4) parallel to said cylindrical portion (2), the height (h) of which is equal to at least 1.8 mm to form a compartment (41).

4. An eyelet (1) according to claim 3, **characterized in that** said compartment (41) is adapted to accommo-

date a connection portion (55) of a support (51) and a closing washer (52) underneath said connection portion (55) of the support (51).

5. An eyelet (1) according to claim 4, **characterized in that** said compartment (41) is adapted to accommodate a locking washer (50) above the connection portion (55) of the support (51).

6. An eyelet (1) according to claim 3, **characterized in that** said compartment (41) is adapted to accommodate an insert (54).

7. An eyelet (1) according to any of the claims from 3 to 6, **characterized in that** said straight edge (4) has a serrated end.

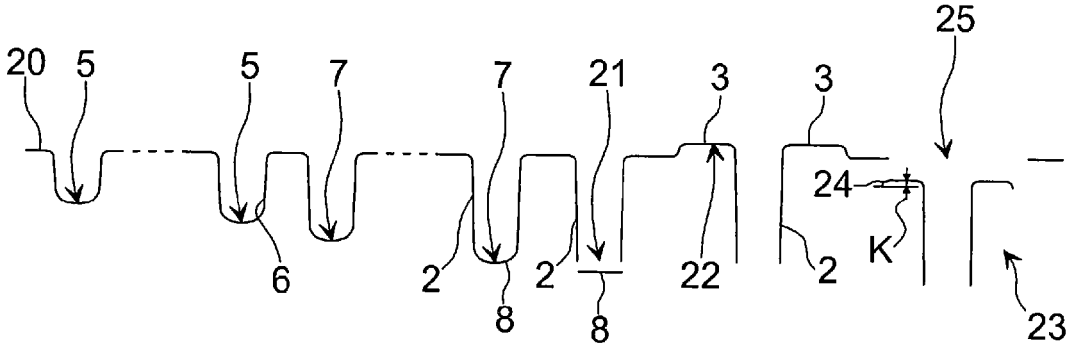

Fig.1

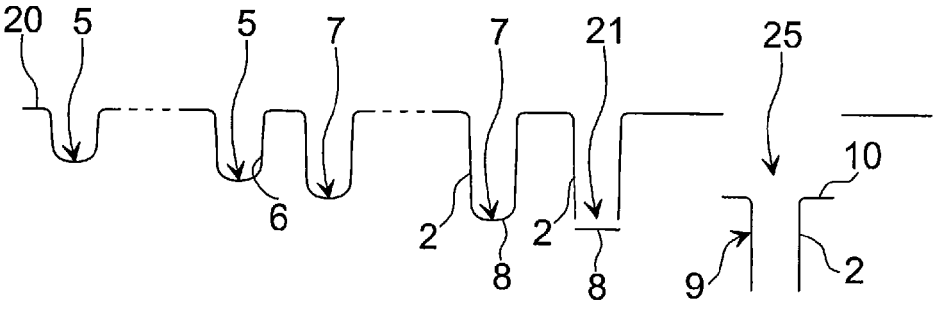

Fig.2

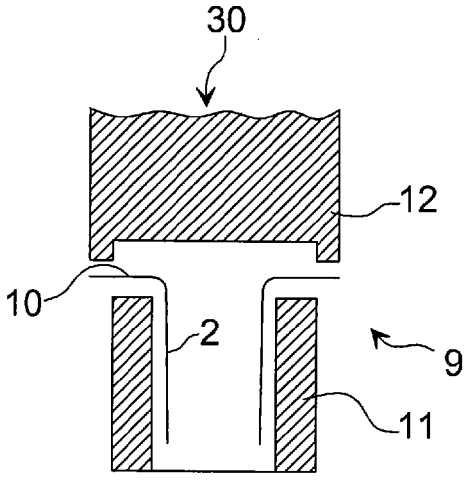

Fig.3

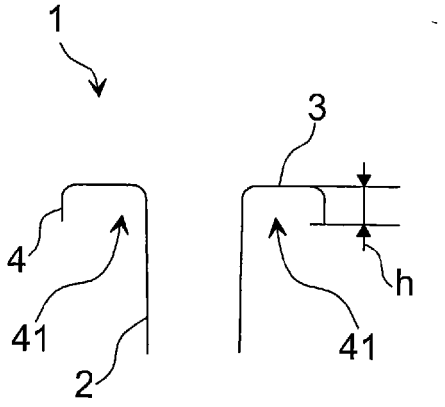

Fig.4

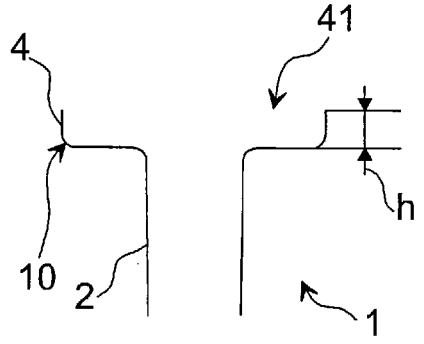

Fig.5

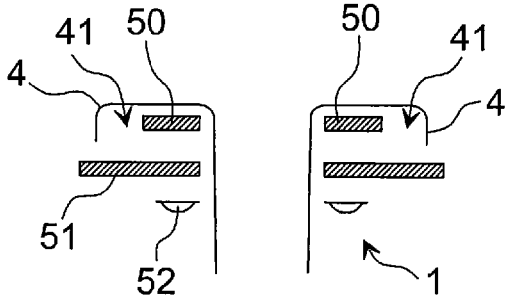

Fig.6

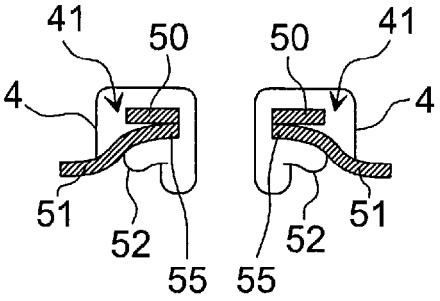

Fig.7

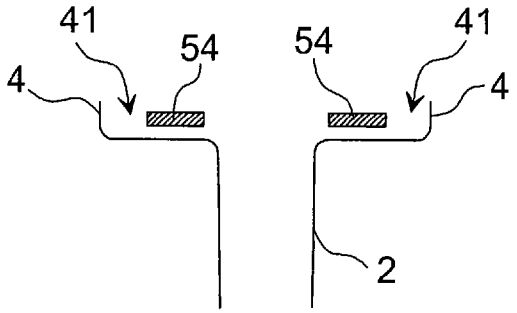

Fig.8

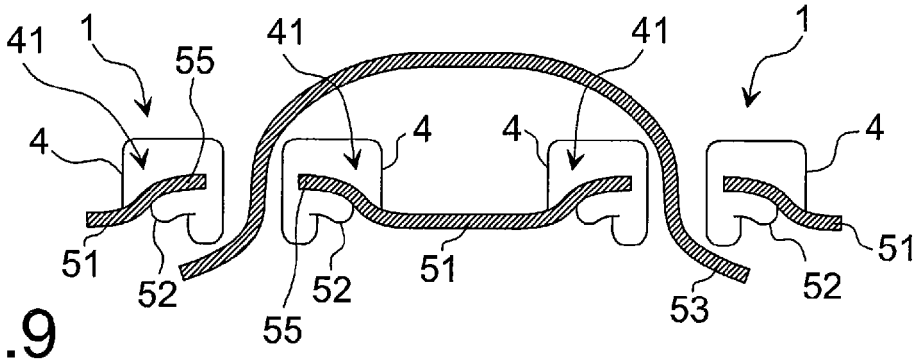

Fig.9

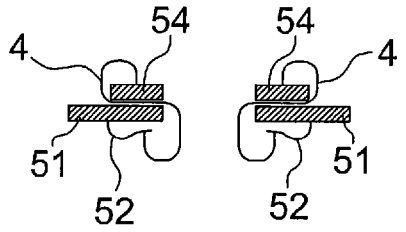

Fig.10

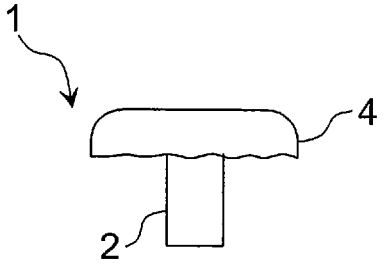

Fig.11

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EUROPEAN SEARCH REPORT

Application Number
EP 15 17 7462

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 942 988 A (WARREN GEORGE E [US]) 14 December 1909 (1909-12-14) * column 1, line 35 - line 37 * * figures 1-5, 7-11, 13 * -----	1-7	INV. A44B13/00 B21D53/36
A	GB 807 155 A (TUCKER EYELET CO GEORGE; JAMES NORMAN HENSHAW) 7 January 1959 (1959-01-07) * figure 9 * -----	1-7	
A	US 6 006 406 A (CHUNG DO JIN [CN]) 28 December 1999 (1999-12-28) * column 1, line 66 - line 67 * * column 6, line 64 - line 66 * * figure 21 * -----	1-7	
A	EP 1 219 495 A1 (EMHART LLC [US]) 3 July 2002 (2002-07-03) * figure 9 * -----	1-7	
A	FR 2 891 719 A1 (GMCC FINANCES SOC PAR ACTIONS [FR] GMCC FINANCES [FR]) 13 April 2007 (2007-04-13) * claim 6; figure 1 * -----	1-7	TECHNICAL FIELDS SEARCHED (IPC) A44B B21D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 December 2015	Krüger, Sophia

CATEGORY OF CITED DOCUMENTS

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