L. S. HARVEY.
BALL AND SOCKET FASTENER.
APPLICATION FILED JUNE 3, 1920.

1,376,765. Patented May 3, 1921.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

WITNESS:

INVENTOR.

BY

ATTORNEYS
To all whom it may concern:

Be it known that I, LEAMAN S. HARVEY, a citizen of the United States, residing at Waterbury, in the county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Ball-and-Socket Fasteners, of which the following is a specification.

My invention relates to new and useful improvements in ball and socket fasteners, and particularly relates to the cap piece or top for the socket piece of the fastener which is adapted to receive the ball member or headed member of the fastener, and also to an improved socket piece for use in connection with said cap piece. The invention as regards the cap piece relates particularly to that type wherein a covering of yielding material, for example, a fabric or other flexible material is arranged over the top of the cap piece or top, and is held in position by clamping action between the elements of which the cap piece or top is composed, and among other objects which will appear hereinafter, I especially desire to provide improved means whereby the covering material is securely clamped in position, and also to provide means whereby the covering and the element over which it extends are held against turning or rotation relative to the other part or parts of the socket fastener. A further object is to provide an improved socket piece for use in connection with said cap piece, and which socket piece will pierce the fabric to which it is applied, or will require a smaller hole to be punched in the fabric than is usually required by prior devices.

The invention consists in the improved construction, and combination of parts to be more fully described hereinafter, and the novelty of which will be particularly pointed out and distinctly claimed.

I have fully and clearly illustrated a preferred embodiment of my invention in the accompanying drawings to be taken as a part of this specification, and wherein—

Figure 1 is a transverse section through one embodiment of my invention, the same showing the completed or assembled socket member.

Fig. 2 shows the novel cap piece and socket piece in the relative positions they assume previous to being applied to and assembled on a fabric or other material.

Fig. 3 is a transverse section view through a cap piece constituting one of the elements shown in Figs. 1 and 2 and previous to being assembled, as shown in said figures.

Fig. 4 is a transverse section through a novel collet constituting one of the elements of the invention.

Fig. 5 is a plan view of the collet shown in Fig. 4 previous to being assembled, and Fig. 6 is a transverse section through a novel form of socket piece, slightly modified from the form shown in Fig. 2.

Referring to the drawings by characters of reference, A designates a fabric or other material to which the improved fastener member is adapted to be applied, said fabric being provided with an opening B, as clearly shown in Figs. 1 and 2 of the drawings. Extending through the opening B is the neck or shank 1 of my improved socket 75 piece 2, the same having at its lower portion an outwardly directed circumferential flange 3 adapted to engage one face of the material to which the fastener member is applied. At its upper portion the socket piece 80 is provided with a pointed head or dome 4, and the sides of said shank are provided with slits or openings 5 extending longitudinally of the shank, and preferably, although not necessarily, four in number, and arranged at diametrical points on the said shank.

The dome portion of the socket piece is tapered or reduced on a gradual curve from the flange 3 to the pointed closed end 4, that is, said dome is circular in cross-section, but is of gradually reduced diameter from said flange to the said dome. By forming the socket piece, as shown in Fig. 2, the hole in the fabric to receive said socket piece may be made much smaller than would be necessary to receive a socket piece in which the dome is substantially cylindrical. By the provision of the pointed closed end of the socket piece, as described, the end passes through the hole in the fabric and spreads the strands or threads of the latter. The form of socket piece shown in Fig. 6 is the same as that shown in Fig. 2, except that in Fig. 6 the base of the dome adjacent the flange is knurled inward, as at 6, to pro-
duce a reduced neck or entrance 7 to co-operate with a ball member (not shown) to securely hold the latter. While I have shown preferred forms of socket pieces in Figs. 1, 2, and 4, I desire it understood that other forms of expandable socket pieces, for example, one having a substantially cylindrical shell or dome (not shown) may be employed in connection with my improved cap piece without departing from my invention as regards the cap piece itself. The socket piece is adapted to be connected to a top or cap piece of the fastener which is located on the opposite side of the fabric from that on which said flange 3 is located and combines with said top or cap piece to form a socket member. This top or cap piece before being assembled with the socket piece is shown in Fig. 2 and comprises an annular collet 8, having an inner short circular flange 9 and an outer, outwardly flaring circular flange 10, preferably of greater length than the said flange 9, as clearly shown in Figs. 1, 2 and 4 of the drawings.

Overlying the collet is a cap consisting of a circular plate or disk 11 having an inwardly directed circumferential flange 12, and over said cap is a covering 13 of one or more layers of fabric or other suitable material having its edge portions clamped between the inner face of the said flange 12 and the flange 10 on the collet. The cap 11 before being assembled on its collet is shown in Fig. 3, and it will be seen that the flange 12 is substantially at right angles to a plane through the cap, said flange being struck inward, as shown in Figs. 1 and 2, by the dies in the act of assembling the same in engagement with the collet.

The flange 10 on the collet is provided at its inner edge portion with a laterally directed circumferential rim 15 which securely grips the fabric or other covering material 13 against the inner face of the said flange 12 on the cap piece, the parts being preferably so proportioned that said rim 15 approximately the bend or channel between the top or cap 11 of the cap piece and the said flange 12. The rim 15 is provided with means adapted to interengage or interlock with the material of the covering so that the latter will be non-rotatably connected with the said collet. This means for engaging the covering may take a number of forms within the spirit and scope of my invention, but I prefer to provide said rim with a plurality of equally distant arranged circumferential notches or indentations 16, as shown in Figs. 4, 5 and 6 of the drawings, so that said rim is provided with projections 17 and intervening recesses, the former adapted to be indented in the covering, and the latter to receive projecting portions of the covering so that the latter will not be permitted to turn or move circumferentially of the collet. The said indentations or recesses 16 may extend only through the said rim 15, but if desired, they may extend downward through the body of the flange 10, as shown at 18. When the collet and cap 11 are assembled, the flange 10 flares outward within the cap, and the flange 12 is struck inward under the said flange 10 so that the cap and collet are rigidly secured and the covering is stretched 75 over the cap and clamped between the cap and collet, as clearly shown in Figs. 1 and 2.

When the cap piece and the socket piece are assembled by dies, in a well-known manner (not shown), the socket portion of the socket piece constituted by the shank 1 and dome 4 is expanded or crushed, as shown in Fig. 1, so that the portions of the said dome between the slits 5 extend laterally over the upper edge of the said flange 85, as at 19, whereby said socket piece, collet and cap piece are clamped together and secured to the covering A. When the elements are clamped together, the dome portion 4 rests against the inner face of the 90 cap piece, as shown in Fig. 1.

From the above description taken in connection with the drawings, it will be seen that the edge portion of the fabric, or other covering, passes down around the lower edge of the flange 12 on the cap 11 and is securely clamped between the inner face of said flange and the outer face of the flange 10 and rim 15 on the collet, said covering extending in engagement with and over the rim 15 so that the covering is securely gripped by the latter against the inner face of the flange 12. The interengagement or interlocking between the collet and the covering by virtue of the indented, recessed or serrated edge on said rim, and the gripping of the flexible material by the rim and flange against the inner face of the cap 11, prevents turning of the fabric, and consequently of the cap.

What I claim and desire to secure by Letters Patent of the United States is:

1. A socket fastener member comprising a cap-piece having a flange, and a collet, a covering material over the cap-piece and around said flange and gripped inside said cap-piece between said flange and the collet, said collet having means integral therewith and projecting laterally therefrom in interengagement with said covering to prevent turning of the same relative to the collet.

2. A socket fastener member comprising a cap-piece having a flange, and a collet, a covering material over the cap-piece and around said flange and gripped inside said cap-piece between said flange and the collet, said collet having annularly arranged spaced means interengaging with the covering and cooperating with the cap-piece to grip said covering.
3. A socket-fastener member comprising a cap piece having a flange, and a collet, a covering material over the cap piece and around said flange and gripped inside said cap piece between said flange and the collet, said collet having annularly arranged projections cooperating with the cap piece to grip said covering.

4. A socket fastener member comprising a cap piece having a flange, and a collet, a covering material over the cap piece and around said flange and gripped inside said cap piece between said flange and the collet, said collet having annularly arranged projections and intervening recesses cooperating with the cap piece to grip said covering.

5. A socket-fastener member comprising a cap piece having a flange, and a collet, a covering material over the cap piece and around said flange and gripped inside said cap piece between said flange and the collet, said collet having indentations cooperating with the cap piece to grip said covering.

6. A socket-fastener member comprising a cap piece having a flange, a collet having an inner flange and an outer flange, the outer flange having an outwardly directed rim, a covering material held by the flange of the cap piece and the outer flange on the collet, said rim having indentations extending into said flange and engaging the covering and preventing turning of the same relative to the collet.

7. A socket-fastener member comprising a cap piece having a flange, a collet having an inner flange and an outer flange, the latter having a rim portion, a covering material over the cap piece and held between the flange of the cap piece and the outer flange and rim on the collet, said rim having indentations engaging the covering and preventing turning of the same relative to the collet.

8. A socket-fastener member comprising a cap piece having a flange, a collet having an inner flange and an outer flange, the outer flange having an outwardly directed rim, a covering held by the flange of the cap piece and engaged by the said rim on the collet, said rim having indentations engaging the covering and preventing turning of the same relative to the collet.

9. A socket-fastener member comprising a cap piece having a flange, a collet having an inner flange and an outer flange, the outer flange having an outwardly directed rim, a covering material held by the flange of the cap piece and the outer flange on the collet, said rim having indentations extending into said flange and engaging the covering and preventing turning of the same relative to the collet.

10. A socket-fastener member comprising a cap piece having a flange, and a collet, a covering material over the cap piece and around said flange and gripped inside said cap piece between said flange and the collet, said collet having indentations cooperating with the cap piece to grip said covering, and a socket piece entering said collet and expanded into interlocking engagement therewith.

11. A socket-fastener member comprising a cap piece having a flange, a collet having inner and outer flanges, a covering material over the cap piece and held between the flange of the cap piece and the outer flange on the collet, said outer flange having indentations engaging the covering and preventing turning of the same relative to the collet, and a socket piece entering said collet and expanded into interlocking engagement with the inner edge of said inner flange on said collet.

12. A socket piece for a fastener, comprising a hollow dome portion and a holding flange integral throughout and formed integral with the base of said dome portion, said dome portion having a closed head and being of gradually reducing diameter from the base of said flange to said reduced head, whereby the wall of said dome tapers on a gradual curve from said holding flange to said reduced closed head, and said dome having longitudinal slits, the ends of which terminate at points between said closed end and said holding flange.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEAMAN S. HARVEY.

Witnesses:
DOROTHY M. MARBATT,
ALBERT P. BRADSTREET.