April 3, 1928. 1,664,566

W. MARSHALL

FASTENER

Original Filed Aug. 25, 1924

Fig. 1.

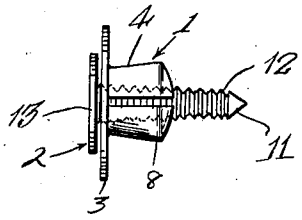


Fig. 2.

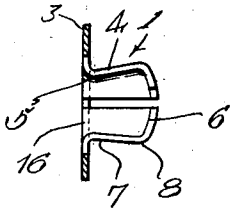


Fig. 3.

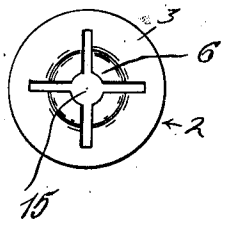


Fig. 4.

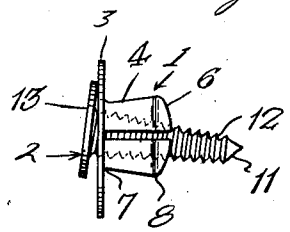
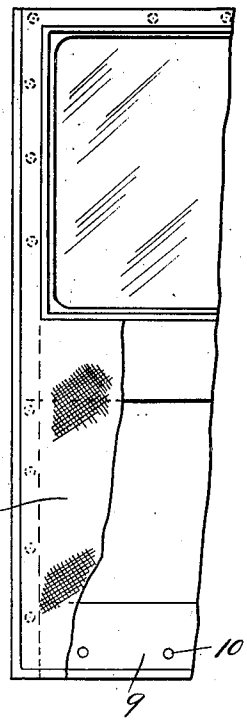


Fig. 5.



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UNITED STATES PATENT OFFICE.

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FASTENER.

Original application filed August 25, 1924, Serial No. 734,127. Divided and this application filed June 7, 1926. Serial No. 114,335.

This invention relates generally to fasteners and consists of certain novel features of construction, combinations and arrangements of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawing:

Figure 1 is a detail view of a fastener embodying my invention.

Figure 2 is a sectional view through the socket member.

Figure 3 is an end view of the socket member.

Figure 4 is a view similar to Figure 1 but showing the headed element inclined with respect to the socket member.

Figure 5 is a fragmentary side elevation of a panel of trimming material applied to a sheet metal support.

This application is a division of my copending application bearing Serial No. 734,127, that issued September 7, 1926, into U. S. Patent 1,599,139.

Referring now to the drawing, 1 is a socket member and 2 is a headed element of a fastener embodying my invention. As shown, the socket member 1 has a centrally apertured base 3 and a plurality of longitudinally extending prongs 4. To provide an efficient construction these prongs 4 project from the edges of the aperture 5 in the base and form a longitudinally split tube. Preferably these prongs incline outwardly from the base 3 and have rounded end portions 6 that extend inwardly toward a common center. Thus, a restricted neck portion 7 is provided at the point of connection of the prongs with the base, while a bulging portion 8 is provided at the point of connection of the end portions 6 with the inclined portions 4 of the prongs.

In use, the socket member 1 may be readily secured to a suitable support such as a sheet 9 of metal by merely pressing the bulging portion 8 through a suitable opening 10 in the metal sheet 9. Inasmuch as the bulging portion 8 is contractable it will be apparent that the free ends of the prongs 4 will move inwardly toward each other when the bulging portion 8 is pressed into the opening 10 until said bulging portion passes through the opening, whereupon the prongs will spring outwardly to normal position. Thus the bulging portion 8 will effectively cooperate with the lateral flange 3 to hold the socket member in assembled position. When the socket member is secured in place, the headed element 2 may be readily secured thereto by pressing the shank 11 inwardly between the inturned end portions 7 of the prongs. To insure a rigid connection and to prevent accidental displacement of the headed element from the socket member, the shank 5 of the headed element is preferably provided throughout its length with the longitudinally spaced annular ridges 12 for engagement with the prongs 4. In practice the head 13 of the element 2 is secured first to an article such as a fabric trim panel 14 and after this subassembly is accomplished, for instance on a suitable work bench or the like, the unit is then secured to the support 9 by pressing the shank 11 of the headed element between the end portions 6 of the socket member. In this connection it will be noted that the opening 15 between the inturned portions 6 is normally smaller than the cross sectional area of the shank 11; in fact the opening 15 is contracted some after the socket member is secured in the opening 10 due to the firm engagement of the edges of the opening 10 with the bulging portion 8 of the prongs, hence the inturned end portions 6 of the prongs will effectively grip the shank 11 when the latter is inserted through the opening 15 between the prongs. Moreover the diameter of the open end 16 of the socket member is materially larger than the cross sectional area of the shank 11, hence the latter may be engaged with and held by the prongs while disposed at an angle thereto (see Figure 4). This automatically compensates for any irregularities in spacing the openings 10 apart in the metal support 9 when for instance a number of such fasteners is used to secure a relatively large panel of trimming material in position. In fact the spacing of the headed elements 2 upon the trim panel 14 is substantially similar to the spacing of the openings 10 in the support 9, hence the shanks 11 will automatically register with the socket members 1 in the support, and the panel of trimming material may be readily attached to the support solely by pressing the shanks 11 through the socket elements in directions transverse to the support and without the use of any tool. Moreover the

construction of the split tube formed by the prongs of the socket element is such that the restricted neck portion 7 of the tube will substantially fill the opening 10 and will effectively prevent the said socket element from wabbling when in the support 9, while the bulging portion 8 will prevent accidental displacement or withdrawal of the socket member from the said support.

While it is believed that from the foregoing description, the nature and advantage of my invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What I claim as my invention is:

1. A fastener element of the class described formed of sheet metal and comprising a base having an opening therein, and a plurality of longitudinally extending prongs projecting from said base at the edges of said opening and having their end portions extending freely inwardly toward a common center, the thickness of said prongs being substantially the same throughout their length, said prongs being arcuate-shape in cross section and forming a hollow longitudinally split tube for insertion through an opening in a suitable support, said tube having an annular hollow bulging portion at its outer end, the area of the base and the cross sectional area of said bulging portion being larger than the cross sectional area of the tube at a point between said base and bulging portion whereby said base and bulging portion will retain said element in place when inserted for use in an opening in a support, said bulging portion being contractable so that the cross-sectional area thereof when contracted is substantially equal to the normal cross-sectional area of said tube at the intermediate point aforesaid thereof to permit the passage of said bulging portion through an opening of a size substantially equal in area to the normal cross-sectional area of said intermediate portion, said bulging portion being formed of resilient material so that said bulging portion will automatically expand to normal position after passing through such opening and will engage over an edge of the opening to prevent accidental withdrawal of said element from said opening.

2. A fastener element of the class described formed of sheet metal and comprising a base having an opening therein, and a plurality of longitudinally extending prongs having straight portions diverging from said base at the edges of said opening and having their end portions extending freely inwardly from said diverging portions toward a common center, said prongs being substantially arcuate-shape in cross section and forming a longitudinally split tube, the prongs forming the tube being so constructed and arranged as to provide a substantially continuous annular bearing for engagement with the edges of an opening in a suitable support to prevent said element from wabbling in such opening, the area of the base and the cross sectional area of the tube at the junction of the diverging straight portions with the inwardly extending end portions being larger than the cross sectional area of the tube at an intermediate point thereof, the diverging end portions of said prongs being movable inwardly toward a common center whereby the cross-sectional area of the tube at the junction of said diverging straight portions with the inwardly extending end portions aforesaid will be restricted to a cross-sectional area substantially equal to the normal cross-sectional area of the tube at said intermediate points to permit the passage of said end portions through an opening having an area substantially equal to the normal cross-sectional area of the said intermediate portions of said tube, said prongs being formed of resilient material so that said prongs will automatically spring outwardly to normal position after passing through such opening so as to engage over edge of an opening to prevent accidental withdrawal of said element from said opening.

3. A fastener of the class described comprising a socket member and a headed element, said socket member having a base provided with an opening for receiving the shank of said headed element, and a plurality of longitudinally extending prongs having straight portions projecting from said base at the edges of said opening and forming a longitudinally split tube, the cross sectional area of said tube at the outer end thereof being larger than the cross sectional area of said tube at any other point thereof, whereby said end portion will retain said element in place when inserted in an opening in a suitable support, and said end portion being contractable to permit the passage thereof through an opening in a support, said prongs having their end portions extending freely inwardly toward a common center for gripping engagement with the shank of said headed element, the opening provided between the free ends of the prongs being smaller than the cross sectional area of the shank of said headed element whereby the free ends of said prongs will be moved outwardly when the shank of said headed element is engaged therewith, said prongs being formed of resilient material whereby the free ends thereof will automatically move outwardly to normal position after passing through the opening in a support and will automatically spring into locking

engagement with the shank of said headed element when the said shank is inserted between the end portions of said prongs.

4. In a fastener of the class described, a socket element formed of sheet metal and comprising a base having an opening therein and a plurality of longitudinally extending prongs having straight portions diverging from said base at the edges of said opening and having their end portions extending freely inwardly from said diverging portions toward a common center, said prongs being substantially arcuate-shape in cross section and forming a longitudinally split tube, the area of the base and the cross sectional area of the tube at the junction of the diverging straight portions with the inwardly extending end portions being larger than the cross sectional area of the tube at an intermediate point thereof, the diverging end portions of said prongs being movable inwardly toward a common center whereby the cross sectional area of the tube at the junction of said diverging straight portions with the inwardly extending end portions aforesaid will be restricted to a cross sectional area substantially equal to the normal cross sectional area of the tube at said intermediate point to permit the passage of said end portions through an opening having an area substantially equal to the normal cross sectional area of the said intermediate portion of said tube, and a headed element having a shank extending freely through the opening in said base and through said tube, said shank being frictionally engaged and yieldably held by the diverging end portions of said prongs.

In testimony whereof I affix my signature.

WILLIAM MARSHALL.