May 31, 1932. E. D. SIMONS 1,861,097

SELF ENGAGING SOCKET FOR RESILIENT STUDS

Filed Sept. 23, 1931

Fig. 1.

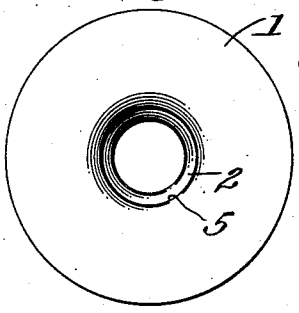



Fig. 2.

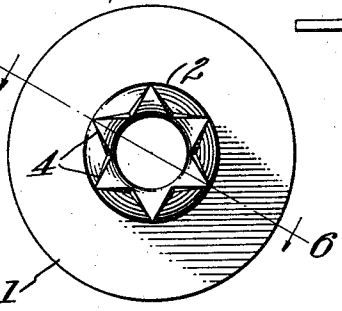



Fig. 3.

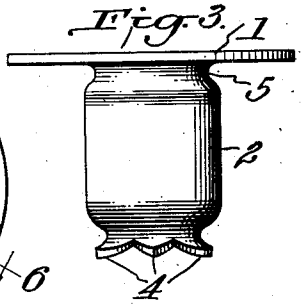



Fig. 4.

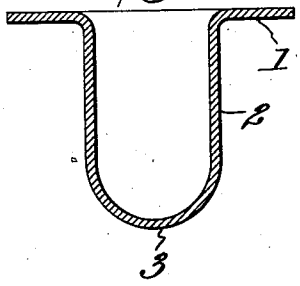



Fig. 5.

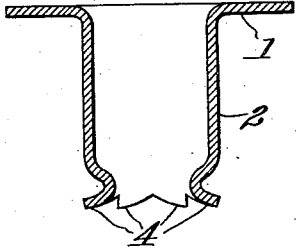



Fig. 6.

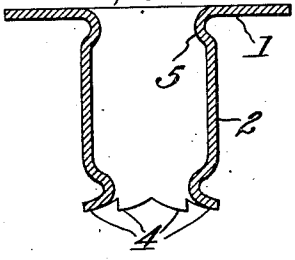



Fig. 7.

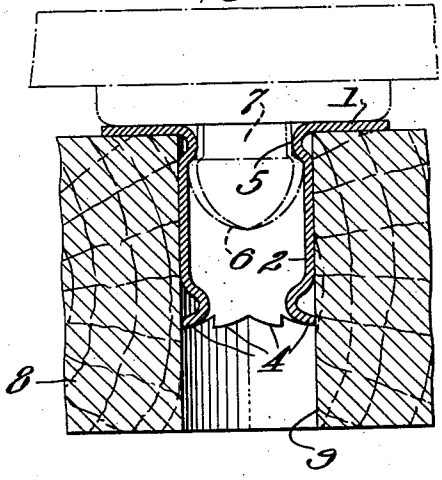
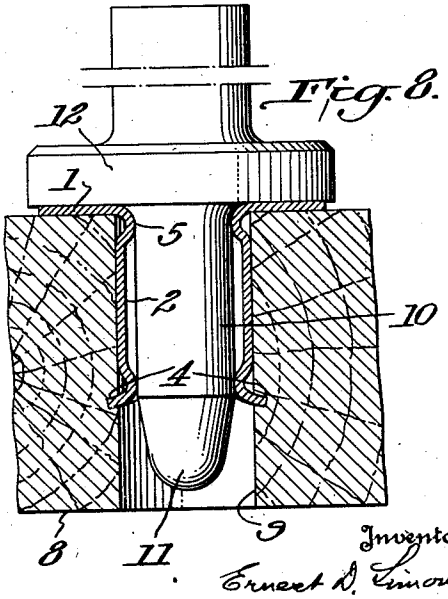



Fig. 8.




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# UNITED STATES PATENT OFFICE

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## SELF ENGAGING SOCKET FOR RESILIENT STUDS

Application filed September 23, 1931. Serial No. 564,669.

This invention relates to fasteners of the stud and socket type, and has particular reference to socket elements adapted to be rigidly mounted in articles or supports such as the floor boards of automobiles, whereby the floor mats or carpets which carry the complemental stud elements may be attached.

The object of the invention is to provide a socket element of the character referred to which may be easily and cheaply manufactured by means of automatic machinery, and which lends itself readily to assembly with its support.

The invention consists in a socket element having a barrel and a flange and means for securing it to its support, the barrel being provided with a constricted portion adjacent to the flange for engagement with a complemental stud element, all as will be described hereinafter more fully and finally claimed.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a top plan view, Fig. 2 is a bottom plan view, and Fig. 3 is a side view of the finished socket element. Figs. 4, 5 and 6 are axial sections illustrating three steps contemplated by the method of manufacturing the socket elements, Fig. 6 being a section on line 6—6 of Fig. 2. Figs. 7 and 8 are sectional elevations showing the manner in which the socket elements may be assembled with their supports, and Fig. 7 shows, in broken lines, a complemental stud element.

In making the socket elements of the invention a blank is formed to cup shape, as illustrated in Fig. 4, provided with an outwardly extending flange 1 and a barrel 2, the barrel having a closed end 3. The closed end 3 is then pierced by means of a suitable tool to produce attaching means preferably in the form of a plurality of radially outwardly extending prongs 4. Then the barrel 2 is knurled or rolled adjacent to the flange 1 to produce a peripheral impression 5 forming a constricted portion in the barrel with which the head 6 of a stud 7 may engage with a snap action (see broken lines Fig. 7). All of these operations may be performed as sequential steps in the operation of an automatic machine, thus making the manufacture of these socket elements very simple and inexpensive.

It is to be noted that in the piercing of the end 3 of the barrel 2 the spreading of the prongs 4 is so controlled that their outstanding points lie within the diameter of the barrel (see particularly Fig. 2) and that the curvature of the barrel 2 adjacent to the prongs 4 is such that the lower portion of the barrel is of less diameter than throughout the major portion of its length, both for purposes hereinafter explained.

As shown in Figs. 7 and 8, the support or article 8 with which the socket elements are assembled, such as the floor board of an automobile, is provided with a bore 9 for each socket element to be used, these bores so located as to most advantageously attach the mat or carpet to be secured.

As will be seen, the bore 9 is of such diameter as to closely fit the barrel 2 of the socket element, and the prongs 4 lying within the diameter of the barrel 2 will be encompassed by the bore in such a manner that the socket element may be readily slipped into the bore, as shown in Fig. 7, the flange 1 limiting insertion by contact with the face of the support.

With the socket element thus positioned an appropriate tool 10 having a suitably tapered end 11 is inserted in the barrel and struck with a hammer or other implement. The force thus applied will drive the tapered end 11 of the tool past the reduced diameter portion of the barrel 2 adjacent to the prongs and acting thereagainst will force the prongs radially outwardly and into the support, as shown in Fig. 8, the shoulder 12 of the tool finally limiting inward movement of the tool by contact with the flange 1 and forcing the flange into close and intimate engagement with the upper surface of the support. The tool 10 is thereafter withdrawn and the socket element thus rigidly attached to or assembled with the support is ready for reception of its complemental stud element.

Various changes and modifications are considered to be within the spirit of the invention and the scope of the following claim.

What I claim is:—

A socket element for separable fasteners, comprising a tubular barrel provided at one end with an outwardly extending flange and at its other end with outwardly extending prongs whereby it may be attached to an article, said prongs normally lying within the diameter of the barrel and deformable out of normal position into engagement with said article, said barrel provided with a constricted portion adjacent to said flange and forming a means for separable engagement with a complemental stud element.

In testimony whereof I have hereunto set my hand.

ERNEST D. SIMONS.