

FASTENER.

1,365,023.

Patented Jan. 11, 1921.

FIG. 1 is a top-down view of a circular device. It features a central shaded circle (12) surrounded by four curved segments (14, 15, 16, 17) arranged in a cross-like pattern. A dashed line (13) indicates a boundary or path. A small square (7) is located near the center.

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UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, MOSES F. CARR, a citizen of the United States, and a resident of Newton, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Fasteners, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention pertains to improvements in fasteners, and more particularly, though not exclusively, to improvements of the type wherein separation of stud and socket may be effected by relative tipping movement in a predetermined general direction only.

One of the objects of the invention is to provide a fastener wherein the ease of separation of stud and socket by relative tipping movement is increased.

In the drawings, which show a preferred form of one embodiment of my invention:—

Figure 1 is a front elevation of a fastener in which the stud is engaged with the socket;

Fig. 2 is a section, partly in elevation, on the line 2—2 of Fig. 1;

Fig. 3 is a section, partly in elevation, on the line 3—3 of Fig. 2; and

Fig. 4 is a view of the parts shown in Fig. 1, when stud and socket are tipped one relative to the other to effect the release of interengaging parts immediately prior to separation of stud and socket.

I have elected to show my invention as applied to a fastener of the three-side lock type, and my invention is particularly useful as applied to this type of fastener.

In fasteners of the three-side lock type as heretofore constructed, it has been the usual practice to provide a stud having a head, a neck behind the head and a shank portion rearwardly of the head and sloped to form cam surfaces adapted to cooperate with the sides of the shoulder in front of the neck of the stud to disengage jaw means carried in the socket from behind the shoulder at the front of the neck of the stud. In constructions as heretofore provided, however, the relative tipping of stud and socket has effected only a portion of the jaw-disengaging movement, the rest of the jaw-disengaging movement being effected subsequent to the termination of the relative tipping of stud and socket and during what may be

termed the withdrawing operation of the stud from the socket. The effecting of a substantial portion of the jaw-disengaging movement during this withdrawing operation has involved a substantial movement of the jaw means in a disengaging direction by a camming action thereof against the round of the head of the stud adjacent the neck portion thereof, and has resulted in what may be termed a drag.

By the present invention this drag is entirely or substantially eliminated, the jaw means being entirely or substantially disengaged from the neck of the stud during the tipping movement so that substantially no further disengaging movement of the jaw means need be effected during the withdrawing operation following the completion of relative tipping movement.

In the preferred form of my invention illustrated in the drawings, I have shown a stud having a head 5, a neck 6 and a shank portion 7. The shoulder 8 between the head 5 and the neck portion 6 is preferably relatively abrupt as shown, the stud, or the operative parts thereof, being preferably round in cross-section and the front of the shank portion 7 adjacent the neck 6 is preferably sloped to form a cam surface 9. The shank 7 of the stud is preferably, as illustrated, somewhat larger in diameter than the maximum diameter of the head 5 of the stud, thus extending the cam surface 9 so that the jaw moving action thereof is proportionately increased beyond what such action would be if the diameter of the head of the stud and of the shank 7 were identical.

The socket includes a casing of any suitable form, but preferably includes a front plate 10 and back plate 11 carrying between them a spring portion 12 and, where the socket proper is to be carried on the opposite side of the fabric 13 from that side at which the stud enters the socket, this casing may be secured to the fabric by prongs 14 projecting through the fabric and engaging a back plate 15 in the usual manner. It is obvious, however, that the form of casing may be freely varied without departing from the scope of my invention. The spring 12 is preferably formed to provide jaw means, herein shown as two jaw elements 15, 16 adapted to engage opposite sides of the stud and preferably approaching one

another at 17, 18 to increase the stud-engaging surface of the jaw means, and to facilitate separation of the jaw means when stud and socket are tipped one relative to the other, as hereinafter described. The socket is preferably formed with an elongated opening 19 in the back thereof to permit relative tipping of stud and socket in the direction shown by the arrow in Fig. 2.

In the foregoing descriptive matter, I have described the mechanism of the fastener in a general way without attempting to describe the features which provide the improved operation of the preferred form of fastener illustrated. I will now describe more specifically the improved features.

When the stud and socket are tipped one relative to the other, which may conveniently be effected by grasping the bottom of the curtain and pulling in the direction of the arrow shown in Fig. 2, the portions of the spring marked 17, 18 are crowded back against the sloped shoulder 9 of the stud and cammed apart thereby a sufficient distance so that the stud-engaging jaws are separated a sufficient distance substantially entirely to clear the head of the stud so that stud and socket may be freely separated when the tipping movement is completed. This improved operation is preferably effected by proportioning the diameter of the head of the stud adjacent the neck portion, the effective depth and contour of the neck portion, the diameter of the shank portion, which is sloped adjacent the neck portion, and the shape of the jaw means to coordinate in such a way as to completely or substantially completely disengage the jaw means by spreading action during the tipping movement, the greater part of this spreading action preferably being performed by the sloped part 9 of the shank 7 and leaving no substantial portion of the spreading action to be effected by camming of the jaw means by the round at the sides of the head of the stud after the completion of tipping movement.

In Fig. 4 I have shown the preferred form of my invention at the conclusion of the tipping movement, the jaws being shown sufficiently separated by the sloping shoulder on the shank to clear the head of the stud. It will be understood, however, that it is not essential that the jaws be opened sufficiently entirely to clear the head of the stud, it being sufficient if they are opened sufficiently substantially to clear the head of the stud and eliminate the drag ordinarily incidental to separation of stud and socket after the completion of the tipping movement.

In the preferred form of my invention shown in the drawings, separating movement by relative tipping of stud and socket in any direction other than the general direction indicated by the arrow in Fig. 2 is

prevented by means heretofore well known in the art, and which need not be here specifically described.

While I have shown and described a preferred form of my invention, it will be understood that changes involving omission, substitution, alteration and reversal of parts, and even changes in the mode of operation, may be made without departing from the scope of the invention, which is best defined in the following claims.

Claims.

1. A fastener comprising, in combination, a stud having a head, a neck and a shank portion; a socket having jaw means; said stud and the parts cooperating therewith proportioned to effect, during relative tipping movement of stud and socket, a substantially complete disengagement of said jaw means from behind the head of said stud.

2. A fastener comprising, in combination, a stud having a head, a neck and a shank portion, said shank portion presenting a sloped surface adjacent said neck; and a socket for engagement with said stud, providing spring portions adapted to be wedged apart by said sloped surface when stud and socket are tipped one relative to the other a sufficient distance substantially to clear the head of the stud.

3. A fastener comprising, in combination, a symmetrical stud having a head, a neck and a shank portion, said shank portion presenting a sloped surface adjacent said neck and being of greater diameter than said head, said stud having a relatively abrupt shoulder between said head and said neck; and a socket including two jaw elements adapted to engage opposite sides of the neck of said stud, said stud and socket proportioned substantially to complete the maximum necessary jaw-separating operation during relative tipping movement of said stud and socket whereby, pursuant to such tipping movement, stud and socket may be separated without substantial drag of said jaws on the head of said stud.

4. A separable fastener comprising, in combination, a stud and a socket separable by relative tipping movement in one predetermined general direction only, said stud having a head and a neck and said socket having jaw means, said stud and socket being formed substantially to complete disengagement of said jaw means from said neck during relative tipping movement of stud and socket whereby, pursuant to such tipping movement, stud and socket may be separated without substantial drag of said jaw means on the head of said stud.

5. A snap fastener comprising, in combination, a stud having a head, a neck and a shank; and a socket providing jaw means for engagement with the neck of said stud,

said shank adjacent said neck being shaped to displace said jaw means when said stud and socket are tipped one relative to the other in a determined direction, the head of
5 said stud being of lessor diameter than said shank and proportioned thereto to complete the displacement of said jaw means from

said shoulder during the tipping movement, thereby to facilitate separation of stud and socket.

In testimony whereof I have signed my
name to this specification.

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MOSES F. CARR.