March 20, 1928. 1,663,240

F. S. CARR

FASTENER

Filed June 14, 1924

Fig. 1.

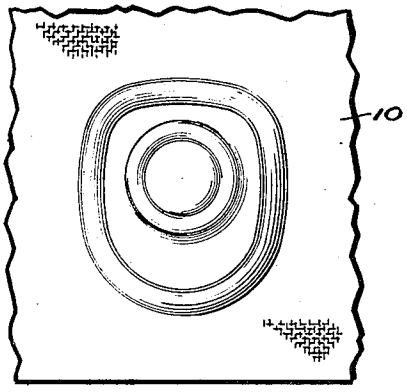


Fig. 2.

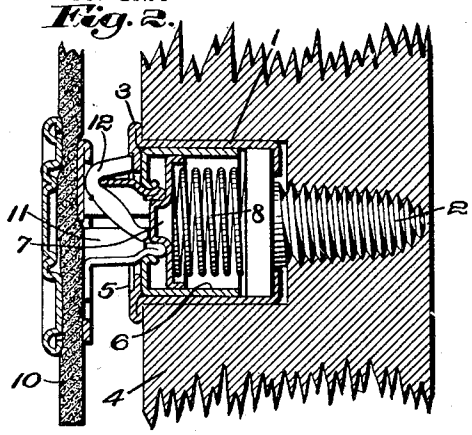


Fig. 3.

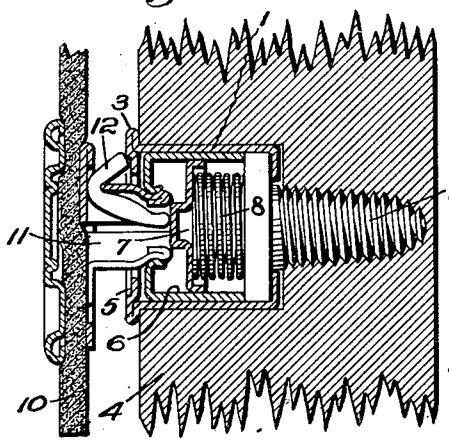


Fig. 4.

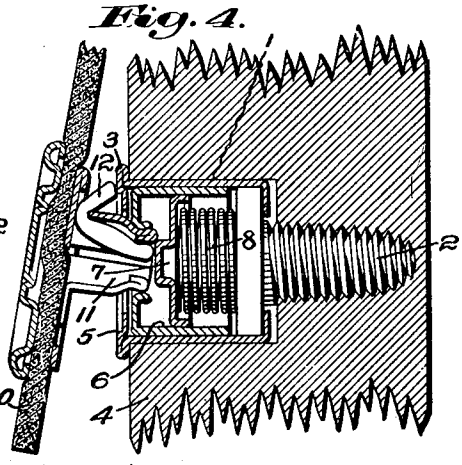


Fig. 7.

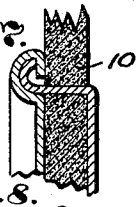


Fig. 5.

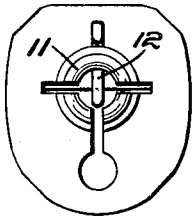


Fig. 6.

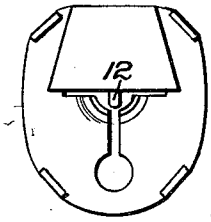


Fig. 8.

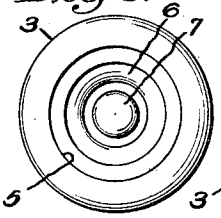
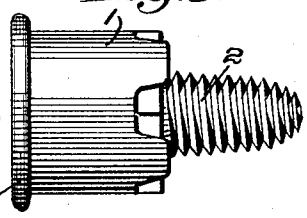


Fig. 9.



Inventor:
Fred S. Carr,
by Emery, Booth, Janney & Emery
Attys.

Patented Mar. 20, 1928. 1,663,240

UNITED STATES PATENT OFFICE.

FRED S. CARR, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO CARR FASTENER COMPANY, OF CAMBRIDGE, MASSACHUSETTS, A CORPORATION OF MAINE.

FASTENER.

Application filed June 14, 1924. Serial No. 719,925.

This invention aims to provide an improved fastener of the push and pull type.

In the drawings, which illustrate a preferred embodiment of my invention:—

Figure 1 is a front elevation of the preferred fastener;

Fig. 2 is a section on the line 2—2 of Fig. 1, being partly in elevation, and showing the stud and socket locked together;

Fig. 3 is a section similar to Fig. 2, and shows the stud moved axially into the socket and the locking member in unlocked position;

Fig. 4 is a section similar to Fig. 2, and shows the stud being separated from the socket by relative tipping action after the parts have assumed the position in Fig. 3;

Fig. 5 is a front elevation of the stud;

Fig. 6 is a rear elevation of the stud;

Fig. 7 is a section on the line 7—7 of Fig. 1, showing the means of attaching the stud to a curtain;

Fig. 8 is a front elevation of the socket; and

Fig. 9 is a side elevation of the socket.

Referring to the drawings and to the preferred form of my invention as illustrated therein, I have shown a socket preferably of the so-called flush type. The socket comprises a body part or casing 1 having an attaching screw 2 secured thereto in substantially the same manner as illustrated and described in the co-pending application of Andrew G. Anderson, Serial No. 708,724, filed April 24th, 1924. The casing presents a flange 3 at the outer end thereof for engagement with the face of the support 4 to which the socket is attached, and the front face of the casing presents an annular shoulder 5, the purposes of which are more fully hereinafter described. The socket also includes a stud-receiving part 6 presenting a stud-receiving aperture and a locking member 7 normally urged into aperture-closing position by a spring 8 which also urges the stud-receiving part forward until it seats against the front face of the casing. The stud-receiving part is preferably provided with a substantially long tubular part closely slidably fitting the inside of the casing.

The preferred form of stud for use with the socket herein described is secured to a flexible carrying fabric 10, and presents a socket-engaging contractible and expansible head 11 and a latch 12 pivoted thereupon.

The attaching means, the stud and the operation thereof are substantially illustrated and more fully described in my co-pending application filed herewith, Serial No. 719,924. The only substantial variation between the stud herein illustrated and the stud illustrated in the above-mentioned application is in the neck. In this instance, the neck is of the usual construction, having little or no lost motion between it and the stud-receiving part when the stud and socket are locked together.

Engagement of the stud and socket may be effected by pressing the stud toward the socket thereby engaging the head of the stud with the stud-receiving part adjacent the stud-receiving aperture. As further pressure is applied to enter the head in the aperture, the stud-receiving part moves axially inward against the pressure of the spring 8 and relative to the socket until the end of the tubular part seats against the head of the attaching screw. Still further pressure urges the head to contract and enter the stud-receiving aperture at the same time urging the locking member out of the aperture against the pressure of the spring 8. Thus the head enters the aperture and again expands, the neck thereof engaging the peripheral wall surrounding the stud-receiving aperture. Pressure is now released from the stud and the spring 8 then urges the stud-receiving part 6 into its normal position again and at the same time the locking member 7 is free to be urged by the spring 8 into engagement with the reversely bent portions of the stud, as best illustrated in Fig. 2, thereby locking the stud and socket against separation by a pull at any side thereof. The stud is also locked against separation by an upward pull because the end of the latch that engages the face of the socket contacts with the annular shoulder 5, which provides a very effective stop thereby preventing a resolution of forces from tipping the stud out of engagement with the stud-receiving part.

Separation of the stud from the socket is effected by first pressing the stud toward the

socket, thereby moving the stud and stud-receiving part axially relative to the casing and at the same time the latch tips relative to the stud, thereby moving the locking member out of engagement with the reversely bent portions of the stud, as best illustrated in Fig. 3. When in the position shown in Fig. 3, the stud may be tipped out of engagement with the stud-receiving part by merely grasping the lower edge of the curtain and exerting a slight pull thereon, as best shown in Fig. 4.

While I have shown and described a preferred form of one embodiment 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 my invention, which is best defined in the following claims.

I claim—

1. A stud and socket fastener comprising, in combination, a socket including a casing, a stud-receiving part movable relative to said casing, a cooperating stud for engagement with said stud-receiving part, locking means forming part of the fastener assembly for locking said stud with the socket and unlocking means separate from said locking means and carried by said stud for displacing said locking means to permit separation of the fastener when said stud and stud-receiving part are moved relative to said casing.

2. A stud and socket fastener comprising, in combination, a socket including a casing, a stud-receiving part movable relative to said casing, a cooperating stud for engagement with said stud-receiving part, locking means forming part of the fastener assembly for locking said stud with the socket, a latch operable to displace said locking means and means adjacent said latch to prevent tipping of said stud relative to said socket when lateral strain is exerted in the direction of said means.

3. A stud and socket fastener comprising, in combination, a socket including a casing, a stud-receiving part movable relative to said casing, a cooperating stud for engagement with said stud-receiving part, locking means forming part of the fastener assembly for locking said stud with the socket, a latch operable to displace said locking means and a shoulder located upon said socket and engageable by said latch when a lateral strain is exerted upon said stud from above said latch.

4. A stud and socket fastener comprising, in combination, a socket including a casing, a stud-receiving part and a spring-pressed locking member normally urging said stud-receiving part into its forward position, a cooperating stud having a head for engagement with said stud-receiving part and adapted when engaged therewith to receive said locking member to prevent separation of said stud from said stud-receiving part and a latch pivoted upon said head and operable by axial movement of said stud and stud-receiving part relative to said casing thereby to displace said locking member from said head and permit separation of said fastener.

5. A stud and socket fastener comprising, in combination, a socket including a casing, a stud-receiving part axially movable in said casing and presenting a stud-receiving aperture surrounded by a wall of fixed dimensions, and means forming part of the socket for limiting the movement of said stud-receiving part, a stud having a contractible and expansible head engageable with said stud-receiving part after movement thereof to its inner limited position and spring-pressed locking means within said stud-receiving part for moving said stud and stud-receiving part to the forward limit and for locking said parts together.

6. A stud and socket fastener comprising, in combination, a socket including a casing, a stud-receiving part axially movable in said casing and means for limiting the movement thereof, a stud having a contractible and expansible head engageable with said stud-receiving part after movement thereof to its inner limited position, separate spring-pressed locking means forming part of the socket for moving said stud and stud-receiving part to the forward limit and locking said parts together, and a latch forming part of the fastener assembly and operable by inward-movement of said stud-receiving part relative to said casing to shift said locking means and permit separation of said stud and socket.

7. A stud and socket fastener comprising, in combination, a socket including a shiftable stud-receiving part, a stud for engagement therewith, resiliently pressed locking means carried by said socket for locking said stud with said stud-receiving part and unlocking means pivotally mounted upon the stud and operable relative to said stud-receiving part, without movement between the stud and stud-receiving part, to move said locking means into unlocking position relative to said stud.

8. A socket for a separable fastener including a casing, an axially movable spring-pressed stud-receiving part shiftable relative to said casing, said part presenting a stud-receiving aperture, means for limiting the shifting of said part in said casing, an axially shiftable spring-pressed closure plate forming part of the socket assembly and normally closing said aperture to exclude dust and dirt from said socket, and locking means carried by said plate and pre-

sented at said aperture for engagement with the stud.

9. A socket for a separable fastener including a casing, means for attaching said casing to a support, an axially movable non-resilient stud-receiving part, a locking member reciprocable in said stud-receiving part and a spring normally urging said stud-receiving part and said locking member into normal position said stud-receiving part and said spring being assembled with said casing.

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

FRED S. CARR.