May 29, 1923. 1,456,555

B. F. HUBBELL

FASTENER

Filed Aug. 13, 1921

Fig. 1.

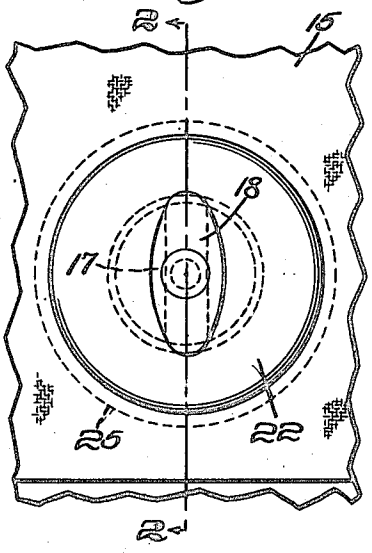


Fig. 2.

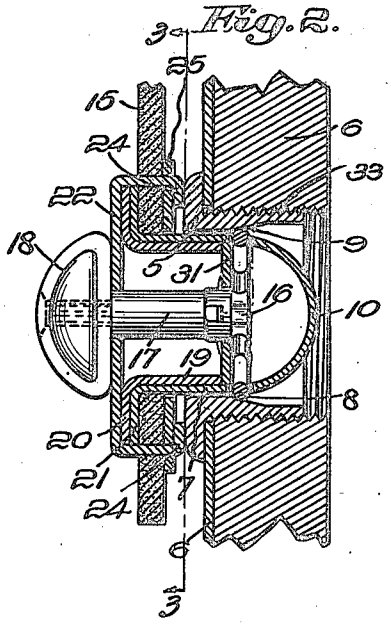


Fig. 3.

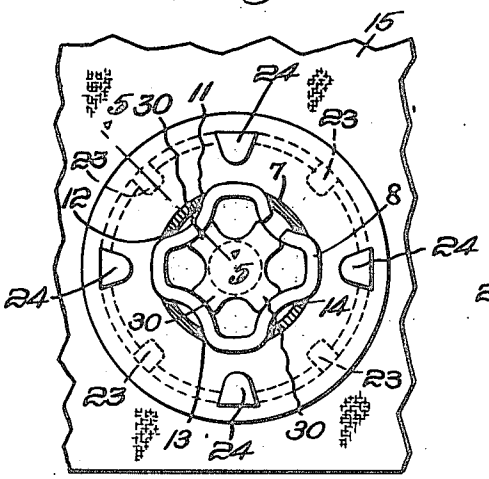


Fig. 4.

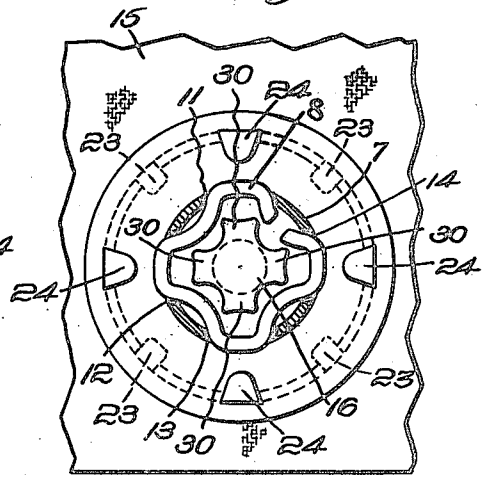
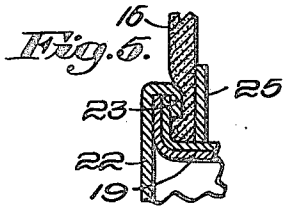


Fig. 6.



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UNITED STATES PATENT OFFICE.

BENJAMIN F. HUBBELL, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO CARR FASTENER COMPANY, OF CAMBRIDGE, MASSACHUSETTS, A CORPORATION OF MAINE.

FASTENER.

Application filed August 18, 1921. Serial No. 491,912.

To all whom it may concern:

Be it known that I, BENJAMIN F. HUBBELL, a citizen of the United States, and resident of Cambridge, in the county of Middlesex, 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 separable fasteners. It is among the objects of the invention to provide a separable fastener in which the parts may be positively locked against undesired separation under strain in any and all directions.

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

Figure 1 is a front elevation of a preferred form of fastener;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a section, partly in elevation, on the line 3—3 of Fig. 2, the socket portions being omitted and the parts of the stud being in locked relation;

Fig. 4 is a section, partly in elevation, on the same line as Fig. 3, but showing the parts of the fastener in unlocked position; and

Fig. 5 is a section of part of the socket member, on the line 5—5 of Fig. 3.

Referring to the drawings and to the preferred form of my invention selected for illustrative purposes, I have shown a socket 5 secured to a rigid carrying medium 6, which may be the body of an automobile or the like. The socket 5 presents a stud-receiving opening of a size at the entrance end which will admit the body portion 7 of a stud-carrying spring 8 contractible to approximately the diameter of the stud body 7, but preferably normally resiliently tending to maintain an outside diameter somewhat greater than that of the body portion 7 of the stud. The interior of the preferred form of socket illustrated presents a recessed or enlarged portion 9 somewhat greater in diameter than the outer portion of the socket aperture. In the preferred form of stud illustrated, the body portion 7 is formed with a rounded end 10 and is slotted at 11, 12, 13 and 14 to permit passage therethrough of projecting portions of the spring 8. The spring 8 is preferably so formed that it may be contracted entirely to fit within the body 7 of the stud during assembly of the spring 8 with the stud body 7. The preferred form of stud illustrated is carried by stud-carrying fabric 15 and includes, in addition to the body 7 of the spring 8, spring-locking means typified by the rotatable cam part 16 secured to a stem 17 having at its opposite ends on the other side of the fabric 15 a projecting turn-button 18. The locking parts 16, 17 and 18 may be held in assembled relationship to the stud body by a retainer ring 19 having an outer terminal flange 20 and a front plate 22 having prongs 23 (as shown in Fig. 5) clenched to hold in assembled relationship the flange 20 of the retainer 19 and the flange 21 of the body portion 7. This front plate 22 also preferably carries projecting prongs 24 adapted to pass through the stud-carrying fabric 15 and to be clenched over the securing plate 25.

The locking cam 16 preferably provides, as illustrated, the projections 30 adapted to abut against the bows of the spring 8 lying within the stud body 7 and to hold the spring against compression when the turn-button 18 is turned into locking position, the parts then occupying the relative position shown in Fig. 3. When, on the other hand, the turn-button 18 is turned into unlocked position, the cam 16 occupies the position relative to the spring, as illustrated in Fig. 4, so that the spring may compress pursuant to outward strain on the stud away from the socket.

The assembly of the various parts of the fastener may be as follows. Assuming the shank 17 to be assembled with the disc 31, and the cam 16 to be riveted thereto, the ring 19 and front plate 22 are then pressed over the shank 17 and the turn-button 18 is riveted to the end of the shank 17 to hold these parts in assembled relationship. The spring 8 is then slipped on to the cam 16 in the relative position thereto shown in Fig. 4, and the stud body 7 is slipped over these assembled parts, thereby compressing the spring 8 so that it can pass through the stud body until it reaches the openings 14 thereof, after which the spring 8 will spring into these openings. The lugs or prongs 23 are then bent down to hold the stud body 7 in assembled relationship to the parts previously assembled. When the stud portions previously described are to be secured to their carrying curtain 15, an appropriate

opening is punched therethrough to permit passage of the stud body and of the prongs 24, after which the securing plate 25 is slipped over the stud body and over the prongs, the prongs being then clenched against the back face of the securing plate 25. The socket may be secured to its carrying elements in any suitable way, but where the carrying element is a solid as distinguished from a flexible carrying medium, I prefer to use the exterior screw threads 33 as indicated.

The operation of the fastener is simple, the turn-button being turned to unlocking position so that the locking cam is free of the spring, as shown in Fig. 4. The stud is pressed into the socket and when sufficiently entered therein the locking cam is turned to locking position so that the locking cam will hold the spring against compression, the cam and spring then being in the relative position shown in Fig. 3. When it is again desired to separate the parts, the locking cam is again turned to unlocked position, whereupon the stud may be easily withdrawn from the socket.

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:

1. A fastener comprising a socket, in combination with a stud presenting a body portion projecting on one side of a flexible carrying medium, a generally flat spring carried by said body portion, the plane of said spring perpendicular to the axis of said body portion, and locking means for holding said spring locked in engaged relation to said socket, said locking means cooperating with an operating part extending into said body portion and projecting on the opposite side of said carrying medium from said body portion.

2. A fastener including a stud having a hollow body portion, lateral openings in said body portion, resilient means projecting through said openings to engage a cooperating socket and a locking part mounted for turning movement in said body portion to hold said resilient means in extended position and to permit contraction of said resilient means.

3. A stud for separable fasteners comprising a body part projecting from one side of a flexible carrying medium, a spring laterally projecting through said body part, a turnable locking cam for locking said spring in expanded position, a shank connected to said cam and provided with a handle portion on the opposite side of the carrying medium, and means holding said body, spring, cam, shank and handle portion in assembled relationship prior to application thereof to the flexible stud-carrying medium.

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

BENJAMIN F. HUBBELL.