D. BOURQUE.

SEPARABLE FASTENER.

APPLICATION FILED JAN. 11, 1919.

1,320,832. Patented Nov. 4, 1919.

Fig. 1.

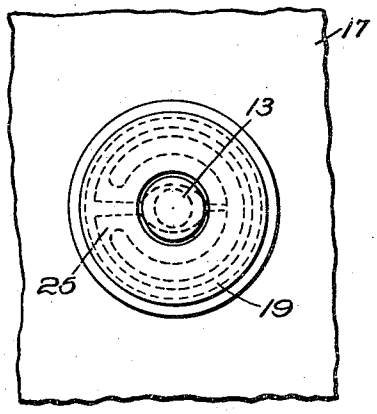


Fig. 2.

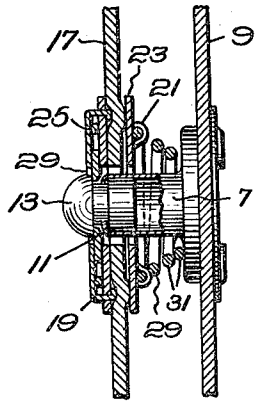


Fig. 3.

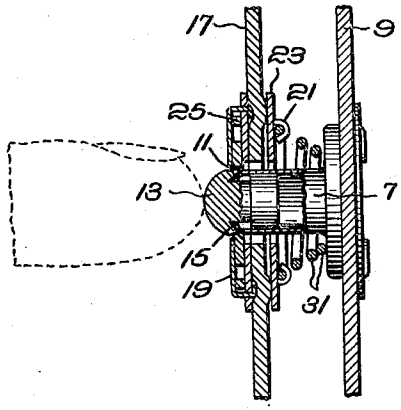


Fig. 4.

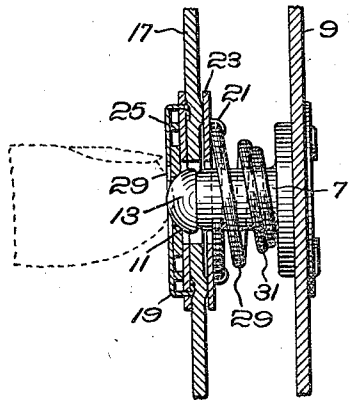
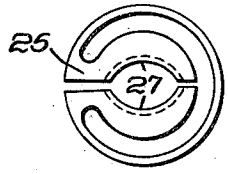


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SEPARABLE FASTENER.

1,320,832. Specification of Letters Patent. Patented Nov. 4, 1919.

Application filed January 11, 1919. Serial No. 270,735.

To all whom it may concern:

Be it known that I, DAVID BOURQUE, a citizen of the United States, and resident of Amesbury, county of Essex, and State of Massachusetts, have invented an Improvement in Separable 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 relates to separable fasteners and in particular to such a fastener having means for automatically separating the parts when the interlocking engagement between them is released.

My invention will best be understood by reference to the following description of one particular embodiment of my invention as illustrated in the accompanying drawings, wherein:—

Figure 1 is a front elevation of the fastener;

Fig. 2 is a vertical diametrical section;

Figs. 3 and 4 are views similar to Fig. 2 showing the parts in different phases of the separating movement; and

Fig. 5 is a detail of a spring jaw used in the fastener shown.

As an example of my invention I here show a separable fastener utilizing certain features of construction already known, which, however, are embodied in a novel combination. Referring to the drawings, the fastener shown comprises a male member or stud 7 which may conveniently be formed of a hollow stamping, as shown, and is provided with suitable means for securing it to a supporting member 9. The stud 7 is provided with a terminal beveled camming surface 11 and is provided with a tip or head 13 relatively movable axially of the stud and provided with an undercut shoulder 15 adapted when the head is pressed inwardly, as shown in Fig. 3, to fit over the camming surface 11 and when in the outward position shown in Fig. 2 to define with that surface a jaw-receiving space. Conveniently the outer surface of the head 13 is domed or rounded, as shown, to facilitate its introduction in the coöperating element of the fastener as hereinafter described.

Herein the female member of the fastener takes the form of a socket adapted to be secured to an element such as a curtain 17 of an automobile and is provided with spring jaws to interlock with the stud. The socket shown comprises a casing 19 secured to the curtains by means of prongs 21 clenched to a washer 23 and in the casing is housed a jaw structure 25 which may if desired take the form shown in detail in Fig. 5, consisting of a plate of the form shown providing two spring jaws 27. The socket member is provided with a stud-receiving opening 29 extending entirely through the same, so that if the stud is introduced from the right hand side in the figures the tip or head 13 will be exposed on the opposite side, as is illustrated. As will be well understood, the jaws 27 are presented at the margins of the opening 29 and when the stud is introduced into the socket the domed end thereof will spread these jaws apart and they will then snap in behind the shoulder 15 on the head, as shown in Fig. 2. Since in the present embodiment the shoulder is undercut and the outer face of the jaws 27 vertical, the interlocking will be positive. The inner face of the jaws may be beveled as indicated to facilitate the release of the stud in the manner next to be described.

To separate the parts of the fastener the head 13 of the stud is pressed inwardly, from the position of Fig. 2, axially of the stud proper 7. This is illustrated in Fig. 3. The shoulder 15 of the head will push inwardly the jaw member 25 and the edges of the jaws 27 will ride along the camming surface 11 and be spread outwardly. This movement is facilitated by the beveling of the inner faces of the jaws 27. By this action the jaws are spread apart until the opening between them is of a diameter to pass the shoulder of the head 13 and the stud is therefore ready for release. The parts are then in the position shown in Fig. 3 and

the undercut shoulder fits over the camming surface 11, so that a substantially smooth surface is provided without interruptions to catch the jaws as they are moved to the left from the stud. There may, however, be sufficient depression to catch the jaws and permit them to snap into place when the parts are put together and the head is not held positively pressed inward. The variance of a practical construction from the geometric ideal will provide for this.

My invention contemplates means for thrusting the displaced jaws over the head to separate the parts, and I have herein shown means for moving the entire socket member bodily from its locked position. For this purpose a suitable spring is provided working between the socket and the base of the stud or the element which supports the stud. I have herein shown a spring 29 secured to the washer 23 by means of the prongs 21 and adapted to bear on the base of the stud 7. Herein the spring is formed from a wire spiral, conical in form, and the terminal spires 31 are closely wound to provide a finish for the end of the spring which will furnish a firm bearing and prevent it from being accidentally caught on foreign objects. When the parts are locked in the position shown in Fig. 2, the spring is compressed, being held by the engagement of the jaws 27 behind the shoulder 15 of the stud. When these jaws are spread beyond the edge of the shoulder, as shown in Fig. 3, however, the spring is free to expand and will do so, as indicated in Fig. 4, moving the jaw structure, and indeed herein the entire socket, free of the stud. The manipulation of the head 13, therefore, not only releases the engagement between the stud and socket but automatically separates the two parts.

I am aware that kick-out springs have hitherto been embodied in separable fastenhead or no. The spring acts between the practical. To illustrate the advantages of my novel combination we may suppose that the fastener is used as a curtain fastener for automobiles. The stud 7, then, may be placed upon the body of the vehicle and the socket is placed upon the curtain. When the parts are engaged, the head 13 is presented at the outside of the curtain where it may be conveniently reached for manipulating pressure. It is not hidden in any way by the curtain itself. Furthermore, the manipulation of the stud to unlock the parts has no effect upon the spring 29 which is free to expand whether the finger is on the head or no. The spring acts between the fixed body of the automobile and the movable socket on the curtain which is not touched by the fingers in any way. There is thus no danger of the operator unintentionally neutralizing the effect of the kick-out spring. The manipulating pressure of the finger is taken up by the support of the stud 7.

I have herein illustrated and described one particular form of releasable interlocking fastener elements. It will be understood, however, that the particular design of the two coöperating members could be widely varied within the scope of my invention while still utilizing the novel combination exemplified in the illustrated construction. The features of novelty exemplified thereby which I desire to secure by Letters Patent I shall express in the following claims:—

1. A fastener comprising a stud, a socket having an opening extending entirely through the same and adapted to receive the stud from one side thereof, means carried by the socket for engaging the stud to secure the parts of the fastener together, a portion carried by said stud and presented at the opposite side of the socket manipulable to release the engagement of said means and resilient means normally tending to thrust the socket from the stud.

2. A fastener comprising a stud having a camming surface and an axially movable tip having an undercut shoulder adapted to fit said surface, a socket having jaw means to lock behind said shoulder and be forced thereby along said camming surface when the tip is pressed and resilient means for thrusting the jaw means past said shoulder when cammed beyond the same.

3. A fastener comprising a socket having a resilient jaw, a stud having a head behind which the jaw springs, said head being susceptible of manipulation from the side of the socket opposite to that from which the stud enters and being movable to displace the jaw and spring means for thrusting the displaced jaw over the head.

4. A fastener comprising a male member having a movable head and a female member having an opening extending through the same to pass the male member and formed to engage behind said head in one position thereof, movement of said head to another position serving to release such engagement and spring means to thrust the female member over the head.

5. A fastener comprising an interlocking stud and socket and manipulable means for releasing the interlocking engagement and a spiral spring carried by one of the elements and adapted to bear on the other, having a free end formed of closely arranged spires.

6. A fastener comprising an interlocking stud and socket and manipulable means for releasing the interlocking engagement and a conical spiral spring carried by one of the

elements and adapted to bear on the other, having a smaller free end formed of closely arranged spires.

7. A fastener comprising a female member having an opening extending entirely through the same, a male member adapted to enter the opening from the rear side and interlock with the female member, said male member presenting at the forward side a movable portion which when manipulated releases the interlocking engagement of the parts, and spring means acting on the rear side of the female member to thrust it off from the male member.

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

DAVID BOURQUE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Correction in Letters Patent No. 1,320,832.

It is hereby certified that in Letters Patent No. 1,320,832, granted November 4, 1919, upon the application of David Bourque, of Amesbury, Massachusetts, for an an improvement in "Separable Fasteners," an error appears in the printed specification requiring correction as follows: Page 2, strike out line 45 and insert the syllable and words *ers but the constructions have not been;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 9th day of December, A. D., 1919.

[SEAL.]

M. H. COULSTON,
Acting Commissioner of Patents.

Cl. 24—211.