No. 860,679. PATENTED JULY 23, 1907.

J. A. LEWIS.

SEPARABLE FASTENING DEVICE.

APPLICATION FILED NOV. 30, 1906.

Fig. 1.

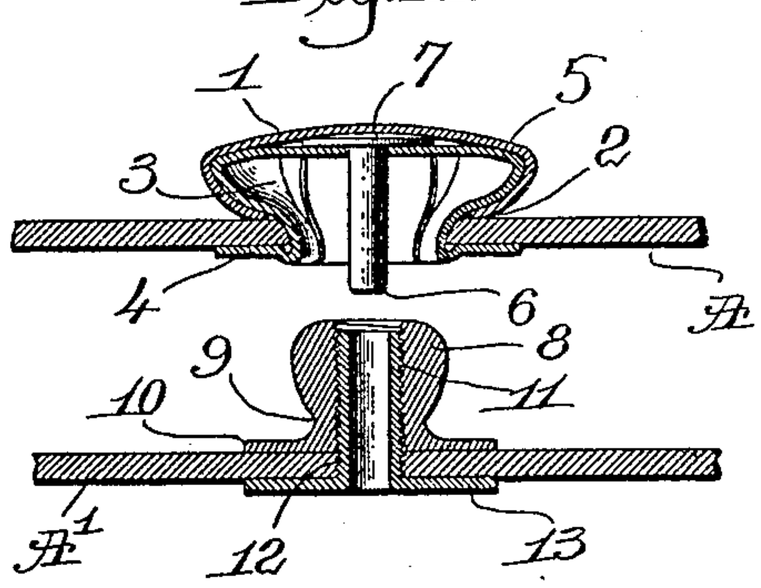


Fig. 2.

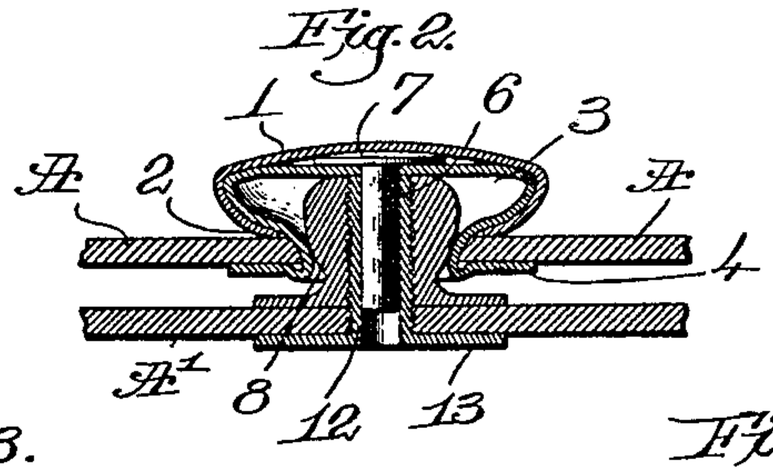


Fig. 3.

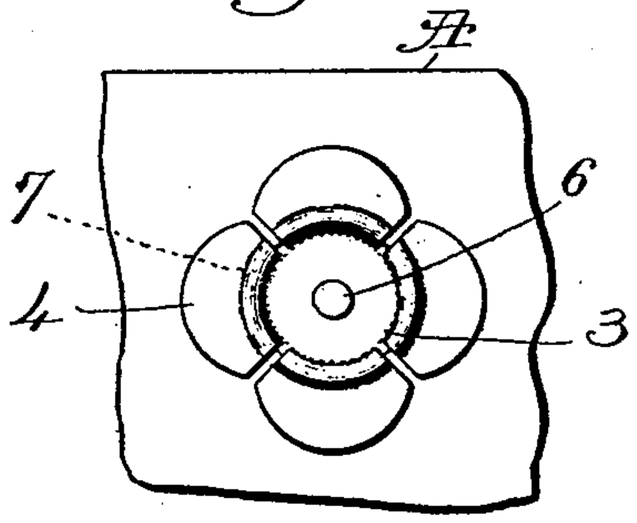


Fig. 4.

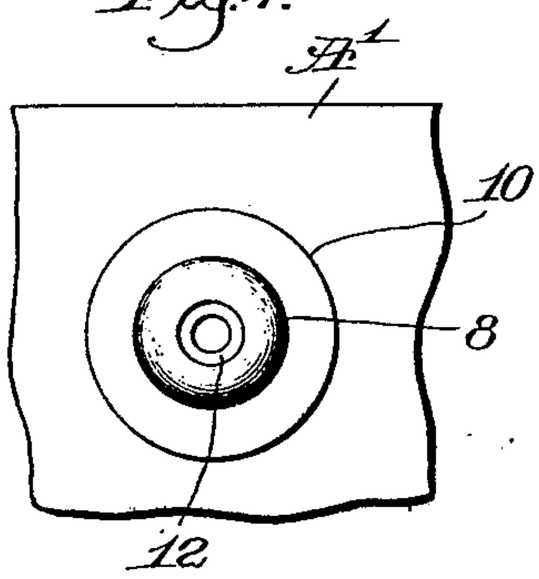
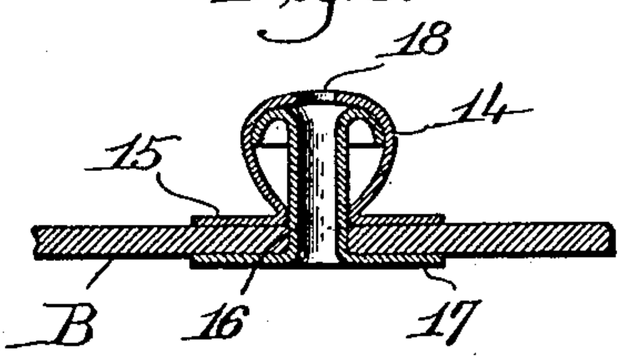


Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES A. LEWIS, OF WALPOLE, MASSACHUSETTS.

SEPARABLE FASTENING DEVICE.

No. 860,679. Specification of Letters Patent. Patented July 23, 1907.

Application filed November 30, 1906. Serial No. 345,625.

To all whom it may concern:

Be it known that I, JAMES A. LEWIS, a citizen of the United States, and a resident of Walpole, county of Norfolk, State of Massachusetts, have invented an Improvement in Separable Fastening Devices, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relates to separable fastening devices of the well-known ball and socket type, wherein one member of the device is provided with a suitable head adapted to enter and be held or gripped in the spring-socket of the coöperating member.

Fastening devices of this character are very largely used on gloves, clothing, and other articles when a convenient and serviceable snap fastening has been desirable, but such devices are open to the objection that very frequently they can be unfastened accidentally by a lateral pull or pressure. This is due to the fact that the ball and socket can turn or roll one upon the other by a lateral pull, sufficiently to draw the head out of the socket.

My present invention has for its object the production of a strong, simple and efficient fastening device of the general type referred to, so constructed and arranged that the members can be unfastened or separated only by means of a direct axial pull, and which are connected by simply inserting one in the other.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a greatly enlarged vertical sectional view of a separable fastening device embodying one form of my invention, the members of the device being separated or disconnected; Fig. 2 is a similar view but showing the members connected; Fig. 3 is a face view of the socket member; Fig. 4 is a top plan view of the coöperating ball member; Fig. 5 is a view similar to Fig. 2 of a modified form of the ball member, to be described.

In the embodiment of my invention illustrated in Figs. 1 to 4 inclusive the socket member is substantially of well known construction, and comprises a sheet metal cap 1 having its edge inturned at 2, into which is introduced a tubular rivet-like member having spring fingers 3, outturned at their free ends, at 4.

The cap is placed on one surface of the fabric A, the rivet-like member is passed through a hole in the fabric and upset or spread laterally, as at 5, Fig. 1, into the overturned edge of the cap, the ends 4 of the fingers bearing against the adjacent face of the fabric. The socket member is thereby secured firmly in place and presents a spring-socket having a contracted but expansible opening, and so far as described the socket member is not of my invention, but is well known in the art.

In accordance with my present invention I provide the socket member with a central or axially located pin 6, and this is conveniently held rigidly in place by inserting its flat head 7 between the cap 1 and the adjacent end of the rivet-like member, the pin passing through the latter, as shown. The free end of the pin preferably extends slightly beyond the opening of the socket, as best shown in Fig. 1.

I have shown the coöperating member of the fastening device as two-part, and in Figs. 1 and 2 it is adjustable to fabrics of different thickness, said member being shown as comprising a solid and strong ball-like head 8 connected by a reduced neck 9 with a thin, flat disk-like base 10, the head having an axial, threaded opening 11 therethrough. The base 10 rests on one face of the fabric A′ and is held thereon by the other part of said member, consisting of a tubular, threaded post 12 having a disk-like enlargement or base 13 which bears upon the adjacent face of the fabric, the post being screwed into the opening 11 of the head.

By screwing the post into the head 8 to the desired extent the fabric is firmly clamped between the two disks 10 and 13, as will be obvious, the ball member of the fastening device being thereby properly positioned, a considerable variation in thickness of the fabric being provided for by the adjustable structure described.

To connect the two members the head 8 is inserted or "snapped" into the socket, and at such time the pin 6 enters the post 11, the bore of which is just large enough to easily receive the pin without any play, the pin extending beyond the coöperating portions of the head and the spring-socket member, as shown in Fig. 2.

The spring-fingers 3 grip and frictionally hold the ball-like head 8, maintaining the members of the fastening device connected, and they can be disconnected only by a direct axial pull, for the coöperation of the pin 6 and post 7 prevent any turning movement of one member of the fastening device relatively to the other, and hence they cannot be accidentally disconnected by any lateral pressure or pull.

It will be manifest that the means for preventing relative tipping or turning of the two coöperating members of the fastening device is independent of the means by which said members are frictionally held together in coöperative relation.

A fastening device of the construction described cannot unfasten itself, while it is absolutely as easy to disconnect the members by a direct axial pull as with the ordinary ball and socket, or "snap" fasteners now in use.

By reason of the impossibility of my fastening device becoming disconnected accidentally by a lateral pull, or pressure, it is well adapted for use on shoes, as well as on any of the various articles on which fasteners of this general type are used.

In Fig. 5 I have shown a different form of ball member, the ball-like head 14 being made of sheet-metal and having a flattened, circular base 15, and a tubular rivet 16 is passed through the fabric B and upset within the head, the rivet-head 17 bearing against the adjacent face of the cloth. When so made the upsetting tool must have a stud or pin to pass through the hole 18 in the head and into the rivet, to prevent the latter from collapsing when upset.

The pin 6 of the socket member passes through the hole 18 of the head and into the rivet, the latter cooperating with such pin as does the post 12 in Figs. 1 and 2, and preventing any separation of the members of the fastening device by lateral pull or pressure.

My invention is not restricted to the precise construction herein shown and described, as the same is but one practical embodiment of my invention, illustrated and described in detail for explanation in order that the invention may be clearly understood.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A separable fastening device comprising a member having a flat base with a solid ball-like head thereon provided with a deep central opening, and a coöperating member having an expansible socket portion to receive and grip the head, the socket member having a rigidly attached pin to enter the opening in the head and prevent separation of the members by lateral pressure.

2. A separable fastening device comprising a member having a solid head connected therewith by a reduced neck and provided with an axial opening extended through the head and neck, and a coöperating spring-socket member to receive and grip the head and having a rigid, centrally located pin to enter the said axial opening and extend beyond the coöperating portions of the head and the spring-socket member.

3. A separable fastening device comprising a spring-socket member having a rigid, centrally located pin, and a two-part coöperating member consisting of a head portion having a threaded axial opening and an attaching portion having a hollow, threaded post to screw into the opening of the head and receive the pin when the head is inserted in the socket.

4. A separable fastening device comprising a member having a solid ball-like, axially apertured head, and a cooperating member having a plurality of spring gripping fingers to form a socket for the head, and a rigid pin within and independent of the fingers to enter the axial aperture of and extend substantially the length of the head.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JAMES A. LEWIS.

Witnesses:

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