ABSTRACT OF THE DISCLOSURE

A resilient member coupling first and second end portions to each other extends between first and second portions of material to which the first and second end portions are affixed and passes through end loops formed in the first and second end portions. The resilient member comprises a pair of rubber strings each having two end areas and a central area. The end areas are interlocked and positioned in the end loops formed in the first and second end portions and the strings cross each other in the central area thereof to form a figure 8.

DESCRIPTION OF THE INVENTION

The present invention relates to a resilient fastening device. More particularly, the invention relates to a fastening device for resiliently fastening a first portion of material to a second portion of material.

The principal object of the present invention is to provide a new and improved resilient fastening device.

And another object of the present invention is to provide a resilient fastening device which is adapted to be removably affixed to first and second portions of material.

Another object of the present invention is to provide a resilient fastening device of simple structure and great facility and reliability in use.

Another object of the present invention is to provide a resilient fastening device of facile and inexpensive manufacture.

Another object of the present invention is to provide a resilient fastening device for resiliently fastening first and second portions of material with rapidity, facility, reliability and efficiency.

Another object of the present invention is to provide a resilient fastening device which may be fastened and unfastened with great rapidity and facility.

Another object of the present invention is to provide a resilient fastening device which permits rapid and facile adjustment of the distance between portions fastened thereby and simultaneously provides sufficient tightness.

In accordance with the present invention, a fastening device for resiliently fastening a first portion of material to a second portion of material comprises a first end portion adapted to be removably affixed to the first portion of material. A second end portion is adapted to be removably affixed to the second portion of material. Each of the first and second end portions comprises a substantially thin strip of material folded over itself to form an end loop and has a surface adapted to be affixed to a portion of material and coated with adhesive for affixing such surface to the portion of material. The first and second end portions are separate and spaced from each other. A resilient member couples the first and second end portions to each other and extends between the first and second portions of material and passes through the end loops formed in the first and second end portions. The resilient member comprises resilient strings having two end areas and a central area. The strings cross each other in the central area thereof and are positioned in the corresponding end portions in the end areas thereof.

A strip of material is affixed to one of the first and second end portions at the end opposite that having an end loop formed therein for enabling the one of the end portions to be affixed to and removed from each of the first and second portions of material.

The resilient strings are of figure 8 configuration and comprise rubber. The resilient strings comprise a pair of rubber strings each having two end areas and a central area and a substantially U-shaped end loop formed in each end area. The end loop of each of the strings passes through the corresponding end loop of the other of the strings. One pair of interlocking end loops is positioned in the end loop formed in the first end portion and the other pair of interlocking end loops is positioned in the end loop formed in the second end portion. The interlocking end loops of the strings are held in position in the corresponding loops of the first and second end portions.

In order that the present invention may be readily carried into effect, it will now be described with reference to the accompanying drawing, wherein:

FIG. 1 is a top view of an embodiment of the fastening device of the present invention in its inoperative condition;

FIG. 2 is a top view of the embodiment of FIG. 1 in its operative condition in use joining first and second portions of material to each other.

FIG. 3 is an enlarged view of one end portion of the fastening device of the present invention, opened;

FIG. 4 is a sectional view, taken along the lines IV—IV of FIG. 2; and

FIG. 5 is a view of an embodiment of the resilient member of the fastening device of the present invention.

In the figures, the same components are identified by the same reference numerals.

The resilient fastening device of the present invention is an improvement over that disclosed in our United States Patent No. 5,403,427, issued Oct. 1, 1968. The resilient fastening device of the present invention, as shown in FIGS. 1 and 2, comprises a first end portion 11 adapted to be removably affixed to a first portion of material 12, a second end portion 13 adapted to be removably affixed to a second portion of material 14 and a resilient member 15 coupling the first and second end portions to each other and extending between said first and second end portions.

The first end portion 11 comprises a thin strip of material, greatly exaggerated in thickness in FIG. 4 of rectangular parallelogram configuration folded over on itself to form an end loop 16. The folded strip portion 11 comprises a first leg 11a and a second leg 11b which are fastened to each other by any suitable means such as, for example, cement or glue, to close the end loop 16. The first end portion 11 has an adhesive surface 17, that is, a surface on which there is a coating of adhesive material. The adhesive material on the surface 17 permits the first end portion 11 to be removably affixed to the first portion of material 12.

The first end portion 11 may comprise any suitable material such as, for example, thin pliant material of cellulose, plastic or any natural or artificial fibers. The length of the strip portion 11, extending in the direction of the arrows 18, the width of said strip portion, extending in the direction of the arrows 19, and the thickness of the said strip portion 21, may be of desired dimensions to suit the use to be made of the resilient fastening device.

At the time that the first end portion 11 is folded over on itself to form the end loop 16 and before the first and second legs 11a and 11b, respectively, thereof are fastened to each other, the resilient member 15 is positioned in the end loop 16 in a manner hereinafter described with reference to FIGS. 2, 3 and 5. In other words, the first end portion 11 is folded over on itself around the resilient member 15. The resilient member 15 comprises resilient
material such as, for example, rubber, of any suitable cross-sectional area. The second end portion 13 comprises a thin strip of material, greatly exaggerated in thickness in FIG. 4, of rectangular parallelogram configuration folded over on itself to form an end loop 22. The folded strip portion 13 comprises a first leg 13a and a second leg 13b which are fastened to each other by any suitable means such as, for example, cement or glue, to close the end loop 22. The second end portion 13 has an adhesive surface 23, that is, a surface on which there is a coating of adhesive material. The adhesive material on the surface 23 permits the second end portion to be removably affixed to the second portion of material 14.

The second end portion 13 may comprise any suitable material such as, for example, thin plant material of cellu-
lose, plastic or any natural or artificial fibers. The length of the strip portion 13, extending in the direction of the arrows 24, the width of said strip portion, extending in the direction of the arrows 25, and the thickness of the said strip portion 26, may be of desired dimensions to suit the use to be made of the resilient fastening device. The first and second end portions 11 and 13, respectively, may be identical with each other.

At the time that the second end portion 13 is folded over on itself to form the end loop 22 and before the first and second legs 13a and 13b, respectively, thereof are fastened to each other, the resilient member 15 is positioned in the end loop 22. In other words, the second end portion 13 is folded over on itself around the resilient member 15.

The resilient fastening device of the present invention has many applications and considerable utility such as, for example, in packing or wrapping any types or configurations of material, in resiliently maintaining a bandage or surgical dressing position on a person without slippage regardless of movement of the person, in resiliently maintaining another type of article such as, for example, a disposable diaper, on a baby, and the like. The first portion of material 12 and the second portion of material 14 may each be part of a bandage or a dressing loop, the first portion of material 12 and the second portion of material 14 may each be part of a disposable apron type article, or the like.

The first and second portions of material 12 and 14 are resiliently joined to each other by first pressing the first end portion 11 with its adhesive surface 17 against said first portion of material, and then pressing the second end portion 13 with its adhesive surface 23 against said second portion of material. The first end portion 11 then adheres to the first portion of material 12 and the second end portion 13 adheres to the second portion of material 14.

In accordance with the present invention, the resilient member 15 comprises a pair of rubber filaments, threads, strings or the like 15a and 15b. The rubber strings 15a and 15b, as shown in FIGS. 2 and 3, are looped with each other in the areas of both ends of each in a manner which provides a central loop between the first and second end portions 11 and 13.

One pair of end loops 15c are positioned in the end loop 16 prior to the closing of said end loop, as shown in FIGS. 3 and 4. The other pair of end loops 15d are positioned in the end loop 22 prior to the closing of said end loop as shown in FIG. 4.

Initially, after the first end portion 11 is affixed to the first portion of material 12, the second end portion 13 may also be readily removed and affixed either to said first portion of material and/or to said first end portion via a strip of material 27. The strip of material 27 is affixed to the second end portion opposite the end forming the end loop 22, as shown in FIGS. 1 and 2, and functions as a handy tab for affixing and removing said second end portion to either portion of material.

In the inoperative condition of the fastening device, as shown in FIG. 1, the adhesive-bearing surface 23 of the second end portion 13 is pressed to the first portion of material 12, the first end portion 11, or both and thereby removably maintains said second end portion 13 adjacent said first end portion. In the operative condition of the fastening device, as shown in FIG. 2, the strip of material 27 is pulled up from the first portion of material 12 so that the second end portion 13 is freed. The second end portion 13 is then twisted or turned through 180° so that the adhesive-bearing surface 23 of said second end portion may be pressed onto the surface of the second portion of material 14.

The twisting of the first and second end portions 11 and 13 180° relative to each other changes the ovalar, circular or elliptical configuration of the central loop formed in the resilient member 15 to a figure 8 configuration. The rubber strings 15a and 15b thus cross each other at the center 15e of the 8 (FIGS. 2 and 5). The removing, twisting and affixing operation is accomplished by the user with one hand and with considerable facility and rapidity because of the strip or tab 27.

The end loops 15c and 15d are held securely in their respective end loops 16 and 22, respectively, and cannot slip. The resilient member 15, as a result of elastic de-
formation, applies a sufficient pressure to draw the first and second portions of material to each other and thereby maintain said first and second portions of material in non-slippering relation to each other.

The first and second end portions 11 and 13 may be removably affixed to the first and second portions of material 12 and 14 without stretching the resilient loop 15, so that said first and second portions of material may be loosely fastened to each other. By positioning the first and second end portions 11 and 13 at different distances from each other, in the direction of the length thereof, the de-
gree of stretching and the degree of pressure applied by the resilient loop 15 may be varied from zero to a maxi-
mum.

Furthermore, one or both of the end loops 16 and 22 may be opened and the end loops 15c and 15d of the rubber strings 15a and 15b may be varied or adjusted to vary the distance between the first and second end por-
tions 11 and 13. This also permits adjustment of the tension or pressure applied by the resilient member 15 to the first and second portions of material 12 and 14.

The resilient fastening device of the present invention may thus perform the functions of any fastening device such as, for example, straight pins, safety pins, buttons and buttonholes, snap devices, pressure devices and the like, with the added advantages of adjustability of the tautness and pressure exerted by the fastening device, facility, rapidity, reliability and efficiency in use of the fastening device, simplicity of structure and facility and economy in manufacture.

Each of the first and second end portions 11 and 13 may comprise material of any desired configuration other than that of a rectangular parallelogram such as, for example, triangular, square or other geometric configuration. Also, the resilient member 15 may have any desired cross-sectional shape and may comprise any desirable combination and number of rubber strings.

The resilient member may be formed by shaping one of the rubber strings into a substantially W configuration opening in one direction and having two loops opening in the opposite direction and having two ends. The first and second strings are then inter-
locked by passing each end loop of each of the strings through the corresponding end loop of the other of the strings. The end loops are then held in position on the corresponding sheets of material 12 and 14. One of the pairs of end loops is then twisted 180° relative to the other to convert the central loop of the W's into a figure 8.

While the invention has been described by means of a specific example and in a specific embodiment, we do not wish to be limited thereto, for obvious modifications will
5 occur to those skilled in the art without departing from the
spirit and scope of the invention.

What we claim is:

1. A fastening device for resiliently fastening a first
portion of material to a second portion of material, said
fastening device comprising

a first end portion adapted to be removably affixed to
the first portion of material;

a second end portion adapted to be removably affixed
to the second portion of material, each of said first
and second end portions comprising a substantially
thin strip of material folded over on itself to form an
end loop and having a surface adapted to be affixed
to a portion of material and coated with adhesive
for affixing said surface to said portion of material,
said first and second end portions being separate and
spaced from each other; and

a resilient member coupling said first and second end
portions to each other and extending between said
first and second portions of material and passing
through the end loops formed in said first and second
end portions, said resilient member comprising resil-
ient string means having two end areas and a central
area, said string means crossing each other in the
central area thereof and being positioned in the cor-
responding end portions in the end areas thereof.

2. A fastening device as claimed in claim 1, further
comprising a strip of material affixed to one of said first
and second end portions at the end opposite that having an
end loop formed therein for enabling said one of said end
portions to be affixed to and removed from each of said
first and second portions of material.

3. A fastening device as claimed in claim 1, wherein
said resilient string means is of figure 8 configuration.

4. A fastening device as claimed in claim 1, wherein
said resilient string means comprises a pair of rubber
strings.

5. A fastening device as claimed in claim 2, wherein
said resilient string means comprises a pair of rubber
strings each having two end areas and a center area and
a substantially "U" shaped end loop formed in each end
area, and the end loop of each of said strings passing
through the corresponding end loop of the other of said
strings, one pair of interlocking end loops being posi-
tioned in the end loop formed in said first end portion and
the other pair of interlocking end loops being positioned
in the end loop formed in said second end portion.

6. A fastening device as claimed in claim 5, wherein
said strings cross each other in their central areas to form
a figure 8.

7. A fastening device as claimed in claim 6, wherein
the interlocking end loops of said strings are held in position
in the corresponding end loops of said first and second end
portions.

8. A method of making the resilient member of a
fastening device, comprising

shaping a first rubber string into substantially "U" con-
figuration opening in one direction and having two
end loops;

shaping a second rubber string into substantially "U"
configuration opening in the opposite direction and
having two end loops;

interlocking the first and second strings by passing each
end loop of each of the strings through the corre-
sponding end loop of the other of the strings; and

holding the end loops in position on corresponding
sheets of material to be affixed to each other.

References Cited

UNITED STATES PATENTS

3,403,427 10/1968 Asseo et al. 24—73

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