

Feb. 23, 1965

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3,170,213

CLASPING DEVICES

Filed July 31, 1962

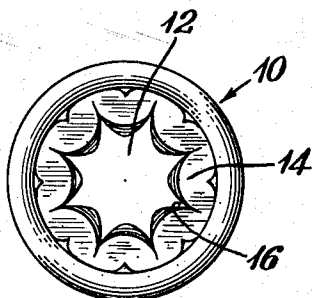


Fig. 1.



Fig. 2.

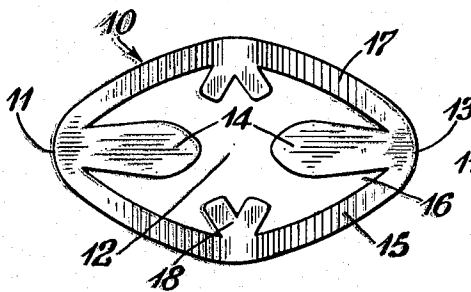


Fig. 3.

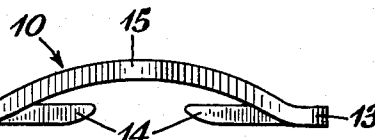


Fig. 4.

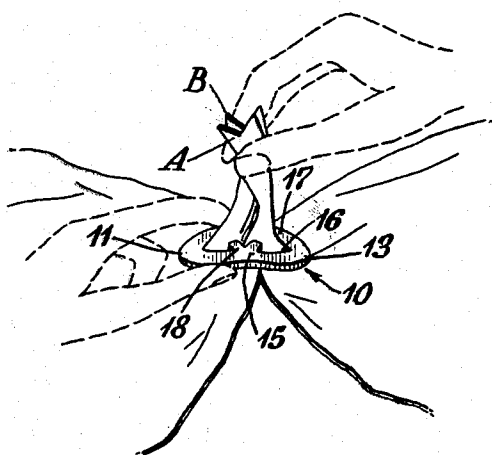


Fig. 6.

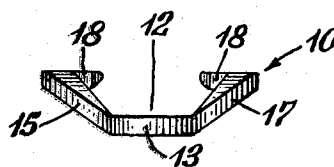


Fig. 5.

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CLASPING DEVICES

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Filed July 31, 1962, Ser. No. 213,665

7 Claims. (Cl. 24-255)

This invention relates to clasp devices and more particularly to clasp devices for securing the end portions of two or more layers of sheet-like material, such as plastic film, cloth, e.g., diaper material, etc. together.

The conventional penetrating fasteners such as pins, tacks and nails as well as metal eyelets, etc. employed for the above purpose, tend to tear through the material being fastened, and gripping devices are subject to the same difficulty, particularly when provided with serrated jaws. Further, there is an inherent danger in the use of any of the foregoing devices. For example, the conventional safety pin used to fasten diapers on an infant are safe only when closed, but are dangerous when in the open position necessary for its application. Furthermore, it is also essential to the operation of the safety pin in that it penetrates the layers of the material being fastened, which operation shortens the useful life thereof.

The main objects of the present invention are therefore to avoid the objections to penetrating fasteners, overcome the inoperativeness of other fasteners and provide a one piece clasp, which will effectively grip the end portions of two or more layers of material.

Another object is to provide a diaper clasp which can be applied without sticking the infant or attendant without penetrating the fabric of the diaper and which will grip the ends of a circumferential band formed by the diaper with sufficient tightness to provide a snug and comfortable fit to the waistline of the infant.

According to the present invention the clasp for fastening two or more layers of sheet-like material comprises a member centrally apertured, a plurality of lobes affixed to said member and extending therefrom into said aperture and in a plane substantially with said member, said lobes being separate and spaced one from the other and said aperture being completely open between each said lobe so as to receive respective ends of said material through said aperture and to fasten said material by snubbing action in the space between each said lobe.

The clasp may, therefore, be applied by placing the ends of each of the layers of material desired to be fastened into and through the aperture provided in the clasp and sliding the clasp down the layers of material until the material is dispersed snugly into each of the slots formed by the spaces between the respective lobes and the material is held secure to diverging pressure by a snubbing action.

In the drawings:

FIG. 1 is a plan view of the clasp according to the instant invention;

FIG. 2 is a side elevation of the clasp shown in FIG. 1;

FIG. 3 is a plan view of the clasp incorporating an embodiment of the present invention;

FIG. 4 is a side elevation of the embodiment shown in FIG. 3;

FIG. 5 is an end plan view of the clasp shown in FIGS. 3 and 4; and

FIG. 6 is a fragmentary elevation showing the method of applying the clasp of the instant invention.

The clasp shown in FIGS. 1 and 2 of the drawings comprises a member 10, having a central aperture 12. A plurality of solid lobes 14 are affixed to the member 10 and extend therefrom into the aperture 12 and are in a plane substantially with the member 10. The lobes 14 are separate and are spaced one from the other and the aperture 12 is completely open between each of the lobes 14 so as to receive respective ends of the material to be fas-

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tened through the aperture 12 and fasten such material by snubbing action in the space or slot 16 between each of said lobes 14.

It is preferred that the ends of the lobes 14 extending into the aperture 12 be about $\frac{1}{16}$ inch thick. It is also preferred that the end of each lobe extending into the aperture be somewhat rounded and/or bevelled so as to aid in the snubbing action. While the clasp shown in the drawings has smooth inner edges, it is within the scope of the invention that such edges be serrated, fluted, etc. or of any configuration which will aid in the snubbing action. As shown in FIGS. 1 and 2 it is also preferred that the outer periphery of the clasp be thicker than the remainder thereof so as to strengthen the clasp against transverse or bending stresses.

The clasp shown in FIGS. 2, 3 and 4 of the drawings illustrates an embodiment of the instant invention and comprises member 10 having a central aperture 12 and having opposite end portions 11 and 13 defined between the central aperture 12 and the respective end edges of the member. Narrow side rails 15 and 17 are provided on opposite sides of the aperture 10 and connect the end portions 11 and 13. On each of the end portions 11 and 13 is affixed a single lobe 14. Thus, each of the bridge-like side rails 15 and 17 provide an angle with each of the respective lobes 14. It is in the spaces or slots 16 formed by such angles that the material is wedged or snubbed in this embodiment so as to provide for the fastening of the material.

The clasp shown in FIGS. 3, 4 and 5 of the drawings also illustrates another embodiment of the present invention, that is, smooth barbs 18 affixed midway each of the side rails 15 and 17 and projecting into the aperture. Such barbs provide for the fastening of an additional layer of material. For example, when the clasp of the present invention is utilized to fasten a diaper about an infant's waist, the use of the above-mentioned barbs provide for the fastening of tabs, e.g., the tabs on an infant's undershirt, between the respective ends of the diaper being fastened.

The size of the lobes in the above embodiment is not critical but it is preferred that each end portion and lobe extend from the end edge of the member for a distance equal to between $\frac{1}{4}$ and $\frac{3}{8}$ of the over-all length dimension of the member. As above, the edge of each lobe may be bevelled, as well as the inner edge of the guard rails.

It is preferred that the embodiment of the clasp shown in FIGS. 3, 4 and 5 be oblong in configuration and that the side rails extend from the end portions and bridge upwardly therefrom at an angle of about 15 degrees.

The clasp of the instant invention can be made of any suitable material which will not cut or pierce the sheet-like material being fastened. Thus, while metal is suitable, the ends must be a thickness which will not result in an extremely thin lobe edge. The preferred materials for the manufacture of the clasp of the instant invention are moldable plastics or resins. Such preferred materials include acrylonitrile-styrene resins, phenolic resins, polyethylene, polystyrene, polystyrene-rubber modified compounds, styrene-acrylonitrile resins, polyamide, vinyl chloride and copolymer resins, and the like.

In operation, as shown in FIG. 6, end portions A and B of material to be fastened are placed adjacent each other and the clasp is grasped between the index finger. The ends of the material are brought to the underside of the clasp member 10, placed into the aperture 12 and are subsequently drawn through said aperture. The clasp is then slid down the material until the folds in the layers of material are tightly wedged within the slots formed by the spaces between the lobes affixed to the clasp member. The adjacent portions of the material within the clasp are thereby held secure by a snubbing action when

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divergent pressure is exerted to the respective portions of material outside the clasp.

Since certain obvious changes may be made in the clasping device without departing from the scope of the invention, it is intended that all matter contained herein be interpreted in an illustrative and not in a limiting sense.

What is claimed is:

1. A diaper clasp for gripping adjacent ends of a diaper comprising an inflexible plastic member having a centrally disposed, longitudinally extending aperture therethrough and having an outer periphery, said periphery being thicker than the remainder of said member so as to strengthen said clasp against bending stresses, a plurality of extending lobes affixed to said member so as to surround said aperture and extending therefrom a substantial distance into said aperture and lying in a plane substantially with said member, the free ends of said lobes being rounded and separate and closely spaced one from the other and said aperture being completely open between each free end of said lobe so as to receive said ends through said aperture and to securely fasten said ends therein by snubbing action in the space between each of said lobes.

2. A clasp as claimed in claim 1 in which the edge of each lobe extending into said aperture is bevelled.

3. A diaper clasp which will grip the end portion of a circumferential band formed by a diaper comprising an inflexible, moldable plastic member arched from one end edge to the opposite end edge, said member being centrally apertured and including opposite end portions defined between said central aperture and the respective end edges of said member and further including narrow side rail portions lying on opposite sides of said aperture bridging angularly upward between and connecting said end portions, a respective single lobe affixed to each of said end portions centrally of and at an edge thereof and extending therefrom midway between said side rail portions into said aperture and in a plane substantially with the end portions, said lobes being separate one from the other and said aperture being completely open between each said lobe and each said side rail portion between said lobes to receive respective ends of said material through said aperture and to fasten said material by snubbing action in the angle between each said lobe and each said rail portion.

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4. A clasp as claimed in claim 3, in which a plurality of smooth barbs are affixed midway each of said side rails, said barbs projecting into said aperture.

5. A clasp as claimed in claim 3, in which each said end portion and lobe extend from the respective end edge of said member for a distance equal to between $\frac{1}{4}$ and $\frac{3}{8}$ of the over-all length dimension of said member.

6. A clasp as claimed in claim 3, in which an edge of each of said lobes is bevelled.

7. A diaper clasp which will grip the end portion of a circumferential band formed by a diaper around an infant's waist comprising an oblong moldable plastic member arched from one end edge to the opposite end edge, said member being centrally apertured and including opposite end portions defined between said central aperture and the respective end edges of said member and further including narrow side rail portions lying on opposite sides of said aperture bridging upwardly at an angle of about 15 degrees between and connecting said end portions, a respective single unpointed lobe affixed to each of said end portions centrally of and at an edge thereof and extending therefrom midway between said side rail portions into said aperture and in a plane substantially with the end portions, said lobes being separate one from the other and said aperture being completely open between each said lobe and each said side rail portion between said lobes to receive respective ends of said material through said aperture and to fasten said material by snubbing action in the angle between each said lobe and each said rail portion.

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