March 2, 1954 C. A. SIECK, JR 2,670,514

DIAPER CLASP

Filed Dec. 12, 1951

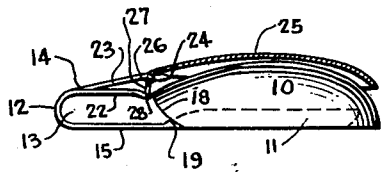


FIG. 1

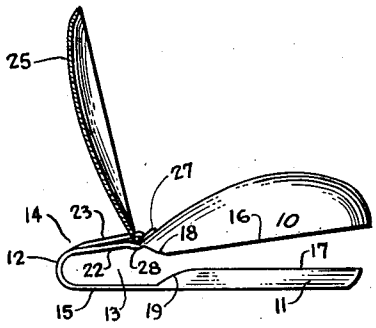


FIG. 2

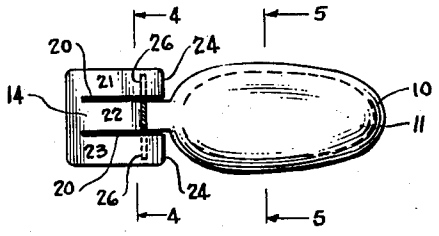


FIG. 3

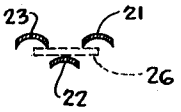


FIG. 4

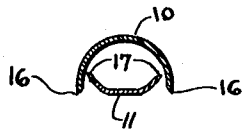


FIG. 5

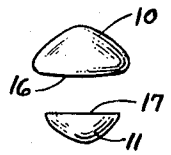


FIG. 6

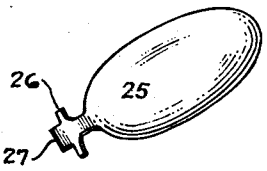


FIG. 7

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DIAPER CLASP

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3 Claims. (Cl. 24—243)

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The present improvements relate to removable fastening devices and more particularly to that type of clasp which is manually applied to clothing when in several plys, by enveloping the edges and being locked by a cam and lever member.

It is significant that, in the practice of securing diapers about the body of a child, the ancient expedient of the common safety pin has been in universal use, without a satisfactory substitute having been adopted. Such pins expose both the baby and mother to inadvertent and unintentional piercing of the skin by the sharp point of the pin, when applying or removing the diaper, and at times when the pin is accidentally unlatched. Moreover, the repeated application of the pin through the diaper material tends to speedily depreciate it by tearing the cloth.

The present improvements are designed to provide a clasp for securing diapers which will overcome the foregoing objectionable features.

Important objects of the improvements are the provision of a releasable clasp having semi-rigid, yet yielding and resilient features throughout; having corrugated or fluted portions for added strength; having cupped, concave and dished complementary jaws designed to nest within one another; having a U-shaped bight portion defining a two or three ply recess for receiving edges of the diaper, and defining, in addition, a further "form fitting," gripping region supplementing that of the jaws.

A still further object of the invention is the provision of a novel diaper clasp which envelops the cloth throughout the entire length of the clasp, and effects a positive grip on the cloth and insures against accidental release. A clasp with no obstructing edges, to facilitate application and removal, constitutes a further object.

Inasmuch as a baby exerts sudden jerks or pulls on the diaper in all directions when kicking or otherwise, the present improvements are designed to resist accidental release and removal of the clasp against pulls in all directions.

The provision of a flat or thin-dimensioned diaper clasp, having jaws and a lever member provided with rounded and stream-lined surfaces and contours is another object of the invention.

A further object of the invention is the provision of a clasp which is peculiarly adapted to secure two or more layers of cloth to one another and will, therefore, accommodate various thicknesses of diaper, and a clasp which will yield, should excess pressure be exerted on the jaws resulting from increased thickness of diaper.

The provision of a novel collar or sleeve-like structure for receiving the trunnion of the cam

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lever member, constitutes a further object of the improvements.

These and other objects will be apparent as the description proceeds, upon reference to the accompanying drawings in which—

Fig. 1 is a side elevation of one form of the improvements, showing the clasp in locked position, one part shown in section.

Fig. 2 is a side elevation of the structure of Fig. 1, with the parts in open, unlocked position.

Fig. 3 is a top plan view, looking down on Fig. 2, with the cover cut off, for convenience in illustration.

Fig. 4 is a section on line 4—4 of Fig. 3, showing the location of the axle in dotted lines.

Fig. 5 is a section on line 5—5 of Fig. 3.

Fig. 6 is an end view of the clasp, looking from right to left in Fig. 2.

Fig. 7 is a plan view of the cam and lever member, showing this L-shaped member slightly distorted for convenience in illustration.

In the drawings, the clasp proper is stamped out of resilient and yielding metal in one piece, folded upon itself to provide three primary parts—viz., the upper jaw 10, the lower jaw 11 and the bight section 12 which joins the jaws in a U-shaped form defining an open sided recess 13 hereinafter described. The recess is further defined by arm portions 14 and 15.

As seen in Figs. 2, 5 and 6, the upper and lower jaws 10 and 11 are concave or dished throughout their contour, so as to provide inwardly extending gripping flanges 16 and 17. The flange 16 on jaw 10 extends about the entire periphery, except for a minor area where it joins the U-shaped bight section. The flange 17 on jaw 11 also extends about the entire periphery except for a minor area where it joins the U-shaped bight section. The edges of these flange portions are tapered to a fairly sharp edge, and are preferably substantially elliptical in outline, as defined in certain of the claims. However, where these edges approach the U-shaped bight region defining recess 13, the flanges recede to the plane of the arms 14, 15, of the U-shaped recess, and provide edges 18 and 19 as hereinafter referred to.

Upon reference to Figs. 1 and 5, the lower jaw 11 is smaller in its perimeter, so that it will telescope or nest within the upper jaw 10. It will be seen from these views, wherein the jaws are held in closed position, that the lower jaw is nested within a plane passing through the edge of the flange portion 16 of upper jaw 10.

As an integral part of the one piece resilient sheet-metal clasp, the upper arm 14 defining the

U-shaped recess is cleft or split at 20, 20, to provide resilient or yielding finger members 21, 22 and 23. These members are fluted, as illustrated, in Fig. 4, to provide added strength. The yielding member 22 is a continuation or extension of jaw 10, while finger members 21 and 23 are struck from the metal and disposed in a plane above the plane of member 22 as seen in Fig. 4. The free ends of fingers 21 and 23 are crimped downwardly at 24, to define a collar or sleeve-like area for confining the axle 26 of the lever. These elements 24, along with the forked arrangement of members 21, 22 and 23, provide a yielding chamber or sleeve for holding the axle under tension.

A cam and lever arrangement comprising an L-shaped lever arm 25 is provided. Upon reference to Fig. 7, this element is provided with a trunnion or axle 26 and a cam 27. The body of the lever 25 is dished throughout so as to effect a stream-lined hood or cover over the clasp, when the clasp is in locked position. This insures against any entanglement with the cloth of the diaper.

In assembled, unlocked position, the lever 25 is up-standing with respect to the clasp, with axle 26 yieldingly held and disposed between members 21, 22, 23 and 24, as seen in dotted lines on Figures 2 and 4. The cam 27, as seen in Fig. 2 is disposed and held against upper jaw 10. Upon depressing the lever 25, from the position in Fig. 2 to that of Fig. 1, the cam 27 rides downwardly into a minute trough 28, provided in member 22, and this action depresses jaw 10 toward jaw 11. As the cam 27 approaches dead center, and passes slightly beyond dead center, it compresses the jaws 10 and 11 to complete nested position (as seen in Figs. 1 and 5) and the cam 27 rests in the trough 28 with the lever 25 engaging the upper face of jaw 10, and enveloping its forward and side portions.

The lower arm 15, defining the U-shaped recess 13, is integral with the jaw 11 and, as heretofore described, cooperates to form bight portion 12. As seen in Fig. 1, wherein the clasp is illustrated in closed, locked position, the edges 18 and 19 (which are provided on both sides of the jaws) define a closed gripping barrier, so that the bight 12, arms 14 and 15 and edges 18 and 19 serve to enclose folds of cloth within the open-sided recess 13.

In actual use, the clasp is held in one hand in open position as seen in Fig. 2, and the diaper folds or plys are held in the other hand. The open jaws 10 and 11, defining the mouth of the clasp, are sleeved over the diaper folds until the bight and recess of the clasp are engaged and occupied by the folds. The entire length of the jaws, as well as the U-shaped recess and bight, are all now enveloping the folds of cloth.

The lever 25 is now depressed, and the cam 27 applies pressure to the jaws, causing them to engage and grip the diaper folds there-between and, as the final locking position of the lever and cam is reached, the diaper folds are pressed into a tortuous contour between the biting edges of the jaws, which exert a claw-like grip on the cloth. This anchors the folds in secure lapped position, and resists slippage or accidental release.

At the same time, the edges 18 and 19, defining an enclosure for the diaper edges within recess 13 (as seen in Fig. 1) exert an additional claw-like grip on the diaper folds, and further resist pulls or strains in directions longitudinally of the clasp.

The design of these various gripping flanges and gripping regions is such as to prevent dislodgement of the clasp or clasps, by movements of the wearer, and insure a tight bond between the lapped material, such as always occurs in the use of diapers.

It is apparent that the yielding features of the jaws, bight portion and bight arms and fingers permit the clasp to be accommodated to various plys of cloth, as well as various thicknesses of diaper material. It has been shown in practice that these yielding or resilient features contribute to the use and application of the clasp in a variety of different environments.

Moreover, the streamline design and contour is such as to protect the wearer or attendant from any harm or accidental injury.

The assembly of the lever 25 (as seen in Fig. 7) within the sleeve or collar structure of the clasp, is greatly facilitated because of the yielding character of the members 21, 22 and 23. The trunnion or axle 26 may be sprung or snapped under the crimped ends 24 and secured within the sleeve area which is defined by the forked arrangement of members 21, 22 and 23. These parts, being resilient, exert a spring tension on the axle or trunnion 26 so that element 26 is held taut during all position of rest and movement. Moreover, the yielding characteristics of all parts of the clasp enable the lever and cam to function efficiently, regardless of whether the jaws and recess may be over-crowded with an apparent excess of folds of cloth. It is evident that the present improvements are especially designed to protect the skin of the infant from injury or chafing. It is apparent that, when the clasp is locked in closed condition, the folds of diaper extending around flange 16, form rounded and protruding areas which engage the child's skin, and thereby keep the metal face of jaw 11 away from the child's body.

Modification of the present improvements may be made without departing from the scope of the invention. For example, upon reference to Fig. 3, it will be seen that the slits 20, 20, terminate just short of the bight portion 12. However, the present improvements contemplate extending these slits into the curved portion of bight 12, and part way down the end to about the middle of portion 12, in order to afford greater resiliency. The extent to which these slits 20, 20, may extend depends largely on the type and character of the metal available for making the clasp.

Furthermore, it is apparent that the trough 28 in member 22 may be located at any one of a plurality of points, without departing from the invention.

These and other modifications of the invention may be devised and adopted, without departing from the purview and scope of the improvements.

What I claim is—

1. In a lever-cam actuated clasp, a one piece metal blank folded intermediate its ends for defining a bight portion and complementary jaw members integral therewith, a pair of fingers struck from the bight portion of one of said jaws, each of said fingers flanking the main bight portion of the jaw member, said fingers having sections spaced from the said main bight portion and coacting therewith to provide a sleeve to accommodate a trunnion of a lever.

2. In a lever-cam actuated clasp, a one piece resilient metal blank folded intermediate its ends for defining a bight portion and complementary jaw members integral therewith, a pair of resilient fingers struck from the bight portion of one

of said jaw members, each of said fingers flanking the main bight portion of the jaw member, said fingers being flared away from said bight portion and terminating in crimped ends for coacting with said bight portion to provide a sleeve.

3. In a lever-cam actuated clasp, a one piece metal blank folded intermediate its ends for defining a bight portion and complementary jaw members integral therewith, a pair of fingers split from the bight portion of one of said jaw members, each of said fingers flanking the main bight portion of the jaw member, said fingers being flared away from said bight portion and terminating in crimped ends for coacting with said bight portion to provide a sleeve.

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