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DIAPER CLIP

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7 Claims

ABSTRACT OF THE DISCLOSURE

A diaper clip comprising a stationary jaw, a movable jaw having pivotal movement with relation to the said stationary jaw, a curved, spring hinge piece integrally formed with the stationary jaw and a lock pivotally connected to the said hinge piece. The lock overlies the movable jaw and is operable to lock the movable jaw in spaced, parallel relationship with the stationary jaw, the said spring hinge positively urging the locking action between the lock and the movable jaw.

The present invention relates to the general field of fabric fasteners, and more particularly relates to an easily openable clip suitable for use with baby diapers.

It is well known that diapers are generally employed as garments for babies. Such garments are fabricated of materials that are readily moisture absorbent and that are easily washable. In view of the necessary frequency of changes and the fact that the skin of babies is extremely delicate, prior workers have sought better methods of applying diapers to the bodies of infants to both assure safety to the infant and to permit rapid changing of the diapers.

In order to find better ways of solving the problem, prior workers in the field have attempted to alter the conventional design of diapers to thereby permit interfolding the material to thereby eliminate all need for pins, clasps or other fastening devices. Such methods have generally met with failure inasmuch as the folding operations were either too cumbersome, complicated or too unreliable to produce a satisfactory result. Others have attempted to elasticize portions of the diapers to thereby eliminate the need for mechanical fastening devices. Such constructions have generally proved unsatisfactory inasmuch as the elasticized portions are relatively expensive to manufacture and have a very short life span in view of the frequency of washing required and the sterilization procedures necessary when laundering baby diapers.

Despite all of the efforts of prior workers in the field, the fastening device found most satisfactory and in most frequent use at the present time comprises an oversized safety pin that applies directly through the diaper fabric to thereby suitably drape the diaper garment to the body of a baby. The major drawback of the present oversized safety pin resides in the fact that a sharp point must be provided in order to easily pierce the diaper fabric with the pin point when applying the diaper to the body of a baby. In view of the delicate nature of the skin of an infant, this point presents a problem when first inserting it through the fabric in that extreme care must be exercised to make sure that the pin does not contact the body of the baby. Also, the safety pin arrangement presents a problem after application inasmuch as occurrences have been reported wherein the pin somehow opened after the garment was applied to the body of a baby and the exposed point was thus available to cause harm. Such possibilities have caused moments of anxiety to all parents. All of the above problems can readily be overcome and avoided through the use of a diaper clip designed and constructed in accordance with the instant invention.

It is therefore an object of the present invention to provide an improved device of the type set forth.

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It is a further object of the present invention to provide a novel diaper clip that completely eliminates the need for exposed, pointed members.

It is a further object of the present invention to provide a novel diaper clip comprising a single stationary portion and two interconnected moving portions that may be readily operated by one hand for diaper fabric fastening purposes.

It is another object of the present invention to provide a novel diaper clip including a stationary jaw and a movable jaw, the said jaws incorporating fabric gripping fastening means therebetween.

It is another object of the present invention to provide a novel diaper clip wherein all of the parts are dipped in a nontoxic, water-proof, rust-proof bath to thereby prevent injury to the skin of an infant.

It is a further object of the present invention to provide a novel diaper clip including a spring metal hinge piece which serves to make the clip operation manually adjustable for tighter or looser connection as required by the fabric thickness.

It is a further object of the present invention to provide a novel diaper clip including construction avoiding all sharp points, corners, bends or similar possibly harmful configurations.

It is another object of the present invention to provide a novel diaper clip that is inexpensive in manufacture, simple in construction and trouble-free when in use.

Other objects and a fuller understanding of the invention will be had by referring to the following description and claims of a preferred embodiment thereof, taken in conjunction with the accompanying drawings wherein like reference characters refer to similar parts throughout the several views and in which:

FIG. 1 is an exploded, perspective view of a diaper clip constructed in accordance with the present invention.

FIG. 2 is a side elevational view of the diaper clip in open position.

FIG. 3 is a side elevational view of the diaper clip in closed position gripping a portion of the diaper therein.

FIG. 4 is a top plan view of the diaper pin of FIG. 3 in closed position.

FIG. 5 is a bottom plan view, partially broken away to expose the interior construction.

Although specific terms are used in the following description for the sake of clarity, these terms are intended to refer only to the particular structure of my invention selected for illustration in the drawings, and are not intended to define or limit the scope of the invention.

Referring now to the drawings, I show in FIG. 1 the construction of my novel diaper clip 10 including a fixed jaw 12 which terminates at one end thereof in an integral, spring hinge 14. The hinge 14 is provided with means for receiving in operating engagement therewith the movable jaw 16 and the movable lock 18.

As best seen in FIGS. 2 and 3, the movable jaw 16 may be pressed from a single sheet of metal and is rolled at one end thereof to form a transverse bearing 20 for pivotal movement about the spring hinge 14. The transverse edges 24, 26 of the jaw 16 are bent and shaped during the stamping operation to form a plurality of fabric grippers 28 which extend at right angles to the general plane of the jaw 16 and face in the direction of the fixed jaw 12 to thereby grip the fabric 30 therebetween when the movable jaw 16 is locked in spaced, closed relationship with the fixed jaw 12. See FIG. 3.

The movable lock 18 is formed to a generally L-shaped configuration comprising a lever arm 32 and a locking leg 34 disposed at right angles thereto. A bearing 36 transversely forms at the junction 38 between the lever arm 32 and locking leg 34 and receives the pin 40 in rotary engagement therein. When necessary, a fillet piece 42 of gen-

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erally triangular configuration may be provided between the lever arm 32 and the locking leg 34 for structural considerations to provide the required strength to permit the movable lock 18 to function about the pin 40 for locking the movable jaw 16 into operating relationship with respect to the fixed jaw 12.

The spring hinge 14 is fabricated from a flat, spring steel material and may be integrally formed with the fixed jaw 12. As best seen in FIG. 1, the spring hinge 14 arcuately curves above the jaw 12 to a generally semi-circular cross-sectional configuration of transversely flat construction. The diameter of the cross-sectional configuration may be increased by using a pair of pliers of the like to adjust for any thickness of diaper fabric to be employed. Generally, it is contemplated that the configuration of the hinge 14 will be established during the construction and that no field adjustments will be required. However, it is pointed out that adjustments may be made after fabrication to thereby render the clip universally acceptable under all operating conditions.

A pair of pin bearings 44, 46 integrally medially depend from the top of the spring hinge 14 to rotatively receive the pin 22 therein. Thus, the movable jaw 16 pivots about the hinge connected pin 22 and pivotally moves with respect to the fixed jaw 12. Similarly, the movable lock 18 hingedly connects to the spring hinge 14 by means of the pin 40 which positions in the inwardly directed, end positioned, spring hinge connected pin bearings 48, 50. As best seen in FIGS. 2 and 3, the pin 40 supports to the spring hinge 14 at the bearings 48, 50 and pivotally hinges the movable lock 18 at the junction bearing 36.

In order to use the invention, the movable lock 18 is first rotated in a clockwise direction, thereby rotating the locking leg 34 out of contact with a movable jaw 16. It should be noted that the lever arm 32 terminates outwardly in an upturned edge 52 which bends away from the jaw 16 to thereby provide a convenient lift to thus enable the clip to be readily opened simply by applying an upward pressure at the upturned edge 52. As best seen in FIG. 2, the clockwise rotation of the movable lock 18 frees the locking leg 34 from contact with the movable jaw 16, thereby permitting the movable jaw 16 to rotate about its bearing pin 22 also in a clockwise manner to thus provide an enlarged fabric receiving opening 54 between the fixed jaw 12 and the movable jaw 16.

The two thicknesses of fabric 30 to be joined together are then introduced into the opening 54 up to the underside 56 of the spring hinge 14 to thereby keep the amount of clip exposed above the edge of the fabric to a minimum. With the two pieces of fabric to be joined thus positioned, the movable lock 18 then rotates about its bearing 36 and the inserted pin 40 in a counterclockwise direction upon the application of a counterclockwise force upon the lever arm 32. The end of the locking leg 34 then contracts the movable jaw 16 and also urges it in a counterclockwise rotation about its bearing 20 and the bearing pin 22, thus closing the fabric receiving opening 54. As best seen in FIG. 3, the locking leg 34 turns past the perpendicular position with respect to the movable jaw 16 and a position approximately sixty degrees from the movable jaw 16 when the lever arm 32 rotatively bottoms against the lower portion of the movable jaw 16 to positively lock the movable jaw in position. It is thus observed that it is impossible to move the jaw 16 relative to the fixed jaw 12 until the movable lock 18 is rotated in a clockwise direction which may be easily accomplished by utilizing the upturned edge 52. As can best be observed in FIG. 3, when the movable lock 18 rotates to its locked position, the fabric grippers 28 impress into the fabric 30 and grip the fabric tightly between the jaws 12, 16. In this manner, once the lock 18 is rotated to its locked position, the fabric 30 is tightly gripped between the jaws 12, 16 and the fabric grippers 28 prevent the fabric from pulling free of the diaper clip

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10 until such time as the jaw 16 is released by counterclockwise rotation of the movable lock 18. It should be observed that once the locking leg is turned in a clockwise direction past the perpendicular with the movable jaw 16, a positive lock is established which can only be broken by deliberate counterclockwise rotation of the lever arm 32. Such counterclockwise rotation pushes against the bias of the spring hinge until the locking leg 34 is rotatively carried past the perpendicular position with the movable jaw 16.

In order to prevent oxidation of the metal, chafing of the baby's skin or other forms of irritation, after fabrication, all of the parts may be dipped in a nontoxic, waterproof, rust-proof material such as liquid rubber or liquid vinyl plastic. The coating material thus applied also serves to prevent slipping of the fabric 30 with respect to the jaws 12, 16.

Although I have described my invention with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

What is claimed is:

1. In a fabric clip for fastening adjacent pieces of material the combination of

(A) a fixed jaw having a pair of spaced, longitudinal edges,

(1) said fixed jaw terminating at one said edge in an open end, and

(2) said fixed jaw terminating at the other said edge in a spring hinge connection;

(B) a spring hinge of generally hollow semicylindrical configuration,

(1) said spring hinge having one closed edge and one open edge,

(a) said closed edge connecting to the said spring hinge connection of the said fixed jaw,

(2) said spring hinge medially carrying a pair of movable jaw pin bearings, and

(3) said spring hinge carrying at the open edge thereof a pair of movable lock pin bearings;

(C) a movable jaw having pivotal motion with respect to the said fixed jaw,

(1) said movable jaw terminating at one end thereof in an open end,

(a) said open end being spaced from the said open end of the fixed jaw, and cooperating therewith to form a fabric receiving area,

(2) the said movable jaw terminating at the other end thereof in a pin bearing,

(a) said pin bearing serving to connect the said movable jaw to the said medially positioned movable jaw pin bearings provided on the said spring hinge;

(D) a movable lock rotatively carried at the open end of the said spring hinge,

(1) the said movable lock being counterclockwise rotatable to a locked position and being clockwise rotatable to an open position,

(2) said movable lock being carried in the said movable lock pin bearings affixed to the said spring hinge,

(3) said movable lock being generally L-shaped in configuration,

(a) said movable lock including an elongated lever arm and a shortened locking leg respectively displayed on either side of a transverse pin bearing at substantially right angles to each other,

(4) said movable lock being provided with means to urge the said movable jaw toward the said fixed jaw and to lock the said movable jaw.

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2. The invention of claim 1 wherein the said spring hinge is constructed of spring material to thereby vary the distance between the fixed jaw and the movable lock bearing upon rotation of the said movable lock.

3. The invention of claim 1 wherein the movable jaw is provided with a plurality of fabric grippers, the said fabric grippers facing in the direction of the said fixed jaw.

4. The invention of claim 1 wherein the said locking leg pivots the said movable jaw toward the said fixed jaw when the said lever arm is rotated in a clockwise direction.

5. The invention of claim 1 wherein the said locking leg pivots the said movable jaw toward the said fixed jaw when the said lever arm is rotated in a clockwise direction, and wherein the locking leg turns past the perpendicular with the said fixed jaw when in the said locked position,

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6. The invention of claim 1 wherein the said locking leg pivots the said movable jaw toward the said fixed jaw when the said lever arm is rotated in a clockwise direction, and wherein the bias of the said spring hinge serves to lock the said movable lock in the said locked position.

7. The invention of claim 1 wherein both the locking leg and the lever arm of the movable lock contact the said movable jaw when in the said locked position.

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