Aug. 6, 1968 J. G. WHALEN ET AL 3,395,707

CONVERTIBLE DIAPER

Filed March 7, 1966 2 Sheets-Sheet 1

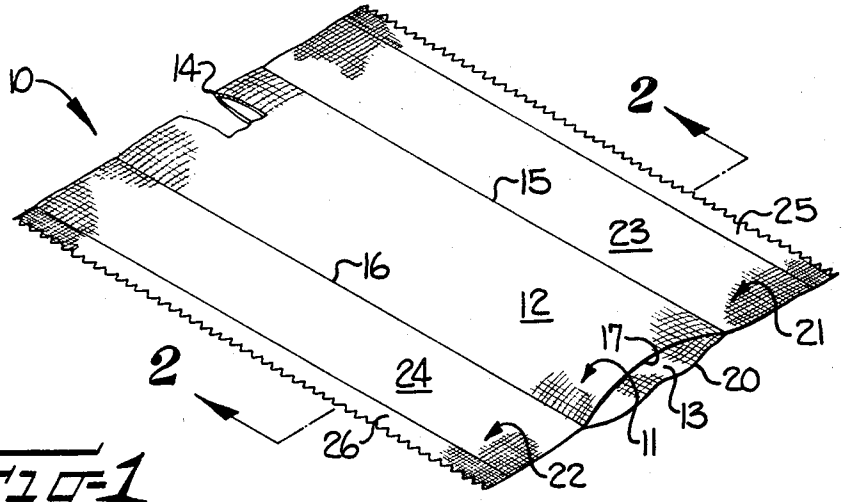


Fig-1

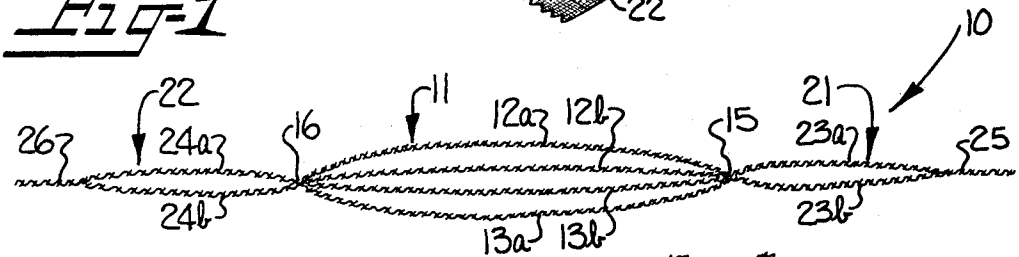


Fig-2

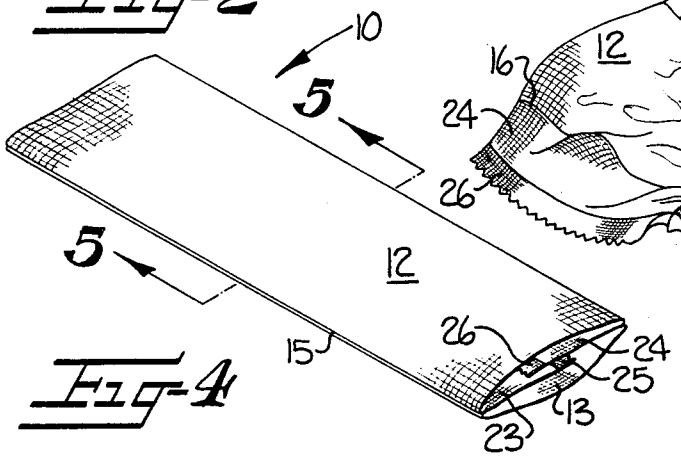


Fig-4

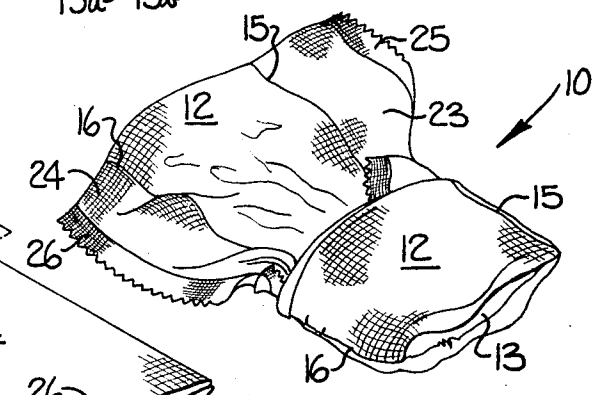


Fig-3

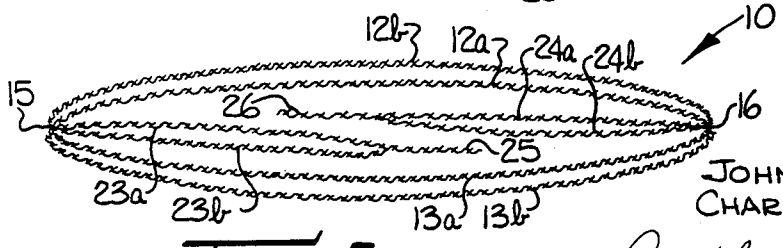


Fig-5

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Aug. 6, 1968 J. G. WHALEN ET AL 3,395,707

CONVERTIBLE DIAPER

Filed March 7, 1966 2 Sheets-Sheet 2

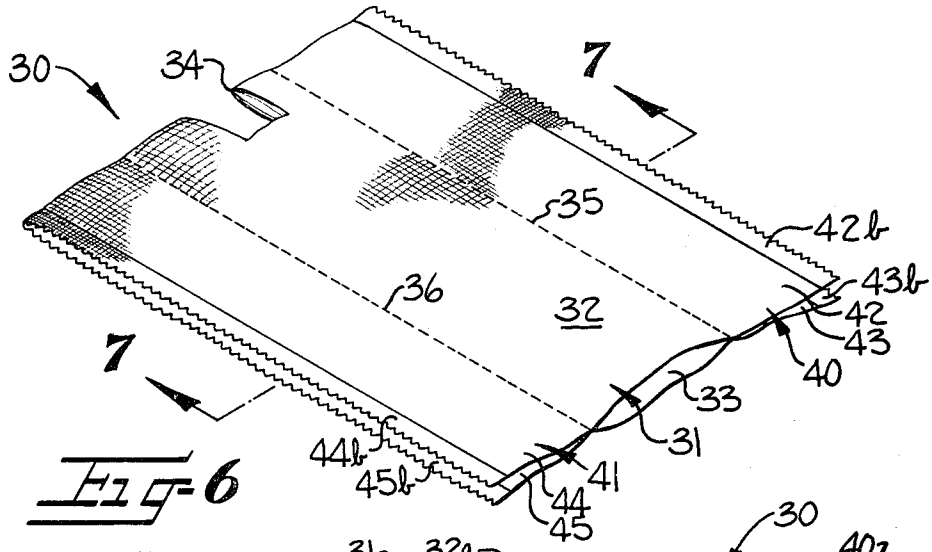


Fig-6

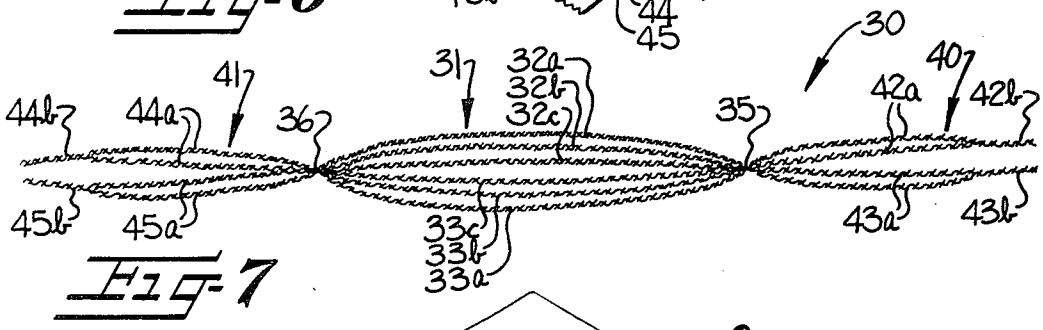


Fig-7

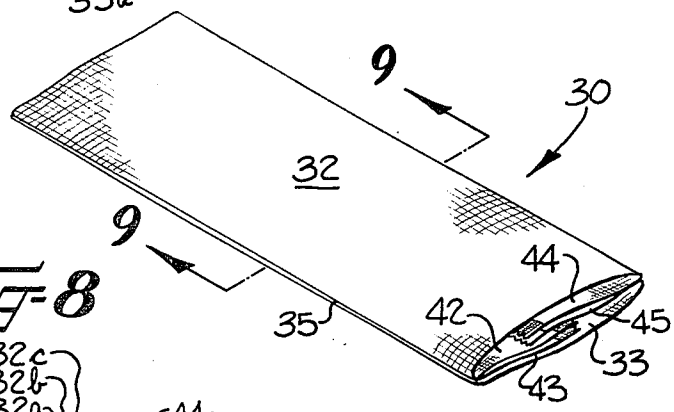


Fig-8

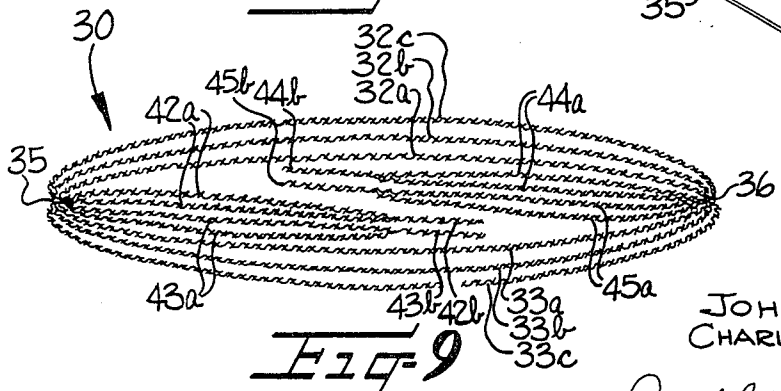


Fig-9

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United States Patent Office 3,395,707 Patented Aug. 6, 1968

3,395,707

CONVERTIBLE DIAPER

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Continuation-in-part of application Ser. No. 463,507, June 14, 1965. This application Mar. 7, 1966, Ser. No. 532,257

10 Claims. (Cl. 128—284)

ABSTRACT OF THE DISCLOSURE

A diaper constructed for selective use in one form on a small infant and in another form on a larger infant, and wherein the diaper is formed with a tubular central portion having an open end for permitting turning the diaper inside out to position side fabric portions within the tubular central portion in converting the full width diaper into a smaller size for use on small infants.

This application is a continuation-in-part of our copending application Ser. No. 463,507, filed June 14, 1965, and entitled No-Sew, No-Fold Diaper.

This invention relates to diapers and more particularly to diapers of the type which are formed so as to be ready for use on an infant. Still more particularly, the present invention relates to diapers of this type which are constructed and arranged for selective use in one form on small or newborn infants, and in another form on larger or older infants while providing a better fit thereon and, by this selective use, providing greater wearability.

Conventionally, diapers of this type are usually formed of gauze diaper fabric woven in any desired arrangement which most commonly includes juxtaposed sections of single and multi-ply constructions. The diaper fabric is transversely cut to desired size, either the desired length or width of the completed diaper, and is then folded one or more times to form a generally rectangular pad with sections of the diaper fabric disposed in superposed relation. These superposed sections of diaper fabric are then secured together by spaced lines of stitching running longitudinally of the diaper and, in some instances, by overedge stitching across the ends of the diaper.

Such diapers are commonly referred to as "prefold diapers," and have been widely accepted, particularly by the commercial laundry or diaper service trade, but also to an increasing degree by the retail or home market. However, since such diapers are prefolded and then secured in the folded condition, problems having been encountered in the use of these diapers, one of which resides in an improper fit which such prefold diapers provide on varying size infants, particularly the very small or newborn infant. In this respect, these conventional prefold diapers are usually formed with a standard width sufficient to properly fit a relatively large infant, and therefore, such standard width diapers cannot properly fit a small or newborn infant without excessive additional folding and/or excessive overlap at the sides thereof.

One attempted solution to this problem has been the formation of a smaller size prefold diaper for small or newborn infants and a regular or normal size prefold diaper for larger or older infants. This approach has been moderately successful with the commercial laundry or diaper service trade due to the large volume of customers which they serve and the attendant large inventory which they may economically maintain. However, this approach has not been successful with the retail or home trade because of the expense of buying two sets of different size diapers.

Another problem encountered in the use of conventional

prefold diapers resides in the fact that only one surface of the diaper fabric, i.e., the outer surface of the diaper, is subject to wear since the diaper fabric is secured in folded condition. Therefore, the outer surface of the diaper becomes worn quicker and the effective life of this diaper is considerably shorter than with diapers which are not secured in folded condition.

One suggested solution to this latter problem has been to remove the stitching securing the diaper in folded condition after the diaper has become worn, refolding the diaper to position the unworn side of the diaper fabric on the outside surface of the folded diaper, and restitching the diaper to again secure the same in folded condition. While providing additional wearability and hence longer effective diaper life, this suggested solution has several drawbacks, such as the time and expense involved in the removal of the stitching and in the restitching of the diaper, and the requirement of a sewing machine for the restitching operation. Accordingly, this refolding and restitching has not been widely accepted.

It is therefore an object of the present invention to provide a novel diaper which obviates the aforementioned problems encountered in the use of conventional prefold diapers.

A more specific object of the present invention is to provide a diaper of the character described which is selectively usable in a first form or arrangement in which the diaper is of narrower width than the standard width of conventional prefold diapers and in a second form or arrangement in which the diaper is of a width corresponding to this standard width.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings in which—

FIGURE 1 is a perspective view of a diaper incorporating the features of the present invention with a portion broken away;

FIGURE 2 is an enlarged transverse sectional view taken substantially along line **2—2** in FIGURE 1;

FIGURE 3 is a reduced perspective view of the diaper shown in FIGURE 1 illustrating the manner of everting the same to convert the diaper into another form;

FIGURE 4 is a perspective view of the diaper converted into the other form;

FIGURE 5 is an enlarged transverse sectional view taken substantially along line **5—5** in FIGURE 4;

FIGURE 6 is a perspective view similar to FIGURE 1 of another embodiment of the diaper of the present invention;

FIGURE 7 is an enlarged transverse sectional view taken substantially along line **7—7** of FIGURE 6;

FIGURE 8 is a perspective view similar to FIGURE 4 of the diaper shown in FIGURE 6 converted into another form; and

FIGURE 9 is an enlarged transverse sectional view taken substantially along line **9—9** in FIGURE 8.

Referring now more specifically to the drawings and particularly to FIGURES 1 and 2 thereof, there is shown a diaper **10** incorporating the features of the present invention which is shown in the first of two forms into which the same may be quickly and easily converted for selective use on larger or older infants or on small or newborn infants. In this first form, diaper **10** has a length and width corresponding to the more or less standard dimensions of conventional diapers of the prefold type, which dimensions are such that the diapers may be used on most infants throughout the diaper-wearing stage. In this respect, conventional diapers of the prefold type usually have a length within the range of 18 to 22 inches and a width within the range of 12 to 16 inches.

Diaper **10** includes a generally rectangular, tubular central panel or portion **11** which includes upper and lower sections **12** and **13**, respectively. Upper and lower sections **12** and **13** are interwoven along one end **14** thereof and along opposite sides **15**, **16** thereof, but have independent selvages **17** and **20** at the other end thereof to make central portion **11** into tubular form with an open end to permit the same to be everted therethrough. Additionally, each of the sections **12** and **13** preferably includes a plurality of fabric layers to provide the desired absorbency in the central portion of the diaper, and as illustrated in the drawings, sections **12** and **13** include fabric layers **12***a*, **12***b* and **13***a*, **13***b*, respectively.

A pair of generally rectangular side panels or portions **21** and **22** are disposed in juxtaposed relation to and are formed integral with opposite sides of tubular central portion **11**. Each of the side portions **21** and **22** are of a length substantially the same as the length of the tubular portion **11** and the combined with of side portions **21** and **22** is equal to at least one-half (½) the width of the tubular portion **11** for reasons to be described.

While the side portions **21** and **22** may be of single layer construction, the same preferably include sections **23**, **24**, respectively, of multi-layer construction to permit easy insertion of pins therethrough and to provide a softer, more comfortable diaper. As illustrated in the drawings, sections **23** and **24** are formed of two fabric layers **23***a*, **23***b* and **24***a*, **24***b*, respectively. These layers are interwoven with each other and with the layers of central portion **11** along the inner side edges thereof which respectively correspond to the opposite side edges of central portion **11**.

Side portions **21** and **22** also preferably include pinking bar portions **25**, **26** along the outer sides of sections **23**, **24**, respectively. Pinking bar portions **25**, **26** are preferably of single layer construction and have the outer side edges thereof pinked to provide anti-ravel characteristics in the opposite side edges of the diaper.

Diaper **10** is preferably formed in the manner described in our copending application Ser. No. 463,507, filed June 14, 1965, and entitled "No-Sew, No-Fold Diaper." However, it should be understood that diaper **10** may be formed in any convenient manner to provide the above-described structure without departing from the scope of the present invention.

Tubular portion **11** of diaper **10** is evertible, as illustrated in FIGURE 3, to position fabric portions **21**, **22** interiorly thereof (FIGURES 4 and 5) and to quickly and easily convert diaper **10** into another form (FIGURE 4) which is of narrower width and which is particularly adapted for use on and provides a better fit for a smaller or newborn infant. Upon eversion of tubular portion **11**, the sides of the upper and lower sections **12** and **13** thereof are folded back upon themselves and are positioned within the tubular portion, as is illustrated in FIGURE 5. Also, when positioned interiorly of the everted tubular portion **11**, fabric portions **21** and **22** define an absorbent interliner therewithin to increase the absorbency of the diaper **10** when in this form in the area where the same is most needed. In this respect, while the fabric portions **21** and **22** are of a combined width at least equal to one half (½) of the width of tubular portion **11**, the tubular portion **11** should be of sufficient width to properly fit a newborn or small infant when the same is everted, and it has been determined that this width should be about eight (8) to eight and one-half (8½) inches. Preferably, fabric portions **21** and **22** are of a combined width as great as the width of the tubular portion **11** and, as illustrated in the drawings, the combined width of the sections **23** and **24** of these portions is equal to the width of the tubular portion **11** such that the pinking bar portions **25** and **26** are in overlying relation to the sections **23** and **24**, respectively, within the tubular portion **11**.

Referring now to FIGURES 6–9 of the drawings, there is shown another embodiment of a diaper incorporating

the features of the present invention, which is generally referred to at **30**. Similarly to diaper **10**, diaper **30** includes a generally rectangular tubular central portion **31** which is defined by upper and lower sections **32** and **33** respectively. Upper and lower sections **32** and **33** are interwoven along one end **34** thereof and are stitched together along opposite sides thereof by spaced lines of stitching **35** and **36**. The upper and lower sections **32** and **33** have separate selvages at the other end thereof to define an open end into the tubular portion **31**. Each of the upper and lower sections **32** and **33** preferably includes a plurality of fabric layers and more preferably, each includes three fabric layers **32***a*, **32***b*, **32***c* and **33***a*, **33***b*, and **33***c*, respectively.

A pair of generally rectangular side portions **40**, **41** are disposed in juxtaposed relation to and formed integrally with opposite sides of tubular portion **31** and likewise include upper and lower sections **42**, **43**, and **44**, **45** respectively. Each of the sections **42**, **43**, **44** and **45** includes a multi-layer portion, preferably two layers, **42***a*, **43***a*, **44***a* and **45***a*, respectively, immediately adjacent the tubular panel **31** and a pinking bar portion **42***b*, **43***b*, **44***b* and **45***b*, respectively, along the outer side edge thereof, to provide the desired anti-ravel characteristics.

As with the diaper **10**, diaper **30** may be converted into another narrower form by eversion of the tubular portion **31** to position the side fabric portions **40** and **41** interiorly thereof, as illustrated in FIGURE 8. The fabric portions **40** and **41** are preferably of substantially the same length as the tubular portion **31** and have a combined width of at least one-half (½) the width of the tubular portion **31**, but preferably a combined width as great as the width of the tubular panel to provide an absorbent interliner within the tubular panel when the same is in said other form. In fact, it is more preferable that the multi-layer portions **42***a*, **43***a*, and **44***a*, **45***a*, of side portions **40**, **41** have a combined width equal to the width of the tubular portion **31**, with the pinking bar portions overlapping the multi-layer portion.

It is therefore believed apparent that the present invention provides a novel diaper which may be selectively used in either of two forms and easily and quickly converted into these forms, with one form being of a size and shape corresponding to the standard size and shape of conventional diapers of the prefold type and with the other form, to which the diaper may be converted, being narrower and more absorbent than conventional diapers of the prefold type. Additionally, the present invention provides a diaper which has a greater effective life due to the greater wearability thereof because of its convertibility between the two forms.

In the drawings and specification there have been set forth preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

What is claimed is:

1. A convertible diaper characterized by being usable in either of two forms, one form of said diaper being relatively narrow and being particularly adapted for use on and providing a better fit for a small or newborn infant, the other form of said diaper being wider than said one form and particularly adapted for use on and providing a better fit for a larger or older infant, said diaper when in said one form, comprising an elongate, generally rectangular, tubular portion including upper and lower sections each comprising at least one fabric layer, said upper and lower sections being connected together along the sides thereof but being separate at one end thereof to define an open end in said tubular portion, the sides of said tubular portion being folded back upon themselves by eversion of said tubular portion and being positioned within the everted tubular portion, and an interliner disposed within the everted tubular portion to provide increased absorbency in the area where most needed and

comprising a pair of fabric portions connected with the folded back sides of the tubular portion, the combined width of said pair of fabric portions being at least one-half (½) the width of said tubular portion and the length thereof being substantially the same as said tubular portion, said tubular portion being adapted to be everted to position said pair of fabric portions exteriorly thereof and to convert said diaper into said other form of increased width.

2. A diaper according to claim 1 wherein each of said upper and lower sections of said tubular portion includes a plurality of fabric layers.

3. A diaper according to claim 1 wherein said upper and lower sections of said tubular portion are connected along the end opposite said open end to close the same.

4. A diaper according to claim 1 wherein said pair of fabric portions each includes a plurality of fabric layers for added absorbency when the same are disposed within said tubular portion and for ready insertion of pins therethrough when the same are disposed exteriorly of said tubular portion.

5. A diaper according to claim 1 wherein said upper and lower sections of said tubular portion are interwoven along said opposite sides and the end thereof opposite said open end and each comprises a plurality of fabric layers.

6. A diaper according to claim 1 wherein said upper and lower sections of said tubular portion are stitched together along opposite sides thereof and interwoven along the end thereof opposite said open end and each comprises a plurality of fabric layers.

7. A diaper according to claim 1 wherein said upper and lower sections of said tubular portion are interwoven along the sides and the end thereof opposite said open end, and each comprises a pair of fabric layers, and said pair of fabric portions of said interliner each comprises a first two-layer portion immediately adjacent the corresponding side of said tubular portion and a single-layer pinking bar portion along the outer side thereof remote from the corresponding side of said tubular portion.

8. A diaper according to claim 1 wherein said upper and lower sections of said tubular portion are interwoven along the end thereof opposite said open end and are connected together along opposite sides thereof by stitching and each comprises three fabric layers, and said pair of fabric portions of said interliner each comprises upper and lower sections connected together along the inner side thereof by said stitching.

9. A convertible diaper characterized by being usable in either of two forms, one form of said diaper being of the width of a conventional prefold diaper and being particularly adapted for use on and providing a better fit for a larger or older infant, and the other form of said diaper being narrower than said one form and being particularly adapted for use on and providing a better fit for a small or newborn infant, said diaper, when in said one form, comprising an elongate, generally rectangular tubular portion defining the central portion of the diaper and including upper and lower sections each comprising at least one fabric layer and spaced lines of stitching extending along opposite sides of said upper and lower sections and connecting the same together along the sides thereof, said upper and lower sections being separate at one end thereof to define an open end in said tubular portion, and a pair of generally rectangular fabric portions disposed in juxtaposed relation to and connected with opposite sides of said tubular portion and defining said side portions of the diaper, said fabric portions having a length substantially the same as the length of said tubular portion and a combined width of at least one-half the width of said tubular portion, said tubular portion being adapted to be everted to position said pair of fabric portions interiorly thereof so that the same define an absorbent interliner within said tubular portion and to convert said diaper into said other form of narrower width.

10. A convertible diaper characterized by being usable in either of two forms, one form of said diaper being of the width of a conventional prefold diaper and being particularly adapted for use on and providing a better fit for a larger or older infant, and the other form of said diaper being narrower than said one form and being particularly adapted for use on and providing a better fit for a small or newborn infant, said diaper, when in said one form, comprising an elongate, generally rectangular tubular portion defining the central portion of the diaper, said tubular portion comprising an elongate piece of fabric folded along a medial fold line into upper and lower sections and spaced lines of stitching extending along opposite sides of said upper and lower sections and connecting the same together along the sides thereof, said medial fold line being at one end of said tubular portion and said upper and lower sections being separate at the other end of the tubular portion to define an open end therein, and a pair of generally rectangular fabric portions disposed in juxtaposed relation to and connected with opposite sides of said tubular portion and defining side portions of the diaper, said fabric portions having a length substantially the same as the length of said tubular portion and a combined width of at least one-half the width of said tubular portion, said tubular portion being adapted to be everted to position said pair of fabric portions interiorly thereof so that the same define and absorbent interliner within said tubular portion and to convert said diaper into said other form of narrower width.

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