

Nov. 13, 1951

M. DONOVAN  
DIAPER COVER

2,575,163

Filed May 5, 1949

3 Sheets-Sheet 1

FIG. 1

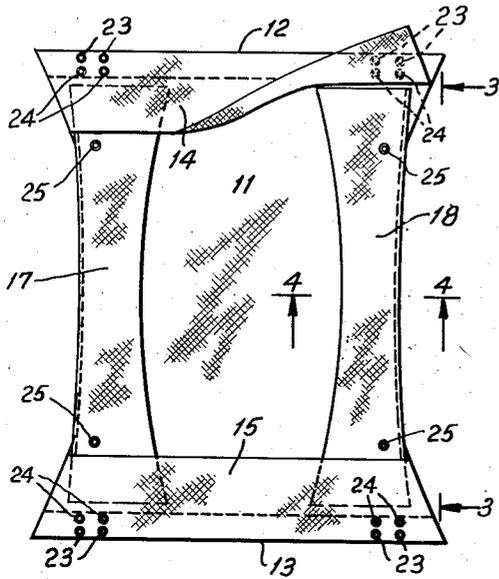


FIG. 2

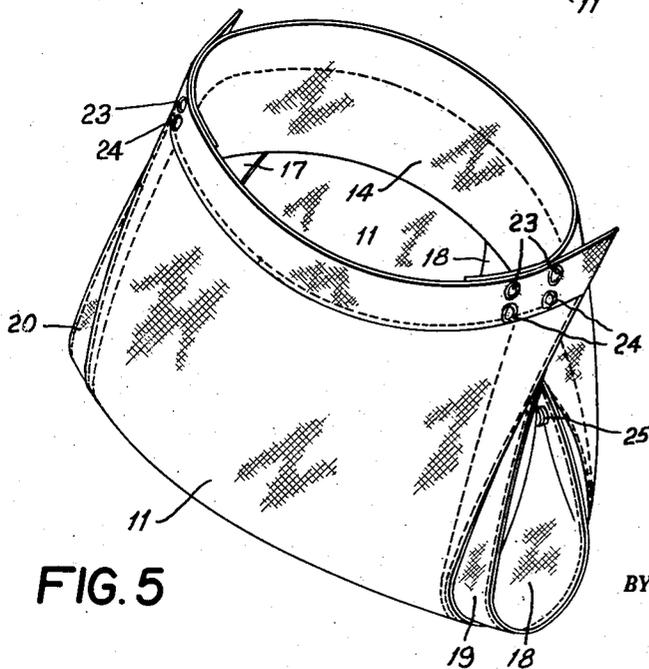
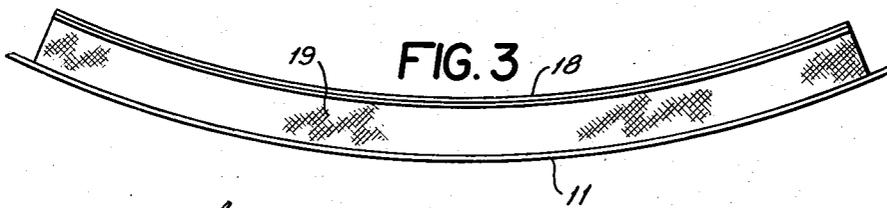
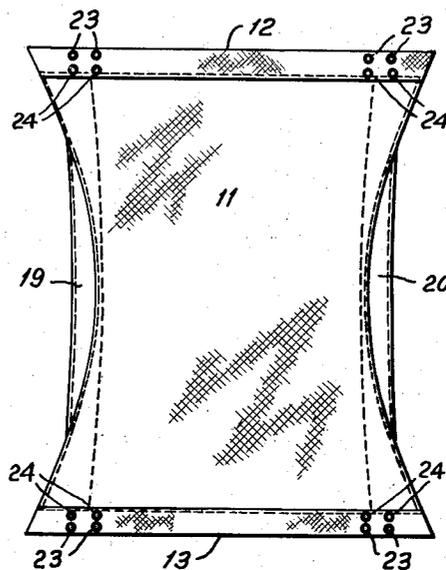


FIG. 4

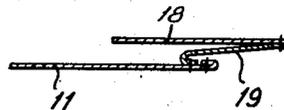


FIG. 5

INVENTOR.  
MARION DONOVAN  
BY *William F. Moore*  
ATTORNEY.

Nov. 13, 1951

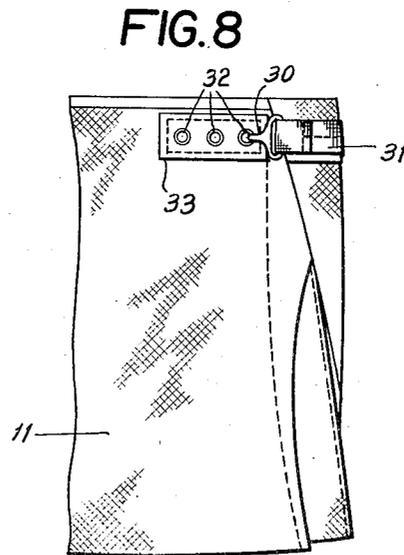
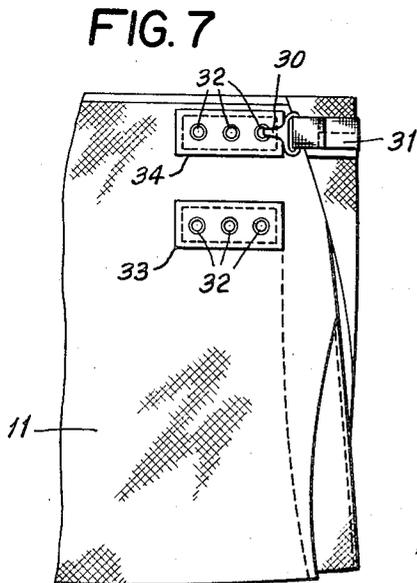
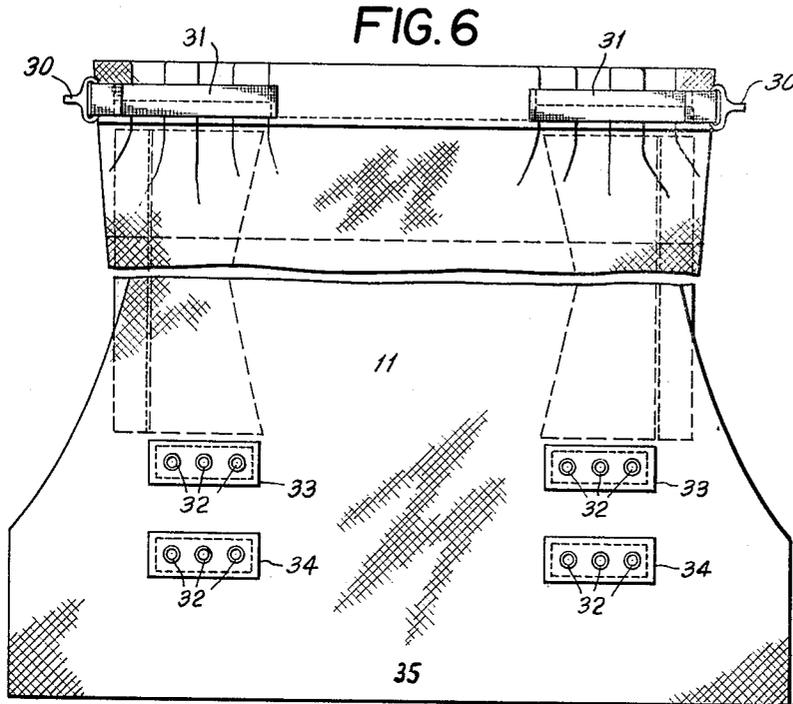
M. DONOVAN

2,575,163

DIAPER COVER

Filed May 5, 1949

3 Sheets-Sheet 2



INVENTOR

MARION DONOVAN

BY *William J. Moss, Jr.*

ATTORNEY.

Nov. 13, 1951

M. DONOVAN

2,575,163

DIAPER COVER

Filed May 5, 1949

3 Sheets-Sheet 3

FIG. 9

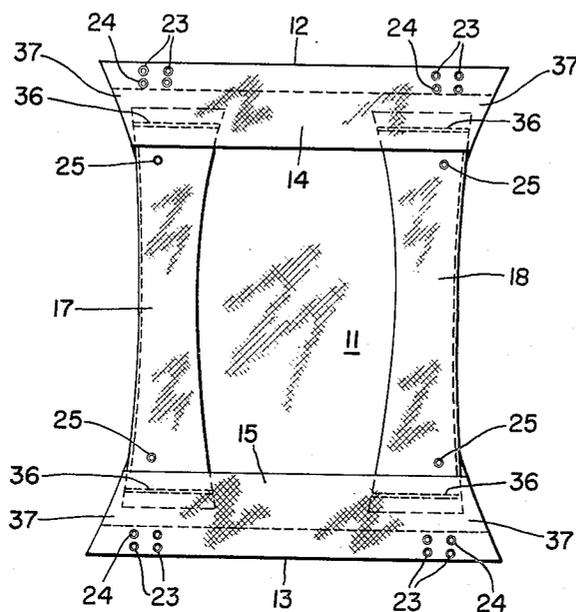
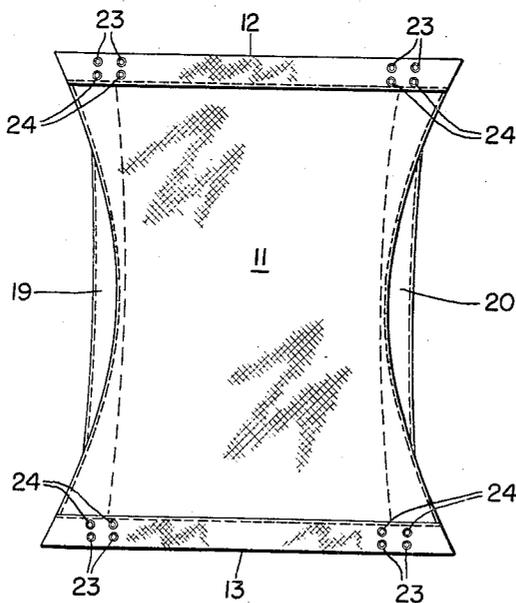


FIG. 10



INVENTOR.  
MARION DONOVAN  
BY *William F. Moore*  
ATTORNEY.

# UNITED STATES PATENT OFFICE

2,575,163

## DIAPER COVER

Marion Donovan, Saugatuck, Conn., assignor to  
Kennedy Car Liner & Bag Co., Inc., Shelbyville,  
Ind., a corporation of Indiana

Application May 5, 1949, Serial No. 91,536

9 Claims. (Cl. 128—287)

1

The present invention relates to a new and improved waterproof and leakproof diaper cover.

For maximum health, diaper covers must not interfere with the circulation of the infant's blood and should permit free circulation of air. It is also desirable that there be a minimum of contact between the baby's skin and the wet diaper. For sanitary reasons the diaper cover must be capable of easy and thorough cleansing. Also, the cover should be adjustable in order to take into account the baby's natural growth and to permit the application of either one or several diapers at the same time. Finally, the cover should be such as to make it possible to diaper and waterproof the baby in one operation.

Various accessories have previously been used with diapers in an attempt to accomplish these objects but all have been unsatisfactory. Rubber sheets and mattress covers entail additional work and do not prevent the baby from soiling his own clothes and bedding or the clothes of any one holding him. Rubber and plastic pants are highly unsatisfactory, for these rely on constriction in order to prevent leakage; there is usually an elastic about the baby's waist and legs, but this must be very tight, particularly about the legs, if the pants are to be at all effective. Such pants cut off ventilation, cause excessive chafing and frequently interfere with the circulation of the baby's blood. Furthermore, such pants tend to press the wet diaper against the baby's body and by forcing him into close contact with it, they frequently cause irritation of the baby's skin. Diaper covers that retain the diaper between flat folds or overlaps have also been used, but these are not entirely satisfactory because of a tendency of the cover to unfold or of the overlap to buckle outward at the fold between the infant's legs and so permit leakage at this critical area.

The new and improved diaper cover herein disclosed provides a waterproof and leakproof cover which will retain moisture within its own confines and prevent the baby from soiling its other clothing and bedding and the garments of those holding the baby. Furthermore, it will not interfere with the baby's circulation or with ventilation. Nor will it force the wet diaper against the baby's skin, and in fact it will protect the baby from contact with much of his own wet diaper. It is easily cleansed, is adjustable to different sizes and can be applied with the diaper in one operation.

All of these features and advantages are provided in the present invention, which may, in one embodiment, be described as a diaper cover of waterproof material generally rectangular in

2

shape and having a flap at either end and a vertical sidewall of arcuate shape at either side with a side flap attached to each sidewall. Each flap is secured along one edge only and so is free along three sides. Thereby the flaps are capable of opening outwards for the positioning of a diaper upon the inner face of the backing sheet and of folding inwards to cover the edges and the side and end portions of the diaper and to retain the diaper upon the backing sheet against lateral displacement. At the end portions of the backing sheet, which will be about the baby's waist when the cover with its inserted diaper is in use, there are several sets of fastening means, such as snaps or hooks and eyes, or merely an area for pins, in order to make the diaper cover adjustable as to size and to provide for the infant's growth and permit the use of either one or several diapers at the same time.

Other features and advantages of the invention will be apparent from a consideration of the full detailed specification with reference to the drawing illustrating a preferred form of the invention to which:

Fig. 1 is a plan view of the diaper cover in a flattened condition, showing the inner surface thereof;

Fig. 2 is a plan view of the diaper cover showing the outer surface thereof;

Fig. 3 is an elevation along lines 3—3 in Fig. 1 showing the arcuate sidewall in a vertical position;

Fig. 4 is a sectional view along lines 4—4 in Fig. 1 showing one side flap and sidewall in a partially flattened position;

Fig. 5 is a perspective view of the diaper cover in operating position;

Fig. 6 is a broken plan view of the diaper cover showing the outer surface thereof and alternative fastening means;

Fig. 7 is a view of one side portion of the diaper cover in operating position showing the alternative fastening means shown in Fig. 6 set for maximum size, both vertically and horizontally;

Fig. 8 is another view of one side portion of the diaper cover in operating position with the alternative fastening means shown in Fig. 6 set for minimum size vertically and maximum size horizontally.

Fig. 9 is a plan view of an alternative form of diaper cover in a flattened condition, showing the inner surface thereof.

Fig. 10 is a plan view of said alternative form of diaper cover in a flattened condition, showing the outer surface thereof.

Referring now to the drawings, the diaper cover is, in the illustrative embodiment, made throughout of a soft pliable waterproof material. I prefer to use a plastic material of, for example, a vinyl resin type, but while there are particular advantages for this material, other materials such as rubber or waterproofed cloth may be used. The backing sheet 11 may be of generally rectangular shape but in the preferred form of my invention, as illustrated in Fig. 2, I prefer to make the middle portion of backing sheet 11, which will pass between the infant's legs when the diaper is in use, narrower in width than the end portions thereof which will be secured about his waist. The backing sheet thereby approximates in outline the cross-sectional shape of an hour-glass.

At each end 12 and 13 of backing sheet 11 there is provided a flap, 14 and 15 respectively, of the same pliable waterproof material. Each of these flaps 14 and 15 may be merely a part of backing sheet 11 folded back upon itself, but there are particular advantages in using separate pieces of material affixed thereto by stitching or other means along the outer edge portions of said flaps. In the preferred form of my invention, using plastic as the material, I prefer to use separate pieces of plastic for these flaps and to make these and all other connections by heat sealing or by electronic seaming. In the preferred form as illustrated in Fig. 1, I have shown each end flap shaped in the form of an isosceles trapezoid, but while there are particular advantages from using this shape, these end flaps can be of any suitable shape. The sides and inner edges of flaps 14 and 15 are free; that is, they are not secured in any way. Therefore these flaps may be folded back for easy insertion of a diaper and for cleaning the cover. In Fig. 1, one corner of flap 14 is shown in such folded back position.

A side flap also of the same material is provided for each side of backing sheet 11, but these side flaps 17 and 18 are secured thereto in a different fashion than are the end flaps 14 and 15. One edge of each side flap 17 and 18 is attached to one edge of a vertical arcuate sidewall, 20 and 19 respectively. Each sidewall is affixed perpendicularly along its opposite edge to the opposing side portions of backing sheet 11, thereby securing said sideflaps 17 and 18 to the backing sheet 11 but separating said sideflaps from said backing sheet. These sidewalls 19 and 20 are arcuate in shape, as illustrated in Fig. 3, where sidewall 19 is shown in a position perpendicular to said backing sheet 11. Each sidewall 19 and 20 comprises an elongated strip of soft pliable waterproof material, the long boundaries or edges of which are curved in the same direction, one boundary being convex and the boundary opposite thereto being concave. Each said sidewall 19 and 20 is affixed along its convexly curved boundary to backing sheet 11 along the respective side portions of said backing sheet and perpendicular thereto. Because of the pliability of the material, when the backing sheet is laid flat these sidewalls assume the partially flattened position shown for sidewall 19 in Fig. 4. However, when the backing sheet is curved upwardly at either end in a manner approaching the actual operation position of the diaper cover, the vertical position of these arcuate sidewalls 19 and 20 is apparent as is shown in Fig. 3, where the sidewall is shown perpendicular to backing sheet 11. Both sidewalls 19 and 20 are identical in shape and although a generally catenary curve for such sidewalls is shown in Fig. 3, it must be

understood that I do not propose to limit myself to this particular curve, which is only illustrative of the fact that these vertical sidewalls have two long boundaries curved in the same direction with the convex boundary joined to said backing sheet. The degree of curve may be considerably increased or even somewhat decreased without departing from my invention. Having sidewalls of this vertical arcuate construction prevents the side flaps from opening or buckling outwards and so permitting leakage when the cover containing a diaper is applied about the infant as in the position shown in Fig. 5.

Also, these sidewalls 19 and 20 need not be of the same width throughout their entire length but, if desired, they may taper slightly toward their ends.

The side flaps 17 and 18 may be of any suitable shape but there are certain advantages to be derived from the preferred form of the invention illustrated in Fig. 1, where I have shown a side flap of generally rectangular outline but having its two long opposing sides unequally concave, the edge affixed to the sidewall being less concave than the opposite edge. This formation of the side flap permits it to conform when in operating position to the general hour-glass shape of the backing sheet and also to leave exposed a convex area of the inserted diaper, with the exposed area widest at its middle portion upon which the baby will wet.

For the insertion of a diaper, the diaper cover is placed as in Fig. 1, but in an unfolded condition with the end flaps 14 and 15 and the side flaps 17 and 18 opened outwardly. One or more diapers are folded to fit and are placed on the cover and all flaps are folded inwardly to cover the edges and end and side portions of the diaper or diapers, thereby retaining the same on the backing sheet against lateral displacement. The diaper cover with the diaper so retained and partially covered is then passed between the baby's legs and about his body in the same manner in which diapers are usually applied. In the preferred form shown in Figs. 1, 2 and 5, the diaper cover and inserted diaper is secured about the baby's waist by means of snaps 23. Other adjustable fastening means could also be used such as hooks and eyes or ordinary safety pins. As shown in Figs. 1, 2 and 5, several snaps 23 are arranged horizontally on the backing sheet 11 and end flaps 14 and 15 in order to permit different horizontal adjustments to make allowance for the growth of the baby and to permit the use of either one or several diapers at the same time. For similar reasons, another set of snaps 24 are arranged vertically on the backing sheet 11 and the end flaps 14 and 15 to permit vertical adjustments. Also, additional snaps 25 may be positioned on the side flaps in order to decrease the size of the leg openings if desired.

As is apparent from Fig. 1, the end flaps 14 and 15 and the side flaps 17 and 18 are arranged to leave exposed the inner face of that part of the diaper on which the baby will wet but to cover the end and side portions of the diaper. This permits the flow of liquid throughout the diaper in normal fashion to utilize the entire diaper for absorption, but the area of wet diaper which can be in contact with the baby's skin is considerably limited, thus decreasing the possibility of skin irritation, as well as the area of the baby's skin which may be so affected. Because of the curved construction of sidewalls 19 and 20 said flaps 17 and 18 do not buckle outward at the midpoint of

the sides when the diaper cover with the diaper inserted is placed about the baby; therefore leakage is prevented and all moisture is contained within the diaper cover and cannot soil the baby's other clothing and bedding. Nevertheless this curved sidewall construction permits a large free opening for the infant's legs without any restriction whatsoever and insures proper ventilation at the same time that it prevents leakage. Also, this looseness prevents the diaper from being pressed against the baby's body and the cover actually suspends the diaper below the baby.

Furthermore, if the baby's shirt is attached to the diaper cover at the waist it will not be soiled by the baby when he wets as is customarily the case. There will be no need to completely disrobe the infant to put on a dry shirt every time there is occasion to change diapers and as a result there will be less danger that the infant will catch cold.

Since the diaper cover is capable of being opened out completely, it is susceptible of a thorough washing in an unfolded condition and lends itself to being cleaned by wiping with a damp antiseptic cloth, or by a simple rinse, for there are no crevices, cracks or corners to retain dirt.

As can be seen from the foregoing, my new and improved diaper cover makes it possible to diaper and waterproof the baby in one easy operation without the requirement of any other accessories. It provides a healthy and practical means for confining moisture within the diaper cover and away from the baby's other garments and his bedding and the persons holding him. It will interfere in no way with the baby's circulation or with proper ventilation. At the same time it decreases the area of the wet diaper which will be in contact with the baby's skin and so minimizes the possibility and extent of skin irritation.

Figs. 6, 7 and 8 show an alternative means by which the diaper cover may be secured in an adjustable manner about the baby's waist. Instead of the series of snaps 23 and 24 shown in Figs. 1, 2 and 5, the alternative means of hooks and eyes may be used. One end portion of the diaper cover may be provided with hooks 30 one of which is affixed at either side thereof. These hooks may be attached directly to the backing sheet 11, but I prefer to secure each hook to the backing sheet by means of a piece of elastic cloth 31. One such piece of said elastic cloth is attached to the outer face of the backing sheet at each side of an end portion, and it is affixed thereto by stitching or other means at each end of the elastic, thus providing additional adjustability. Each hook 30 is adapted to engage eyes 32 set at each side of the other end portion of the backing sheet on the outer face thereof. These eyes 32 may be all the way through backing sheet 11, in which case the end flap should be affixed to the end portion of the backing sheet inside of the eyes 32 in order to preserve the waterproof and leakproof integrity of the diaper cover. However, I prefer to have the eyes set in an additional piece of material 33 affixed to the backing sheet and as illustrated in Figs. 6, 7 and 8. Since this separate piece 33 can be thicker and stronger than the rest of the diaper cover to take the strain of the hooks, I am enabled to use a very light and pliable material for the cover with less likelihood of tearing, for the principal strain occurs at these points where the fastening means are secured. A second series of eyes, also set in a separate piece of heavier material 34, is provided in order to give vertical adjustment of the diaper cover. Fig. 7 shows

one such alternative fastening means set for maximum adjustment both vertically and horizontally. Fig. 8 illustrates the same alternative fastening means but now adjusted for maximum size horizontally but minimum size vertically. By having the eyes set in separate pieces of material, 33 and 34, I am enabled to use a simple fold of backing sheet 11 to form the end flap at this end portion of the backing sheet. This end flap is shown in an unfolded condition as 35 in Fig. 6. In Fig. 8 that portion of the backing sheet in which piece 33 is affixed is folded in, thus increasing the depth of end flap 35. However, this is not absolutely necessary for the hook 30 could simply be engaged with any eye set in piece 34, leaving that portion of the backing sheet upon which separate piece 33 is set simply projecting above the baby's waist.

An alternative arrangement of securing the end flaps 14 and 15 is available and is shown in Figs. 9 and 10. In addition to securing said end flaps along one boundary thereof to said backing sheet 11 as described earlier herein, the end flaps 14 and 15 may be secured along the opposite boundary thereof or thereabouts to the side flaps 17 and 18 where said end flaps overlap said side flaps in Fig. 1. This is shown by dotted line 36 in Fig. 9. If this is done, said side flaps 17 and 18 may be somewhat shortened at each end thereof beyond said lines of connection with end flaps 14 and 15 in order to provide openings 37 for the easy passage of soapy water or other cleansing fluid when the diaper cover is being cleaned by rinsing, for it will be noted that although the end flaps and the side flaps are so connected at 36, there is no connection at these points of said end flaps and said side flaps with said backing sheet 11. It will be found that such passages 37 may exist near the corner portions of the diaper cover without causing the diaper cover to permit leakage when in use. When so secured, the flaps do not unfold and the diaper is now inserted by slipping its end and side portions under the end and side flaps respectively. This alternative arrangement is particularly useful to maintain said end flaps 14 and 15 in an inwardly folded position when the diaper cover is in use despite all the wriggling and squirming of the most active infant.

While certain preferred forms of a diaper cover embodying the present invention have been described in considerable detail, it will be understood that numerous changes and variations may be made in said diaper cover without departing from the general principles and scope of the invention. Matter disclosed but not claimed herein is claimed in my copending application Serial No. 99,096, filed June 14, 1949, which is a continuation-in-part of subject application.

I claim:

1. A diaper cover comprising a backing sheet, longitudinally arcuate sidewalls attached along one edge thereof along opposing side portions of said backing sheet, and side flaps attached along the opposite edge of said side walls, all of soft pliable waterproof material.

2. A diaper cover comprising a backing sheet of soft pliable plastic of a vinyl resin type, longitudinally arcuate side walls of the same material attached along one edge thereof along the side portions of said backing sheet, and flaps of the same material attached to the opposite edge of said sidewalls.

3. A diaper cover comprising a backing sheet of soft pliable waterproof material, sidewalls of

the same material having two long and two short boundaries, the long boundaries of said sidewalls being curved in the same direction, one such boundary being convexly and the other such boundary concavely curved, each said sidewall being joined along its convexly curved boundary to said backing sheet along a side portion thereof, side flaps of the same material joined to said sidewalls along the concavely curved boundary of each said sidewall.

4. A diaper cover comprising a backing sheet of soft pliable waterproof material, sidewalls of the same material having two long and two short boundaries, the long boundaries of said sidewalls being curved in the same direction, one such boundary being convexly and the other such boundary concavely curved, each said sidewall being joined along its convexly curved boundary to said backing sheet along a side portion thereof, side flaps of the same material joined to said sidewalls along the concavely curved boundary of each said sidewall and end flaps of the same material affixed to said backing sheet along the end portions thereof, said end flaps and said side flaps adapted to fold inwardly upon the end and side portions of a diaper disposed upon said backing sheet and partially cover the same.

5. A diaper cover comprising a backing sheet, vertical arcuate sidewalls having two long boundaries curved in the same direction, one said boundary being convex and the opposite boundary concave, end flaps and side flaps, all of soft pliable waterproof material, one of said end flaps being affixed along one edge thereof along one end portion of said sheet and another said end flap being similarly attached to the opposing end portion of said sheet, one of said vertical arcuate sidewalls being affixed along the convex boundary thereof along one side portion of said sheet and another said sidewall being similarly attached to the opposing side portion of said sheet, one of said side flaps being affixed along one edge thereof along the concave boundary of a said sidewall and another said side flap being similarly attached to the opposing sidewall, said end and side flaps being adapted to fold inwardly to cover the end and side portions of a diaper disposed upon said backing sheet.

6. A diaper cover comprising a backing sheet, longitudinally arcuate sidewalls, end flaps and side flaps, all of soft pliable waterproof material, said backing sheet being of rectangular outline having two opposing sides concave, a longitudinally arcuate sidewall being affixed along one edge thereof along one concave side portion of said sheet and another said sidewall being similarly affixed to the opposing side portion of said sheet, a said end flap being affixed along one edge thereof along one end portion of said sheet and another said end flap being similarly affixed to the opposing end portion of said sheet, said side flaps being of rectangular outline having one side thereof concave, a said side flap being affixed along the edge opposite its concave side along the edge of a said sidewall opposite to the edge of said sidewall affixed to said backing sheet and another side flap being similarly attached to the

opposite side wall, said end and side flaps being adapted to fold inwardly upon the end and side portions of a diaper disposed upon said sheet.

7. A diaper cover comprising a backing sheet of soft pliable waterproof material, longitudinally arcuate sidewalls of the same material affixed along one edge thereof along the side portions of said backing sheet, flaps of the same material affixed along one edge thereof along the opposite edge of said sidewalls, and adjustable securing means at the end portions of said backing sheet for adjustably securing said end portions about the waist of an infant when said sheet is passed between the legs of said infant.

8. A diaper cover of soft pliable waterproof material comprising a backing sheet, end flaps affixed to the end portions thereof, longitudinally arcuate sidewalls affixed along one edge thereof to the side portions of said backing sheet, side flaps affixed along one edge thereof to the opposite edge of said sidewalls and adjustable securing means at the end portions of said backing sheet for adjustably securing the backing sheet about the waist of an infant when said sheet is passed between the legs of said infant.

9. A diaper cover comprising a backing sheet of soft pliable waterproof material and having two concave opposing side boundaries, sidewalls of the same material, each said sidewall having two long boundaries curved in the same direction, one said boundary being convexly curved and the opposing said boundary being concavely curved, each said sidewall being joined along said convexly curved boundary to said backing sheet along the concave side portion thereof, side flaps of the same material, each said side flap being joined along one edge thereof to a said sidewall along the concavely curved boundary of said sidewall, end flaps of the same material joined along one edge thereof along the end portions of said backing sheet, said end flaps and said side flaps adapted to fold inwardly upon the end and side portions of a diaper disposed upon said backing sheet and to partially cover the same, adjustable fastening means positioned at each end of said backing sheet at the side portions thereof to adjustably secure the ends of said diaper cover about the waist of an infant when said diaper cover is passed in an operative position between the legs of said infant.

MARION DONOVAN.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
924,644	Daudt	June 15, 1909
1,447,367	Williams et al.	Mar. 6, 1923
2,273,906	Spanel	Feb. 24, 1942
2,493,492	Malamut	Jan. 3, 1950

#### FOREIGN PATENTS

Number	Country	Date
606,320	Great Britain	Aug. 11, 1948