

Sept. 25, 1956

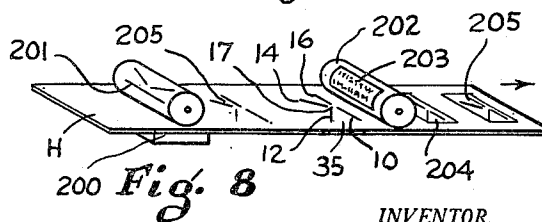
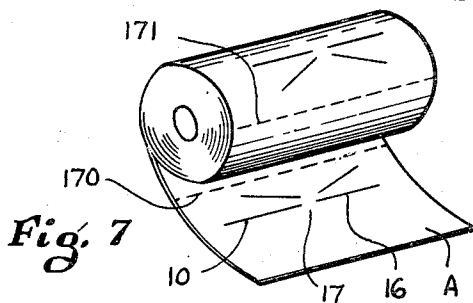
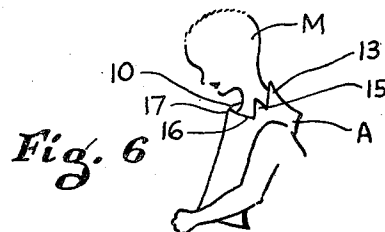
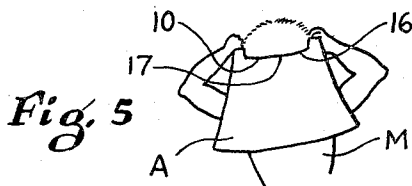
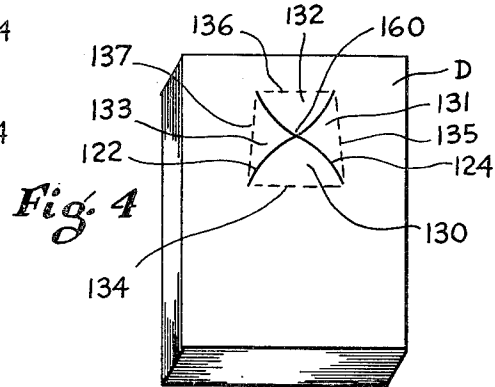
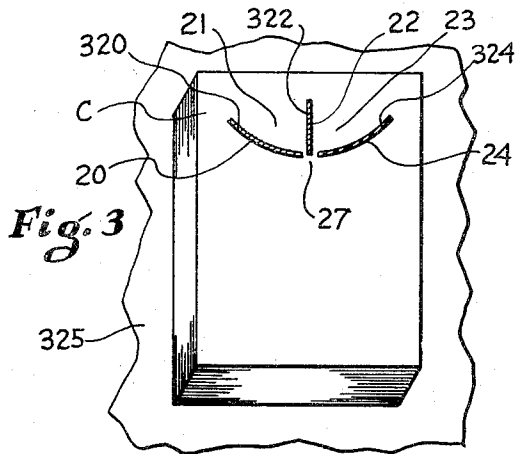
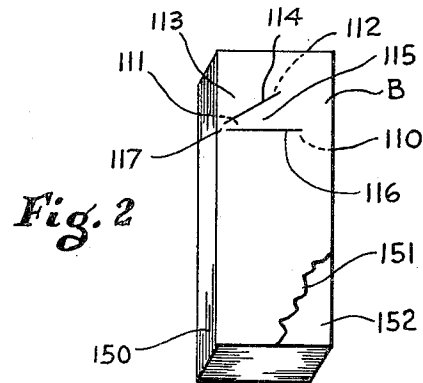
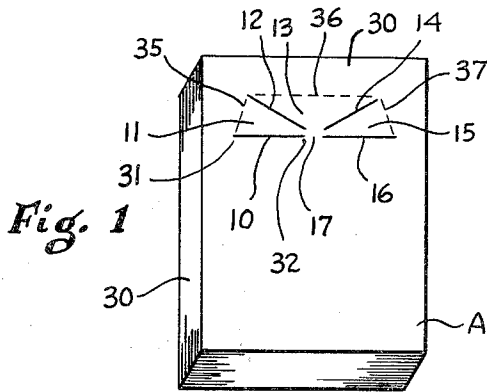
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2,763,867

DISPOSABLE BIBS

Filed Jan. 22, 1951

2 Sheets-Sheet 1



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DISPOSABLE BIBS

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2 Sheets-Sheet 2

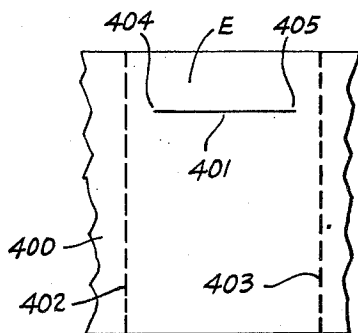


Fig. 9

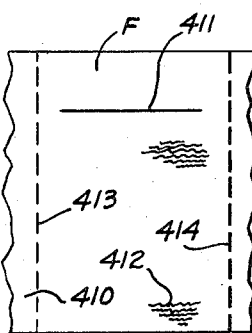


Fig. 10

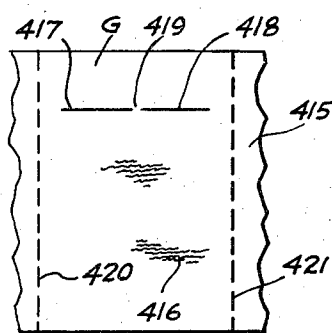


Fig. 11

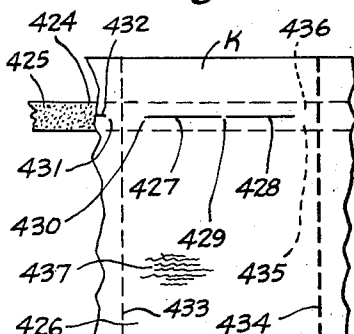


Fig. 12

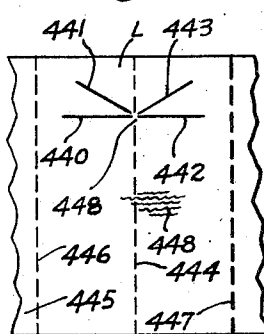


Fig. 13

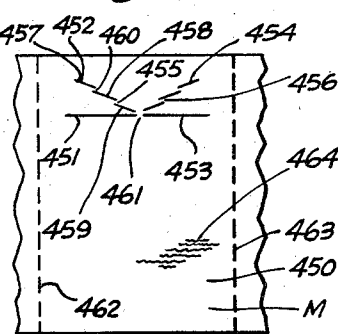


Fig. 14

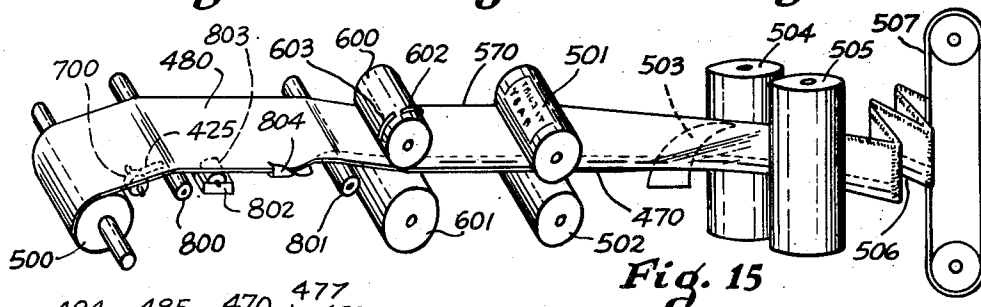


Fig. 15

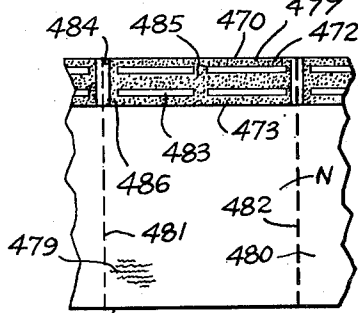


Fig. 16

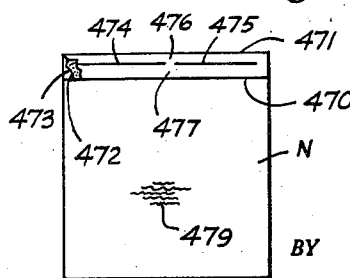


Fig. 17

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2,763,867

DISPOSABLE BIBS

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Application January 22, 1951, Serial No. 207,169

7 Claims. (Cl. 2-49)

This invention relates to disposable bibs made of paper or similar fibrous material.

The principal object of my invention is to provide bibs which can be made simultaneously from a stack of sheets of paper, or made successively from a moving web of paper as the web travels through an ordinary printing press or from a moving web of paper travelling through a high speed printing, folding and cutting device. Another object of my invention is to provide a disposable bib with a neck opening slit, or slits, in which each slit is located well within the periphery of the bib and the slit or slits do not form an opening in any peripheral edge thereof. Another object of my invention is to construct such a bib from a single sheet of paper-like material entirely by the use of slits, rather than cut outs, thus preventing waste of the material. A further object of my invention is to produce a bib which can be dispensed in roll form, without tearing at the neck opening slits when disengaged from the roll. A still further object of my invention is the provision of a disposable bib, in which the neck opening slits are bridged at intermediate points by a narrow connecting web of the material of the sheet, the bridges keeping the sheet integral during manufacture and shipment but being easily tearable to form continuous slits upon use as a bib.

In the drawings,

Fig. 1 is a plan view of one form of my new bib.

Fig. 2 is a plan view of the bib shown in Fig. 1, showing how the slits may be made while the bib is folded in half.

Fig. 3 is a plan view of a modified form of the bib.

Fig. 4 is a plan view of a further modification.

Fig. 5 is an elevation illustrating the manner in which one of my bibs is placed on the user.

Fig. 6 is a side elevation of one of my new bibs in position for use.

Fig. 7 is an isometric view of a roll of one form of my bib.

Fig. 8 is a diagrammatic view of one method of forming a continuous web of printed bibs according to my invention.

Fig. 9 is a plan view of another modification of my new web.

Fig. 10 is a plan view similar to Fig. 9, showing the preferred relationship of the neck opening slit to the direction of the fibres of the paper-like material.

Fig. 11 is a plan view of the preferred form of my new bib.

Fig. 12 is a plan view of another modification of my new bib having a reinforcing strip attached thereto.

Fig. 13 is a plan view of another modification of my new bib.

Fig. 14 is a plan view of another modification of my new bib.

Fig. 15 is a diagrammatic view of the preferred method of manufacture of my new bib.

Fig. 16 is a plan view of another modification of my new bib, showing the adhesive pattern.

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Fig. 17 is a plan view of the completed bib shown in Fig. 16.

In Figs. 1-4, I show forms of my new disposable bib which are especially suited for manufacture by simultaneously slitting through a stack of sheets or by successively slitting through a web of paper passing through an ordinary printing device.

As shown in Fig. 1, A is a rectangular sheet of paper or the like which preferably is soft, flexible and highly absorbent, but may also be liquid resistant, liquid proof, or have other characteristics desirable in a paper bib. In any case, A is preferably of a fibrous material which is tough but slightly tearable, in other words, a slit therein can be slightly extended by tearing the material under slight pressure in a suitable manner.

10, 12, 14 and 16 are substantially radial slits cut in A by suitable knives to form partially completed and substantially triangular sectors 11, 13 and 15 which remain connected together by a small connecting web of the material at 17. Each of the radial slits is spaced at its outer end, such as 31, from the periphery 30 of A and is spaced at its inner end 32 from the common meeting point of the other slits located in the connecting web 17. In order to form a neck opening in the bib it is only necessary to tear, break or otherwise fracture the connecting web 17, in extension of the radial slits, to permit sectors 11, 13 and 15 to be bent up on hinge or bend lines 35, 36, and 37 and form neck flaps.

In Fig. 2, I show a bib B, similar to A, but folded in half on fold line 150 in order that only two slits are necessary to form the bib rather than four slits. Slits at 114 and 116 in the top surface 151 of B penetrate through the lower surface 152 to form identical slits 110 and 112 therein. Sectors 111, 113, and 115 are thus formed with a central connecting web at 117. The package containing bibs so folded and stacked is adapted for household storage being of reduced size.

A modification is shown in Fig. 3 in which the sheet C has curvilinear slits 20 and 24 and a straight slit 22, the slits forming sectors 21 and 23 with a central connecting web at 27. When the connecting web 27 is torn before, or upon, being placed over a child's head, the lines 20 and 24 together form a curved front edge which conforms to the shape of the neck or chest of the wearer.

It is an advantage that the sectors formed in my new bib be connected to the other sectors at the base and apex as in Figs. 1 to 3, to prevent flapping of the same. I may however arrange the slits as in Fig. 4, wherein a sheet of material D has slits 124 and 122 which cross each other at 160. No connecting web of material is left at the apex 160 so that the flaps 130, 131, 132, and 133 are connected to each other only on the lines 134, 135, 136 and 137 which form fibrous hinges for the flaps. The bend or hinge lines 134, 135, 136, and 137 are spaced well within the peripheral edge 139 of D and define a flap-encircled neck opening when bent outwardly as in the form of my invention, shown in Fig. 6.

I have found that the bibs shown in Figs. 1 to 4, can be made in large quantities economically by stacking a number of sheets of material and cutting the required slits through the stack in one operation whether the sheets are folded or unfolded. It is obvious that the slits can be straight, curved or crooked, the essential point being that at no point do they reach the periphery of the sheet.

In Fig. 5, I show one of my new bibs, such as A, being placed over the head of a child M and with the connecting web 17 torn so that slits 10 and 16 become a continuous line. In Fig. 6, the bib is shown extending down over the child's chest and partially down the back with the sectors 11, 13, and 15 forming neck-encircling flaps which may be tucked under the collar, if desired.

In Figs. 1 to 4, I show my new bibs arranged in stacks

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as they may be made and shipped. In prior devices of this nature, it has been necessary to cut out a portion of the blank sheet, or to add adhesive, or to add reinforcement to each sheet or to weaken the stack by cutting slits which extend out to the periphery of each sheet in the stack. My new method of making disposable bibs in stack form eliminates all such time consuming and individual handling operations and accomplishes the same result by one slitting operation. As shown in Fig. 3, a stack of sheets of suitable material is converted into a stack of my new bibs by a single passage therethrough of slitting knives such as 320, 322 and 324, while the stack rests on a suitable surface 325. The stack may then be run through a printing press capable of handling individual sheets in stacks for the addition of decoration or advertising without danger of the stack spreading, of flaps being folded under and with no necessity for removing cut outs or adding parts.

I may also make and ship the bibs shown in Figs. 1-4, in roll form with each bib separated from the next by a perforated line such as 170, 171, in Fig. 7. Such bibs may also be printed, while in the form of a continuous web of paper, on suitable roll printing presses, and then formed in a roll similar to Fig. 7.

In Fig. 8, I show diagrammatically my new method of producing a continuous web of printed disposable bibs. A web of paper H moving in the direction of the arrows passes between a surface 200 and a set of slitting knives 201 so that the slits such as 10, 12, 14 and 16 are cut therein to form a neck opening 205 with the sectors connected to each other at the apex 17 and the base such as 35 of each sector such as 11. The web then passes through suitable printing mechanism such as a printing roll 202, having type 203, and the printed or decorative matter 204 is placed on each bib over the incomplete neck opening 205 while the sectors thereof are still connected.

It will be obvious that the neck opening formed by the sectors of my bib can be square, rectangular, circular or of other desired shapes and the amount of material left at the central connecting web, if any, will be lesser or greater, depending on the tearability of the paper used. I prefer to use a comparatively tough, but soft, paper with considerable resistance to tearing and substantially radial slits which approach so close to their common centre as to leave an almost imperceptible web therebetween. Pressing the bib down on a child's head very lightly thus causes the central connecting web to fracture easily and the sectors to fold upward into flaps around the neck. The bib cannot be torn off easily however because of the much greater length of material between the outer ends of the slits and the periphery of the sheet.

In Figs. 9-14, I show forms of my new bib which can not only be made in stacks or in a continuous web, but which can also be made on a high speed printing, folding and cutting device now in general use. Such devices exert a considerable pull longitudinally on the web of paper due to the speed of the rolls and the folding mechanism also exerts pressure, particularly on the centre line of the web. Such pulls and pressure on the web would tend to fracture it, if the web contained a transverse slit such as 22 in Fig. 3 or a slit at a considerable angle to the direction of travel of the web such as 14 in Fig. 1, or 124 in Fig. 4. A central connecting web such as 17 in Fig. 1 tends to prevent such fracture and is used in most of the forms shown in Figs. 9-14 to prevent any possibility of fracture or tearing of the web during the printing, folding and cutting operations.

As shown in Fig. 9, a web of paper 400, having a succession of substantially straight continuous slits 401, each parallel to the direction of travel of the web and each located between the longitudinal centre line and either longitudinal edge thereof can be cut along lines 402 and 403 to form a bib E. Each opposite end 404 and 405

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of slit 401 terminates at a spaced distance from the adjacent edges 402 and 403 of bib E.

The paper from which disposable articles, such as paper napkins or paper tissue are made usually is formed with the fibres all lying in the same direction. It is therefore easy to tear in a direction parallel to the fibres, but difficult to tear in the transverse direction across the fibres. As shown in Fig. 10, such paper is usually run through high speed rotary printing presses with the fibres lying in the direction of travel of the web such as 410, thus giving resistance to tearing crosswise of the web. I have discovered that a continuous slit such as 411, similar to 401 in Fig. 9, will have less tendency to cause fracture if it is not only parallel to the direction of travel of the web, but also parallel to the direction of the fibres 412 in the web. A bib F is formed from web 410 by cutting along lines 413 and 414.

The preferred form of my new bib is shown in Fig. 11 in which a web of paper 415, having fibres 416 is provided with substantially straight aligned slits 417 and 418 each parallel to the direction of travel of the web, parallel to the fibres and separated by or bridged by a connecting web 419. A bib G is formed from the web by cutting along lines 420, 421, and the connecting web 419 can be easily fractured in order to make a continuous substantially straight neck opening of slits 417 and 418.

As shown in Fig. 12, I may use a substantially straight and narrow strip of reinforcing material 424, introduced into the printing press from a roll in a well known manner and having suitable adhesive 425 thereon to cause it to adhere to the web 426 in the area which will form opposite edge surfaces 435, 436, of the slits. Slits 427 and 428 similar to 417 and 418 are then cut through both the web of paper and the reinforcing strip and the strip reinforces the connecting web 429 and the material between the extremities 430 of a slit 427 and the extremity 431 of the next adjacent slit 432. A bib K is thus formed when the web 426 is cut on lines 433, 434, transverse to the direction of the fibres 437.

As shown in Fig. 13, I may use two pairs of substantially radial slits 440, 441 and 442, 443, each pair located on an opposite side of each transverse centre line 444 of the bib L to be formed in a web such as 445 by cutting along lines such as 446 and 447. Each slit extends from a point proximate the common centre point 448 of all slits to a point spaced from the adjacent edge of bib L such as 446 or 447. Slits 440 and 442 are preferably parallel to the direction of travel of the fibres 448 and slits 441 and 443 are only slightly angular thereto for example at 20 degrees or less.

In Fig. 14, I show a web 450 having a pair of slits 451, 452, and 453, 454, similar to those in Fig. 13, except that the angular slits 452 and 454 are bridged at one or more points by a narrow connecting web such as 455, 456, and the sections of each angular slit are not aligned. For example, the sections 457, 458, and 459 of angular slit 452 are separated, or bridged by connecting webs 455, 460, which extend parallel to the fibres 464 and the direction of travel of the web and thus greatly strengthen the web from fracturing at the slits. A central connecting web 461 is also used and upon cutting along lines 462, 463, a bib M is formed. By fracturing the central connecting web 461 and the connecting webs such as 455, 456, in each angular slit such as 452, a bib similar to that shown in Fig. 1 is formed and ready for use.

In Fig. 17 I show still another modification of my new bib especially adapted for manufacture on a well known type of printing, folding and cutting device designed to run at high speed. The bib N, in Fig. 17, has one peripheral edge such as 470, infolded one or more inches on a fold line 471 and adhesively secured, as by glue 472, to the adjacent surface 473 of the bib. Aligned slits 474 and 475, separated by a central bridge or web 476 and parallel to the direction of fibres 479, pass through both

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the folded portion 477 and the portion 473 of the bib to which the fold is adhesively secured.

In Fig. 16 is shown a portion of a continuous web of material 480, from which a bib such as N may be formed by infolding a longitudinal edge and cutting slits as explained above and by cutting along the dotted lines 481 and 482. The adhesive, such as glue 472 is preferably applied to the web by a roller having a pattern made up of suitable cavities to deposit glue in the pattern shown. It should be noted that the areas such as 483, where slits such as 474 and 475 will be located, and the areas such as 484, where cuts 481 and 482 will be located, are not deposited with glue and thus the slitting and cutting knives do not become fouled with adhesive. Glue is deposited, however, on area 485, where the web or bridge 476 will be located and on areas such as 486 which will be located between the outer end of a slit such as 474 and the area adjacent to a cut such as 481. The doubled longitudinal edge of the material, with the doubled surfaces stuck or bonded together provides a reinforcement at each end of each slit and prevents any possibility of undesired tearing in extension of a slit during the manufacture of the bib.

In Fig. 15 I show diagrammatically my new method of making disposable bibs applied to a well known type of high speed machine designed to convert a continuous web of paper into printed paper articles, such as napkins or bibs, each folded and ready for packaging. A continuous web of suitable material, such as 480, is carried on a supply roll 500 mounted on a rollstand not shown, and is passed through revolving printing rolls such as 501 and 502 so that advertising or other printed material may be successively applied thereto over each section of the web which will later be cut into a separate article. The longitudinal centre of the web 480 then passes over a vertically positioned plow 503 while the longitudinal edges such as 470 and 570 of the web are drawn down on each side of the plow by vertically positioned opposed rollers 504 and 505 thus folding the web in half. Well known folding mechanism is then provided to create folds in the folded web as at 506 and a band saw 507 cuts through the centre of the folds 506 to create a succession of individual articles folded in four quarters for packaging.

In my new method of making disposable bibs instead of first printing the articles and then slitting, or otherwise cutting, a neck opening in the printed article I slit the article first and print it afterward thus avoiding damage to the printing by the slitting operation. The slitting step of my process is preferably performed on such high speed machines by placing a slitting roll 600 and a support roll 601 between the source of the web 480 and the printing rolls 501 and 502. Slitting knives 602 and 603 are provided on roll 600 and extend parallel to the direction of the fibres 479 and to the direction of travel of the web 480 in order to successively produce slits such as 417, 418 in G or 474, 475 in bib N. It will be obvious that such slitting or piercing knives may be of suitable design to create the slits shown in any of the various modifications of my new bib, although the types shown in Figs. 1-4 are not as suitable as those shown in Figs. 9-17 for high speed production.

If reinforcement is desired for the slits, as in Fig. 12, a supply roll 700 carrying a continuous reinforcing adhesive strip such as 425 may be located as shown in dotted lines in Fig. 15 to accompany the moving web through the press in a well known manner.

If reinforcement is desired in the manner of Figs. 16 and 17, a pair of idler rollers 800 and 801 are provided to support the web 480 and a glue pot 802 and a glue roller 803 are positioned, as shown, beneath a longitudinal edge surface of the web. Glue roller 803 is provided with minute cavities arranged to successively pick up glue 472 from the pot 802 and deposit it in a longitudinal strip, as indicated at 473 and 477 on web 480 in the pattern shown in Fig. 16. A well known type of infolding

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device is provided at 804, arranged to infold the longitudinal edge 470 of the web, thus adhering the glued surface 477 to the glued surface 473 except around the immediate areas to be slit by knives 602 and 603 and to be cut by band saw 507.

It will thus be seen that prior to the printing step, at rollers 501 and 502, the moving web has been successively pierced by an elongated knife, such as 602 and 603 on a roller such as 600 to create successive elongated neck opening slits therein and therethrough. The web may also have been reinforced by an adhesive strip 425, or a glued infolded edge such as shown in Fig. 17, if desired prior to the slitting step.

As stated above the slit or slits defining the neck opening of the bib may be straight, curved or crooked and the neck opening, defined thereby, may be square, rectangular, circular or of other desired shapes. However, since the bib is of disposable paper, and must be made at high speed and low cost to have any substantial commercial value, there are certain characteristics of the slit and neck opening which are the essence of the invention. First the slit, or all of the slits, defining the neck opening always have terminal ends which are closed within what I call the bib attachment section, or neck opening area, of the rectangular sheet and the edge portion of the periphery of the bib attachment area is always imperforate and free of slits. Second, there is always at least one elongated slit with closed terminal ends which extends laterally of the rectangular sheet from near one longitudinal edge toward the opposite longitudinal edge. Third, the neck opening defined by the slit, or slits, is always a closed figure wholly within the confines of the bib attachment area and unconnected by any slits extending to the peripheral edges thereof. These characteristics are significant because the disposable bibs are preferably formed, and preferably dispensed in a continuous web with the perforated lines of severance between bibs transverse to the direction of travel and direction of the fibres of the web. The perforated lines of severance are thus the longitudinal, or elongated parallel sides, of the rectangular sheet, or bib. Any elongated slit defining a neck opening, running parallel to such longitudinal edges would cause the web to sever at the line of the slit. Any slit extending to the peripheral edge of the sheet or bib would also cause a severance of the web.

By using a slit, or slits, with closed terminal ends to define a neck opening in the form of a closed figure and by running the slits either laterally of the bib or at a slight angle from such lateral direction, severance of the web is avoided. A very short longitudinal slit such as at 22 in Fig. 3 is possible when the bib is not made, or dispensed, in web form and when the neck opening is principally defined by laterally extending slits such as 20 and 24. Similarly crossed laterally extending slits at a greater angle from a lateral direction such as at 122 and 124 in Fig. 4 are also possible when not made or dispensed in web form and when the neck opening figure is well spaced from the edges of the sheet. However it should be noted that in none of the forms of bib illustrated is an elongated slot, extending parallel to the elongated sides of the rectangular sheet, used as the principal slit for defining the neck opening. If such a slit is used at all, it is only in combination with a much longer laterally extending slit as in Fig. 3.

I claim:

1. A disposable bib comprising a rectangular sheet of tearable paper having between its parallel longer side edges a major surface area, adjoining one shorter side edge, forming a bib section; a minor surface area on said sheet, between said parallel longer side edges and adjoining the opposite shorter side edge, forming a bib attachment section; a pair of substantially aligned, elongated slits, each of a length to serve as approximately half of a neck opening and each extending generally laterally of said sheet in said bib attachment section and substan-

tially parallel to the shorter side edges of said sheet; a single narrow web in said tearable paper sheet, separating the adjacent closed ends of said pair of slits at the longitudinal centre line of said sheet, and a pair of wide webs in said tearable paper sheet, each wide web located between a closed terminal end of a slit and the adjacent edge of one of the parallel longer sides of said sheet, said wide webs being adapted to resist tearing and said narrow web being easily tearable to convert said pair of slits into a continuous substantially straight neck opening intermediate of said bib attachment section and laterally of said sheet.

2. A disposable bib as specified in claim 1 plus a pair of supplementary slits in said bib attachment section, said supplementary slits each extending substantially radially from said narrow web at an acute angle to one of said substantially aligned slits toward a peripheral edge of said sheet and a pair of supplementary wide webs each separating the closed terminal end of a supplementary slit from the adjacent peripheral edge of said sheet.

3. A disposable bib comprising a rectangular sheet of tearable paper having between its parallel longer side edges a major surface area, adjoining one shorter side edge, forming a bib section; a minor surface area on said sheet, between said parallel longer side edges and adjoining the opposite shorter side edge, forming a bib attachment section; a pair of substantially aligned, elongated slits, each of a length to serve as approximately half of a neck opening and each extending generally laterally of said sheet in said bib attachment section and substantially parallel to the shorter side edges of said sheet; a single narrow web in said tearable paper sheet separating the adjacent closed ends of said pair of slits at the longitudinal centre line of said sheet; a pair of wide webs in said tearable paper sheet, each wide web located between a closed terminal end of a slit and the adjacent edge of one of the parallel longer sides of said sheet; a reinforcing strip overlying the laterally extending area of said sheet in said bib attachment section containing said slits, corresponding slits in said strip registering with the slits in said bib and a layer of adhesive be-

tween said strip and said bib except immediately adjacent to the registering slits therein, the wide webs in said bib being adapted to resist tearing and the single narrow web in said bib being easily tearable to convert said pair of slits into a continuous substantially straight neck opening intermediate of said bib attachment and laterally of said sheet section.

4. A disposable bib as specified in claim 1 wherein said sheet of tearable paper is formed of intermingled fibres which extend substantially laterally of said sheet in the same direction as the direction of said elongated slits in said sheet.

5. A disposable bib as specified in claim 1 wherein a peripheral edge strip of said sheet, adjacent said slits, is infolded upon itself and adhered flatwise on said bib and said strip is provided with corresponding slits which register with the neck opening slits of said bib attachment section.

6. A disposable bib as specified in claim 2 wherein each of said supplementary slits is formed by at least two slits in stepped relation with each other.

7. A disposable bib as specified in claim 2 wherein the parallel longer side edges of said rectangular sheet are connected to adjacent identical sheets by perforated tear lines.

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