Feb. 13, 1968 R. E. ERICSON ETAL 3,368,561

PEDIATRIC URINE COLLECTOR

Filed July 28, 1964

Fig. 1.

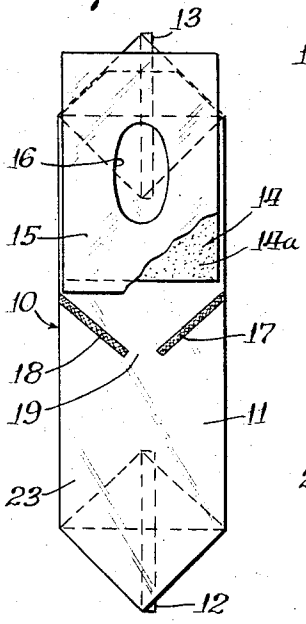


Fig. 2.

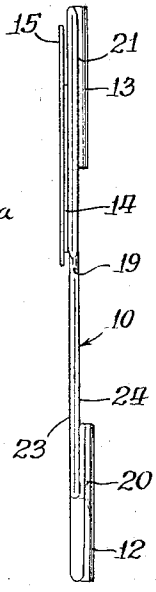


Fig. 3.

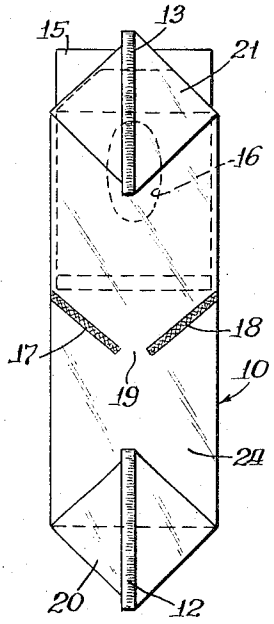


Fig. 4.

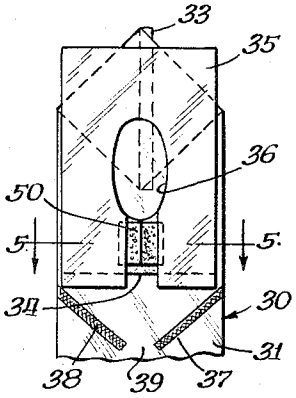


Fig. 5.

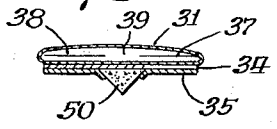


Fig. 6.

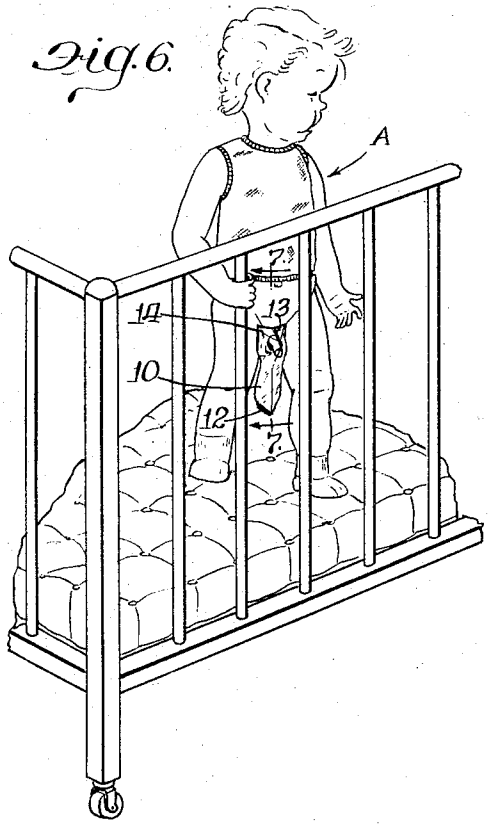
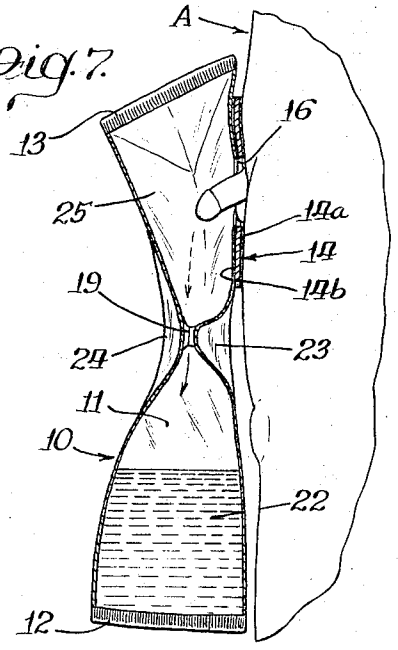


Fig. 7.



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PEDIATRIC URINE COLLECTOR

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ABSTRACT OF THE DISCLOSURE

A pediatric urine collector adapted for adhesive attachment to the child's body and having an upper chamber into which the child's outer genitals protrude and a lower chamber for collection of the urine. The two chambers are separated by a thin funnel-like throat formed by downwardly converging sealed areas which lie in a plane substantially normal to the plane of the top and bottom seals of the collector so as to make each of the two chambers three-dimensional.

This invention is concerned with urine collectors for infants and small children particularly collectors of the type normally fastened to the patient's body and into which urination occurs in the normal manner.

Urine samples are periodically required for diagnosis and treatment of various body disorders. Collection of such samples is no problem with older children and adults but with very young children and infants unable to urinate at will, to whom directions are incomprehensible and catheterization is undesirable and perhaps even dangerous, collection or urine samples is a real problem. Solutions to this problem have been proposed from time to time and collectors of the type illustrated in the Fowler Patent No. 2,548,149 and more recently in the Hill Patent No. 2,877,769 have been well received. The urine collector of this invention is an improvement over pediatric urine collectors known prior to this invention.

It is an object of this invention to provide a pediatric urine collector which efficiently collects the urine, segregates it, is readily and easily detached without spilling the contents and, above all, is comfortable when worn by infants and small children.

Other objects of the invention will be apparent from the specification and the drawings.

In the drawings:

FIGURE 1 illustrates a typical pediatric urine collector of this invention in the folded condition as viewed from the front or body engaging side.

FIGURE 2 illustrates the collector of FIGURE 1 as view from the side.

FIGURE 3 illustrates the collector of FIGURE 1 as viewed from the rear.

FIGURE 4 illustrates a partial front view of a modified urine collector of the invention particularly adapted for female infants.

FIGURE 5 is a cross section of FIGURE 4 showing more clearly the modification.

FIGURE 6 illustrates pictorially the collector of FIGURES 1, 2 and 3 in use.

FIGURE 7 illustrates in cross section, the arrangement of the collector of FIGURE 1 particularly with respect to the baby's body.

It is undesirable to have an infant's body exposed to raw urine for obvious reasons. Hence the urine should be segregated, if possible, immediately upon its passage. Segregation of the urine is one of the features of the collector of this invention.

It is also desirable to maintain minimum rubbing contact between the baby's tender sexual parts and the collector while the latter is being worn. In this respect the unique structure of the collector of this invention provides sufficient clearance for the genitals that such rubbing normally does not occur.

Referring once more to the drawings:

In FIGURES 1, 2 and 3, collector **10** is formed of two film panels, front panel **23** and back panel **24** which are preferably integral panels of a flat tubular structure but the panels may be joined by a thin seal at the side edges preferably an electronic heat seal. At any rate, the panels **23** and **24** are sealed together in the sealed areas **17** and **18** to form a bottom chamber **11** and a top chamber **25** (FIGURE 7), connected by a thin throat **19**. The panels **23** and **24** are also sealed together in the sealed areas **12** and **13** with seals that are normally in a plane substantially vertical to the plane of sealed areas **17** and **18**. This is best shown in FIGURE 7. When the container is folded, however, as in FIGURES 1, 2 and 3, the ends fold into a square configuration with the seals **12** and **13** lying substantially in the plane of the sealed areas **17** and **18**.

In the embodiments illustrated in FIGURES 1, 2, 3, 6, and 7 there is applied to the front of panel **23** and extending at least in an area surrounding the aperture **16** but preferably extending substantially across panel **23** above the sealed areas **17** and **18**, an adhesive tape **14** having pressure sensitive adhesive **14***a* both on its front and back surfaces. Alternatively, a coating of pressure sensitive adhesive **14***a* might be applied directly to the front panel in the desired area. In the embodiment shown, the pressure sensitive adhesive on the back of the tape **14** adheres it to the panel **23**. The adhesive **14***a* exposed on the front of panel **23** is covered with a facing strip **15** such as polyethylene, Mylar, cellulose triacetate, silicone-coated paper or other well-known facing materials for pressure sensitive adhesives. This strip, as is shown, preferably extends somewhat beyond the adhesive surface to facilitate its removal therefrom. An aperture **16** of generally elliptical shape and approximately 1½ inches in length is made prior to making the seal **13**. This aperture extends through the facing strip **15** through the adhesive or adhesive tape **14** and through the front panel **23**. If desired, however, an unapertured facing may be put on after the aperture **16** is made, whereupon the facing would act to cover the aperture.

In practice, the facing **16** is removed, the seals **12** and **13** are placed in their normal unfolded position as shown in FIGURE 7 to open the chambers and then the adhesive surface is pressed against the baby in the proper position with the outer genitals protruding into the chamber **25**. The embodiment shown in FIGURES 1, 2, 3, 6 and 7 is operative with either male or female infants. In FIGURES 4 and 5, however, a modification particularly adapted for female infants is shown. In this modification, the collector **30** is shown as formed from a tubular film **31**, the front and back panels of which are sealed as before by seals **37** and **38** to provide a narrow throat **39**. The adhesive tape **34** again preferably extends over approximately the same area and the end seal **33** has the same relationship. The facing **35** has a portion cut away, however, just below the hole **36** and projecting from this cut-away portion and adhered to the adhesive **34** is a portion of a triangular-prism-shaped piece **50** of soft resilient material such as felt or surgical sponge material. The preferred material is a soft urethane rubber or natural rubber sponge but it is not critical. This wedge is inserted at the bottom between the labia majora. When the wedge is so positioned, the urine is emitted in a stream which does not trickle around the edges of the hole **39**.

Sealing is used in the collector of this invention to provide a number of desirable features. The downwardly converging sealed areas **17** and **18** not only separate the tubular structure into upper and lower chambers but they

also provide an inclined funnel-like drainway into the lower chamber. The unsealed portion between the sealed areas provides a slit-like drain or throat through which the urine flows into the lower chamber. As the lower chamber becomes filled the weight of the urine causes the slit-like throat to narrow but it does not become a watertight valve. However, it does serve the function of preventing the urine from spilling out in volume if the collector is up-ended momentarily, and it does segregate the urine from the baby.

But, in addition, the downwardly converging sealed areas help in making the upper and lower chambers three-dimensional. These sealed areas confine the central portion of tubular structure to one plane whereas the top and bottom seals normally confine the ends of the tubular structure into planes roughly normal to the plane of the central portion. Thus when the seals are in their normal position both the top and bottom chamber assume a three-dimensional shape. It is still possible, however (and is a desirable feature), to fold the ends so that they lie flat substantially paralleling the plane of the central portion. This is illustrated in FIGURES 1, 2 and 3.

While the preferred material of the collectors of this invention is substantially transparent, extruded thermoplastic film preferably of the order of ½ to 3 mils in thickness, opaque film and films of other thickness may be used being obviously less desirable. But in addition to extruded tubular films, sheet films and moisture impervious paper coated with wax, thermoplasic resins, silicones and the like may be made into tubes by heat sealing, gluing or other appropriate means and thereafter converted into the collectors of this invention.

We claim:

1. A pediatric urine collector comprising a tubular structure of water impermeable material including a top seal and a bottom seal respectively closing the top and bottom of said structure, an upper chamber and a lower chamber within said structure, a pair of separated downwardly converging sealed areas in each of which opposite sides of said tubular structure are sealed together, said sealed areas, disposed intermediate said top and bottom seals, forming a partial closure between said chambers, an unsealed throat between said downwardly converging sealed areas joining said upper and lower chambers, an elongated aperture in said upper chamber suitable for accommodating the external genitals of a child, a pressure sensitive adhesive carried by said tubular structure on an outer wall thereof in an area surrounding said elongated aperture and a removable facing covering said adhesive, said top and bottom seals being disposed in a plane substantially normal to the plane of said sealed areas when said tubular structure is unfolded so that both said upper and lower chambers assume a three-dimensional shape.

2. The urine collector of claim **1** wherein the seals are heat-seals.

3. The urine collector of claim **1** wherein the pressure sensitive adhesive is part of an adhesive tape bearing pressure sensitive adhesive on both major surfaces thereof.

4. The urine collector of claim **1** wherein the pressure sensitive adhesive extends to the side edges of said tubular structure as defined by said downwardly converging sealed areas.

5. The urine collector of claim **1** wherein the tubular structure is integral.

6. The urine collector of claim **1** wherein the tubular structure is of thermoplastic film.

7. The urine collector of claim **1** wherein the tubular structure is of water impervious coated paper.

8. The urine collector of claim **1** wherein the downwardly converging sealed areas extend to the side edges of said tubular structure.

9. The urine collector of claim **1** wherein a triangular-prism-shaped pad is disposed immediately below said aperture with a face of said pad adherent to said pressure sensitive adhesive and with an edge of said pad substantially aligned with the longitudinal axis of said aperture.

10. The urine collector of claim **9** wherein the pad is of resilient foam.

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