Nov. 11, 1958 E. J. DE VILLERS 2,859,447

ADJUSTABLE, DISPOSABLE-TYPE CAP CONSTRUCTION

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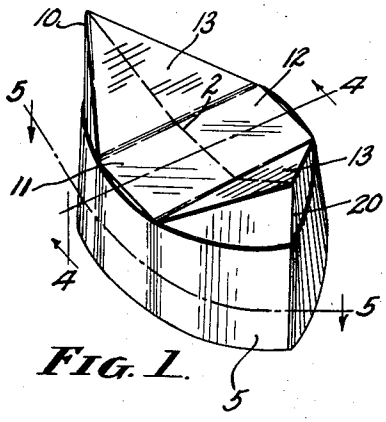


FIG. 1.

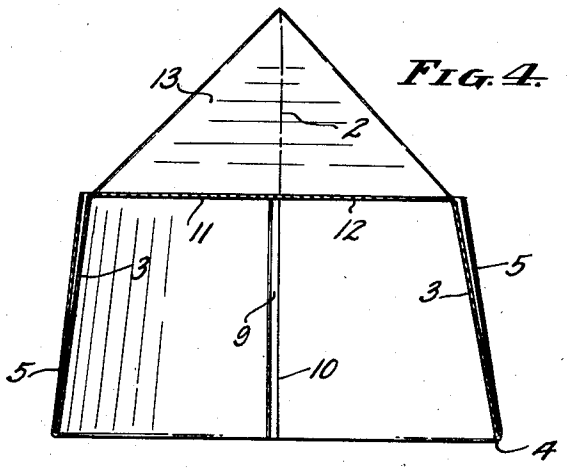


FIG. 4.

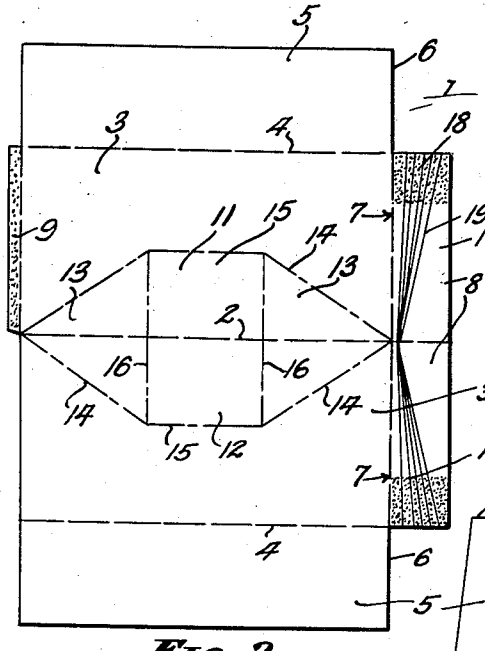


FIG. 2.

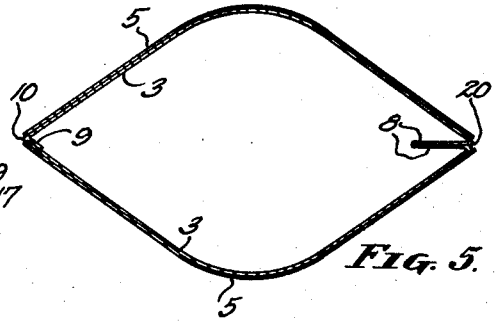


FIG. 5.

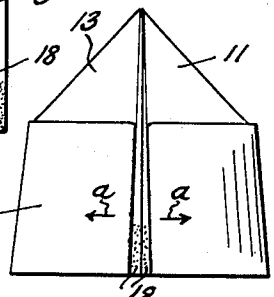


FIG. 6.

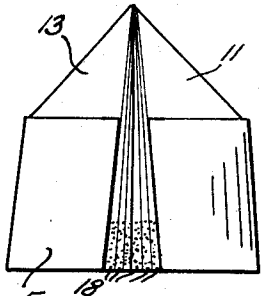


FIG. 7.

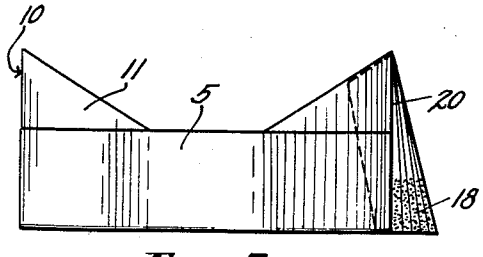


FIG. 3.

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ADJUSTABLE, DISPOSABLE-TYPE CAP CONSTRUCTION

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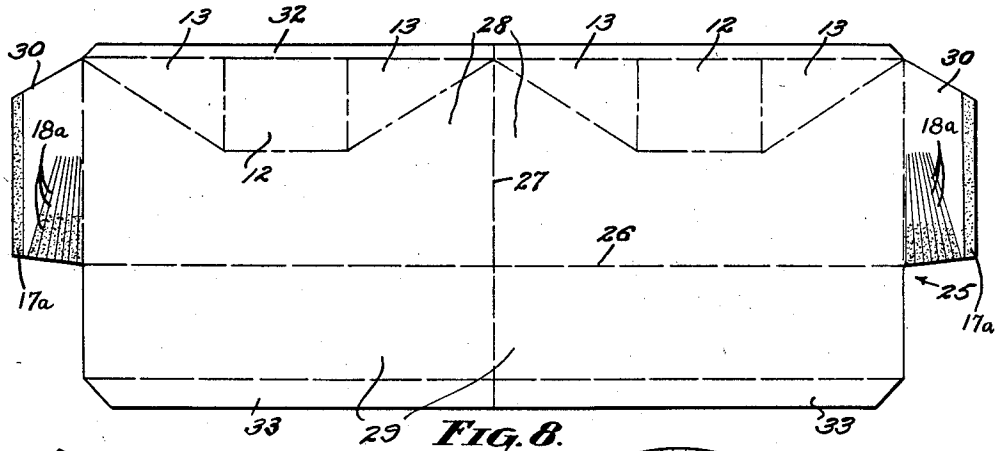


FIG. 8.

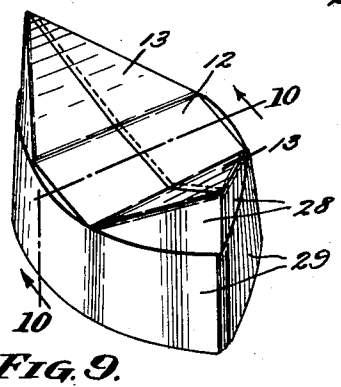


FIG. 9.

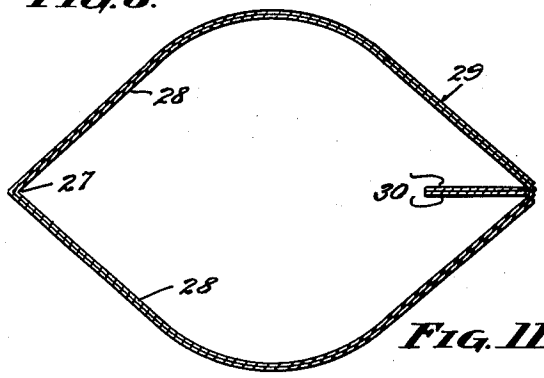


FIG. 11.

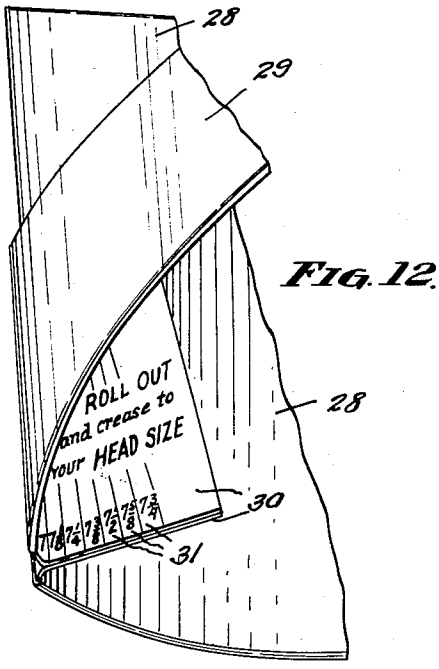


FIG. 12.

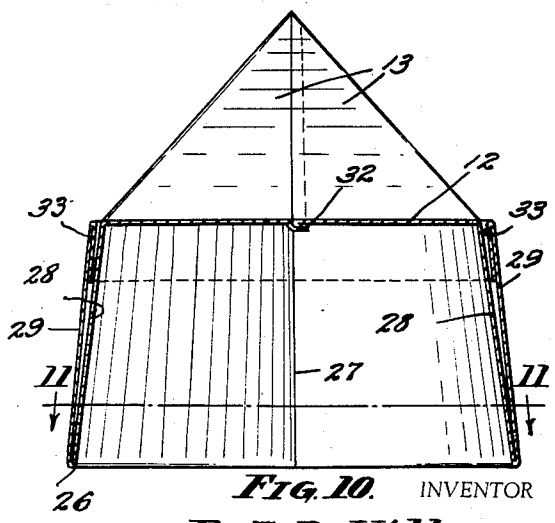


FIG. 10.

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2,859,447

ADJUSTABLE, DISPOSABLE-TYPE CAP CONSTRUCTION

Edmund J. De Villers, Columbus, Ohio, assignor, by mesne assignments, to Paperlynen Company, Columbus, Ohio, a corporation of Ohio

Application April 20, 1955, Serial No. 502,644

3 Claims. (Cl. 2—197)

The present disclosure is concerned with paper cap construction, particularly machine made caps of a type suitable for wear by persons engaged in various occupations, as in the preparation and serving of foods, and in other capacities or industries.

In producing such caps, it is important that the same shall possess a design by which the same may be formed from a withdrawn web of rolled paper which is cut into blanks and folded through automatic machine operations to form attractive, properly fitting and economically produced articles of head wear, and it is a general object herein to provide a paper cap in which these qualifications or properties are present in an improved and higher degree over caps of the prior art.

Another object of the invention is to provide such an article of head wear formed so that it may be flatly folded in association with other corresponding articles for compactness in storage and shipment, and which individually may be readly opened and expanded for application to the head of a wearer, the article being so formed that when expanded the same presents an attractive military appearance, well adapted for use by either men or women.

A further object of the invention is to provide a cap of this character which is formed and folded to provide a head-receiving band having adhesively united interengaging ends, the latter being so formed as to admit of controllable separation thereof in regulating the circumference of the band, so that the same may be conveniently adjusted to fit the individual head size of a wearer.

The invention also contemplates other details of construction as will hereinafter more fully appear.

The illustrated embodiment of the invention will now be described and thereafter the invention will be pointed out in the claims.

Fig. 1 is a perspective view of a paper cap formed in accordance with the present invention, and disclosing the cap in its expanded condition suitable for use;

Fig. 2 is a view of the paper blank from which the cap is formed, the fold or crease lines of the blank being disclosed by broken lines;

Fig. 3 is a side elevational view of the cap disclosing the adhesively united size-controlling folds in the positions which the same occupy when the cap is adapted to receive larger head sizes;

Fig. 4 is a transverse vertical sectional view taken through the finished and folded cap on the plane disclosed by the line 4—4 of Fig. 1;

Fig. 5 is a horizontal sectional view on the plane indicated by the line 5—5 of Fig. 1;

Fig. 6 is a rear elevational view disclosing the cap when adhesively united to provide a small head size;

Fig. 7 is a similar view disclosing the cap when adjusted to render the same adaptable to a larger head size;

Fig. 8 is a view disclosing a paper blank from which a modified type of paper cap embodying the features of the present invention is formed;

Fig. 9 is a perspective view of a finished cap produced from the blank of Fig. 8, and illustrating the same when expanded for application to the head of a wearer;

Fig. 10 is a vertical transverse sectional view taken on the line 10—10 of Fig. 9;

Fig. 11 is a horizontal sectional view taken through the head band portion of the cap of Fig. 9, and illustrating the adhesively united flap-forming ends of the band portion;

Fig. 12 is a fragmentary perspective view looking toward the inwardly disposed, adjustable, adhesively united, size-controlling head band flaps of the cap of Fig. 9.

Referring now to the drawings by reference characters, the numeral 1 designates a cap-forming blank in the form of a flat, rectangular, sheet of paper, or other similar inexpensive, flexible, sheet material. As shown in Figs. 1 through 7, the blank is provided with a centrally disposed longitudinally extending crease or fold line 2. When the blank is folded along this line a pair of substantially duplicative side-forming panels 3 are provided and from which the head band and crown portions of the cap are formed. The blank of Fig. 2 is also formed with fold or crease lines 4 arranged in parallel equidistantly spaced relation from the fold line 2. When the blank is folded along the lines 4, the same provides the upwardly turned, outer side flaps or panels 5 to thus form a double thickness head band portion for the cap as shown particularly in Figs. 4 and 5.

As shown in Fig. 2, the blank 1, in registry with the rear edges 6 of the panels 5, is provided with a transversely extending crease or score line 7 and which intersects the fold line 2, as shown in Fig. 2. At the right of the score line 7, there are formed a pair of rectangular, adhesive-bearing, extensions or end flaps 8 which are adapted to be adhesively joined, in a manner hereinafter more fully explained, to close and unite the originally separate rear ends of the head band of the cap.

The forward end of one of the panels 3, in this instance, is formed with a glue lap 9 which is adapted to be inwardly folded, after the manner disclosed in Fig. 5, and permanently sealed to the forward edge of a complemental panel 3 along the inner surface thereof, whereby to provide an erect, forwardly disposed, vertical edge region 10 which extends the full height of the finished and folded cap, as indicated in Fig. 3. The side panels 5 normally are merely folded upwardly, after the manner disclosed in Fig. 4, without adhesive union with adjoining surfaces of the cap body.

To improve or heighten the appearance of the cap when the same is being worn, in this instance by imparting a military aspect thereto, the panels 3 are provided on opposite sides of the fold line 2, as shown in Fig. 2, with a crown or top-forming area 11. This area comprises a centrally located, substantially rectangular, region 12 which is flanked on both sides by triangular regions 13. These regions are well defined by the crease or fold lines indicated at 14, 15 and 16. The bases of the triangular regions 13 are formed by the vertical fold lines 16, while the apexes thereof of these regions terminate on the fold line 2 at the opposite ends thereof in dividing the panels 3 to form the side and crown regions.

With the panels so creased and folded and when the cap is fully extended from its flat folded condition to one adapted for application to the wearer's head, the same folds readily so that the rectangular crown region 12 is depressed and disposed in a horizontal plane, whereas the adjacent triangular regions 13 extend upwardly in reverse forwardly and rearwardly directed order.

To provide for adjustment of the cap in adapting the same to the head requirements of each individual wearer, the extensions or flaps 8 are formed so that they may be inwardly folded along the score or crease lines 7 and brought into relative contact with each other, as indi-

cated in Fig. 5. The adjacent surfaces of the extensions or flaps are provided with localized, generally triangular pleats or areas, indicated at **18**, formed to include a plurality of relatively inwardly converging crease or score lines **19**. The latter converge, as shown in Fig. 2, at a point on the crease or score line **2** at the rear peak of the folded cap, and these regions are adapted to receive a pressure-sensitive adhesive which, upon the application of separating or pulling forces, applied in the directions indicated by the arrows *a* of Fig. 6 to the areas **18**, permit the latter to be separated progressively in complemental pairs to increase as required the circumferential dimensions of the head-receiving portion of the cap, thus adapting the same to differing head sizes.

In the manufacture of the cap, the separable areas **18** receiving the adhesive are preferably marked in some suitable way, as shown in Fig. 12, for example, to indicate head sizes, so that the users of the cap will be enabled to separate the areas **18** as required until a desired or proper head size is presented.

In the formation of the cap, and following the cutting of the blanks **1**, a permanent adhesive may be applied to one of the surfaces of the glue lap **9** and to the outer edge surfaces **17** of the end flaps or extensions **8**. The latter may then be folded along the line **7** so that the under surfaces thereof, which do not contain adhesives, may be placed flatly on the surfaces of the panels **3**. Likewise, the glue lap **9** is similarly folded and bent backwardly to overlap the panel **3** with which it is joined but in non-adhesive relationship therewith. The flat blank is then folded upon itself about the line **2**, and the side panels **5** folded about the crease lines **4** to cause the same to extend upwardly against the side panels **3**.

The adhesive-bearing surfaces of the glue lap **9** are then united with the forward edge of the complemental panel **3** to secure the forward edge portions **10** of the cap throughout their height in permanently united relatively inseparable relationship. Likewise, the adhesive-bearing surfaces **17** and **18** are brought into adhesive engagement to close the vertical rear edge **20** of the completed cap. In this latter operation, the localized areas **17**, containing the permanent adhesive, are brought into united relationship, as are also the areas **18** containing the pressure-sensitive and separation-permitting adhesive. If it is desired to enlarge the cap from its normal contracted position, as shown in Fig. 6, it is merely necessary to apply oppositely and outwardly directed pressures to the side band-forming regions of the cap on opposite sides of the rear edge **20**, so that one or more complemental pairs of the areas **18** will be separated to enlarge the cap's circumference.

In the form of my improved paper cap as illustrated in Figs. 8 through 12 of the drawings, there is provided a blank **25** of paper, or other sheet material. As shown, the blank **25** is of an elongated, generally rectangular formation and is scored or weakened to include a longitudinally extending fold line **26** and a vertically disposed intersecting fold line **27**. These lines define side-forming panels **28** and outer panels **29** forming a head band, the outer panels being disposed so that they are adapted to lie adjacent to and in parallel order with the inner head band panels **28**.

The fold line **27** is disposed in registry with the front vertical edge of the cap, while the separable rear vertical edges are formed by means of adhesively united rear end closing flaps **30**, the latter being formed as integral extensions of the opposite ends of the side-forming panels **28** of the blank. After the manner of the flaps **8** of Fig. 5, the flaps **30** in the completed cap are folded inwardly of the latter and permanently adhesively secured along the areas **17***a* and have their mutually contacting triangular pleats or areas **18***a* provided with a pressure-sensitive adhesive. By pulling these adhesive-bearing areas **18***a* of the flaps **30** apart in a regulated manner, as determined by the size markings **31**, shown in Fig. 12, the effective circumference of the head band may be varied to accommodate different head sizes in the same manner as described in connection with the form of cap shown in Figs. 1–7.

The crown portion of the cap shown in Figs. 8–12 may include the rectangular regions **12** and the triangular regions **13** shown in connection with the form of my cap illustrated in Fig. 1 and produced in the same manner. In the cap of Fig. 9, however, the crown portions of the side-forming panels **28** are originally separate from one another and subsequently joined by an adhesive lap **32** formed longitudinally along one edge of the blank **25** and inwardly folded to provide an upper ridge line. The upper edge portions of the outer flaps **29** may be reinforced by an inwardly and downwardly folded edge region **33**.

The constructions of my improved caps as defined are simple and effective and may be readily produced at a low cost with machine-executed operations. The adhesively united head bands of my improved caps specifically avoid the relative complexity of the slidable telescoping type of adjustable band means, such as have been heretofore employed in paper cap manufacture, enabling paper caps to be manufactured at substantially lower costs and with simplified apparatus.

Various modifications may be made in the constructions shown in the drawings and above particularly described within the principles and scope of the invention and set forth in the appended claims.

I claim:

1. A disposable cap comprising a pair of substantially duplicative, rectangular side-forming panels each including an upper longitudinally extending crown-forming part and a lower longitudinally extending head band-forming part, said panels being joined to one another along an upper longitudinally extending edge and along one end edge of said cap and being formed at the end of said cap opposite said one end edge with relatively mating, longitudinal extension flaps folded inwardly of the opposite end of said cap and permanently secured to one another along the outer end edges thereof, said extension flaps being formed inwardly of their permanently secured edges with a plurality of upwardly and relatively convergent fold lines defining a plurality of triangular areas extending upwardly of said flaps from the lower head band-forming part of said panels to the joined upper longitudinally extending edges thereof; and pressure-separable adhesive means applied to the triangular areas of said extension flaps, at least in the regions thereof adjacent the head band-forming parts of said panels, and detachably uniting corresponding triangular areas on said flaps to form a second end edge for said cap, the adhesively united triangular areas of one of said flaps being progressively detachable from corresponding areas on the other of said flaps to progressively increase the circumferential size of the head band portion of said cap.

2. A disposable cap as defined in claim 1, wherein the longitudinally extending edges of said panels opposite the joined upper longitudinal edges thereof are folded upwardly upon the head band-forming parts of said panels to provide a double thickness in the head band portion of the cap.

3. A disposable cap comprising a one piece body of flexible sheet-like material formed with a pair of substantially duplicative side-forming panels each defining on said cap upper crown portions and lower head band portions, said side-forming panels being of generally rectangular form and having upper longitudinal edges and forwardly disposed end edges connected respectively with one another each of said side-forming panels being formed at the end thereof opposite said forwardly disposed end edges with flap extensions each including a plurality of relatively upwardly convergent fold lines defining on said extensions a plurality of triangular

pleats, said flap extensions being folded inwardly of said cap at the rearward end edge thereof and each of said extensions having at least a portion of the triangular pleats thereof secured to corresponding pleats on the opposite extension by a pressure separable adhesive, the triangular pleats of said extensions converging upwardly to a point along the upper longitudinal edges of said panels and being relatively widened at the lower head band portions of said panels to permit of relative expansion of the head band portion of said cap upon separation of said adhesively secured pleats.

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