July 31, 1956 J. A. DE LUCA, JR., ET AL 2,756,431

DISPOSABLE RAIN CAPE

Filed Dec. 2, 1952

Fig. 1

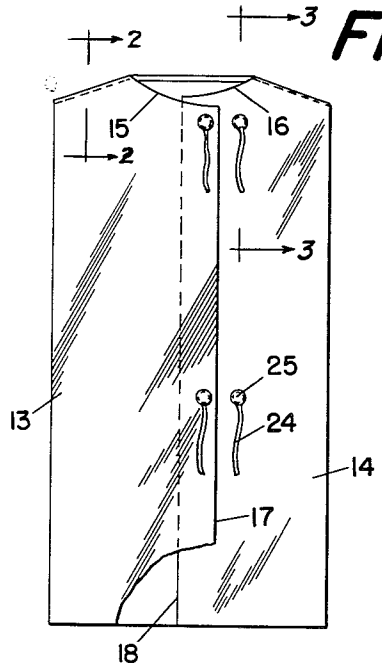


Fig. 5

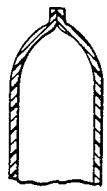


Fig. 6

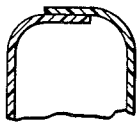


Fig. 2



Fig. 3

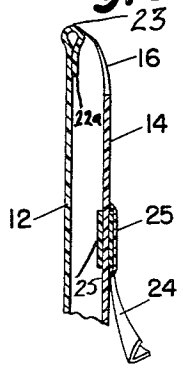


Fig. 4

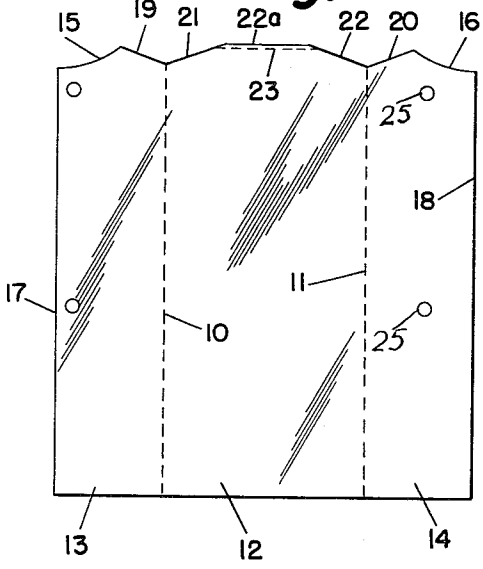
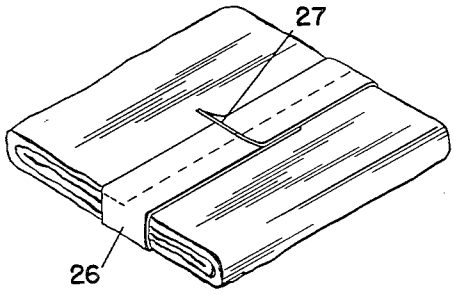


Fig. 7



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DISPOSABLE RAIN CAPE

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1 Claim. (Cl. 2—87)

The present invention relates generally to outer garments for protection against rain or the like and it relates more particularly to rain-capes or the like which are inexpensive and intended to be disposed of after but a single use.

An object of the present invention is to provide a new and improved type of disposable outer garment for protection against rain or the like. Another object of the present invention is to provide a rain-cape or rain-coat or the like, which can be manufactured and sold at a price sufficiently low to permit the garment to be used but once and thereafter discarded. A further object of the present invention is to provide a disposable rain-cape or the like of material sufficiently light in weight, and flexible, to permit it to be folded into a square no larger than a handkerchief for ease in selling and carrying, which at the same time is fully waterproof and fireproof, to give adequate protection against rain or the like without incurring the risk of fire normally attendant upon the wearing of thin filmy garments. Still another object of the present invention is to provide an inexpensive rain-cape or the like which can be folded into a sfficiently small package to enable it to be sold in automatic vending machines. A still further object of the present invention is to provide an inexpensive, disposable, compactly-packaged rain-cape or the like, intended for but a single wearing, which can be conveniently sold in drug stores, cigar stores, super-markets, theatre and hotel lobbies, at news stands, by concessionaires at all outdoor sporting events, amusement parks, picnic grounds and vacation resorts, so that one can be readily purchased in the event of a sudden and unexpected shower or the like. An additional object of this invention is to provide a light-weight, disposable rain-cape or the like, which is formed of sufficiently thin, yet comparatively strong material to enable it to be folded into an extremely small square and to be sold as such, without the need for an outer wrapper. Yet another object of the present invention is to provide an inexpensive, disposable rain-cape or the like, formed of extremely thin gauge, synthetic resin, sheet material, the edges and/or seams of which can be formed by heat-sealing operations without the need for stitching, and in which fold-lines can be readily formed by heat-molding to facilitate the manufacture of the garment and also its folding into a compact, easily bendable form.

Other objects and advantages of the present invention are apparent in the following detailed description, appended claim and accompanying drawings.

In recognition of the need for protection against sudden showers and the undesirability of carrying around conventional relatively heavy and bulky rain-coats, various suggestions have heretofore been made to provide an inexpensive, disposable outer garment for this purpose, which can be compactly packaged and conveniently sold and carried around for emergency use. However, none of these previously suggested constructions has proven satisfactory or enjoyed any appreciable degree of public acceptance, because of the shortcomings inherent therein.

Thus, rain-coats of waxed or oiled paper, as heretofore suggested, have proven stiff and uncomfortable to wear, have been too easily torn, have cracked and leaked, especially at fold lines, have been difficult to fabricate and to fold into compact form, and, worst of all, have been highly inflammable, tending to flare up violently when ignited by an accidental cigarette spark or the like, to cause serious injury and even death to the wearer. Other materials heretofore employed have been too expensive and difficult to fabricate and have likewise had the serious disadvantage of inflammability.

Accordingly, the present invention contemplates a novel disposable rain-cape construction employing an inexpensive, thin film or sheet of synthetic resin which is absolutely fireproof, completely waterproof, having a soft feel or "hand" and the ability to drape comfortably, like woven textile material, which is capable of being hemmed and seamed by heat-sealing, without the need for stitching, which can be heat-molded into fold-lines to facilitate fabrication and subsequent folding into an extremely compact square or the like, which has sufficient strength to enable it to be self-packaged (without any outside wrapper) if desired and to withstand the stresses of normal usage, and which does not crack, peel or otherwise deteriorate even upon prolonged storage, so that the purchaser can be assured of the effectiveness of a garment even though obtained many months or even years before the first occasion for its use arises.

We have found that a light-weight, low cost, easily foldable, fireproof rain-cape having all the other desirable qualities set forth above can be fabricated most advantageously of polythene synthetic resin film, in a manner to be described hereinbelow, although a number of other waterproof and fireproof synthetic resins, in sheet or film form, can also be employed, as for example, Mylar polyester film.

For the purpose of illustrating the invention, there are shown in the accompanying drawings forms thereof which are presently preferred, although it is to be understood that the present invention is not limited to the precise arrangements and instrumentalities illustrated.

Referring to the accompanying drawing in which like reference characters indicate like parts throughout:

Figure 1 is a front elevational view of a disposable rain-cape forming one embodiment of the present invention.

Figure 2 is a cross-sectional view taken generally along the line 2—2 of Fig. 1, showing the appearance of the heat-sealed shoulder seam construction.

Figure 3 is a cross-sectional view taken generally along the line 3—3 of Fig. 1, showing the appearance of the heat-sealed neckline hem and also showing the manner in which the tie-strings are secured and reinforced.

Figure 4 is an elevational view of the sheet or film "blank" as it appears after the neckline and shoulder seam edges and the fold-lines have been formed, but before heat-sealing of the shoulder seams to form the cape.

Figure 5 is a cross-sectional view like that of Fig. 2, but showing another form of shoulder seam construction.

Figure 6 is a cross-sectional view like those of Figs. 2 and 5, but showing still another form of shoulder seam construction.

Figure 7 is a perspective view showing the rain-cape of Fig. 1 as it appears when folded into a compact vendible package.

In Fig. 1, we have shown a light-weight, inexpensive, disposable rain-cape constructed in accordance with the present invention, and formed, for the most part, of a single sheet of polythene, or other suitable synthetic resin film, which is fireproof and waterproof and which has the other desirable properties described herein.

As indicated in Fig. 4, the rain-cape is formed from a generally rectangular blank (which in turn may be cut from a continuous roll of suitable width, as for example 63 inches), which is divided by spaced, longitudinally-extending fold-lines **10** and **11** into a back panel **12** and two peripherally-disposed front panels **13** and **14**; the combined transverse dimension of the two front panels being slightly greater than the transverse dimension of the rear panel so that there is a slight overlap of the front panels in the final product, as shown in Fig. 1.

Polythene and the other synthetic resins preferred by us are thermoplastic and capable of being molded and of cohering under the action of heat. Thus, the fold lines are preferably, though not necessarily, permanently formed in the blank, by running the blank (or the continuous roll from which the blank is cut) through conventional heated scoring or folding dies, in a manner well known in the art.

One end of the blank is shaped to provide shoulder seams and a neck opening, in a manner to be hereinafter described. Thus, arcuate edges **15** and **16** extend inward and upward from the uppermost ends of the vertical edges **17** and **18** of the panels **13** and **14**, respectively. From the inner ends of the arcuate edges **15** and **16** (which are located about half-way in from the vertical edges **17** and **18** respectively) generally straight edges **19** and **20** extend downwardly and inwardly and terminate at the upper ends of the fold-lines **10** and **11** respectively.

Straight edges **21** and **22** extend upwardly and inwardly of the back panel **12** from the upper ends of the fold-lines **10** and **11**, respectively. The angle of inclination of the edges **21** and **22** is the same as that of the edges **19** and **20**, so that folding of the panel **13** along the fold-line **10** results in juxtaposition of the edges **19** and **21**, while folding of the panel **14** along the fold-line **11** results in juxtaposition of the edges **20** and **22**.

Extending generally horizontally intermediate the innermost and uppermost ends of the edges **21** and **22** is an edge **22***a* which is intended to be folded down along the generally horizontal fold-line **23** to form the rear portion of the neck opening of the cape, after being heat-sealed in the manner shown in Fig. 3 so as to eliminate sharp cut edges at the neck as well as to provide added strength along a zone of appreciable stress.

After folding of the panels **13** and **14** in the manner described above, the juxtaposed straight edges **19** and **21**, and **20** and **22** are turned downward and heat-sealed (by use of heated dies or rollers or the like, as is well known in the art) to form shoulder seams, in the manner shown in Fig. 2. Of course, the shoulder seams can be formed in other ways, as for example by turning up and heat sealing the juxtaposed edges in the manner shown in Fig. 5, or by simply overlapping and heat-sealing the juxtaposed edges in the manner shown in Fig. 6.

It can be seen that the folding of the blank and the heat-sealing of the shoulder seams, as described above, are the only fabricating steps required to convert the blank into the rain-cape.

It is desirable, however, to provide fastening means at the front edges of the cape (i. e. adjacent the overlapped vertical edges **17** and **18**, to keep the cape closed so as to keep rain from coming in.

We may provide, for this purpose, the simplest and least expensive type of fastening, namely two pairs of tie strings **24** secured adjacent the edges **17** and **18** of the front panels **13** and **14**; one pair being disposed just below the neck opening (which is formed by the fold-line **23** and the edges **15** and **16**) and the other pair being disposed slightly more than halfway down the cape (which may be of the order of 48 inches in length so as to protect the wearer from the shoulders down to about the knees, although of course it can be made longer or shorter, as desired).

We prefer to construct the tie strings **24** of the same material (i. e. polythene or other suitable synthetic resin) as forms the body of the rain-cape, and to affix them by heat sealing or cohesion. The tie strings may be of the same sheet material or film forming the body of the rain-cape, but doubled over longitudinally and heat-sealed to give a two-ply structure of greater strength. Circular reinforcing tabs **25** (also of the same polythene or other synthetic resin film forming the body of the cape) may be disposed on the inner and outer faces of the panels **13** and **14** at the points of affixation of the tie strings (the outer tab overlying the affixed end of the tie string) and may be heat-sealed to the body of the rain-cape during the same operation as secures the tie strings thereto. This provides zones of triple thickness (as shown in Fig. 3) and considerably greater strength where this is needed most, thereby ensuring against accidental pulling loose of the tie strings.

It is apparent that the formation of the blank, and the neck and shoulder seam edges, the formation of the fold-lines **10**, **11** and **23**, the heat-sealing of the neckline and shoulder seams, and the formation and affixation of the tie strings and reinforcing tabs, can all be done quickly and easily and with a minimum of hand operations, to permit the garment to be fabricated inexpensively.

As mentioned above, polythene lends itself especially well to the fabrication of the disposable rain-cape of the present invention. Thus, its relatively great strength and tear-resistance, its ability to be rolled into extremely thin sheets having high uniformity of gauge and freedom from pin-holes, permit it to be employed in thicknesses of the order of 0.0015". This, in turn, makes it possible to construct a rain-cape roomy enough to protect even the largest man wearing an overcoat, and, at the same time, capable of being packaged, by folding, into a size no larger than those customarily employed for individually wrapped pocket handkerchiefs. Thus, the packaged rain-cape can be carried about conveniently in a pocket or hand-bag, in the glove compartment of an automobile, etc., to keep it readily accessible, at all times, in the event of unexpected rain.

Furthermore, as also pointed above, this extremely compact packaging of the rain-cape makes the product particularly well suited to dispensing from automatic vending machines, thereby greatly increasing sales potentialities.

Additionally, polythene has the advantages of being fireproof, completely waterproof, chemically inert, readily heat-sealable (to facilitate formation of seams), non-toxic (so that it is safe for children's garments as well) and low in cost.

By using polythene or other synthetic resins having similar properties, it is possible to construct an effective rain-cape in the manner described above at a cost sufficiently low to permit the product to be sold at retail for a nominal price, of the order of 25 cents. Thus the average purchaser will be perfectly willing to buy a half-dozen or so of the rain-capes and to keep them on hand for emergencies. Indeed, we contemplate the selling of as many as a half-dozen or even more individual capes in a single, still-compact package to increase sales.

As mentioned above, it is possible to fold the rain-cape into an extremely compact package for ease in vending and carrying. In Fig. 7, there is shown a rain-cape constructed in accordance with the present invention, as it appears when folded into a package of relatively thin, flat, generally rectangular configuration corresponding generally in size to a folded pocket handkerchief. Thus, the folded package of Fig. 7 may measure less than 4" by 6" and may be less than ¼" in thickness.

While it is possible to encase the folded rain-cape in a conventional wrapper of paper or cellophane or like material in making up a vendible package, this is not essential, because the nature of the synthetic resin material of which the rain-cape is constructed (especially its resistance to tearing and dirtying) makes it possible to form it into a vendible package by itself.

Thus, in Fig. 7, the folded rain-cape is shown as simply being held in compactly-folded condition by a tightly-encircling band **26**, the ends of which are adhesively secured, with one of the ends extending slightly beyond the secured zone to form a pull-tab **27**, which enables the band to be removed quickly by a simple pulling operation.

It is also possible to provide the underside of the band **26** with a coating of pressure-sensitive adhesive, of a type well known in the art, which affords a strippable adhesion of the band to the synthetic resin of the raincape. This provides more secure positioning of the band in its proper place around the folded rain-cape package, yet permits it to be pulled off cleanly and without any residual adhesive remaining on the synthetic resin.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, therefore, the embodiments described above should be considered merely as illustrative and not restrictive, reference being made to the appended claim rather than to the foregoing description, as indiclaim rather than to the foregoing description, as indicative of the scope of the invention.

Having thus described our invention, we claim as new and desire to protect by Letters Patent, the following:

A disposable raincape or the like comprising a generally integral body formed of extremely thin lightweight waterproof and fireproof heat-sealable synthetic resin film, said body having left and right shoulder seams formed by juxtaposed heat-sealed cut edges and also having a lapel-less and collar-less neck opening formed along its rear edge by a doubled-over inwardly-folded

heat-sealed cut edge extending between the inner ends of the shoulder seams, said body having overlapped vertical free edges extending along its front, and a plurality of vertically-spaced pairs of fastening members mounted adjacent said free edges, said fastening members comprising tie-strings formed of the same synthetic resin as the body and heat-sealed to the body at one end, a reinforcing tab of the same synthetic resin heat-sealed to the body in overlying relation to the attached end of each tie-string, said body having two permanently heat-molded fold-lines extending vertically downward from the outer ends of the shoulder seams and providing a flat generally two-ply structure including a back panel and left and right front panels, the synthetic resin film having the ability to drape, generally like woven fabric, and being easily foldable, whereby the flat two-ply structure can be folded again and again to provide an extremely compact multi-ply package capable of being conveniently carried about for emergency use.

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