July 29, 1958 B. J. TAMARIN 2,845,213

PACKAGE WITH TEAR TAB OPENING MEANS

Filed June 10, 1953 3 Sheets-Sheet 1

Fig. 1

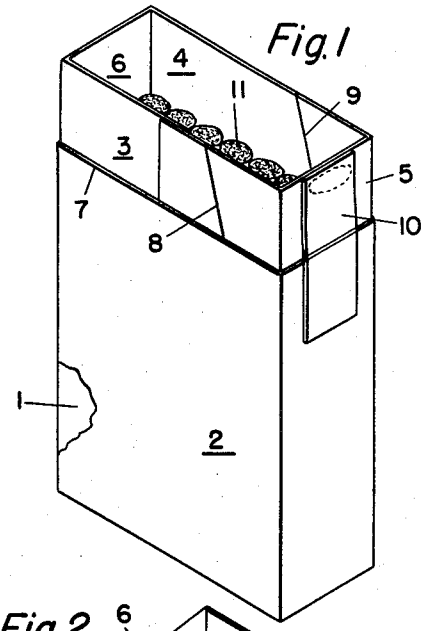


Fig. 2

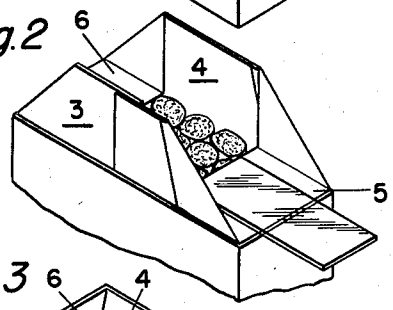


Fig. 3

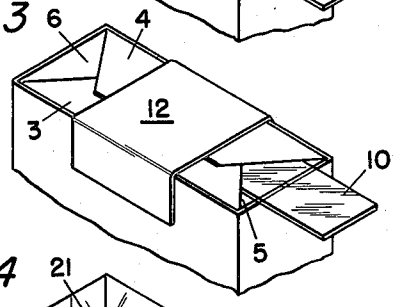


Fig. 4

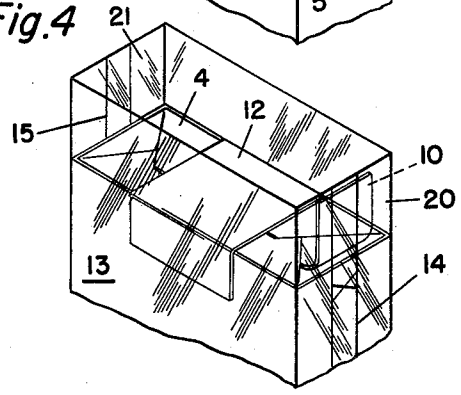


Fig. 5

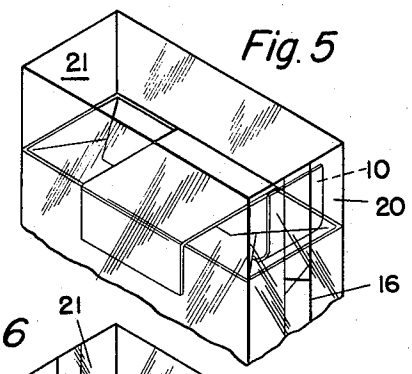


Fig. 6

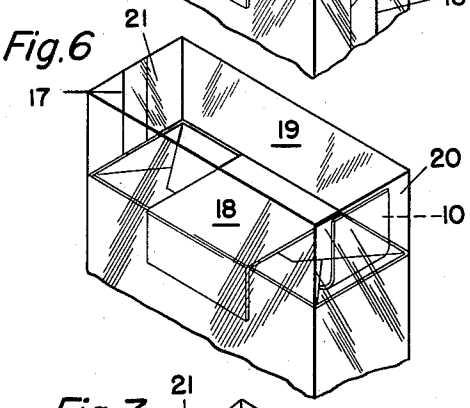


Fig. 7

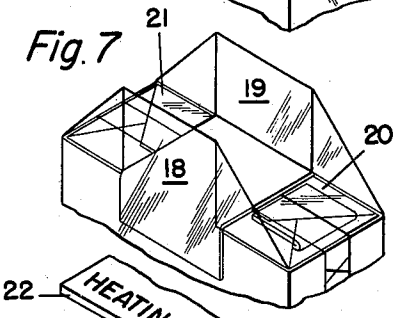
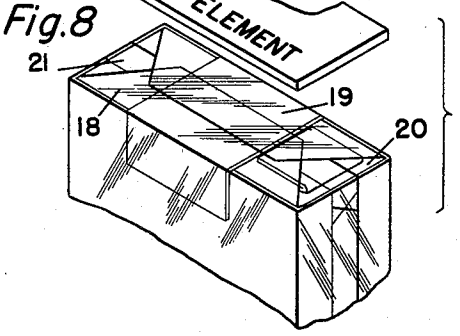


Fig. 8



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Fig. 9

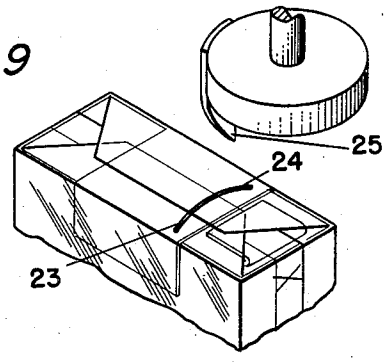


Fig. 10

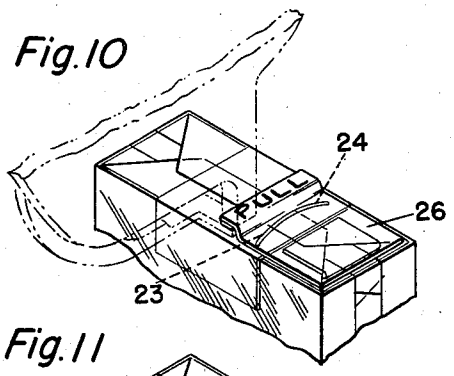


Fig. 11

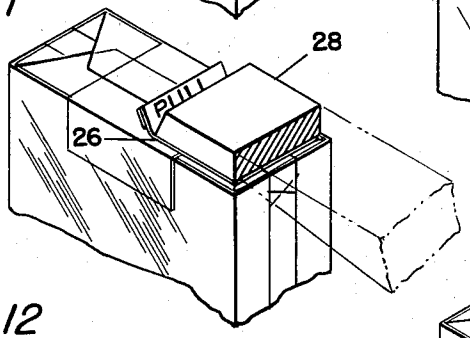


Fig. 12

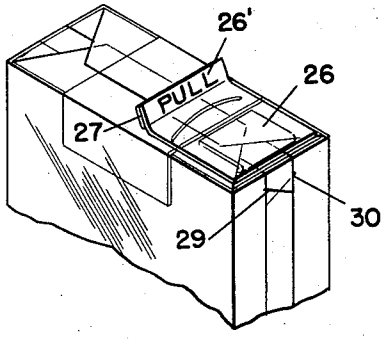


Fig. 13

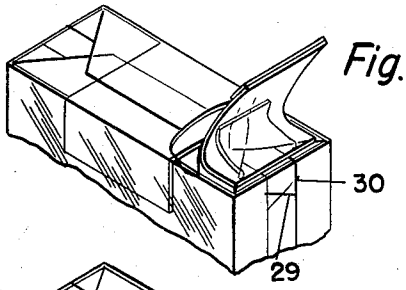


Fig. 14

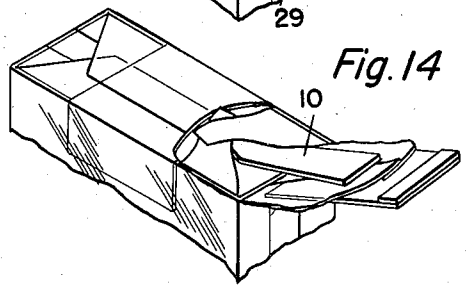


Fig. 15

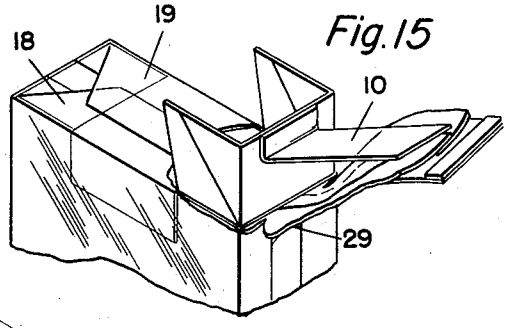
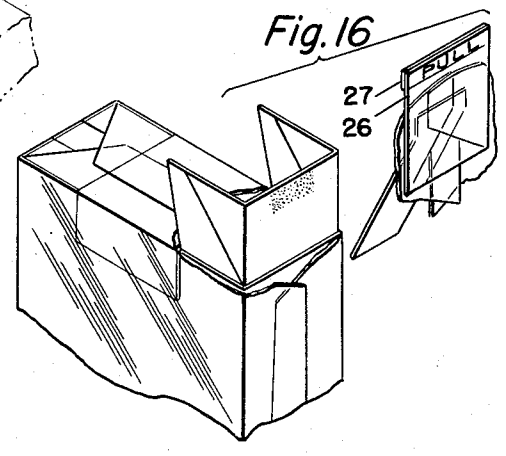


Fig. 16



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Fig. 17

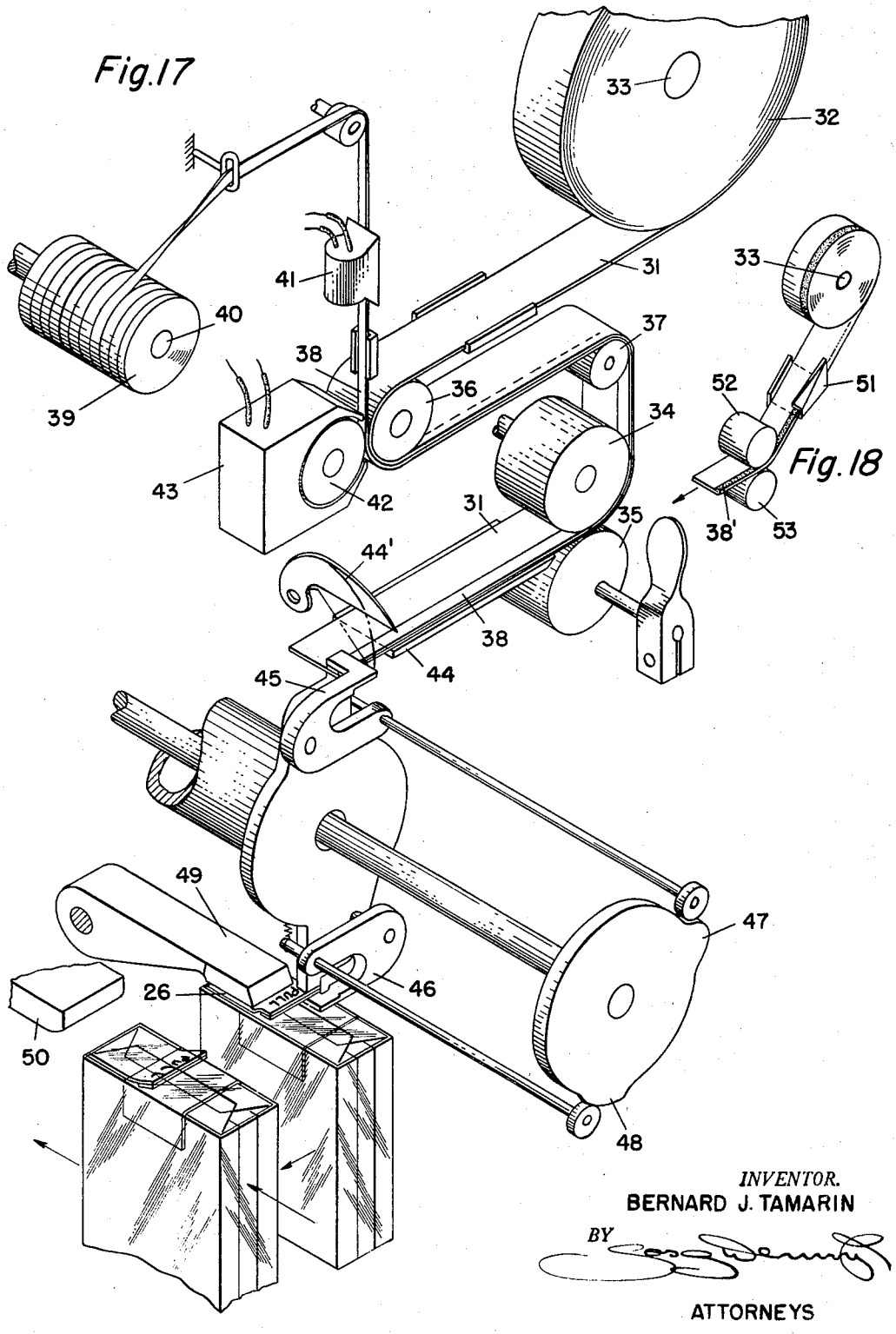


Fig. 18

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United States Patent Office 2,845,213 Patented July 29, 1958

2,845,213

PACKAGE WITH TEAR TAB OPENING MEANS

Bernard J. Tamarin, Flourtown, Pa.

Application June 10, 1953, Serial No. 360,789

4 Claims. (Cl. 229—51)

My invention relates to the art of packaging, and it is designed to provide an improved moisture-proof package for cigarettes and similarly packeted articles, and a method of and apparatus for rapidly and economically embodying my improvements in packages differing but little in appearance from packages made on standard equipment. The leading objects of my invention are to afford immediate access by a single, simple pull to the contents of an effectively moisture-proofed package; to overcome inherent difficulties in opening and reclosing conventional types of cigarette packages having a foil inner wrapper and a sealed outer sheath of cellophane (sheeted cellulose acetate) or similar materials in which it is difficult to initiate a tear; to avoid mutilation commonly incident to the opening of a conventional cigarette package; and to provide a package on which the bulk of the moisture-proofed sheath will be retained and whose inner wrapper may be reclosed after opening.

My improvements are applicable to either machine made packages or to handmade packages, but are particularly applicable to packages of the type shown in my application Serial No. 50,823, filed September 23, 1948, matured into Patent No. 2,675,169 made on apparatuses such as shown in application Serial No. 263,889 filed December 28, 1951, and sheathed in cellophane by a modified cellophane wrapping machine, preferably having the general characteristics of the "Scandia" type.

In accordance with my present invention, a tear-initiating slit is cut in a cellophane sheet, either after or before the package is sheathed therein, and the slit is sealed by covering it with a tab which is bonded to the cellophane all around the slit but leaving a free edge forming a lip which is preferably of multi-ply construction.

The tear-initiating slit preferably extends substantially across the top of the cellophane sheet which overlies end closure flaps of the inner wrapper which are down-folded so that at least one of the narrower flaps is at least partially overlaid by two downfolded broad flaps which are held in a downfolded, partially overlapping relation to one another by the bight of a revenue stamp or the like whose ends are respectively attached to the front and back of a jacket enclosing the body of the inner wrapper.

The broad flaps are slit transversely adjacent to the inner end of the narrow flap overlaid thereby, and the slits in the broad flaps are overlaid by the edge of the revenue stamp which is in proximity to the transverse slit in the top of the sheet.

The overlaid narrow closure flap of the inner wrapper is connected with the top section of the cellophane sheath by a folded pull strip having one lap peelably bonded to the surface of the inner section of the flap and its other lap partially overlying the broad flaps of the inner wrapper and bonded to the inner surface of the top section of the sheath between the slit therein and the proximal top edge of a side of the package.

The pull strip and top tab, as well as the slit in the sheath, are each preferably of slightly less width than the top section of the cellophane sheath and the pull strip

and/or top tab and front and back top edges of the package form tearing guide for tears initiated at the termini of the slit in the sheath.

The sheath preferably has a sealing seam formed by overlapped edges extending mediately along a side of the package. The overlapped edges may be provided with intersecting slits adjacent to the top edge of such side so as to intercept any tear which tends to run from the top edge of the cellophane sheath down along the edges of the seam on the side thereof.

When a pull on the lip of the sealing tab initiates tearing of the cellophane top section at the termini of the slit therein, the tears tend to follow the lines of least resistance between the lateral edges of the top tab and the adjacent edges of the package to the corners thereof, thence between the end of the top tab and the top edge of the side of the package to the side seam in the sheath and thence downward along the seam to the intercepting cuts therein.

In this tearing operation, stress is transmitted from the tab, through the severed top section of the sheath and through the pull strip to the narrow flap. This stress lifts and unfolds the narrow flap which thereby withdraws the edges of the broad flap sections from under the edge of the stamp and unfolds such sections to form, with the narrow flap between them, a reclosable spout through which the contents of the package may be withdrawn.

The characteristics of my improved package, and of the best method and apparatus which I have contemplated for producing the same, will further appear from the following description and the accompanying drawings in illustration thereof.

In the drawings, Fig. 1 is a perspective view of a pouch type cigarette package with its narrow closure flaps and its broad closure flaps unfolded and a flexible pull strip peelably attached to the outer surface of the upper portion of one of the narrow closure flaps; Fig. 2 is a fragmentary perspective view of the top portion of the same package with the narrow flaps downfolded; Fig. 3 is a fragmentary perspective view of the top portion of the same package with all the flaps downfolded and secured in place by a stamp adhering to front and back walls of the package jacket; Fig. 4 is a fragmentary perspective view of the top portion of the same package with an unsealed "end wrap" cellophane sheath thereon; Fig. 5 is a fragmentary perspective view of the package of Figs. 1 to 4 with an unsealed "side wrap" cellophane sheath thereon; Fig. 6 is a fragmentary perspective view of the package of Figs. 1 to 4 with a "side wrap" cellophane sheath wrapped thereon from the opposite side of the package from that shown in Fig. 5; Fig. 7 is a fragmentary perspective view of the top portion of the package shown in Fig. 5 with the narrow flaps of the sheath downfolded; Fig. 8 is a fragmentary perspective view of the top portion of the package showing Fig. 7 with all the flaps downfolded and bonded together and to the pull strip by a heating element, which is shown diagrammatically; Fig. 9 is a diagrammatic fragmentary perspective view illustrating the slitting of the downfolded wide flaps adjacent to the inner end of a downfolded narrow flap of the cellophane sheath; Fig. 10 is a diagrammatic fragmentary perspective view illustrating the deposition of an outer pull strip or tab on portions of the narrow and wide flaps and over the slits in the latter; Fig. 11 is a diagrammatic fragmentary perspective view illustrating the bonding of the slit-sealing tab to the top of the sheath to seal the slits and leave a free hemmed end forming a projecting lip; Fig. 12 is a fragmentary perspective view showing the upper portion of a finished package embodying my invention; Fig. 13 is a fragmentary perspective view illustrating an initial step in opening the package shown in Fig. 12; Fig. 14 is a fragmentary perspective

view illustrating a further step in opening the package shown in Fig. 12; Fig. 15 is a fragmentary perspective view illustrating a further step in opening the package of Fig. 12; Fig. 16 is a fragmentary perspective view illustrating the detachment of the outer sealing tab, of portions of the sheath, and of the inner pull strip as a unit from the remainder of the package; Fig. 17 is a schematic view of apparatus for forming the outer sealing tab and bonding it to the sheath; and Fig. 18 is a detached, fragmentary perspective view illustrating a modification in the hemming of the outer sealing tab.

As shown in the drawings, my invention is applied to a cigarette package comprising a soft shell pouch composed of an inner wrapper **1**, and a printed jacket or label **2** which is telescoped over and holds together the folded inner wrapper **1**. The front, back, and side walls of the wrapper **1** have end extensions consisting of broad flaps **3**, **4** and narrow flaps **5**, **6**, which, during the formation and filling of the pouch, project beyond the top edge **7** of the jacket **2**.

The broad flaps **3** and **4** are crease-cut or slit along lines **8** and **9** from the outer edges of such flaps to termini adjacent to the edge **7** and respectively at a distance from the proximal corner of the jacket approximating the height of the flap **5** above the edge **7**. The narrow flap **5** has a pull strip **10** adhesively bonded to the upper portion thereof and peelable therefrom.

When the pouch has been filled with cigarettes **11**, or other rod-like articles, the flaps **5** and **6** are folded down along the edge **7** to form tucks. The flaps **3** and **4** are folded down along the edge **7** and partially overlap one another and the downfolded narrow flaps **5** and **6**. The flaps **3** and **4** are held downfolded by a stamp **12** which is adhesively bonded to the front and back surfaces of the jacket **2** and has a bight slightly overlying the crease-cuts **8** and **9** so that the end closure members **3**, **4**, **5**, and **6** are all held in place but none of them are adhesively connected to one another.

The package thus formed is enclosed in a moisture resistant, transparent sheath **13**, of cellophane or the like. As shown in Fig. 4, the sheath may be end wrapped around the package with its bight around the bottom thereof and its vertical edges **14** and **15** overlapped and sealed on opposite sides of the package. As illustrated in Fig. 5, the cellophane sheath may be side wrapped on the package with its bight around the side thereof opposite to the pull strip **10** and its edges overlapped to form a sealed seam **16** along the side of the package adjacent to the pull strip **10**. As shown in Fig. 6, the cellophane sheath may be side wrapped around the package with its bight around the side of the package adjacent to the pull strip **10** and its edges overlapped to form a sealed seam **17** on the opposite side of the package from the pull strip **10**. Regardless of what method of wrapping the cellophane sheath is employed, the free end of the pull strip **10** is initially bent upward by the application of the sheath **13** to the pouch, as indicated in Figs. 4, 5, and 6.

The cellophane sheath **13**, however applied, has front, back, and side extensions **18**, **19**, **20**, and **21** which initially project beyond the top of the filled and closed package. The cellophane extensions **20** and **21** and the free end of the pull strip **10** pressing against the extension **20** are simultaneously folded down. The free end of the pull strip **10** overlies portions of the tuck **5** and of the flaps **3** and **4** which overlie the tuck **5** and the extensions **20** and **21** each forms a tuck overlying the end closure of the package approximately up to or slightly beyond the proximal edges of the stamp **12**. The extensions **18** and **19** are then folded down to form flaps which overlap one another and partially overlie the tucks formed by the extensions **20** and **21**.

The pull strip **10** and the cellophane wrapper **13** are composed of, or their facing surfaces are coated with, a thermotropic substance so that when a heater and presser **22** are applied thereto the outer surface of the pull strip **10** adheres to the inner surface of the extension **20**; the surface of the inturned sections of the extensions **18** and **19** adhere to the tucked extensions **20** and **21**, and the inner surface of the extension **19** adheres to the outer surface of the extension **18** to form a sealed, moisture resistant sheath.

In accordance with my present invention, the extensions **18** and **19** are provided with complementary and partially overlapping slits **23** and **24** which may be crease-cut therein prior to the application of the cellophane sheet to the package, but are preferably cut accurately therein by a cutter **25** after the members **18**, **19**, **20**, and **21** have been sealed.

The outer extremities of the slits **23** and **24** preferably lie near but spaced slightly from the front and back walls of the package and adjacent to the edge of the stamp **12** and to the inner edge of the downfolded extension **20**.

A thermo-tropic tab **26** is laid over and bonded to the folded members **18**, **19**, and **20** and extends, preferably, from the top edge of the side wall of the package to a line beyond the slits **23** and **24** so that the latter are completely covered and sealed. The inner portion of the tab **26**, extending inwardly beyond the slits **23** and **24**, is preferably faced or hemmed with a strip **27** to form a mult-ply lip **26'**. The body of the tab **26** is preferably composed of, or its under surface is coated with, a thermotropic material which, when exposed to heat and pressure from a heating element **28**, securely bonds the body of the tab **26** to the members **18**, **19**, and **20**. The heating of the body of the tab **26** by the element **28** causes a shrinkage of material which causes the multi-ply lip **26'** to turn up, away from the top of the package, to form a convenient finger piece.

It will thus be seen that, whereas the flaps **3**, **4** and **5** are in nowise bonded together and are unfoldable relatively to one another, the tuck-forming flaps **18**, **19**, and **20** are thermally bonded together so that they are not unfoldable relatively to one another and are connected as a unit through the pull strip **10** with the tuck-forming flap **5** which is free to unfold and to thereby unfold the sections of the flaps **3** and **4** lying between the flap **5** and the slits **8** and **9**.

When the lip **26'** is pulled toward the side of the package, tears are initiated at the outer termini of the slits **23** and **24** in the flaps **18** and **19** and run along the lateral and transverse edges of the tab **25** and adjacent top edges of the jacket **2** and down the edges of the side seam of the sheath to the intercepting, intersecting slits **29** and **30** in the overlapped edges forming the side seam. A stress is transmitted through the tab **26**, flap sections **18**, **19**, **20**, and pull strip **10** to the tuck **5**. This causes the latter to unfold and thereby unfold the flaps **3** and **4**. When the members **3**, **4**, and **5** are unfolded, the pull strip **10** peels away from the member **5**, and leaves a refoldable spout for access to the contents of the package.

The pull strip **10** may be conveniently formed and applied as set forth in my application Serial No. 50,823 filed September 23, 1948, or by the method and apparatus set forth in application Serial No. 263,889 filed December 28, 1951.

The tab **26** may be formed and applied by the method and apparatus illustrated diagrammatically in Figs. 17 and 18. As illustrated in Fig. 17, a transparent strip **31**, of cellulose acetate or the like, is drawn from a roll **32** on the journalled spool **33** by the relatively adjustable feed rollers **34** and **35**. In passing from the roll **32** to the rollers **34** and **35**, the strip **31** may be passed over rollers **36** and **37** and have applied thereto a narrow reinforcing edging **38** which is fed from a roll **39** on the journalled spool **40**. The strip **31**, and, if desired, the edging **38**, has a thermo-plastic coating on the face thereof. The thermo-plastic coating on the edging **38** may be initially softened by the passage of the edging across a heater **41** with its uncoated face in juxta-position thereto. The

thermo-plastic coating of the edging **38** and the thermo-plastic coating of the strip **31** are softened and bonded together to form a multi-ply edge section by their passage between the pressure rolls **36** and **42**; the latter of which may be heated by a heating element **43**. The uncoated surfaces of the edging **38** and the strip **31** are in juxtaposition to the roller surfaces so that adhesion to the roller surfaces is avoided.

The combined strip **31** and edging **38** are fed by the feed rollers **34** and **35** across a fixed jaw **44** and under the oscillatory jaw **44'** of a shear which severs the combined strip **31** and edging **38** into successive tabs **26** which are successively gripped and released by the jaws of conveyors **45** and **46**, which are operable in suitably timed relation by cams **47** and **48**.

The conveyors **45** and **46** are rotatable about a common axis to sequentially translate successive tabs **26** from the cutter jaws **44** and **44'** to a position above the end closures of successive packages which are sequentially moved into position.

Each tab **26** is deposited on the end closure of a package so that the thermo-plastic surface of the tab covers the slits **23** and **24** and is bonded to the end closure by an oscillating heater and presser **49** which acts in timed relation to the opening of the jaw of a conveyor **45** or **46**. If the package is moved from the heated presser **49** before a desired firm bond is made between the thermo-plastic surface of the tab **26** and the outer surface of the sheath flaps **18**, **19**, and **20**, the package, with the tab thereon, may be passed beneath one or more additional heated pressers **50** until the desired firm bond is made between the members **18**, **19**, and **20** and the entire area of the tab **26** which is not covered by the edging **38**. The exposed surfaces of the finger piece **26'** are uncoated with a plasticizer and the action of the heated pressers on the plasticized portion of the tab **26** causes the multi-ply lip **26'** thereof to bend upward so as to provide a readily seizable finger piece.

Instead of applying a separate facing strip **38** along the edge of the strip **31** as shown in Fig. 17, the strip **31** may be self-hemmed by running it through a hemmer **51** and between presser rolls **52**, **53** interposed between the spool **33** and the rollers **42** and **36** to turn over a colored edge reenforcement **38'** as shown in Fig. 18.

The rim of the heated roller **42** is preferably made of such thickness as to render tacky only the surfaces of the colored strips **38** or **38'** which contact the coated surface of the strip **31**.

The body of the tab **26** and the pull strip **10** are preferably transparent if the sheath is transparent or colored to conform with a colored sheath so as to direct attention therefrom to the lip **26'** whose ply **27** formed from a strip **38** or **38'** is preferably of a color contrasting strikingly with the adjacent members so as to direct attention to the lip **26'** and the operating instructions thereon or adjacent thereto.

Having described my invention, I claim:

1. A package comprising an inner wrapper bent to form an end closure having an unfoldable tuck and unfoldable flaps partially overlying said tuck and containing transverse slits, a pull strip peelably attached to the outer surface of said tuck and terminating adjacent to said slits, said strip being partly overlaid by and partly overlying said flap sections, an outer sheath bent to form an end closure having a tuck overlying said tuck first named and flaps partially overlying and bonded to said second named tuck, said pull strip being bonded to the inner surface of said second named tuck, the last named flaps

containing transverse slits, and a tab bonded to said second named flaps and sealing the slits therein, said tab having a free lip through which a single pull will impart stress detaching from the package said tab and the sheath flaps bonded thereto and unfolding said first named tuck and the flaps overlying such tuck.

2. A package having a narrow end closure flap and a pair of broad closure flaps at least partially overlying said narrow end closure flap, said broad flaps containing slits adjacent to the end of said narrow closure flap, a flexible strip peelably secured to said narrow closure flap, a sheath covering said flaps and bonded to said strip, said sheath containing a slit adjacent to the slits in said broad flaps, and a tab sealing said slit last named and having a lip free from said sheath, said sheath being tearable by pulling on said lip and said pull strip being movable to unfold portions of said first named flaps by stress transmitted through said tab and a torn out portion of said sheath.

3. A package comprising an inner wrapper having a downfolded end closure flap and a pair of downfolded end closure flaps extending transversely to and at least partially overlying said first named flap, said overlying flaps containing complementary slits adjacent to the end of said first named flap, a pull strip peelably attached to said first named end closure flap and folded partially over said overlying flaps, a sheath thermally bonded to said pull strip and overlying said flaps, said sheath containing a slit for initiating tearing thereof, and a tab sealing said slit and having a lip facilitating the application of stress to said sheath at the ends of said slit last named, said sheath having slit, overlapped edges adjacent to an edge of said first named flap for limiting the tearing of said sheath.

4. A package having an inner wrapper bent to form a pair of narrow closure flaps and a pair of overlying broad closure flaps coacting to form an end closure having members unfoldable to form a spout, a pull strip peelably secured to one of said first named closure flaps, said broad flaps being slit transversely adjacent to the inner end of said last named narrow closure flap, means forming a bight at least partially overlying said slits and holding said broad flaps in downfolded position, an outer sheath covering said flaps and said bight and containing a slit extending substantially across said closure and adjacent to an edge of said bight, and a tab having a section bonded to said sheath and sealing said last named slit, said tab having a free lip and said pull strip being folded over on itself and bonded to a portion of said sheath beneath said tab; the flap to which said pull strip is secured being unfoldable through said strip and the sheath portion to which it is bonded by stress applied to said lip sufficient to detach said tab and said sheath portion from said package.

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