April 16, 1963 E. BOK 3,085,738

FLAT BAG WITH AN ADHESIVE SEAL

Filed Aug. 9, 1960 4 Sheets-Sheet 1

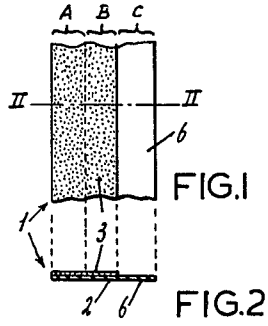


FIG.1

FIG.2

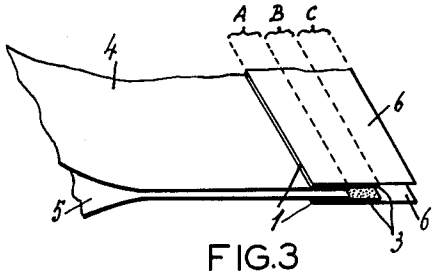


FIG.3

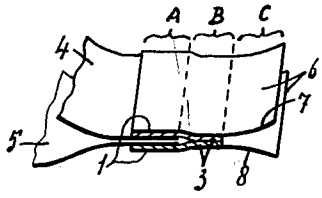


FIG.4

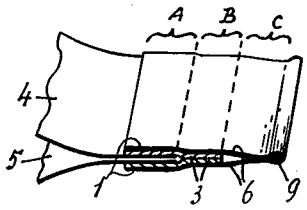


FIG.5

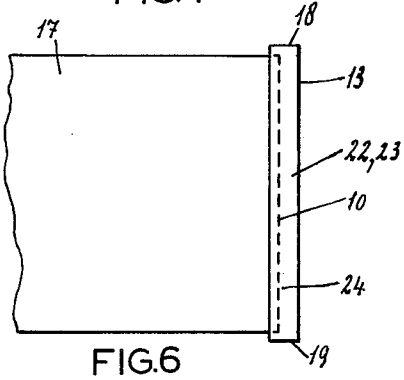


FIG.6

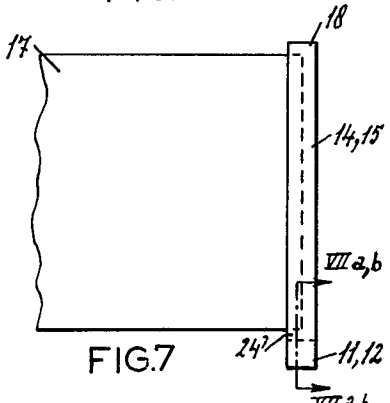


FIG.7

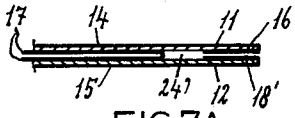


FIG.7A

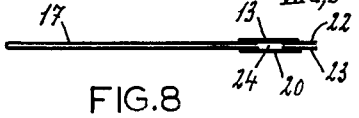


FIG.8

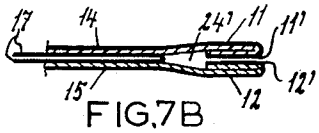


FIG.7B

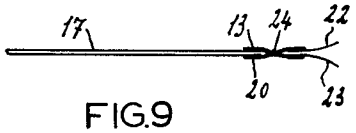


FIG.9

April 16, 1963 E. BOK 3,085,738

FLAT BAG WITH AN ADHESIVE SEAL

Filed Aug. 9, 1960 4 Sheets-Sheet 2

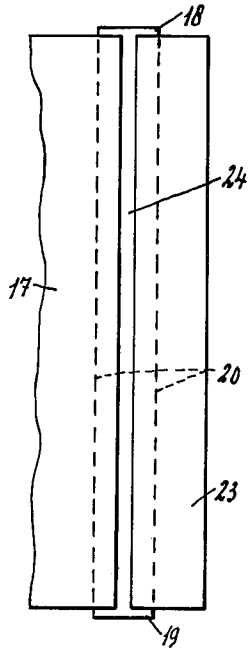


FIG.10

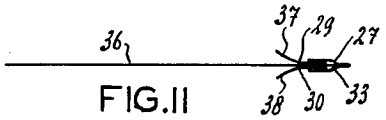


FIG.11

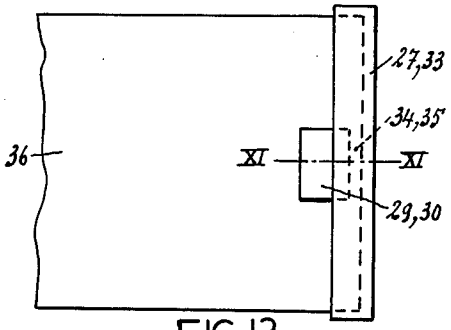


FIG.12

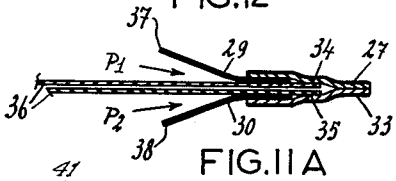


FIG.11A

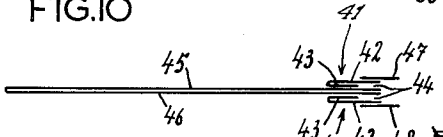


FIG.13

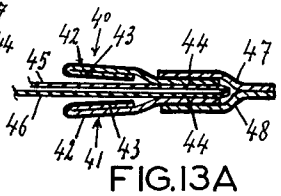


FIG.13A

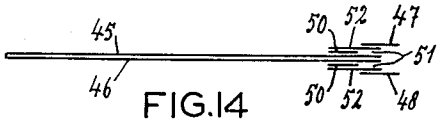


FIG.14

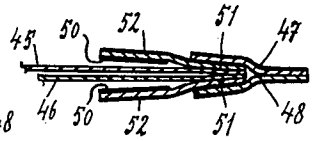


FIG.14A

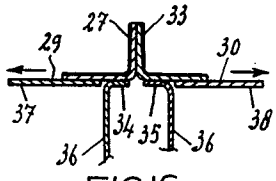


FIG.16

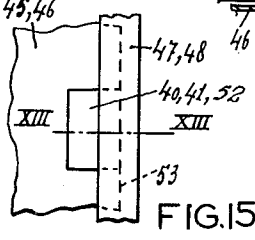


FIG.15

April 16, 1963 E. BOK 3,085,738

FLAT BAG WITH AN ADHESIVE SEAL

Filed Aug. 9, 1960 4 Sheets-Sheet 3

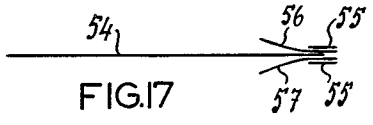


FIG.17

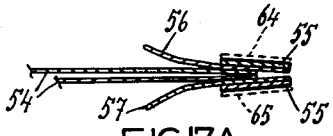


FIG.17A

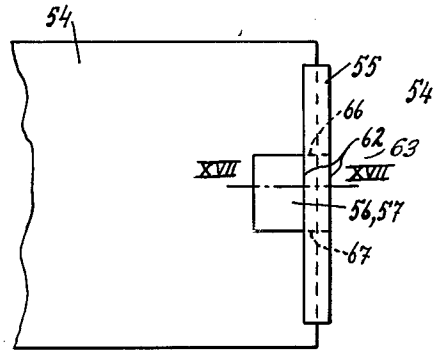


FIG.18

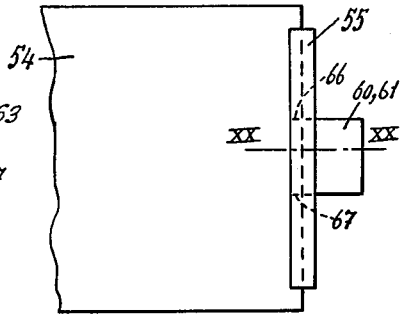


FIG.21

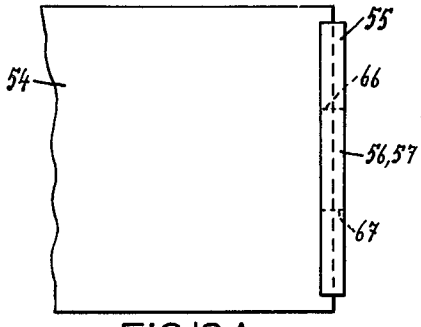


FIG.18A

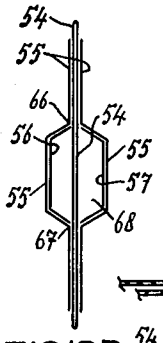


FIG.18B

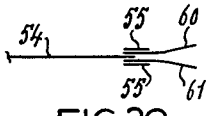


FIG.20

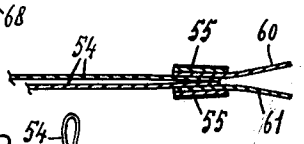


FIG.20A

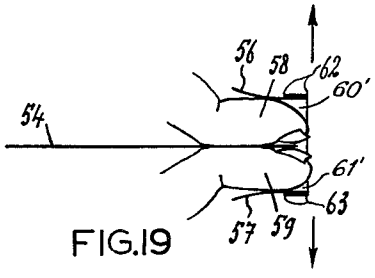


FIG.19

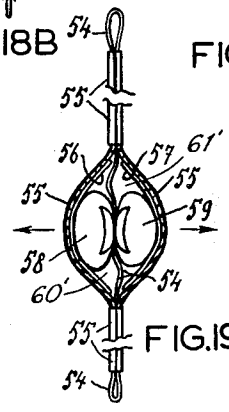


FIG.19A

April 16, 1963 E. BOK 3,085,738

FLAT BAG WITH AN ADHESIVE SEAL

Filed Aug. 9, 1960 4 Sheets-Sheet 4

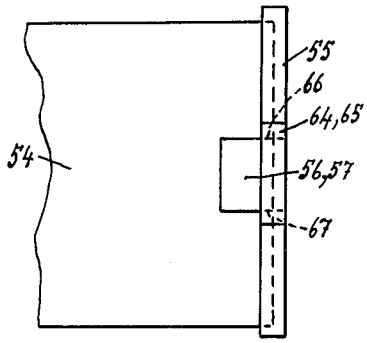


FIG.22

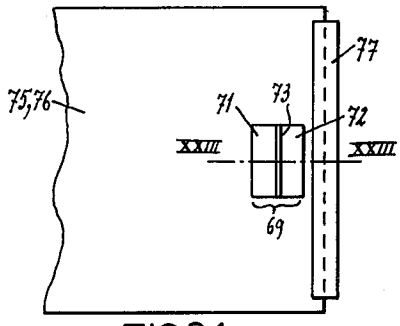


FIG.24

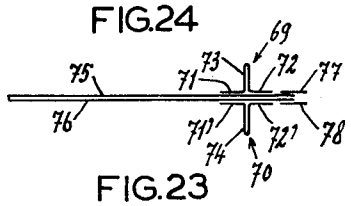


FIG.23

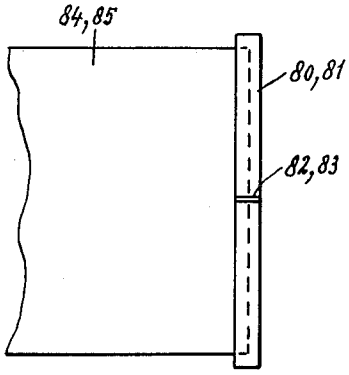


FIG.26

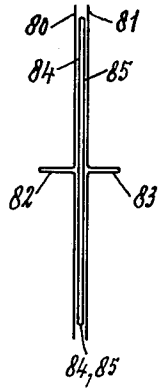


FIG.25

United States Patent Office 3,085,738 Patented Apr. 16, 1963

3,085,738

FLAT BAG WITH AN ADHESIVE SEAL

Edward Bok, Karperstraat 7, Amsterdam, Netherlands

Filed Aug. 9, 1960, Ser. No. 48,531
Claims priority, application Netherlands Aug. 10, 1959
3 Claims. (Cl. 229—62)

The invention relates to a flat bag provided with a seal constituted by strips of material which are separately disposed on the outer wall of the bag in the area along the edge to be sealed, the said strips protruding beyond the edge of the bag and being adjacent thereto provided with an adhesive layer on the side facing the side of the opposite strip.

The flat bags in particular manufactured from plastic film or cellulose ("cellophane") are utilized on a large scale for packing all kinds of products, the sealing however of these bags is still a problem to which the right answer has so far not been given. The bags are produced in big quantities and at low costs in automatic machines, but an easily to be handled seal capable of being applied at a slight increase of production costs without interfering with the course of the automatic production, and which can be removed without causing damage to the bag, preferably adapted for repeated closing and opening, has not been available. In the above-mentioned known type, though the protruding parts of the sealing strip have an adhesive layer, it was permanently bonded to the bag edges which rendered the manufacture too expensive. Opening had to be effected by cutting or ripping the bad edge, which is cumbersome and as the bag was damaged thereby, the sealing was not suitable for a repeated use. Inasmuch so far other types of sealing have been applied with the aid of adhesive tape, they were only applicable for certain types of bags and therefore the costs thereof were relatively high.

For that reason the sealing of plastic bags is mostly effected by applying a local thermal treatment, but then again it is an inconvenience that such a junction can only be performed once, that is to say that after having opened a such like bag a simple and airproof resealing thereof is difficult. Furthermore this way of sealing reduces the inner space and as in many cases the bag fits tightly around the object enclosed, so that a good enclosure of the object after the bag has once been opened is not possible.

The invention provides for a flat bag having sealing strips cut from adhesive tape the adhesive layer being used as well for the connection of the sealing to the edges of the bag opening as for sealing the bag by pressing the protruding tape parts along the edges of the opening against each other.

Consequently strips of normal adhesive tape can be used which is available ready for use in rolls, the strips being cut from the rolls and mechanically delivered to the bag edges from both sides. The adhesive layer already available serves for both the fastening on the bag edge and for attaching the parts extending beyond the bag edge.

This can be very simply realized in a mechanical way as no special auxiliaries for bonding by means of a glue are required. A perfectly tight seal suitable for a repeated opening and closing can be obtained.

The opening of the bags can be very much facilitated in a preferred embodiment according to which pull lips are constituted in the way that the sealing strip of adhesive tape is extended by a non adhesive outer portion beyond the areas, in which the adhesive layer is lying on the wall of the bag and the areas, in which the strips are situated placed with their adhesive layers one against the other.

Preferably the strips of adhesive tape project in the direction of the width of the bag on both sides beyond the sides thereof.

In this way a perfectly tight closure also at the corners of the mouth is ensured. These protruding ends can also be advantageously utilized for holding the bag at both sides, while the mouth over the entire width of the bag can be made free, which is of great importance among others for automatic filling machines.

The pull lips can advantageously be formed with the aid of separately disposed strips of material, which are provided on either side of the bag's walls one facing the other and adjoining at least the middle part of a sealing strip of adhesive tape disposed on the edge of the bag opening. When pulling such lips in opposite direction the opening of the bag starts in the middle of the sealing and proceeds therefrom laterally towards two sides. In this way the operation is carried out in a regular and perfect way with the slightest chance of damaging the tape or the bag. As will be shown hereinafter the pulling forces will be in the plane of the adhesive layers where they are attached to the bag but perpendicularly thereto where they have to be separated from each other.

The invention can be further applied to bags, like those destined for packing textiles, where the mouth of the bag needs not be closed over the entire width, a local seal being sufficient. In this case their possibility of use as to opening the bag is maintained and even facilitated. In a specially suitable embodiment for that purpose the pull lips proceed under the entire cross section of the sealing strip of adhesive tape, whereas the surfaces of both pull lips facing one the other are not provided with an adhesive layer, in such a way, that on each side an opening between the sealing strip of adhesive tape and the walls of the bag is formed.

In order to open the bag it is now possible to put a finger tip on either side in the passage cleared between the pull strip and the bag. There is quite a number of other possibilities, and modifications of the invention which will hereinafter be explained in the course of the description of a number of constructional examples illustrated with the aid of a drawing. The figures are outline figures, the thicknesses of material are exaggerated in a number of figures for clearness sake.

FIGURE 1 is a view of a strip of adhesive tape as can be applied according to the invention.

FIGURE 2 is a cross section of the adhesive strip according to FIGURE 1.

FIGURE 3 shows in a perspective view a bag portion cut in a direction perpendicular to the mouth, the ends of the said bag portion both being provided with the adhesive tape according to the FIGURES 1 and 2.

FIGURE 4 shows in a same way as FIGURE 3 a portion of the bag after the mouth has been closed by means of the adhesive tape.

FIGURE 5 shows in a way corresponding to that of FIGURE 4 a modified embodiment, in which a supplementary seal by thermal treatment is added to the sealing means according to the invention.

FIGURE 6 is a partial plan view of a bag seal corresponding with that according to the FIGURES 3 and 4, the area C, however, being left out, so that entirely normal adhesive tape is used, the strips protruding on either side beyond the sides of the bag.

FIGURE 7 is a partial plan view of such a bag seal with a pull lip portion projecting on one side.

The FIGURES 7*a* and 7*b* are to a larger scale and represent in outline longitudinal sections of the portion of the pull lips according to the line VII*a, b* in FIGURE 7, two embodiments being shown.

FIGURE 8 is a longitudinal section of a bag with a particular embodiment of the pull lips.

FIGURE 9 is a longitudinal section of the bag seal according to FIGURE 8 but represented in a closed position.

FIGURE 10 is a larger seal plan view of the inner wall of a portion of the bag according to FIGURE 8.

FIGURE 11 is a schematic longitudinal section of a bag closure with tabs attached under the sealing strips and represented in a closed position, FIGURE 11*a* showing in a larger scale a section of a detail thereof. Both sections are on the line XI—XI in FIGURE 12.

FIGURE 12 is a partial plan view of the bag closure according to FIGURE 11.

FIGURE 13 is a section of a modified embodiment of this latter type of bag seal, FIGURE 13*a* representing to a larger scale a section of a detail thereof.

FIGURES 14 and 14*a* show in a corresponding way a section of still another embodiment.

FIGURE 15 is a partial plan view of the bag seal according to the FIGURES 13 and 14 and the sections of FIGURES 13*a* and 14*a* are taken along the line XIII—XIII in FIGURE 15.

FIGURE 16 represents in a partial cross section the shape of the bag of FIG. 12 when the latter is opened with the aid of pull lips or tabs.

FIGURE 17 is a section of a bag to which pull tabs are applied in such manner, that there is an opening in the seal.

FIGURE 17*a* represents to a larger scale a section of a detail. The sections are taken along the line XVII—XVII in FIGURE 18.

FIGURE 18 is a partial plan view of the bag seal according to FIGURE 17, the FIGURES 18*a* and 18*b* representing a plan view and a view upon the sealing edge in order to clarify a modified embodiment thereof.

FIGURE 19 shows a partial longitudinal section of the kind of bag seal according to the FIGURES 17–22 representing how opening of the bag can be effected with the aid of two fingers put in the apertures between the walls of the bag and the strips of adhesive tape. FIGURE 19*a* is a view pertaining thereto of the seal, looking upon the sealing edge.

FIGURE 20 is a longitudinal section of a bag with a modified embodiment of the positioning of the tabs shown in FIGURES 17–19, FIGURE 20*a* representing a section to a larger scale. The sections are along the line XX—XX of FIGURE 21, which shows a partial plan view of the bag closure according to FIGURE 20.

FIGURE 22 is a plan view of a like embodiment, wherein, however, reinforcing strips of adhesive tape are disposed at the location of the tabs.

FIGURE 23 is a schematic longitudinal section of a bag closure, the tabs being independently of the strips of adhesive tape attached to the bag walls. The section is taken along the line XXIII—XXIII of FIGURE 24, which represents a partial plan view of the seal of the bag according to FIGURE 23.

FIGURE 25 is a front view upon the edge of a seal of a bag, wherein the strips of adhesive tape achieving the closure of the bag are locally formed to tabs.

FIGURE 26 is a partial plan view of the seal of the bag according to FIGURE 25.

In FIGURES 1 and 2 is seen an adhesive tape **1** constituted by a strip of material **2** which may be of the "cellophane" type and which is provided with an adhesive layer **3**.

In FIGURE 3 are seen two similar strips **1** of adhesive tape attached in facing relation an area A of the adhesive layer **3** upon the outer edge portions of the bag walls **4** and **5** and along the mouth of the bag. The same adhesive layers **3** on the strips **1** of adhesive tape protrude by their area B beyond the edge of the mouth of the bag and on this area they are directly stuck to each other as is to be seen in FIGURE 4, where the sealing of the mouth has been effected. Consequently one need only supply a single kind of adhesive tape from a roll of adhesive tape and no separate steps in the process of production are necessary to connect sealing strips by

means of glue layers with the edges of the bag neither is it required to provide a separate adhesive layer on the inner side of the bag, so that the manufacture and sealing becomes very easy.

In order to facilitate opening the pull lips **6** are disposed which on either side of their surface are non-adhesive. In this embodiment this is obtained in the way that the adhesive layer **3** of the adhesive tape **1** does not extend over an area C the pull lips **6** being integral with the adhesive tape.

FIGURE 4 shows that these lips **6** can be grasped easier by disposing them in opposite direction with outwardly directed bendings **7**, **8**, so that the outer ends of the lips are diverging.

According to the embodiment of FIGURE 5 the outer edges of the lips are further joined by a strong welding rim **9** so that a supplementary seal is obtained by means of thermal treatment. After having cut off this edge the bag can further be opened and closed as described hereabove.

For the rest a very strong protection of the mouth can be obtained by using for the sealing strip of adhesive tape a thicker material than that of the bag walls, so that the package can be many times opened and closed without the closing function getting lost owing to tears.

In the embodiment according to FIGURE 6 the length of the sealing strips **13** of adhesive tape is slightly greater than the width of the bag **17**, whereby the portions **18** and **19** of the adhesive tape on either side of the edge **10** of the mouth provide for a good airtightness. These lips **18** and **19** can also serve for holding the bags in automatic filling apparatuses and the like in such a way that the full width of the mouth **10** remains available.

As illustrated in the FIGURES 7, 7*a*, 7*b* such a lip **11**, **12** can also serve for opening the bag in the way that one or both strips **14**, **15** of adhesive tape are fully or partially torn off.

According to FIGURE 7*a* between the portions of adhesive tape **11**, **12** of the lip, there can be attached on each of the adhesive layers belonging thereto a strip of material **16**, **18'**, respectively. As a result thereof both lip portions **11**, **12** at the free end do not adhere and the said lip portions can each be seized between thumb and forefinger and pulled apart, whereby one or both sealing strips **14**, **15** can be entirely or partially removed in order to open the bag.

It appears from FIG. 7*b* that the same result can also be obtained by folding inwardly the extremities **11'**, **12'** of the lips of adhesive tape **11**, **12**.

FIGURE 8 shows, that corresponding means can also be applied along the entire length of the strips **13**, **20** by means of inserted strips of material **22**, **23** one in front of the other between the outer edges of the tape strips **13**, **20**. As these strips **22** and **23** are non-adhering on the outer surface they can be seized very easily near the middle part of the sealing strips **13**, **20** when opening the bag. Means such as **13**, **20**, **22**, **23** for closing and opening remain secured to the bag and thus available for repeated opening and closing.

FIGURE 9 representing the closed position shows that the strips of adhesive tape **13**, **20** by their adhesive layers are pressed one on the other in the area **24**, whereby the closing is effected. The same occurs with regard to the area **24'** according to the FIGURES 7, 7*a* and 7*b*. It will be obvious that inwardly folded parts, as indicated in FIGURE 7*b* at **11'** and **12'** can also be applied along the length of the strips of adhesive tape **13**, **20** in FIGURES 8 and 9, for which purpose a broader adhesive tape must be used, the strips **22**, **23** being superfluous in that case.

FIGURE 10 shows the position of the strip of adhesive tape **20** and of the pull strip **23** on one wall of the bag, viewed from the inner side of the bag **17**.

In the FIGURES 11–12 there is shown an embodiment wherein the tabs **37**, **38** are constituted by strips

29, 30, which are interposed between the walls 36 of the bag and the strips 27, 33 of adhesive tape. In this case the pull strips 29, 30 extend beyond the sealing strips in the direction of the bottom of the bag. The location of these pull strips 29 and 30 which on either side are free from an adhesive layer is such with respect to the seal, that the areas 34 and 35 of the walls of the bag are not covered thereby, because otherwise the air could enter according to the arrows P1 and P2 in FIGURE 11*a*. The strips 29 and 30, which only have a limited length with respect to the width of the bag, are perfectly fastened to the seal of the bag by means of the adhesive strips 27 and 33. In FIGURE 16 is to be seen, how the bag is opened. The pull portions 37 and 38 of the strips 29 and 30 are going to lie endwise in one plane as well as the area of the tape strips 27, 33, adhering to the walls of the bag so that the adhesive layers where their adherence is to be maintained are charged only by forces in the plane of these layers. However the pull acts perpendicular to the adhesive layers in the place where they are to be pulled apart. The adhesive surface of the adhesive strips 27 and 33 remains free from contact by hand, whereby the suitability of the bag for frequent opening and airtight closing is maintained.

In FIGURE 13 the pull strips are constituted by adhesive strips 40 and 41, the rear ends 43 of which are inwardly folded, in the same way as indicated in FIGURE 7*b* for the lip ends 11, 12 and with corresponding advantages. Both faces 42 and 43 of each lip are hereby free from adhesive while the areas 44 are caused to adhere to the bag walls 45 and 46. The sealing strips of adhesive tape 47 and 48 are disposed over these fastenings and on the walls of the bag whereby a very strong closure can be obtained with extraordinary good possibilities for opening.

In FIGURE 14 the same bag seal as represented in FIG. 13 is shown except that the folded ends 43 are replaced by cover strips 50, in the way as has been described with reference to FIG. 7*a*. In this case, too, the adhesive areas 51 of the strips of adhesive tape serve for a good adhesion of the pull lips to the walls 45 and 46 of the bag and complete at the same time the closure of the bag.

In the plan view of FIGURE 15, which refers to both embodiments according to FIGURES 13 and 14, it is to be seen that the tabs 40, 41, 52 in this case need not be set back with respect to the edge 53 of the bag in order to ensure a tight seal, because the adhesive areas 44, 51 make up this seal at the location where the strips 47, 48 of adhesive tape are passing over same.

The described embodiments allow savings in adhesive tape and bag material, and this results in a considerably lower cost price for the seal especially in the event of broad and large bags.

The invention can also be applied to the formation of bags from tube shaped material like cellulose ("cellophane"), polyethylene, paper and like materials used for bag packing, which in the desired length are cut from the tube, the bottom being sealed in a manner indicated in FIG. 6 for the sealing of the mouth thereat, while the mouth side is closed by a seal with pull lips such as tabs, as indicated in one of the other embodiments.

On packing textiles the closure which has to be opened and closed many times need not necessarily be airproof. Especially in the event of textiles, if the goods to be packed are large sized, it may be felt as a hindrance that the adhesive tape material forms an adhesive area over the entire width of the mouth on either side of the bag closure, so that the wall ends of the bag closure tend to adhere to each other while the textiles are pulled out or again put in.

An advantageous embodiment of the bag closure therefor is characterized in that the strips of adhesive tape are disposed on the bag over a length smaller than the width of the bag, so that there is an open bag portion beside the strip of adhesive tape.

This for instance is shown in the FIGURES 18, 19*a*, 21 and 24. On one side or on both sides of the adhesive tape seal a still larger open bag portion may exist than is represented in these figures, provided the seal prevents the goods packed from sliding from the bag. As the bag seal in this case needs not to be pulled open onto the corners of the bag an easier opening of the closure of the bag has become possible.

In the event of a broad bag two or more pull lips can be distributed over the width of the bag. In this case the strips of adhesive tape serving to seal the bag can be interspaced so that various separate closures capable of being opened and closed can be disposed on a bag side to be sealed.

As an airtight bag closure is not requisite in many cases, for instance for most textile packages, non-adhesive tab strips proceeding under the entire cross section of the sealing strip of adhesive tape can be applied in such cases, in such a way that between the tabs and the bag walls an opening is lift in the closure formed by the sealing strips of adhesive tape.

The FIGURES 17, 18 refer to a first embodiment of such a closure, tabs 56 and 57 being attached under the adhesive layer and between the walls 54 of the bag and the sealing strips of adhesive tape 55. Because the tabs do not possess an adhesive layer on the side turned to the wall of the bag and proceed at least on the entire width of the strips 55 of adhesive tape, the portions of adhesive tape are not attached to the bag walls 54 at the location of the tabs 56 and 57. The advantage in this case is that opening of the bag is still facilitated, while in the opened position of a bag as represented neither the central nor the corner portions of the bag closure tend to adhere to each other.

In the FIGURES 19 and 19*a* is to be seen, how in order to open the bag the fingertips 58 and 59 are put into the openings 60′ and 61′ between the walls of the bag and the tabs 56 and 57, whereupon by spreading the fingers in the direction of the arrows the bag can easily be further opened on either side of the tabs, the pull being produced in a direction substantially perpendicular to the adhesive layers in the areas where they must be separated from each other.

The embodiment according to the FIGURES 20–21 corresponds substantially with that according to the FIGURES 17–18, the tabs 60 and 61 with respect to the seal extend, however, outwardly instead of in the direction of the bottom. Also tab strips can be utilized extending on either side of the sealing strips of adhesive tape as a combination of the two last-mentioned embodiments. In simple cases it will suffice to dispose small strips under the strips of adhesive tape in such a way that they do not project, only the portions 62 and 63 as indicated in the FIGURES 18 and 19 serving as tabs.

In FIGURE 22 (and indicated by dotted lines in FIGURE 17*a*) it is to be seen that reinforcing strips 64 and 65 of adhesive tape made of a strong material overlap the tabs 56 and 57. In that case there is still a lesser chance that the sides of the tabs would damage the strips 55 of adhesive tape, so that after having opened and closed the closure many times it would become defective.

To the described embodiments and the modifications thereof mentioned another conception may be applied viz. to choose the width of the tabs between the lines 66 and 67 in the FIGURES 18, 21 and 22, and the length of the strips of adhesive tape between these lines, in the space where the tabs are attached to the strips, to be greater than the distance between the said lines, so that a loop 68 is formed at this location between the bag wall and the tab. This is represented in outline in the FIGURES 18*a* and 18*b*.

In the embodiment according to the FIGURES 23 and

24 the tabs 69 and 70 are disposed on the walls 75, 76 of the bag near to the strips 77 and 78 of adhesive tape but separated therefrom. These tabs can be pinched in a simple way between thumb and finger, and in this case, if the tabs are small, also a part of the bag walls 75 and 76 can be grasped at the same time. In a corresponding way with that illustrated in FIG. 16 the closure is opened by pulling the tabs in opposite directions. The tabs 69 and 70 are formed from strips on one side provided with an adhesive or glue layer and the ends 71, 72 and 71', 72', respectively are caused to adhere one beside the other to the bag wall, whereas the middle part 73, 74 is outwardly pleated in order to cause the two parts of the fold to adhere to each other.

As the ends 71, 72, 71', 72' on pulling in a way as shown in FIGURE 16 are directed together with the walls of the bag in the plane of tension, the adhesive layer in the ends mentioned is stressed in its own plane, so that it will not easily loosen. If desired a permanent layer of glue can, however, be applied in this case.

The folding lines of the lips 69, 70 proceed in the same direction as the sealing strips of adhesive tape 77, 78, which promotes the described effect on opening.

In the FIGURES 25 and 26 is represented an embodiment of a tab which to some extent looks like the preceding one, the lips being constituted in the way that the strips of adhesive tape 80 and 81 have a greater length than the length caused to adhere to the walls of the bag. This extra length is outwardly pleated in the middle at 82 and 83, where the adhesive layer is utilized to cause the two parts of the fold to adhere one to the other. The seal can be made airtight but on pulling the tabs the walls of the bag 84 and 85 are moved apart.

In this embodiment and in the other ones previously described coloured strips or strips provided with a text can be enclosed within the tabs. On using translucent adhesive tape it is possible to use coloured material or material provided with inscriptions and instructions in places where portions of the tabs or the like are disposed under the adhesive tape or scriptures can be enclosed between parts where adhesive layers are folded against each other.

What I claim is:

1. A flat bag comprising an outer wall including an edge defining a mouth; and a seal, said seal including two separate strips of flexible adhesive tape separately disposed on said wall in facing relation along said edge, said strips including one area of adhesive layer protruding beyond and along said edge detachably adhering the strips together and an adjoining area of adhesive layer detachably and reuseably adhering the strips to said wall, the seal further including pull lips sandwiched between the outer wall of the bag and each of the strips and projecting beyond the strips, said lips having non-adhesive outer surfaces to enable detachment of the adhesive strips from the wall by lifting the pull lips to thereby break the seal and expose the interior of the bag whereby material may be inserted therein, said strips and wall being adapted for being resealed subsequent to breakage of the seal whereby said bag is reusable with said material sealably contained therein.

2. A flat bag as claimed in claim 1 wherein said pull lips are constituted by adhesive strips, which are in detachable adhering relation with said wall, the non-adhesive outer surfaces being constituted by cover strips of non-adhesive material on said pull lips.

3. A flat bag as claimed in claim 2 wherein said outer wall has sides defining the width of said bag, said strips of adhesive tape projecting beyond the sides of the walls, said pull lips each adjoining at least the middle part of each of said strips of adhesive tape.

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