A collapsible dispensing tube for containing and dispensing a flowable material, the tube including a fold-retainer strip of a stiff foldable material having a width equal to a small fraction of the length of the tube, and a length greater than the width of the tube such that when the fold-retainer strip is applied transversely across the closed bottom of the tube and the tube is folded upon itself starting from its closed bottom, the opposite ends of the strip project laterally outwardly of the opposite sides of the tube and serve as foldable tabs to retain the tube in its folded condition. The fold-retainer strip is detachably carried on the outer face of the tube to enable the strip: (a) to normally serve as a decorative strip for the tube when filled with the flowable material; and (b) thereafter, to serve as a fold-retainer strip conveniently detachable by a user whenever desired for application across the closed bottom of the tube to retain the tube in a folded condition.
COLLAPSIBLE DISPENSING TUBE CONSTRUCTION

RELATED APPLICATIONS


FIELD AND BACKGROUND OF THE INVENTION

[0002] The present invention relates to collapsible dispensing tubes, particularly to tubes made of a squeeze-deformable plastic material, for dispensing a flowable material, such as toothpaste, various ointments, glues, gels, paints, and the like.

[0003] Such collapsible dispensing tubes were originally made of a deformable metal which permitted squeezing, folding or rolling up the tube in order to facilitate dispensing the full contents of the tube. In more recent years, collapsible dispensing tubes have been made primarily of a deformable plastic material. Such a tube has a tendency to partially return to its original tubular form after it has been squeezed, folded or rolled-up. This makes it difficult to squeeze out the complete tube contents. Also, the tube, when partially recovering its original form after a quantity of its contents has been squeezed out, tends to draw air into the tube which can deleteriously affect the remaining tube contents. Many devices have been devised for application to the closed bottom of such plastic tubes for continuously retaining the tubes in their squeezed, folded or rolled condition as their contents are dispensed. Examples of such known devices are described in U.S. Pat. Nos. 4,807,782, 5,344,049, 5,373,968, 6,419,115 and 6,747,087.

[0004] However, such known devices are generally constructed as separate re-usable units to be applied to the tube and then to be removed after the complete contents of the tube have been dispensed to enable the device to be re-applied to another tube for reuse. These known devices, therefore, are subject to a number of disadvantages, including: the need for, and the cost of, purchasing a separate device, the awkwardness of applying the separate device to the closed bottom of each collapsible dispensing tube on which it is to be used, e.g., by forcing the closed bottom through a narrow slot in the device; the need for removing the separate device to enable it to be reused with another collapsible dispensing tube, and the inconvenience of retaining and locating the device when it is desired to be used.

[0005] It has also been known to provide fold-retainer strips of a stiff foldable material to be applied transversely across the closed bottom of the tube such that when the tube is folded upon itself, starting from the closed bottom, the opposite ends of the strip project laterally outwardly of the tube and serve as tabs foldable over the folded ends to retain the tube in its folded condition. Examples of such devices are described in U.S. Pat. Nos. 5,579,956 and 6,685,057. Insofar as the applicant is aware, however, such devices have not come into widespread use, probably because of the need to purchase and maintain a supply of the fold-retainer strips, as in the case of U.S. Pat. No. 5,579,956, or the need to modify the construction of the closed bottom of the collapsible tube, as in the case of U.S. Pat. No. 6,685,057.

[0006] In a completely different field, namely the field of reclosable bags, it is known to provide a metal strip (commonly known as a tin-tie) extending along one side of the open end of the paper bag, and having a length greater than the width of the bag to define tabs projecting laterally from opposite sides of the bag open end and bendable over the opposite side to close the bag open end. Such reclosable bags have been known for over a century, as indicated by U.S. Pat. No. 488,785, which issued in the year 1892, and a large number of constructions have been developed for this purpose as shown by the large number of patents issuing on such constructions.

OBJECTS AND BRIEF SUMMARY OF THE INVENTION

[0007] An object of the present invention is to provide a collapsible dispensing tube having advantages in one or more of the above respects.

[0008] According to a broad aspect of the present invention, there is provided a collapsible dispensing tube for containing and dispensing a flowable material, the tube having a closed bottom and an open top closable by a removable cap, and being foldable upon itself, starting from its closed bottom, for reducing its volume after flowable material has been dispensed therefrom via its open top; the tube including a fold-retainer strip of a stiff foldable material having a width equal to a small fraction of the length of the tube, and a length greater than the width of the tube such that when the fold-retainer strip is applied transversely across the closed bottom of the tube, and the tube is folded upon itself starting from its closed bottom, the opposite ends of the strip project laterally outwardly of the opposite sides of the tube and serve as foldable tabs to retain the tube in its folded condition; the fold-retainer strip being detachably carried on the outer face of the tube between its top and bottom, to thereby enable the strip: (a) to normally serve as a decorative strip for the tube when filled with the flowable material; and (b) thereafter, to serve as a fold-retainer strip conveniently detachable by a user whenever desired for application across the closed bottom of the tube to retain the tube in a folded condition.

[0009] Such a fold-retainer strip can be removable attached to the tube as a part of the process for making the tube, or as a part of the process for filling the tube. Accordingly, providing such a retainer strip on the tube itself would involve an insignificant increase in cost, far outweighed by the many advantages of such a tube construction, including: the decorative value of the strip when applied to the tube, the convenience of having such a strip provided with the tube itself so as to obviate the need for maintaining a supply, the convenience of having a fold-retainer readily available whenever desired to be used, and the continuous reminder, until the fold-retainer strip is actually detached, that such a strip is available for retaining the tube in a folded condition, whenever desired.

[0010] Preferably, such a fold-retainer strip is carried lengthwise of the outer face of the tube. However, it can also be carried circumferentially of the outer face of the tube, in which case it would have the additional advantage of providing some structural support for the tube.

[0011] Many flexible strip constructions are known for use as tin ties for closing the open ends of bags as briefly described above, for application as a decorative trim strip to various articles, etc. Many of these known constructions are made of a stiff foldable material and can be used as the fold-retainer strip in the present invention.
[0012] In the described preferred embodiments, the fold-retainer strip has an outer metallic appearance and includes a pair of stiff, foldable metal wires extending along its opposite sides with a thin web inbetween. A metal foil encloses the pair of stiff wires and in turn is enclosed by a transparent plastic film, to define the thin web between the stiff wires. The web is preferably formed with a plurality of transversely-extending ribs to increase the stiffness of the fold-retainer strip in the longitudinal direction. Such a fold-retainer strip thus defines a beaded formation along each of its opposite edges, which facilitate the detachment of the strip from the outer face of the tube, and its application transversely across the closed bottom of the tube.

[0013] Also in the described preferred embodiments, the fold-retainer strips include a pressure-sensitive adhesive for detachably bonding it to the outer face of the tube. Other forms of temporary attachment means could be used, for example light heat-fusion bonding of the plastic film of the strip to the outer face of the plastic tube.

[0014] According to another aspect of the present invention, there is provided a retainer element particularly useful for application to a collapsible dispensing tube having an upper open end, closeable by a removable cap, for dispensing a flowable material, and a bottom closed end, the retainer element being effective to permit the tube to be transversely folded upon itself, starting from its closed bottom, and retain the tube in a folded position when folded upon itself many times to reduce the volume of the tube as its contents are dispensed, the retainer element comprising: a backing strip of a foldable material; a pressure-sensitive adhesive coating on a face of at least a middle region of the backing strip for pressure application to the closed bottom of a tube; and a pair of stiff, foldable elements embedded in and extending along the opposite edges of the backing strip; the backing strip being dimensioned such that its width is a small fraction of the length of the collapsible tube and is of a length greater than the width of the closed bottom of the tube, such that the middle region of the backing strip may be adhesively applied by pressure to the face of the closed bottom of the tube, with the opposite ends defining lateral tabs foldable over the opposite face of the tube each time the bottom end of the tube is folded upon itself, and thereby to retain the tube in its folded condition.

[0015] The invention also provides an assembly of a plurality of retainer elements each as defined above, wherein the plurality of retainer elements are each removably carried on one face of a continuous carrier strip wound in the form of a roll on a holder, or wherein each of the retainer strips is enclosed within a paper enclosure and the plurality are contained within a common container.

[0016] Further features and advantages of the invention will be apparent from the description below.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0017] The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein

[0018] FIG. 1 is a side elevational view illustrating one form of collapsible dispensing tube constructed in accordance with the invention to include a fold-retainer strip removably attached to the tube lengthwise of the tube;

[0019] FIG. 2 illustrates the tube of FIG. 1 after the fold-retainer strip has been removed and initially applied transversely across the closed bottom of the tube;

[0020] FIG. 3 illustrates the tube of FIG. 2 after the fold-retainer strip has been folded around the closed bottom of the tube;

[0021] FIG. 4 illustrates the tube after it has been folded upon itself several times and the ends of the retainer strip have been folded to retain the tube in its folded condition;

[0022] FIG. 5 illustrates the tube of FIG. 4 after it has been folded upon itself many times such that the tube is almost completely empty;

[0023] FIG. 6 illustrates another embodiment wherein the fold-retainer strip is applied circumferentially around the tube;

[0024] FIGS. 7 and 8 illustrate two other preferred locations of the fold-retainer strip on the outer face of the tube when detachably applied thereto;

[0025] FIG. 9 is a plan view illustrating the shape and relative dimensions of the fold-retainer strip in FIGS. 1-8;

[0026] FIG. 10 is an enlarged transverse section of the fold-retainer strip of FIG. 9 along line X--X;

[0027] FIG. 11 is a plan view of a modification in the retainer strip of FIGS. 1-10;

[0028] FIGS. 12-14 illustrate examples of three arrangements which may be used for carrying a plurality of retainer elements on one face of a continuous carrier strip wound in the form of a roll on a holder and

[0029] FIG. 15 illustrates another construction wherein the retainer element is enclosed within a paper enclosure;

[0030] FIG. 16 is a sectional view along line XVI—XVI of FIG. 15; and

[0031] FIG. 17 illustrates an arrangement wherein a plurality of retainer elements of FIGS. 15 and 16 are contained within a common container.

[0032] It is to be understood that the foregoing drawings, and the description below, are provided primarily for purposes of facilitating understanding the conceptual aspects of the invention and possible embodiments thereof, including what is presently considered to be a preferred embodiment. In the interest of clarity and brevity, no attempt is made to provide more detail than necessary to enable one skilled in the art, using routine skill and design, to understand and practice the described invention. It is to be further understood that the embodiments described are for purposes of example only, and that the invention is capable of being embodied in other forms and applications than described herein.

**DESCRIPTION OF THE PREFERRED EMBODIMENTS**

[0033] FIG. 1 discloses a collapsible dispensing tube, generally designated 2, for dispensing a flowable material, such as a toothpaste, an ointment, a gel, or the like. The bottom of tube 2 is closed, as indicated by bond lines 3, and its top 4 is open but is closed by a removable cap 5. Thus, when cap 5 is removed, the contents of the tube may dispensed through the open end 4 by manually squeezing the tube to reduce the tube volume, and thereby to force the contents out through the open end 4, as well known in collapsible dispensing tubes of this type.

[0034] Tube 2 may be a conventional collapsible dispensing tube commonly used for toothpaste and the like. It is made of a deformable material and may have an inner face of a metal foil or coating, as known in plastic tubes of this type.

[0035] In accordance with the present invention, a fold-retainer strip, generally designated 10, is detachably carried on the outer face of tube 2 between its top and bottom. Strip
10, as will be described more particularly below with respect to FIGS. 9 and 10, is of a stiff, foldable material, removably attached lengthwise along the length of the outer face of the tube 2. As shown in FIG. 1, strip 10 has a width “w” equal to a small fraction of the length “L” of tube 2; and as shown particularly in FIG. 2, strip 10 has a length “l” greater than the width “W” of tube 2. The arrangement is such that when the intermediate portion 11 of strip 10 is applied transversely across the bottom of the tube, as shown in FIG. 2, the opposite ends of the strip project laterally outwardly of the opposite sides of the tube and serve as foldable tabs 12, 13. When strip 10 is thus applied transversely across one face of the bottom of the tube, the tube may be folded upon itself, starting with the bottom, any desired number of times, and the tabs 12, 13 may then be folded over bottom face of the folded bottom of the tube to retain the tube in its folded condition.

[0036] FIGS. 2 and 3 illustrate the condition of the tube when strip 10 has initially been applied transversely across the bottom end of the tube, but the tube has not yet been folded; FIG. 4 illustrates the condition wherein tube 2 has been folded a number of times about itself, starting with the bottom, and the tabs 12, 13 then bent over the folded end of the tube to retain the tube in its folded condition; and FIG. 5 illustrates the condition wherein the bottom of the tube has been folded almost a maximum number of times about itself, such that the tube is almost empty, and the tabs have been folded over the tube to retain the tube in this folded condition.

[0037] As shown in FIG. 2, the length “l” of strip 10 should be more than 1.5, preferably about twice, the width “W” of the tube 2, such that the tabs 12, 13 substantially abut or almost abut each other in the non-folded condition of the tube, and move farther apart as more folds are applied to the tube, as shown particularly in FIGS. 4 and 5. As shown in FIG. 1, the length “l” of strip 10 is less than the length “L” of the tube 2 such that the strip can be conveniently applied lengthwise of the outer face of the tube to serve as a decorative strip or the like. The width “w” of strip 10 is a small fraction of the length “L” of the tube 2, preferably less than one-fifth, more preferably between about one-fifth and one-tenth, of the length so as to allow at least five, preferably up to 10, folds to be made in the tube when the complete contents of the tube have been dispensed, as shown in FIG. 5.

[0038] FIG. 1 illustrates the fold-retainer strip 10 as being applied lengthwise to the outer front face of the tube 2, it could also be applied to the rear face or to a side face so as not to obstruct viewing the information appearing on the front face. Applying the fold-retainer strip 10 to the front face, however, has the advantage of serving as a continuous reminder to the user that such a detachable fold-retainer strip is conveniently available for detachment and use whenever desired.

[0039] FIG. 6 illustrates the detachable retainer strip 10 applied circumferentially around a mid-portion of the outer face of the tube 2, whereas FIG. 7 illustrates the fold-retainer strip 10 applied circumferentially around the upper end of the tube. The latter arrangement has the advantage of avoiding obscuring any written information appearing on the outer face of the tube, so as to serve merely an ornamental function until detached from the tube. In addition, it does not interfere with the squeezing-out of the complete contents of the tube, should it not be desired to remove and use the fold-retainer strip.

[0040] FIG. 8 illustrates another alternative, in which the detachable fold-retainer strip 10 is applied along the side of the tube 2, preferably from the upper end towards, but short of, the lower end. Thus, when the strip is applied to the side of the tube, it can be applied so as not to obscure any information on the outer face of the tube; and when it is applied to the upper end of the tube, it becomes more noticeable as available for use as a fold-retainer strip as more contents of the tube are dispensed.

[0041] FIGS. 9 and 10 illustrate a preferred construction of the fold-retainer strip 10. Its main section 11 is of a length substantially equal to the width “W” of the tube 2 so as to allow the strip to be applied transversely across the bottom end of the tube, with the two laterally-projecting end sections 12, 13 each of a length equal to about “W/2”, to thereby serve as the tabs foldable over the folded bottom of the tube.

[0042] As particularly shown in FIG. 10, the preferred illustrated construction of the fold-retainer strip 10 includes a pair of stiff, foldable wires 14, 15, such as of steel, aluminum or copper, extending along the opposite sides of the strip. The strip further includes a web 16 in between, such as of a metal foil (e.g., aluminum foil) enclosing, and extending between, the stiff, foldable metal wires 14, 15 along the opposite sides of the strip. Metal foil 16 is in turn enclosed by a transparent plastic film 17 for protective purposes. The web 16 between the metal wires 14, 15 is formed with transversely-extending ribs 18, spaced lengthwise of the strip. Such ribs enhance the transverse foldability of the strip, but increase the stiffness of the strip in the longitudinal direction.

[0043] The foldable metal wires 14, 15 are each of circular cross-section, such that the opposite edges of the strip 10 are rounded, as shown particularly in FIG. 10. Such a construction not only increases the transverse foldability of the strip, but also facilitates its removal from the toothpaste tube when it is desired to use the strip for folding the tube from its bottom end as described above.

[0044] Preferably fold-retainer strip 10 is removably attached to the tube 2, lengthwise as shown in FIGS. 1 and 8, or circumferentially as shown in FIGS. 6 and 7, by a pressure-sensitive adhesive, shown at 19 in FIG. 10. The use of a pressure-sensitive adhesive for this purpose facilitates the application of the strip transversely across the bottom of the tube and then the folding of the tube from its bottom end in order to reduce the volume of the tube, after which the tabs 12, 13 may be folded over the end of the tube to retain it in its folded condition.

[0045] It will be appreciated that once the bottom of the tube has been folded over the strip, the foldable tabs will hold the strip in place. Accordingly, the strip may also be removably attached to the tube by light heat-fusion bonding or the like, since an adhesive coating is not necessary when applying the strip transversely across the bottom of the tube.

[0046] In the collapsible tube construction described above the fold-retainer strip 10 initially serves as a decorative strip for the tube when filled with its flowable material contents, (e.g., toothpaste). By using a metal foil (such as aluminum) for the strip 10, a metallic appearance is given to the strip enhancing its decorative function. Since the strip is to be removed if and when used for folding the tube and retaining it in its folded condition as described above, the strip may also be used for containing information, such as instructions for its use, shelf life of the contents of the tube, or the like. Whenever desired, the strip may be detached from the tube to serve as a retainer-strip conveniently accessible to a user for folding the tube and retaining it in its folded condition.

[0047] FIG. 11 illustrates a modification in the construction of the fold-retainer strip, wherein generally designated 110 in
this modification, the intermediate portion 111 of the retainer strip 110 is of slightly narrower width than the laterally-projecting tab portions 112, 113, to thereby increase the retaining properties of the tabs when folded over the face of the tube opposite to which the intermediate portion 111 is applied, as described above. This modification would otherwise be constructed as described above with respect to FIGS. 9 and 10, to include the two metal wires 114, 115, extending along the opposite edges of the strip.

[0048] FIGS. 12-17 illustrate arrangements wherein the fold-retainer strip (10) may also be supplied separately from the collapsible tubes to which they are to be attached when emptying the tube. In one such arrangement, as illustrated in FIGS. 12-14, a plurality of the fold-retainer elements are removable* carried on one face of a continuous carrier strip wound in the form of a roll on a holder; and in the arrangement illustrated in FIGS. 15-17, each fold-retainer strip is enclosed within a paper enclosure, and a plurality of such retainer elements are contained within a container.

[0049] Thus, FIG. 12 illustrates an arrangement wherein a carrier strip 200 carries a plurality of the fold-retainer strips 210, each of which may be constructed as described above. The carrier strips 200 may be a plastic film coated on one surface with a pressuresensitive adhesive for removably receiving the fold-retainer strips 210. Alternatively, each fold-retainer strip 210 may be adhesively coated, for its complete surface or for only its middle region to be attached to the collapsible, and the opposite edges of the carrier strip 200 may include an adhesive coating, as shown in FIG. 12, for retaining the carrier strip, with the fold-retainer strips 210 thereon, in a roll form.

[0050] In FIG. 12, the fold-retainer strips 210 are arrayed in longitudinally-aligned positions along the length of the carrier strip 200. FIG. 13 illustrates an arrangement wherein the fold-retainer strips 310 are arrayed in an inclined position along the carrier strip 300 so as to reduce the length of the carrier strip for holding a given number of fold-retainer strips. FIG. 14 illustrates a further variation wherein each fold-retainer strip 410 extends transversely along the length of the carrier strip 400, for minimizing the length of the carrier strip for a given number of fold-retainer strips.

[0051] FIGS. 15-17 illustrate an arrangement wherein each fold-retainer strip is also supplied in pre-cut length to the consumer, but similar to the manner in which pressure-sensitive adhesive bandages are supplied. Thus, the fold-retainer strip, generally designated 510 in FIGS. 15 and 16, is enclosed within a paper enclosure or envelope 521, a plurality of which are supplied within a container 522, as shown in FIG. 17.

[0052] Thus, as shown particularly in FIG. 16, each fold-retainer unit 500 includes a fold-retainer 510 formed with a flexible web 511 between two bendable wires 514, 515 extending along its opposite edges. The wires are enclosed within a metal foil 516, and a transparent plastic film 517 formed with transversely-extending ribs 518. An adhesive layer 519 is applied to one face of the fold-retainer 510, and a strip of film 520 is applied over the adhesive layer. The so-produced fold retainer is then enclosed within a paper envelope or enclosure 521 and is supplied to the consumer in a container 522 containing a plurality of such fold-retainers.

[0053] While the invention has been described above with respect to several preferred embodiments, it will be appreciated that these are set forth merely for purposes of example, and that many other variations, modifications and applications of the invention may be made.

What is claimed is:

1. A collapsible dispensing tube for containing and dispensing a flowable material, the tube having a closed bottom and an open top closable by a removable cap, and being foldable upon itself, starting from its closed bottom, for reducing its volume after flowable material has been dispensed therefrom via its open top;

2. The tube including a fold-retainer strip of a stiff foldable material having a width equal to a small fraction of the length of the tube, and a length greater than the width of the tube such that when the fold-retainer strip is applied transversely across the closed bottom of the tube and the tube is folded upon itself starting from its closed bottom, the opposite ends of the strip project laterally outwardly of the opposite sides of the tube and serve as foldable tabs to retain the tube in its folded condition;

3. The fold-retainer strip being detachably carried on the outer face of the tube between its top and bottom to thereby enable the strip: (a) to normally serve as a decorative strip for the tube when filled with the flowable material; and (b) thereafter, to serve as a fold-retainer strip conveniently detachable by a user whenever desired for application across the closed bottom of the tube to retain the tube in a folded condition.

4. The collapsible dispensing tube according to claim 1, wherein the fold-retainer strip is carried lengthwise of the outer face of the tube.

5. The collapsible dispensing tube according to claim 2, wherein the fold-retainer strip is detachably carried on the front or rear outer surface of the tube.

6. The collapsible dispensing tube according to claim 3, wherein the fold-retainer strip is carried circumferentially around the outer face of the tube.

7. The collapsible dispensing tube according to claim 4, wherein the fold-retainer strip is detachably carried circumferentially around a middle region of the outer face of the tube.

8. The collapsible dispensing tube according to claim 5, wherein the fold-retainer strip has an outer decorative metallic appearance.

9. The collapsible dispensing tube according to claim 1, wherein the fold-retainer strip includes a pair of stiff, foldable metal wires along its opposite sides, and a thin web inbetween.

10. The collapsible dispensing tube according to claim 9, wherein the thin web is formed with transversely-extending ribs to increase the stiffness of the fold-retainer strip in the longitudinal direction thereof.

11. The collapsible dispensing tube according to claim 9, wherein the flexible web includes a metal foil enclosing, and extending between, the stiff, foldable metal wires at the opposite sides of the strip.

12. The collapsible dispensing tube according to claim 11, wherein the metal foil is enclosed by an outer transparent plastic film.
13. The collapsible dispensing tube according to claim 1, wherein the fold-retainer strip includes a beaded formation along each of its opposite edges for facilitating its detachment from the outer face of the tube, and its application transversely across the closed bottom of the tube.

14. The collapsible dispensing tube according to claim 1, wherein the width of the fold-retainer strip is less than one-fifth the length of the tube, and the length of the fold-retainer strip is at least 1.5 times the width of the tube.

15. The collapsible dispensing tube according to claim 1, wherein the width of the fold-retainer strip is about one-tenth the length of the tube, and the length of the fold-retainer strip is about twice the width of the tube.

16. The collapsible dispensing tube according to claim 1, wherein the fold-retainer strip includes a pressure-sensitive adhesive detachably adhering it to the outer face of the tube.

17. The collapsible dispensing tube according to claim 1, wherein the fold-retainer strip is detachably heat-bonded to the outer face of the tube.

18. A retainer element particularly useful for application to a collapsible dispensing tube having an upper open end, closable by a removable cap, for dispensing a flowable material, and a bottom closed end, the retainer element being effective to permit the tube to be transversely folded upon itself, starting from its closed bottom, and retain the tube in a folded position when folded upon itself many times to reduce the volume of the tube as its contents are dispensed, the retainer element comprising:

- a backing strip of a foldable material;
- a pressure-sensitive adhesive coating on a face of at least a middle region of the backing strip for pressure application to the closed bottom of a tube;
- and a pair of stiff, foldable elements embedded in and extending along the opposite edges of the backing strip;
- the backing strip being dimensioned such that its width is a small fraction of the length of the collapsible tube and is of a length greater than the width of the closed bottom of the tube, such that the middle region of the backing strip may be adhesively applied by pressure to the face of the closed bottom of the tube, with the opposite ends defining lateral tabs foldable over the opposite face of the tube each time the bottom end of the tube is folded upon itself, and thereby to retain the tube in its folded condition.

19. An assembly of a plurality of retainer elements each according to claim 18, wherein the plurality of retainer elements are each removably carried on one face of a continuous carrier strip wound in the form of a roll on a holder.

20. An assembly of a plurality of retainer elements each according to claim 18, wherein each of the retainer elements is enclosed within a paper enclosure, and the plurality are contained within a common container.

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