May 31, 1960 R. N. EICHORN 2,938,623

CONTAINER

Filed April 30, 1957 3 Sheets-Sheet 1

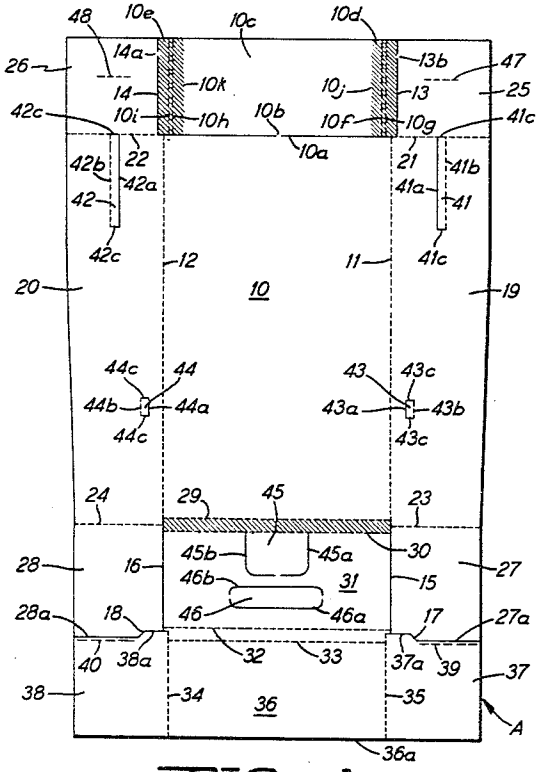

FIG. 1.

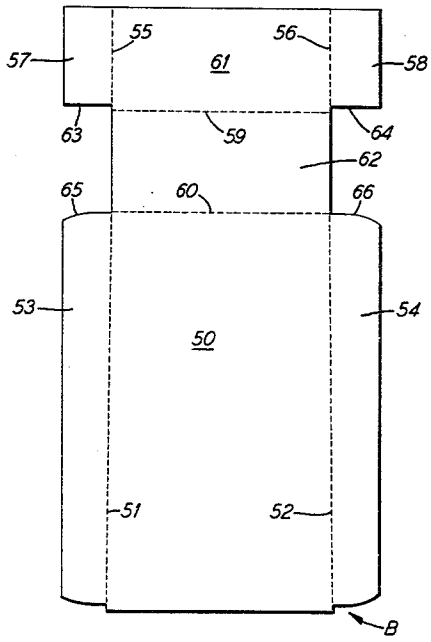

FIG. 2.

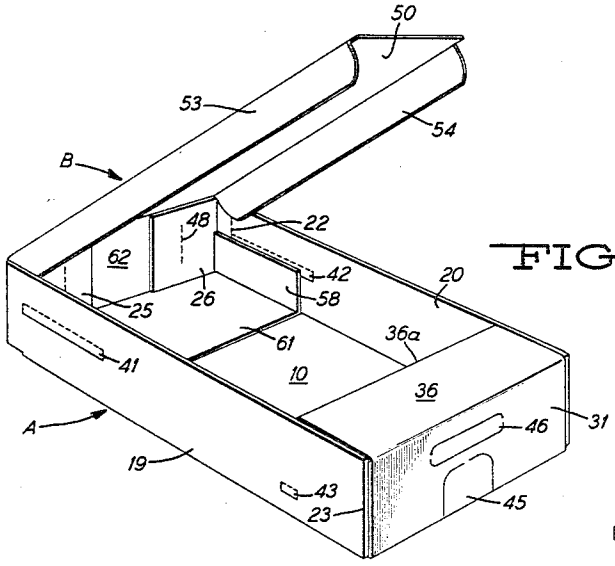

FIG. 3.

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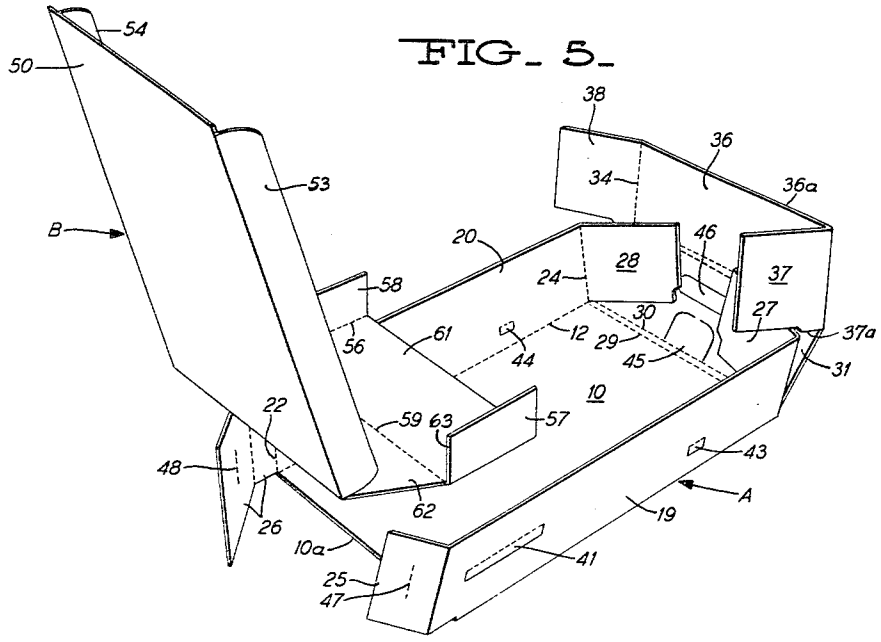
May 31, 1960 R. N. EICHORN 2,938,623

CONTAINER

Filed April 30, 1957 3 Sheets-Sheet 2

FIG. 5.



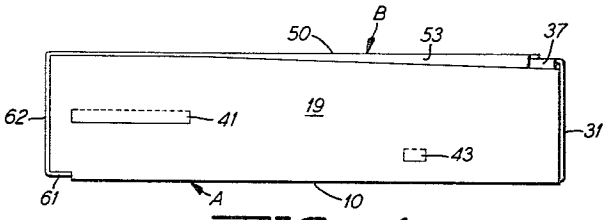


FIG. 4.

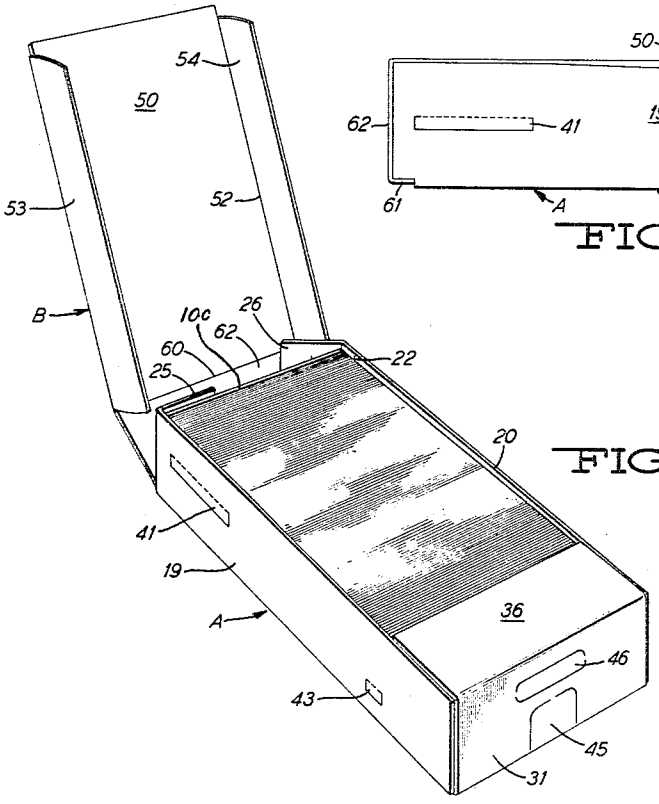


FIG. 6.

May 31, 1960 R. N. EICHORN 2,938,623

CONTAINER

Filed April 30, 1957 3 Sheets-Sheet 3

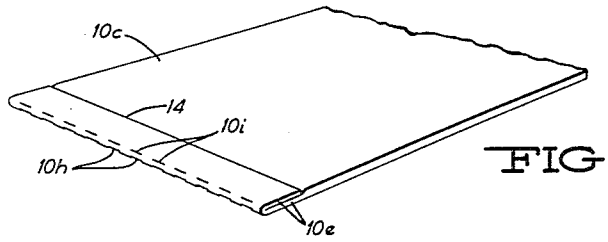


FIG. 7.

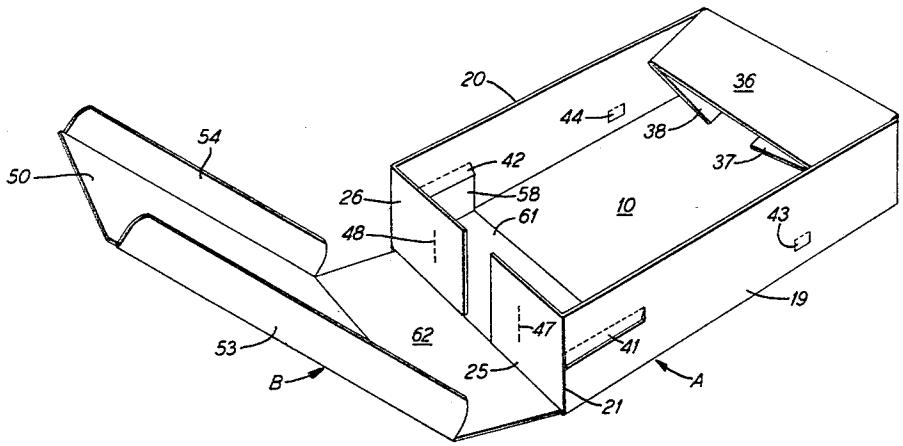
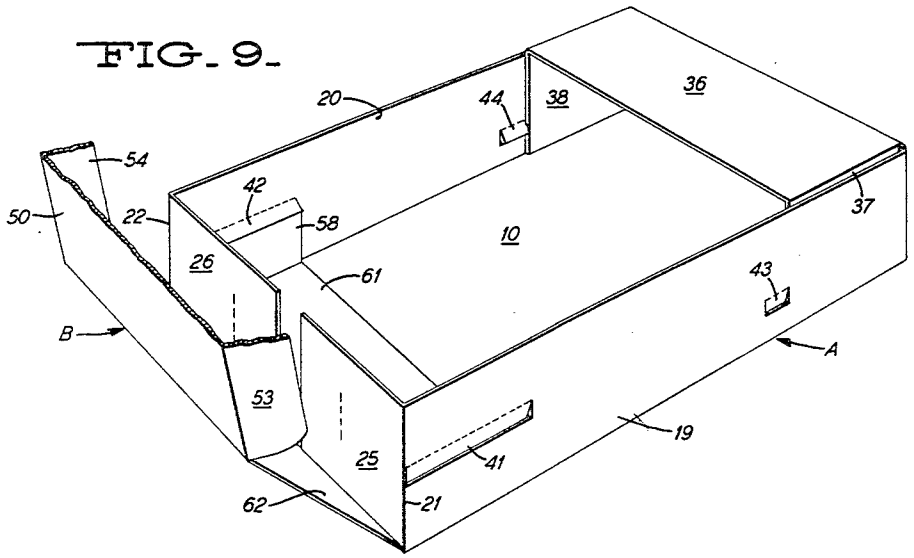


FIG. 8.

FIG. 9.



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CONTAINER

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6 Claims. (Cl. 206—60)

This invention relates to containers and more particularly to expansible containers of paper or fibre board adaptable for retaining articles such as tabulating cards for card controlled business machines and the like.

The tabulating cards, which are sometimes referred to as record cards, in order to be useful must meet many requirements and therefore it is very desirable to have adequate containers for these cards during shipment and storage to prevent damage to the cards. Briefly, an adequate container would be one which contains a predetermined number of cards in a manner that the edges of the cards would not be damaged, that the cards would not warp or curl, that the cards would be easily accessible and that the cards would not be exposed unnecessarily to the atmosphere.

Attempts to provide a single adequate container heretofore have been rather unsuccessful and at best unsatisfactory to the trade. The paper stock used for the manufacture of the tabulating cards generally is allowed to vary in caliper within tolerable limits and it is necessary to accommodate this variation in card caliper where a predetermined number of cards are to be within a container. For example, if an acceptable tolerance is plus or minus .0004 inch and it is desired to have all cartons contain 2000 cards, it would be necessary to provide a container which could accommodate the variance in capacity which could occur under the tolerances indicated in order to compactly contain the predetermined number of cards. Since if the cards are not compactly contained, damage will occur during shipment.

An obvious solution to the problem would be to provide a container having a capacity to contain a given number of cards having a maximum tolerable caliper. Any variance from the maximum tolerable caliper could be accommodated by either putting in more cards than the order requires or filling up the void space created by smaller caliper cards with shim stock. In either event, whether the carton would be filled with extra cards or with shim stock the operation would become quite costly.

Hence it is a principal object of this invention to provide a variable capacity container for retaining varying caliper articles in a manner that the articles will not be damaged by handling of the container or by exposure to the elements.

A further object of this invention is to provide an inexpensive variable capacity container.

A still further object of this invention is to provide a variable capacity container which is easily and quickly assembled for filling and closure.

Another further object of this invention is to provide an improved variable capacity container that does not require separate means for securing the container against collapsing.

Still another object of this invention is to provide an improved variable capacity container that can be maintained in a closed condition without separate closing means.

The requirements of a container for articles such as tabulating cards differ as to whether the cards are being shipped or whether the cards are being retained in the container for file purposes. While the container is in transit, accessibility to the cards is of little importance, however, protection of the cards from damage is of major importance. When the container is being used as a file, accessibility to the cards is of considerable importance as well as protection of the cards from damage. Of course, it is highly desirable to have a single container which will satisfy these conditions.

Accordingly, it is still another object of this invention to provide a variable capacity container which provides maximum protection to the articles contained therein during shipment of the containers and to provide greater accessibility to the articles during storage.

Damage to the articles such as tabulating cards will be reduced according to the tightness or density of packing the articles.

Therefore, it is still a further object of this invention to provide a variable capacity container which will compactly or densely contain a predetermined number of articles which are allowed to vary in caliper.

The articles such as tabulating cards are produced at a very rapid rate and since it is desirable to package these articles as they are being produced it would be advantageous to have a container which could be quickly assembled and readied for shipment; whereas after shipment it may be additionally desirable to modify the assembly of the container in a manner which could have been done in the original assembly but which involves more time. Hence to increase the over-all desirable characteristics of the container, the assembly can be further modified after shipment to enhance the storage facilities of the container.

Therefore a still further object of this invention is to provide a variable capacity container which can be assembled for filling and be readied for shipment very rapidly and subsequently can additionally be modified to become more suitable for storage or file purposes.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of examples, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a plan view of the blank used in forming section A of the container.

Fig. 2 is a plan view of the blank used in forming section B of the container.

Fig. 3 is a perspective view of the container as it would appear in its assembled form for shipping; however with the cards removed and with the cover open.

Fig. 4 is a left side elevation of the container as it would appear in its assembled form for shipping.

Fig. 5 is a perspective view of the sections A and B with the folds having been made for assembling the container in a form for shipping.

Fig. 6 is a perspective view of the assembled container having been filled with cards and showing one of the end flaps being folded inward, the other end flap having been folded.

Fig. 7 is a fragmentary view in full line of the insertable end panel as it would appear if removed from the carton shown in Fig. 6.

Fig. 8 is a perspective view of the container assembled in an alternate form, that is, with the locking ears folded inward 180° and the end portion being folded downward 180° and with the wing elements locked with sides of the slideable bottom portion.

Fig. 9 is a perspective view of the container assembled in an alternate form, that is, with the locking ears folded inward 90° and the end portion folded downward 90° and with the other wing elements locking with the locking ears.

The container or carton comprises two sections A and B which are made from blanks illustrated in Figs. 1 and 2, respectively. The section A, Fig. 1, comprises a body **10** formed from suitable material such as paper board or the like. The body **10** is normally scored longitudinally along the dotted lines **11** and **12** and cut longitudinally along the lines **13**, **14**, **15** and **16** and transversely along the lines **17**, **18** and **10***a* so that respective portions **19** and **20** may be folded upwardly to provide side walls.

The longitudinal cut lines **13** and **14** and the transverse cut line **10***a* are not complete cut lines but are interrupted to provide small ties or lands **13***a*, **14***a* and **10***b*, respectively, thereby retaining a panel **10***c* integral with the body **10** until the carton is to be assembled. At the time for assembly of the carton, the assembler merely ruptures the holding ties **13***a*, **14***a* and **10***b* to remove the panel **10***c*. The function of the longitudinal score lines on the panel **10***c* will be described hereinafter. The cuts made along the lines **17** and **18** are made in the manner shown for purposes also to be described hereinafter.

The respective portions **19** and **20** are normally scored transversely along the lines **21**, **22**, **23** and **24** so that respective portions **25**, **26**, **27** and **28** may fold inwardly after removing panel **10***c* to provide end flaps.

The body **10** is crushed transversely between the dotted lines **29** and **30** but line **30** is heavily scored to insure that a portion **31** to be folded upwardly will be folded therealong and thereby forming an end portion. The end portion **31** is heavily scored transversely along the dotted line **32** and lightly scored transversely along the dotted line **33** and normally scored longitudinally along the dotted lines **34** and **35** to provide an end portion **36** and ear portions **38** and **37**, respectively. The ear portions **37** and **38** may be folded inwardly 90° to form locking ears which lock over the inwardly folded end flaps **27** and **28** as the end portion **36** as shown in Figs. 3, 5, and 6 is folded downward 90°.

In order to provide maximum support for the articles and also provided a good edge for locking the ear portions **37** and **38** over the inwardly folded end flaps **27** and **28**, the cuts along the lines **17** and **18** are made so that edges **27***a* and **28***a* of the end flaps **27** and **28** will just abut each other to provide a strong support for the articles when held in contact with the end portion **31** by the ear portions **37** and **38**, see Figs. 3 and 5. The edges **37***a* and **38***a* on the ear portions **37** and **38** and formed by the cuts **17** and **18** lock the end flaps **27** and **28** with the end portion **31** as the end portion **36** is folded downward 90°, also see Figs. 3 and 5.

The end flaps **25** and **26** when folded inwardly, Figs. 3 and 6, do not abut each other to provide a strong support for the articles as furnished by the abutting end flaps **27** and **28**. However, when filling the container, the panel **10***c* is detached from the body portion **10** and is inserted after the last article is placed in the container to provide added support for the articles as shown in Fig. **6**. The panel **10***c* is crushed in the areas **10***d* and **10***e* and is longitudinally perforated along the lines **10***f*, **10***g*, **10***h* and **10***i*; the purpose of the crushed areas and perforated lines will be described hereinafter.

The ear portions **37** and **38** may be folded inwardly 180° along the score lines **35** and **34**, respectively, as the end portion **36** is folded downward 180°, see Fig. 8. The edge **36***a* of the end portion **36** is adapted to lock in the crushed area between the lines **29** and **30**.

The ear portions **37** and **38** are perforated along lines **39** and **40**, respectively, to permit deforming of the areas between the cut line **17** and the line **39** and between the cut line **18** and the line **40** by the area between the dotted lines **32** and **33** as the ear portions **37** and **38** are folded inwardly 180° and the end portion **36** is folded downward 180°.

The section B, Fig. 2, comprises a body **50** also formed from suitable material such as paper board or the like. The body **50** is normally scored longitudinally along the dotted lines **51** and **52** so that respective portions **53** and **54** may be folded upwardly to provide side walls. Further the body **50** is scored transversely along the dotted lines **59** and **60** to form portions **61** and **62**, respectively, and to facilitate folding of the body **50** in a manner to be described hereinafter and the so-formed portion **61** is normally scored longitudinally along the dotted lines **55** and **56** to permit respective portions **57** and **58** to be folded upwardly.

When preparing a container for filling, Figs. 5 and 6, side walls **19** and **20** of section A are folded upwardly 90° with respect to the body portion **10** and the end flaps **27** and **28** are folded inwardly 90°, respectively. The end portion **31** is folded upwardly 90° so as to lie in contact with the inwardly folded end flaps **27** and **28**. The locking ears **37** and **38** are then folded inwardly 90°, respectively, and the end flap **36** is folded downwardly 90° thereby carrying the locking ears **37** and **38** over the inwardly folded end flaps **27** and **28** to lock the end portion **31** and the side walls **19** and **20** in their upwardly folded positions. The portions **57** and **58** of section B are folded upwardly 90° from the portion **61** and section B in this condition is then placed so that portion **61** lies above and in contact with the body portion **10** of section A and that the upwardly folded portions **57** and **58** lie in contact with the side walls **19** and **20**, respectively. The container is filled from the end portion **31** toward the end portion **62**. As mentioned above, the container is to hold a predetermined number of articles such as tabulating cards which are allowed to vary in caliper within specified limits. Hence the score lines **21** and **22** are made so that if all the articles were of a caliper of the specified lower limit, the articles would fill the container up to the score lines **21** and **22**. However, if all of the articles are of a caliper of the specified upper limit, the articles would fill the container to marks **47** and **48** made on the end flaps **25** and **26**, respectively. The edges **63** and **64** of the upwardly folded portions **57** and **58** are brought to bear against the inwardly folded end flaps **25** and **26** at the score lines **21** and **22** or along the length of the end flaps **25** and **26**, respectively, in accordance with the position the articles have filled the container by sliding the portion **61** along the body portion **10**. It is seen in Fig. 4 that when articles fill the container beyond the edge **10***a* of the body portion **10**, the portion **61** extends beyond the edge **10***a* to perform the same function as the body portion **10**. Upon filling the container the panel **10***c* is positioned in contact with the last article placed in the container, thereby protecting the articles and providing a good edge for facilitating the folding of the end flaps **25** and **26** when the articles fill the container beyond the score lines **21** and **22**.

As the panel **10***c* is positioned in contact with the last article placed in the container, the crushed areas **10***d* and **10***e* between the score line **10***g* and the cut line **13** and between the score line **10***i* and the cut line **14** are caused to fold upward along the score lines **10***f* and **10***h*, and as the end flaps **25** and **26** are folded inward the crushed areas aforementioned are folded along the score lines **10***g* and **10***i* over the crushed areas between the score line **10***f* and a line **10***j* formed by the crush operation, and between the score line **10***h* and the line **10***k* formed by the crush operation, see Fig. 7. By crushing the areas indicated the thickness of the panel **10***c* is not increased as one crushed area is folded over the other. However, by folding one crushed area over the other, the articles are under high compression near their ends to be densely or tightly held in the container.

With the end flaps 25 and 26 folded inwardly over the panel 10c as shown in Fig. 3, the articles will be compactly held in the container as the portion 62 is folded upwardly 90° from the portion 61 to bear against the end flaps 25 and 26. The side portions 53 and 54 are then folded inwardly 90° to the body portion 50 which is subsequently folded downward 90° along the score line 60 so that the edges 65 and 66 of the side portions 53 and 54, respectively, lock over the inwardly folded end flaps 25 and 26 to hold the portion 62 tightly against the end flaps 25 and 26, and consequently hold the articles tightly in the container. It will be remembered that the end portion 36 is folded downward 90° to lie over the articles, hence when the articles are of maximum tolerable caliper, the body portion 50 folded downward 90° along the score line 60 will always overlap the end portion 36 as in Fig. 4 thereby insuring that the articles will be covered. This arrangement affords very good protection to the articles in that the articles are tightly contained and are completely covered. Of course, the fact that the container is self-sustaining without the aid of additional binding means allows for quick assembly of the container.

As mentioned hereinabove, the characteristics of the container may be enhanced for storage or file purposes. In Figs. 8 and 9 it is seen that wing elements 41 and 42 formed in the side walls 19 and 20 by longitudinal cuts along the lines 41*a* and 42*a* and longitudinal scores along the dotted lines 41*b* and 42*b* and transverse cuts along the lines 41*c* and 42*c* can be pushed inwardly so that they lock with the portions 57 and 58, respectively. The wing elements 41 and 42 in effect join the sections A and B to make a one piece container, thereby facilitating greater ease in handling the container when it is empty or partially filled. Further if it is desired to store the container with the end portion 36 lying over the cards, Fig. 9, wing elements 43 and 44 formed in the side walls 19 and 20 by longitudinal cuts along the lines 43*a* and 44*a* and longitudinal scores along the dotted lines 43*b* and 44*b* and transverse cuts along the lines 43*c* and 44*c* can be positioned inwardly to lock with the locking ears to facilitate ease in handling of the container when removing articles, since, in the absence of articles in the container the locking ears 37 and 38 could move inward toward each other thereby reducing the effectiveness of their ability to lock the end flaps 27 and 28 with end portion 31. However, it may be more desirable to store the container so that the articles in the container may be inspected by merely pulling the container partially from storage by the facility of a pull tab 45 formed in the end portion 31 by the perforation along the arcuate lines 45*a* and 45*b*. In this instance, see Fig. 3, the locking ears 37 and 38 would be folded inward 90° and the end portion 36 would be folded downward 90°. To provide easy identification of the contents of a container, see Fig. 1, a removable tab 46 is formed in the end portion 31 by cuts along the lines 46*a* and 46*b*. A tabulating card having identification of the contents of the container would be placed between the end portion 31 and the end flaps 27 and 28 in a manner that the identification marks would appear when removing the tab 46.

Fill marks 47 and 48 are located on the flap members 25 and 26 so that if the predetermined number of cards extends beyond the marks, there is an indication that the caliper of the cards is exceeding the upper limit of the specified tolerance and if the predetermined number of cards and the panel 10c do not extend to the score lines 21 and 22, this is an indication that the caliper of the cards is below the lower limit of the specified tolerances.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art, without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. An expansible container comprising a first rectangular panel, side walls hinged to the sides of said first panel, end flaps extending from the ends of said side walls, a front wall hinged to one end of said first panel, means for retaining said front and side walls in an upright position with respect to said first panel by locking said front wall with said end flaps extending from said side walls adjacent said front wall, a second panel having two sides and two ends, side walls hinged to the sides of said second panel, a rear wall hinged to one end of said second panel, a rectangular bottom panel hinged to said rear wall to slidably engage said first panel, and side panels extending upwardly from the sides of said rectangular bottom panel, one of the ends of said side panels disposed to abut said end flaps extending from the other end of said side panels along a line positioned in the area defined between the end of the side panels and another line spaced inwardly from the free edge opposite the edge connecting with the side panels, said rectangular bottom panel being wider than said defined area.

2. An expansible container comprising two sections, one section having a bottom panel with two ends and two sides, an end panel upstanding from said bottom panel at one end, the other end being a free edge, two side panels upstanding from said bottom panel and coextensive therewith, and members extending from said side panels beyond said bottom panel which are folded inward along a line positioned in the area defined between the end of the side panels and another line spaced inwardly from the free edge opposite the edge connecting with the side panels, the other section having a top panel with two ends and two sides disposed to lie from and parallel to said bottom panel, an end panel depending from one end of said top panel, a slideable rectangular bottom panel extending from said depending end panel and disposed to overlie said bottom panel, said slideable bottom panel being wider than said defined area, side panels upstanding from said slideable bottom panel, and side panels depending from the sides of said top panel adapted to lock said depending end panel and said side panels upstanding from said slideable bottom panel in contact with the inwardly folded portion of said members extending from said side panels.

3. A 2-piece carton of the type described comprising a first element having a bottom panel with a free end, an end wall upstanding from the other end, opposing side walls upstanding from the sides of the bottom panel, and foldable end flaps extending from the opposing side walls; and a second element having a top panel spaced from and parallel to said bottom panel, an end panel dependingly attached to said top panel, a slideable panel attached to extend from said end panel and disposed to overlie said bottom panel, and side panels upstandingly attached to said slideable panel, said side panels disposed to abut the foldable end flaps along a line positioned in the area defined between the end of the side panels and another line spaced inwardly from the free edge opposite the edge connecting with the side panels, said slideable panel being wider than said defined area.

4. An expansible container for packaging a predetermined number of articles varying in caliper within given minimum and maximum tolerances comprising a first element including a first bottom panel, a first end panel and first side panels forming a receptacle open at one end, said side panels having foldable end flaps extending therefrom, said end flaps being folded along a line positioned in the area lying between the juncture of the end flaps with the first side panels and another line spaced inwardly from the end opposite the juncture to accommodate the maximum variance in caliper of the articles; and a second element including a top panel, a second

end panel and a second bottom panel disposed to overlie said first bottom panel at the open end of said first element and slideable relative thereto to extend the effective length of the first bottom panel, said second bottom panel being wider than said area and having second side panels, one of the ends of said second side panels being in engagement with said end flaps.

5. An expansible container according to claim 4 further comprising rectangular elements having one side hingedly attached to the inner surfaces of said first side panels at a position whereby the other side of said rectangular elements frictionally engages the upper edge of said second side panels.

6. An expansible container for packaging a predetermined number of articles varying in caliper within given minimum and maximum tolerances comprising a first element including a first bottom panel, a first end panel and first side panels forming a receptacle open at one end, said first side panels having foldable end flaps extending therefrom; a predetermined number of articles having a variance in caliper within the minimum and maixmum tolerances disposed within said first element and extending beyond said open end, said end flaps being folded at the outer edge of the terminal article extending beyond the open end whereby one portion of

the end flaps extends beyond said first side panels to flank the articles extending beyond said open end and another portion frontally abuts the terminal article; and a second element including a top panel overlying said articles, a second end panel engaging the outer surface of said another portion of the end flaps, a second bottom panel underlying the articles extending beyond said open end and overlying said first bottom panel to provide a completely closed bottom and second side panels extending from said second bottom panel and engaging the inner surface of said another portion of the end flaps.

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