W. C. WEIS.

FIBER CONTAINER.

APPLICATION FILED JAN. 29, 1917.

1,308,883.

Patented July 8, 1919.

2 SHEETS—SHEET 1.

Fig. 1

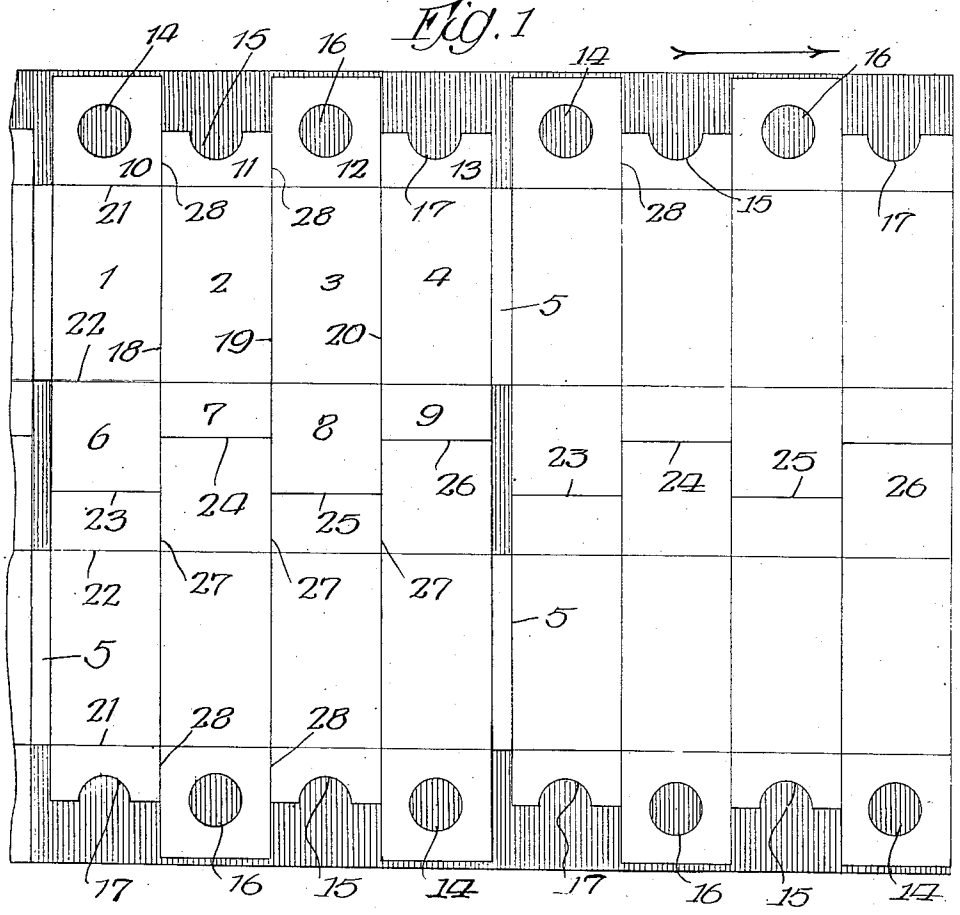
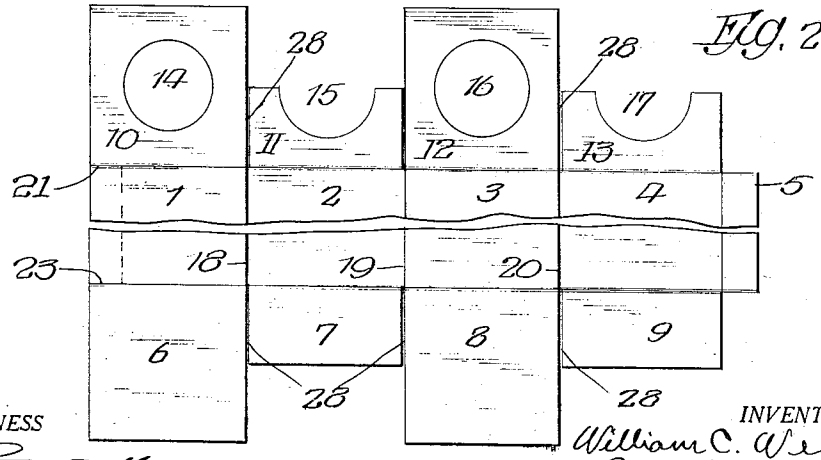


Fig. 2



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2 SHEETS—SHEET 2.

Fig 3

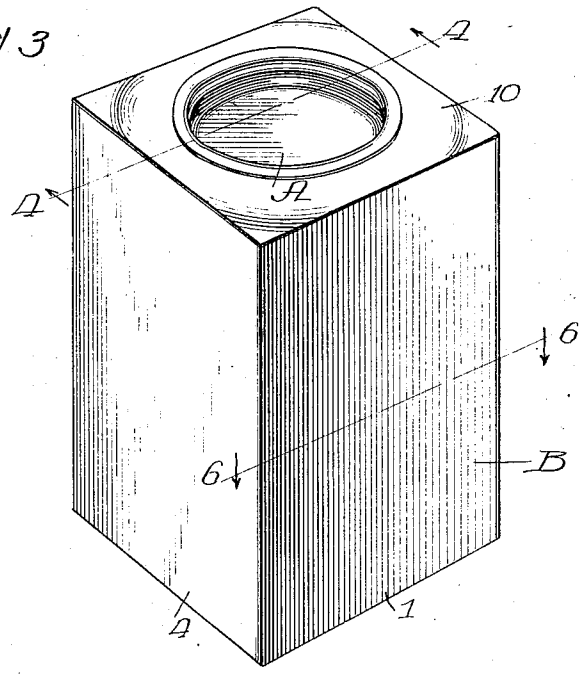


Fig 5

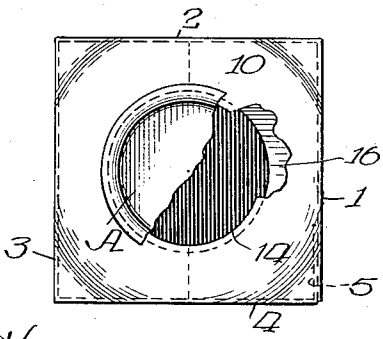


Fig 4

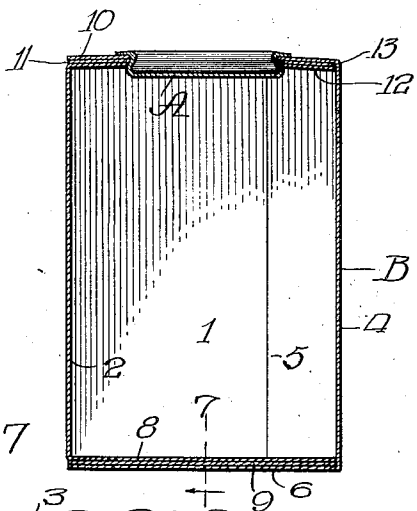


Fig 6

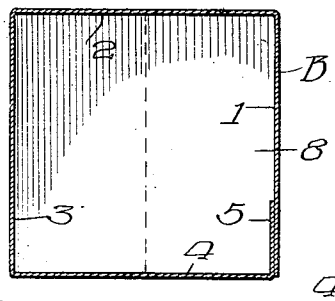
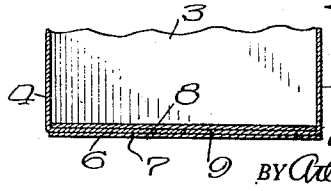


Fig 7



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FIBER CONTAINER.

1,308,883. Specification of Letters Patent. Patented July 8, 1919.

Application filed January 29, 1917. Serial No. 145,080.

To all whom it may concern:

Be it known that I, WILLIAM C. WEIS, a citizen of the United States of America, and resident of Monroe, Monroe county, Michigan, have invented a certain new and useful Improvement in Fiber Containers, of which the following is a specification.

My invention relates to fiber containers of that kind in which the blank of sheet material is folded in a manner to provide the sides of the container, and in which the flaps which are flexibly connected with the upper and lower ends of the sides are folded to provide the top and bottom of the container, an opening being provided in the top of the container for the introduction of liquid or dry commodities, and the container being sealed by a closure which is inserted in said opening.

Prior to my invention, containers of this kind have been made by properly folding the blanks, and by punching an opening in the flaps forming the top of the container, during the general operation of folding the blank, this method being considered necessary, or at least desirable, in order to insure alinement of the holes in the different flaps, and thereby to provide an even or perfect edge for said opening.

The object of my invention, therefore, is to provide an improved method of manufacture and construction which will permit the formation of the holes in said flaps before the blank is folded, thereby to simplify and reduce the cost of manufacture.

A further object is to provide an improved construction and method of manufacture which will, when the holes are thus preliminarily formed in the flaps before the folding of the blanks, entirely obviate the necessity of bringing said holes exactly into alinement with each other, in order to form an even and perfect edge for the opening or mouth of the container, and whereby, if the said holes are not in exact alinement with each other, said opening will have a true or clean edge of the desired character.

To this and other useful ends, my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings:—

Figure 1 is a plan view of a sheet of paper or fiber, showing four blanks in outline thereon, and illustrating the method of cutting the blanks from said sheet, with the apertures formed in the flaps for the top of each container.

Fig. 2 is an enlarged plan view of one of said blanks, with the central portion thereof broken away for convenience of illustration.

Fig. 3 is a perspective of the complete fiber container with the closure thereof in position in the opening or mouth of the container.

Fig. 4 is a vertical section on line 4—4 in Fig. 3.

Fig. 5 is a plan of said container, showing certain portions broken away to illustrate the construction.

Fig. 6 is a transverse horizontal section on line 6—6 in Fig. 3.

Fig. 7 is a detail vertical section on line 7—7 in Fig. 4.

As thus illustrated, the blanks are made in the manner illustrated in Fig. 1, which is as follows: A sheet of paper is fed along by any suitable means in the direction indicated by the arrow, and the blanks are cut from the sheet by any suitable means, each blank having the outline indicated in Figs. 1 and 2, it being understood that in Fig. 2 the middle portion of the blank has been broken away for convenience of illustration. Thus, each blank is provided with parallel and flexibly connected side sections 1, 2, 3 and 4, and an end portion 5, which, when the blank is folded into the shape shown in Fig. 3, is glued to the section 1 to form a container having four sides and four corners. The lower ends of the sections 1, 2, 3 and 4 are provided with flaps 6, 7, 8 and 9 flexibly connected thereto, and the upper ends of these sections are provided with flaps 10, 11, 12 and 13, in the manner indicated. It will be seen that the flaps 6 and 8 are square and of the same area as the bottom of the container, but that the flaps 7 and 9 are only one-half as large, whereby these two flaps will be folded edge-to-edge to provide one layer of the bottom, while

the flaps 6 and 8 will form the other two layers of the bottom, thus making a 3-ply bottom for the container. The top flaps 10, 11, 12 and 13 are folded in a similar way to produce the top of the container. There are different ways of folding these flaps, but good results have been obtained by folding the short flaps inside and the long or square flaps outside. The flaps 10, 11, 12 and 13 are provided respectively with apertures 14, 15, 16 and 17, the apertures 14 and 16 being in the form of round holes, and the apertures 15 and 17 being in the form of half-round notches. When the blank is properly folded, these apertures are brought opposite each other to form the opening or mouth of the container. In this way, the holes which are made in the flaps to form the opening or mouth of the container are formed in the sheet material before the blank is folded.

It will be seen that if said holes are all of exactly the same size, and that if the flaps 10, 11, 12 and 13 are not accurately folded, the different holes will not be brought into exact alinement with each other, so that the edges of the opening or mouth of the container will be uneven or imperfect. As it is difficult to fold a blank of this kind with such exactness, the said holes are, as a matter of special improvement, of different sizes, the hole 14 being the smallest, and the holes formed by the apertures 15, 16 and 17 being somewhat larger, so that the edge of the hole 14 will provide an inwardly projecting and overhanging edge for the opening or mouth of the container. In this way, the different holes can be out of alinement with each other, but such inaccuracy in the folding of the flaps will not be objectionable, inasmuch as the inaccuracy will not bring the edges of the holes formed by the apertures 15, 16 and 17 beyond the edges of the hole 14, at any point in the circumference of the latter, inasmuch as the difference in size of the holes is sufficient to take care of this discrepancy in the alinement of the holes, so that either one or both of the lower holes can be displaced laterally to some extent without bringing their edges out from under the edge of the hole 14 at any point. In other words, the opening or mouth of the container has a clean and perfect edge which is formed by the edge of the hole 14, on the upper surface of the top of the container, and, as the other holes are somewhat larger, any inaccuracy in the alinement of the holes will not show around the edge of the opening or the mouth of the container. Of course, the intention is to fold the flaps so that the three holes in the three thicknesses of the top will be concentric, but this is not necessary in order to insure a true or perfect edge for the mouth or opening of the container, for the lower or larger holes can be shifted sidewise to some extent, so that they and the smaller hole in the top will be concentric, without resulting in any defect in the true and perfectly circular and clean edge provided by the hole 14 in the upper layer of the top.

Any suitable means can be employed for folding the blank to produce the container. Preferably, however, the flaps 10, 11, 12 and 13 are folded first, after the two ends of the blank are brought around and secured together, thus forming the opening or mouth of the container by the mere folding of the top flaps. Then an instrument of suitable character is inserted through the opening or mouth of the container, and the bottom flaps 6, 7, 8 and 9 are then folded over upon each other to form the bottom of the container. The top and bottom flaps can be secured together in any suitable manner, but are preferably secured by glue or other adhesive, so that a strong and solid top and an equally strong and solid bottom are provided for the container, both being 3-ply in character. It will also be seen that the top is preferably raised a little around the opening or mouth of the container, and this is preferably done during the compression and gluing together of the flaps 10, 11, 12 and 13, in any suitable manner. After the blank is thus folded and glued together to form the container, the latter is then immersed in hot paraffin, if it is to be used for holding liquids. It can be used without the paraffin if it is to be used for certain other purposes.

The importance of the even and perfect edge for the opening or mouth of the container becomes more apparent when it is considered that the closure A of the bottle or container B is formed to enter this opening or mouth, being made of fiber or other suitable sheet material, and is then expanded to bring it into tight engagement with the inner edge of said opening or mouth. For this purpose, it is desirable that the said opening shall have a perfectly true and clean and accurately formed edge, so that the expansion and closure will effectively seal the container, making it absolutely air-tight. If the apertures in the top flaps were all punched or cut in a manner to make them exactly the same in size or diameter, it is evident that any inaccuracy in the folding of the flaps would produce uneven edges around the opening or mouth of the container, inasmuch as the edges of the lowermost hole, for example, would project a distance inward at one side of the opening or mouth of the container, and the middle or intermediate hole might be shifted laterally enough to bring its edge into projecting position at the opposite side of said opening or

mouth, thus making it difficult to tightly seal the container by the expansion of said closure. With the foregoing construction and method of manufacture, however, as explained, this difficulty will not be liable to occur, inasmuch as the inaccuracies in the folding of the flaps will always be more or less slight, and in no case sufficient to bring the edges of the two lower holes out from under the edge of the hole 14 in the uppermost flap of the top. Hence, as explained, the edge of the hole 14 will always constitute the sealing edge of the opening or mouth of the container, and in this way the holes can be inexpensively cut or punched in the blank at any time before the latter is folded, thus making it unnecessary to punch the opening or mouth of the container after the flaps are folded together, and in this way simplifying and reducing the cost of manufacture.

It will be understood, of course, that the parallel lines 18, 19 and 20 of the blank are score lines, of the usual character, so that the sections 1, 2, 3 and 4 are flexibly connected together to fold along the lines which form the four corners of the container. The lines 21 and 22 are also score lines, so that the top and bottom flaps are flexibly connected with the side sections. Fig. 1 illustrates an economical method of cutting the blanks from the sheet, the bottom flaps of one blank interlocking with the bottom flaps of another blank, so that very little waste results from the cutting of the blanks from the sheet material. The apertures for the top flaps can be punched or cut at the same time that the blank is cut and scored. The lines 23, 24, 25 and 26, it will be understood, therefore, represent cuts made entirely through the sheet material, which is also true to the lines 27 extending between the lines 22, as well as the lines 28 which extend between the flaps to the outer edges of the blanks, so that the flaps can fold separately, being hinged to the body of the blank along the lines 21 and 22, in a manner that will be readily understood.

From Fig. 1, it will be seen that a comparatively small amount of paper or other fiber board is wasted in the formation of the blanks. Practically all that is wasted is the material cut away at the opposite edges of the sheet to form the short flaps 11 and 13, and the portions which are cut away to form the apertures in Fig. 1. The blanks of the upper row or series extend, of course, in a direction opposite to a lower row or series, so that the long bottom flaps of each blank in the upper row will be opposite the short bottom flaps of a blank in the lower row, and whereby the short flaps of the upper row will be opposite the long flaps of the lower row. Thus the blanks can be struck off in pairs, each pair consisting of a blank in one row and an interlocking blank in the other row. Slight space, if necessary, as indicated, can be left between the successive pairs of blanks, but this will not add very much to the total waste of material. While a round opening is preferable, obviously, in view of the character of the structure and the method of sealing the opening, it is obvious that the opening can be of other shapes, if such is desired, without departing from the spirit of my invention.

With the construction shown and described, the mouth of the container has an under-cut edge, so that the opening thus formed has an overhang at opposite edges thereof, which overhang insures proper engagement of the under-cut edge of the mouth with the sides of the closure, when the latter is expanded therein.

What I claim as my invention is:—

1. In combination with a closure, a container formed from a blank having flaps provided with round openings to register when the blank is folded, so that the container has a top formed by the superimposed flaps and provided with a mouth through which the container is filled and to receive said closure by inward insertion of the closure through the mouth, thereby to seal the container after the filling thereof through said mouth, having said openings of different diameters to obviate the necessity of exact registration of the openings in the folding and securing together of said flaps to provide the mouth with a suitable circular edge for receiving said closure to seal the container.

2. A container and closure therefor, as specified in claim 1, said closure being cup-shaped and adapted to be expanded laterally below the edge of said mouth, and said mouth having the smaller diameter thereof at the outside of the container, so that the openings may be more or less eccentric to each other without impairing the shape of said mouth.

3. A container and closure therefor, as specified in claim 1, said flaps being four in number, two of said flaps being relatively large and having their openings centrally located therein, and the other two flaps being smaller and formed with notches in the edges thereof to form the third opening.

4. In combination with a closure, a container formed from a blank having flaps provided with openings to register when the blank is folded, so that the container has a top formed by the superimposed flaps and provided with a mouth through which the container is filled and to receive said closure by inward insertion of the closure through the mouth, thereby to seal the container after the filling thereof through said

mouth, having said openings of different areas to obviate the necessity of exact registration thereof in order to provide the mouth with a suitable edge for receiving said closure to seal the container.

5. In a container, side walls and a bottom formed from a blank, and a top wall formed by flaps having holes which provide a mouth for the container, one hole being smaller than the others, to form a contracted rim around the edge of the mouth, and a closure adapted for insertion in said mouth to engage said rim and having a flange to rest thereon.

Signed by me at Monroe, Mich., this 24th day of January, 1917.

WILLIAM CHRISTIAN WEIS.