Jan. 26, 1926. 1,571,089

H. L. CARPENTER

CONTAINER

Filed April 8, 1921 2 Sheets-Sheet I

Fig. 1.

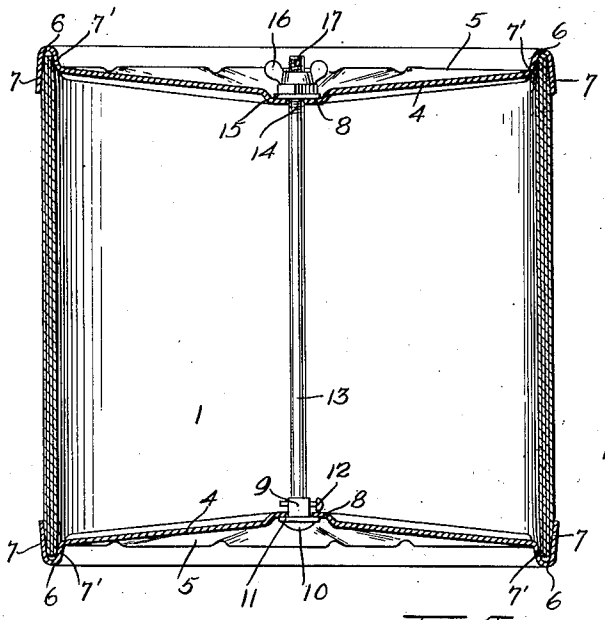


Fig. 1A.

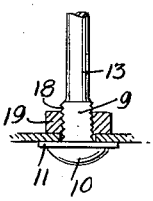


Fig. 2.

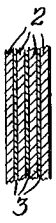


Fig. 3.

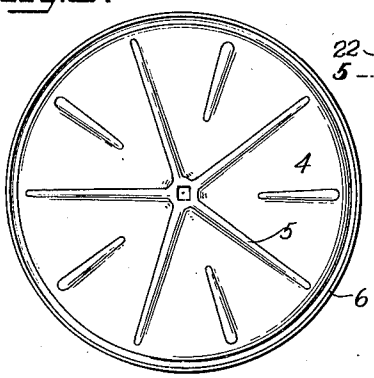


Fig. 4.

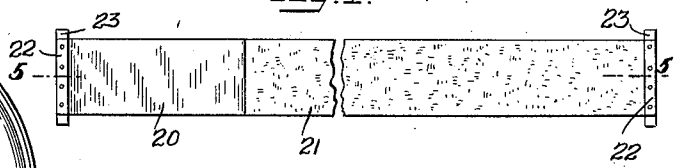


Fig. 5.

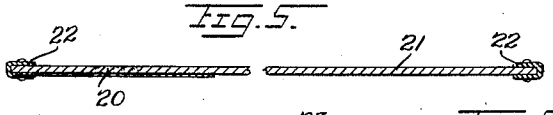


Fig. 7.

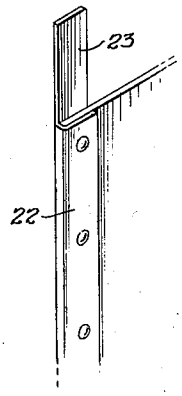


Fig. 5.

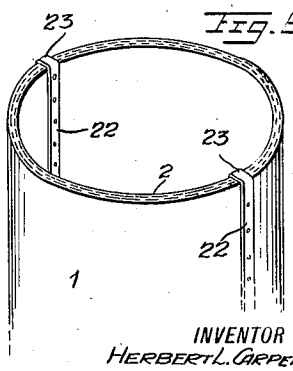


Fig. 9.

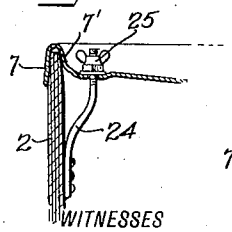
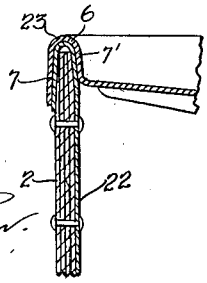


Fig. 8.



WITNESSES

H. J. Walker

Robert S. Hutzeiger.

INVENTOR

HERBERT L. CARPENTER

BY Munn & Co

ATTORNEYS

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H. L. CARPENTER

CONTAINER

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Fig. 10.

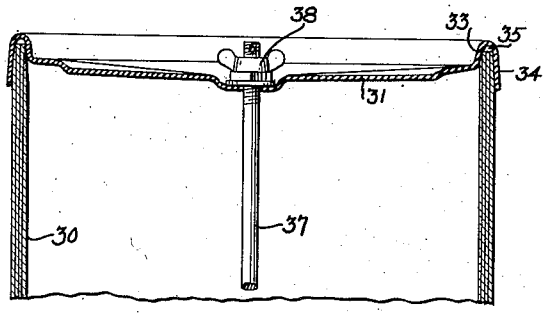


Fig. 11.

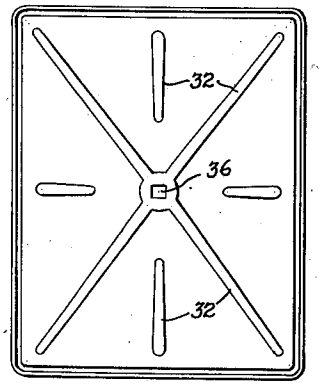


Fig. 12.

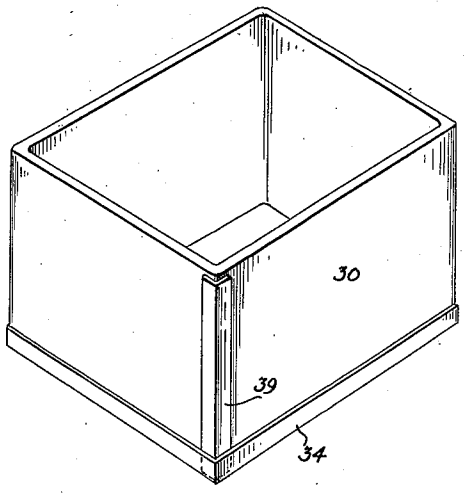
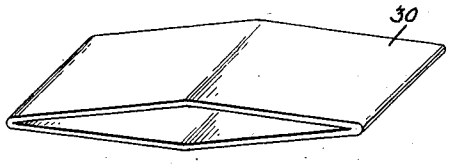


Fig. 13.



WITNESSES

H. T. Walker

Robert D. Huleizer

INVENTOR

HERBERT L. CARPENTER

BY Munn & Co

ATTORNEYS

Patented Jan. 26, 1926. 1,571,089

UNITED STATES PATENT OFFICE.

HERBERT L. CARPENTER, OF BROOKLYN, NEW YORK.

CONTAINER.

Application filed April 8, 1921. Serial No. 459,615.

To all whom it may concern:

Be it known that I, HERBERT L. CARPENTER, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Container, of which the following is a full, clear, and exact description.

This invention relates to containers, and has particular reference to containers which are collapsible as well as to the method of holding the container closed under predetermined and continuing pressure.

An object of the invention is to provide a container for general use which is provided with a body portion of sheet material which can be rolled into shape in the form of a plurality of laminations which may or may not be held together by adhesive, as desired, or may be formed and folded as in the case of a rectangular body portion. Suitable heads of metal or other material are provided to grip the upper and lower edges of the body portion with a sort of wedging or binding action to reinforce and strengthen the body portion, and at the same time means are provided, extending between the body portion and the heads to hold the heads on the body portion with a predetermined and continuing pressure.

Another object resides in the provision of means whereby these containers can be collapsed to occupy very small space when not in use.

A further object resides in the provision of means whereby a container is formed of elements which are collapsible and yet which at the same time when assembled provide an extraordinarily compact, rugged and strong device.

A still further object resides in the provision of means whereby the container is not only strong and collapsible but is also absolutely tight, so as to permit of the reception of fine material, such as flour or metallic dust.

Another object resides in the particular construction and arrangement of parts which are hereinafter described and claimed and shown in the accompanying drawings.

A further object of the invention is to provide such a structure that the heads and means for holding the heads together can be easily assembled and disassembled and salvaged without damage, so that they can be reused with new body portions, thereby permitting a great saving in the net cost of shipping in these containers.

The invention in general comprises a hollow body portion, which may be curved or straight sided but which is shown in Figs. 1, 2 and 3 in the form of a cylinder, which is made up of a plurality of layers of rolled or composition sheet material, either of metal or fiber or a combination of both. These laminations may, if desired, be held together by a layer of adhesive between successive layers of laminations, thereby making a solid seamless body portion, although this is not necessary. When the layers of sheet material are rolled together without adhesive, it is preferable to provide simple fastening means at each end of the sheet to engage the other laminations or layers and temporarily hold them together. Heads or cover portions, preferably although not necessarily made of metal, are provided to close the upper and lower ends of the body portions. These heads are provided with tapered flange portions having a form similar to the form of the edges of the body portion, and are adapted to engage therewith in a wedging or clamping manner to bind the edges of the body portion tightly together. Means are provided to force and hold the heads on to the body portion under a predetermined pressure, which results in a container or package which is exceedingly strong and compact.

The invention is illustrated in the drawings, of which—

Figure 1 is a transverse vertical section through a container;

Figure 1ª is a modified form of the method of attaching the bolt to one of the heads;

Figure 2 is an enlarged partial detail section of the laminations;

Figure 3 is a plan view of one of the heads;

Figure 4 is a modified form which the sheet material sometimes assumes;

Figure 5 is a section therethrough on the line 5—5 of Fig. 4;

Figure 6 is a perspective view of the body portion shown in Fig. 4 when assembled;

Figure 7 is a detail perspective of the fastening means for the ends of the sheet material;

Figure 8 shows the manner in which the ends of the sheet material are held together;

Figure 9 is a modified form of fastening

between the body portion and one of the head portions;

Figure 10 is a partial vertical section taken through a container which is rectangular in form;

Figure 11 is an inverted plan view of one of the closures for the container shown in Fig. 10;

Figure 12 is a perspective view of a rectangular body portion; and

Figure 13 is a perspective view of the body portion in Fig. 12 when collapsed.

One of the preferred forms of my invention, as shown in Figs. 1 to 9, inclusive, comprises a hollow body portion 1 which is formed of a plurality of layers 2 of laminated material, which may be paper, thin sheet metal or a combination of both. These laminations are rolled in this form under pressure in any suitable type of machine, and under some conditions they are provided with a layer such as 3 of adhesive material between successive laminations.

Each end of this hollow container is adapted to be provided with a closure portion 4 which is in the form of a head made of metal or of some other suitable material, perhaps fiber or paper. This head portion is provided with a plurality of reinforcing corrugations or ribs 5 and is also provided with a curved, tapered groove 6 which is formed along the edge of the head between tapered flange portions 7 and 7'. The form of the groove 6 between the flange portions 7 and 7' is similar to the form of the upper edges of the body portion 1 which the groove 6 is adapted to engage. The center 8 of each head portion is flat and provided with suitable apertures, one of which is adapted to receive the square shank 9 of a bolt. Between the head 10 of the bolt and the shank 9, on the outside of one of the heads, is a washer 11. A pin 12 extends through the shank 9 within the container to hold the bolt within the container. The body portion 13 of the bolt is provided with threads such as 14 at the other end. This threaded portion extends through a suitable aperture in the other head 8 and is adapted to receive a washer 15 and a winged nut 16 thereon. By tightening the nut the heads 4 may be drawn tightly together over the upper and lower edges of the container. If desired, an aperture 17 may be provided through the upper end of the bolt 13 so that a sealing wire may be passed therethrough. By tightening up the winged nut 16, a pressure is exerted through the head on the upper and lower edges of the container throughout their length and is exerted longitudinally on the laminations. By reason of the tapered groove the body portion is not only subjected to a compression but the upper and lower edges of the laminations are bound tightly together. It is found that this results in an exceedingly strong package or container, capable of standing great stresses, due to this binding and clamping action.

In Fig. 1ª the square shank of the bolt is, along its corner edges, provided with threads 18 with which a nut, such as 19, is adapted to co-operate. This arrangement takes the place of the pin 12, and, moreover, is more likely to hold the body 13 of the bolt in an upright position so that the upper end of the bolt is maintained in proper position to facilitate the right placement of the upper head 4 on the body portion.

As shown in Fig. 4, the laminations may be formed of a continuous sheet of material, sometimes made entirely of paper, and other times made partly of metal, such as 20, and partly of paper, such as 21. The ends of the sheet may be provided with reinforcing strips of metal 22 which may have projecting ears 23 at the upper and lower ends thereof.

As shown in Figs. 6, 7 and 8, these projecting ears 23, when the sheet material has been rolled in the form of a hollow cylinder, are turned over adjacent laminations or layers to hold the same together. As shown in Fig. 8, when the head 4 is placed in position, the tapered groove 6 engages the ears 23 therebetween.

In Fig. 9 the bolt 24 is at one end attached to the body portion, the other end passing through the adjacent head where its end is provided with a winged nut 25. In this case, there may be a plurality of bolts 24 spaced around the container as desired, both at the upper and lower edges.

In Figs. 10, 11, 12 and 13 I have shown a modified form of container in which the heads and the body portion are rectangular in shape. In this modification the head portion functions in substantially the same way as it would for a cylindrical container. The body portion, such as 30, may be formed of any suitable material, such as the laminated material previously described with respect to the cylindrical container, or it may be made of metal or wood of the desired shape. If made of laminated material, such as paper, it can be formed either by hand or by machine and held together by adhesive or by means of ears, such as the ears 23 previously mentioned with respect to the cylindrical body portion. The closure portion is of suitably formed metal having its central portion disposed below the level of the outer edges in order that the fastening means will ordinarily lie below the level of the top edges of the closure, to prevent breakage or injury to the fastening means. The body portion such as 31 is in the form of a rectangle and provided with reinforcing or strengthening ribs 32. Along the rectangular edges of this body portion are

provided tapered flange portions 33 and 34. There is formed between these flanges 33 and 34 a tapered groove such as 35 which is of rectangular form and is adapted when the closure portion 31 is placed over the edges of the body portion 30 to grip the edges of the body portion in a manner identically similar to the gripping between the closure and the body portion previously mentioned. The center portion of the closure 31 is provided with an aperture 36 through which a bolt 37 extends and which on its upper end is provided with a winged nut 38. This bolt and nut fastening means is identical with the fastening means previously mentioned with respect to the cylindrical body portion. When the two closure portions are fastened into place they provide a rigid, compact receptacle in which the plates are held down under a predetermined and continuing pressure which makes the receptacle one which can resist sudden shocks and which will preserve its strength even after being subjected to shocks.

As shown in Fig. 12, the body portion when assembled may be provided at one or more of its corner portions with an angular plate such as 39 which may extend from the top to the bottom edges. The upper and lower ends of this plate 39 are adapted to be gripped between the body portion and the outer flange 34 of the closure portion. This plate is added to provide additional reinforcing strength to the receptacle.

In Fig. 13 the body portion 30 is shown collapsed into the form it assumes when not in use and when it is to be shipped. It will be observed that this collapsed form takes up very little space and it will, therefore, be understood that the entire container, including all its parts, when collapsed can be packed and shipped in much smaller space than when assembled. The different types of fastening means mentioned previously with respect to the cylindrical form of container are equally adaptable to use in connection with this rectangular container, and it is to be understood without further reference that they may in this manner be so used.

It will, therefore, be observed that I have provided a simple, compact and strong container which can be readily assembled and very easily collapsed or disassembled, and when collapsed will occupy a very small space compared to the assembled volume. This permits of the efficient storage of large numbers of these containers and also permits of the ready and economical shipment of large numbers of these containers, which has not hitherto been possible. The particular trusslike gripping action between the heads and the body portions in the manner heretofore described permits this container to have a strength far beyond any heretofore used or known. Minor modifications may, of course, be made in the form and arrangement of the parts and the structure without departing from the spirit of the invention.

What I claim is:

1. A container, comprising a hollow body formed of a plurality of layers, removable heads on the ends of the body, said heads having at their margins tapered and spaced flanges forming inverted V-shaped grooves, said grooves being of a size less than the thickness of the body, and means for drawing the heads together whereby the ends of the body will be forced into the grooves of the heads with a wedging action and a tight joint thereby obtained.

2. A container, comprising a hollow body formed of a sheet composed of a plurality of layers, said sheet having at its ends reinforcing strips provided with ears projecting beyond the edges of the sheet and bent over the said edges to clamp the several layers of the sheet together, and removable heads on the ends of the body and having at its margin a V-shaped groove of a size less than the thickness of the body, and means for securing the heads on the body, said means serving to draw the heads together to force the ends of the body into the grooves with a wedging action.

HERBERT L. CARPENTER.