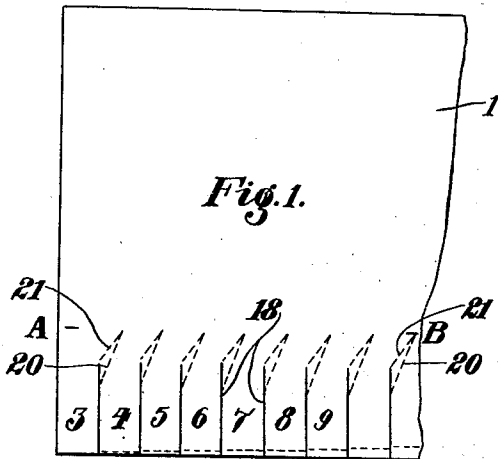
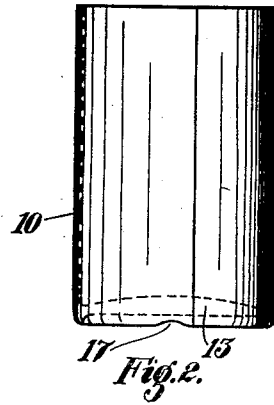
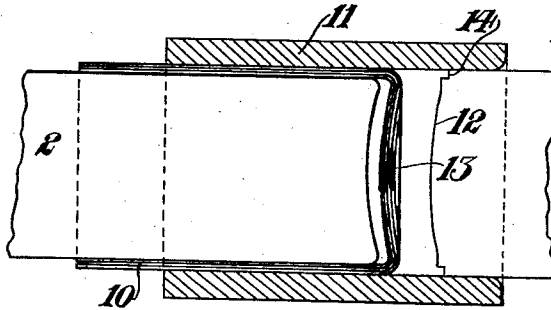
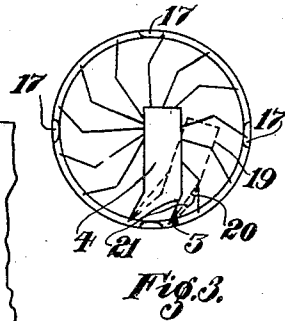
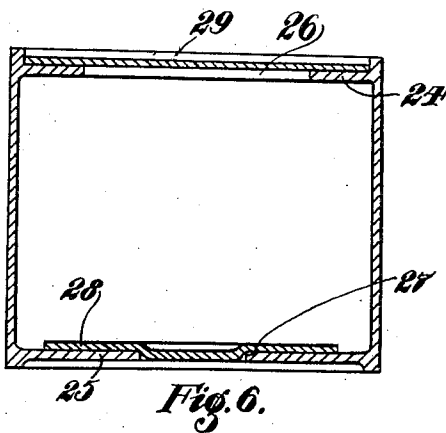
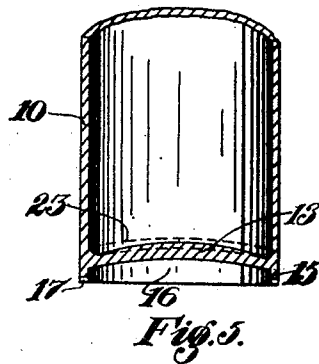


1,362,090.

Patented Dec. 14, 1920.



H. DRYSDALE.
Inventor.
per: Sydney E. Page.
Attorney.

UNITED STATES PATENT OFFICE.

HENRY DRYSDALE, OF LONDON, ENGLAND.

CONTAINER OR BOX.

1,362,090.

Specification of Letters Patent.

Patented Dec. 14, 1920.

Application filed March 22, 1919. Serial No. 284,447.

To all whom it may concern:

Be it known that I, HENRY DRYSDALE, a subject of the King of Great Britain, residing at London, England, have invented certain new and useful Improvements in Containers or Boxes, of which the following is a specification.

This invention relates to containers or boxes and the manufacture of the same of cardboard, paper woven fabric, or other suitable material, wherein layers of the material cut into tabs at the edge are wound upon each other and the tabs are bent inward during the winding so as to overlap each other and are pasted together to form the end.

The primary object of the present invention is to produce in cardboard or the like, improved containers designed to take the place of metallic boxes such as are employed to contain coffee or the like.

For this purpose a mandrel is employed of the shape in cross section that is required to be given to the container and may, for example, be approximately rectangular with rounded corners or hexagonal or other angular figure, or cylindrical or oval, according to circumstances.

Upon this mandrel is wound a continuous strip or sheet of cardboard or the like of the required width to form the body of the box but so arranged as to overlap or extend beyond the mandrel at one or both ends thereof for the purpose hereinafter described.

According to the present invention, that part of the cardboard sheet to form the overlap is slit at suitable intervals in lines approximately at right angles to the length of the sheet, thus forming a number of tabs, or in the case of material of considerable thickness, the tabs are slit, or they might be cut away on one or both sides in angular or tangential lines in order to assist the folding or remove some of the material, and thereby lessen the bulk of the folded part, but the material is scored on angular lines springing from the extremities of the slits and on angular lines extending from near the ends of the slits to the ends of the first mentioned scores.

The further description of this invention will be made in connection with the accompanying drawings which illustrate a box made according to this invention.

Figure 1 is a development of one end of

the continuous strip or sheet of cardboard before winding;

Fig. 2 is a view showing the strip wound into a tubular box shape with the tabs turned down to form the ends;

Fig. 3 is a plan view of Fig. 2 showing the tabs folded down so as to form the base of the tubular box;

Fig. 4 illustrates the partly finished container still upon the mandrel placed in a form, and a die or plunger about to advance to complete the bottom;

Fig. 5 is a sectional view of part of the container showing the bottom in its finished form; and

Fig. 6 is a sectional view of a large size box closed in at both ends.

Referring to the drawings, Fig. 1 illustrates a strip of cardboard 1 which may be of any length according to the thickness of the sides of the box required, and which in manufacture is wound around a mandrel, for instance as shown by 2 in Fig. 4, the winding being done in such a manner that the part of the strip extending approximately beyond the line A, B (Fig. 1) projects beyond the end of the mandrel. The first layer of the strip 1 around the mandrel 2 is free from cement or other adhesive, and the first layer of tabs, for instance, 3, 4, 5, 6, 7, 8, 9 are free on their inside surfaces from adhesive, but otherwise are covered as regards their outside surfaces and the later inward surfaces with a suitable adhesive, as are also the side or sides of the plain portion 1 after the first convolution is wound on the mandrel. When the first convolution is finished, the tabs 3, 4, 5, 6, 7, 8, 9 and so on are turned down at an angle to the side 10 and gradually cover the space at the base of the tube 10, being cemented in place one after the other as turned down. The winding then proceeds with further tabs being turned down as they are reached until the side 10 is of the requisite thickness, the tabs forming the end being arranged preferably so that a succeeding tab covers the join made by the overlapping of earlier tabs in the base until finally a base is produced in which the last layer of tabs will appear as shown in plan in Fig. 3 and in section in Fig. 4 it being understood that each layer is united by adhesive as the work proceeds.

Upon reaching the form shown in Fig. 4

the mandrel and its layers are then placed within a cylindrical mold 11, and a plunger with an end shaped somewhat as shown at 12 is pressed with considerable force against the layers 13 as then formed compressing them between the end of the plunger 12 and the end of the mandrel 2. By this plunger, and owing to the recess 14 around its edge, the base of the casing is pressed into the form shown in Fig. 5 so as to leave the projecting rim 15 around the end of the box 10 upon which it can rest when placed on a shelf or otherwise. In order that the space 16 beneath the base shall be ventilated in the case in which the box may be standing for a considerable time recesses 17 are pressed in the edge 15 so as to form air channels leading from the outside to the center when the space 16 is inclosed by the rim 15 standing on a support.

On reference to Fig. 1 it will be seen that the slits 18 forming the tabs 3, 4, 5 and so on are not carried wholly to the line A, B from which the bending over of the tabs takes place in order to form the base 13. The intermediate zone between A, B and the ends of the slits is creased or scored by means of two lines 20, 21 of which 21 proceeds at an angle from the end of the slit, and 20 starting from the line A, B proceeds beyond the end of the slit, as shown in Fig. 1. In material of considerable thickness, such as cardboard or equivalent material it is difficult to fold the tabs one upon another owing to the thickness, but by means of this scoring I have found that this folding of the base of one tab over a preceding tab can be accomplished in a most satisfactory manner by scoring these lines 20, 21. Remembering that the tabs as shown in Fig. 1 are in line with the side 1 before bending over, it will be seen on reference to Fig. 3 that the bending over proceeds by doubling the creased corner over on itself, the dotted line 19 showing an intermediate position of the tab 4, from which it can be seen how this occurs. The crease 20 on the surface of the tab 5 is folded beneath the surface of the tab 4 when in its final position, the crease 21 passing to the other side of the crease 20, as shown by the full line in Fig. 3. It will be noticed that so far only the tab 4 appears in full on the base of the box, the final tab 3 being preferably folded beneath the tab 4 and of less width than the other tabs, the earlier tabs being partly covered by a succeeding one as the overlapping proceeds. As previously mentioned the final form of the end 13 is preferably with a rim 15 as shown in Fig. 5 and in the pressing of the complete box the internal mandrel 2 may advantageously be of an expanding nature so that both the sides and the ends are subjected to considerable pressure which leaves them in a

smooth and hard condition at the end of the manufacture.

In the case of a small box it may happen that the ends will overlap to a greater extent in the center of the base than at the edges giving rise to a bulging base as shown in Fig. 5 by the full lines. This will not matter very much, but in case it is desired to have the end of an equal thickness the tabs toward one end of the strip 1 may be shortened in length, for instance, as shown by the dotted lines in 8, 9 as compared with 3, 4.

Further, as the inside of a box formed with the tabs only is inclined to be somewhat rough by reason of the folds, a plate or disk as shown by the dotted line 23 (Fig. 5) may advantageously be inserted, being attached to the integral base 13 by an adhesive cement, the whole box being waterproofed before finally used in order that if necessary it may carry liquid or semi-liquid contents.

In the case in which a box of large diameter or perimeter is required it may be formed as shown in Fig. 6 that is to say, with the tab portion turned over so as only to form a flange 24 around the top and 25 around the base of the box, leaving holes 26 and 27 respectively which are filled as regards the base of the box by a disk or plate 28 securely cemented in place, the inward side of the disk or plate being left free of the adhesive which secures it in place to the flange 25; as regards the top hole 26 it may be closed by any suitable form of lid, either a fitting disk such as 29, or some form of hinged lid.

In constructing this form of the device closed in at both ends any suitable collapsible mandrel is employed which according to the present invention is slightly collapsible endwise as well as diametrically and is eventually removed through the top hole or opening.

In the ordinary box such as shown by Fig. 2 the lid may be either of metal, paper, or the like, with a fitting flanged side.

Though described herein specifically in connection with tubular boxes it must be understood that almost any shape of box may be manufactured, the only variation from the manufacture just described being that the shape of the mandrel 2 and the die 12 must be formed to suit the shape of the box required; although the overlapping tabs will not dispose themselves at the same angles as are shown in Fig. 3, they can readily be arranged by cutting the slits in suitable position to close in the end of a rectangular box or a box of other shape by suitably setting out their development before turning over.

In some cases and more especially when the device is to contain semi-fluid substances

such as jam it may be lined with parchment paper or the like which is wound the required number of convolutions upon the mandrel prior to winding the body.

5 The finished containers may be water-proofed by any known method.

Although the invention is primarily intended for use in connection with cardboard it may usefully employed with thin paper,
10 woven fabric, or, other suitable material.

What I claim is:—

1. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the material being slit at intervals so as to form tabs, creasing or scoring an intermediate zone adjoining the tabbed zone by lines associated with the said slits, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together, whereby the scored or creased portions, causing a limp piece where they occur, allow of an overlapping of the said tabs which thus form an end section integral with the sides of the box.

2. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like material, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the material being slit at intervals so as to form tabs, creasing or scoring an intermediate zone adjoining the tabbed zone by lines associated with the said slits, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together, whereby the scored or creased portions, causing a limp piece where they occur, allow of an overlapping of the said tabs which thus form an end section integral with the sides of the box, and pressing in the end section in order to consolidate it and to form a projecting edge thereon.

3. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the material being slit at intervals so as to form tabs, creasing or scoring an intermediate zone adjoining the tabbed zone by lines associated with the said slits, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together, whereby the scored or creased portions, causing a limp piece where they occur, allow of an overlapping of the said tabs which thus form an end section integral with the sides of the box, and pro-

viding a separate plate member adhesively attached to the end section of the box.

4. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the material being slit at intervals so as to form tabs, creasing or scoring an intermediate zone adjoining the tabbed zone by lines associated with the said slits, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together, whereby the scored or creased portions, causing a limp piece where they occur, allow of an overlapping of the said tabs which thus form an end section integral with the sides of the box, and so applying the adhesive to the material as to leave the inside of the first convolution and the portion of the tabs showing on the inside free of the adhesive.

5. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the material being slit at intervals so as to form tabs, creasing or scoring an intermediate zone adjoining the tabbed zone by lines associated with the said slits, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together, whereby the scored or creased portions, causing a limp piece where they occur, allow of an overlapping of the said tabs which thus form an end section integral with the sides of the box, providing a separate plate member adhesively attached to the end section, and so applying the adhesive as to leave the inside of the first convolution of the material and the inward side of the plate member free of the adhesive.

6. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the material being slit at intervals so as to form tabs, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together to form an end section, pressing in the end section in order to consolidate it and to form a projecting edge thereon, and providing a plate member adhesively attached to the end section of the box.

7. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the ma-

material being slit at intervals so as to form tabs, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together to form an end section, pressing in the end section in order to consolidate it and to form a projecting edge thereon, providing a plate member adhesively attached to the end section, and so applying the adhesive as to leave the inside of the first convolution of the material and the inward side of the plate member free of the adhesive.

8. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the material being split at intervals so as to form tabs, creasing or scoring an intermediate zone adjoining the tabbed zone by lines associated with the said slits, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together, whereby the scored or creased portions, causing a limp piece where they occur, allow of an overlapping of the said tabs which thus form an end section integral with the sides of the box, pressing in the end section in order to consolidate it and to form a projecting edge thereon, and providing a separate plate member adhesively attached to the end section of the box.

9. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material suitably provided with adhesive one upon another, an edge of the material being slit at intervals so as to form tabs, creasing or scoring an intermediate zone adjoining the tabbed zone by lines associated with the said slits, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together, whereby the scored or creased portions, causing a limp piece where they occur, allow of an overlapping of the said tabs which thus form an end section integral with the sides of the box, pressing in the end section in order to consolidate it and to form a projecting edge thereon, and

so applying the adhesive to the material as to leave the inside of the first convolution and the portion of the tabs showing on the inside free of the adhesive.

10. The manufacture of boxes and containers of cardboard, paper, woven fabric, and like materials, by winding layers of the said material, suitably provided with adhesive one upon another, an edge of the material being slit at intervals so as to form tabs, creasing or scoring an intermediate zone adjoining the tabbed zone by lines associated with the said slits, turning the said tabs and the portion of the material adjoining the tabs at an angle to the side concurrently with the winding of the layers and cementing the tabs together, whereby the scored or creased portions, causing a limp piece where they occur, allow of an overlapping of the said tabs, which thus form an end section integral with the sides of the box, pressing in the end section in order to consolidate it and to form a projecting edge thereon providing a separate plate member adhesively attached to said end section, and so applying the adhesive as to leave the inside of the first convolution of the material and the inward side of the plate member free of the adhesive.

11. A container comprising a number of thicknesses of paper wound and cemented together, and an end portion comprising a number of tabs and an integral scored or creased part adjacent to such tabs disposed at an angle to the side of the container.

12. A container comprising a number of thicknesses of paper wound and cemented together, and an end portion comprising a number of tabs and an integral scored or creased part adjacent to such tabs disposed at an angle to the side of the container, having an annular edge projecting from the end with recesses in the said edge.

13. A container comprising a number of thicknesses of paper wound and cemented together, and an end portion comprising a number of tabs and an integral scored or creased part adjacent to such tabs disposed at an angle to the side of the container, and having an annular edge projecting from the end with recesses in the said edge and a plate member cemented to the end.

In testimony whereof I affix my signature.
HENRY DRYSDALE.