March 10, 1953 A. ELMENDORF 2,630,934

CYLINDRICAL CONTAINER

Filed July 31, 1948 2 SHEETS—SHEET 1

Fig. 1

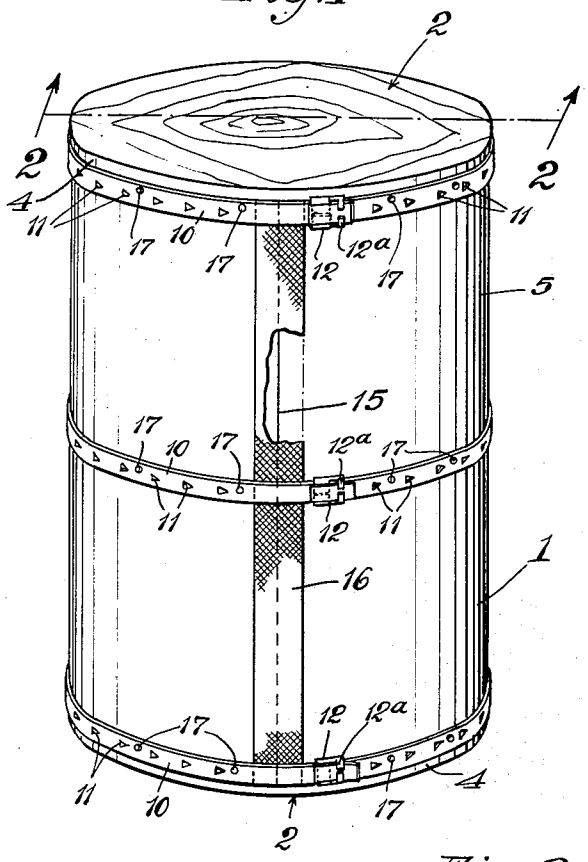


Fig. 3

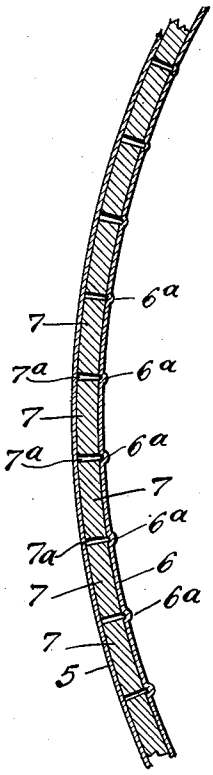
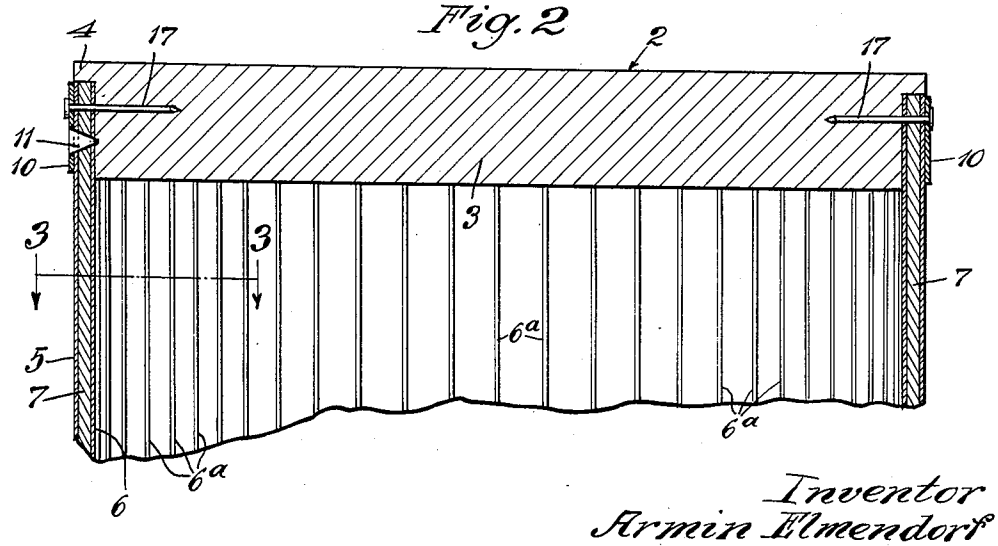


Fig. 2



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Fig. 4

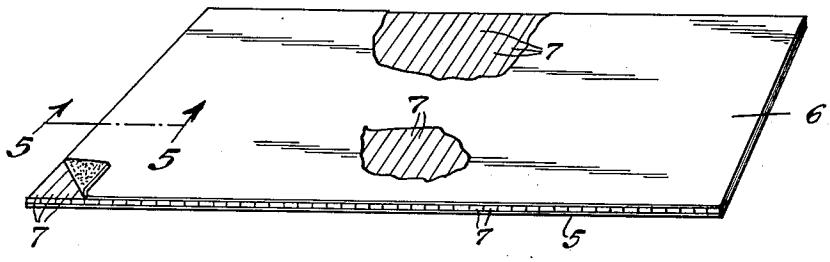


Fig. 5



Fig. 6

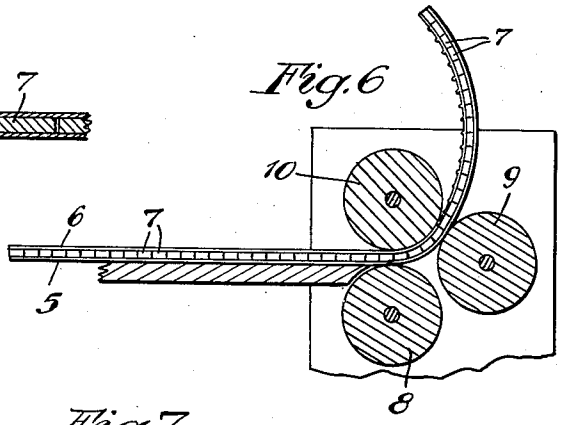


Fig. 7

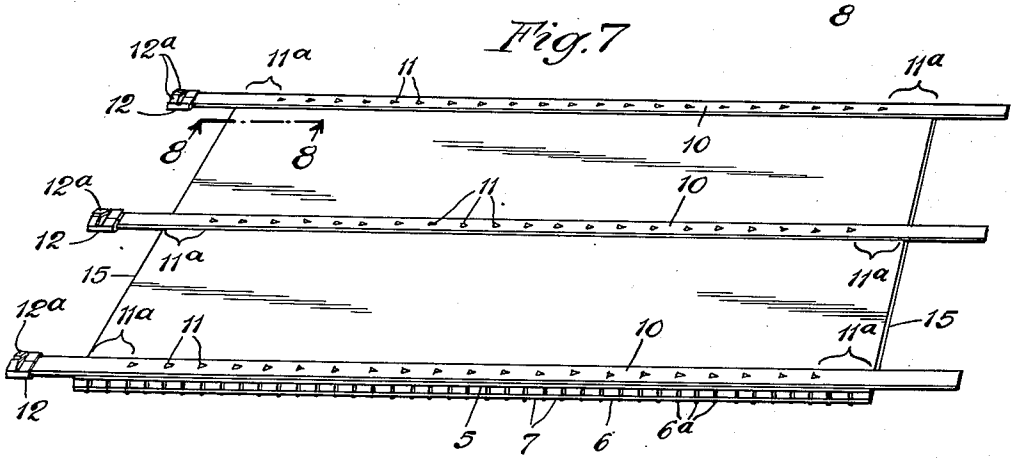
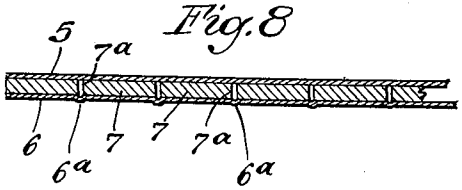


Fig. 8



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CYLINDRICAL CONTAINER

Armin Elmendorf, Winnetka, Ill.

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9 Claims. (Cl. 217—1)

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My invention relates to an improvement in containers and in blanks from which containers may be formed.

One purpose is to provide an improved tubular container.

Another purpose is to provide an improved blank which may be shipped and stored flat, but which is adapted for the easy and efficient formation of tubular containers without the necessity of employing special machinery.

Another purpose is to provide an improved reinforcing assembly for tubular containers.

Another purpose is to provide an improved method of forming tubular or cylindrical containers.

Other purposes will appear from time to time in the course of the specification and claims.

I illustrate the invention more or less diagrammatically in the accompanying drawings; wherein:

Figure 1 is a perspective view, with parts broken away, of a container embodying my invention;

Figure 2 is a section on an enlarged scale on the line 2—2 of Figure 1;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a perspective view of the material from which the side wall of the container is formed;

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

Figure 6 is a diagrammatic illustration of a step in the preparation of material of Figure 4 for use in making the container of Figure 1;

Figure 7 is a perspective view of a form or blank which may be employed in forming the container of Figure 1; and

Figure 8 is a section on an enlarged scale on the line 8—8 of Figure 7.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the drawings, 1 generally indicates a container side wall and 2 the head of the container which may include a portion 3 of a diameter substantially that of the inner surface of the side wall 1 and an outer portion 4 having a diameter substantially equal to the exterior diameter of the outer wall 1, with reference to the position of the parts in the completed container.

The side wall 1 is shown as formed of an outer layer 5, of a material preferably having the general characteristics, as to flexibility and strength, of strong paper, such as kraft liner board. How-

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ever, any suitable flexible material may be employed, including, if desired, a textile. 6 indicates an inner layer of similar material. Between the layers 5 and 6 is a layer 7 constituted by strips or elements of wood veneer which are separated as by intervals 7a. The inner layer may be formed by cutting a sheet or band of wood veneer, along the grain, into spaced strips or elements which are structurally separate, but which remain in the same relative position as in the uncut veneer. They may be of a width of from one to ten times their thickness. It is important, in most instances, that the individual strips or elements 7, if not completely severed from each other, are at least sufficiently separated to destroy any effective structural unity or continuity. While I do not wish to be limited to a particular spacing of the strips, I find it convenient to space them apart sufficiently to extend or expand the across-the-grain length of the veneer by a proportion of the order of five to fifteen percent. Figure 4 illustrates a panel of such material which is cut or formed to proper size to provide a blank for forming the container of Figure 1. It will be understood that the blank constitutes the side wall 1 of the container. In the condition in which it is shown in Figure 4 the panel of material is flexible along the grain, but tends to lie or remain flat. I find it advantageous, when I am going to use such material in the formation of a cylindrical container, or a container having a tubular wall which is rounded in cross section, to subject the blank to an initial forming operation. In Figure 6 I illustrate the material as passing between shaping rolls 8, 9 and 10. The result is to crimp or crease or fold or upset the inner layer 6, as at 6a, along the intervals between adjacent strips or elements 7. During the process, the outer flexible layer 5 is under tension but is of sufficient strength to resist rupture or weakening. After the material is passed through the rolls 8, 9 and 10, it may be pressed back into flat or substantially flat position and may be stored, later to be packed and shipped in flat condition. It has a bias which makes it easy manually to roll it into cylindrical or tubular form, when the user wishes to form it, for example, into a cylindrical container.

It will be understood that when I employ the term cylindrical in my description or in my claims, I wish it to be interpreted with sufficient breadth to include any tubular container where a single side wall is used, such as the side wall 1 of Figure 1. The side wall may be cylindrical or oval, or pear-shaped, or in general,

rolled or curved into a form which is curvilinear in cross section.

Assume that I wish to store or to ship blanks to a point of use, where they can be assembled into containers at maximum speed, with minimum effort and without special machinery. Under those circumstances, I find it advantageous to provide the blank with reinforcing and securing means which can be stored or shipped as part of the blank. I find it advantageous to employ flexible straps which may, for example, be of sheet metal, and which can be attached to the blanks before the blanks are stored or shipped. For example, in Figure 7, I show a blank from which a tubular or a cylindrical container can be formed. I illustrate three straps 10 which may be of sheet metal and which may have upset prongs 11 closely spaced therealong, which can be driven through the blank. Preferably the straps 10 are of greater length than the blank itself, as will be clear from Figure 7. On one or both of the free ends, I may position any suitable locking members 12, whereby the free ends of a given strap may be secured together as shown in Figure 1. Details of the locking members do not as themselves form part of the present invention, but I prefer a locking member which may be applied and released without the use of special equipment. In the form shown in Figure 1, for example, ears or lugs 12*a* are employed, which can readily be bent into releasing position by an ordinary knife blade or screw driver or the like. It is also advantageous to leave at least at one end of the blank a length of the strap which, while it overlies the edge or end portion of the blank, is not actually secured to it. Such free lengths are shown, for example, at 11*a*. It will be understood that the blank shown in Figure 7 may be stored or shipped or supplied with the securing members 12 already in position at one end of each strap, or the securing members may be supplied later, at the point or time of use.

The blanks shown in Figure 7 may be stored flat, and may be shipped flat to the point of use. There the user merely bends or rolls the already pre-bent blank into its final form around a suitable mandrel. A convenient method is merely to drop one of the heads 2 into proper position and then roll the side wall 1 around it. The heads and the blank are properly proportioned so that the opposed edges 15 of the blank either abut or closely approach, as shown in Figure 1. They may be secured together for example by an adhesive tape 16. This tape may be initially applied to one end of the blank and shipped with it. It is, in general, more practical to apply the tape at the point of assembly. The tape is advantageous in preventing leakage through the opposed edges 15. It also may serve to give additional strength or reinforcement. Thus a very strong container is provided, in which a head at each end serves as a form or reinforcement. The blank or side wall may be secured directly to the head, for example, by nails 17, thus preventing unintended removal of ends or heads of the container. These are preferably driven through the straps 10. The side wall is secured, and reinforced by the straps 10, the ends of which may be secured together as shown in Figure 1.

It should be kept in mind that the securing strip 16 must provide strength in shear at least as great as that of the rest of the panel or sheet or side wall 1 itself. Note that the free ends of the reinforcing straps 10 overlie the sealing and shear-resisting strip 16, the employment of free ends at one or both ends of each strap making the later application of the strip 16 practical and convenient.

It will be realized that whereas I have described and shown a practical and operative method and structure, nevertheless many changes may be made in size, shape, number and disposition of the parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting me to my precise disclosure herein. It will be understood that I wish the term cylindrical to be interpretated sufficiently broadly to cover any tubular form of container in which a side wall is curvilinear in transverse cross section.

I claim:

1. A blank for tubular containers which includes two layers of paper having secured between them a layer of veneer separated along the grain, and transversely of the blank, into narrow strips, the strips being spaced apart a distance sufficient to extend the length of the veneer, across the grain, by generally from five to fifteen percent, the strips being in their original relative position but structurally unconnected, said blank having one layer of paper in its original extended condition and the other layer upset along its length with creases located substantially entirely along the gaps between the veneer strips.

2. The structure of claim 1 characterized by and including flexible straps secured at closely spaced intervals to the uncreased surface of the blank.

3. The structure of claim 1 characterized by and including flexible sheet metal straps secured at closely spaced intervals to the uncreased surface of the blank.

4. The structure of claim 1 characterized by and including flexible straps secured to the uncreased surface of the blank and of greater length than the blank.

5. The structure of claim 1 characterized by and including flexible straps extending across the grain of the veneer and secured to the uncreased surface of the blank.

6. The structure of claim 1 characterized by and including flexible straps extending across the grain of the veneer and secured to the uncreased surface of the blank, said straps having free ends and securing members on said free ends.

7. The structure of claim 1 characterized by and including flexible sheet metal straps having closely spaced upset prongs extending through the blank and securing the straps to the uncreased surface of the blank, said straps extending across the grain of the veneer.

8. A curved walled container including a tubular side wall formed of two layers of paper having secured between them a single layer of veneer separated, along the grain, and longitudinally of the container, into narrow strips, the strips being in their original position but spaced apart and structurally unconnected, the strips being separated along the grain and being spaced apart sufficiently to extend the across-the-grain length of the veneer by the order of from 5% to 15%, said side wall being formed and secured into tubular shape, a head extending into the opening formed by one edge of the side wall, said head being secured to said side wall, and said side wall being secured along the abutting end edges of the blank of which it is formed, the inner layer of paper being upset along its length with creases located substantially entirely along

the gaps between the veneer strips, the outer layer of paper being in its original extended condition and crossing the gaps between the adjacent veneer strips.

9. A curved walled container including a tubular side wall including an outer layer of paper and an inner single layer of veneer, the veneer being separated, along the grain, and longitudinally of the container, into narrow strips, the strips being in their original position but spaced apart and structurally unconnected, the strips being separated along the grain and being spaced apart sufficiently to extend the across-the-grain length of the veneer by the order of from 5% to 15% said side wall being formed and secured into tubular shape, and a head extending into the opening formed by one edge of said side wall, said head being secured to the edge of said side wall, said side wall being secured along the abutting end edges of the blank of which it is formed, the inner layer of paper being upset along its length with creases located substantially entirely along the gaps between the veneer strips, the outer layer of paper being in its original extended condition and crossing the gaps between the adjacent veneer strips.

ARMIN ELMENDORF.

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