Aug. 29, 1939. M. P. CHAPLIN 2,171,413

APPARATUS FOR AND METHOD OF RESHAPING A MOLDED PULP ARTICLE

Filed June 7, 1937 2 Sheets-Sheet 1

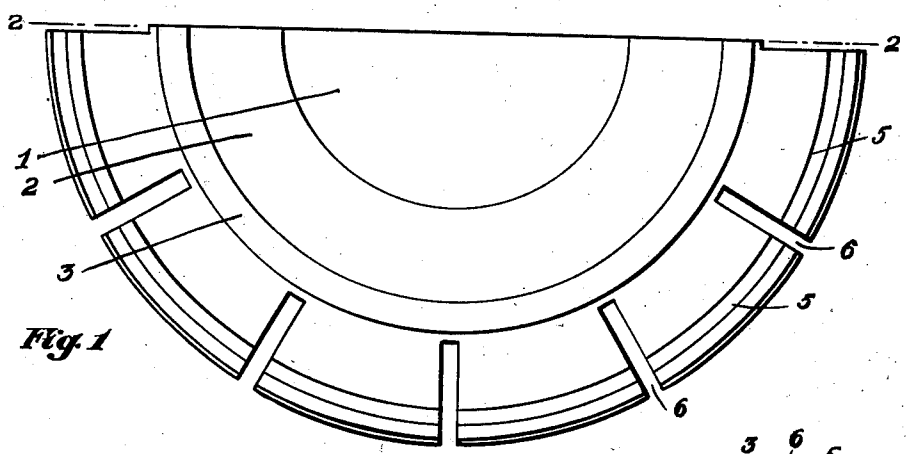


Fig. 1

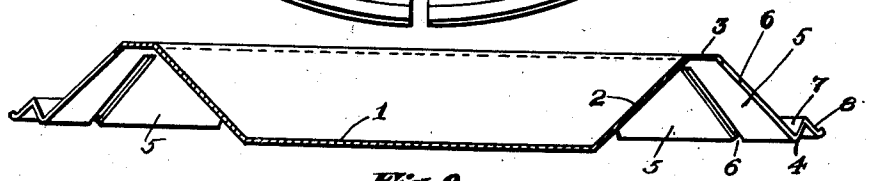


Fig. 2

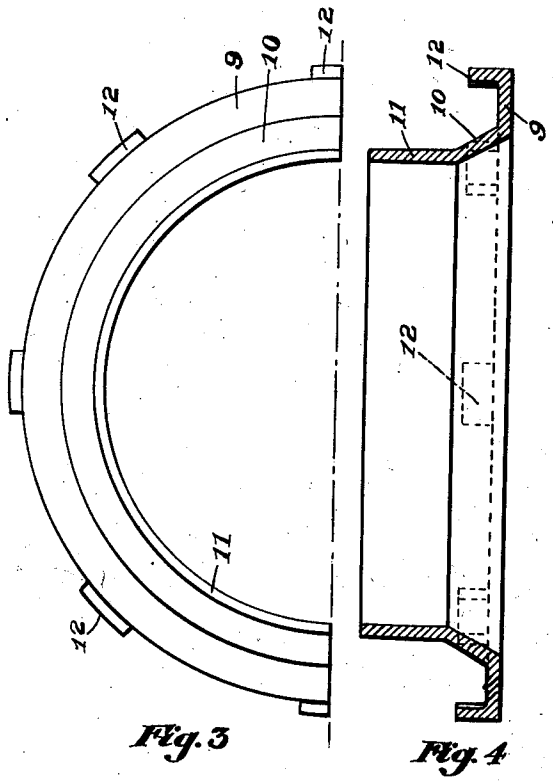


Fig. 3

Fig. 4

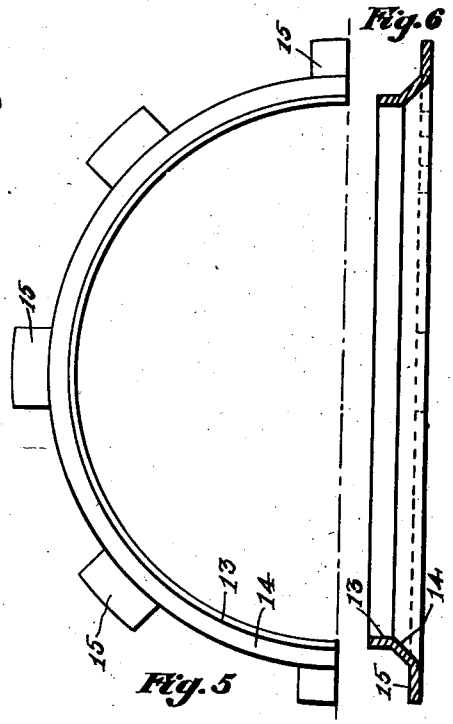


Fig. 5

Fig. 6

Inventor;

Merle P. Chaplin

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APPARATUS FOR AND METHOD OF RESHAPING A MOLDED PULP ARTICLE

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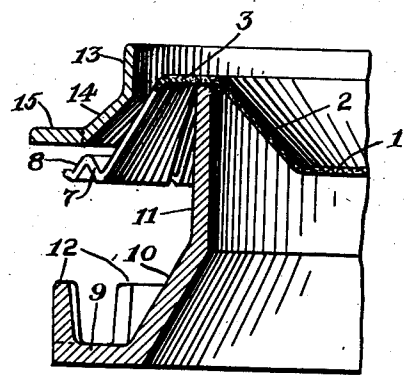


Fig. 7

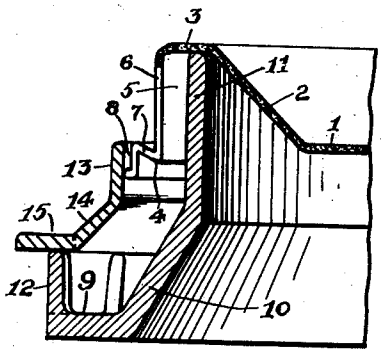


Fig. 8

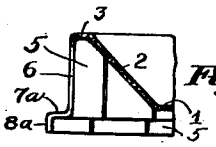


Fig. 14

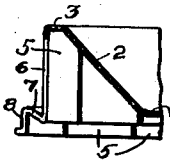


Fig. 15

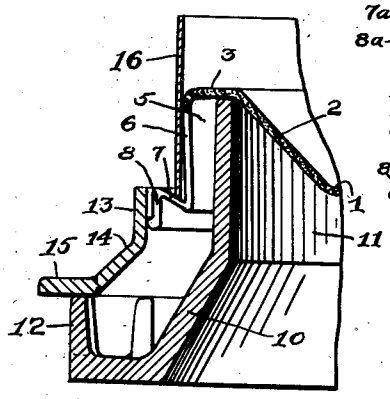


Fig. 9

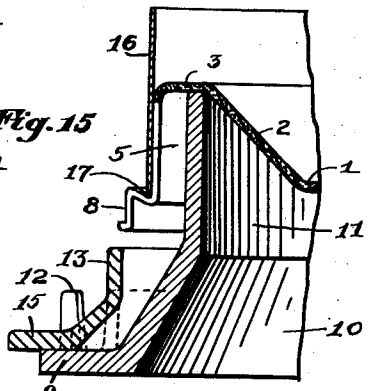


Fig. 10

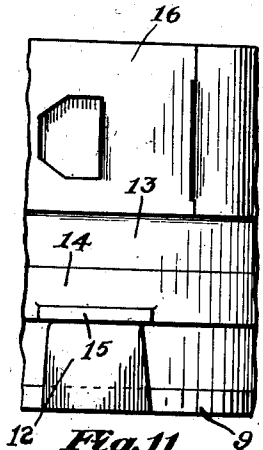


Fig. 11

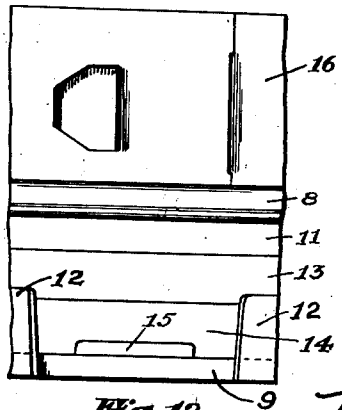


Fig. 12

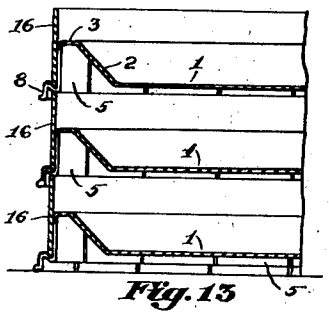


Fig. 13

Inventor,

Merle P. Chaplin

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UNITED STATES PATENT OFFICE

2,171,413

APPARATUS FOR AND METHOD OF RESHAPING A MOLDED PULP ARTICLE

Merle P. Chaplin, South Portland, Maine, assignor to Chaplin Corporation, South Portland, Maine, a corporation of Maine

Application June 7, 1937, Serial No. 146,763

12 Claims. (Cl. 93—55)

This invention relates to a method of re-shaping a molded pulp article, said method facilitating the assembly of a device with the re-shaped article, and for holding it in re-shaped position.

The molded pulp article and its method of manufacture is disclosed in my copending applications—Serial Numbers 113,308 and 144,905.

A device suitable for holding the molded pulp article in re-shaped position is disclosed in my copending application—Serial Number 143,763.

My invention is illustrated by the following figures:

Fig. 1 shows a plan view of the molded pulp article before reshaping.

Fig. 2 shows a sectional view thru the center of the article of Fig. 1, as on line 2—2, of Fig. 1.

Fig. 3 is a half plan vliew of a symmetrical base ring or holding fixture on which the article is placed before reshaping.

Fig. 4 is a sectional view thru the center of Fig. 3.

Fig. 5 is a half plan view of a symmetrical ring or compressing fixture used to reshape a portion of the pulp article of Figs. 1 and 2.

Fig. 6 is a sectional view thru the center of the ring of Fig. 5.

Fig. 7 is a sectional view thru one side of the base ring of Figs. 3 and 4, showing the unreshaped molded pulp article in place on the ring and the compressing ring in place to subsequently reshape the article.

Fig. 8 shows a sectional view thru one side of the base ring of Figs. 3 and 4, with the molded pulp article in place on this ring and the compression ring of Figs. 5 and 6 in position after a portion of the pulp article has been reshaped.

Fig. 9 is a sectional view similar to Fig. 8, but showing the retaining device or band in place for holding the portion of the reshaped article in position.

Fig. 10 is a sectional view similar to Fig. 8 but showing the retaining device or band holding the molded pulp article in reshaped position, the compression ring having been removed, leaving the reshaped article completed.

Fig. 11 is a side view of Fig. 9, showing the compression ring in its upper position.

Fig. 12 is a side view of Fig. 10 showing the compression ring in lower position.

Fig. 13 shows several of the reshaped articles of Fig. 10 with their restraining bands in place, these articles being superimposed, the restraining band performing a dual purpose of holding the reshaped portion of the reshaped article in position and forming a support for a superimposed article.

Fig. 14 shows one form of angle formation on the bottom of the sections 5, to facilitate and permit superimposed reshaped articles to be stacked one above the other.

Fig. 15 shows a preferred form of angle formation used for the same purpose but provided for restraining inward motion of the sections 5.

The molded pulp article of Figs. 1 and 2 consists of a bottom portion 1, an enclosing flared section 2, relatively flat rim section 3, and an extra rim section 4. The central portion of the article included in portions 1, 2 and 3, are suitable for containing or holding any desired material or product. The extra rim section 4 is divided into a number of sections 5 by slots 6. The outer end of these sections 5 terminate in an angle structure consisting of an outwardly and upwardly projecting short projecting section 7, and a downward and somewhat outwardly projecting portion 8. These several sections 5 are divided by spacing slots 6, in order that they may be reshaped into a new position.

The reshaping of the above portions is accomplished by two devices or fixtures, one, a base or holding ring illustrated in Figs. 3 and 4, and the other, a compression ring, illustrated in Figs. 5 and 6.

The base ring consists of a base section 9, an upwardly and somewhat inwardly inclined section 10, and a vertical section 11. The section 11, is shaped in plan view, to conform and fit beneath the rim section 3 of the molded pulp article, which it is desired to reshape. Arranged about the upstanding portions 10 and 11, and attached to and a part of, base 9, are a plurality of upstanding ribs or posts 12.

The compression ring of Figs. 5 and 6 consists of an upstanding substantially vertical portion 13, on the lower edge of which is a downwardly and outwardly flaring portion 14, this portion terminating in a plurality of outwardly projecting ears 15. The number of outwardly projecting portions 15, on the compression ring, is the same as the number of posts 12, on the base ring, and these ears project outwardly from the inclined section 14 a sufficient distance so that they will rest on the top of the posts 12, when the ears 15 of the compression ring are placed above the posts 12, on the base ring. The diameter of the upwardly extending section 14, is somewhat less than the inner diameter between the posts 12 on the base ring, so that when the compression ring is placed over the base ring, with the

ears 15 located in between the posts 12, the compression ring will go all the way down and rest on the top of the base 9 of the base ring.

Referring to Fig. 7, the molded pulp article to be reshaped is placed on the base ring as shown, the diameter of the base ring and the inner diameter of the rim portion 3 of the molded article, where it meets the inner section 2, being so designed and dimensioned, that the portion 11, of the base ring will center the molded pulp article in position. After the article has been placed on the base ring, the compression ring is placed over the top of both base ring and article, as indicated. When so placed, the compression ring is located so that its ears 15 are directly above the posts 12 on the base ring. The compression ring is then pushed down to the position shown in Fig. 8, this downward motion of the compression ring forcing the divided sections 5 of the pulp article, inwardly to the position indicated in Fig. 8. This forcing inwardly is accomplished by the beveled section 14 on the compression ring, contacting and sliding down over the outer portion 8 of the pulp article. When the compression ring is in the position indicated in Fig. 8, the outer portion 8 of the flange at the bottom of the section 5, will be substantially in the vertical center of the straight portion 13 of the compression ring.

When the sectional portions 5 of the pulp article, have been reshaped into the position indicated in Fig. 8, a band or ring, made up in endless form, is pushed downwardly over the reshaped sections to the position indicated in Fig. 9. This band or ring portion, indicated at 16, then serves to retain the sections 5 in the position in which they have been reshaped by the compression ring.

In order that the reshaped article, with its band 16, forced over it, can be readily removed from the base ring, the compression ring is rotated about the base ring to bring the ears 15 in between the posts 12 on the base ring. The compression ring will then drop downwardly to the position indicated in Figs. 10 and 12, and the vertical part 13 will be free and clear of the angular section 8, which was previously held in compression by the part 13. The reshaped article with its retaining band may then be readily removed from the base ring, and a second pulp article placed thereon, for reshaping.

Before a subsequent article is placed on the base ring, the compression ring must, of course, be removed so that it may be reused in the position indicated first at Fig. 7.

Fig. 11 shows an exterior view of the base, the compression ring and the reshaped article after the band is in place but while the compression ring is still holding the reshaped portions 5 in position. The ear 15, on the compression ring, is shown resting on the top of post 12, on the base ring, and the vertical section 13 of the compression ring in contact with, and holding part 8, of the section 5, in reshaped position.

Fig. 12 is an exterior view of the base ring, compression ring, and the reshaped article with the band in place after the compression ring has been turned so that the ears 15 come in between the post 12, permitting the ring to drop downwardly until it rests on the base 9. The top of the straight section 13, on the compression ring, is below the part 8 on the reshaped article, permitting the reshaped article and its band to be removed from the base ring.

The purpose of the angle-shaped portion comprising the outwardly projecting part 7 and the downwardly projecting part 8, is to provide a locking or nesting recess to cooperate with the upper edge of a retaining band, which has been assembled on a similar article. Figs. 14 and 15 show two slightly different shapes or forms of this structure.

The preferred form is illustrated in Fig. 15, which form is also shown in Fig. 13, where a stack of three reshaped articles is shown. In this preferred form of angle-structure the divided edge portions or sections 5, are not only held against outward movement or a return to their un-reshaped position, but they are also restrained against further or additional inward movement by virtue of a locking action at point 17, between the lower edge of the band 16, and of the outwardly projecting flange portion 7.

With either the angle-section illustrated in Fig. 14 or that illustrated in Fig. 15, the operation and method of reshaping the sectional edge portions 5, is the same. When the sectional edge portions 5 are held in reshaped position by the ring 13, the band 16 may be pushed downward in assembly firmly against the outwardly projecting portion 7, as illustrated in Fig. 9, insuring that it lock efficiently, with the projecting portion 7, for the purposes previously explained.

While the locking and stacking portion, as disclosed in Fig. 15 is my preferred form, I do not commit myself exclusively, to this design or to any other design specifically, in connection with this invention.

This invention deals only with an apparatus for, and a method of, reshaping a portion of a molded pulp article.

Cognate subject matter not claimed herein is embraced in copending applications, previously mentioned.

Having thus described my invention, what I claim is:

1. A device of the class described, comprising a base member with an upstanding central section adapted to hold in position a molded pulp article, a portion of which is to be reshaped, said base member having exteriorly, of said first mentioned upstanding section, a plurality of other upstanding portions, and a compression ring, a portion of which is adapted to rest on and be held by, the aforementioned plurality of exteriorly positioned upstanding members on the base ring.

2. A device of the class described, comprising a base member adapted to hold and center a molded pulp article, a plurality of upwardly projecting lugs on said base member, a compression ring member, a portion of which is adapted to reshape a portion of article centered by the base member, and a plurality of outwardly extending portions on said compression ring member cooperating with the upstanding posts on the base member to locate said compression ring member in a pre-determined position.

3. A device of the class described, comprising a base member having an upstanding central portion and a plurality of upstanding sectional portions located exteriorly thereof, and a compression ring, with a plurality of extending sections, adapted to either rest on the sectional upstanding portions of the base ring, or to drop between and below said upstanding sectional base portions, depending on the position of the compression ring relative to the base ring.

4. An apparatus for reshaping molded pulp articles comprising means to hold and center the

molded article, comprising a holding member having a central section and a plurality of upstanding portions on the exterior thereof, a compression ring member adapted to be forced over that portion of the article to be reshaped, and to bend same to desired shape by application of compression about said portion, said ring member having a plurality of projecting ears adapted to rest upon and be supported by the upstanding portions on the holding member thereby to retain the compression ring in proper position to hold the reshaped molded pulp article portions in reshaped position until a retaining and securing member can be inserted therein.

5. An apparatus for reshaping molded pulp articles comprising means to hold the molded article, a plurality of circumferentially spaced apart, upstanding portions on the exterior of said holding means, a compression ring member adapted to be forced over that portion of the article to be reshaped and to bend same to desired shape by application of compression about said portion, said ring member having a plurality of outwardly projecting portions circumferentially arranged, said outwardly projecting portions being positioned to rest on and be supported by the upstanding portions on the holding means, the spacing between said upstanding portions being sufficiently great to receive said outwardly projecting portions when said compression ring is partially rotated, whereby said compression ring may drop down into a co-operative plane, out of contact with a reshaped article.

6. The method of reshaping a molded pulp article which consists in supporting said article substantially centrally thereof, applying compression externally against that portion of the article to be reshaped, and reshaping same by bending said portion toward the central portion, of applying a holding or retaining band to secure the reshaped portions of the molded article in position, and of maintaining the application of compression against the reshaped portions until said retaining band is in position on the article.

7. Apparatus for reshaping portions of a fibrous article, comprising supporting means for holding and centering the article to be reshaped, and compression means effective when positioned in one plane with respect to said supporting means both to apply reshaping pressure to the portions of the article which are to be reshaped and to hold the article temporarily in its reshaped form until a retaining member can be applied thereto for holding the article in its reshaped form after it is removed from the apparatus, said compression means effective when positioned in another plane with respect to said supporting means to release the reshaping pressure and permit the reshaped article and its applied retaining member to be removed from the apparatus.

8. The apparatus of claim 7, the supporting means and the compression means being provided with portions cooperatively engageable with one another to retain the compression means in compression-applying position when positioned in said first-named plane of operation but releasable from one another by partial rotation of said compression means to permit said compression means to move to said second-named plane of operation.

9. Apparatus for bending the angularly extending segmental portions of a radially slotted plate rim from their angular position to a substantially vertical position wherein the outer ends, at least, of the slots in the plate rim are substantially closed and the rim presents a substantially unbroken edge, comprising a plate-supporting member and a rim-bending member, said members vertically movable with respect to one another and effective when positioned in one plane to apply sufficient bending pressure to the segmental rim portions to move them from said angular to said substantially vertical position for the application of a retaining annulus thereto, and effective when positioned in another plane to release the bending pressure and permit removal of the plate and its retaining annulus from the apparatus.

10. Apparatus for bending the angularly extending segmental portions of a radially slotted plate rim from their angular position to a substantially vertical position wherein the outer ends, at least, of the slots in the plate rim are substantially closed and the rim presents a substantially unbroken edge, comprising a plate-supporting member and a rim-bending member, said members vertically movable with respect to one another to thereby apply sufficient bending pressure to the segmental rim portions to move them from said angular to said substantially vertical position for the application of a retaining annulus thereto before the bending pressure is released.

11. The steps in the method of producing a display pack, which comprise placing a plate having an angularly extending radially slotted rim on a support, applying sufficient bending pressure to the segmental rim portions of the plate while so supported to move them from their angular position to a substantially vertical position, wherein the outer ends, at least, of the slots in the plate rim are closed and the rim presents a substantially unbroken edge, and applying an annulus to said bent rim portions for thereafter retaining them in said substantially vertical position.

12. The steps in the method of producing a display pack, which comprise placing a plate having an angularly extending radially slotted rim between relatively movable plate-supporting and rim-bending members, moving one of said members vertically relative to the other to thereby apply sufficient bending pressure to the segmental rim portions of the plate to cause them to move from their angular position to a substantially vertical position wherein the outer ends, at least, of the slots in the plate rim are closed and the rim presents a substantially unbroken edge, and subsequently moving one of said members vertically relative to the other to thereby release the bent rim portions, and applying to the bent rim portions an annulus for thereafter retaining them in said substantially vertical position.

MERLE P. CHAPLIN.