

G. J. BOHLMAN.

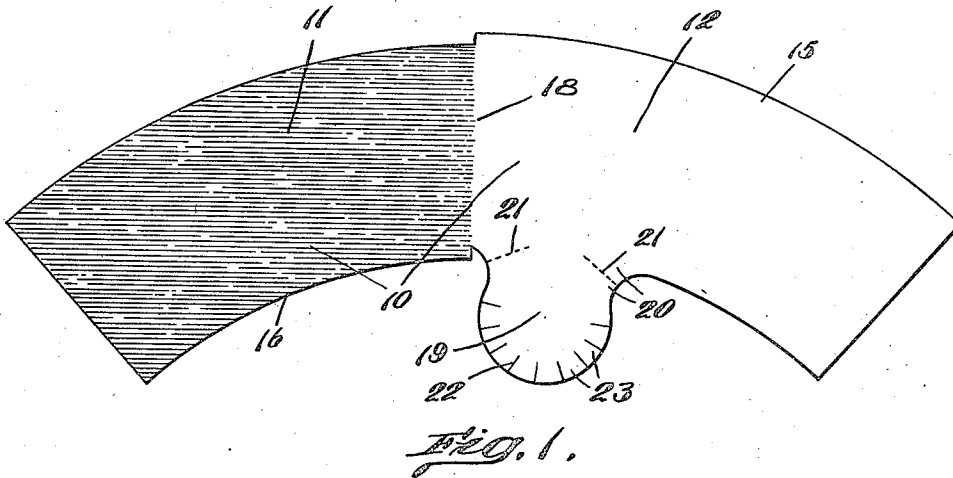
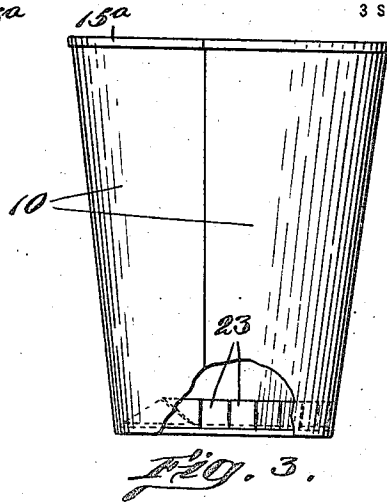
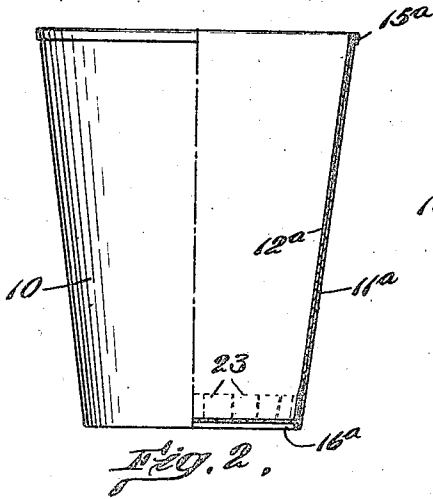
PAPER CUP.

APPLICATION FILED AUG. 23, 1915.

1,295,418.

Patented Feb. 25, 1919.

3 SHEETS—SHEET 1.



Witness,
H. B. Davis.

Inventor,
George J. Bohlman
By Angus Harman
Atty.

G. J. BOHLMAN.

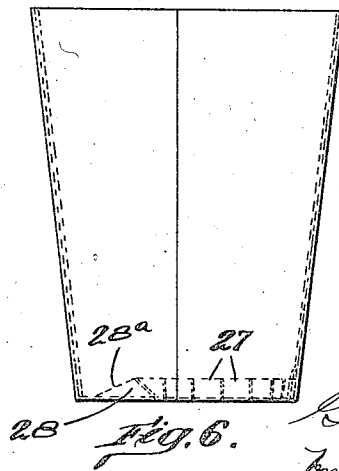
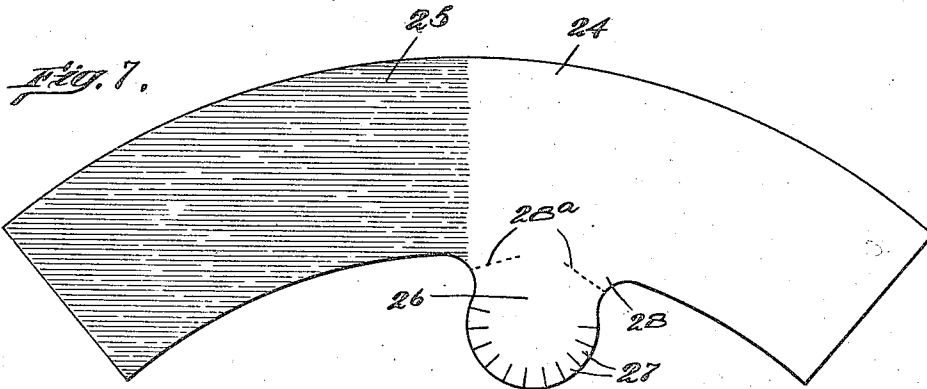
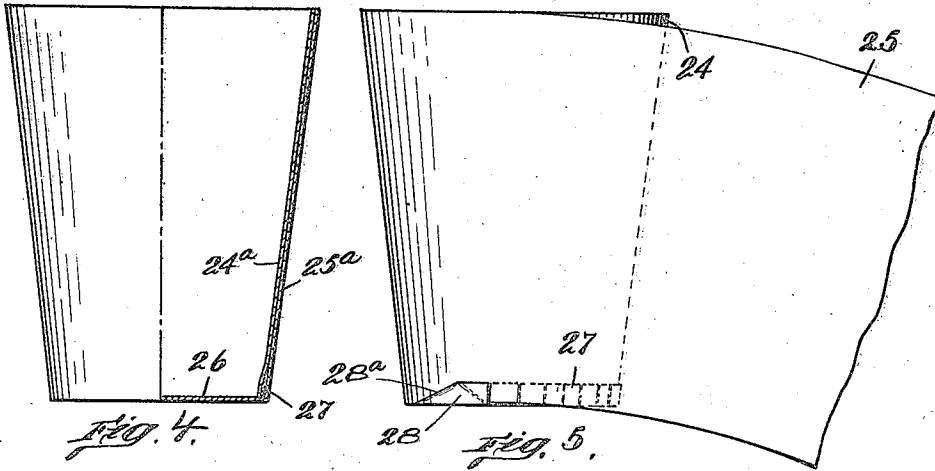
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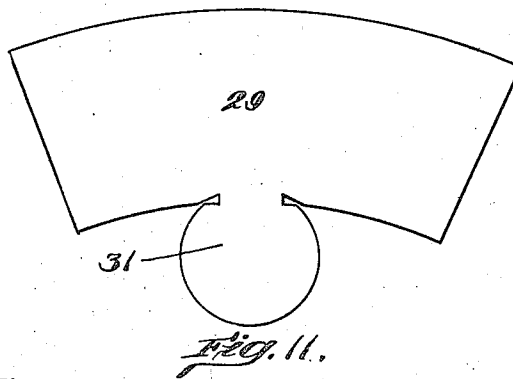
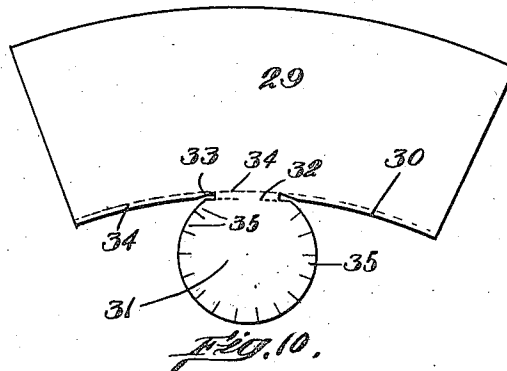
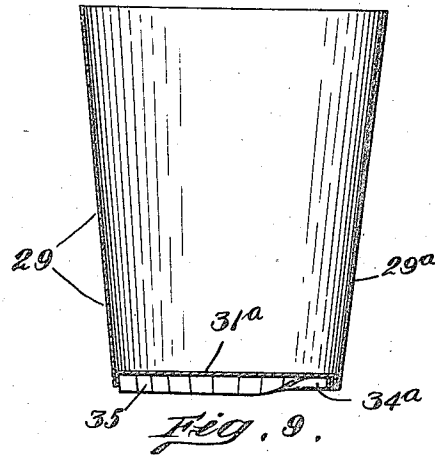
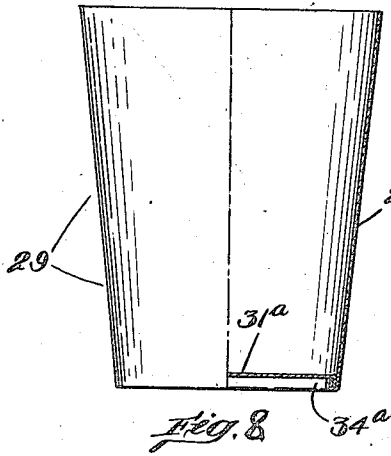
George J. Bohlman
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3 SHEETS—SHEET 3.



Witness.
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UNITED STATES PATENT OFFICE.

GEORGE J. BOHLMAN, OF MEDFORD, MASSACHUSETTS, ASSIGNOR TO AMERICAN WATER SUPPLY COMPANY OF NEW ENGLAND, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

PAPER CUP.

1,295,418.

Specification of Letters Patent.

Patented Feb. 25, 1919.

Application filed August 23, 1915. Serial No. 46,789.

To all whom it may concern:

Be it known that I, GEORGE J. BOHLMAN, a citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Paper Cups, of which the following is a specification.

My present invention relates broadly to new and useful improvements in paper receptacles, and has particular reference to an improved form of paper drinking cup.

One of the principal objects of the invention is to provide a receptacle of the above-stated character which is constructed with such regard to design and arrangement of parts that it may be cheaply manufactured from a single blank of paper or equivalent material, which, when complete as an article of manufacture, will be water-tight.

It has heretofore been found necessary in the manufacture of paper drinking cups to impregnate finished cups with paraffin in order that the seams will be water-tight. This step in the manufacture of paper drinking cups adds materially to the cost of production, and is otherwise objectionable since a paraffin cup cannot be used for hot drinks.

Being cognizant of the above objections to paper cups as they are now manufactured, I have, therefore, had in mind as one of the principal objects of my invention the construction of a paper drinking cup from a single blank of relatively cheap paper, which blank may be quickly formed into a completed cup, and will not require that paraffin or any equivalent waterproofing material be employed in sealing the seams and otherwise making it water-tight.

Another more specific object of my invention is to provide for both the upper and basal edges of the cup annular stiffening elements which serve to prevent the collapse of the body-wall under ordinary usage and also by pressure from the holding element of the usual containers.

The above and other incidental objects of a similar nature, which will be hereinafter more specifically treated, are accomplished by such means as illustrated in the accompanying drawings, described in the following specification, and then more particularly pointed out in the claims, which are appended hereto and form a part of this application.

Figure 1 is a view of the blank from which the preferred form of receptacle is fashioned;

Fig. 2 is a detail view partly in elevation and partly in longitudinal section of a cup constructed from a blank of the type shown in Fig. 1;

Fig. 3 is a detail view in side elevation of the cup disclosed in Fig. 2, the bottom portion of the body or side wall of the cup being broken away to disclose more clearly the manner in which the bottom wall is connected to the side wall;

Fig. 4 is a detail view partly in elevation and partly in longitudinal section of a modified form of cup;

Fig. 5 is a detail view of the modified form of cup shown in Fig. 4 in a state of partial completion;

Fig. 6 is a side elevation of the modified form of cup shown in Figs. 4 and 5, looking at the side wall seam thereof, and indicating in dotted lines the manner in which the two sections of the blank, which form the side wall, are overlapped and the manner in which the bottom wall is secured to the side wall;

Fig. 7 is a detail view of the blank in which the modified form of the cup is constructed;

Fig. 8 is a detail view partly in side elevation and partly in longitudinal section of a further modified form of cup;

Fig. 9 is a longitudinal section of the form of cup shown in Fig. 8;

Fig. 10 is a detail view of the blank from which the modified form of cup of Figs. 8 and 9 are made, showing the blank in its initial state; and,

Fig. 11 is a detail view of the blank of Fig. 10 showing the blank completed and ready for folding.

Before taking up a detailed description of the several embodiments of my invention shown in the accompanying drawings, I desire to explain that while I preferably form the blanks for the receptacles from paper, any other equivalent material may be employed without departing in any way from the spirit and scope of my present invention.

In the preferred embodiment of my invention I form the cup from a blank of paper, shown in Fig. 1. The body portion

10 of this blank is substantially segmental or arcuate in shape, adapting it to be wound around a frusto-conical form, and for the purposes of the present description may be
 5 said to consist of two complemental portions 11 and 12, the former of which is slightly shorter than the latter. As will be hereinafter more fully explained the section 11, is, during the manufacture of the cup, to be
 10 passed completely around the section 12, it being intended that the cup shall have a two-ply body wall. The upper and lower edges of the two portions 11 and 12, are, therefore, of lengths equal, respectively, to
 15 the desired finished external and internal diameters of the upper and base edges of the cup.

The upper edge of the portion 12 has an arcuate extension 15, while the lower or
 20 basal edge of the portion 11 has a similar extension 16. The extension-member 15 is adapted to be folded, during the shaping of the blank, by means of a spinner to form an annular lip, which, as indicated at 15^a in
 25 Fig. 2, embraces the upper edge of the portion 11, which constitutes the outer ply 11^a of the body wall of the cup, as disclosed in Fig. 2. The extension 16 is, however, designed to be folded inwardly and upwardly
 30 producing an internal lip or bead, as indicated at 16^a in Fig. 2, to assist in holding the bottom wall in position, and also to assist in sealing the seam between the perimeter of the bottom wall and the body-wall.

35 On the lower edge of the portion 12, and immediately adjacent to the junction of this portion with the portion 11 at the separating line 18, is formed a substantially circular tab 19, which member, when the
 40 blank has been folded or wound on the form, will serve as and constitute the bottom wall of the cup. As above stated the tab 19 is substantially circular, but, as shown in Fig. 1, small triangular fields 20 are left
 45 on each side of the member 18, to connect this member to the body of the blank. These connecting portions 20 are folded inwardly of the cup along the crease lines indicated at
 50 21, as will also hereinafter be more fully pointed out. At the margin of the member 19 are a plurality of circumferentially spaced, radially extending slits 22, adapted to form attaching tongues 23. The slits 22 are of uniform length, and extend inwardly
 55 such a distance as to leave an uncut circular field, which forms the bottom wall proper of the cup.

The specific features of the blank being thus described, reference will now be had to
 60 Figs. 2 and 3, wherein a cup formed from the blank of Fig. 1 is disclosed.

As will be seen in these figures the portion 12 of the blank body is first rolled on a form to produce a substantially frusto-conical
 65 body wall 12^a. The triangular fields 20 are

then creased on the lines 21, and folded upwardly to lie against the outer face of the wall defined by the portion 12, as disclosed best in Fig. 3, thereby causing the bottom wall to lie flat upon the end of the form. 70
 Then the tongues 23 are folded on the circle which comprehends their inner ends, and are extended along the outer face of the portion 12, as is also disclosed in Fig. 3. Following these steps the portion 11, to the inner face of which has been applied a film of adhesive material, as in Fig. 1, is passed around the member 12^a, thereby producing, as in Fig. 2, a two-ply, substantially frusto-conical body or side wall. 80

It is now to be noted that since the tongues 23 are disposed to engage against the outer face of the inner ply of the body wall, and the portion 11 surrounds this member, the tongues are disposed between the two plies 85 and are secured in place by the adhesive material on the inner face of the portion 11. Thus the bottom wall 19 of the cup is firmly secured to the basal edges of the side wall of the cup, and the seam between the bottom 90 wall and the side wall is practically and efficiently sealed, without requiring the employment of paraffin or any equivalent material as a sealing impregnant.

The final steps in the production of a cup 95 of the type shown in Figs. 1, 2 and 3 is the folding of the extensions 15 and 16 by a spinner or equivalent apparatus. As has been previously stated, the member 15 is folded to embrace the outer ply of the cup 100 body-wall, while the member 16 is folded upwardly and inwardly to engage against the bottom wall 19. Obviously the member 15 constitutes a stiffening element for the body wall of the cup, so that when pressure is exerted to the body wall by the fingers of the holders, the wall will not readily collapse, but will maintain its intended and original circular shape at its upper edge. Obviously also the member 16 constitutes a stiffening element at the basal edge of the cup and further serves as a sealing element for the space between the body wall. In this connection it will be appreciated that the member 15 will serve to prevent the escape of any water which may have passed between the lower edge of the inner ply 12^a of the body wall and the bottom wall, and found its way down in between the members 23 and the member 11. 110 115 120

In concluding the description of the preferred form of my cup, it is now desired to direct particular attention to the following salient features, all of which have been found to contribute materially to the commercial efficiency of the receptacle. 125

Since the body wall of the cup is formed as a two-ply element, a relatively cheap grade of paper may be employed, for the permeability of a two-ply wall is consider- 130

ably less than a single-ply wall. As a consequence even though a cheap paper be employed, it is not necessary that it be impregnated with paraffin, as is the present practice, even with good paper. This two-ply feature is one of considerable importance since it is found to reduce materially the cost of manufacture.

A further advantage follows from the construction of the body wall as a two-ply element since it provides an efficient means for sealing the seam between the body wall and the bottom wall. In this connection reference is made, of course, to the fact that the tongues 23 of the bottom wall may be inserted and adhesively held between the two plies of the body wall and the basal edge of the inner ply 12^a, thus maintained in sealing engagement with the bottom wall 19.

Having thus described the actual construction of the preferred form of the cup, reference will now be made to Figs. 4, 5, 6 and 7, wherein is illustrated one of the possible modifications to which my present invention may be subjected.

In the modified form of my invention, shown in Figs. 4, 5, 6, and 7, I provide a paper blank which includes as in the preferred embodiment two complementary arcuate or segmental portions 24 and 25, and a tab 26 which is substantially circular and equivalent to the tab 19, and is arranged on the portion 25, and substantially triangular portions 28, which correspond to the members 20 of Fig. 1. As in the preferred form of the invention, the blank is adapted to be wound about a former to produce a two-ply wall, the portion 24 constituting an inner ply 24^a, as in Fig. 4, and the section 25 constituting an outer ply 25^a. As in the preferred form, the inner face of the section 24 is provided with a film of adhesive material by which the two plies are permanently united. A plurality of tongues 27 are formed on the tabs 26, being similar to the members 23 of Fig. 1. After the portion 24 has been wound about the former the members 27 are folded on the creased lines 28^a, and disposed to engage the outer face of the wall 24^a, and the tongues 27 are then bent in the manner previously described in connection with the tongue 23, to also engage the outer face of the member 24^a. The portion 25 is then passed around the wall 24^a forming the outer ply 25^a of the cup-body wall, as in Fig. 6.

Thus it will be seen that the modified form of cup differs from the preferred form of cup only in that the extensions 15 and 16 are omitted, and the lips 15^a and 16^a are accordingly omitted.

The modified embodiment of the invention, shown in Figs. 8, 9, 10, and 11, is formed from a single blank 29, which is of segmental shape, but is of a length to form but a single ply body-wall for the cup, as indicated at 29^a, as in Figs. 8 and 9. From the shorter arcuate edge 30, of this blank, extends a substantially circular tab 31, corresponding to the tabs 19 and 26, in that it constitutes a bottom wall in the cup when the blank has been shaped in the completed form. On each side of the portion 32, by which the tab 31 is connected to the body of the blank, I cut a substantially triangular notch, as indicated at 33. These notches 33 are provided so that the portion 32 may be creased on the line 34, and on the line 35, for disposing the bottom wall, indicated at 31^a, in Fig. 8, above the lower edge of the body-wall 29^a. The formation of the notches 33 also makes it possible to bend the lower edge-portions of the blank-body on each side of the tab 31 upwardly and inwardly to form the sealing lips, indicated at 34^a, in Fig. 8.

It will be noted that tongues 35, similar to the members 23 and 27, are formed on a tab 31, and are bent downwardly, as in Figs. 8 and 9, to lie between the lips 34^a, and the body-wall 29^a. When the lip 34^a is formed by the spinner, the tongues 35 are inclosed and pressed against the body-wall 29^a, thus sealing the seam between the body-wall and the body-wall of the cup.

I claim:—

1. The receptacle herein described formed from flexible, non-metallic material comprising a body wall, and a circularly formed bottom wall integral with the body wall having a marginal engaging portion and triangular fields at the junction of the bottom wall and body wall having intermediate creases.

2. The receptacle herein described formed from flexible, non-metallic material comprising a two-ply body wall and a circularly formed tab integral with one of the plies thereof, arranged to form a bottom wall, and means provided at the junction of said tab and ply which admits of the tab being bent angularly with respect to the ply bearing it on a line which permits the edge of said ply to project so as to be turned over upon the other ply.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEORGE J. BOHLMAN.

Witnesses:

AMOS L. TAYLOR,
MARY C. BRICKNAM.