

L. W. LUELLEN.

CUP.

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1,284,728.

Patented Nov. 12, 1918.

Fig. 1. 7

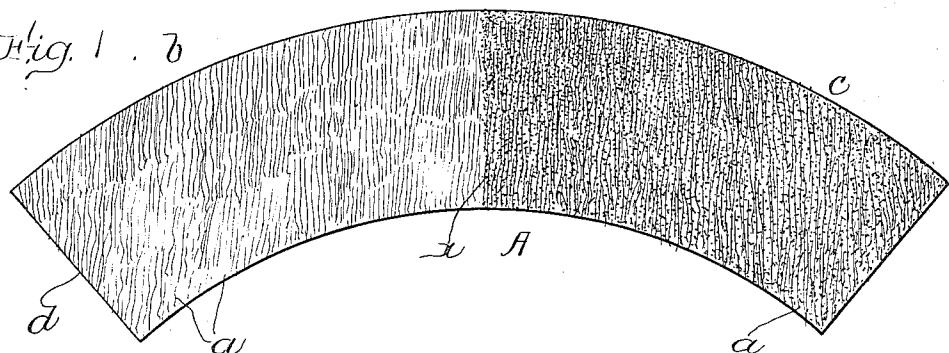


Fig. 2.

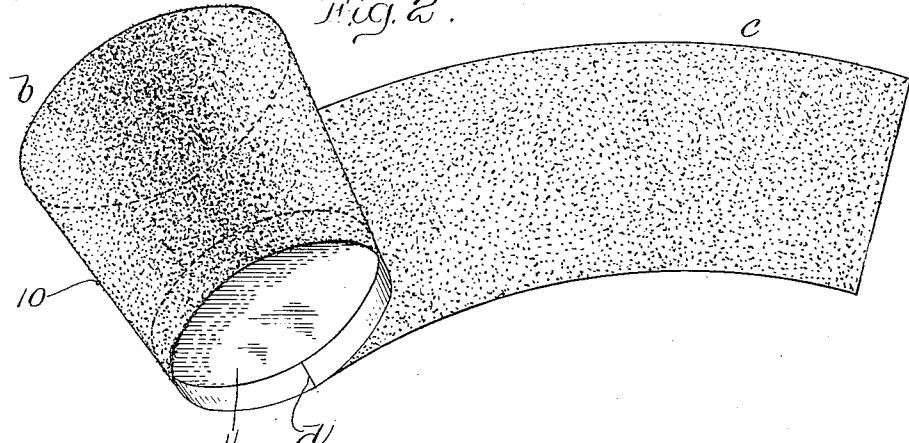


Fig. 4.

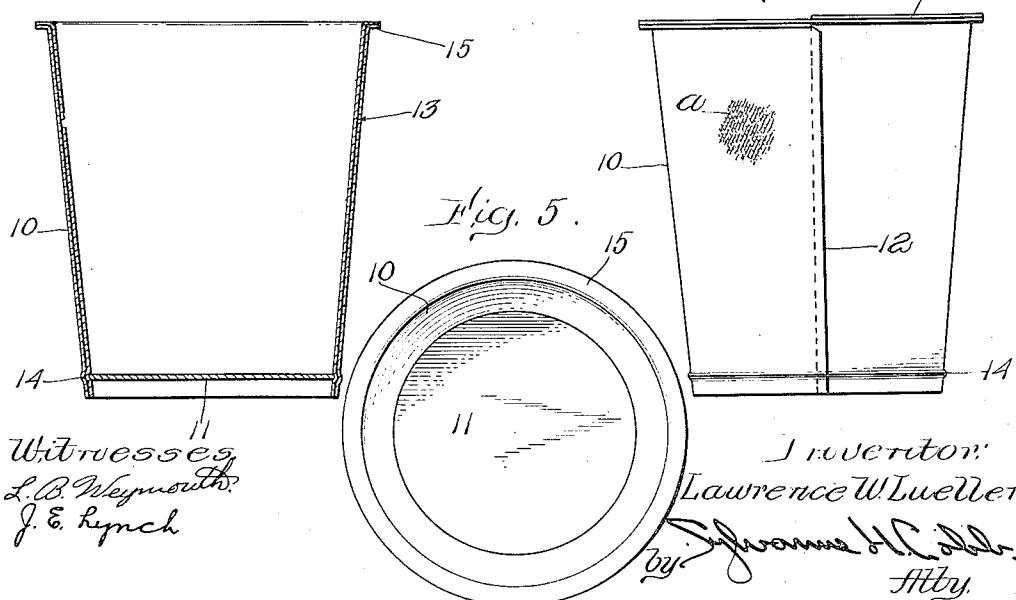


Fig. 5.

Witnesses  
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# UNITED STATES PATENT OFFICE.

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## CUP.

1,284,728.

Specification of Letters Patent. Patented Nov. 12, 1918.

Application filed February 20, 1911. Serial No. 609,756.

To all whom it may concern:

Be it known that I, LAWRENCE W. LUellen, a citizen of the United States, residing at New York, borough of Manhattan, in the county and State of New York, have invented a new and useful Cup, of which the following is a specification.

As a hygienic measure, and as a matter of convenience, drinking vessels are now frequently manufactured of such inexpensive, flexible material as paper so treated as to be waterproof. In that type of these vessels which is of open or permanently cup-like form, as distinguished from those normally folded and which must be separated by the user, it is necessary that they shall be so stable as to effectually resist collapse in the hands, and that their parts shall be of such strength that they may not be readily torn or displaced by spoons or like utensils or by engagement with the delivery mechanism of dispensing or vending apparatus. Still, it is desirable that to prevent repeated use they may be destroyed by manual pressure. By my invention these results are attained by disposing the cup material, and particularly that of the side walls and flange, in such a manner that a minimum weight offers a maximum resistance to normal stresses. Furthermore, I have produced a drinking vessel of this class which is free from objectionable appearance and feeling characteristic of the usual methods of manufacture. What constitutes my invention may be best appreciated from the following description and claims, the latter being understood as not limited to the embodiment illustrated and described in detail.

Figure 1 of the accompanying drawings shows a blank from which my improved cup may be formed; Fig. 2 is a perspective view of the cup in process of formation; Fig. 3 is a side elevation of said cup; Fig. 4 is a central vertical section therethrough; and Fig. 5 shows a top plan view.

In all figures of the drawings like characters of reference are employed to designate similar parts.

One way of carrying out my invention is as follows: A blank A is cut from the desired material in the segmental form appearing in Fig. 1 of the drawings. For this purpose I prefer some such fibrous material as rag-paper, in which the fibers are disposed throughout in the same general direc-

tion, the material offering the greatest resistance to rupture at right angles to this line. The blank is so cut from the stock that the fibers lie parallel to the central axis of the segment; that is, to a radius midway between the ends of the blank, a portion of these fibers being indicated by the light broken lines a.

Upon the completion of the blank, there is applied to it a coating of a fluid substance which is both an adhesive and a waterproofing agent. Heated paraffin is especially adapted for this purpose, having the further advantage of remaining for some time in a plastic condition upon cooling before it finally sets. For reasons which will appear, this coating although preferably covering the entire area of the blank is divided between opposite sides; half shown at b being upon one face of the blank to the left of the median line x, as viewed in Fig. 1, and the other half, c, being upon the opposite face to the right of said line. Such a quantity of the paraffin is employed in the coating, as to penetrate and fill the spaces between the fibers without passing through to the other face, and to leave upon the side of application a thin yet tangible film.

The blank-strip with the paraffin still fluid is then subjected to the first step in the actual formation of the cup, it being rolled upon itself into the frustum of a cone, conveniently over a tapered core, with the coated surface b outward, as appears in Fig. 2, a circular bottom-piece 11 of pasteboard or the like being held within the cup at right angles to the axis and at some little distance from the lower or small end. When the end d of the blank has reached the center line x one layer of the side wall 10 of the cup will have taken shape. The rolling of the strip continues, the coated surfaces b and c now contacting with one another until a tapered tube with a complete double wall results, with preferably a slight overlap at 12 to insure the completion of the plural layers. Between the layers of paper is a layer 13 of paraffin furnished by the coalescing of the two films. With this layer 13 still in a plastic condition, the bottom 11 is forced down to the position which it is to finally occupy, and on account of the taper of the tubular wall produces an annular groove or depression 14 in which it seats itself. At an appropriate time, the wall 15

layers are pressed together and the upper edge turned over at right angles to the axis to provide a flange 15, which is especially adapted to be engaged by delivery mechanism. All this is accomplished while the paraffin is still plastic. When it solidifies there results a multiple wall and flange combining the strength and rigidity of the layers of fibrous material and paraffin. The latter is entirely concealed, leaving both the interior and the exterior of the cup practically unchanged; and by the manner of application, in plural light coatings, the operations are rendered cleanly, with freedom from waste and without danger from an excess soaking through the paper.

It must be noted that in the completed cup the fibers *a* of each layer of paper, through the rolling in tapered form, assume angular positions with respect to those of the other layer, as will be best understood by reference to Fig. 3, those of the first layer being inclined upwardly and toward the left, and those of the outer layer toward the right. Because of this, there is no direction in which the flange and wall may be readily torn, since at least one layer of the fibers will be presented transversely to the rupturing stress. A greater resistance to distortion is also offered, this being of especial importance as regards the flange and the depression in which the bottom rests.

It is obvious that many modifications and changes may be made in the construction shown in the drawings without departing from the spirit and scope of my invention, and I do not mean to limit myself to the particular form or forms shown and described.

Having thus described my invention, I claim:

1. A cup having a side wall consisting of a plurality of layers of flexible fibrous material, the fibers extending generally from top to bottom of the wall but lying at an angle with one another in adjacent layers.

2. A vessel having a side wall circular in section and consisting of a continuous strip of paper rolled upon itself in a plurality of layers, the fibers of the paper being disposed transversely of the strip.

3. A paper drinking cup, comprising side walls, a bottom and a stiffening rim having a free edge projecting outward from the upper edge thereof to constitute a lip-engaging flange and being formed of a plurality of thicknesses of paper, reinforced by paraffin.

4. A paper drinking cup, having side walls and a bottom piece and having an outwardly-presented lip-engaging portion reinforced by paraffin interposed between a plurality of layers of paper.

5. A drinking cup having side walls and a bottom formed of paper, fiber or the like,

and having at its upper open edge a plurality of layers of paper between which paraffin is interposed to constitute a smooth lip on the cup.

6. A drinking cup having its side walls and bottom formed of paper, fiber or the like, and having a rim at the upper edge thereof formed by turning out the upper edge of the side wall to form a free lip flange composed of at least two thicknesses of paper and having paraffin between said thicknesses.

7. A drinking cup having side walls and a bottom formed of paper and having a stiffening rim projecting outward from and being a free lip flange integral with the upper edge of said side walls and comprising a plurality of thicknesses of paper having paraffin therebetween.

8. A drinking cup having side walls and an outwardly projecting free lip flange at the upper edge thereof formed of a single blank of paper disposed upon itself and secured in place by paraffin or the like.

9. A drinking cup having side walls and an outwardly projecting free lip flange at the upper edge thereof, the said side walls and flange being formed from a single blank of paper, portions of which overlap and are held in place by paraffin.

10. A drinking cup having side walls and an outwardly turned free lip flange made of a single piece of paper, said flange including a plurality of thicknesses of paper held together by paraffin.

11. A drinking cup having side walls and a free lip flange at the upper edge thereof, said side walls and flange being formed from a single blank of paper, portions of which overlap and are held in place by paraffin, the edge of said blank forming the flange projecting outward and constituting the greatest diameter of the cup.

12. A drinking cup having side walls, the upper edge of which is turned outward to form a free lip flange or rim, formed of a single blank of paper rolled upon itself and secured both in the body and rim portions by paraffin or the like, the edge of the blank forming the rim constituting the greatest diameter of the cup.

13. As a new article of manufacture, a drinking cup, having integral side wall portions of thin paper formed double by intimately overlaying the paper upon itself, said wall portions being coated and impregnated with paraffin and cemented in position by the paraffin, said paraffin being the only securing means added to the paper and constituting a stiffening layer between the thin wall portions.

14. As a new article of manufacture, a drinking cup, having integral side wall portions of thin paper formed double by intimately overlaying the paper upon itself,

the overlying portions being pressed together and coated with a sanitary water-proofing permeating coating which alone cements the overlying portions in position and reinforces the same.

15. As a new article of manufacture, a destructible receptacle, formed with integral paper side wall portions of thin paper formed double by intimately overlaying the paper upon itself and tapering from the top inwardly toward the bottom of the receptacle, the overlying portions being pressed together and giving the cup a substantially smooth surface, and a coating of fusible, cementitious material of slight adhesive properties on the side wall portions making the same water-proof and holding alone the overlying portions in position and reinforcing the same.
20. 16. A drinking cup, having a side wall portion of thin paper formed double by intimately overlaying the integral paper upon itself to be capable of maintaining a predetermined outline when the overlying portions are secured together, said wall portion merging into an outwardly extending free lip portion, and a strengthener and binder

of paraffin applied to the cup alone cementing the overlying portions of the double wall together, and continuing therethrough and through the lip portion thereof, and around the juncture therebetween, to stiffen the same.

17. As a new article of manufacture, a drinking cup, formed with a downwardly tapered side wall of paper including intimately superimposed integral layers of thin paper impregnated with and held together by a fusible cement constituting a stiffening layer between the thin wall portions.

18. A drinking cup, formed with a side wall of thin paper and having free lip-engaging edge portion formed of a plurality of intimate integral layers of the paper reinforced with paraffin between and uniting the layers.

Signed at Boston in the county of Suffolk and State of Massachusetts, this 13th day of February, 1911.

LAWRENCE W. LUELLEN.

Witnesses:

HARLEY W. CHITTENDEN,  
AUSTIN M. PINKHAM.