G. J. BOHLMAN.

PAPER CUP.

APPLICATION FILED NOV. 2, 1914.

1,181,963.

Patented May 2, 1916.

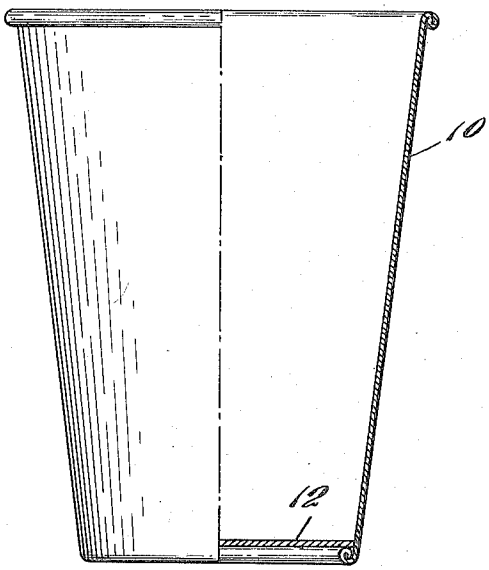


Fig. 1.

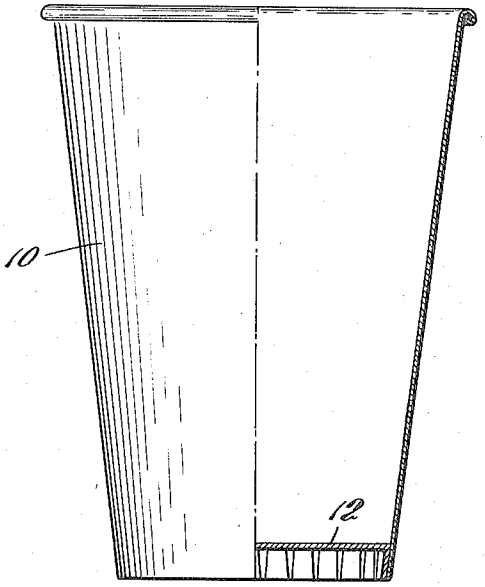


Fig. 2.

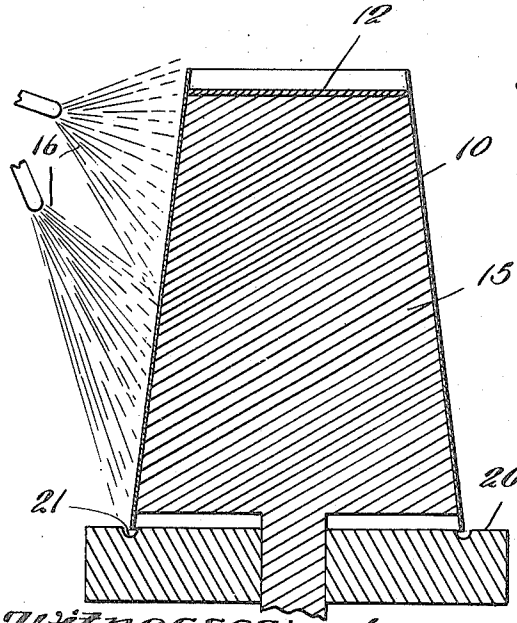


Fig. 3.

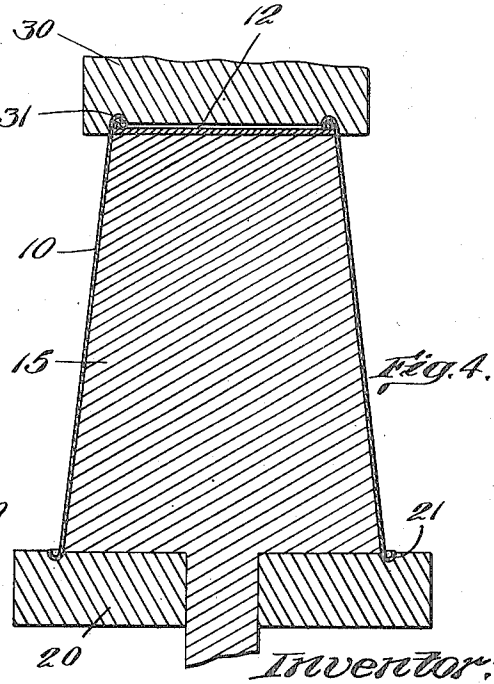


Fig. 4.

Witnesses:

L. L. Erickson

H. B. Davis.

Inventor:

George J. Bohlman

by Noyes & Harriman.

attys.

UNITED STATES PATENT OFFICE.

GEORGE J. BOHLMAN, OF MEDFORD, MASSACHUSETTS.

PAPER CUP.

1,181,963. Specification of Letters Patent. Patented May 2, 1916.

Application filed November 2, 1914. Serial No. 869,763.

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.

This invention relates to paper drinking cups or other paper receptacles, and has for its object the production of a cup having an improved form of rolled-edge at either or both ends of its body. A rolled-edge at the top of the cup is of advantage as contrasted with the usual thin sharp edge, as it gives additional stiffness and rigidity to the cup, and also presents a smooth lip-engaging portion which will not have a tendency to cut the lip; and a rolled-edge at the bottom of the cup is also of advantage, as by it a stiff flange is produced below the bottom-piece, by which to support the cup in upright position, even when filled, and by which the bottom-piece is held from dropping out, so that bottom-pieces composed of flat disks may be employed.

Heretofore paper cups have been produced with rolled-edges, but the methods employed for producing them have been such that additional expense was incurred and an extra amount of paraffin wax employed, which not only increased the expense but also increased the weight of the cups to such an extent that when the cups were nested in a pile of, say, one hundred, the increased weight was objectionable. Furthermore, in warm weather the paraffin wax softened, and when several cups were nested in a pile they had a decided tendency to stick together, so much so, in fact, that cups heavily or even moderately coated, or having portions heavily or moderately coated with paraffin wax, could not be used as an all-year-round cup. Even in case the rays of the sun were allowed to strike a pile, the paraffin wax would not only soften, but would run, whereupon the cups of the pile would weld together.

In carrying out my invention, the paper cup-body is formed in any usual or suitable manner, and its bottom-piece is arranged therein, and while said cup-body is on the form on which it is made, or on a similar form, the paraffin is applied to it in the form of a liquid spray, at a high temperature, which is caused to spread over its entire outside surface, and as a result the paper becomes thoroughly saturated, and is, therefore, in temper, and while in such condition it can be easily stretched and bent without breaking, and, therefore, while in temper, one or both of its end-portions are subjected to a suitable bending or edge-rolling-device, by which they are rolled over, thereby to produce a rolled-edge at either or both ends, and then said body is allowed to cool and the paraffin to set or congeal, whereupon the paper becomes quite stiff, and its rolled-edge becomes permanently set. In case the paper is thoroughly saturated with the hot or melted paraffin wax, it will be found that when congealed there is present on the surface of the paper a very thin coating. The complete saturation of the paper is the main requisite, so that it will be substantially waterproof, but the coating which is present on the surface must be of no appreciable thickness, otherwise the cups, when nested, will have a tendency to stick together, particularly in warm weather. The roll which is formed at the edge, is of small diameter, but is sufficient for the purposes desired.

Figure 1, is a side elevation and partial longitudinal vertical section of a paper drinking cup having both end-portions formed with rolled edges. Fig. 2, is a side elevation and partial longitudinal vertical section of a paper drinking cup having its upper end-portion formed with a rolled edge. Fig. 3, is a side elevation of a paper cup before the rolled-edges are produced, and illustrating a spray or jet of liquid paraffin which is being directed upon the cup-body, and the molds or forms which may serve as bending-devices. Fig. 4, is a similar view, showing the end-portions of the cup-body rolled over.

10 represents a paper cup-body, and 12 a bottom-closure therefor, both of which may be of any well-known or suitable construction. After the body is produced, it is placed on a form 15, or while reposing on the form on which it is made, a spray or jet of melted paraffin wax, indicated at 16, is directed upon it, which is extended over its entire surface, and which acts to coat the body but more particularly to saturate the paper, so that it is in good temper, and may be easily bent without breaking. The liquid paraffin wax in the form of a spray spatters the paper, and the numerous spots coalesce to completely saturate the paper. While the

cup-body is in temper, its ends are rolled over by a suitable stretching and bending-device, such for instance, as represented in Fig. 3, wherein a plate 20 is arranged at the bottom of the form 15 having a shallow groove 21, semicircular in cross-section, adapted to receive the lower end of the cup-body, and by a slight downward pressure upon said body its end-portion or edge is caused to follow the curved wall of said groove and thereby to stretch and bend outwardly, upwardly and then inwardly, substantially completing a circle, although the distance said bend is continued may vary more or less. Also, a similarly grooved plate 30, is or may be arranged above the form, the groove 31 of which receives the upper end-portion of the cup-body, as said plate and form are moved one toward the other, with the result that said end-portion is similarly bent. After the bend or bends are formed the cup-body is allowed to cool whereupon the paraffin congeals, and the paper is caused to remain in the position in which it is bent, becoming permanently set. The paper body with its rolled edge or edges thus formed is quite stiff, and are incidentally coated with a very thin film or layer of wax of uniform thickness, and although the rolled edge or edges are of small diameter they are sufficiently rigid to prevent being broken by any pressure or strain upon them to which they are ordinarily subjected, and provide smooth rounded lip-engaging portions which will not have a tendency to cut the lip.

The paper receptacle herein described having a rolled edge, which is completely and uniformly saturated with paraffin wax may be nested in a pile, and in warm weather will not stick together, owing to the fact that there is no excess or body of paraffin wax on any part of it. The cup, therefore, is practical and serviceable in warm weather.

The paper receptacle herein described having a rolled edge, which is uniformly saturated and coated with paraffin wax may be produced by other methods, as for instance as described in my application No. 869,762, filed concurrently with this application.

The method herein described forms the subject matter of a divisional application #9,261, filed February 19, 1915.

I claim:—

1. A frusto-conical paper drinking cup having a rolled edge at the top, said cup including its rolled edge being completely saturated with paraffin wax, but having no appreciable amount of paraffin wax upon its surface at any part thereof, substantially as described.

2. A frusto-conical paper drinking cup having a rolled edge at the bottom which engages the under side of the bottom piece, said cup including its rolled edge being completely saturated with paraffin wax, but having no appreciable amount of paraffin wax upon its surface at any part thereof, substantially as described.

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

GEORGE J. BOHLMAN.

Witnesses:
ELIZABETH M. HANSON,
AMOS L. TAYLOR.