METHOD OF MAKING PAPER STRAWS
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1 Claim. (Cl. 93—94)

This invention relates to methods for making paper straws, the term being applied to relatively short lengths of tubular material of small internal diameter used to drink milk or beverages by suction from bottles or glasses.

The object of the invention is to provide a method for producing straws from paper strips transversely rolled with suitable adhesive, as distinguished from like articles formed by spirally winding ribbon-like pieces of material. It is also an object of this invention to fashion the straws individually and without the employment of an arbiter or other similar device for creating a small tube, whereby it is believed the manufacturing of such goods may be expedited and the cost thereof reduced, at the same time turning out a superior, salable and serviceable drinking tube.

Of the accompanying drawing, Fig. 1 represents a diagrammatic arrangement of rollers and associated devices comprising one form of apparatus for producing this invention.

Fig. 2 illustrates a reduced scale the general shape of the strips of paper employed.

Throughout the drawing and description the same number is used to refer to the same part.

Considering Fig. 1, a suitable machine frame carries a bracket which in turn supports a strip holding box containing a stack of paper strips of substantially twice the dimensions, but of the like shape shown in Fig. 2. The paper strips are marked. The paper of which the strips are made, should be of the proper texture. The best results are obtained by the use of a chemical pulp paper well sized. When water is applied to one surface of the paper it releases the fibres and they expand, which causes the paper to curl or curve, and if the grain is the long way of the paper it will form a tube or take a substantially tubular shape. From the box the strips of paper are fed one by one by a rubber coated drum and each strip descends upon the drum the surface of which is of sponge rubber. In contact with the drum 5 is a drum or roller 7 in a tank 3, provided as shown with a heater and containing a fluid. The applicant does not limit himself to any kind of paper or grade thereof, or to one kind of adhesive substance. The applicant has made straws successfully from glassine paper, and has also used ordinary flour paste containing about ten per cent of adhesive in the water in the tank. The wheel 7 takes the fluid from the tank and applies it to the rubber sponge exterior of the drum 6. The strip is caught upon the wet surface of the drum and is thus fully moistened on one surface. The strip curves by reason of the applied fluid and takes the shapes illustrated in the drawing, Fig. 1, and is deposited by the drum 8 on the travelling belt 11 on drums 12 and 13. The curling strip is carried along by the belt 11 and pressed and rolled against the slanting bar 14 whereby the strip is rolled into tubular form and is made somewhat smaller in diameter as shown. From the belt 11 a scraper 15 directs the partly formed straw downwardly upon the drum 16. This is the waxing roll and is revoluble in the tank 17 in the wax 18 kept in fluid condition by the heater 19. The applicant reserves the right to use any suitable wax that is now on sale for the purpose. From the waxing drum 16 a scraper 20 delivers the waxed tubes to the traveling belt on rollers 22 and 23, and each tube is further rolled and pressed by the belt 21 against the stationary guide and presser 24. The now completed straws are taken off at the turn of the belt 21 and deposited upon a receiving shelf or drier 25.

Applicant does not limit himself to any particular shape, material or size of the rollers and belts and associated devices described as constituting the apparatus illustrated.

The steps of this method invention will now be understood.

First the strips are moistened on one surface, and thereby caused to curl or curve transversely. There is then applied to the curving strip both pressure and a rolling movement by the inclined preser guide, and then the partly completed tube is waxed and further rolled and pressed into its final and perfected shape. No arbiter or like is employed.

Having now described this invention and the manner of carrying the method out, I claim:

A method of making paper straws from separate strips of paper relatively narrow with respect to the length of the strips, consisting in advancing the strips individually with the length of the strips crosswise with respect to the direction of subsequent movement of the strips, subjecting the strips to a transverse rolling operation wherein during the movement of the strip before the actual rolling takes place each strip is treated with a heated fluid on one face causing the strip to become transversely curved in the direction it is to be rolled, rolling the strips without internal support in a horizontal direction into lengthwise tubular form, subjecting the tubes to a gradually contracting rolling operation to reduce the diameter thereof, applying heated wax to the tubes, and further rolling the tubes.

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