

Aug. 26, 1947.

C. BARBIERI

2,426,159

METHOD OF MAKING PAPER CUPS

Original Filed June 12, 1942

3 Sheets-Sheet 1

Fig. 1.

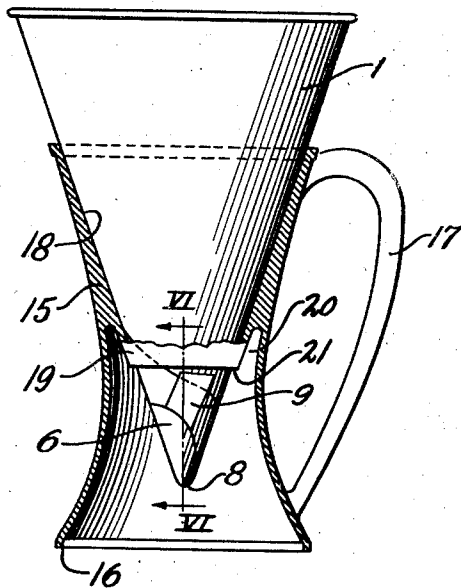


Fig. 2

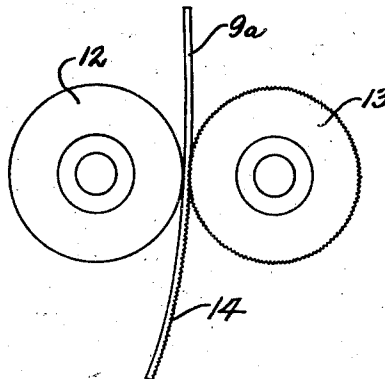


Fig. 3

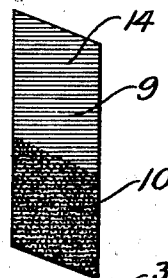
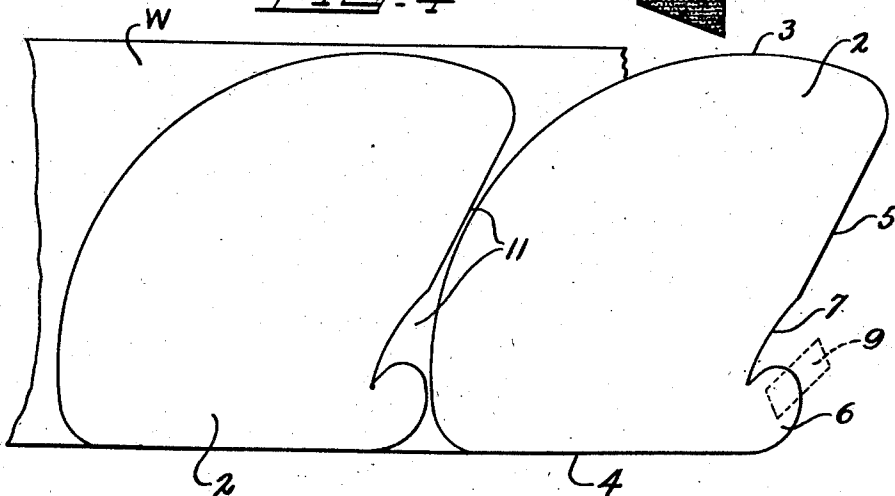


Fig. 4



INVENTOR
CESARE BARBIERI.

by *Charles R. [Signature]* Attys.

Aug. 26, 1947.

C. BARBIERI

2,426,159

METHOD OF MAKING PAPER CUPS

Original Filed June 12, 1942

3 Sheets-Sheet 2

Fig. 5

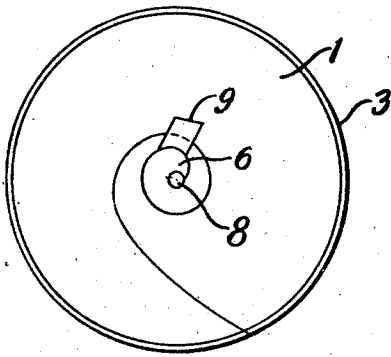


Fig. 7

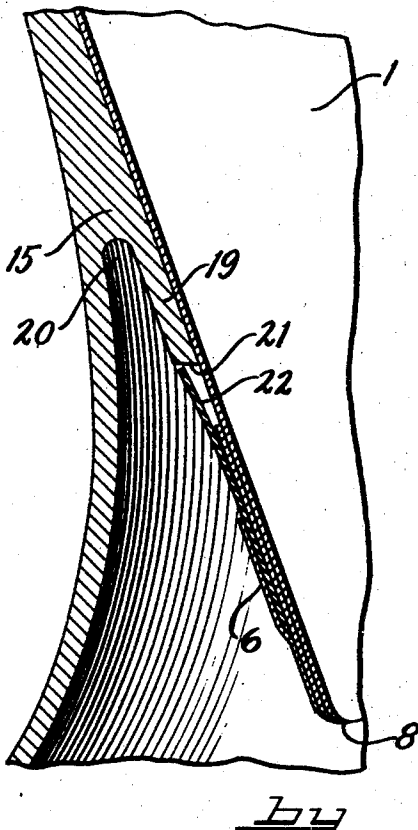


Fig. 6

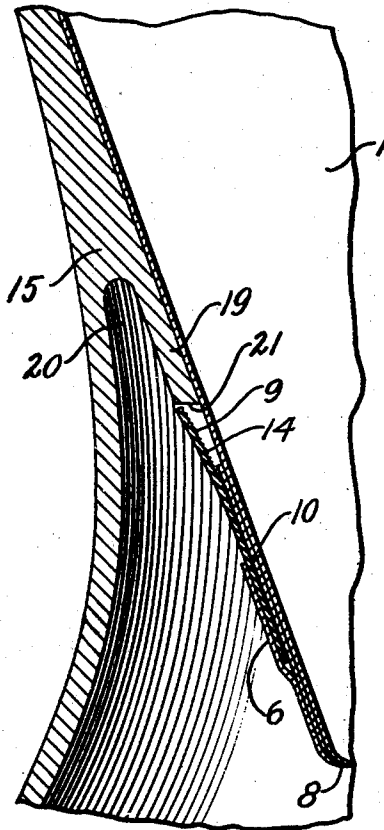
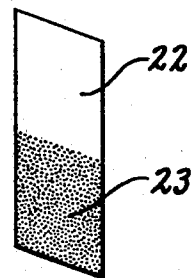


Fig. 8



INVENTOR
CESARE BARBIERI.
Charles Barberi
Attys.

Aug. 26, 1947.

C. BARBIERI

2,426,159

METHOD OF MAKING PAPER CUPS

Original Filed June 12, 1942

3 Sheets-Sheet 3

Fig-9.

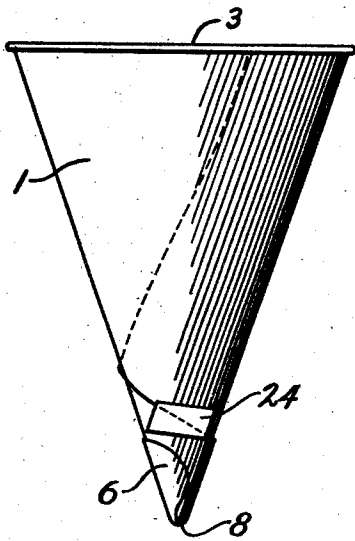


Fig-10.

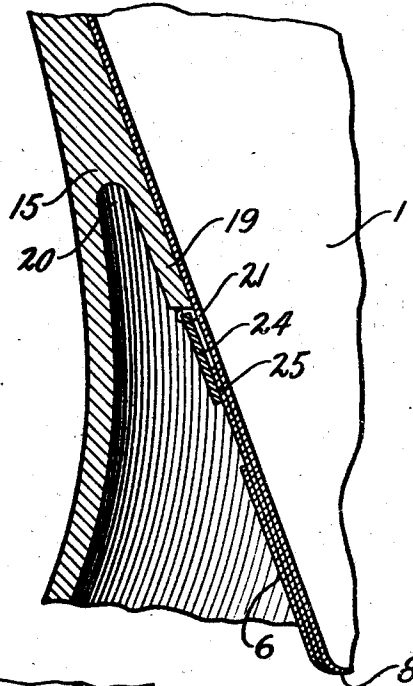


Fig-11

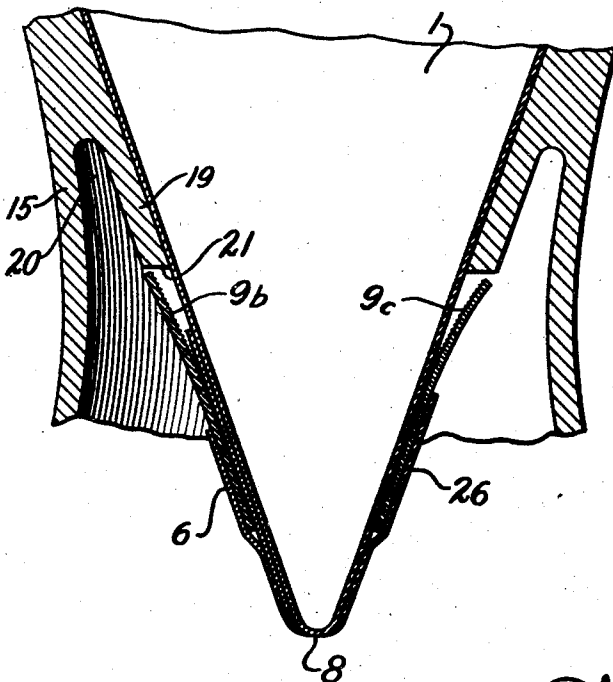
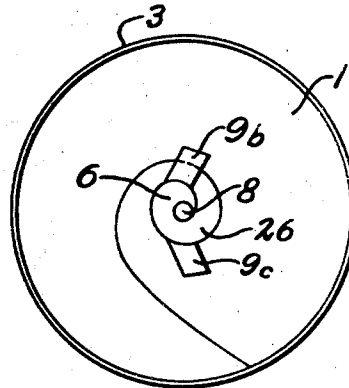


Fig-12



Inventor
CESARE BARBIERI.

Charles Barbieri
Attys.

UNITED STATES PATENT OFFICE

2,426,159

METHOD OF MAKING PAPER CUPS

Cesare Barbieri, New York, N. Y., assignor to
Dixie Cup Company, a corporation of Delaware

Original application June 12, 1942, Serial No.
446,698. Divided and this application March
8, 1943, Serial No. 478,338

5 Claims. (Cl. 93—36.1)

1

This invention relates to improvements in a method of making paper drinking cups, the method being highly desirable for the production of paper cups to be used in suitable holders in drug, confectionery and similar stores for the dispensing of individual soft drinks, sodas, etc., although the product of the invention may have other uses and purposes as will be apparent to one skilled in the art.

This application is a division of my copending application entitled "Paper cups and method of making the same," filed June 12, 1942, Serial No. 446,698.

In the dispensing of ice cream, sodas, soft drinks, and similar confections in paper cups, it is customary to withdraw a paper cup from a dispenser, place it in a suitable holder, then put the desired soft drink or other confection in the cup and serve it to the purchaser. Most frequently the holders for the cups are provided with handles to permit elevation of the cup to the mouth by way of the holder in the event straws are not used. In most instances it is desirable to temporarily lock the paper cup in the holder, so that if the purchaser picks up the holder and cup and drinks from the cup, the cup will not tend to slip out of the holder and cascade downwardly over the customer's wearing apparel or otherwise spill some of its contents on the clothing of the customer. Such a temporary locking medium is particularly desirable where the cup is of the conical type, because such a cup flares so widely at the top as to be substantially top heavy if not anchored to the holder in some manner.

In the past, in all instances of which I am aware, patient painstaking effort on the part of an operator has been necessary to properly secure the cup in the holder against accidental dislodgement, and in most instances it was necessary, or at least most frequently happened, for the operator to contact the cup and frequently adjacent cups with his naked hand. Quite often the naked hand or a finger or two of the operator was inserted inside the cup in order to twist, skew, or otherwise position the cup in the holder so that the locking means would take effect. Any cup that requires a specific adjustment of the cup or holder relatively to each other in order to temporarily lock the cup in position is objectionable as time-wasting, and any cup that not only may require but is so constructed as even to tempt the operator as a matter of facility to contact the cup inside or at the brim with his naked hand, is highly objectionable as unsanitary.

With the foregoing in mind, it is an important object of this invention to provide a method of

2

making a paper drinking cup equipped with latching means which automatically assume a latching position in conjunction with the holder, merely upon positioning of the cup within the holder or the positioning of the holder over the cup, no angular adjustment of one relatively to the other on the part of the operator being necessary in order to establish a sufficient engagement to prevent accidental dislodgement of the cup during use.

Another object of the invention is the provision of a method of making a paper cup having a projecting portion or part thereon of such character as to properly engage with and in a holder upon a movement of the cup or the holder relatively to the other, without any circumferential registry or angular adjustment therebetween.

Still another object of the invention resides in the provision of a method of making a conical paper cup wound convolutely in such a manner as to augment the normal radial projection of one of the convolutions from the cup part therebeneath so that the cup will properly engage within and in a holder in a latching or equivalent manner sufficient to prevent accidental dislodgement of the cup from the holder during use.

Another object of the invention is the provision of a method of making a paper cup carrying locking means thereon of such character that the cup may be merely placed in a holder, or a holder placed over the cup, and an automatic engagement between the locking means and a shoulder or equivalent structure in the holder will occur of sufficient character to prevent accidental dislodgement of the cup during use.

It is also an object of this invention to provide a method of making a paper cup having a locking tab projecting outwardly from the body of the cup in such position as to flex in passing by a shoulder or equivalent structure within a holder, and latchingly engage beneath such shoulder or equivalent structure, no relative angular or circumferential adjustment between the cup and holder being necessary to establish such engagement.

It is also an object of this invention to provide a method of making a conical paper cup carrying a locking tab projecting from the body or side wall of the cup in a manner such that it will pass a shoulder or the equivalent in a holder and spring out in the manner of a barb or latch beneath that shoulder or equivalent structure, thus preventing accidental removal of the cup through the top end of the holder.

A further object of the invention is the provision of a method of making a conical paper cup

3

which incorporates the shaping of stock for the cup, and the shaping of a tab from different stock, and the ultimate joining of the cup stock and a tab in such manner that at least a portion of the tab will project freely from the body of the cup for automatic engagement with a shoulder or equivalent structure in a cup holder.

Still a further object of the invention resides in the provision of a method of making a paper cup equipped with a plurality of locking elements or portions projecting from parts of the cup thereinside in such manner as to automatically engage a shoulder or equivalent structure within a cup holder.

While some of the more salient features, characteristics and advantages of the instant invention have been above pointed out, others will become apparent from the following disclosures, taken in conjunction with the accompanying drawings, in which:

Figure 1 is a cross-sectional part elevational view of a paper cup made in accordance with the instant method, showing the cup in position within a holder;

Figure 2 is a diagrammatic view illustrating a step in the construction of a locking tab for attachment to a cup, such step being embodied in the instant invention;

Figure 3 is an inside face view of the locking tab itself;

Figure 4 is a diagrammatic view illustrating the severance of blanks from a strip of stock, and indicating diagrammatically the attachment of a locking tab to a severed blank;

Figure 5 is a bottom plan view of the cup seen in Figure 1;

Figure 6 is an enlarged fragmentary vertical sectional view taken substantially as indicated by the line VI—VI of Figure 1, looking in the direction of the arrows, and illustrating the locking engagement of the cup with the holder;

Figure 7 is an enlarged fragmentary vertical sectional view of the same character as Figure 6, but illustrating a cup having a slightly different form of locking tab, but made in accordance with principles of the instant method;

Figure 8 is an inside face view of the locking tab of Figure 7;

Figure 9 illustrates in side elevation a cup equipped with a locking tab of still different construction, such construction also resulting from the practice of the instant method;

Figure 10 is an enlarged fragmentary vertical sectional view illustrating the engagement of the cup of Figure 9 with the holder;

Figure 11 is a fragmentary central vertical sectional view illustrating the engagement of a cup made under the instant method and equipped with a plurality of locking tabs positioned within a holder; and

Figure 12 is a bottom plan view of the cup of Figure 11.

As shown on the drawings:

In each of the several embodiments of cups resulting from the practice of the instant invention, conical paper cups are illustrated, and the association of the conical paper cups is with the same type of holders throughout. Also, in each instance the cup itself is made of any suitable material, such as paper of the character commonly used in making paper drinking cups, preferably a paper of the so-called dry wax type, wherein the paper is impregnated with a wax to render it waterproof, but the wax is not discernible on the surface of the paper, which is left

4

entirely clean. In addition, in each embodiment of this invention, the locking tab or tabs, to be later described, may be made of wax impregnated paper, or of paper commonly referred to as raw stock, which has no wax content, Celluloid or resin coated paper, a light plastic, or any other suitable material. Preferably, but not necessarily, the locking tab or tabs may be of slightly heavier stock than the cup itself and, for the purpose of clarity, I have illustrated each tab as being of a heavier or thicker stock than is embodied in the construction of the cup with which the tab is associated. It will be understood, however, that the tab may be made of the same stock as the cup, or of a stock of equal thickness with the cup, and still function satisfactorily. This would be especially true in that form of the invention wherein a plurality of tabs are used on one cup.

That embodiment of cup resulting from the practice of the instant invention illustrated in Figures 1 to 6 inclusive, includes a conical paper cup 1 of the convolute type, and made from a single blank. This single blank 2 is best seen in Figure 4, and comprises a substantially sector-shaped piece of stock embodying an arcuate mouth defining edge 3, a side edge 4 which initially was the side edge of a strip or web 2 of stock from which the blank was cut, another converging side edge 5, and a rounded apex tab or projection 6. The converging side edge 5 is arced and notched inwardly as indicated at 7 just above the tab 6 to assist in the forming of the cup by presenting only the outer portion of this edge to the grippers embodied in the forming means. The blank is rolled into the shape of cup 1 by any suitable forming means, such as a pair of conical dies, by rolling the blank from the edge 5 toward the edge 4 and winding the projection 6 about the apical portion of the cup. Thus, the cup is convolutely wound to its ultimate conical shape, and either during or after the winding the very apex or point of the cup may be blunted as indicated at 8 in Figure 1, if so desired.

Prior to the winding operation, a locking tab may be attached to the cup blank, or during the winding operation the locking tab may be inserted within the convolutions or folds of the cup. As seen in Figure 4, this locking tab may be mounted on the inner side wall of the projection 6 on the blank so that the outer portion of this tab will overlie the locking tab 9 in the completed cup, as seen clearly in Figures 1 and 5. The locking tab is illustrated by itself in Figure 3 and comprises merely a cut-off portion of a narrow ribbon of stock, preferably heavier than that of the cup itself, as stated above, and to one portion of which an adhesive coating 10 is applied. The portion 10 is that portion inside of the cup convolution defined by the projection 6 on the blank. In the formation of the cup, adhesive will be applied along the margin 4 of the blank, and in some instances that adhesive which projects over a portion of the tab or projection 6 will be sufficient to hold the locking tab 9 in position. However, in order to provide a safety factor for the retention of the locking tab, it may be desirable to apply the adhesive 10 directly to the locking tab and thus insure its absolute adhesion in position on the cup.

With reference again to Figure 4, it will be noted that the blanks 2 are cut very closely together from the stock strip or web 5 so that only a minimum portion of stock 11 is waste

5

between adjacent blanks. This waste is far less than in the case where locking tabs are formed integral with the blank from which the cup is made. In most instances, the difference between the waste entailed by cutting successive blanks with integral locking tabs, and by cutting blanks as illustrated in Figure 4 with separate locking tabs, will result in an ultimate saving as high as seven percent of paper stock. Such saving, in the commercial manufacture of paper cups, is a very considerable item, because the cost of the paper itself is one of the major expenses of production, and while the saving from the cutting of two adjacent blanks may be a mere trifle, that saving multiplied by the manufacture of billions of paper cups is a considerable factor.

In Figure 2 I have illustrated diagrammatically a step in the manufacture of the locking tab 9. This tab is cut from a ribbon or web 9a of stock which preferably is passed between a plain surface wheel 12 and a wheel 13 having a serrated surface so that the web 9a is transversely knurled on one side as indicated at 14 as it is fed by the rolls or wheels 12 and 13. This knurling on one face of the resultant locking tab 9 accomplishes two different results. First, it creates a definite set or permanent curvature in the tab 9 so that when placed in position on the cup the tab will assume an outward curvature away from the body of the cup in its free portions as seen clearly in Figure 6. Second, the horizontal or transverse knurling prevents the glue 10 from spreading along the length of the tab when pressure is applied during the formation of the blank into a cup, and thus insures that the exposed or outer portion of the locking tab is free of glue and will have no tendency to stick to the body of the cup when the cup is compressed in tight nested relationship with other cups during packing and shipping.

In order to show the operation of the cup when actually in service, I have illustrated the cup in association with a holder 15. This holder is of substantially hour-glass shape including a base portion 16, a handle 17, and an inside bore 18 in keeping with the taper of the side wall of the cup for which the holder is designed. Inside the holder is a freely projecting portion 19 through which the bore 18 continues, but it will be noted that this freely projecting portion is spaced away from the outer wall of the holder as indicated at 20 so that the under edge of the portion 19 provides a definite shoulder 21.

When the cup 1 is placed in the holder, the locking tab 9 flexes as the lower portion of the cup passes through the part 19 of the holder, and immediately on passing beneath the shoulder 21, the upper portion of the tab 9 assumes its outward position and extends beneath the shoulder so as to effectively prevent accidental dislodgment of the cup from the holder during use. Any tendency of the cup to slip out of the holder will cause the upper portion of the locking tab 9 to lock more firmly against the shoulder 21.

The knurling on the inner face of the locking tab also augments its locking engagement with the shoulder 21 upon a tendency of the cup to slip out of the holder. If, for some reason, the cup tends to make a forceful exit from the holder, the upper portion of the locking tab 9 may extend outwardly beyond the entire shoulder 21, and the engagement of the cup with the holder is thereby made still more firm. When it is desired to remove the cup from the holder after usage, it is a simple expedient to jerk the cup out of the holder,

6

notwithstanding whatever destruction to the tab or to a portion of the cup may occur, because the cup is destroyed after a single usage.

The placing of the cup in the holder may be done in a most careless manner and the action of the tab 9 is automatic. No attention need be given to the relative position of the cup as it enters the holder. The axis of the cup need not be aligned with the axis of the holder because if the apex of the cup strikes the side wall of the holder, the cup will turn and cam itself into proper position. No attention need be given to any circumferential registry between the cup and the holder, there being no base line to coincide for a proper attachment. The cup may be placed in the holder by hand, it may be tossed through the air so that it falls into the holder, or the holder may be pushed over a stack of inverted cups and the cup lifted up with the removal of the holder, or the holder may be pushed over the lowermost cup in a stack of cups held by a dispenser, and a downward movement of the holder will automatically dispense the lowermost cup from the stack. In that event, only the handle of the holder need be contacted by the hand of the operator. In any of these events, or substantially regardless of how the cup enters the holder, the latching or locking tab 9 functions automatically to secure the cup within the holder against accidental displacement.

In Figures 7 and 8 I have illustrated another form of cup resulting from practice of the instant invention which differs from the previously described form only in that the locking tab 22 is of plain stock, without the knurling. The holder is the same, and the cup is the same as above described. The tab 22 is made of plain stock, however, and may, if so desired, be provided with an adhesive portion 23 in that region of the tab which underlies the projection or convolution 6 of the cup. The tab functions in substantially the same manner as the locking tab 9 previously described, although the tab 22 may not have quite the tendency to spring outwardly away from the body of the cup as the tab 9, and perhaps a little more care need be used in attaching the tab to the cup to prevent any spread of glue lengthwise of the tab that may hinder to some extent its outward springing tendency. However, less glue may be used and, if so desired, a set or permanent curvature may be given the tab in some other means rather than knurling, such, for example, as a hot press prior to attachment to the cup.

In Figures 9 and 10 I have shown substantially the same character of cup resulting from the practice of the instant invention, and the same type of holder. However, in this form of cup, a locking tab 24 is secured to the outer surface of the cup, and is not overlapped by the convolution 6 or any other convolution. The tab 24 is preferably turned substantially at right angles to the position occupied by the previously discussed tabs 9 and 22. In this position, the tab 24 presents a greater edge area below the shoulder 21 of the holder so that there is greater contact with the shoulder upon a tendency of the cup to fall out of the holder. The tab 24 may be cemented along its lower margin to the outer wall of the cup as indicated at 25 in Figure 10. By positioning the tab adjacent the convolution of the cup so that the major portion of the tab projects above the convolution, the upper portion of the tab is automatically spaced away from the wall of the cup to some extent and will retain that spacing. Consequently, when the cup is placed in the

7

holder by any of the means described above, or in any other manner, the tab will automatically assume an outwardly projecting position beneath the shoulder 21 of the holder and effectively anchor the cup within the holder against accidental dislodgment. Of course, in this instance it is preferable to attach the tab to the cup after the cup has been formed.

It will be noted from the disclosure in Figures 9 and 10 that either of the previously described tabs 9 and 22 may also be attached to the outside wall of the cup after the cup has been formed in the same manner as the tab 24 is attached thereto, if so desired. Likewise, if so desired, the tab 24 may be given a permanent outward curvature such as by the knurling operation shown in Figure 2.

In Figures 11 and 12 I have illustrated another conical cup resulting from the practice of this invention, provided in this instance with a plurality of locking tabs. These tabs are designated 9b and 9c, and are shown as being of identical character as the tab 9 above described. The tab 9b is shown as occupying a position beneath a part of the outermost and lowermost convolution 6 of the cup, while the tab 9c, preferably substantially diametrically disposed, may be positioned beneath the next uppermost convolution, designated 26. The action of the tabs when the cup is placed in the holder is the same as above described, with the exception that there is a plurality of tabs to latch the cup beneath the shoulder 21 of the holder.

It will, of course, be appreciated that the tabs 9b and 9c may be of the character of the above discussed tabs 22 and 24, if so desired, and associated with the cup in any of the above described manners. As previously stated, the tabs 9b and 9c may likewise be made of the same material as the cup itself, any weakening of the latching engagement of the tab by the use of a thinner material being offset by the number of locking tabs.

While I have elected to illustrate the use of two tabs as indicative of the fact that a cup may carry a plurality of tabs, it will of course be understood that any desired number may be associated with the cup. The use of more than one tab is quite desirable in connection with cups commonly termed hot cups; i. e., cups that are usually of a double thickness in the body portion so as to hold some such hot liquid as coffee, and tend to maintain the temperature of the liquid. Such cups are obviously heavier and would have more tendency to fall out of a holder than a single thickness cup as illustrated.

From the foregoing, it is apparent that I have provided a novel method of making a paper cup equipped with suitable means for automatic engagement with a shoulder or equivalent structure in a cup holder. The cup resulting from the practice of this invention need not be placed in the holder in any special manner, the cup need not be contacted, at least inside, by the hands of an operator when placed in a holder, and the entire construction is quite efficient in operation. The instant invention is very economical to practice in the production of paper cups with ease and rapidity.

It will, of course, be understood that various steps in this process may be varied through a wide range, or the order of the steps changed or transposed, without departing from the principles of this invention, and it is, therefore, not the purpose to limit the patent granted hereon otherwise

8

than necessitated by the scope of the appended claims.

I claim as my invention:

1. The method of making a paper cup carrying a latching tab, including the steps of cutting a blank for forming into a cup, feeding a web of material separate from the blank stock, knurling one face of said web to give it a permanent curvature, cutting a tab from said knurled web, applying adhesive to a portion only of said tab, securing that portion of the tab to the blank, and forming a cup from the blank carrying the tab so that the free portion of the tab projects outwardly from the body of the formed cup.

2. The method of making a paper cup carrying a latching tab, including the steps of shaping a blank for forming a cup, applying adhesive adjacent a marginal edge portion of said blank, cutting a tab, forming the cup with overlapping portions held by said adhesive, and contemporaneously with the forming operation attaching the tab to the cup stock with a portion of the tab between overlapping portions held by said adhesive and the remainder projecting freely therewithout.

3. The method of making a paper cup carrying a latching tab, including the steps of shaping a piece of stock, applying adhesive to said piece of stock, and forming the piece into a conical paper cup with overlapping portions held by said adhesive, cutting a tab, and attaching the tab to the cup stock in such manner that a part of the tab is between overlapping portions held by the adhesive on the stock piece and the remainder projects freely from the body of the cup.

4. The method of making a paper cup carrying a latching tab, including the steps of shaping a piece of stock, applying adhesive along a margin thereof, and forming the piece into a convolute conical paper cup, providing a tab, and attaching the tab to the cup stock in such manner that a part of the tab extends beneath a convolution to be held by said adhesive and the remainder projects freely from the cup body.

5. The method of making a paper cup, including the steps of shaping a substantially sector-like blank for a conical cup including a tab projecting in the apical region of the blank to be wound around the apical portion of the cup in the forming operation, knurling one face of a web of stock separate from the blank stock to give the web a tendency to curve, cutting a latching tab from said knurled web, applying adhesive to a portion only of said latching tab and securing that portion to the tab on the blank, and forming a conical cup carrying the latching tab with the free portion thereof projecting outwardly from the body of the cup.

CESARE BARBIERI.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,987,896	Ericsson	Jan. 15, 1935
1,413,460	Curtin	Apr. 18, 1922
1,964,238	Wood	June 26, 1934
417,363	Murphy	Dec. 17, 1889
2,333,090	Carew	Nov. 2, 1943
2,308,538	Decker	Jan. 19, 1943

FOREIGN PATENTS

Number	Country	Date
434,343	Great Britain	Aug. 29, 1935