June 15, 1937. H. F. AFFELDER 2,083,538

BOTTLE COLLAR

Filed May 14, 1934

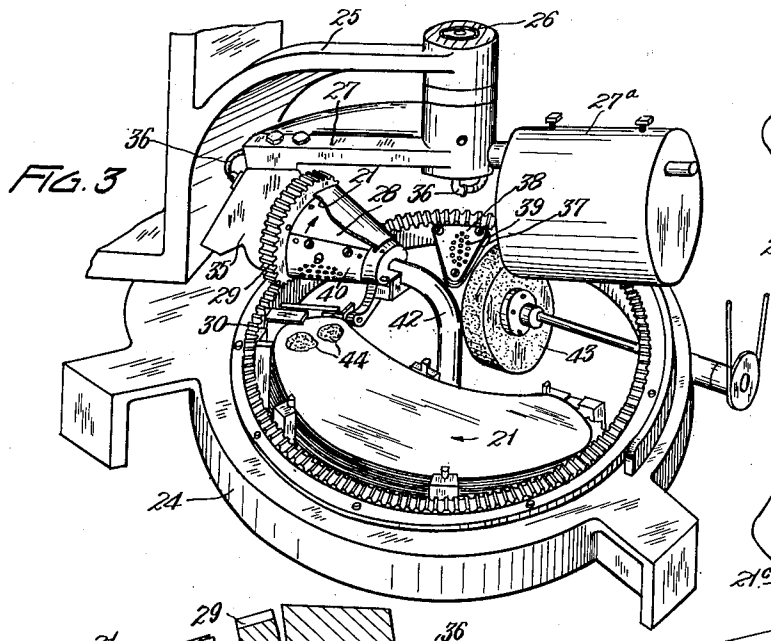


FIG. 3

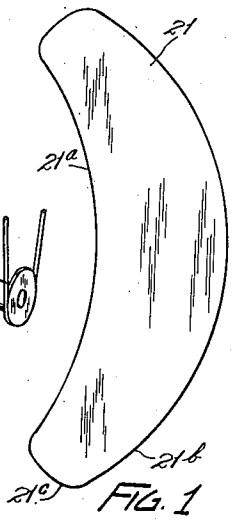


FIG. 1

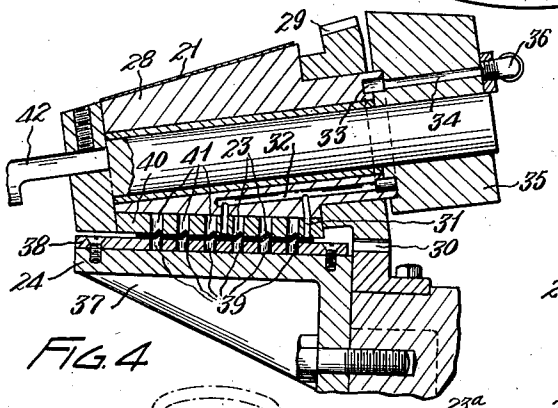


FIG. 4

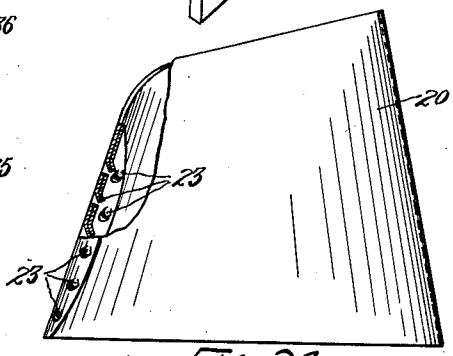


FIG. 2a

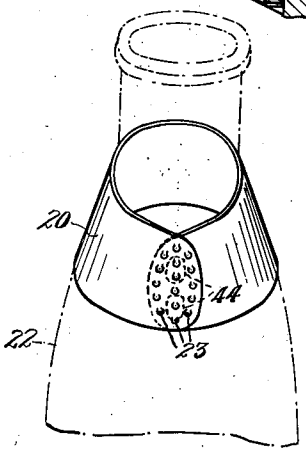


FIG. 2

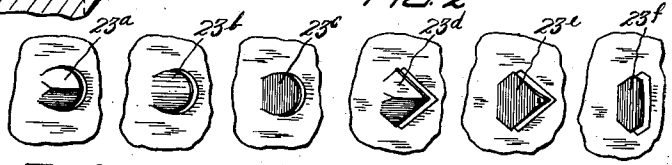


FIG. 6 FIG. 8 FIG. 10 FIG. 12 FIG. 14 FIG. 16

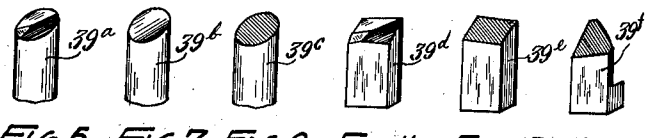


FIG. 5 FIG. 7 FIG. 9 FIG. 11 FIG. 13 FIG. 15

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BOTTLE COLLAR

Harry F. Affelder, Cleveland Heights, Ohio

Application May 14, 1934, Serial No. 725,562

1 Claim. (Cl. 40—4)

This invention relates to milk bottle collars and the like.

So-called milk bottle collars are being made and used at the present time, these articles being generally formed from arcuate strips of paper with their ends hooked together so as to form a frusto-conical collar adapted to be provided with advertising matter and designed to be slipped over the neck of a bottle, such as a milk bottle. So far as I am aware, heretofore it has been customary to form on one end of the arcuate strip a notch or slit and on the other a tongue which is adapted to be manually extended therein and so formed as to hold the ends of the strip together. Collars so formed have the objection that their cost does not justify very extensive use thereof, the principal item of expense being the labor required to produce the tongue and slit and in extending the tongue formed at one end of the strip through the slit in the other end.

The principal object of the present invention is to provide an article of this general kind, whether employed as a milk bottle collar or for other purposes, with the overlapping ends of the strip fastened together in a manner such that these articles can be produced far less expensively than heretofore.

More specifically considered, it is the aim of the invention to fasten the overlapping ends together both by an adhesive and by punching a plurality of tabs in the overlapped portions which tabs, by being displaced laterally of the surface of the material and being formed so as to leave comparatively narrow uncut supporting portions, constitute an effective method of fastening. This method of securing together the overlapping ends of the strip with the article in the form that it is to assume when used, is adapted for inexpensive quantity production by automatically operating mechanism. The punched and displaced tabs may be in any number desired and may be formed in a variety of different shapes without departing from the spirit of the invention, it being a preferable feature of the tabs in so far as their shape is concerned that the unpunched or tab supporting neck be narrower than the severed and displaced portions of the tab so as to reduce the likelihood of the ends separating by the tabs formed on one end pulling through the openings formed in the other end.

In the accompanying sheet of drawing:

Fig. 1 is a plan view of an arcuate strip as it is blanked out to produce a bottle collar;

Fig. 2 shows the collar in its finished form fitted onto the upper portion of a milk bottle which is indicated by dotted lines;

Fig. 2*a* is an enlarged view of the collar looking at right angles from the point of view of Fig. 2 and showing a portion of the overlapping ends in section and showing how the tabs are displaced inwardly;

Fig. 3 is a perspective view of a machine or portion thereof illustrating the method by which the ends of the strip may be fastened together by means of punched and laterally displaced tabs;

Fig. 4 is a fragmentary sectional view taken through the rotatable former which has a rolling action about the central axis of the machine and designed to pick up the arcuate strips one at a time, roll them upon itself, and in its travel cause the tabs to be formed in the overlapping ends;

Figs. 5, 7, 9, 11, 13, and 15 are views partly in perspective showing different forms of punches which may be used; and

Figs. 6, 8, 10, 12, 14 and 16 show the correspondingly shaped tabs which are punched from the overlapping ends of the strip by the punches of Figs. 5, 7, 9, 11, 13, and 15, respectively.

The articles which are formed in accordance with the present invention may be produced from paper or from other suitable flexible material. For convenience of description, the material will be assumed to be suitable paper stock. Many specifically different articles may be formed by the fastening means and the process of this invention such as advertising collars adapted to be fitted over the necks of bottles, lamp shades, and other articles which may be formed of conical, frusto-conical, cylindrical, or possibly other shapes. For convenience, the article will be referred to as a collar which is shown at **20** in Fig. 2 and is formed from an arcuate strip **21** shown in Fig. 1. To form the specific article **20**, the strip has arc-shaped upper and lower edges **21***a* and **21***b* which are eccentrically disposed so that the strip will have greater width at its center than at its ends **21***c* which are preferably somewhat rounded as shown, but the upper and lower arc-shaped edges may be concentric or irregularly shaped as may be desired. This strip forms the frusto-conical collar **20** which in this instance is designed to be slipped over the neck of a bottle **22** with the larger end resting upon the enlarged body portion of the bottle.

In accordance with the present invention, the

ends of the strip overlap sufficiently to admit of their being fastened together by a series of punched tabs **23** the shape and number of which can be varied as desired or required. In this instance, the overlapping ends describe an elliptically shaped area which accommodates three rows of punched tabs. The tabs may be arranged quite differently than here illustrated in lines which are straight or otherwise disposed, but in this instance the two outer rows describe an elliptical figure and the middle row is along the major diameter of the ellipse. This arrangement has been found desirable but, as stated above, is not essential to the invention.

These tabs are formed with a punch so shaped as to form in the overlapping portions of the strip two contacting tongues or overlying tabs one formed on each end of the strip, and these tongues are displaced laterally in the manner best indicated in Figs. 6, 8, 10, 12, 14, and 16 preferably inwardly of the collar. In each instance the punch goes only partway through the overlapping ends of the strip so as to leave the punched and displaced tabs supported on the stock by an integral or unsevered neck which is preferably narrower than the widest portion of the tab where it is severed from the stock with the result that the ends of the collar are securely interlocked since the tendency of the tabs formed on one end of the strip to separate from the tabs formed on the other end of the strip and to pull through the openings formed in the latter is greatly minimized. Furthermore, the punches may be so formed that in the punching operation the portions of the stock forming the tabs are stretched so that the tabs will be somewhat larger than the openings, and, if desired to further reduce the likelihood of the tabs pulling through the openings, the line of severance may be made somewhat ragged so as to cause something like a tearing action when the tabs are being cut, thereby producing a somewhat ragged edge.

Regardless of the number of tabs that are employed to fasten together the overlapping ends of the strip, to facilitate the manufacture of the articles the overlapping ends of the strip are united by forming the tabs in one quickly performed operation, the tabs being formed simultaneously or substantially so.

A machine and a method by which these results can be attained very effectively are illustrated in Figs. 3 and 4. In these figures **24** represents a circular frame or base from which extends upwardly and inwardly an arm **25** having in line with the center of the circular base **24** or coaxial therewith a boss in which is journaled a vertical shaft **26** carrying a rotatable arm **27** which in turn supports a frusto-conical former **28** which extends inwardly of the annular base **24** with its axis inclined downwardly (see Fig. 4) and intersecting the vertical axis of the machine. The arm **27** with the parts supported by it is counterbalanced by a counterweight **27***a*. At the larger end of the former **28** is a bevel pinion **29** which engages a bevel ring gear **30** supported in fixed position on the base **24**. Consequently, as the shaft **26** and the arm **27** are rotated, the bevel pinion **29** is caused to roll around the ring gear **30**, with the result that the former **28** revolves about the vertical axis of the machine and rotates on its own axis. During each cycle of the revolving and rotating movements the former **28** picks up and causes to be wrapped around its frusto-conical surface just inside the pinion **29** one of the arcuate strips **21** with its ends suitably overlapped. For this purpose I arrange just inside of the ring gear **30** an elevator on which is adapted to be placed a stack of the strips **21**, the arrangement being such that the former **28** rolls over and picks up the uppermost strip **21** of the stack during each cycle. Suction means is utilized to cause the strip **21** to be firmly held to and wrapped around the former, and to accomplish this suitably arranged air ports **31** (see Fig. 4) extend from the periphery or outer surface of the former **28** inwardly to a passageway **32** which in turn is connected to an annular passageway **33** at the larger or outer end of the former. From this annular passageway **33** there extends a passageway **34** through the supporting block **35** at the outer end of the arm **27** and communicating with this passageway is a suction pipe or tube **36** which extends up through the shaft **26**.

Supported by the base **24** at a suitable point just inside the ring gear **30** is a bracket **37** (Fig. 4) which supports a plate **38** carrying a series of punches **39** corresponding in number and arrangement to the number and arrangement of the tabs which are to be punched in the overlapping ends of the strip which is wrapped around the former. Likewise, there is provided on the conical surface of the former a die plate **40** (which forms a part of the conical surface), this die plate having a series of dies or openings **41** corresponding in number and arrangement to the series of punches **39**, the whole being so arranged that at each revolution of the former the die plate **40** rolls over the punch plate **38** so that the protruding ends of the punches will enter the die openings. The overlapping ends of the strip **21** wrapped around the former **28** cover the dies or die openings **41** of the die plates so that as the revolving and rotating former rolls over the punch plate the tabs **23** are punched inwardly in the overlapped ends of the strip, thus locking the ends of the strip together. As soon as the revolving and rotating former passes the punch plate, the collar is stripped off the former at its smaller or inner end and slides down a receiving pipe or rod **42** on which the collars may be nested pending removal therefrom. The stripping of the collars from the former **28** is preferably accomplished by a suitable stripper wheel **43** which is rotatably supported inside the ring gear close to the punch plate **38** so that as the former passes the punch plate the collar thereon comes in contact with the periphery of the stripper wheel, which may be in the form of rubber such as sponge rubber, and causes the collar to be slid off the former **28** and down the receiving pipe **42**. The suction which causes the strip to be picked up and held on the former is automatically relieved by means not shown just before the stripper wheel engages the collar to remove it from the former **28**.

In this manner the collars are formed very rapidly with their ends securely fastened together, the elevator which carries the stack of strips **21** being of course elevated to keep the uppermost strip properly positioned with respect to the traveling former which, as will be understood from the above, produces one of the collars at each revolution.

I have not attempted to illustrate all the details of the machine and have shown and referred only to so much thereof as is deemed necessary for an understanding of the method by which these collars are formed, but the machine and method are claimed in a separate application Serial No. 752,666 filed November 12, 1934, and reference

may be had to such application for a complete understanding of the machine in all its details.

It was previously mentioned that the punched tabs may be variously shaped. Naturally, the shape of the tabs will depend upon the shape of the cooperating punches and dies. In Figs. 5, 7, and 9 I have illustrated at **39a**, **39b**, and **39c** punches for producing substantially circular punched tabs, illustrated respectively in Figs. 6, 8, and 10 at **23a**, **23b**, and **23c**. The ends of the punches are inclined and only portions of the inclined ends extend through the die openings in the formation of the tabs so as to leave uncut the necks or unsevered portions which support the tabs. Obviously, the distance that the inclined ends project into the die openings determines the width of the unsevered or neck portions which in this instance are chords of the circles defining the tabs **23a**, **23b**, and **23c**, which chords, in accordance with the present invention, are of less length than the diameter of the tabs. This is obvious from an inspection of Figs. 6, 8, and 10.

To produce the stretching action referred to in forming the tabs, the face of the punch **39a** is not flat but is formed with two inclined portions joining in a central ridge. The face of the punch **39b** is somewhat rounded to obtain the same stretching action, while the face of punch **39c** is flat and will cut the tabs without materially stretching the paper or stock being cut.

In Figs. 11 and 13 I have shown punches **39d** and **39e** which produce substantially rectangular tabs shown at **23d** and **23e** in Figs. 12 and 14. The face of punch **39d** is formed so as to stretch the tabs as they are being cut.

In Fig. 15 I have shown a punch **39f** which produces the substantially triangular tab **23f** of Fig. 16.

Still other shapes of tabs may be employed, it being a feature of the tab formation, whatever its particular shape, that it is supported on the paper from which it is punched by an unsevered or neck portion smaller than the greatest width of the punched portion of the tab so as to decrease the likelihood of the ends of the collar being separated by the tabs in one end of the collar pulling through the openings formed in the other, the likelihood of the ends of the collar separating being decreased as the width of the neck portion is decreased relative to the maximum diameter or width of the tab, and also by the enlarging of the tabs by stretching them as they are being punched and also by making the edges somewhat ragged by using punches and dies, the cutting edges of which are dull or not of the highest cutting efficiency.

I prefer to supplement the holding action of the tabs by placing between the overlapping ends of the strip which forms the collar one or more spots of gum. This could be applied automatically onto one of the ends of the uppermost strip just before the former rolls over it and picks it up and therefore would not slow up the machine in which the collars are produced. In fact, neither the application of the gum nor the drying of the same decreases the rate of production, since the tabs hold the ends together and the gum can dry after the collar is made and moved off the former. In fact not only are the overlapping ends of the collar held together by both the gum and the punched tabs so that both contribute toward the strength of the joint, but since the tabs hold the ends of the collar together while the gum is drying, the capacity of the automatic machine for turning out these collars is considerably greater than it would be if, for example, gum alone were relied upon to fasten the ends together. In Fig. 2, I have shown by dotted lines at **44** the spots of gum or adhesive, and in Fig. 3 they are shown by full lines on the uppermost strip **21** at approximately the points where they would be applied. The rotating former travels in a clockwise direction as shown in Fig. 3, so that the gummed end of the strip is the last to be wrapped onto the former and therefore the spots of gum lie between the overlapped ends and cause them to adhere together.

It will be seen therefore that I have provided an article of the general character hereinbefore stated with its ends secured together effectively and in a manner such as to enable the article to be produced inexpensively. I aim in my claim to cover all modifications in the article and in the process of producing it which do not involve a departure from the spirit and scope of the appended claim.

Having thus described my invention, I claim:

An article of the character described formed from a strip of flexible material having its ends overlapped and held together by an adhesive applied so as to be between the overlapping ends and by tabs punched in the adhering overlapping ends whereby the tabs prevent the spreading of the ends before the adhesive dries.

HARRY F. AFFELDER.