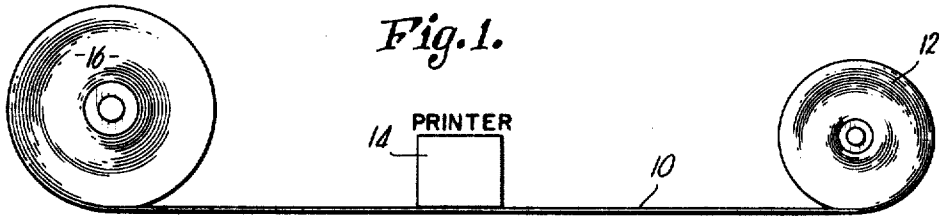
HONEYCOMB ARTICLES AND METHOD OF PRODUCING SAME

Original Filed Aug. 27, 1962 3 Sheets-Sheet 1

Fig. 1.



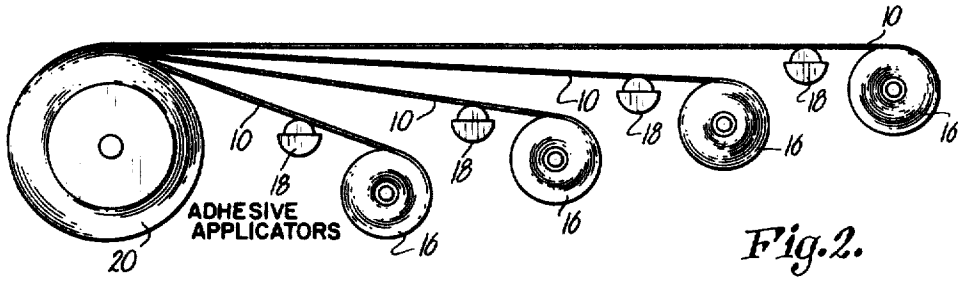
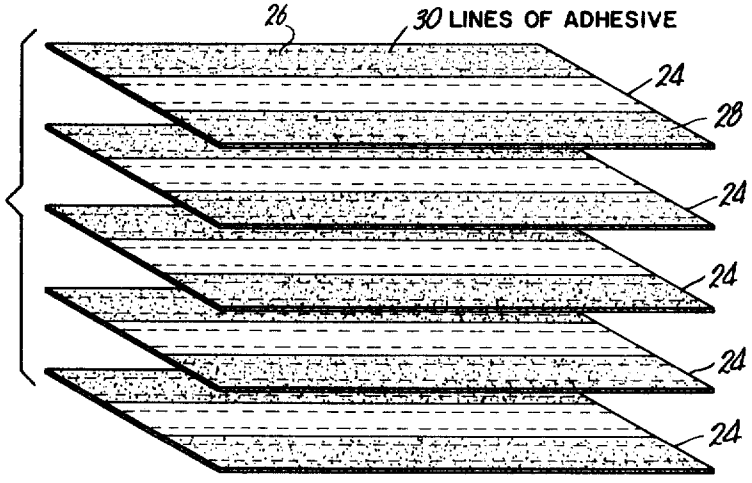


Fig. 2.

Fig. 3.



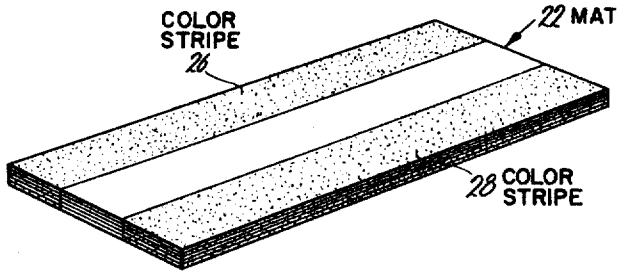


Fig. 4.

INVENTOR.
Richard E. Paige

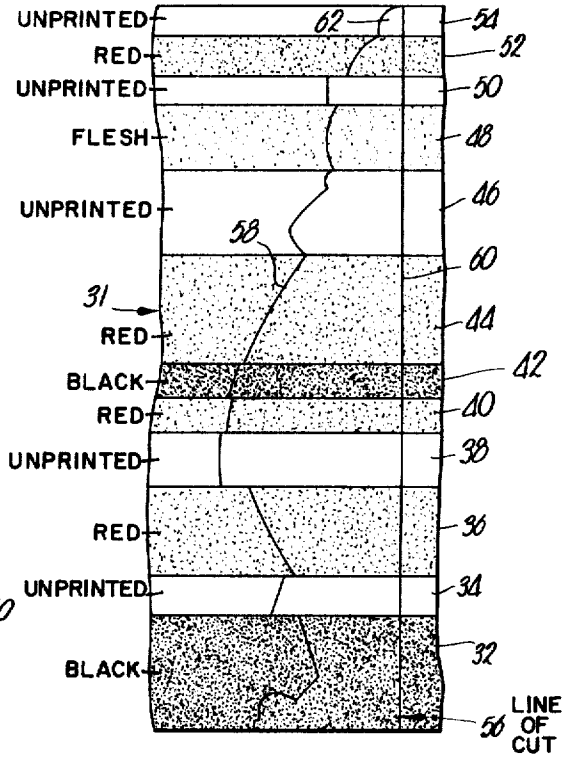
BY

Howrey, Schmidt, Johnson & Howrey.
ATTORNEYS.

HONEYCOMB ARTICLES AND METHOD OF PRODUCING SAME

Original Filed Aug. 27, 1962 3 Sheets-Sheet 2

Fig. 5.



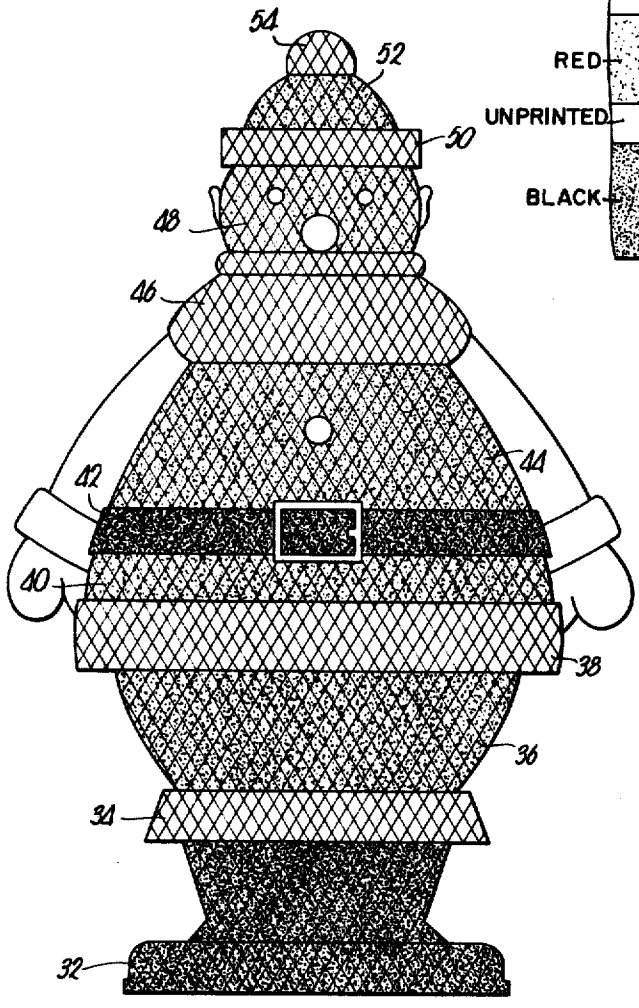


Fig. 6.

INVENTOR.
Richard E. Paige

BY

Harvey, Schmidt, Johnson & Harvey.
ATTORNEYS.

HONEYCOMB ARTICLES AND METHOD OF PRODUCING SAME

Original Filed Aug. 27, 1962 3 Sheets-Sheet 3

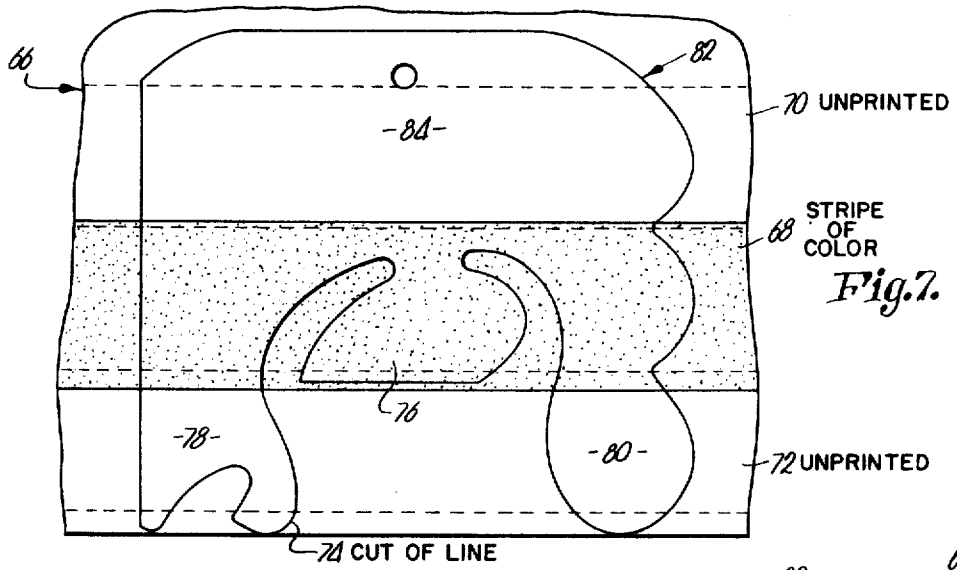


Fig.7.

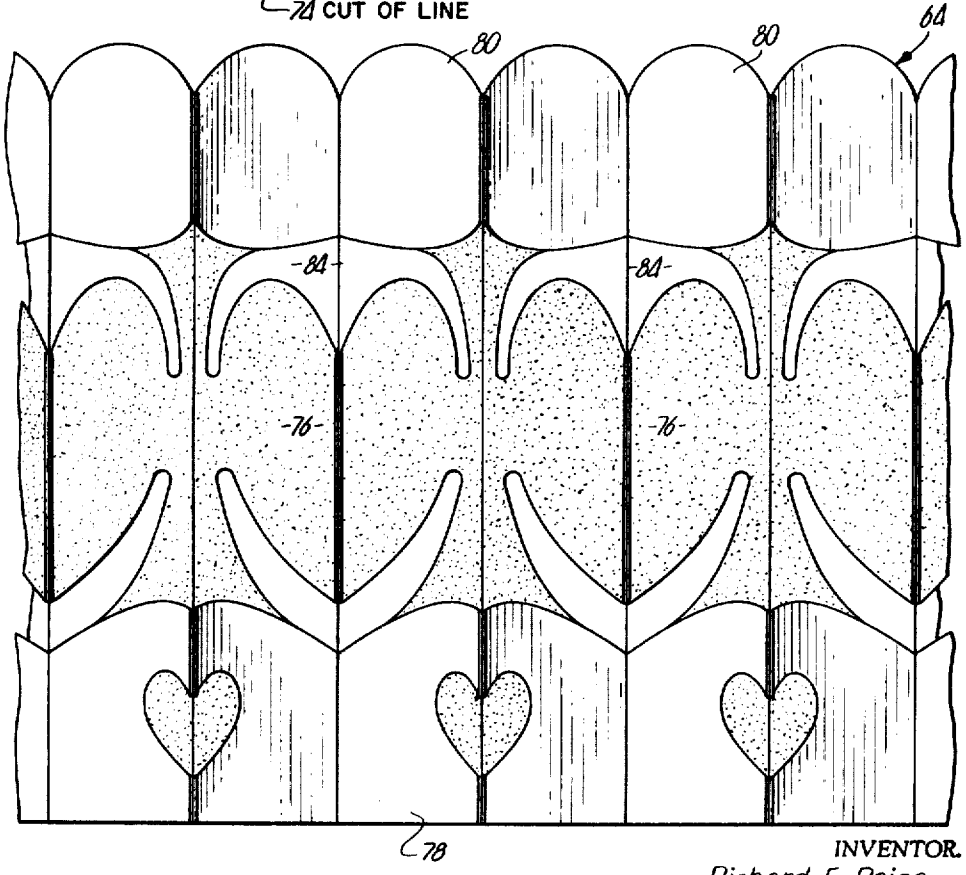


Fig.8.

INVENTOR.
Richard E. Paige

BY

Hovey, Schmidt, Johnson & Hovey.
ATTORNEYS.

United States Patent Office

Re. 26,444
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26,444

HONEYCOMB ARTICLES AND METHOD OF PRODUCING SAME

Richard E. Paige, New York, N.Y., assignor to Hallmark Cards Incorporated, Kansas City, Mo., a corporation of Missouri

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11 Claims. (Cl. 161—14)

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

ABSTRACT OF THE DISCLOSURE

An ornamental, multicolored, honeycomb article made by applying at least one stripe of color on each of a plurality of sheets of material, superposing said sheets with the color stripes in register, securing the sheets together along spaced-apart, alternately staggered lines of adhesive to form a mat and cutting the mat along selected lines to define an article of predetermined configuration, the article being in an initially flat condition, there being a backing member secured to, and covering substantially all of, each of the exteriorly exposed sheets of material to permit expansion of the sheets into the finished article, there being a cellular pattern presented by the outer face of the finished article, the cells having a depth extending inwardly of the article with certain of said cells being the color of said stripe whereby to give the finished article the desired, predetermined ornamental appearance.

This invention relates to a method of producing articles from honeycomb paper and particularly multicolored articles which are used for decorative purposes and the like, the colors desired for the finished article being applied to the paper prior to its formation into honeycomb and subsequently into the finished article.

The cellular material known as honeycomb has been in wide use for various purposes for some length of time but has come into recent use in the manufacture of decorative articles in the nature of figures, ornaments, festoons and the like. The wide acceptance of such articles has led to a search for economies in the production thereof and improvements in the appearance thereof. Specifically, the known methods of manufacturing such decorative articles from honeycomb material are inadequate to present a desirable finished article, particularly so far as the color thereof is concerned, there not being heretofore known any satisfactory, successful and yet economical method of applying color to the paper or the finished article whereby to achieve the desired color characteristics in the finished piece.

The most common method of forming colored honeycomb articles is to form several mats of paper, each of a single color, and subsequently die cut each mat into the particular part of the finished article desired to have the color of that mat. These individual solid colored components are then suitably secured to a cardboard backing or "spine" whereby to interconnect the components and create a finished article having the desired over-all color characteristics. This method is unsatisfactory inasmuch as several different components must be combined to create the finished article, and when the article is moved to its open or display position, the cellular pattern of the article is inconsistent at the points of interconnection of the components, thus leaving gaping and unsightly spaces between the separately colored components.

Other methods of producing multicolored honeycomb

articles involve the forming of the article from a mat of a single color, normally white, and subsequently painting the finished article through the use of an air brush or spray, which process is extremely time-consuming, uneconomical, and wholly unsatisfactory where extremely cheap labor is not available.

Other attempts to create multicolored honeycomb articles have taken the form of creating a finished article from a mat of a single color and then dipping the article into baths of color or brushing the absorbent edges of the article with a suitable color.

The above methods of manufacture have been found to be impractical when it is desired to manufacture articles in large quantities inasmuch as they require an excessive amount of handling of the material and an undesirable amount of labor in assembling or coloring the finished article.

It is, therefore, the primary object of this invention to provide a method of producing honeycomb articles which utilizes known equipment now in use in the printing field and in the field of fabrication of honeycomb mats. In the present method such equipment is used to first print at least one stripe of color on a continuous length of material, the material then having lines of adhesive applied longitudinally of at least one of the surfaces thereof and in parallel relationship to the stripes of color on said surface by conventional equipment heretofore used in the production of honeycomb, the lines of adhesive on alternate surfaces being offset, as is the practice in the production of honeycomb; the length of material then being wound upon a drum and subsequently cut into a mat wherein the stripes of color are in vertical register and vary transversely of the mat according to the color characteristics desired for the finished article.

It is a further aim of this invention to provide a method of producing honeycomb articles wherein the mat from which the finished article is cut is formed from a plurality of superposed sheets, each of said sheets having at least one stripe of color applied thereto prior to its being made a part of the mat, the spaced-apart lines of adhesive also being applied to the individual sheets prior to their formation into a mat and functioning to secure the sheets together and create the cellular pattern of honeycomb appearance desired in the finished article.

It is yet another object of this invention to provide a method of producing honeycomb articles wherein the stripes of color are placed upon the length of material longitudinally thereof and in such a manner that it is not necessary to have a longitudinal register of the stripes of color, the only register necessary being lateral, that is insuring that the side edges of the corresponding stripes of color are in vertical alignment as the sheets are stacked during their formation into the mat. Such a method allows the utilization of presently known equipment which involves the use of a winding drum upon which several lengths of preprinted material are simultaneously wrapped or wound, the one-way register above mentioned compensating for the fact that the lengths of material successively wound upon the drum are of varying circumference. Thus, while longitudinal register of the stripes printed on the length of material would be impossible with presently known equipment for forming honeycomb mats, the present method accommodates itself to such equipment in that there is only a one-way register of the stripes of color and such register may be maintained even though the lengths of material upon which such stripes are printed are wound about a drum.

A yet further aim of this invention is to provide a method of producing articles from a preprinted honeycomb mat, which articles can be of several different color characteristics depending upon the nature and number

of stripes of color applied to the sheets which form the mat and the particular manner in which the mat is die cut to form the finished article, it being contemplated that virtually any number of different preselected lines of cut may be followed when forming the article from the mat, depending upon the appearance and type of coloring desired in the finished article.

Yet another object of this invention is to provide a method of producing multicolored, decorative honeycomb articles wherein the paper which forms the mats from which the finished articles are cut is preprinted in such a manner that the areas of color in the finished article are precise and well defined and the mats themselves are cut in such a manner that the color areas cooperate to define or portray finished articles of the desired design and appearance, which articles have interior detail that cannot be achieved by presently known methods.

It is still another object of this invention to provide a method of producing articles from a honeycomb material, which articles are aesthetically pleasing in their overall appearance, and which articles may be economically and rapidly formed through the use of preprinted sheets of material, the color characteristics of the finished article being superior to those heretofore known in decorative honeycomb articles.

Other objects of this invention will become apparent from the following specification and accompanying drawings, wherein:

FIGURE 1 is a schematic view illustrating the manner in which the stripes of color are printed upon a length of material;

FIG. 2 is a schematic view illustrating the manner in which lines of adhesive are applied to a plurality of lengths of preprinted material;

FIG. 3 is an exploded view showing several sheets of material having the stripes of color and lines of adhesive applied thereto;

FIG. 4 is a perspective view of a finished mat made from such sheets of material;

FIG. 5 is a fragmentary, plan view of a mat having multiple stripes of color thereon and showing the lines of cut followed in forming a certain type of finished article;

FIG. 6 is a front elevational view of a finished article formed from the blank illustrated as being cut in FIG. 5, the article being in the nature of a Santa Claus figure;

FIG. 7 is a fragmentary, plan view of a mat illustrating a line of cut which may be followed in forming yet another type of finished article; and

FIG. 8 is a fragmentary, front elevational view of the finished article illustrated as being cut in FIG. 7, this article being in the nature of a festoon.

The method of producing honeycomb articles hereinafter described is particularly intended to be compatible with presently known equipment utilized in printing lengths of paper material and in applying lines of adhesive thereto whereby such present known equipment may be advantageously used.

The method of printing the length of paper material **10** is schematically illustrated in FIG. 1 of the drawings. A roll of paper **12** which is normally in the form of white tissue paper of grade **10**, or a suitable tissue paper-like material, furnishes a length of material **10** which passes from roll **12** beneath or through a printer **14** whereby the printer **14** may apply to the length of material **10** at least one, and normally a plurality, of longitudinally extending stripes of color, the particular color of the various stripes applied depending upon the desired color characteristics of the finished article.

While white tissue is preferably used in the present method, it will be appreciated that the length of material **10** might also be a colored tissue. The printer **14** may be adapted to print the desired stripes of color on either one or both surfaces of the length of material **10**. However, rather than actually printing both surfaces, it has been found that if a grade **10** tissue is printed on one side with aniline inks, the color will soak through the fibers of the tissue and thereby form a color stripe on both surfaces of the length of material. While such a method of one surface printing is desirable from a standpoint of economy, it will be appreciated that absolutely true and identical shades of color for a given stripe on both surfaces of the material, can best be achieved by utilizing printer **14** to actually print said given stripe of color on both surfaces of the length of material **10** as it passes through printer **14**.

After passing through the printer **14** the length of material is wound upon a cylinder **16** and the cylinder of preprinted material subsequently stored for later use or moved immediately to the apparatus schematically illustrated in FIG. 2 which shows the manner in which a plurality of longitudinally extending lines of adhesive are applied to the lengths of preprinted material such as **10** which emanate from cylinders **16**. Thus, a plurality of cylinders such as **16** may be disposed in suitable relationship whereby to simultaneously pass identically printed lengths of material **10** over corresponding adhesive-applying heads **18**, the lengths of material then being wound about a drum **20** the desired number of revolutions whereby to superpose the same in layers of the desired thickness.

Suitable apparatus (not shown) is coupled with the winding drum **20** whereby to maintain the stripes of color which have been printed upon lengths of material **10** in lateral register as they move onto the drum **20** from cylinders **16**.

Depending upon the finished article desired, the lengths of material **10** may be superposed upon drum **20** in any desired thickness from a very few layers thereof to in excess of 150 layers, it being noted that in the schematic illustration of FIG. 2, each revolution of drum **20** would accumulate four layers of material thus allowing a rapid build-up of the lengths of material **10** about drum **20**. It will be appreciated that due to the longitudinal disposition of the stripes of color upon the lengths of material, the same are maintained in register as said lengths **10** are wound about drum **20** notwithstanding the increasing circumference of each successively applied length of material **10**.

When the desired number of layers of lengths of material **10** about drum **20** have been created, a single transverse cut is made whereby to sever the layers of material from the drum **20** and create a mat **22** illustrated in its finished form in FIG. 4 of the drawings, the mat being formed from a plurality of superposed sheets of material **24** illustrated in FIG. 3 of the drawings.

In FIG. 3 of the drawings each of the sheets **24** has been illustrated as having two stripes of color **26** and **28** applied thereto, although it would be appreciated, as hereinafter pointed out, that there may be any number of such stripes of color, depending upon the color characteristics desired in the finished article.

The stripes **26** and **28** extend longitudinally of the sheets **24** as do the lines of adhesive **30** which are, therefore, in parallel relationship to the stripes **26** and **28** on the same surface of the sheet **24**, the lines of adhesive being offset on alternate surfaces. Thus, as the sheets of material are superposed, the lines of adhesive **30** will serve to secure the same together along spaced-apart, longitudinally extending lines of securement. Inasmuch as the sheets **24** are identically printed, the stripes of color **26** and **28** combine, when the sheets are formed into a mat as shown in FIG. 4, to form a solid area of color extending both longitudinally and vertically of the mat **22**.

When a mat such as **22** has been formed, the same may then be utilized to form a finished article by cutting the mat **22** along preselected lines whereby to define a blank for the finished article. For example, the mat **31** fragmentarily illustrated in FIG. 5 of the drawings, has a plu-

rality of lines of color extending longitudinally thereof throughout the thickness of the mat, the particular mat **31** shown in FIG. 5 being preprinted for use in forming a finished article in the nature of a Santa Claus.

Thus, there is a stripe of black **32**; a stripe of material which has been left white or printed in white designated as **34**; a red stripe **36**; a second white stripe **38**; a red stripe **40**; a black stripe **42**; a red stripe **44**; a white stripe **46**; a flesh colored stripe **48**; a white stripe **50**; a red stripe **52**; and a final white stripe **54**.

To form the finished article from the mat **31** the same is cut along a line of cut **56** which extends generally transversely of the mat and perpendicularly to the stripes of color **32–54**, one portion **58** of the line of cut **56** defining the outer contour of the finished figure and another portion **60** of the line of cut **56** forming the axis about which the blank **62** is folded when it is removed from the mat. Subsequent to the formation of the blank **62**, a piece of cardboard is attached to each of the exterior flat surfaces thereof, said pieces of cardboard combining to form a back or "spine" for the finished article, which finished article is shown in FIG. 6 of the drawings.

Subsequent to the application of the backing cardboard, the blank **62** is opened by folding the same outwardly and by moving the two pieces of cardboard carried by the flat exterior surfaces of the blank **62** into engagement whereby to create a fully formed, three-dimensional figure having the stripes of color disposed horizontally thereof as shown in FIG. 6 to thereby create the desired over-all appearance. Thus, in a finished article such as the Santa Claus figure shown in FIG. 6, black stripe **32** forms the boots of the figure; the stripe of white **34** forms the tops of the boots; stripe of red **36** forms the pants of the figure; stripe of white **38** forms the coattails of the figure; stripe of red **40** forms the lower part of the coat of the figure; stripe of black **42** forms the belt of the figure; stripe of red **44** forms the upper portion of the coat of the figure; stripe of white **46** forms the beard and mustache of the figure; stripe of flesh **48** forms the face of the figure; stripe of white **50** forms the band of the hat of the figure; stripe of red **52** forms the intermediate portion of the hat of the figure; and stripe of white **54** forms the tassel on the hat of the figure. As illustrated in FIG. 6 various cutout cardboard pieces may be appropriately inserted in the finished honeycomb article whereby to define a belt buckle, buttons, arms, eyes, nose, ears and other desired features.

Thus, it is seen that to create a Santa Claus figure such as illustrated in FIG. 6 of the drawings, it is merely necessary to predetermine the colors desired for the finished article, and to then print these colors upon a length of material in the form of stripes extending longitudinally of the length of material, the length of material then being utilized to form a mat from which the blank for the finished article may be cut by cutting along preselected lines such as illustrated in FIG. 5 of the drawings, the lines of cut being disposed generally transversely of the mat when it is desired to have the stripes of color extend horizontally of the finished article.

FIGS. 7 and 8 illustrate yet another form of finished article which may be created through the utilization of a preprinted length of material which has been subsequently formed into a mat as hereinabove described, the finished article illustrated in FIG. 8 and designated as **64** being in the nature of a festoon.

The festoon **64** is formed from a mat of material such as **66** which has a single stripe of color **68** extending longitudinally thereof and vertically therethrough, the remaining portion of the mat **66** having been allowed to remain white in color whereby to define a pair of white stripes **70** and **72** disposed in bracketing relationship to the red stripe **68**.

To form the festoon **64**, the mat is cut along line of cut **74** which extends generally transversely of the mat **66**, although certain portions of the lines of cut **74** are substantially longitudinally disposed with respect to the mat **66**, all as is fully apparent from FIG. 7 of the drawings.

In following line of cut **74**, the red stripe of color is cut in such a manner that a portion of the finished article **76** which would be red in color, extends between a pair of wings **78** and **80** which would be white in color when viewing the blank **82**, as shown in FIG. 7, there being a remaining portion **84** which would be white in color and serve as a background for the red portion **76**.

After the blank **82** has been created by cutting along line of cut **74**, a sheet of cardboard material is applied to each of the exteriorly disposed flat sheets of material from which the blank **82** is formed whereby to provide a backing for the finished article. The blank is then inverted whereby to dispose the stripe of color **68** vertically thereof, and by pulling apart upon the "spine" or backing sheets, the festoon shown in FIG. 8 is created, it being noted that the portion **76** defines a red heart which is in effect framed by the white portions **78** and **80**, the white portion **84** serving as a background for the red heart. Thus, the stripe of red color is disposed within a centrally positioned plane with respect to the remaining portions of the festoon **64**, and a very aesthetically pleasing effect is created.

It will be appreciated that many variations of finished articles can be created through the utilization of the method hereinabove described, depending upon the various colors which are preprinted onto the sheets of material forming the mat and the manner in which the mat is cut to define the finished article. It is also obvious that many variations of the present invention can be utilized without departing from the spirit thereof such as the utilization of stripes of colored dots; lines or repetitive stripes of color rather than a continuous stripe of color as hereinabove described; and many other variations which would be limited only by the ingenuity of the artist and designer.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A method of producing honeycomb articles which includes the steps of printing at least one stripe of color on each of a plurality of sheets of material; applying spaced-apart lines of adhesive to said sheets of material; superposing said sheets of material with the lines of adhesive alternately staggered; aligning the edges of said sheets of material whereby to maintain said stripes of color substantially in register; securing said sheets together along said spaced-apart lines of adhesive whereby to form a mat; and cutting said mat along selected lines whereby to define an article of predetermined configuration.

2. A method of producing honeycomb articles as set forth in claim **1** wherein said stripes of color and said lines of adhesive extend longitudinally of said mat and said lines of cut extend transversely of the mat and generally perpendicular to said stripes of color and said lines of adhesive.

3. A method of producing honeycomb articles as set forth in claim **1** wherein said sheets of material are permeable in nature and said printing is done with an ink capable of permeating each sheet as it is printed whereby to form a stripe of color on both surfaces of each sheet with a single printing.

4. A method of producing honeycomb articles which includes the steps of printing at least one continuous stripe of color on a length of material; applying spaced-apart lines of adhesive to at least one surface of said length of material in parallel relationship to the stripe of color on said one surface; winding said length of material about a drum whereby to superpose layers thereof; aligning the edges of said layers of material whereby to maintain said stripes of color substantially in register; securing the superposed layers of said length of material together along said spaced-apart lines of adhesive; severing said superposed layers along a given line whereby to form a

mat; and cutting the mat along selected lines whereby to define an article of predetermined configuration.

5. An ornamental honeycomb article comprising:

a plurality of sheets of material in an initially flat, superposed condition, the edges of said sheets being aligned in a predetermined configuration;

lines of adhesive securing said sheets of material together at spaced intervals, said lines being alternately staggered whereby said sheets may be expanded;

at least one stripe of color on each sheet of material, the stripes on the plurality of sheets being in register;

a backing member secured to each of the exteriorly disposed sheets of material to permit expansion of said sheets into the finished article; and

a cellular pattern presented by the exposed face of said finished article, the cells having a depth extending inwardly from the exposed face of said article, certain of said cells being the color of said stripe.

6. An ornamental, honeycomb article as set forth in claim 5, said backing members covering substantially all of the outer surface of said exteriorly disposed sheets of material.

7. An ornamental, honeycomb article as set forth in claim 5 wherein said sheets of material are permeable in nature and said color stripe is applied with a coloring material capable of permeating said sheets whereby to form a stripe of color on both surfaces of each sheet of material with a single application.

8. An ornamental, honeycomb article as set forth in claim 5, said stripe extending perpendicularly to said backing members when the article is in its initially flat condition.

9. An ornamental, honeycomb article as set forth in claim 5 wherein the lines of adhesive in the expanded, finished article lie in spaced-apart, vertical parallel lines.

10. An ornamental, honeycomb article as set forth in claim 5, said backing members each being foldable outwardly about a substantially common axis to expand said sheets into the finished article, said stripe of color presenting a colored, cellular band spanning the finished article.

11. An ornamental, honeycomb article as set forth in claim 10 wherein the lines of adhesive and the stripe of color in the expanded, finished article lie in horizontal planes extending radially outwardly from said axis.

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EARL M. BERGERT, *Primary Examiner.*

H. F. EPSTEIN, *Assistant Examiner.*