C. H. AND G. H. CROWELL.

PROCESS OF MAKING COMPOSITE GUMMED FABRICS.

APPLICATION FILED MAR. 14, 1918.

1,323,021. Patented Nov. 25, 1919.

Fig. 1.

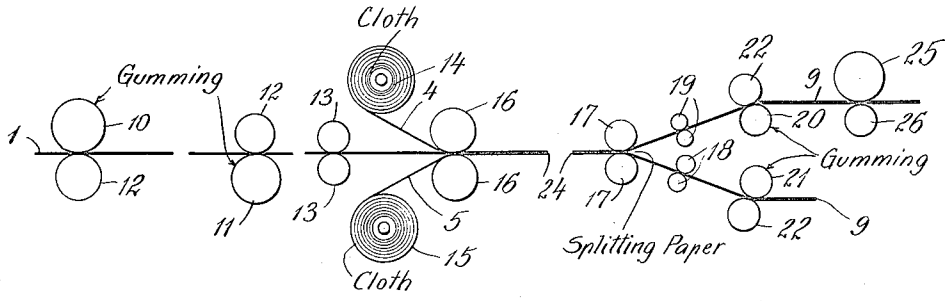
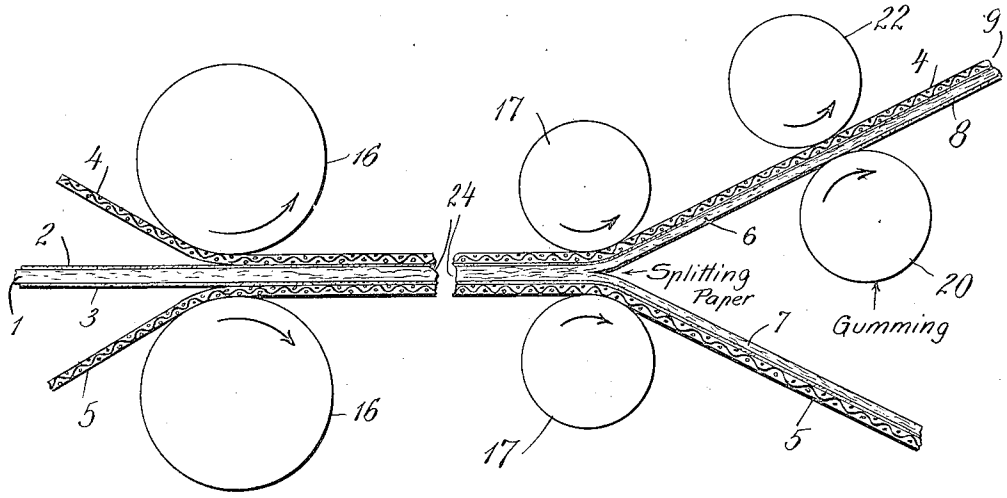


Fig. 2.



Inventors
Charles H. Crowell &
George H. Crowell
By their Attorney
Harry L. Duncan

UNITED STATES PATENT OFFICE.

CHARLES H. CROWELL AND GEORGE H. CROWELL, OF BROOKLYN, NEW YORK; SAID GEORGE H. CROWELL, ASSIGNOR TO SAID CHARLES H. CROWELL.

PROCESS OF MAKING COMPOSITE GUMMED FABRICS.

1,323,021. Specification of Letters Patent. Patented Nov. 25, 1919.

Application filed March 14, 1918. Serial No. 222,331.

To all whom it may concern:

Be it known that we, CHARLES H. CROWELL and GEORGE H. CROWELL, citizens of the United States, and residents of the borough of Brooklyn, county of Kings, city and State of New York, have made a certain new and useful Invention Relating to Processes of Making Composite Gummed Fabrics, of which the following is a specification, taken in connection with the accompanying drawing, which forms part of the same.

This invention relates especially to processes of making composite gummed tapes or fabrics, such as are broadly covered in Charles H. Crowell application, Serial No. 208,230, filed December 21, 1917. A web or sheet of suitable paper has applied to both sides thereof a suitable gum or adhesive coating and preferably after drying the same this coating is rendered adhesive and the light cloth backing fabric quickly applied and attached to both sides thereof by suitable pressing attaching rolls, for instance, so that the double composite fabric web or sheet may then be dried. Thereupon the double web is split by having the two cloth backing fabrics drawn or wound up in different directions so that the adhesive secured thereto retains the adjacent side of the paper sheet or web and splits this interposed web in two so that a continuous and fairly uniform thin sheet of paper is adhesively retained on each of the cloth backing fabrics. A coating of gum or adhesive material is then applied to each of the paper faces and preferably forced sufficiently into the same to suitably strengthen them and more or less engage the adhesive joining this layer of paper to the backing fabric so that the paper is securely retained in position and its strength increased and any further splitting minimized. If desired, the backing fabric before or after the double composite fabric web is split may be waterproofed and also colored, if desired, by applying thereto a waxy colored coating as described and claimed in said application.

In the accompanying drawings showing in a somewhat diagrammatic way illustrative embodiments of this invention,

Figure 1 is a diagrammatic view showing a way in which this process can be carried out; and

Fig. 2 is another view on a somewhat larger scale showing various steps of the process.

The paper which is preferably in the form of the continuous web or fairly long sheet 1 may have a coating of suitable gum or adhesive 2, 3, applied to both sides of the same as indicated in Fig. 2, and this may of course be done in any suitable or desired way, such as is indicated diagrammatically in Fig. 1. The gumming rolls 10, 11, may be continuously supplied with a coating of gum or adhesive in any convenient manner and backing rolls 12 may be used to insure proper contact between the gumming rolls and the paper which is preferably a fairly thin grade of strong Kraft paper of, say, 25 to 40 pound weight or so, although, of course, any other grade of paper may be used which has sufficient body or stiffness to prevent undesirable wrinkling or kinking during the process. The gummed paper web is preferably dried after each application of gum thereto and the dried web may be rendered adhesive on both sides as by two cooperating moistening rolls 13 engaging the gummed paper after which webs of any suitable backing cloth or fabric 4, 5, supplied by the rolls 14, 15, may be brought into contact with the paper web and adhesively attached thereto as by the cloth pressing attaching rolls 16. In this way the cloth while still dry and unshrunk by the action of moisture may be pressed into firm contact with the adhesive paper web and secured thereto throughout its entire extent and the double composite fabric web may of course be dried in any suitable way and at the same time kept in its extended and unwrinkled condition. This is a very decided practical advantage since the lateral shrinkage of the grades of cloth generally used for this purpose, such as light plain cloths, or gray goods, shrink relatively little as compared to the great shrinkage caused by the usual processes of dyeing and finishing such goods or applying liquid adhesive directly thereto. For instance, in using plain cloths of about 38½ inches width the double composite fabric web may have a finished width of 37 to 38 inches as compared to the usual trimmed width of 34 inches where such goods are dyed and finished in the usual way. This means a very substantial saving in the cost of these cloths per unit of finished

product, especially under present market conditions.

The dried double composite fabric web 24 may be split or divided into two web composite webs or sheets as by winding up or drawing the two outside layers of backing fabric 4, 5, in different directions so that the paper web 1 is split into two layers, 6, 7, each adhesively secured to the corresponding backing fabric and with ordinary Kraft paper, for instance, this splitting can be effected in quite a uniform and satisfactory manner, especially since the inner portions of the paper sheet or web seem to be relatively soft as compared to the outer portions which have been more thoroughly compressed during the paper making process and which are also held together somewhat more strongly by the permeation of the adhesive coatings 2, 3 which have been applied thereto during the preliminary steps of this process. If desired, the composite web may be gripped between suitable feed rolls 17 and drawn apart by splitting rolls 18, 19, into which the projecting fabric ends may be introduced after splitting the interposed web or paper by hand, for example, so that the paper web is continuously split or divided as the composite web is fed forward and a continuous and quite uniformly thin sheet or web of paper 6, 7, remains united with the backing fabrics 4, 5, respectively. These split paper webs are preferably gummed with a coating of suitable glue or hygroscopic adhesive material which is in such physical condition when applied by the gumming roll 20, for example, that it may be pressed or forced thoroughly into the paper facing and more or less penetrate the same where it is of relatively thin open fibrous structure so as to strengthen and unite the fibers and even in some cases unite more or less with the adhesive coating or layer securing the fabric backing thereto. This relatively thinner paper web is thus considerably stronger and more desirable when the composite gummed fabric is used for adhesively sealing or securing cartons or packages so that it is not only cheaper but better than composite cloth paper tape which is formed with a full thickness or heavier paper layer to which the final attaching adhesive coating is applied. It is of course understood that the gumming roll 20 and its coöperating presser roll 22 may in some cases serve as the drawing rolls to split the double composite web as indicated in Fig. 2.

If desired, the backing fabrics may be waterproofed and simultaneously colored with suitable colored waxy material such as a waxy composition consisting largely or entirely of hot paraffin in which suitable anilin or other dye has been incorporated and this material may be applied to the backing fabric before or after the double composite fabric web has been split as for instance by means of the roll 25 to which the coloring waterproofing material may be continuously supplied in any way and which coöperates with a suitable presser roll 26 as indicated. Thus the colored waxy composition is forced into or allowed to impregnate the fibers of the backing fabric to quickly and cheaply color the same to the desired extent. The composite cloth paper webs may of course be slit into gummed tapes of the desired width and wound on rolls of suitable diameter for shipment and use.

This invention has been described in connection with a number of illustrative embodiments, forms, proportions, materials, conditions and orders of steps and apparatus and parts for carrying out the same, to the details of which disclosure the invention is not of course to be limited, since what is claimed as new and what is desired to be secured by Letters Patent is set forth in the appended claims.

We claim—

1. The process of making composite adhesive gummed fabric which consists in applying an adhesive gum coating to both sides of a web of paper and drying the same, in rendering said gum coatings adhesive and quickly applying and attaching thereto webs of light plain cloth backing fabric and drying the resulting double composite fabric web, in uniformly drawing in different directions the attached backing fabrics to split the interposed paper web and form two composite cloth paper webs, in applying a coating of adhesive gum to the paper surfaces of said composite webs and causing said gum to penetrate said paper and strengthen the same and in applying waterproof waxy coloring coating to the backing fabric to simultaneously color and waterproof the same.

2. The process of making composite adhesive gummed fabric which comprises adhesively gumming to both sides of a web of thin porous paper webs of light cloth backing fabric and drying the resulting double composite fabric web, drawing in different directions the attached backing fabrics to substantially uniformly split the interposed paper web and form two composite cloth paper webs, and applying a coating of adhesive to the paper surfaces of said composite webs and causing said gum to penetrate said paper and strengthen the same and unite to some extent with the adhesive coating between the paper and backing fabrics.

3. The process of making composite adhesive fabric which consists in adhesively securing webs of light cloth backing fabric to both sides of a web of porous open fibered paper and drying the resulting double composite fabric web, in uniformly drawing in

different directions the attached backing fabrics to substantially uniformly split the interposed paper web and form two composite cloth paper webs and in applying a coating of adhesive gum to the paper surfaces of said composite webs and causing said gum to penetrate said paper and strengthen the same.

4. The process of making composite adhesive fabric which consists in adhesively securing webs of cloth backing fabric to both sides of a web of paper and drying the resulting double composite fabric web, in drawing in different directions the attached backing fabrics to split the interposed paper web and form two composite cloth paper webs and in applying a coating of adhesive gum to the paper surfaces of said composite webs and causing said gum to strengthen the same.

5. The process of making composite fabric which consists in adhesively securing webs of light cloth backing fabric to both sides of a web of paper and drying the resulting double composite fabric web and in uniformly drawing in different directions the attached backing fabrics to substantially uniformly split the interposed paper web and form two composite cloth paper webs.

CHARLES H. CROWELL.
GEORGE H. CROWELL.