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METHOD OF MAKING STRIP GUM PAPERS

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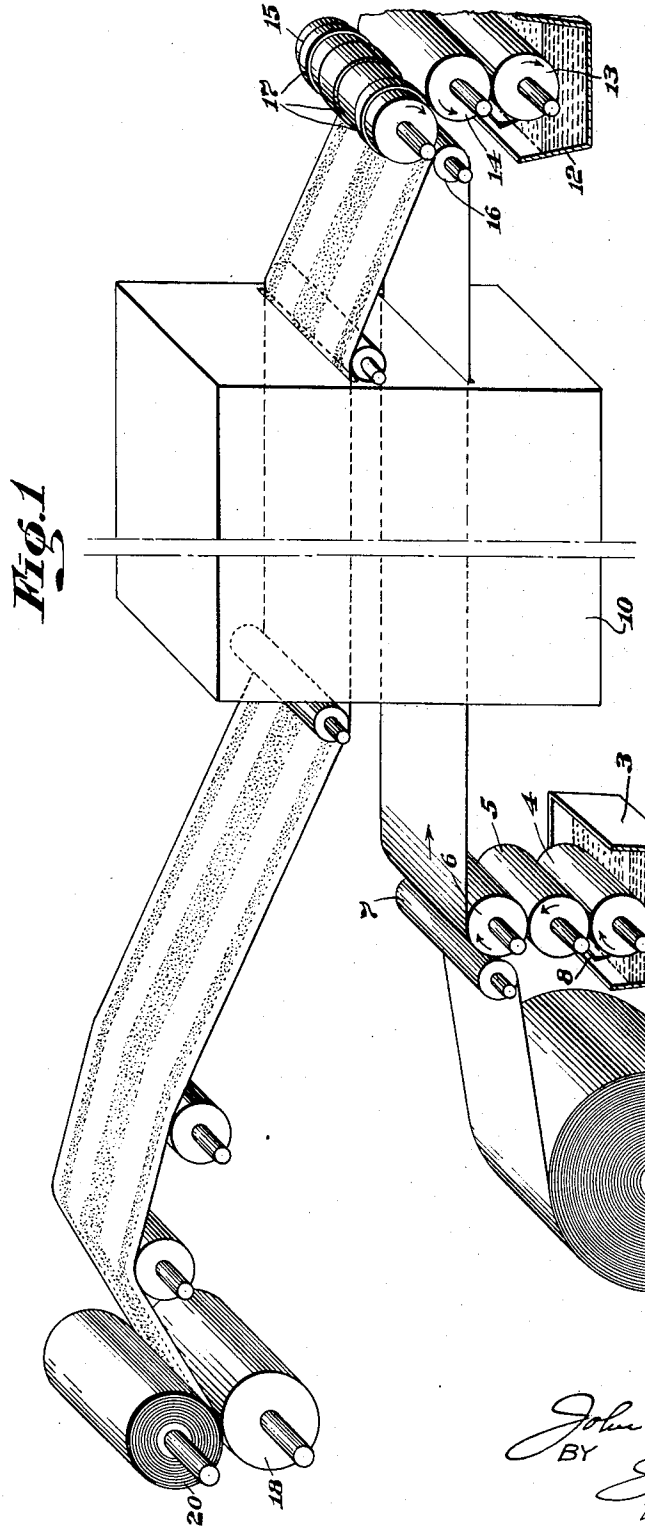


Fig. 1

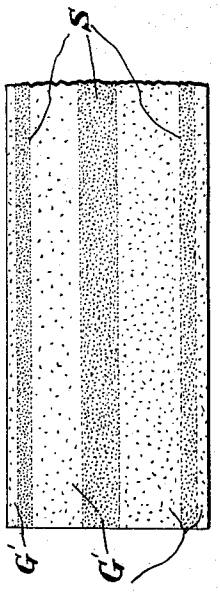


Fig. 3

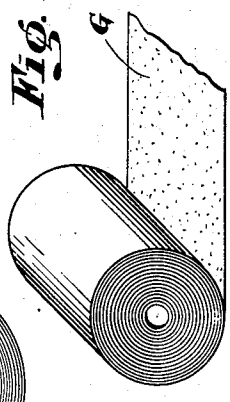


Fig. 2

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METHOD OF MAKING STRIP GUM PAPERS

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2 Claims. (Cl. 91—68)

In the manufacture of labels, posters, and the like, it is frequently desirable to gum portions only of one face of the label or poster and to leave the remainder of the gummed side of the sheet in an ungummed condition. Consequently, in gumming the paper to be used for this purpose it is a common practice to apply the adhesive or gum to strips only of the web of paper which later will be cut up into suitable sizes for the posters or labels. This has long been a common practice and is usually referred to as "strip gumming."

The adhesive so applied to the back of the paper is subsequently utilized in adhesively securing the poster or label to some article or support, and for this reason a fairly heavy coat of gum must be applied. A water soluble adhesive is used for this purpose, and the application of such a material to localized areas only of a web of paper swells the fibers in those areas and tends strongly to produce a distortion or warping of the sheet or web. In addition, the increased thickness of the gummed areas, while of little consequence in an individual sheet, is often the cause of trouble when the sheets are stacked for feeding into a printing press, or after coming out of the press. In other words, the gummed areas may be so located that they will make the stack build up unevenly and therefore will produce an unstable structure.

With a view to avoiding these difficulties, it has been proposed heretofore, in strip gumming paper, to coat the intervening areas between gummed strips with a non-adhesive coating material, both coatings being of substantially the same thickness. This has proved to be an exceptionally satisfactory method since it overcomes both of the difficulties above described. It has gone into substantial commercial use. In practicing this method, however, it has been found that an excessive number of variations in the widths of the strip coatings and in their spacings are necessary in order to meet the requirements of different manufacturers. This adds to the expense of manufacture of the strip gummed product since it increases the number of special coating or gumming rolls which must be used, necessitates frequent change overs in equipment, and involves additional labor in changing from one set of spacings or dimensions to another.

The present invention deals with this problem and it aims to improve the strip gumming of paper with a view to preserving the advantages of the improved process above described, while at the same time minimizing the objection just mentioned.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawing, and the novel features will be particularly pointed out in the appended claims.

In the drawing,

Figure 1 is a perspective, diagrammatic view illustrating the steps of a process embodying this invention;

Fig. 2 is a perspective view of a portion of a roll of paper after the first step of the present method has been performed on it; and

Fig. 3 is a plan view of a section of a web which has been strip coated in accordance with this invention.

Referring more especially to Fig. 1, a supply roll of paper is there shown at 2 from which a continuous web or strip is drawn. Preferably the entire width of this web is first gummed or coated with a suitable adhesive, and for this purpose it is fed through a coating mechanism which may consist of one of the constructions commonly used commercially. The particular arrangement shown comprises a reservoir 3 holding a supply of liquid adhesive, with a pickup roll 4 running in this material and delivering a suitable coating of it to an intermediate roll 5 which, in turn, transfers the gum so received to an applying roll 6 running in contact with the web of paper. A pressure roll or guide roll 7 may be provided to maintain the web in proper engagement with the applying roll 6. Usually, also, a doctor or scraper 8 is used in connection with the pickup roll 4.

As above stated, this mechanism serves to apply a coating of gum of any suitable composition to substantially the entire area of one face of the web of paper. From this mechanism the web enters a drying chamber 10, or passes over any suitable drying apparatus designed to evaporate the water from the coating which has just been applied. After emerging from the dryer, the web of paper then is fed into operative relationship to another mechanism which acts on those portions of the adhesive coating that are to be rendered non-adhesive to treat them in the desired manner to effect this result. This object may be conveniently accomplished by applying strip coatings of non-adhesive material to the desired areas of the adhesive coating previously applied to the web of paper. The non-adhesive coating may consist of suitable fillers such as clay or kaolin mixed with casein, starch, or the like. Preferably, however, a waterproof coating material such as varnish, lacquer, or the like, is used which, when dried, will produce an exceed-

ingly thin protective film. The common lacquers and varnishes of commerce are suitable for this purpose, particularly when thinned with solvents or dispersing liquids to reduce them to the desired consistency. For example, the lacquers having bases consisting of cellulose esters, or synthetic resins, such as cumarone-indene resin, glyptol, gum sandarac, ester gum, and others can be used for this purpose, but those more commonly used in varnishes will also answer the present requirements. Strip coatings of these materials are applied to the gummed surface of the web to render the desired portions of this surface at least superficially non-adhesive, it being understood that the nature of this coating material necessarily will be selected in accordance with the requirements of individual products.

The strip coatings of non-adhesive material may be applied in an apparatus similar to that used for the first coating and comprising a supply reservoir 12, with which are associated pickup and transfer rolls 13 and 14, respectively, an applying roll 15, and a guiding or pressure roll 16. In this mechanism, however, the applying roll 15 does not have a smooth cylindrical surface but is provided with collars or rings 17 running in contact with the transfer roll 14, the peripheries of these rings or collars only being operative to apply coating material to the web. Consequently, these raised annular portions of the applying roll will be made of suitable widths and spaced apart by the necessary distances to apply coating material to those portions of the gum coating which are to be protected or treated in any other way to make them at least superficially non-adhesive.

After receiving the strip coating, the web travels through the dryer 10 in which the solvent or other disbursing medium is evaporated, and it then goes over suitable guide rolls to the winder 18 where it is wound on a core to form a delivery roll 20.

It will be observed that in the process just described the web of paper is fed continuously through the gumming machine and the dryer to the strip coating mechanism, and thence again through the dryer to the winder, the entire process being continuous. Whether such a method is used, or the process is divided into two stages, the first including gumming, drying, and winding into a roll, and the second comprising strip coating, drying and winding, will depend upon the equipment available, the amount of material to be run, and other practical considerations.

In either process warping of the paper is prevented, and the protective coat or coats applied in the strip coating operation can readily be made so thin that no practical difficulties will be encountered because of variations in the thicknesses of different portions of the web. In addition, change-overs in the gumming equipment are limited only to those necessary because of variations in the nature of the material used or the overall width of the web. These changes are not troublesome or expensive, and those which are necessitated by variations in spacing and widths of coatings are confined entirely to the strip coating mechanism. It has been definitely determined in practice that this method reduces the expense of manufacture of strip gummed webs while producing a final product fully as acceptable to the trade for practically all purposes as those produced by the improved method above described.

Fig. 2 shows a roll of paper after the coating of gum has been applied to it, the gummed surface being indicated at G. Fig. 3 illustrates the same web after the strip coatings have been applied, the latter being shown at S and leaving exposed only the relatively narrow strips G' of gum.

Having thus described my invention, what I desire to claim as new is:

1. That improvement in processes of coating paper which consists in gumming substantially the entire area of one surface of a web of paper, drying the coating so applied, and thereafter applying spaced apart strips of non-adhesive waterproof material to the gum coating.

2. That improvement in processes of coating paper which consists in gumming substantially the entire area of one surface of a web of paper, drying the coating so applied, thereafter applying spaced apart strips of non-adhesive waterproof material to the gum coating, drying said strip coating, and feeding the web of paper continuously while said coating and drying operations are performed on it.

JOHN STEPHEN GILCHRIST.