

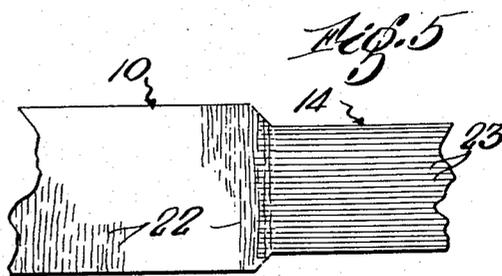
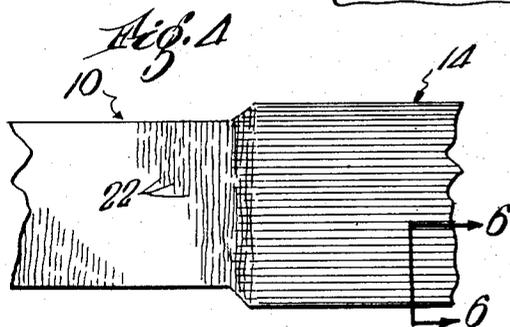
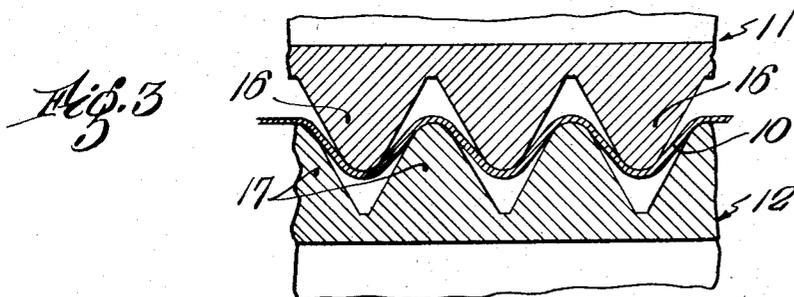
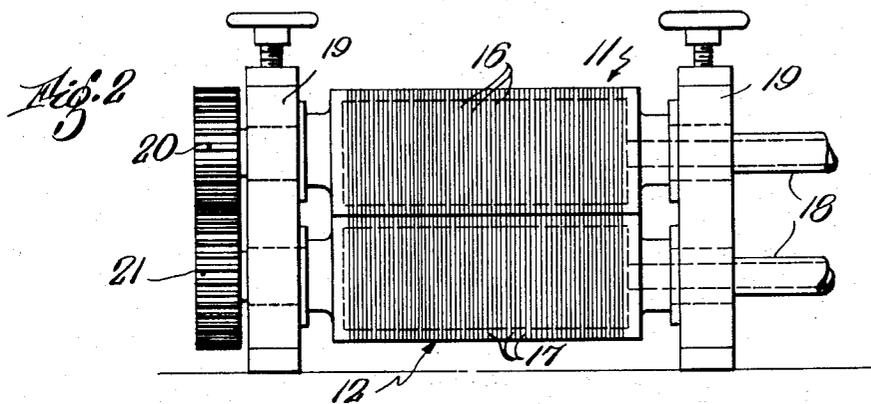
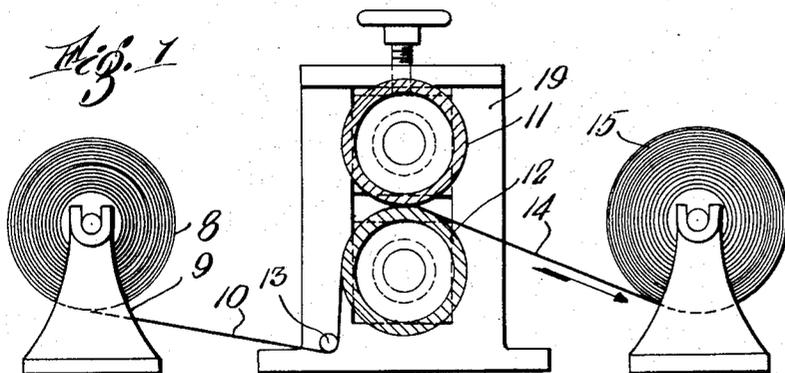
July 2, 1935.

J. H. GIBBS

2,007,047

DECORATIVE PAPER

Filed March 1, 1932



Inventor
J. H. Gibbs
By Roberts, Cushman & Woodberry
his attorneys

UNITED STATES PATENT OFFICE

2,007,047

DECORATIVE PAPER

John H. Gibbs, Framingham, Mass., assignor to
Dennison Manufacturing Company, Framing-
ham, Mass., a corporation of Massachusetts

Application March 1, 1932, Serial No. 596,064

10 Claims. (Cl. 154—33)

This invention relates to decorative paper of the type adapted for use in window dressing and interior decorating, for making paper costumes and novelties, and as a lining or covering for receptacles and containers of various sorts.

Heretofore, the crinkled, elastic paper generally known as crepe paper has been widely used as an inexpensive decorative material of the class to which this invention pertains, but crepe paper is subject to several inherent objections and limitations despite its general serviceability for ornamental uses. For example, crepe paper has an unavoidable hardness of surface and characteristic stiffness in a transverse direction; it feels harsh and crinkly to the touch and rustles noticeably while being arranged or when rubbed by the person; and it has the unmistakable appearance and texture of paper. While these distinctive qualities may be used to advantage in special situations, the need for an inexpensive material which could be used upon special occasions or for limited periods as a substitute for decorative textile fabric, has long been recognized.

It is accordingly the principal purpose of the present invention to produce a paper fabric suitable for decorative purposes and possessing to a large degree the texture and draping qualities of textile material. A further object is to provide a decorative paper which is smooth and soft to the touch, which has a surface finish presenting a lustre and sheen closely simulating silk fabric, and which may be readily manipulated and arranged in a manner best adapted to display its ornamental characteristics.

The improved paper is preferably made by treating commercial crepe paper in such a manner that the paper sheet or web is evenly and regularly ribbed or corrugated in a direction approximately at right angles to the transverse lines or crinkles formed by the previous creping of the paper. Such treatment not only softens the paper by stretching and changing the direction of the creases, but also produces a transverse resilience similar to the longitudinal elasticity characteristic of the creped sheet. The resulting fabric may be gathered or draped either longitudinally or transversely and will hang in soft and pleasing folds or assume any arrangement or decorative effect that may be desired.

When the paper is ribbed by following the preferred process hereinafter more fully described, its surface may be simultaneously polished to produce a silk-like sheen, and the reflecting character of such a finish may be further enhanced

by coating the paper with metallic lacquers or the like before the ribbing and polishing operation. The processes practiced in producing the improved material, as well as the novel aspects of the resulting product fall within the purview of this invention as defined in the appended claims.

The improved paper fabric and its method of manufacture in accordance with this invention are illustrated in the accompanying drawing, in which:

Fig. 1 is a diagrammatic view of a suggested form of apparatus suitable for treating crepe paper according to the present invention;

Fig. 2 is an elevation of a cooperating pair of rolls between which the paper is passed during the treating operation;

Fig. 3 is an enlarged fragmentary section through the meeting faces of the rolls;

Fig. 4 is a composite view of a paper web before and after the ribbing treatment;

Fig. 5 is a similar view illustrating the results of a modified treatment; and

Fig. 6 is an enlarged section on line 6—6 of Fig. 4.

In the particular form of apparatus chosen for the purpose of illustrating my preferred process, a spool 8 of ordinary crepe paper is mounted on the standards 9, and the paper web 10 is carried between the ribbing rolls 11 and 12, after first passing around a guide roll 13, the treated paper 14 being ultimately wound on a spool 15. The rolls 11 and 12 may comprise hollow steel cylinders having peripheral ribs or ridges 16, 17 respectively which intermesh to a suitable extent as shown in Fig. 3; and the rolls are preferably heated in any suitable manner as by steam pipes 18.

The rolls may be mounted in adjustable relation between suitable frame members 19, and one or both of the rolls may be positively driven from a suitable power source through the gears 20 and 21 which may intermesh as indicated. The rolls are rotated in opposite directions and, in one aspect of my process, the surface of one of the rolls preferably moves faster than that of the other. This result may be accomplished by varying the number of teeth on the meshed gears 20 and 21 so that one roll is driven at higher speed than the other, thus producing a calendering action.

It will be apparent, however, that the particular apparatus used in producing my improved paper or in carrying out my process of manufacture is not essential to this invention; any known mechanical devices which perform the desired

steps may be employed, and I make no claim herein to the apparatus per se.

The crepe paper which is preferably used in manufacturing my cloth-like paper fabric may be prepared from tissue or other relatively thin paper of proper quality which is subjected to creping or transverse crinkling in accordance with common practice. The transverse crinkles of the web 10 are indicated at 22 (Figs. 4 and 5), and it will be understood that the paper is substantially shortened longitudinally by the creping process so that the crepe paper has a substantial residual stretch or elongation. However, the creping operation does not appreciably affect the width of the paper, and crepe paper tends to tear readily in the direction of its fibres (i. e., longitudinally of the web) owing to the absence of lateral elasticity or resilience.

This objectionable tendency is lessened and at the same time the crepe paper is softened and preferably polished or glazed by the calendering action of the corrugated rolls 11 and 12, for the resulting strip 14 is not only smooth and soft but also elastic in both directions, so that it yields and flexes under transverse stress without premature cracking or breaking. The residual lateral stretch of the treated web 14 will be relatively small when the crepe paper 10 is dry and relatively large when moist crepe is passed through the rolls; and in either case it will be found that the residual longitudinal stretch of the paper has been substantially reduced.

As best shown in Fig. 3, there is an appreciable clearance between the complementary ridges and grooves of the rolls so that the paper 10 is not tightly pinched or pressed therebetween thus avoiding splitting of the web. This space may be regulated by adjusting the rolls in such a manner as to give best results without tearing the web. It will be understood that the ribs 16 and 17 are relatively low and are spaced close together to produce a series of alternate ridges and grooves on both sides of the corrugated web 14. The product is very similar in appearance to the textile fabric known as poplin and in some respect resembles a knitted fabric.

In case the rolls 11 and 12 are driven at the same speed, the resulting sheet is comparable in appearance to cotton cloth; whereas a variation in relative speed of the operative surfaces produces a sheen or lustre like that of silk, owing to the polishing or calendering action of the roll faces upon the surface of the paper. A comparable effect is produced when one of the rolls is idle and is consequently rotated by friction, for the idle roll will slip sufficiently to cause a polishing action. This simultaneous softening and polishing function of the rolls or other cooperative surfaces is an important step of my process.

As suggested above, the appearance of the polished surface is enhanced by using crepe paper which has been coated with lacquer or similar material which may include metallic particles, for example gold, silver or bronze. The product then simulates changeable silk in its light-reflecting quality. It will also be understood that the crepe paper may be prepared in any desired color and that a metallic lacquer may be selected to give a distinctive contrast to the color of the paper.

Although satisfactory results are attained when the crepe paper is comparatively dry, the use of moist crepe will give a higher degree of transverse elasticity and, by lubricating the fibers, will tend to prevent easy tearing or breaking of the

paper. It will also be found that dry crepe paper is stretched laterally by the operation of the rolls (see Fig. 4); whereas moist crepe is contracted or shrunk transversely when passed through the same rolls (Fig. 5).

From the foregoing it is apparent that the cloth-like paper fabric is formed with ribs or corrugations 23 extending along its opposite sides in a direction transverse to the original creping lines 22 which are substantially obliterated by the ribbing treatment of the web. Nevertheless, the sheet is freely yieldable in a longitudinal direction, and also in the same manner, if to a less degree, in a lateral direction. The ribbed paper has the appearance of textile fabric, notably poplin, and its surface has a silk-like sheen or gloss if the process includes the polishing as well as the ribbing or corrugating action of the rolls. The paper is unusually durable in use, and may be draped or fitted in arrangements heretofore impracticable for decorative paper. So far as I am aware, no paper product having the cloth-like characteristics of the soft and limp material herein described has heretofore been produced, and I do not wish to be understood as limiting this invention to any particular method of manufacture, except as my invention may be defined in the following claims.

I claim:

1. A decorative paper fabric which is soft, limp and resilient transversely as well as longitudinally, and which has a longitudinally corrugated and calendered surface provided with a coating having a glossy finish producing the appearance of silk fabric.
2. A decorative paper fabric which is crinkled transversely and corrugated longitudinally and which has a coated and calendered surface capable of reflecting light, the paper being soft, limp and resilient in all directions and simulating the appearance of silk fabric.
3. A process of producing a decorative paper which comprises coating one side of a web of crepe paper with a light-reflecting material, and then passing the web between cooperative ribbed surfaces moving relative to each other, thereby simultaneously to soften and calender the coated surface of the paper web.
4. The method of producing a decorative paper which comprises forming longitudinal ribs in paper which has previously been creped transversely, and concomitantly calendering the paper to polish its surface.
5. The method of producing decorative paper which comprises simultaneously corrugating and calendering a web of paper.
6. The method of producing decorative paper which comprises crinkling a web transversely, applying a liquid capable of softening the web, and passing the coated web between heated ribbed surfaces moving relatively to each other, thereby crinkling the web longitudinally and simultaneously drying and calendering its surface to effect a finish simulating the appearance of a silk fabric.
7. A decorative paper fabric which is soft, limp, and yieldable longitudinally and transversely, said paper fabric having longitudinal corrugations provided with a glossy calendered finish simulating the appearance of poplin cloth.
8. A decorative paper fabric which is soft, limp, and yieldable longitudinally and transversely, said paper fabric having a plurality of parallel ribs and grooves provided with a glossy calendered

surface thereby providing a finish simulating the appearance of poplin cloth.

9. A decorative paper fabric which is soft, limp, and yieldable longitudinally and transversely, said paper fabric having a longitudinally corrugated surface provided with a calendered finish which simulates the appearance of a textile fabric.

10. A process of producing a decorative paper

which comprises applying a coating to one side of a transversely creped paper web, and then forming longitudinal corrugations in said web and simultaneously calendering the surface of said longitudinal corrugations to effect a finish simulating the appearance of a silk fabric.

JOHN H. GIBBS.