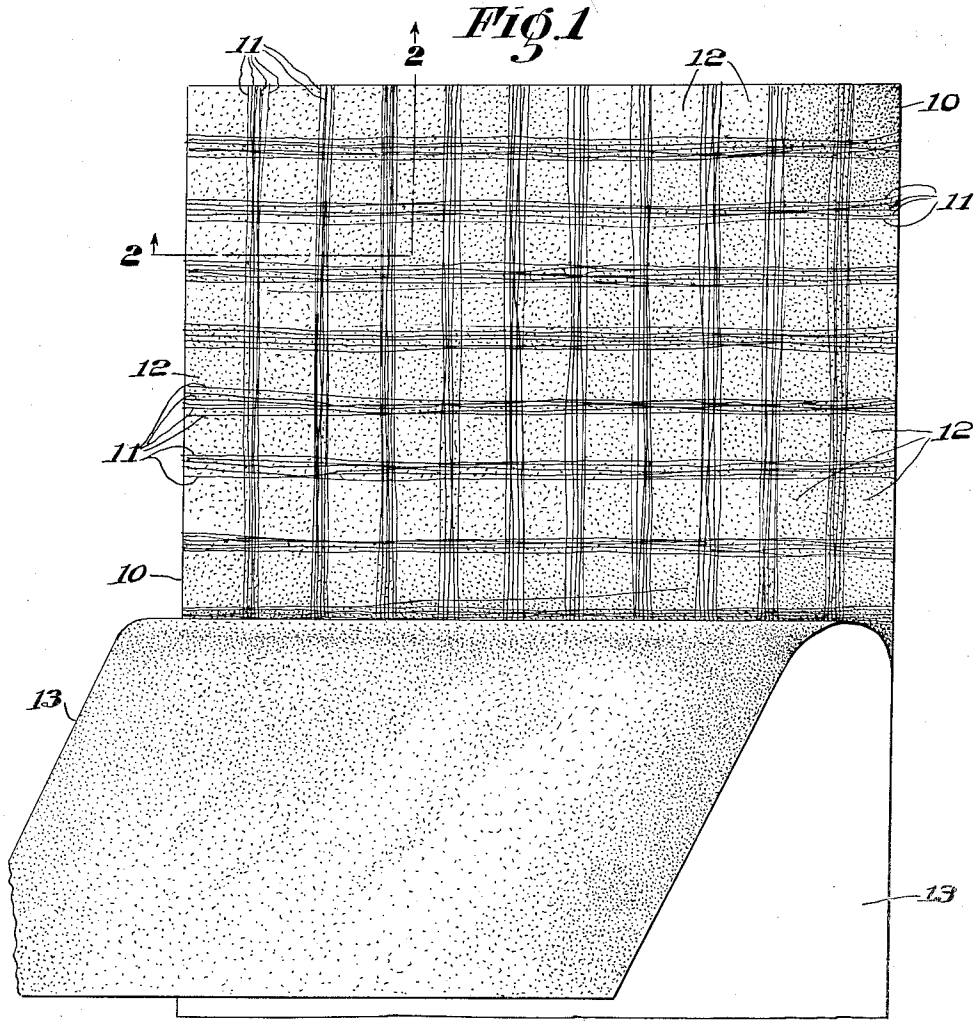
Aug. 7, 1928. 1,679,721

C. H. HOWARD

REENFORCED PAPER FABRIC

Filed April 9, 1927

Fig. 1



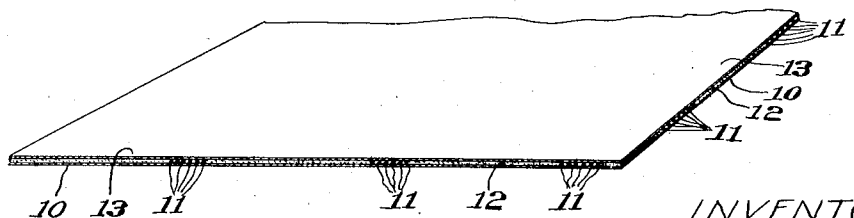


Fig. 2

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UNITED STATES PATENT OFFICE.

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REENFORCED-PAPER FABRIC.

Application filed April 9, 1927. Serial No. 182,275.

This invention relates to paper fabrics adapted for use as a protecting covering, wrapper or container.

Heretofore, paper fabrics of this general class have been reenforced by securing to the surface thereof threads or cords which have been previously spun or twisted into a continuous filament, and such continuous threads or cords have been laid transversely and longitudinally of the fabric to be reenforced.

Paper fabrics of this general class have also been reenforced heretofore by adhesively securing to the face thereof relatively straight unspun fibers that are disposed in approximately parallel relation.

The use of continuous threads or cords to reenforce paper, materially increases the cost of the finished product, and is open to the further objection that most threads or cords stretch under tension to a much greater degree than the paper which they reenforce, with the result that as the threads stretch under the tension applied to the paper the strain is imparted directly to the paper, thus causing it to rupture.

Unspun fibers stretch under tension to a less degree than reenforcing threads or cords and are considerably cheaper, so that paper reenforced with unspun fibers in the manner above mentioned is strong and durable and may be produced at low cost. I have found however that the strength of paper reenforced by unspun fibers may be further increased by grouping the unspun fibers together instead of applying them more or less uniformly over the face of the paper as heretofore.

The present invention therefore relates to a reenforced or strengthened fabric comprising a strip of paper having unspun fibers adhesively secured to its face in spaced groups. When the individual unspun fibers are secured more or less uniformly over the face of the paper, it is found that a pronounced strain or tearing force exerted upon the paper will rupture one individual fiber after the other as it tears the paper, but if the fibers are arranged in spaced groups in accordance with the present invention the paper may be torn until a group of fibers is reached, whereupon the combined strength of such group will prevent further rupture of the paper.

The adhesive used for securing the unspun fibers to the paper and for securing overlying sheets together may be of any appropriate character, but in many cases a waterproof adhesive such as black asphaltum is found highly desirable.

In the drawings illustrating one embodiment of the invention:—

Fig. 1 is a perspective view of a piece of paper fabric reenforced in accordance with the present invention and comprising two plies of paper having one sheet turned back to show the reenforcing fibers; and

Fig. 2 on an enlarged scale is a sectional perspective view taken on the line 2—2 of Fig. 1.

Referring to the drawings, 10 represents a web or strip of paper or other fabric to be reenforced or strengthened by the application thereto of unspun fibers to form a strong and not easily torn fabric that is well adapted for use as a wrapper, cover or container having a much greater strength than the ordinary wrapping paper.

The unspun fibers may be any of those now well known, either animal or vegetable, but preferably the latter, such, for instance, as flax, sisal, hemp, cotton, jute and the like. The fiber is first "prepared" in the usual manner according to the character of fiber employed which has the effect of straightening and separating or detaching the individual fibers from each other, or foreign substance to which they may tend to cling, and of laying them side by side in approximately parallel relation. Since the machines and processes for preparing fiber are well known to those skilled in the art, and the invention does not relate to either, a detailed description of these machines and processes is unnecessary herein.

The unspun fibers thus prepared are indicated by 11 upon the drawing and are shown as adhesively secured to the strip of paper 10 in spaced and approximately parallel groups. The groups of fibers may extend either longitudinally or transversely of the paper 10, or some groups may be secured longitudinally of the paper and others transversely as shown. The fibers 11 are preferably although not necessarily of

long staple and each group may be formed of a small number of comparatively straight individual fibers laid side by side in contacting or approximately contacting relation throughout their length. The groups of fibers 11 are spaced apart as shown so that unreenforced areas lie between the adjacent groups.

The distance between the adjacent groups and the number of fibers 11 provided in a group may be varied as found desirable depending upon the size and strength of the individual fibers and the amount of reenforcement it is desired to impart to the paper, but in most cases the unreenforced area or space between adjacent groups of fibers will be considerably wider than the bunch or number of fibers forming a reenforcing group 11.

Ordinarily the adhesive 12 will be applied to the strip of paper 10 and then the straightened fibers will be applied to the adhesive covered face of the paper in the spaced groups shown. Such groups may be applied either longitudinally or transversely of the paper, or one set may be applied longitudinally and another set transversely as shown. Any means that is adapted to handle the unspun fibers and to group them and apply them to the paper 10 in spaced groups as shown may be employed, and since the present invention relates to the article described and claimed, and not to a method or machine for manufacturing the same, it will be unnecessary to describe either a machine or method for producing the article.

In many cases it may be desirable to secure the groups of unspun fibers between two sheets of paper as shown and this may be done by adhesively securing the overlying strip of paper 13 to the paper 10 so that the groups of reenforcing fibers 11 lie between them as shown. It will be apparent from the foregoing that a reenforced fabric constructed in accordance with the present invention possesses a high degree of strength, since a tearing or rupturing force will be resisted by the combined strength of one or more groups of fibers.

What is claimed is:—

1. As an article of manufacture, a reenforced or strengthened fabric, comprising a strip of paper reenforced by approximately parallel unspun fibers adhesively secured to the paper in spaced groups disposed at frequent intervals over the face of the paper and separated by areas that are unreenforced by the unspun fibers.

2. As an article of manufacture, a reenforced or strengthened fabric, comprising a strip of paper reenforced by spaced parallel groups of unspun fibers adhesively secured to the paper at frequent intervals over the face of the paper, and each group being formed of several unspun fibers laid side by side.

3. As an article of manufacture, a reenforced or strengthened fabric, comprising a strip of paper reenforced by spaced groups of unspun fibers adhesively secured to the paper at frequent intervals over the face of the paper and each group being formed of a number of long straightened unspun fibers laid side by side in contacting or approximately contacting relation.

4. As an article of manufacture, a reenforced or strengthened fabric, comprising a strip of paper reenforced by spaced groups of unspun fibers adhesively secured to the paper at frequent intervals over the face of the paper, each group being formed of a number of long straightened unspun fibers bunched together, and the groups being spaced apart a distance considerably greater than the width of a single group.

5. As an article of manufacture, a reenforced or strengthened fabric, comprising a strip of paper reenforced by spaced groups of unspun fibers extending lengthwise of the paper and adhesively secured thereto and by other spaced groups of unspun fibers extending transversely of the paper and adhesively secured thereto, said groups being arranged at frequent intervals longitudinally and transversely of the paper and each group being formed of a number of straightened fibers laid side by side.

6. As an article of manufacture, a reenforced or strengthened fabric, comprising a strip of paper reenforced by relatively straight unspun fibers adhesively secured to the paper in spaced groups that are disposed at frequent intervals over the face of the paper but which are separated by unreenforced areas, and a second sheet of paper overlying the unspun fibers and adhesively secured to said first sheet.

In testimony whereof, I have signed my name to this specification.

CHARLES H. HOWARD.