

No. 686,877.

B. ARKELL.

Patented Nov. 19, 1901.

BAG.

(Application filed Jan. 14, 1901.)

(No Model.)

Fig. 2,

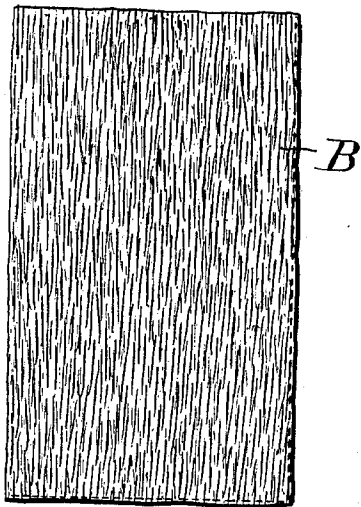


Fig. 3,

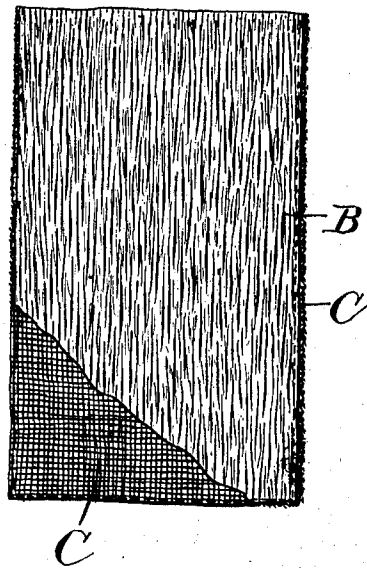
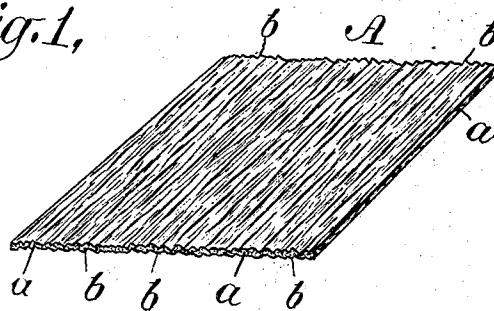


Fig. 1,



WITNESSES:

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BAG.

SPECIFICATION forming part of Letters Patent No. 686,877, dated November 19, 1901.

Application filed January 14, 1901. Serial No. 43,266. (No model.)

To all whom it may concern:

Be it known that I, BARTLETT ARKELL, a citizen of the United States, and a resident of Canajoharie, Montgomery county, and State of New York, have invented certain new and useful Improvements in Bags, of which the following is a specification.

This invention relates to bags, and has for its object to provide a paper bag that shall have the maximum capacity to maintain itself against strains which tend to rupture it.

A further object is to strengthen and protect such paper bag by inclosing it in an outer bag of textile fabric.

The invention consists of a paper bag having the features hereinafter set forth and with or without an outer inclosing bag of textile fabric.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view of the paper fabric of which the paper bag is made, the thickness being somewhat exaggerated for the sake of clearness. Fig. 2 is a side view of a paper bag embodying my invention. Fig. 3 is a side view of a compound bag, consisting of the paper bag shown in Fig. 1 and an outer bag of textile fabric, the latter being torn away to show the inner paper bag.

In carrying out the invention I make or procure a paper fabric in which the length of the constituent fibers run generally in one direction. Such an arrangement of the fibers imparts to the paper the maximum tensile strength in direction of the length of the fibers, but leaves the paper more liable to rupture from strains in a direction transverse to the direction of the fibers. For the purpose of increasing to the maximum the capacity of the paper to maintain itself against transverse strains I form in the paper a multiplicity of crinkles, running generally in the same direction as the length of its constituent fibers. These crinkles, by reason of their direction, do not break the fibers, and hence do not diminish the normal strength of the fibers. On the other hand, they enable the paper to stretch when under transverse strains, and so prevent the paper from breaking. When the fabric is under transverse strain, the crinkles flatten out or unfold, and when the strain ceases the crinkles draw up again and the

paper contracts. Thus by the arrangement of the constituent fibers generally in one direction and a multiplicity of crinkles in the same general direction I impart to the paper fabric the maximum capacity to maintain itself against strains, which tend to rupture it.

The fabric is characterized by a pronounced elasticity in a direction transverse to the direction of its crinkles and its constituent fibers.

The bag B is made of the paper fabric A described, the length of the bag corresponding to the direction of the length of the fibers *a* and crinkles *b*. The bag *b* will be found to be the most satisfactory paper bag yet produced for packing flour, sugar, salt, &c. Its great strength in the direction of its constituent fibers and lengthwise of the bag makes the bag secure against rupture when it is filled and lifted or carried by taking hold of it at one end. Its capacity to yield crosswise makes the bag secure against rupture from such sudden strains as are put upon it when the filled bag is dropped or other bags are piled upon it. These strains tend to force the inclosed material outward against the fabric at one or more points and would readily rupture an ordinary paper bag. In the case of my paper bag, however, the force of such strains is absorbed by the yielding or stretching of the paper at the point or points coinciding with the precise locality of the strains. If the strain is not too prolonged and too great, the stretched portion of the paper will contract after the strain ceases.

I prefer to make the bag B of rope-paper, as being most satisfactory because of its strength and price.

The outer bag C may be made of any suitable textile fabric, such as cotton, burlap, &c.

What I claim as new, and desire to secure by Letters Patent, is—

1. A bag made of paper fabric which has the length of its constituent fibers running generally in one direction, said fabric having crinkles running in the same general direction as the length of said fibers, whereby the maximum strength of the fabric in the direction of its fibers is substantially retained, and whereby the capacity of the fabric to maintain itself without breaking against strains

in a direction transverse to the direction of the fibers is greatly augmented.

2. A bag made of paper fabric which has the length of its constituent fibers running generally in one direction, said fabric having crinkles running in the same general direction as the length of said fibers, whereby the maximum strength of the fabric in the direction of its fibers is substantially retained, and whereby the capacity of the fabric to maintain itself without breaking against strains in a direction transverse to the direction of the fibers is greatly augmented and an outer textile bag inclosing the paper bag.

3. A bag made of paper fabric which has the length of its constituent fibers running generally in one direction, said fabric having crinkles running in the same general direction as the length of said fibers, whereby the maximum strength of the fabric in the direction of its fibers is substantially retained, and whereby the capacity of the fabric to maintain itself without breaking against strains

in a direction transverse to the fibers is greatly augmented, said fibers and crinkles running generally lengthwise of the bag.

4. A bag made of paper fabric which has the length of its constituent fibers running generally in one direction, said fabric having crinkles running in the same general direction as the length of said fibers, whereby the maximum strength of the fabric in the direction of its fibers is substantially retained, and whereby the capacity of the fabric to maintain itself without breaking against strains in a direction transverse to the fibers is greatly augmented, said fibers and crinkles running generally lengthwise of the bag, and an outer textile bag inclosing the paper bag.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BARTLETT ARKELL.

Witnesses:

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