(No Model.)

J. ARKELL.

PAPER BAG.

No. 405,067. Patented June 11, 1889.

FIG. 1.

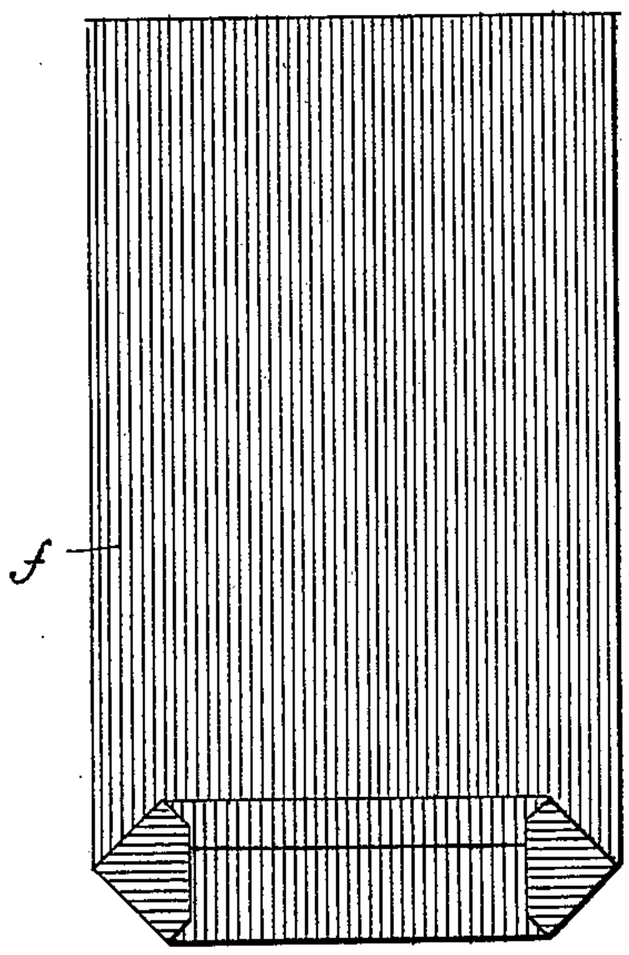


FIG. 2.

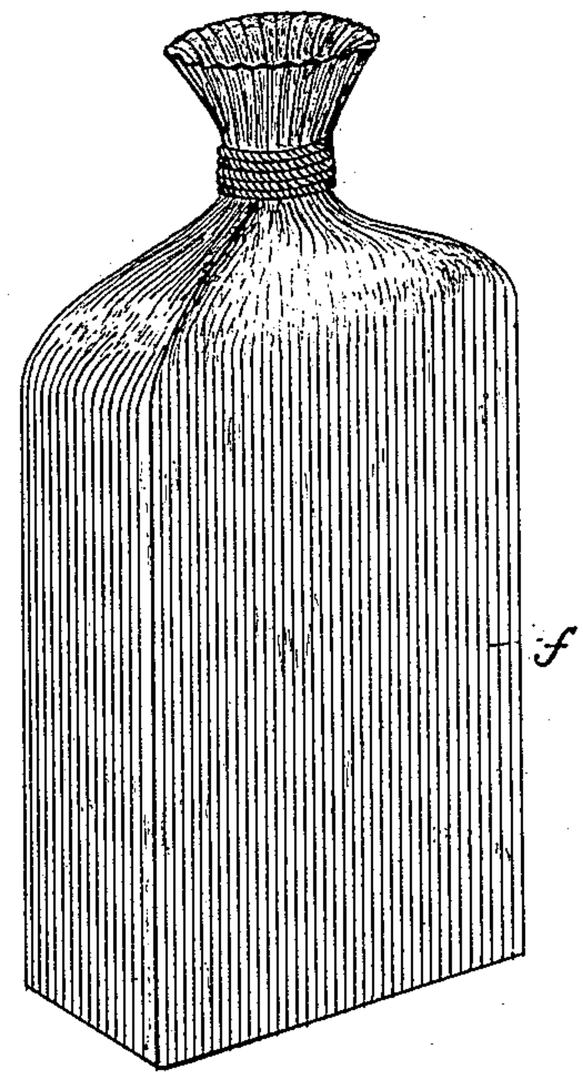
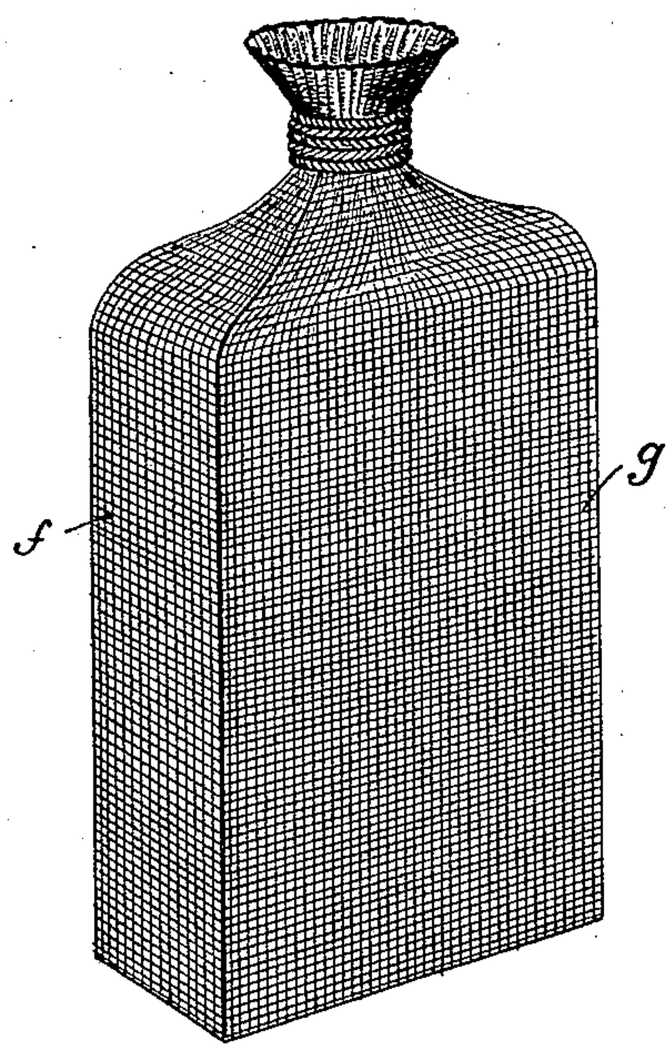


FIG. 3.



ATTEST.

J. Henry Kaiser.

Victor J. Evans.

INVENTOR.

James Arkell.

By J. N. McIntire

Atty.

UNITED STATES PATENT OFFICE.

JAMES ARKELL, OF CANAJOHARIE, NEW YORK, ASSIGNOR TO SARAH HALL ARKELL, OF SAME PLACE.

PAPER BAG.

SPECIFICATION forming part of Letters Patent No. 405,067, dated June 11, 1889.

Application filed February 27, 1889. Serial No. 301,369. (No model.)

To all whom it may concern:

Be it known that I, JAMES ARKELL, of Canajoharie, in the county of Montgomery and State of New York, have invented a new and useful Improved Bag or Sack; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this application.

Previous to my invention it has been customary in the manufacture of paper bags and sacks to make the bag out of paper (of various qualities or textures and of different degrees of strength, according to the sizes and intended uses of the bags) in the condition in which it comes from the hands of the paper-manufacturer, and in the cases of comparatively large bags or sacks designed to contain flour and other material in considerable bulk the paper necessarily employed has been (and is) of a thickness and quality such that it is pretty stiff and naturally inclined to present, when the bag shall have been filled, rigid angular projecting portions that are very liable during the handling and storage of the packages to get broken or ruptured, so as to risk the escape of the contained material.

Many years ago by an invention devised by and patented to myself and partner a then serious difficulty in the way of successful or satisfactory use of such paper sacks made of such heavy and stiff fabric (that arose with reference to the manufacture of or means for fastening up the mouth ends of such bags) was effectually overcome, said invention having consisted in softening or crimping the stock at the vicinity of the bag's mouth, so as to render the paper more pliable. This device, widely known for years in the trade, (the goods involving which device have been and are known in the market as the "Arkell and Smith soft-tie paper sack,") involved, however, the idea only of a paper bag having the naturally stiff paper softened at the locality at which the material was to be gathered together and tied, and has no special reference to the subject-matter of my present invention, which has for its object to provide for use flour and other sacks made of the usual kinds or qualities of paper, but possessed for the first time of the characteristics of pliability or flexibility, softness, and elasticity (or the capacity to stretch) throughout their extent and to such degrees that the filled and closed packages are not nearly so liable to breakage or rupture during the handling and storage of commerce as paper bags made as heretofore of the paper in its original stiff and comparatively frangible condition; and to this main end and object my invention may be said to consist, essentially, in a paper bag or sack composed of the usual fabric softened or rendered more flexible and pliable and made capable of stretching or expanding in the direction of its superficies, whereby the filled and closed sack is rendered capable of better withstanding the knocks and strains to which it is liable to be subjected during its use commercially, all as will be hereinafter more fully described.

To enable those skilled in the art to make and use paper sacks embodying my improvement, I will now proceed to more fully describe the latter, referring by letter to the accompanying drawings, which form part of this specification, and in which I have shown my invention carried out in that form in which I have so far successfully practiced it, though it may of course be used under some modifications.

In the drawings, Figure 1 is an elevation or face view of a flattened paper bag (as it comes from the folding, pasting, and finishing machine) embracing my present improvement. Fig. 2 is a perspective view of the same in a filled and closed condition. Fig. 3 is a view similar to Fig. 2, but showing a modified construction or form of the invention.

In the several figures the bag shown, it will be seen, is of that pattern or general structure well known to the trade as the "Arkell and Smith's satchel-bottom paper bag," and it is supposed to be made of the heavy or stout manila fabric usually employed in the manufacture of such bags when designed for use as flour-sacks. Instead of being of the usual character of such bags, however, the bag shown has the entire stock or fabric thereof bruised or partially broken superficially and crimped, so as to render it comparatively soft, pliable,

and elastic, by means of a series of fine corrugations or crimps formed, preferably, by passing the fabric between fluting or breaking rolls before folding and pasting it up into the bag shown.

In another application for Letters Patent filed by me simultaneously with this case I have shown, described, and claimed as an improvement in the art the mode of making the novel kind of bag made the subject of this case, and by preference I design in producing the improved product herein set forth to follow the mode or method of manufacture set forth in my said other case, which consists, essentially, in taking the paper before making it up into bags and passing it through or between finely-fluted rolls, and under pressure by them in such manner as to crimp or finely corrugate the paper, and thus deprive it of its rigidity or stiffness and render it comparatively pliable, soft, and elastic or stretchable, without, however, weakening the fabric or decreasing its tensile strength. In this manner the paper is throughout corrugated or crimped, and at the same time without in the least detracting from either its toughness or its capacity to bear tensile strain. The fabric has the united fibers and the size or cementing ingredients partially broken up or deprived of their natural stiffness and frangibility, and is rendered by reason of the superficial gathering up thereof or the indentations therein capable of expanding more or less, (either at different portions or throughout the whole extent of the package,) as various causes may tend to produce such expansion, thus vastly reducing the liability of any breakage or rupture of the filled bag.

In the bag shown at Figs. 1 and 2 the paper has thus been treated by passing in only one direction through such breaking-rolls, forming parallel corrugations, while in the case of the bag seen at Fig. 3 the paper has been subjected to crimping treatment in two directions, forming a double series of crimps *f* and *g*, which run transversely to each other.

Of course it will be understood that not only may the crimps or indentations to which the paper is subjected (to soften it and render it superficially elastic or stretchable) be made in various forms and by using different mechanical means from those I have mentioned, but such crimps, corrugations, or indentations may be made in the paper after the fabric shall have been either partially or wholly made up into the bag shape or condition, provided it be found practicable and expedient to practice my present invention in this manner in lieu of according to the mode I have so far followed of first subjecting the fabric to some suitable bruising or crushing treatment and then afterward manufacturing such softened stock into bags.

Wishing it to be understood that I do not consider the scope of my invent on as restricted to either the relative order in which the mechanical softening of the stock or fabric and the folding and pasting up of the latter into bag form may be performed or to any particular form of crimps or indentations, so long as the fabric shall be subjected to some suitable treatment by means of which its superficial rigidity shall be partially destroyed without detracting from either the toughness or tensile strength of the paper, and its superficies shall be rendered capable of more or less stretch, what I claim as a new article of manufacture, and desire to secure by Letters Patent, is—

A paper bag or sack having throughout its body portion corrugations or indentations which render said body portion more pliable and which make it more stretchable or superficially elastic than the body portion of a bag composed of the same stock, but not so corrugated or indented.

In witness whereof I have hereunto set my hand this 28th day of January, 1889.

JAMES ARKELL.

In presence of—
E. B. BURNAP,
JAS. D. MCDIARMID.