

No. 793,034.

PATENTED JUNE 20, 1905.

I. KITSEE.
PROCESS OF PRODUCING PAPER BAGS.
APPLICATION FILED APR. 14, 1902.

Fig 1.

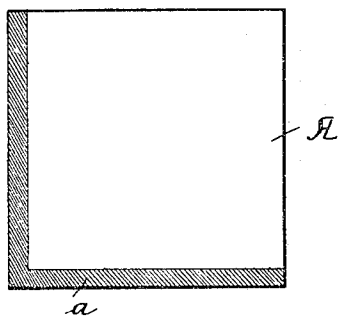


Fig 2

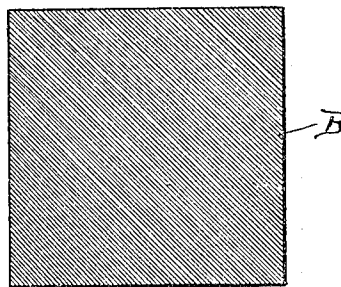


Fig 3

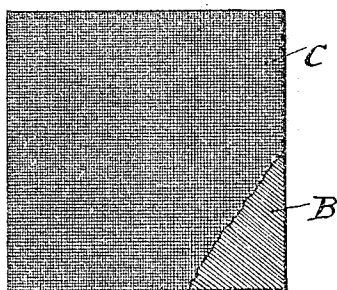
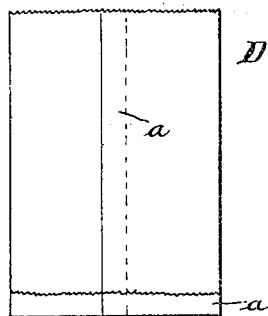


Fig 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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PROCESS OF PRODUCING PAPER BAGS.

SPECIFICATION forming part of Letters Patent No. 793,034, dated June 20, 1905.

Application filed April 14, 1902. Serial No. 102,922.

To all whom it may concern:

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia, State of Pennsylvania, have invented a certain new and useful Improvement in Processes of Producing Paper Bags, (Case No. 117,) of which the following is a specification.

My invention relates to producing paper bags.

10 The object of my invention is to produce an improved paper bag in an efficient and economical manner.

15 In all bags or receptacles produced to-day out of paper the edges have to be provided with a material capable of making the same adherent, so as to retain the desired shape. Such material consists mostly of starch or flour made into a paste. Cases also often arise where it is preferred to employ paper 20 proof against moisture or grease. I refer here only to paper bags which inclose meats for shipment and where it is desired that the meat should be protected entirely from outside influence and the grease and moisture 25 of same shall not penetrate the bag; but besides this different occasions have arisen where paper would be substituted for other material, provided the same can be made in a cheap and economical way proof against moisture 30 and grease.

To bring the paper into a state so as to be able to dispense with the separate pasting substance, as well as when desired to make the paper entirely water and grease proof, is 35 the aim of my invention.

It is well known that if a fibrous material is subjected to the process of nitration, is immersed in a liquid containing nitric acid or any other nitrate, the material loses its cellulose construction and assumes a state wherein it is easily dissolved in an alcohol ether, acetone, 40 amyl acetate, or acetic acid; but in this state the material becomes entirely amorphous and forms a jelly-like substance with the solvent. In technic the nitrated material is mostly called 45 "soluble cellulose," and the material dissolved is called "dissolved cellulose." These operations are old in the art and are well understood specially by persons versed in the

art of making celluloid, celluloidin, and other 50 alike compounds. In carrying out my invention I make use of this property of the fibrous material to become soluble through the process of nitration; but it is a *sine qua non* with my invention that the process shall 55 not be carried out in its entirety, but should be stopped as soon as the surface has become nitrated enough to be slightly soluble in one or the other of the above-mentioned solvents. Whereas, therefore, in all processes of nitra- 60 tration it is the aim to produce a thoroughly-nitrated article, one which readily dissolves in its entirety in the solvents above mentioned, it is the object of my invention that the paper as such should not lose any of its strength 65 due to its fibrous condition, but that its surface alone should have changed its structure, so as to be enabled to become a soluble cellulose through the application of one of the solvents. 70

The usual liquid for nitrating fibrous material consists of one part of nitric acid to two parts of sulfuric acid, by measure, and, as said above, the fibrous material has to be kept in this liquid until it becomes entirely soluble. 75

In this my invention I rather prefer that the liquid should consist of one part of nitric acid and three parts of sulfuric acid, for the reason that the sulfuric acid imparts to the paper a greater strength, (as is well known in 80 the process of parchmenting paper.)

In my experiments, which mostly had for their purpose to produce a paper useful for wrapping or packing, I allowed heavy wrapping-paper, made of wood and straw, to remain in this liquid (temperature 60°) only for 85 from one and a half to two minutes. This paper was then washed in a liquid containing ammonia, or sometimes containing carbonate of soda, and after drying subjected for one 90 minute to the action of one of the above-mentioned solvents.

I found that it is not well to use for this my invention either alcohol-ether or acetone, but that amyl acetate and specially acetic 95 acid are to be preferred, and I, to the exclusion of all others, now use the same.

The product is rather tougher than the pa-

per before undergoing the process, and that only the surface is made slightly soluble can be seen therefrom that the surface itself has assumed a brownish hue due to the nitration, whereas the inner part of the paper has retained its former grayish-white appearance.

In carrying out that part of my invention which only relates to the method of making unnecessary the additional material for pasting I dip only those parts of the paper already cut in the necessary shape which are designed to be pasted together into the nitrating fluid, and after drying I dip these parts into one of the solvents mentioned above. As long as the surfaces are moist with the solvent they will adhere even more firmly than if one of the common pastes of to-day are used. The great advantage of this part of my invention lies therein that the molding or souring of the paste which is often experienced in bags is entirely obviated, and the parts pasted together form a closer union than when starchy or flour material is used.

In carrying out the second part of my invention—that is, that part wherein the whole bag should be made water or grease proof—I first manipulate the paper as described above, allow the same to dry entirely after having made the surface waterproof. To produce a bag out of said material, it is only necessary to again moisten the edges designed to come together with one of the solvents, whereby these edges will again become sticky and will if compressed together adhere to each other. In carrying out that part of my invention wherein a backing of fabric is employed I prepare the paper in the same manner as stated above, but do not allow the surface to dry, and then apply the backing to the moist surface.

It is preferred that the backing itself should be made moist with the solvent. After the backing is applied to the paper it is best to carry the same through compressing-rollers, so as to compress them both, the paper and the backing, together.

It is immaterial for this my invention what shape or form the bag may be made into, and in the drawings I have shown the

most simple form of bag, only to give some illustration of the same.

Referring to the drawings, Figure 1 is a plan view of a piece of paper the edges of which are made soluble in a manner as above described. Fig. 2 is a similar view of a piece of paper, the entire surface of which is made soluble in substantially the same manner. Fig. 3 is a similar view of a prepared sheet of paper backed by a second sheet of material—such, for instance, as a fabric. Fig. 4 is a view of a completed paper bag.

A is the sheet of paper unprepared provided with the prepared edges *a*.

B is a sheet of prepared paper.

C is the backing of a second material secured to the paper.

D is the bag, of which *a* represents the united edges.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The process of producing paper bags which consists in first making soluble through the process of nitration the surface of said paper; in second, drying the surface; and in third, remoistening the edges designed to form the bag.

2. In the process of producing paper bags the following steps to wit: first, treating the surface of said paper so as to make said surface amorphous and soluble; second, dissolving said surface; third, drying said surface; and fourth redissolving the edges adapted to be united in order to form said bag.

3. The process of producing a paper bag which consists in providing the surface with a layer of amorphous and dissolved cellulose; drying said amorphous and dissolved cellulose; and redissolving said cellulose in such places as are designed to be united for the purpose of forming a bag.

In testimony whereof I hereby sign my name, in the presence of two subscribing witnesses, this 12th day of April, A. D. 1902.

ISIDOR KITSEE.

Witnesses:

EDITH R. STILLEY,

CHAS. KRESSENBUCH.