

(No Model.)

J. ARKELL.

METHOD OF MAKING SOFT TIE PAPER BAGS.

No. 298,153.

Patented May 6, 1884.

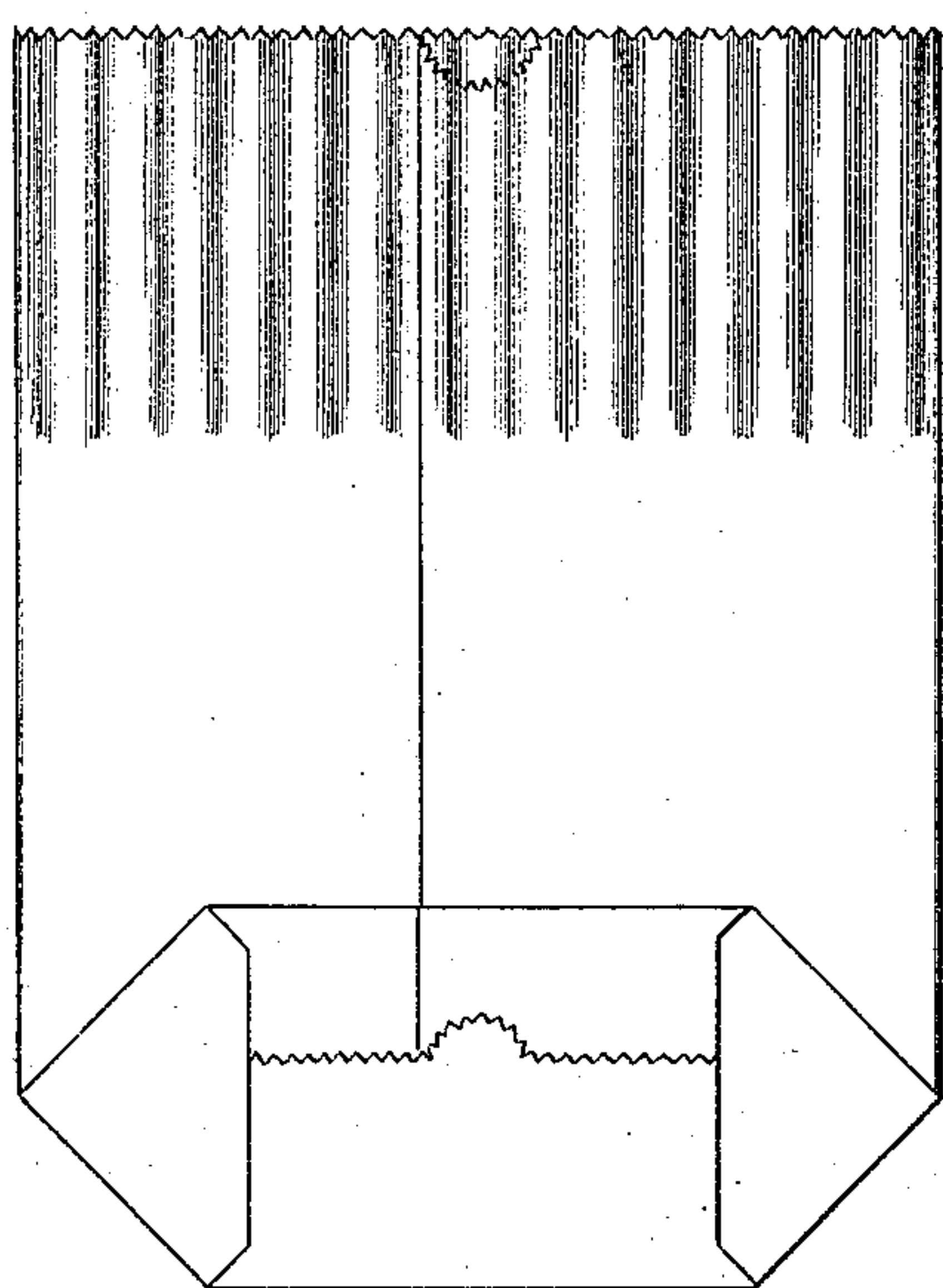


Fig. 1.

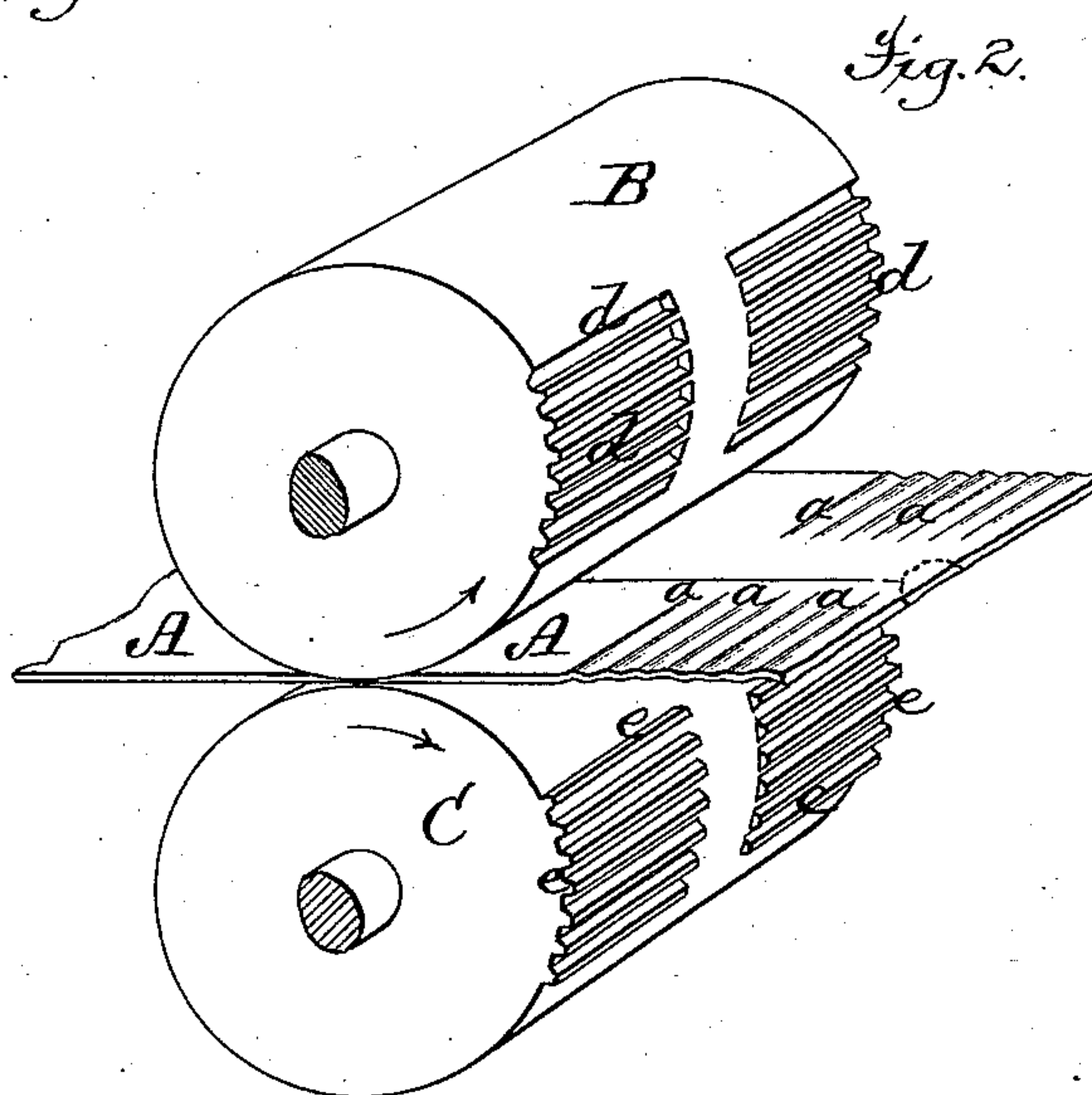


Fig. 2.

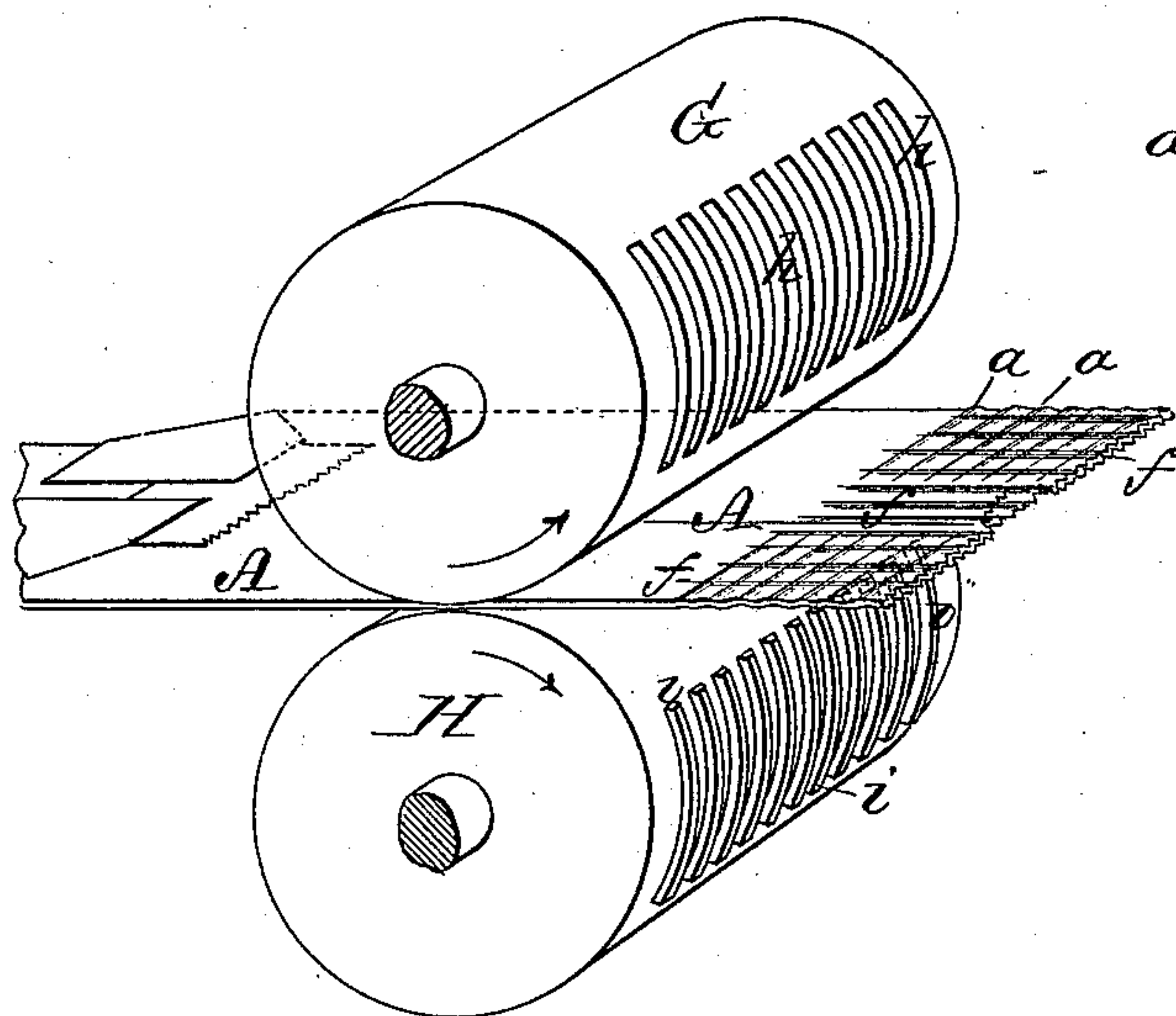


Fig. 3.

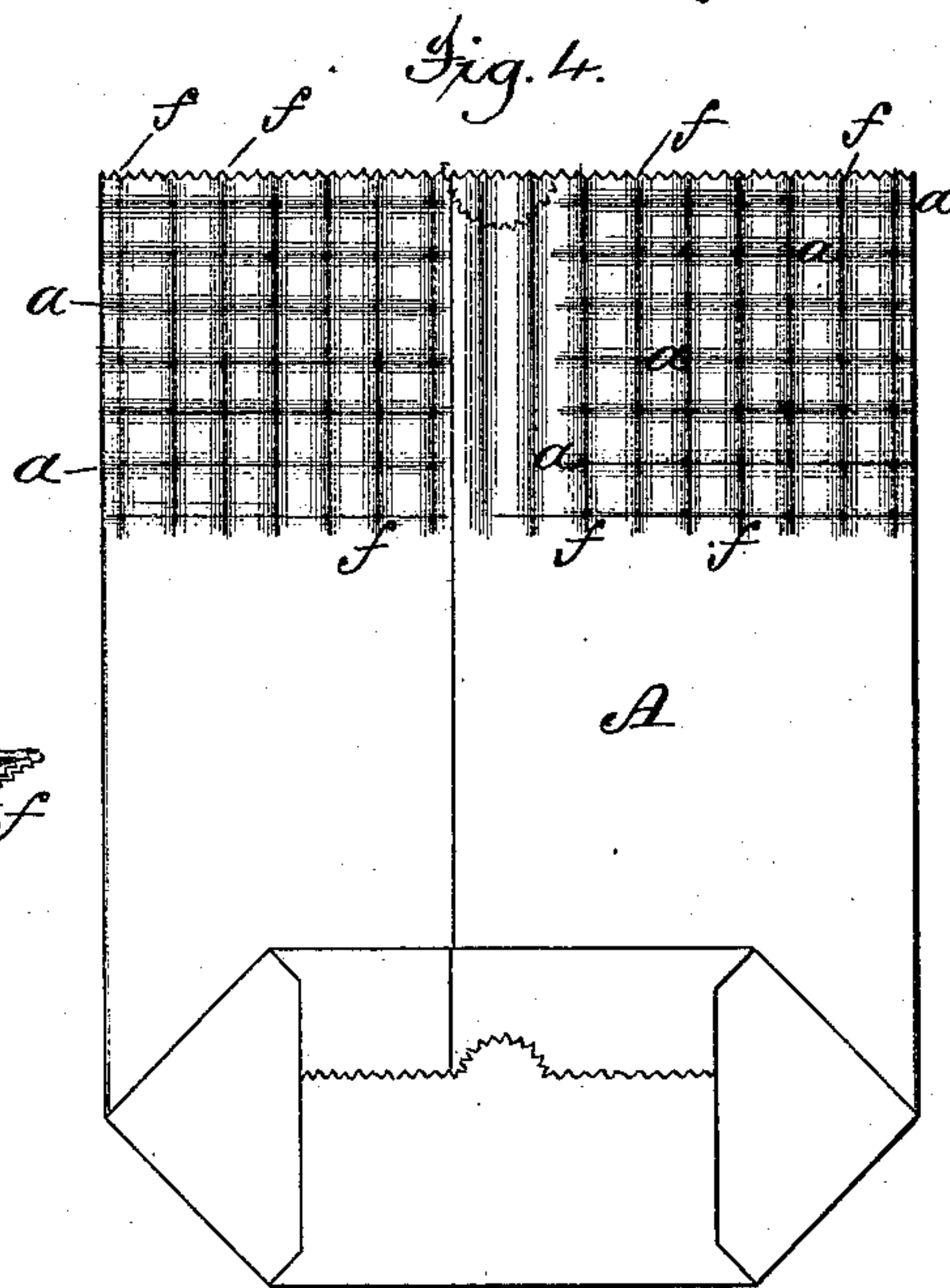


Fig. 4.

Attest:

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# UNITED STATES PATENT OFFICE.

JAMES ARKELL, OF CANAJOHARIE, NEW YORK, ASSIGNOR TO ARKELL & SMITHS, OF SAME PLACE.

## METHOD OF MAKING SOFT-TIE PAPER BAGS.

SPECIFICATION forming part of Letters Patent No. 298,153, dated May 6, 1884.

Application filed September 5, 1883. (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 an Improved Method of Making Soft-Tie Paper Bags; 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.

My present invention relates to a novel method of producing what is known to the trade as a "soft-tie" paper bag or flour-sack.

Previous to my invention it has been customary, in the manufacture of this sort of paper bag, (which was invented by me and Benjamin Smith and patented in the year 1865,) to soften or render comparatively flexible and pliable the portion to be gathered and tied up by subjecting the mouth-end portion of the sack to a sort of crimping operation between rolls used for the purpose, and producing a series of flutes or crimps running longitudinally of the bag. These longitudinal flutes have sometimes been produced by passing the mouth-end portion of the bag crosswise between fluted rolls, substantially such as used in "fluting-machines," (used in laundries;) but more commonly they have been produced by the action of rolls having matched grooves and ridges running circumferentially of the rolls' peripheries, the bag being passed between said rolls lengthwise.

At Figure 1 of the drawings forming part of this specification I have shown in perspective view a "soft-tie" bag made according to the method or process of manufacture heretofore practiced, and by reference to the remaining figures of said drawings, I will now more fully explain the nature of my improved method or process of manufacture, in order that those skilled in the art may understand and be able to practice my invention.

I propose by my novel process of manufacture to produce an improved soft-tie paper bag, and this improved product I have made the subject of a claim in another application for Letters Patent filed simultaneously with this, and to which reference is now herein made.

In Figs. 2, 3, and 4 of the drawings I have shown respectively the rolls for cross-crimping and the crimped bag end, the rolls for longitudinally crimping, together with the crimped bag, and, in perspective, the finished bag resulting from the treatment illustrated at Figs. 2 and 3.

The first operation to which I subject the bag A is that of forming a series of parallel transverse flutes or crimps, *a*, and by preference I produce these cross-flutes by passing the bag longitudinally between rolls B C, which are formed with peripheral grooves and ridges *d e*, that match and work together after the fashion of the teeth or corrugations of an ordinary fluting-machine. I prefer to have the continuity of the fluting-teeth broken at the middle of each roll, as shown at Fig. 2, in order that (as thus plainly illustrated) the cross flutes or crimps *a* shall not run clear across the bag, but only from each edge of the flattened sack to the side seam or longitudinally folded over and pasted portion of the bag. It is not deemed desirable to run the cross-flutes over the side seam, especially if in the process of manufacture these flutes be made while the side seam is fresh from the side-seam paster.

In practicing my present invention I have so far found it preferable to subject the stock to the operation illustrated at Fig. 2 simultaneously with that of forming the flattened tube and cutting it up into bag-blanks. In other words, I have applied the rolls A B to a side-seam paster or tubing-machine, that takes the web of paper from a roll and transforms it into flattened tubes of the proper lengths to form bags when one end of each of such tubes shall have been closed up to make the bag-bottom. After the formation of the transverse flutes *a* in the manner described, or by other means, if preferred, the mouth-end portion of the bag-stock is subjected to a crimping process, by which a series of parallel longitudinal flutes, *f*, is formed, as seen in the finished bag at Fig. 4. These longitudinal crimps, unlike the transverse crimps *a*, (which are rolled in one at a time,) are made all at the same time, preferably by means of a pair of rolls, G H, formed or provided, as shown,



(see Fig. 3,) with peripheral crimping devices *h i*, running circumferentially, and equal each in length to the designed length of the crimps *f*.

In practicing my invention so far, I have, 5 by preference, done this longitudinal crimping simultaneously with folding up and pasting up the bottom of the bag. In other words, I have applied the rolls *G H* to what is called a "bottoming-machine," so that in passing 10 through said machine this longitudinal fluting is done at the same time with the pasting and folding up of the flaps to complete the satchel-bottom of the sack. In practicing my present invention, however, it is not indispensable 15 thereto that either of the crimping operations be done at the times of or in machines for performing other operations in the manufacture of the sack.

An important point in the novel method or 20 process described for producing a soft-tie bag such as seen at Fig. 4—*i. e.*, one in which there are both longitudinal and transverse flutes or crimps—lies in the formation of the first-made set or series of flutes by means 25 which cause the stock to be indented one flute at a time, so that the paper can be drawn into the successively-formed flutes without danger of rupturing or tearing the stock, and in the subsequent formation of another set (crossing 30 the first-made set) which are formed at one time throughout the width of the entire series of such second set, the presence of the first-made set rendering the stock capable of the second treatment without danger of rupture. 35 To further explain this point it will be understood that in the first place, by making the first set of flutes by indenting the paper the entire length of one flute only at a time, there will arise no danger of tearing the stock, be- 40 cause it can be drawn or taken freely from either side of the flute being formed to produce said flute, and in the next place, in producing a second set of parallel flutes, even though all the flutes of the entire series be begun at

the same time and be finished simultaneously, 45 no danger of tearing the stock will arise, because, although the stock has to be drawn upon throughout the entire width of the series of flutes at once, the previous formation of another series of flutes will have left the stock 50 distended and thrown up into that condition that any stock necessary to be drawn into the last-made series of flutes can come from the surplus or, so to speak, bulged-out or upset portions of the first-made set of crimps. 55

Of course, in carrying into effect or practicing my invention, it is not indispensably necessary that either the precise means shown for indenting the paper be used or the precise 60 forms of and orders in making the two sets of crimps described be followed, so long as one set of flutes or crimps be first made and then another set be made transversely to the first, as explained, though I deem it highly desirable to make the first set by rolling in one flute 65 at a time, as explained.

Having now so fully explained my novel process or method of manufacturing a soft-tie bag having both longitudinal and transverse 70 crimps that those skilled in the art to which my invention relates can practice the latter, what I claim as new, and desire to secure by Letters Patent, is—

As an improved process or method of manufacturing soft-tie paper sacks, subjecting the 75 paper first to a crimping operation to produce a series of parallel flutes running in one direction, and subsequently fluting or crimping the stock transversely to the first-formed set of flutes or crimps, substantially as and for the 80 purposes set forth.

In witness whereof I have hereunto set my hand this 27th day of August, 1883.

JAMES ARKELL.

In presence of—

W. A. SMITH,  
P. D. VAN O'LINDER.