

(No Model.)

2 Sheets—Sheet 1.

W. A. LORENZ.
PAPER BAG.

No. 584,555.

Patented June 15, 1897.

Fig. 1

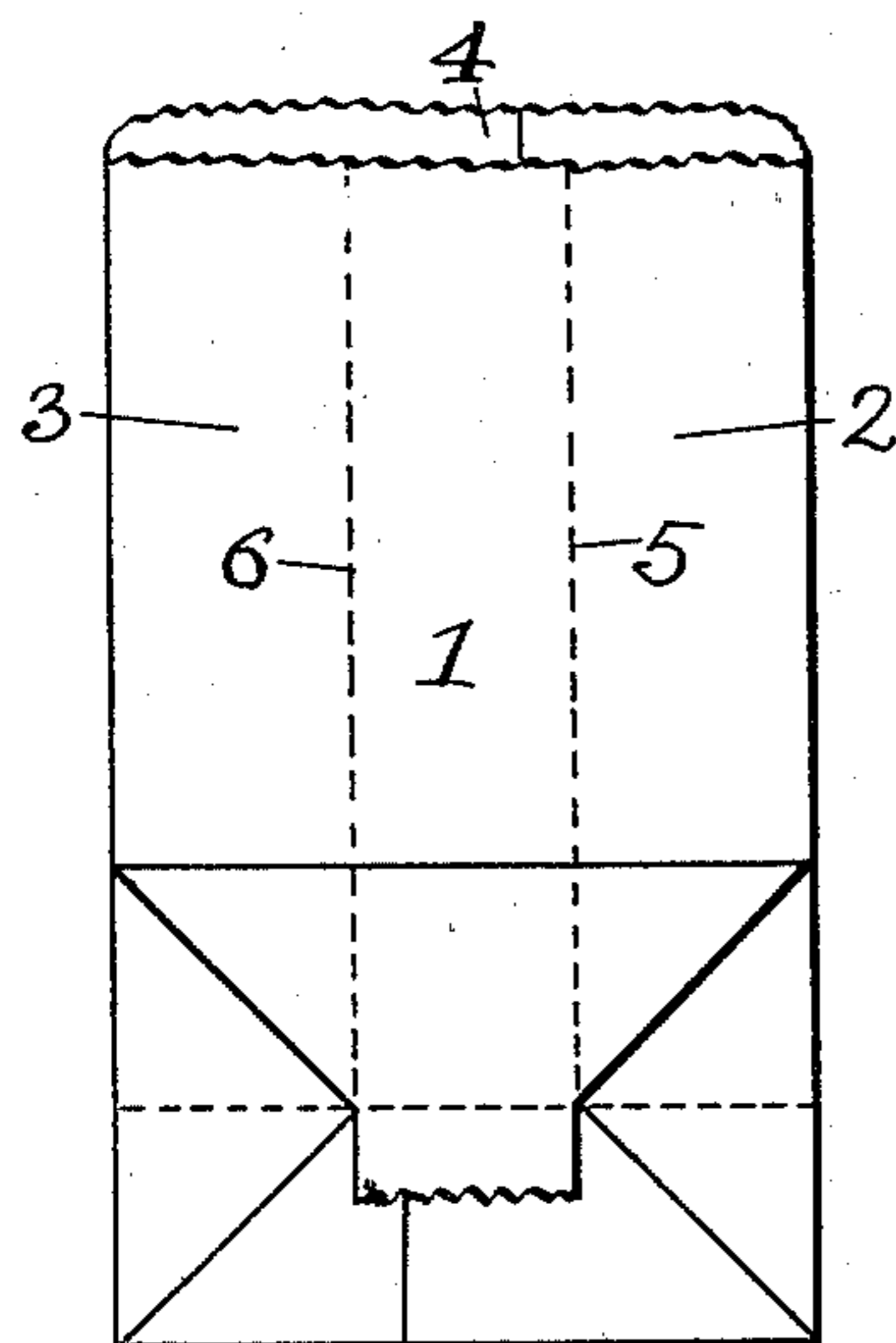


Fig. 2



Fig. 3

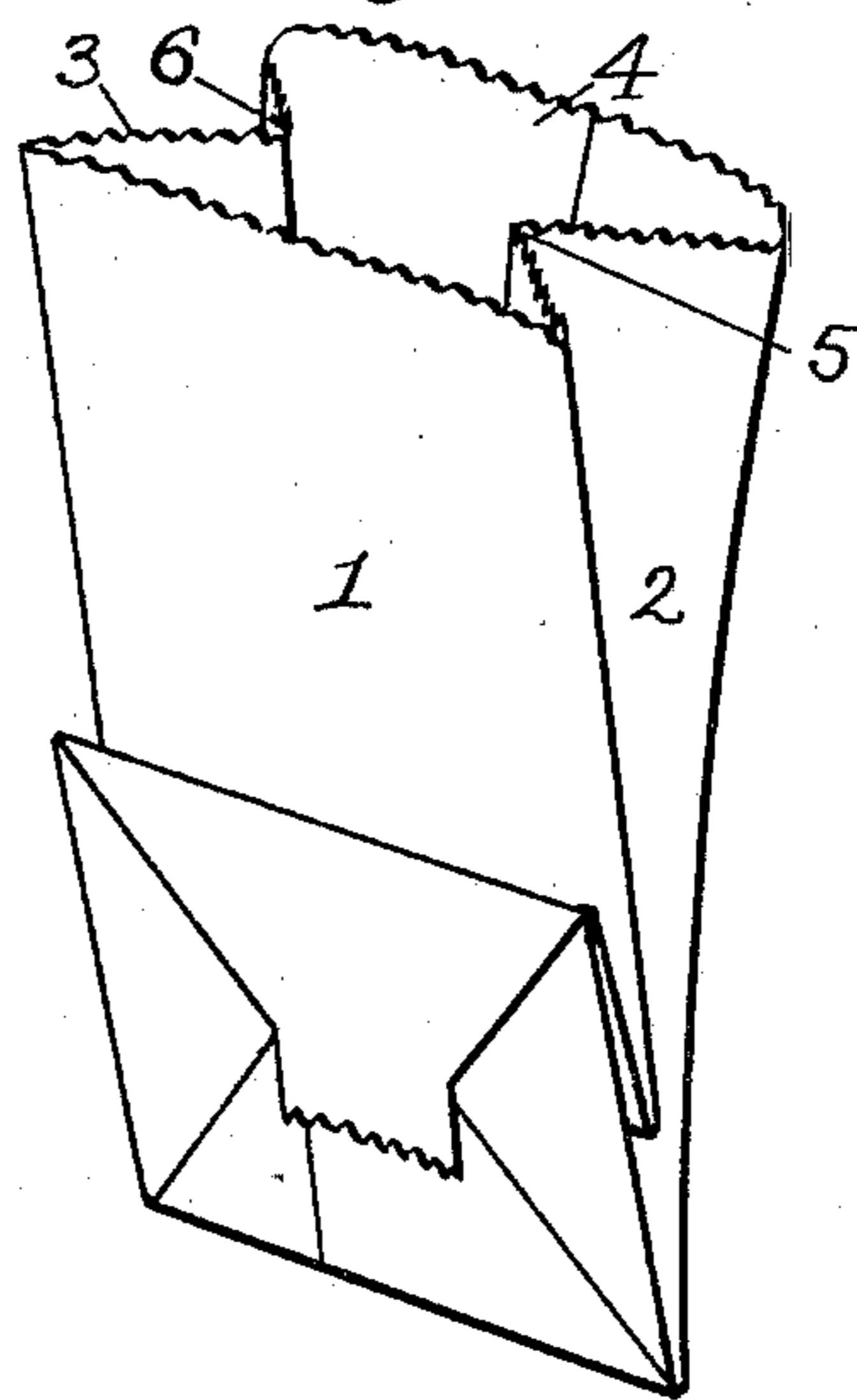


Fig. 4

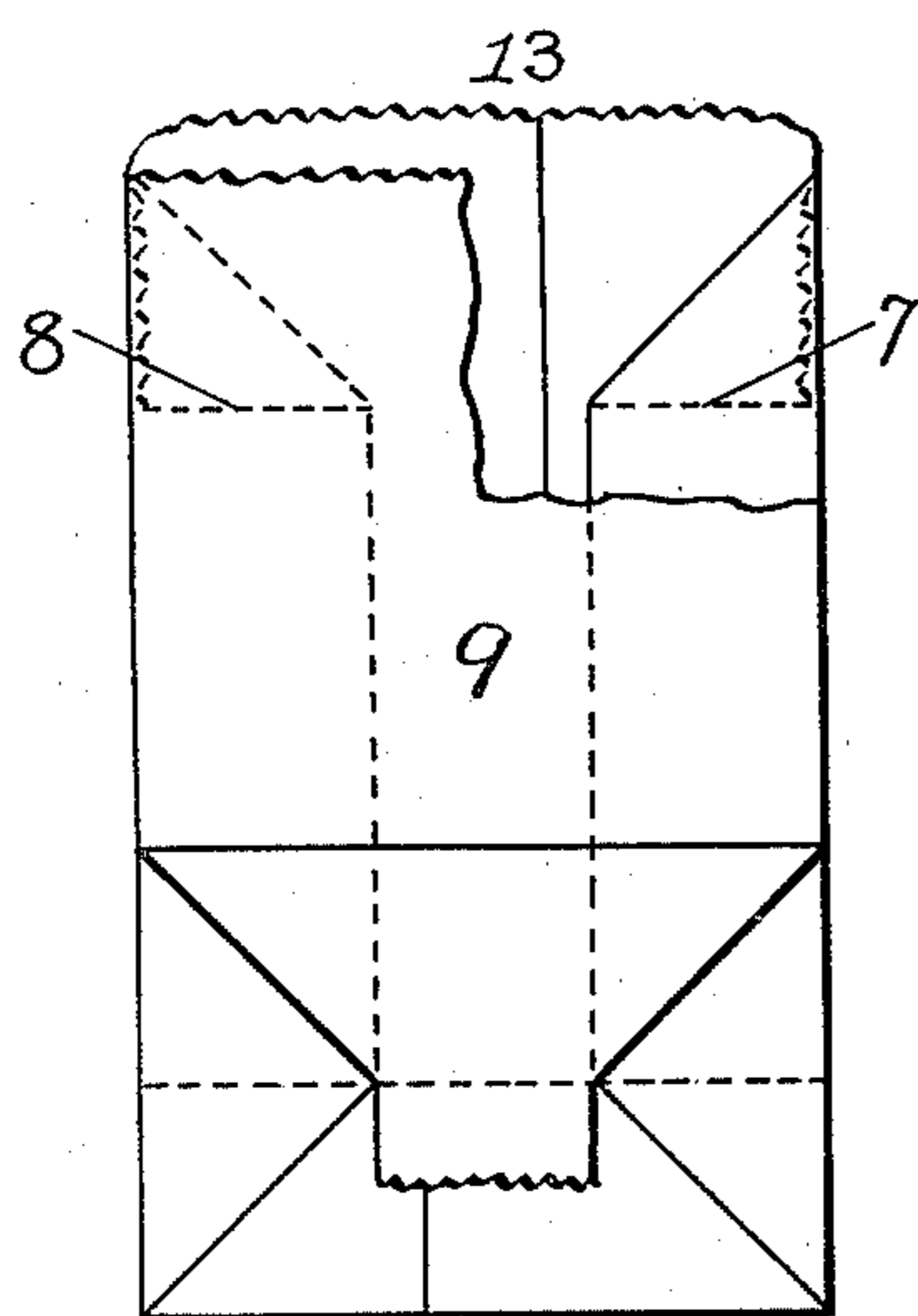
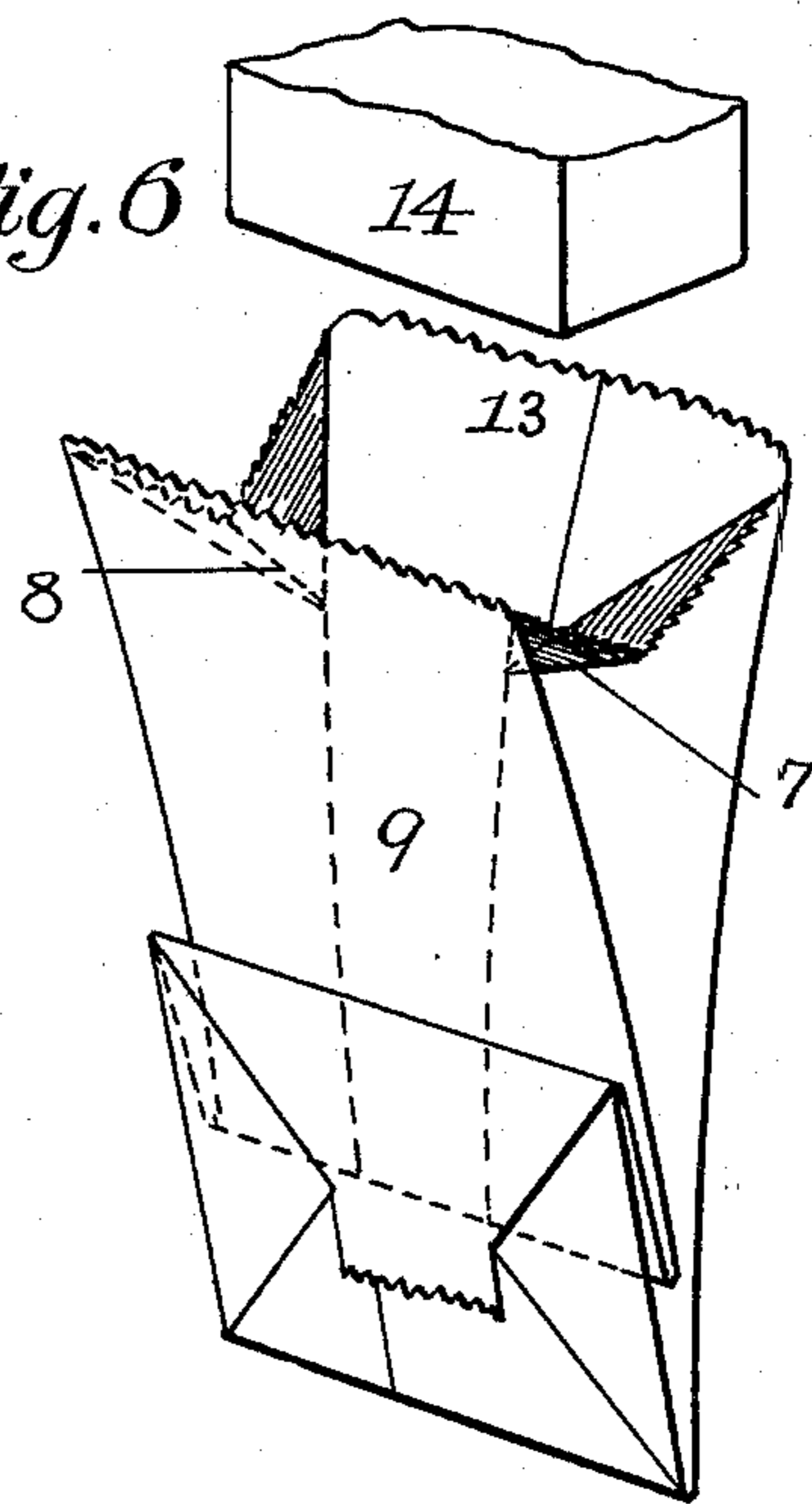


Fig. 5



Fig. 6



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By his Attorney

W. H. Boniss.

(No Model.)

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Fig. 7

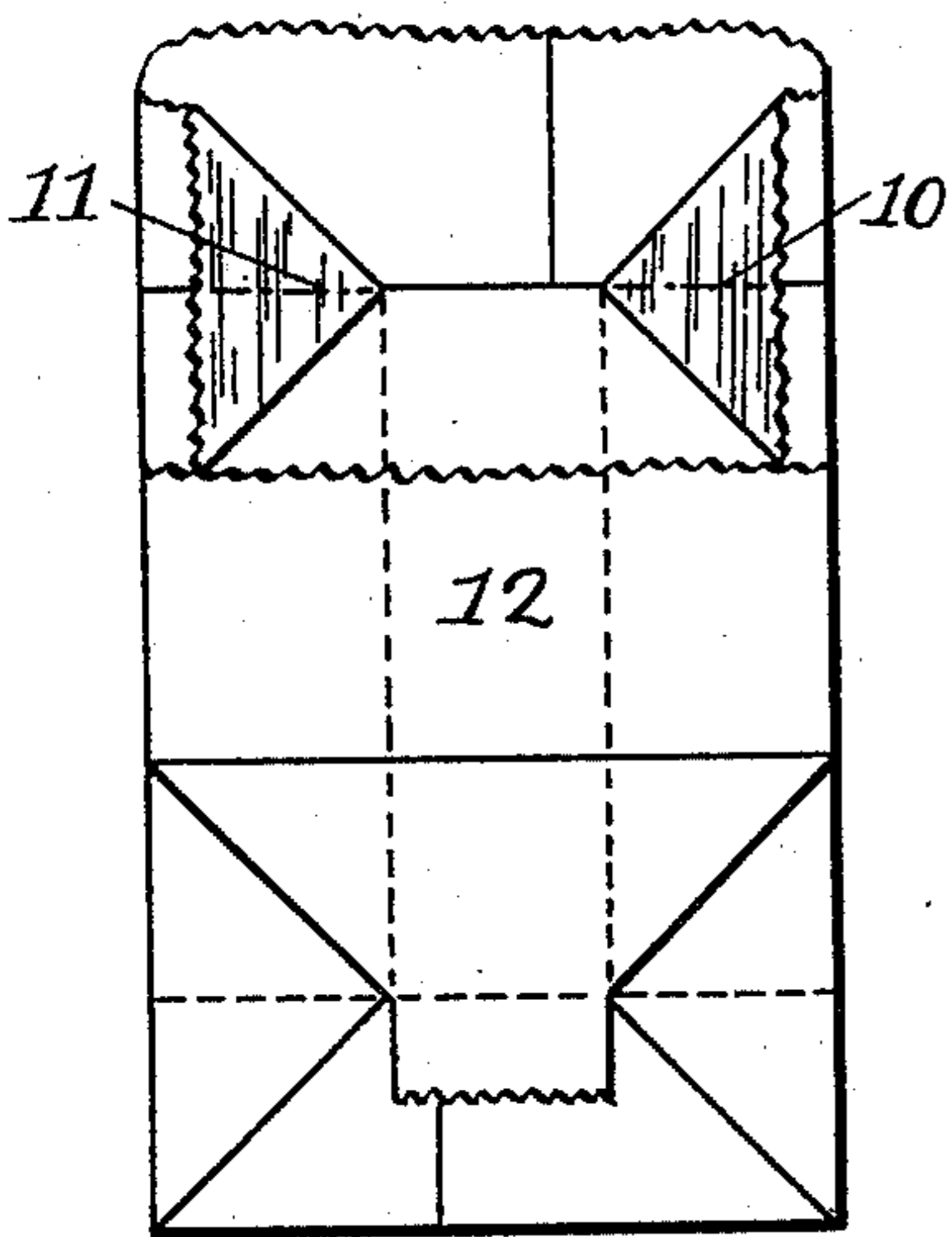


Fig. 8

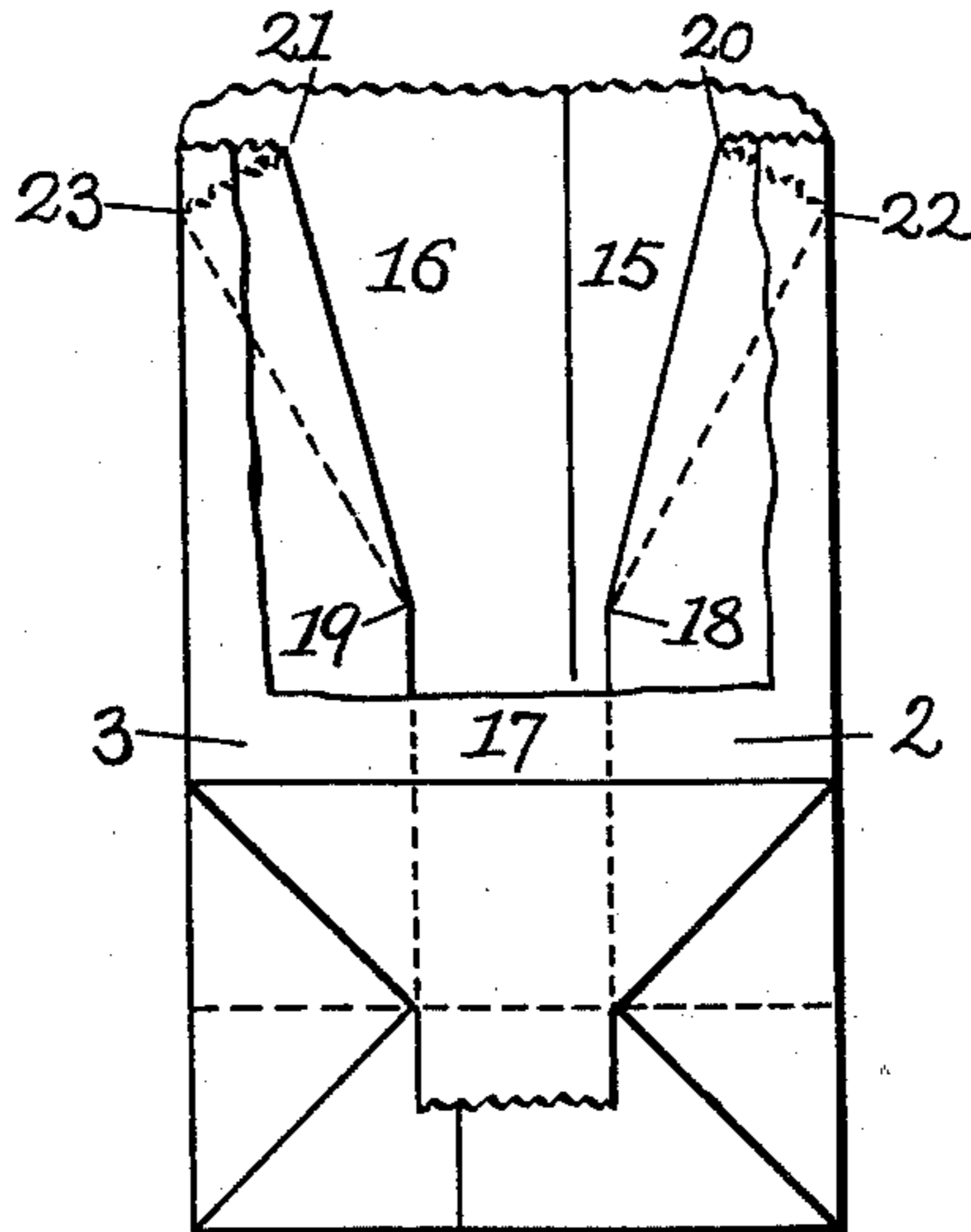


Fig. 9



Fig. 12

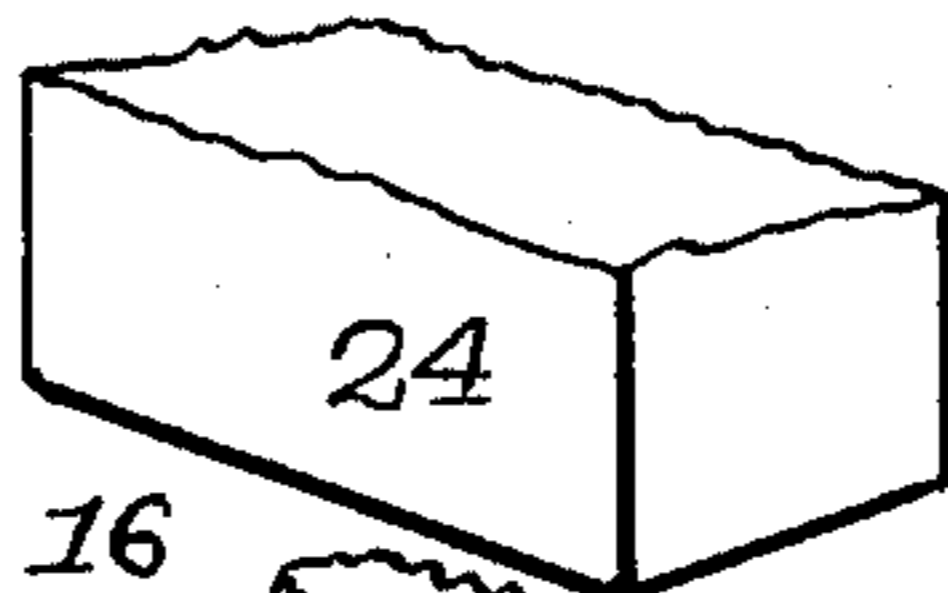
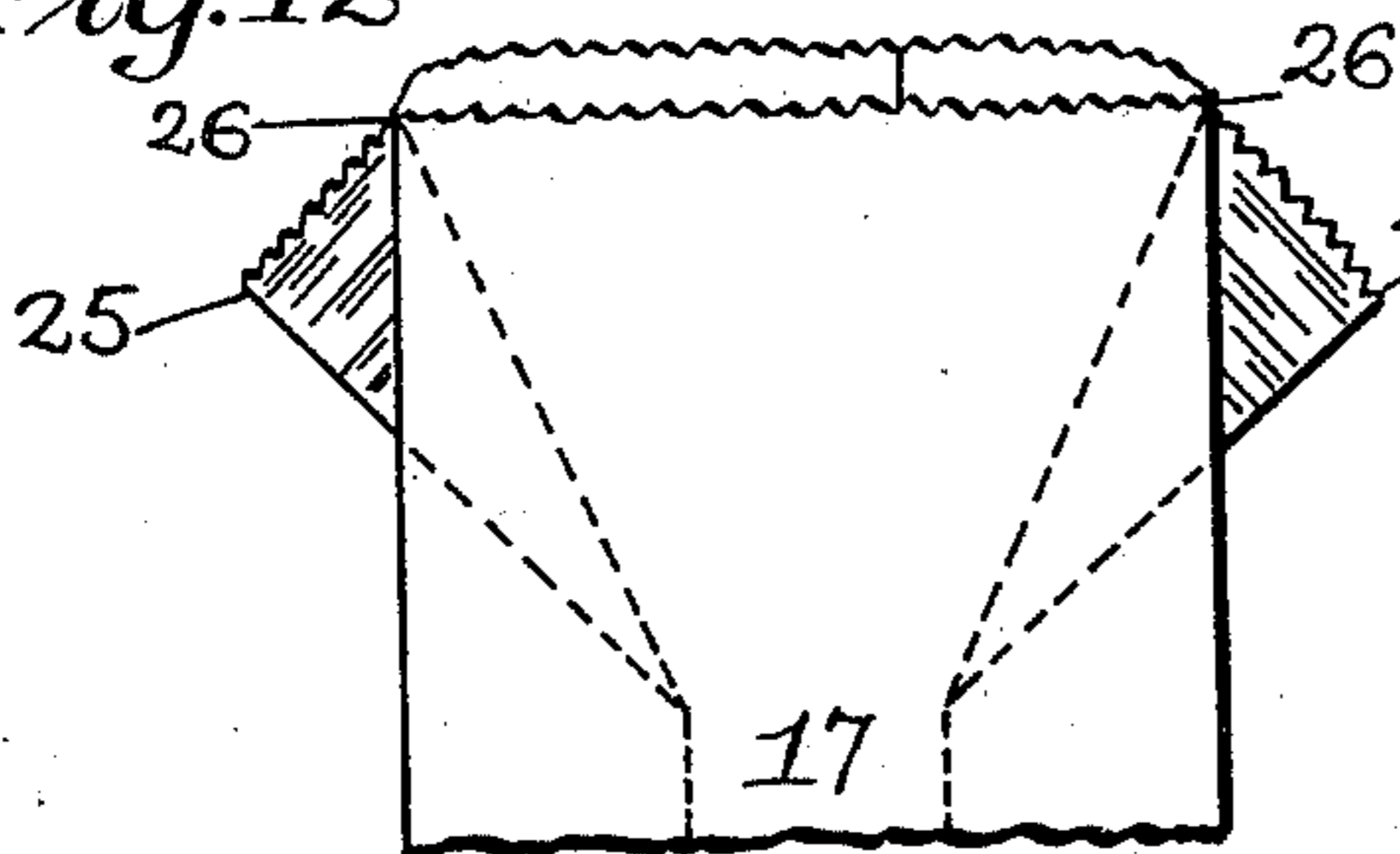


Fig. 10.

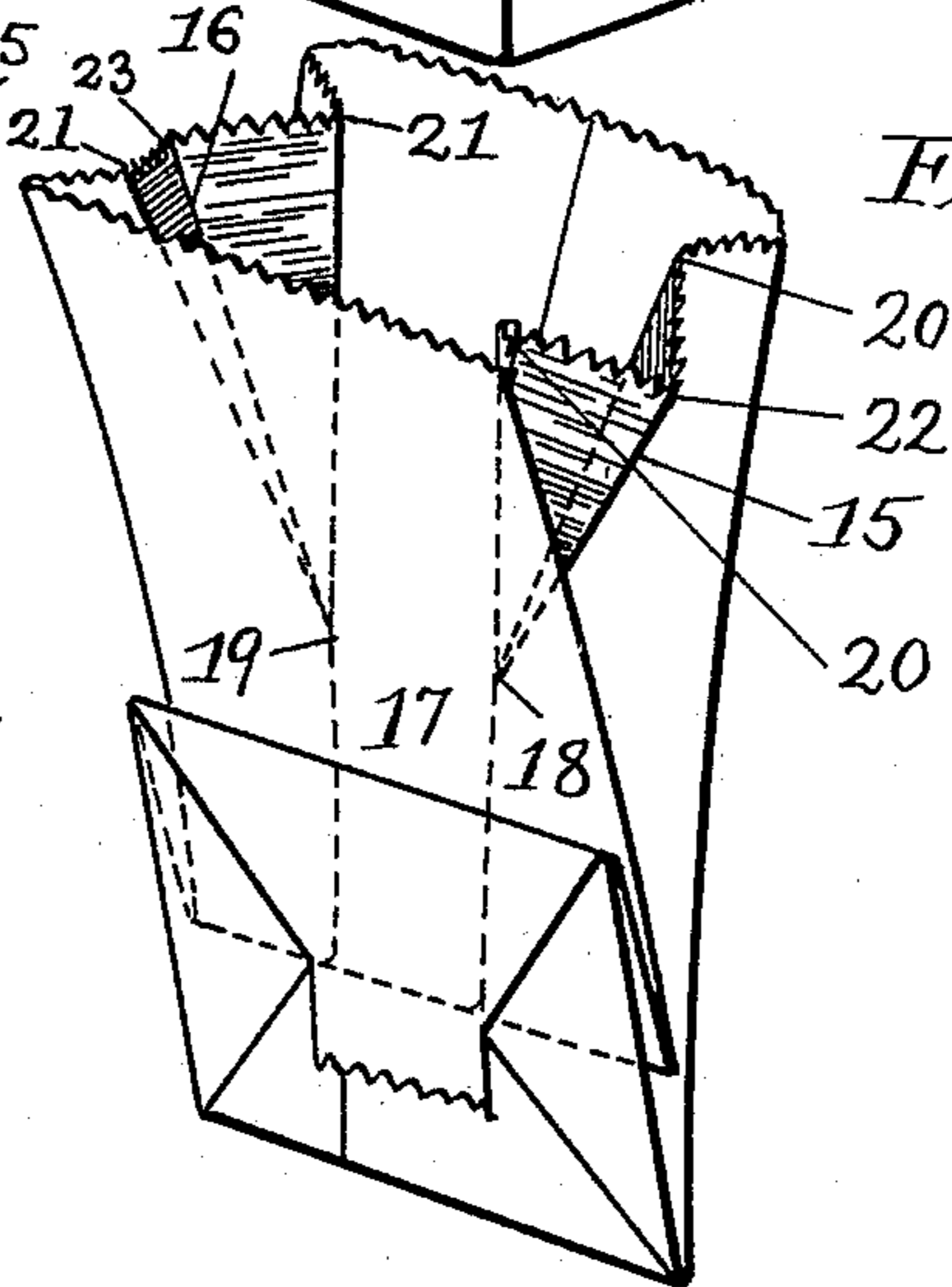
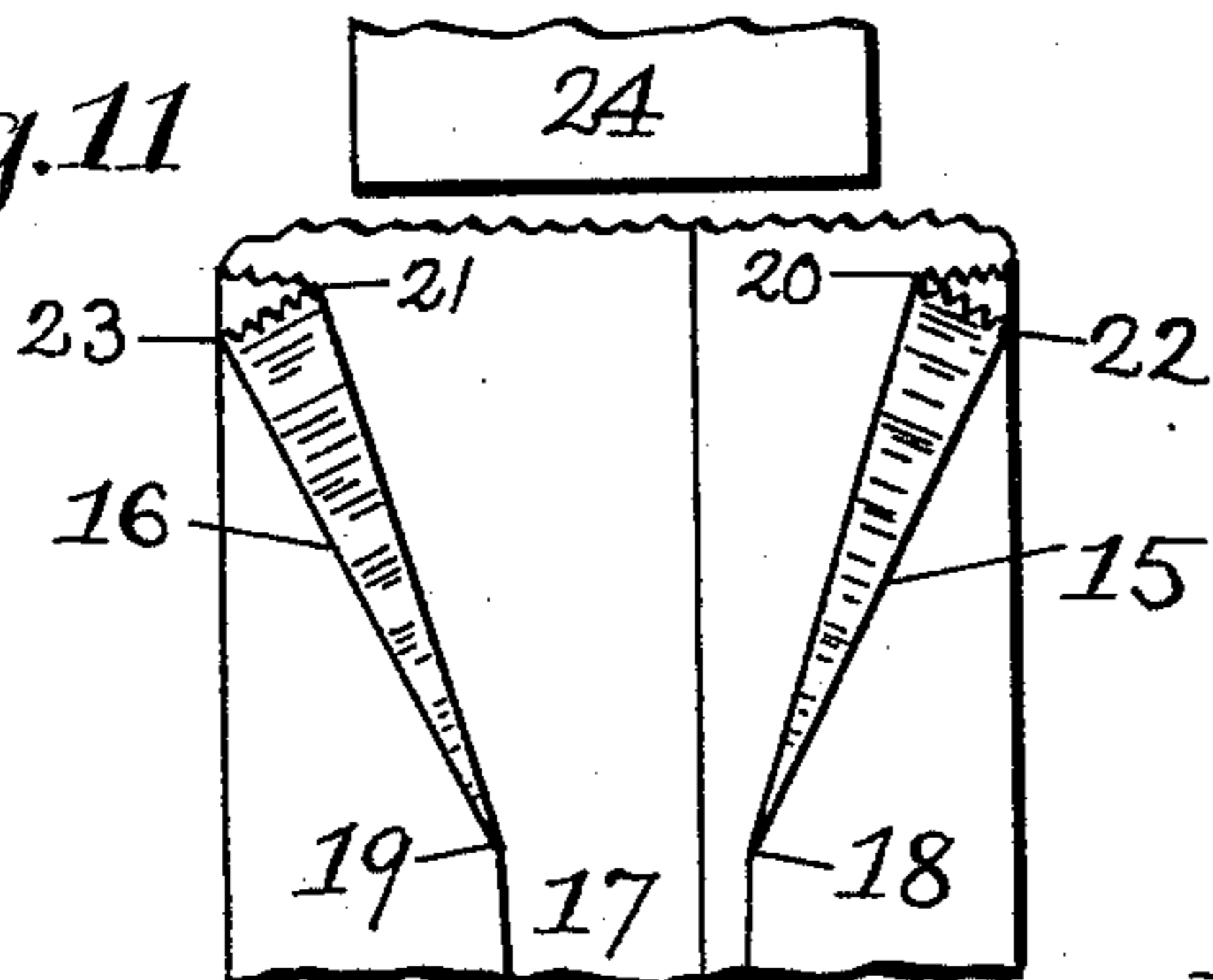


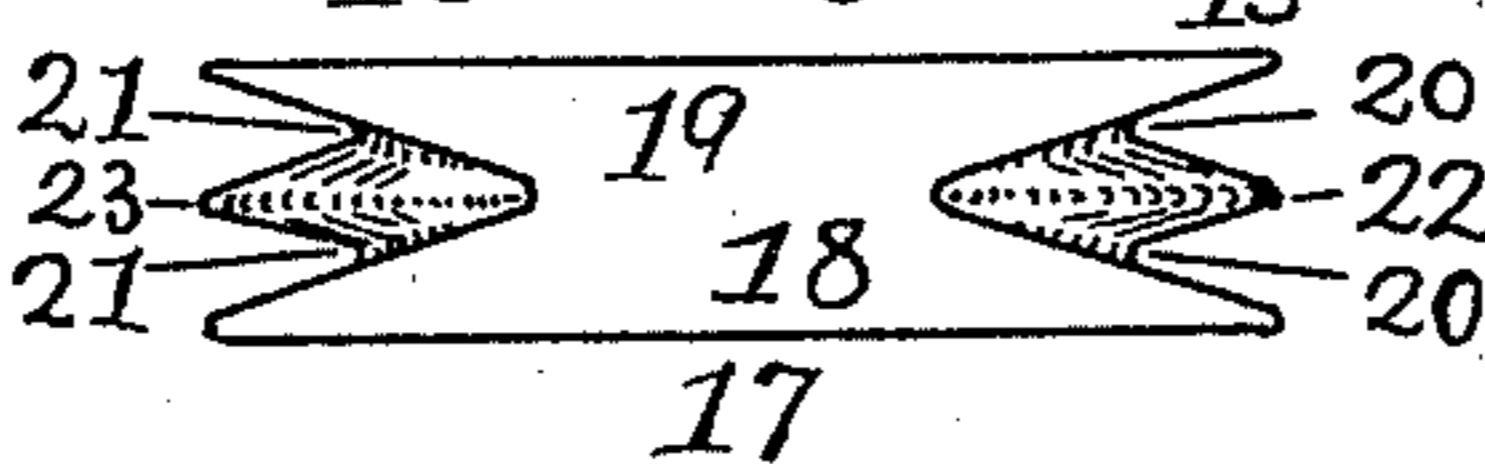
Fig. 11



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Fig. 13



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UNITED STATES PATENT OFFICE.

WILLIAM A. LORENZ, OF HARTFORD, CONNECTICUT, ASSIGNOR TO ALBERT H. WALKER, TRUSTEE, OF SAME PLACE.

PAPER BAG.

SPECIFICATION forming part of Letters Patent No. 584,555, dated June 15, 1897.

Application filed June 19, 1896. Serial No. 596,190. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. LORENZ, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Paper Bags, of which the following is a full, clear, and exact specification.

This invention relates to improvements in the manufacture of bellows-sided paper bags, so called because of the fact that the paper of which they are formed is tucked inwardly on the two opposite sides thereof in order to enable the bag to be compactly collapsed into a flat state for greater convenience in packing, storing, and transportation. The utility of thus tucking the bellows sides inwardly ceases as soon as the bag is required for use, and becomes, on the other hand, an objectionable feature of the bag while it is being filled, inasmuch as the inwardly-projecting tucks serve to contract the mouth-opening of the bag and render much more difficult the filling operation.

The object of this invention is to so arrange the upper or mouth ends of these inwardly-tucked sides as to obviate the above-mentioned objection by reversing the upper end of each of them upon their central fold-lines for a distance from their mouth end substantially greater than the original depth of the tucks, thus producing an outward acute-angled reentrant tuck in each of the bellows sides, the depth of these latter tucks at the mouth end of the bag being substantially one-half that of the original tucks. The bag when opened will therefore naturally take an open funnel-shaped form, having at the top an opening substantially coextensive with the entire cross-sectional area of the open bag, tapering thence to where my improved folds terminate.

Figures 1 and 2 are a side and an edge view, respectively, of a collapsed paper bag like that shown and described in Letters Patent No. 353,307, of November 30, 1886, to William H. Honiss. Fig. 3 is a perspective view of the bag of Figs. 1 and 2, partly opened at its mouth end. Figs. 4 and 5 are a front and a side view, respectively, of a collapsed paper bag

like that of Figs. 1 and 2, having in its upper or mouth end folds similar to those shown and described in Letters Patent No. 355,010, of December 28, 1886, to H. M. Farnsworth, best shown in Fig. 5 of that patent. Fig. 6 is a perspective view of the bag of Figs. 4 and 5, partly opened at its upper or mouth end. Fig. 7 represents a paper bag like that of Figs. 1 and 2, having in its upper or mouth end folds similar to those shown and described in Letters Patent No. 380,263, of March 27, 1888, to me, best shown in Fig. 3 of that patent. Figs. 8 and 9 are a side and an edge view, respectively, of a collapsed paper bag, in other respects similar to those of the preceding figures, but having my improved mouth-folds therein, as best shown in Fig. 8, in which the front ply of the bag is partially torn away, so as to show the inclination and extent of opening of the inwardly-projecting side tucks due to my improved folds. Fig. 10 is a perspective view of the bag of Figs. 8 and 9, partially opened at its upper or mouth end. Fig. 11 is a view in longitudinal section taken on the line 11 11 of Fig. 9, showing the folds in the position occupied by them when the bag is partly opened at its mouth, as in Fig. 10. Fig. 12 is a view of the upper portion of the paper bag like that of Fig. 1, with the reentrant folds of the bellows sides extending from the points which subsequently form the corners of the mouth of the opened bag, thereby causing the upper portion of the reentrant side folds to project laterally beyond the edges of the tube. Fig. 13 is a plan view of the upper end of the bag of Figs. 8 and 9 in a partially-expanded position.

Referring to the drawings, the paper bag which is shown in Figs. 1, 2, and 3 and which is indicated in a general way by the numeral 1 is provided with a collapsed square bottom, as shown and described in the Honiss patent above referred to, and is provided with bellows sides 2 and 3, which, when the bag is collapsed, extend inwardly a considerable distance from the edges of the bag to the fold-lines 5 and 6. When this bag is held by the lip 4 and the mouth is partly opened, the inwardly-projecting corners 5 and 6 of the bellows sides interfere with the easy and rapid

filling of the bag. Various attempts have been made to overcome this difficulty by folding these bottom corners 5 and 6 outwardly at right angles to the longitudinal center of the bag, as represented by the lines 7 and 8 of Fig. 4 and by the lines 10 and 11 of Fig. 7, these figures representing the bags of the Farnsworth and the Lorenz patents, respectively. This folding of the corners 5 and 6 at right angles to their general direction is objectionable for two reasons, the first of which is that when the sides are separated for filling, as shown in Fig. 6, these folds, which are therein indicated by the numerals 7 and 8, being at right angles to the longitudinal center of the bag, are almost flat across the top and therefore prevent the easy introduction of all forms of merchandise into the bag. If, for example, it were attempted to introduce an object like that indicated by 14 in Fig. 6, the bag instead of being further expanded to its full capacity would be more liable to be crushed, inasmuch as the effective opening of the mouth would be narrowed to the width represented by the distance between the inner edges 5 and 6 of the bellows folds. Especially would this be the case if it were attempted to perform the filling operation hurriedly. In case it is desired to introduce grain, sugar, or other granular material into the bag of Fig. 6 the flattened horizontal portions would similarly prevent the material from flowing readily and rapidly into the bag, and would be liable to spill a considerable quantity of it over its outer edges, inasmuch as those outer edges are thus carried considerably below the general plane of the mouth of the bag, as shown by the position of the corner 7 in Figs. 4 and 5. Another objection to the form of mouth-folds shown in Figs. 4 and 7 resides in the facts that when those bags are expanded to the extent shown in Fig. 6 the flat horizontal triangular folds, being so nearly at right angles to the center line of the bags, operate to resist the further expansion of the portions lying below the folds 7 and 8 and 10 and 11, respectively, inasmuch as the corners 5 and 6, when turned at right angles to their general longitudinal direction, operate as a sort of lock upon the adjacent plies, tending to hold the untucked sides of the bag together.

In my improved bag (shown in Figs. 8 to 11, inclusive) these objections and difficulties are overcome by reversing the upper ends of the bellows folds upon the lines 5 and 6 of Figs. 1 and 3 outwardly to the position represented by the numerals 22 and 23 in Figs. 8, 10, and 11, forming reëntrant plies which extend to the points 18 and 19, forming an acute angle with the longitudinal center of the bag, and thus forming a tapering entrance for the easy insertion of the objects to be inclosed.

Those portions of the tucks which are turned outwardly with the corners 15 and 16 are bent outwardly upon the lines which extend from the upper corners 20 and 21 of the tube to substantially the points 18 and 19, as best

shown in Figs. 8 and 10, the points 20 and 21 being located at a distance from the outside edges of the tube substantially equal to one-half the original depth of the tucked sides of the bag, thus bringing the outwardly-turned corners 22 and 23 into substantial coincidence with the outer edges of the tube. If the outwardly-turned corners 15 and 16 were to be folded upon lines running from the points 18 and 19 to the outer corners 26 of the rectangular tube, as shown in Fig. 12, the corners 22 and 23 would project from each side of the bag to the position occupied by the corners 25 in Fig. 12, which is equal to the original depth of the tucked sides. These outwardly-projecting corners are objectionable, inasmuch as they extend beyond the general contour of the otherwise cubical package formed by the bags, and would be liable to become chafed and torn in transportation.

The facility with which bags having my improved acute-angled mouth-folds may be filled is indicated in Figs. 10 and 11, in connection with both of which figures is shown an object 24 similar to that indicated by 14 in Fig. 6. It will be seen that this object when pushed down against the inner edges of the plies which exist because of the presence of my improved acute-angled folds will enter readily and will operate to still further expand the bag to its fully-opened position. The acute angles formed by these folds also permit of easy introduction of a scoop or funnel for filling the bags with powdered or granular substances. Comparing the form of the opening of the improved bags shown in Figs. 10 and 11 with that shown in Figs. 4, 5, and 6, it will be seen that the upper edges of the reëntrant folds of my improved bag are more nearly of the same height as the adjacent untucked sides thereof, and there is, therefore, less liability of spilling the material over them, thus effecting a great saving of time and of material.

The consumption of grocers' paper bags has reached enormous proportions, and any saving of time or prevention of waste of material in the operation of filling these bags is of great value to the user. Most of the improvements hitherto made have been directed to the form of the bottoms of the bags, and but little attention has been paid to the improvement of the upper or mouth portion, although such improvements are obviously as desirable as the others. Any such improvement, although seemingly slight and insignificant when considered as being applied to but one paper bag, becomes in the aggregate of great importance when considered with relation to the many millions of paper bags which are annually consumed by the people of the United States.

I claim as my invention—

1. A collapsible bellows-sided paper bag, having the mouth ends of each of its tucked sides turned outwardly upon the lines 18 and 19 21, thereby reversely folding the turned portions upon the lines 15 and 16, all of these lines of fold extending from the apexes 18 and

19 upwardly and outwardly at an acute angle with the longitudinal center of the folded bag, for the purpose specified.

2. A collapsible bellows-sided paper bag
5 having the upper portions of each of its tucked bellows sides reversed to form the outwardly-inclined lines of fold 15 and 16, thus forming outwardly-folded acute-angled triangular folds in each of the bellows sides of the bag,
10 all the lines of which are inclined outwardly

at their upper ends with relation to the longitudinal center of the bag, the upper ends of the triangular folds being substantially equal to one-half the original depth of the tucked sides, for the purpose specified.

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Witnesses:

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W. H. HONISS.