(No Model.)

W. A. LORENZ.

PAPER BAG.

No. 342,754. Patented May 25, 1886.

Fig. 1

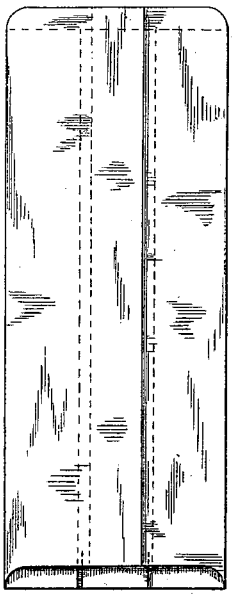


Fig. 2

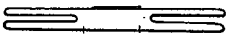


Fig. 3

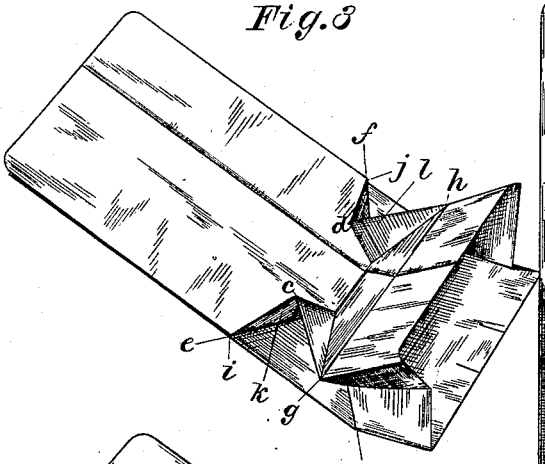


Fig. 4

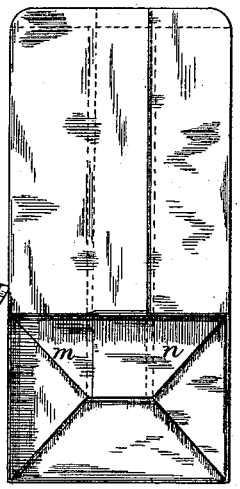


Fig. 5

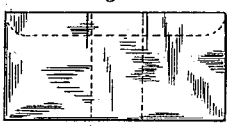


Fig. 6

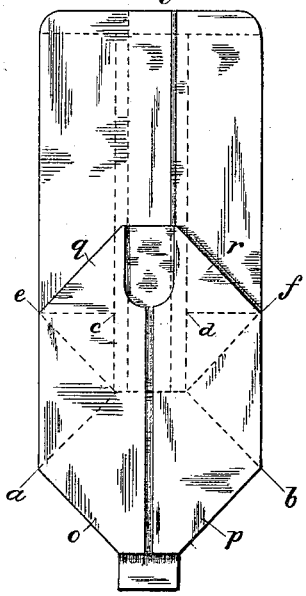


Fig. 7

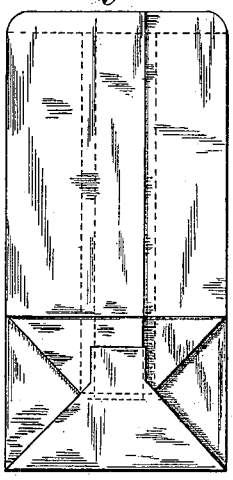


Fig. 8

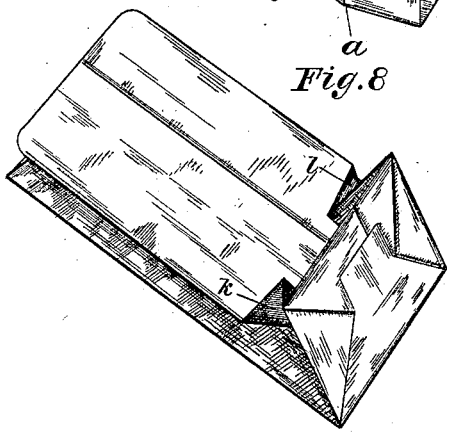
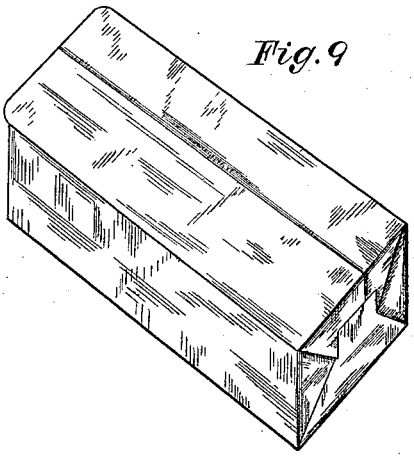


Fig. 9



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Inventor:

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UNITED STATES PATENT OFFICE.

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PAPER BAG.

SPECIFICATION forming part of Letters Patent No. 342,754, dated May 25, 1886.

Application filed June 29, 1885. Serial No. 170,059. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. LORENZ, of Hartford, Connecticut, have invented a new and useful Improvement in Paper Bags, of which the following description and claim constitute the specification, and which is illustrated by the accompanying sheet of drawings.

This invention is an improved square-bottom paper bag.

Figure 1 of the drawings is a view of the seamed side of a tucked paper tube suitable for a square-bottom paper bag, and having two longitudinal slits cut in the lower edge of the unseamed side thereof. The unseamed side projects somewhat below the seamed side at the lower end of the tube, and the seamed side projects correspondingly above the unseamed side at the upper end of the tube. Fig. 2 is a view of the lower end of the tube of Fig. 1, showing the position of the two longitudinal slits. Fig. 3 is a perspective view of the tube of Figs. 1 and 2, with its lower end opened and folded, as hereinafter described. Fig. 4 is a plan view of the tube of Fig. 3, with its lower end still farther opened out into a box-like form; and Fig. 5 is a view of the lower wall of that box, as seen from the outside. Fig. 6 is a view of the tubular blank of Figs. 4 and 5 after the box-like form has been folded down into a diamond form. Fig. 7 is a view of the blank of Fig. 6, with the top flap folded down upon the side flaps and the bottom flap folded over upon the side flaps and the top flap, and the bag thus completed. Fig. 8 is a perspective view of the bag of Fig. 7, partly opened out; and Fig. 9 is a view of the same entirely opened out into the ordinary form of a square-bottom paper bag.

The process of folding up the bottom of this bag is as follows: Any straight-edged implement is inserted in each tuck of the tube of Figs. 1 and 2, and is pressed downward upon the lower fold of that tuck along the diagonal line *a* or *b*, as the case may be. Then the two upper folds of the tucks of the tube are lifted at the points *c* and *d*, respectively, and are carried toward each other on the lines of motion which result from their turning, as upon hinges, upon the diagonal folds *e* and *f*, respectively. At the same time the points *g* and *h* are restrained from corresponding movement, but are caused to move in semicircular courses to the points *i* and *j*, respectively. Thus the two inwardly-projecting double right-angled triangular folds *k* and *l* are first raised to the form shown in Fig. 3, and then continuously are flattened down under the triangular spaces *m* and *n*, respectively, of the box-like form of Fig. 4, when that form is completed by the described operation. Then the middle of the edges of the lower walls of the box-like form are folded down and away from each other, turning upon the bases of those walls as upon hinges, and thus producing the diagonal folds *o*, *p*, *q*, and *r*, and drawing down toward each other the side flaps of the diamond form shown in Fig. 6. Then paste is applied to the proper surfaces of the diamond, and the upper and lower flaps thereof are folded down, one after the other, so as to complete the paper bag of Fig. 7. This process differs from former processes of folding up the bottoms of paper bags in that the points *c* and *d* are carried toward each other instead of being left at the edges of the blank when the box-like form is made; and this bag differs from former square-bottom paper bags in that the central bend of its folds *k* and *l*, respectively, run lengthwise of the bag instead of crosswise thereof.

The resulting improvement consists in the fact that room is provided for the parallel passage of the two implements inserted in the tucks to positions where they can perform their functions upon other bag-blanks without the former necessity of withdrawing those implements from the folds of the bag bottom in directions leading them away from each other, and afterward restoring them to their former distance apart as often as a bag bottom is folded up, and also in the fact that the folds *k* and *l* have more elasticity and therefore greater tendency to assist in the opening out of the bag than they would have if their middle turns extended crosswise of the bag instead of lengthwise thereof. This superiority of elasticity results from the fact that each of those folds involves the turning three times upon itself of the upper ply of the upper fold of the adjacent tuck of the paper tubing, and the turning

twice upon itself of the lower ply thereof; whereas if the middle turns of the folds *k* and *l* extended crosswise of the bag, each of those folds would involve but one turning upon itself of the said upper ply, and two turnings upon itself of the said lower ply.

Among all the paper bags shown in prior Letters Patent of the United States the nearest approach to this of mine is that of Mark L. Deering, indicated in Reissued Letters Patent No. 10,083 of April 11, 1882. My bag is an improvement on that one in the respects indicated in the last paragraph.

I claim as my invention—

A square-bottom paper bag having the inwardly-projecting double right-angled triangular folds *k* and *l*, substantially as described in the foregoing specification, and shown in Fig. 8 of the accompanying drawings.

Dated this 25th day of June, 1885.

WILLIAM A. LORENZ.

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