(No Model.)

3 Sheets—Sheet 1.

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PAPER BAG.

No. 418,291. Patented Dec. 31, 1889.

Fig. 1

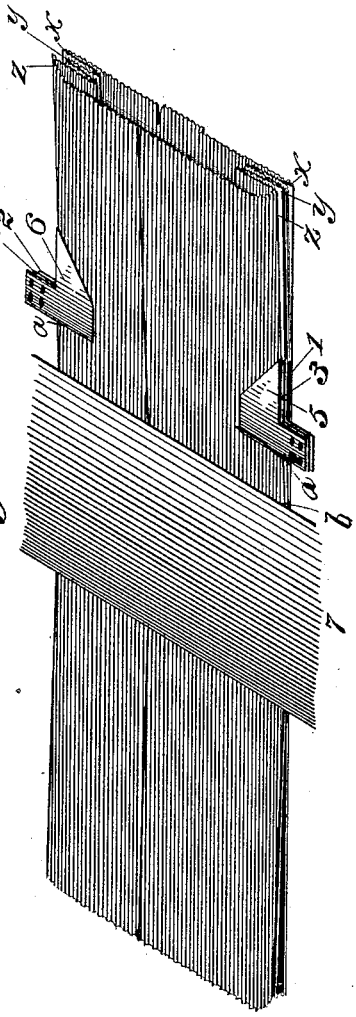


Fig. 2

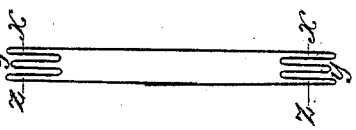
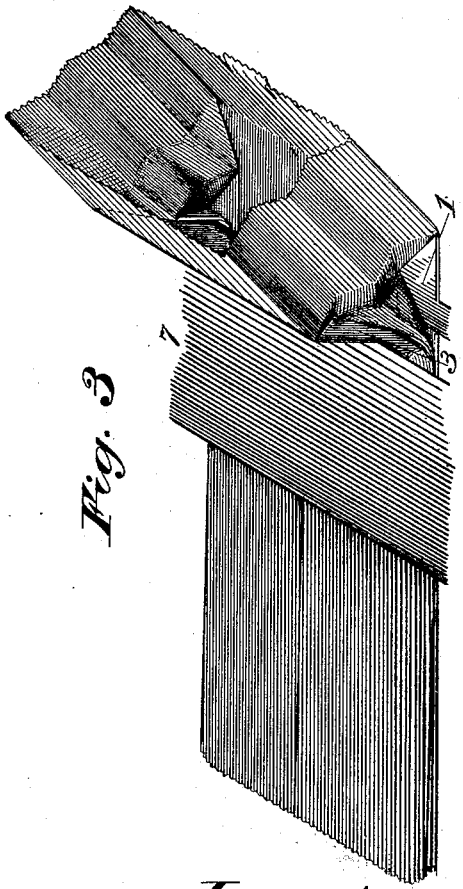


Fig. 3



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Inventor;
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by Albert G. Walker Atty

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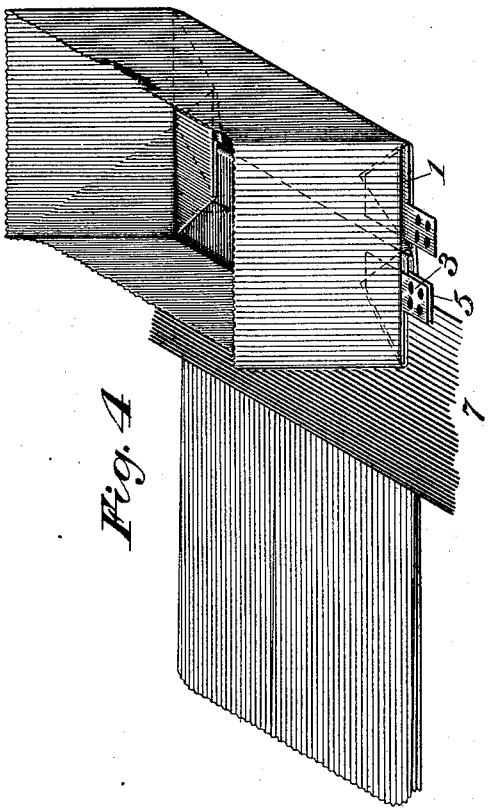

Fig. 4

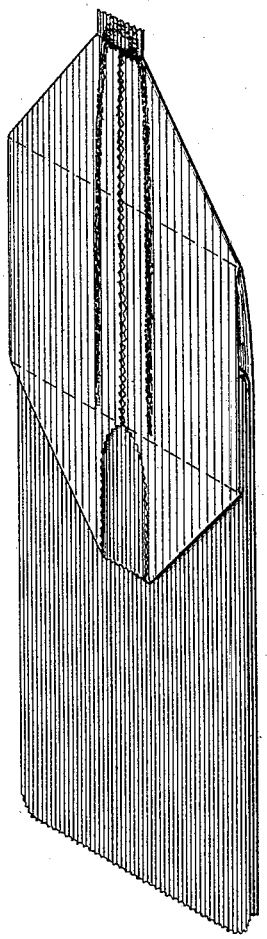

Fig. 5

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Fig. 8

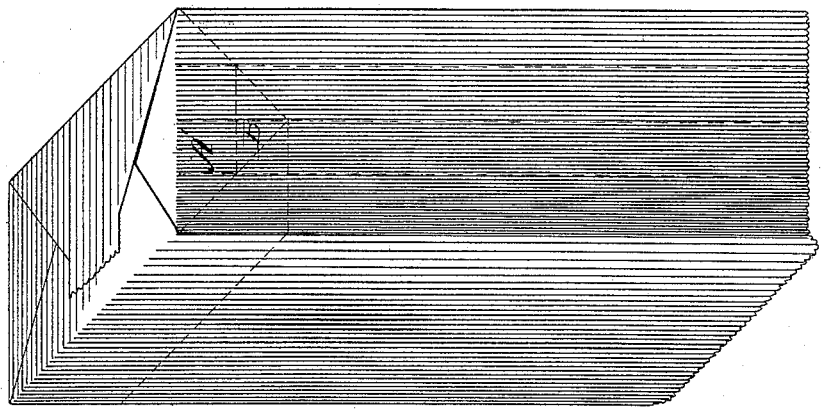


Fig. 6

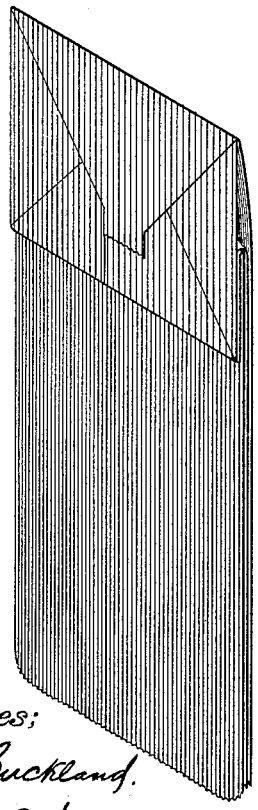
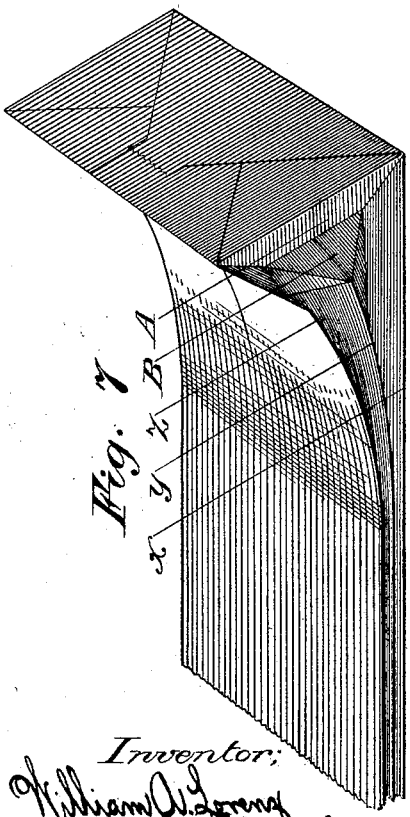


Fig. 7



Witnesses;
C. E. Buckland.
Harry P. Williams.

Inventor;
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UNITED STATES PATENT OFFICE.

WILLIAM A. LORENZ, OF HARTFORD, CONNECTICUT.

PAPER BAG.

SPECIFICATION forming part of Letters Patent No. 418,291, dated December 31, 1889.

Application filed September 14, 1889. Serial No. 323,977. (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 Paper Bag, of which the following description and claims constitute the specification, and which is illustrated by the accompanying three sheets of drawings.

This invention is a self-opening square paper bag having a flat rectangular bottom, two inwardly-inclined longitudinal folds in each of two opposite sides of it, and an inwardly-inclined quadrangular fold and a small outwardly-inclined triangular fold uniting the rectangular bottom to each of said sides.

Figure 1 of the drawings is a view of a paper tube suitable to be manufactured into one of my new paper bags and adjusted to the instrumentalities which can be used in making some of the folds of such a bag. Fig. 2 is a cross-section of the blank of Fig. 1, slightly expanded to show its inwardly-inclined longitudinal folds. Fig. 3 is a view of the blank and of the devices of Fig. 1 when those devices have partly opened out one end of that blank into a box-like form. Fig. 4 is a view of what is shown in Fig. 3 after those devices have completed the production of that box-like form. Fig. 5 is a view of the blank of Fig. 4 after the box-like form has been folded down into the diamond form and after the devices which co-operated in making the box-like form have been withdrawn. Fig. 6 is a view of the blank of Fig. 5 after the ends of the diamond form have been folded over upon the middle portion thereof and pasted down thereon, and the bag thus completed. Fig. 7 is a view of the bag of Fig. 6 with its rectangular bottom raised from its horizontal position upon the body of the bag to a position nearly at right angles therewith, for the purpose of plainly showing the inwardly-inclined longitudinal folds and the inwardly-inclined quadrangular fold and the outwardly-inclined triangular fold which constitute a part of one of the two opposite folded sides of the bag. Fig. 8 is a view of the bag of Fig. 6 opened out into a rectilinear form and standing bottom upward, so as to show in full lines the folds of the bottom and to show in broken lines the location of those creases of the bag of Figs. 6 and 7 which are substantially undone by opening out the bag into a rectilinear form.

One process of folding up the bottom of this bag is as follows: The presser-plate 7 is placed across the blank of Fig. 1 in the position shown in Figs. 1, 3, and 4, so as to hold the blank firmly down upon a table or other suitable surface. The tuck-blade 1 is introduced into the lower longitudinal fold in one side of the blank, and the corresponding tuck-blade 2 is introduced into the corresponding fold in the other side of the blank, and those two blades are held down upon the lower plies *x* of the blank of Figs. 1 and 2, with their rearward edges *a* about an inch forward from the forward edge *b* of the presser-plate 7. The folding-blade 3 and the corresponding folding-blade 4 are introduced into the upper longitudinal folds in the two sides of the blank, respectively, directly over the blades 1 and 2, respectively, but with the middle plies *y* of the blank between. The pincher-blades 5 and 6 are placed on the upper side of the blank directly over the folding-blades 3 and 4, respectively, but with the upper plies *z* of the blank between. While the tuck-blades 1 and 2 are held firmly in position, the folding-blade 3 and the pincher-blade 5 are clasped together at their outward extensions, and the folding-blade 4 and the pincher-blade 6 are likewise clasped. Those two pairs of blades are then carried upward and backward, with their rear edges *a* describing an arc of a circle of which an imaginary line somewhere midway between those edges and the forward edge *b* of the plate 7 is the center, and with their flat sides substantially coincident with radii of that circle. This operation, when carried through a quarter of a circle, opens out the blank of Fig. 1 into the form of Fig. 3, and when carried through a half of a circle opens out that blank into the box-like form of Fig. 4, after which the plates 1 to 7, inclusive, may be removed from the blank. Then the middle portions of the upper borders of the forward and rear walls of that box-like form are turned away from each other upon their bases as upon hinges, and the side walls of that box-like form are thus brought toward each other. This operation, when carried to completion, transforms the box-like form of Fig.

4 into the diamond form of Fig. 5. Then paste is applied to the outer adjacent borders of the two parts of that diamond form, as shown in Fig. 5, and then the two ends of that diamond form are folded, one after the other, like flaps, over upon the central rectangular part of the diamond form, and the bag shown in Fig. 6 is thus completed.

Among all the paper bags heretofore patented in the United States the nearest approach to this of mine is that described, illustrated, and claimed in Letters Patent of the United States No. 353,307, granted on the invention of William H. Honiss, November 30, 1886, and of which many hundreds of millions have heretofore been made, sold, and used. My invention differs from that one in having two inwardly-inclined longitudinal folds in each of two opposite sides of it instead of having one such fold there, and in having the inwardly-inclined quadrangular fold A and the outwardly-inclined fold B uniting the rectangular bottom to the paper which composes two such inwardly-inclined longitudinal folds. It is a part, though not an indispensable part, of my invention to make the middle ply *y* narrower than the plies *x* and *z*, so that its outer edge is nearer the longitudinal center of the body of the bag than are their outer edges, in order that as the bag is pressed when being manufactured or afterward the outer turns of the three plies *x*, *y*, and *z* are not all in the same vertical plane, and therefore are not so sharply creased as they would be in that case.

The principal merit of my invention resides in the fact that such a bag is opened out into the rectilinear form more easily and more perfectly than is the case with the Honiss bag, and the mouth of the bag is thus more easily and quickly expanded fully enough to receive without spilling whatever merchandise is to be poured into it.

I claim as my invention—

1. A paper bag having a flat rectangular bottom, two inwardly-inclined longitudinal folds in each of two opposite sides of the said bag, and an inwardly-inclined quadrangular fold A and an outwardly-inclined fold B between the rectangular bottom and each of said sides, all substantially as described.

2. A paper bag having a flat rectangular bottom and two inwardly-inclined longitudinal folds in each of two opposite sides of the said bag, and having the outer bends of the plies of paper which constitute those longitudinal folds occupying two or more different vertical planes, all substantially as described.

WILLIAM A. LORENZ.

Witnesses:
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KATE C. CHENEY.