

(Model.)

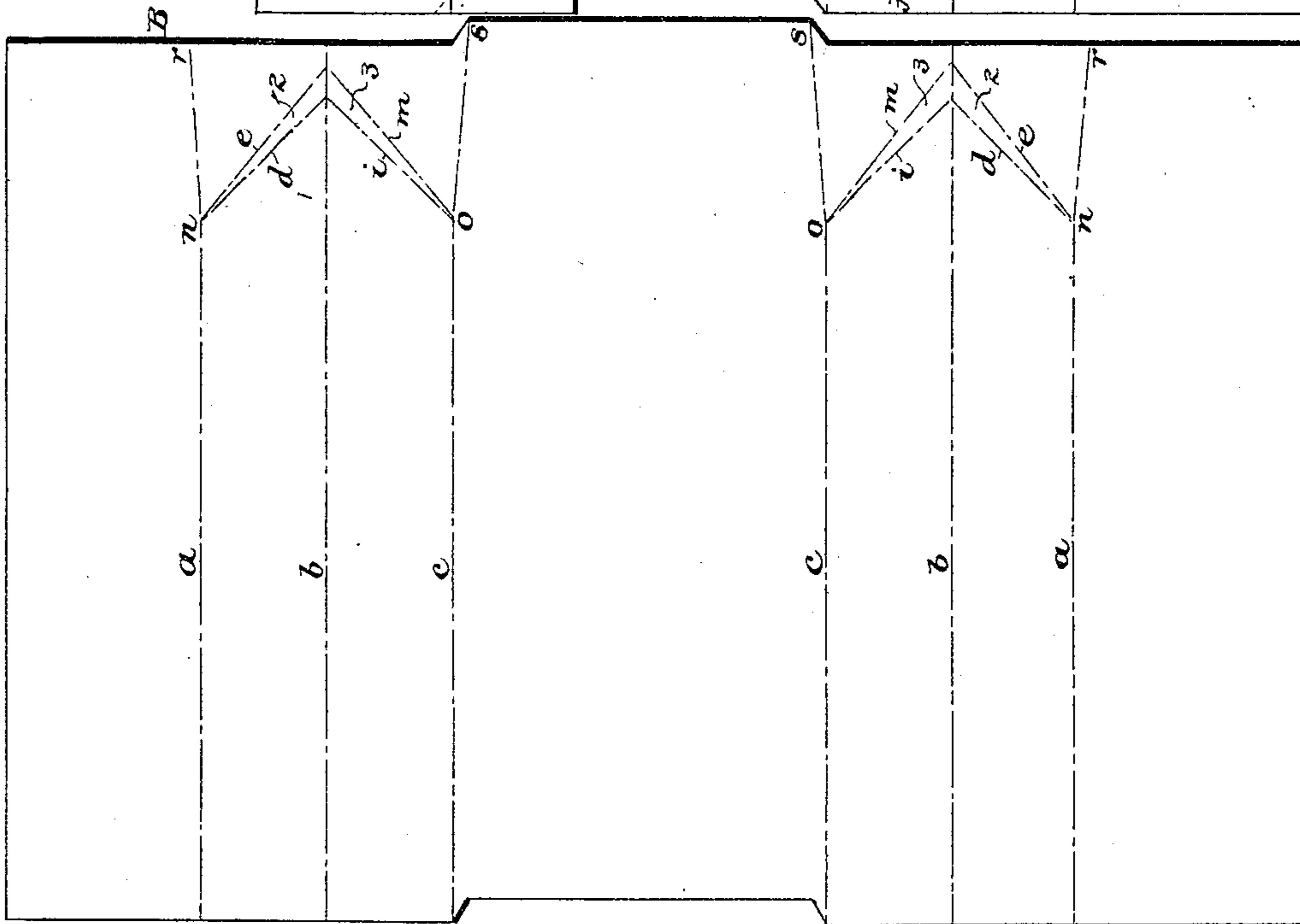
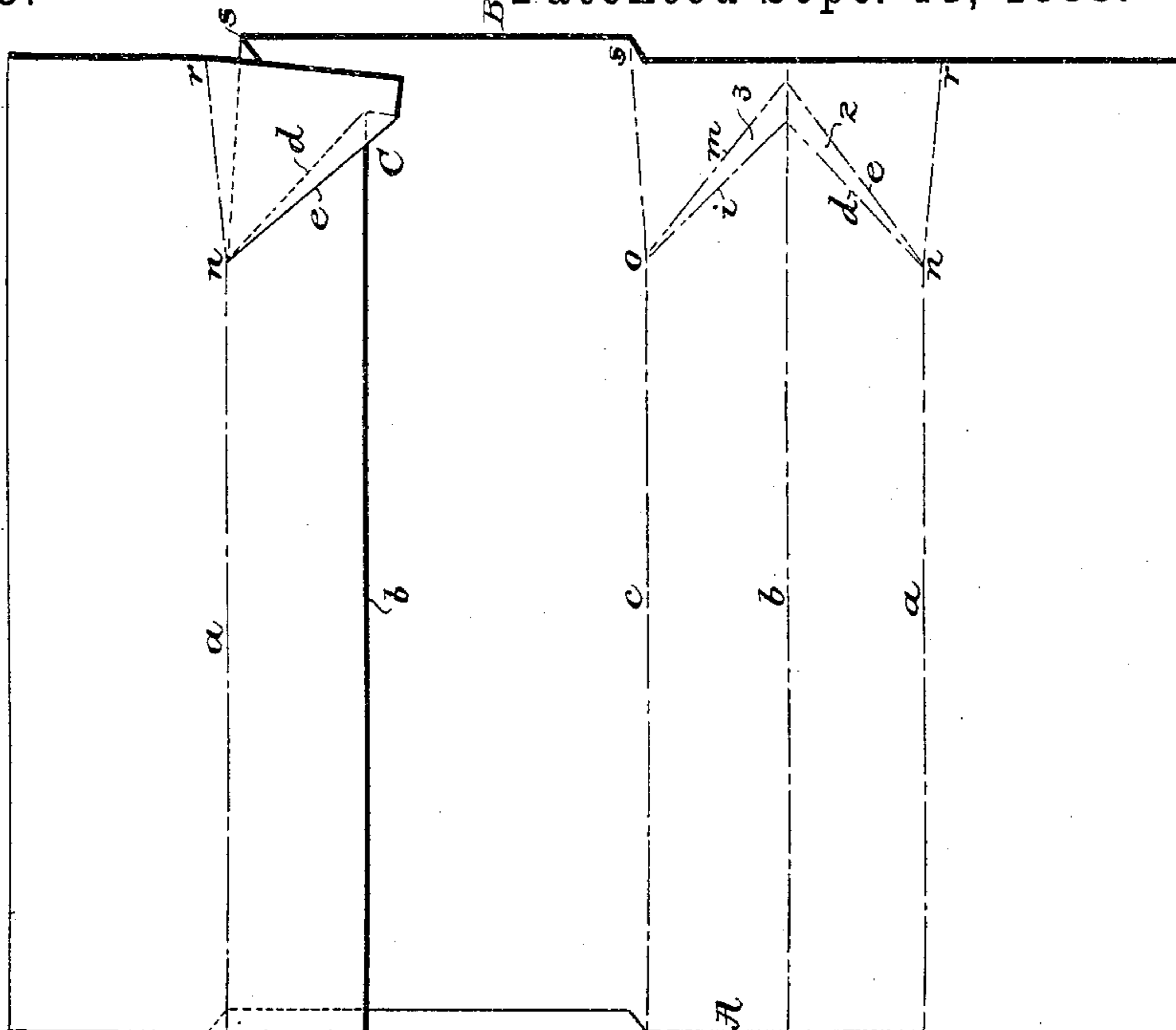
2 Sheets—Sheet 1.

D. APPEL.
PAPER-BAG.

No. 389,353.

Patented Sept. 11, 1888.

Fig. 2.



Witnesses.

Wm. A. Harris,
Sidney L. Johnson,

Fig. 1.

Inventor.

Daniel Appel.
by Foster & Newman
Attorneys.

(Model.)

2 Sheets—Sheet 2.

D. APPEL.
PAPER BAG.

No. 389,353.

Patented Sept. 11, 1888.

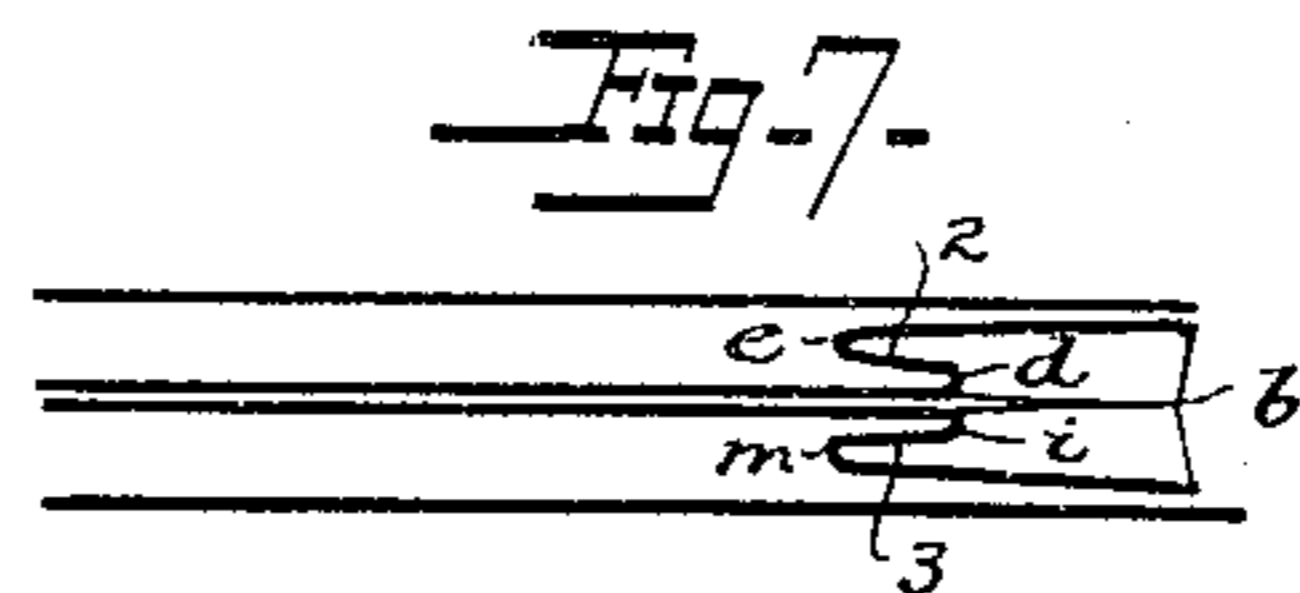
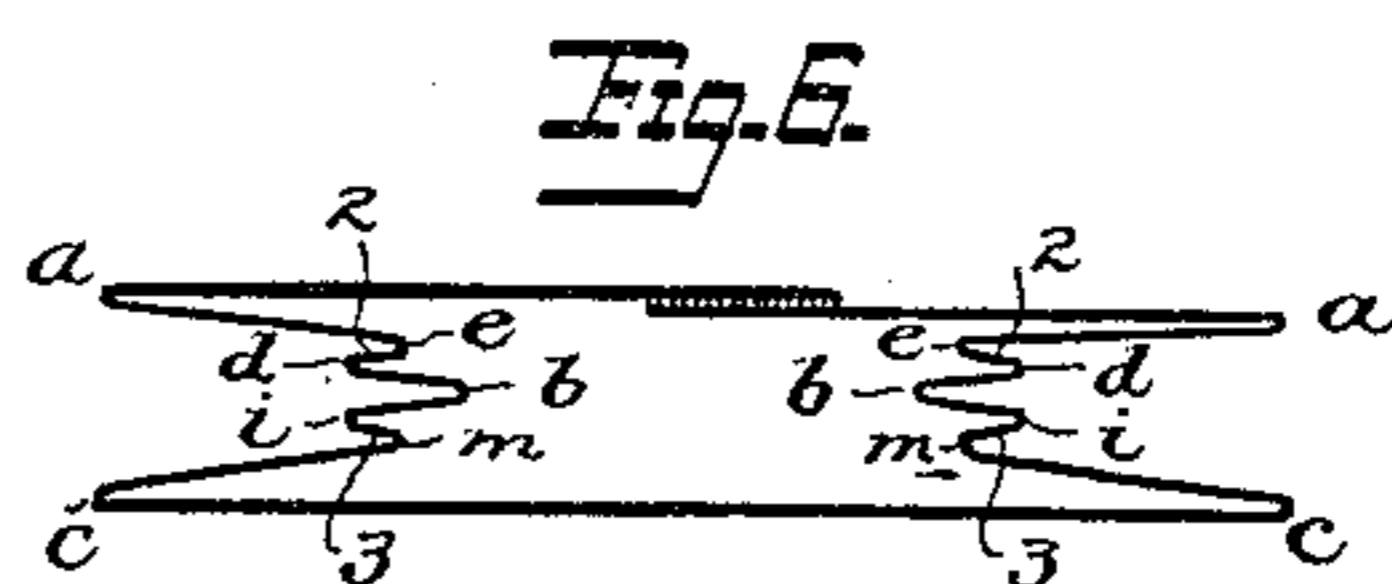
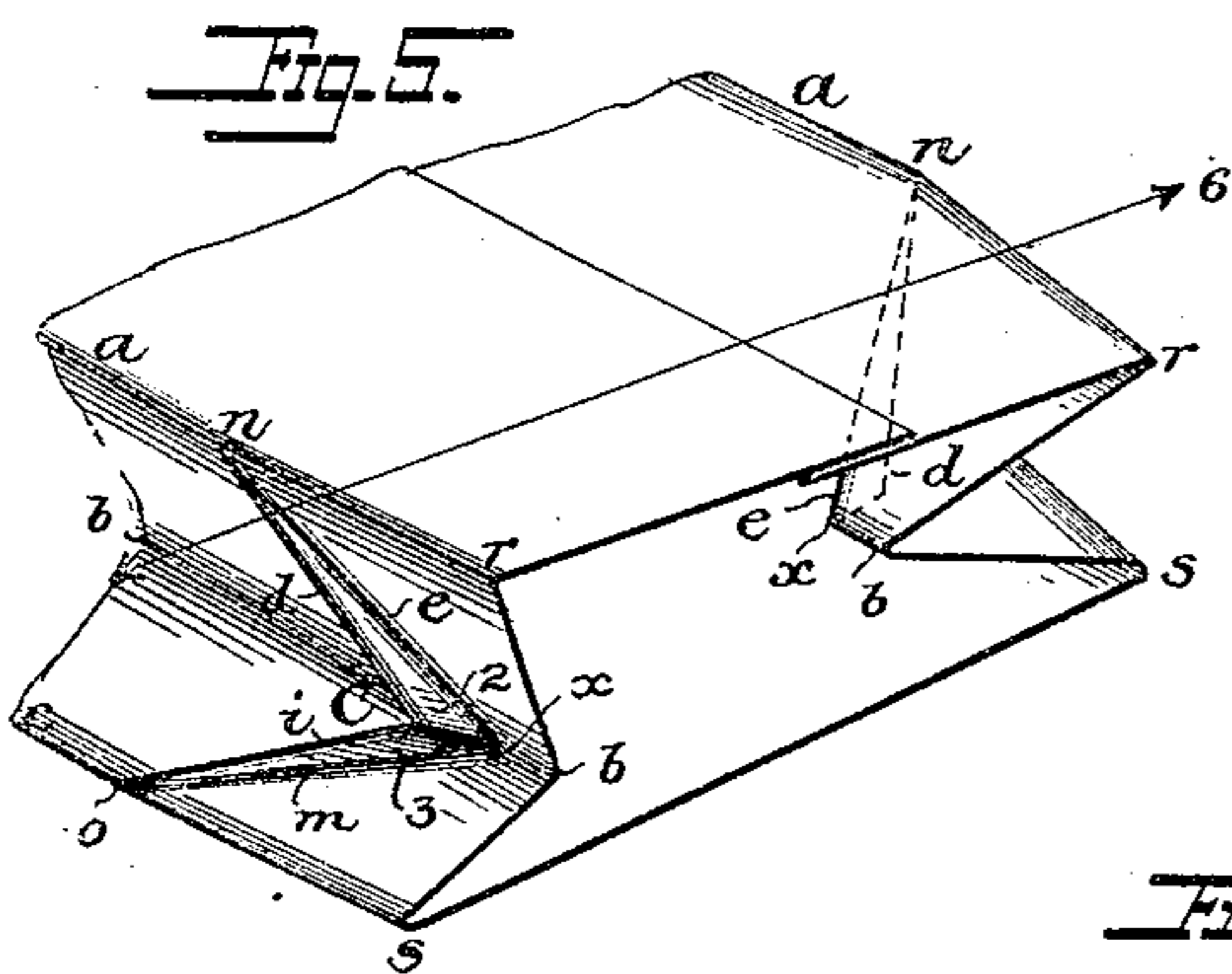
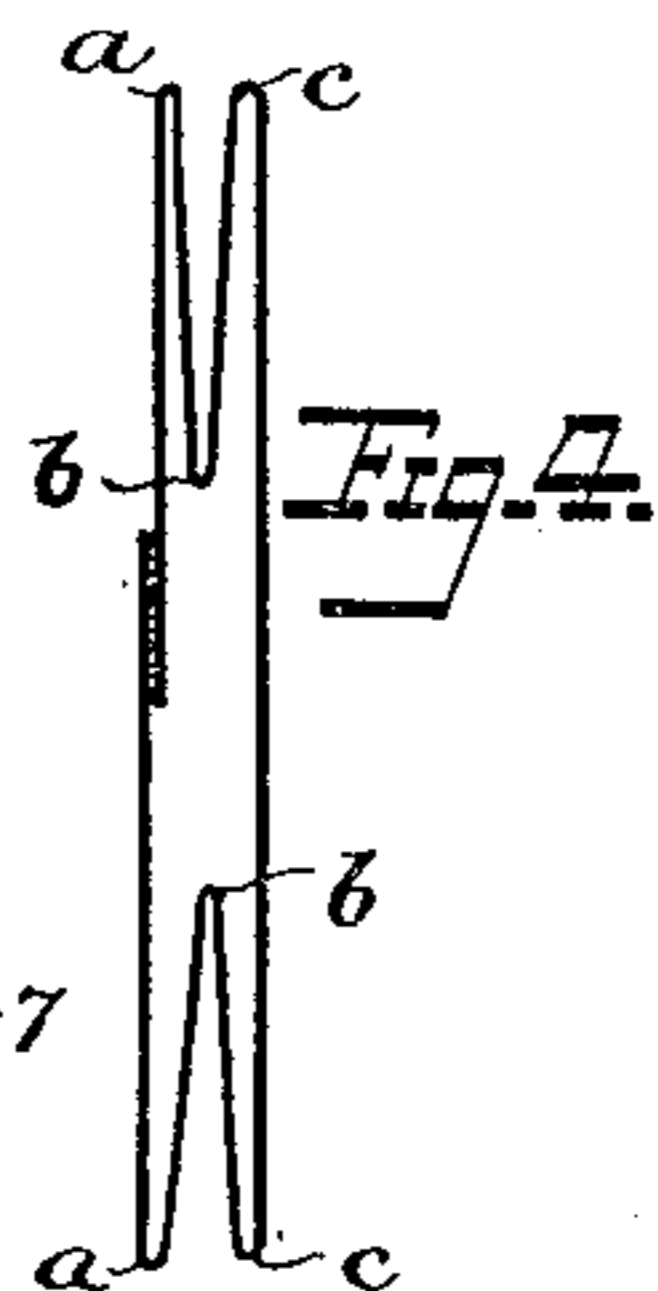
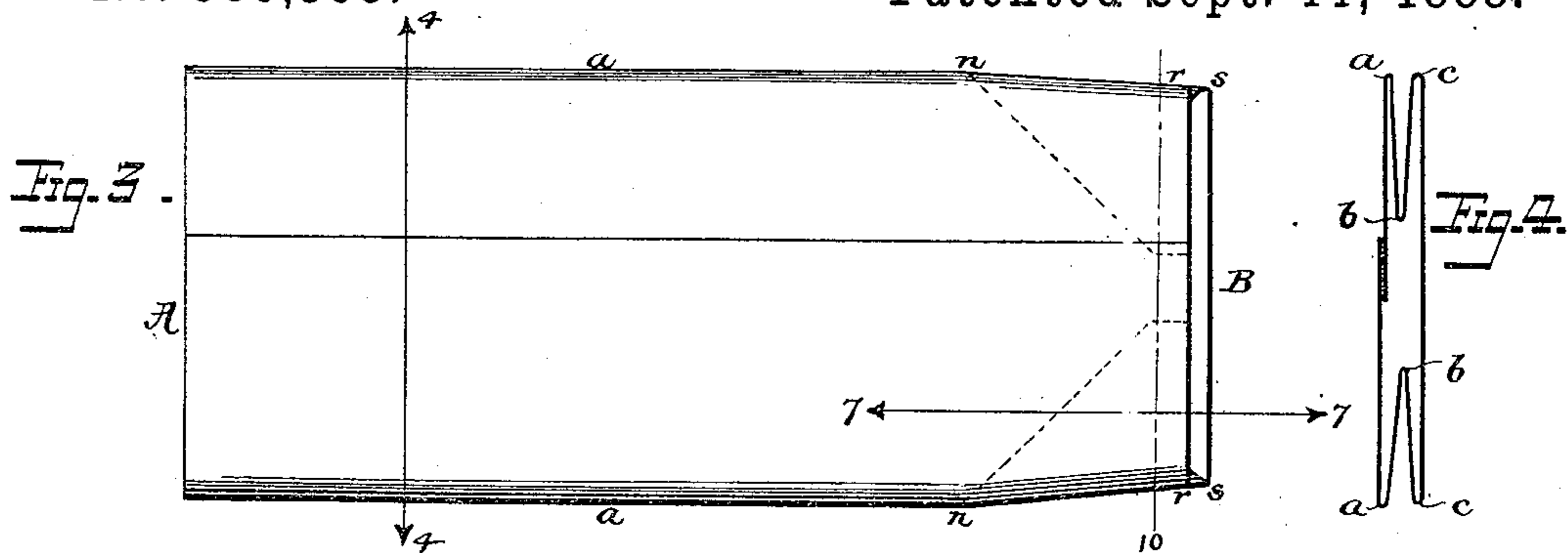


Fig. 8.

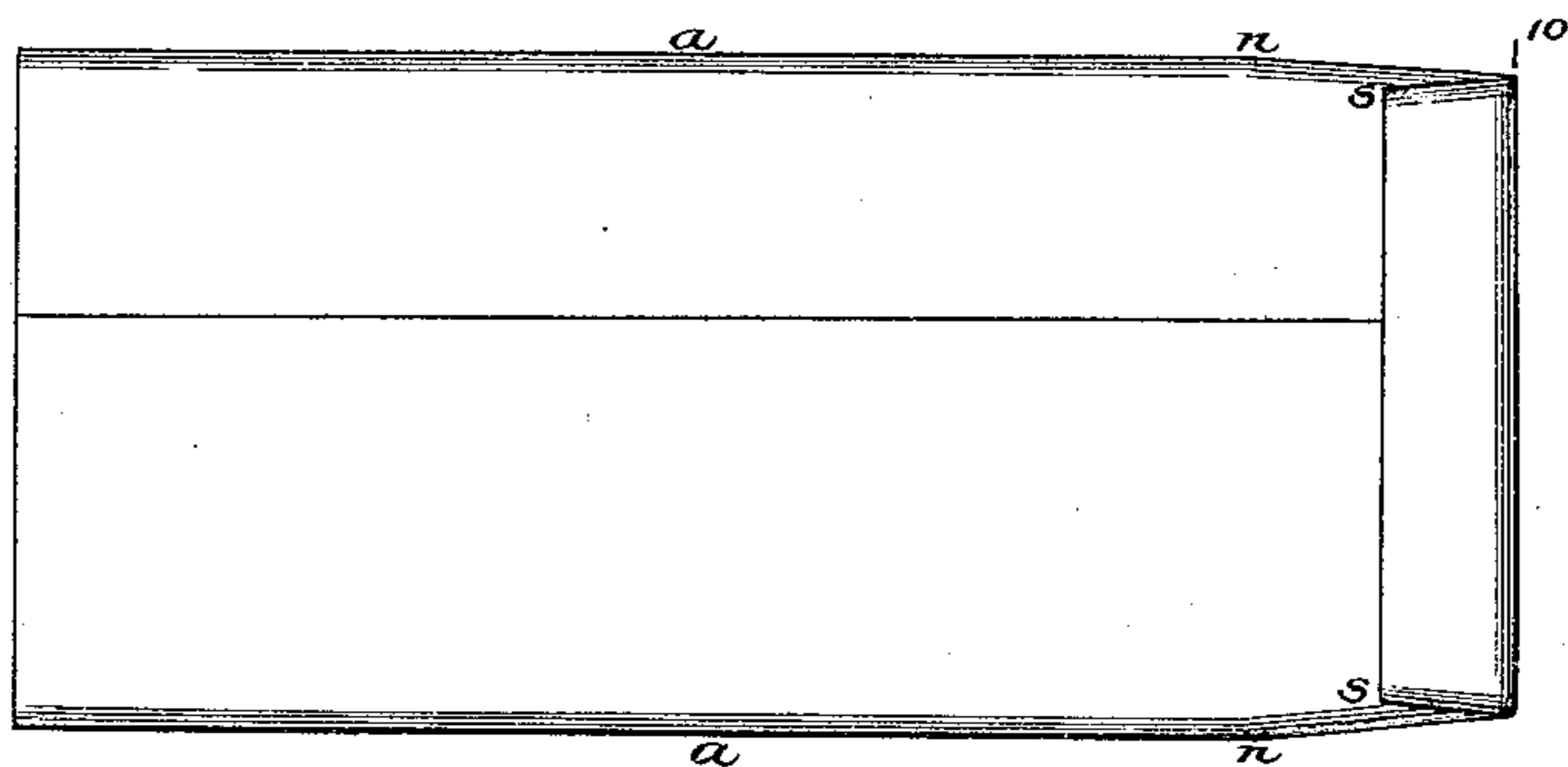


Fig. 9.

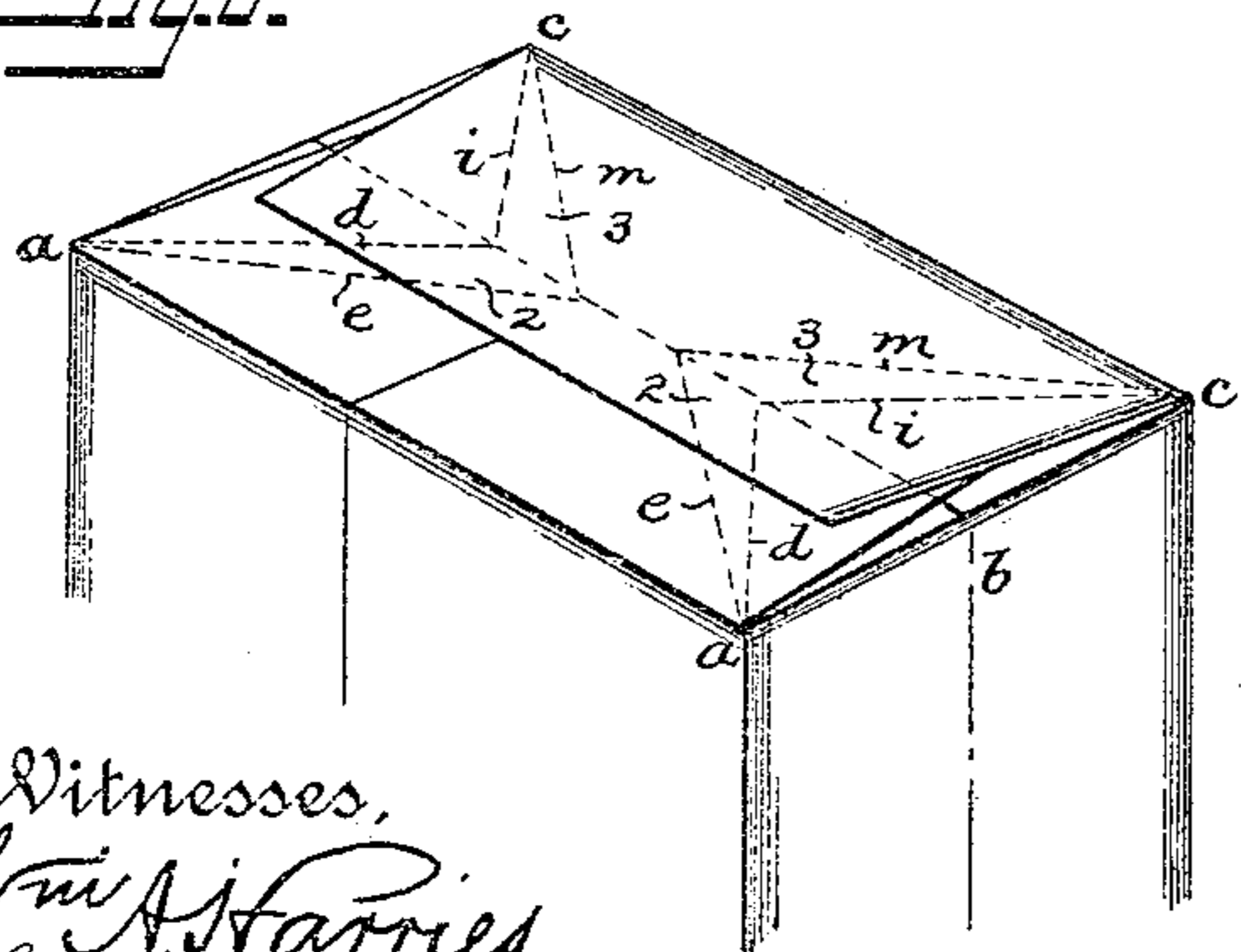
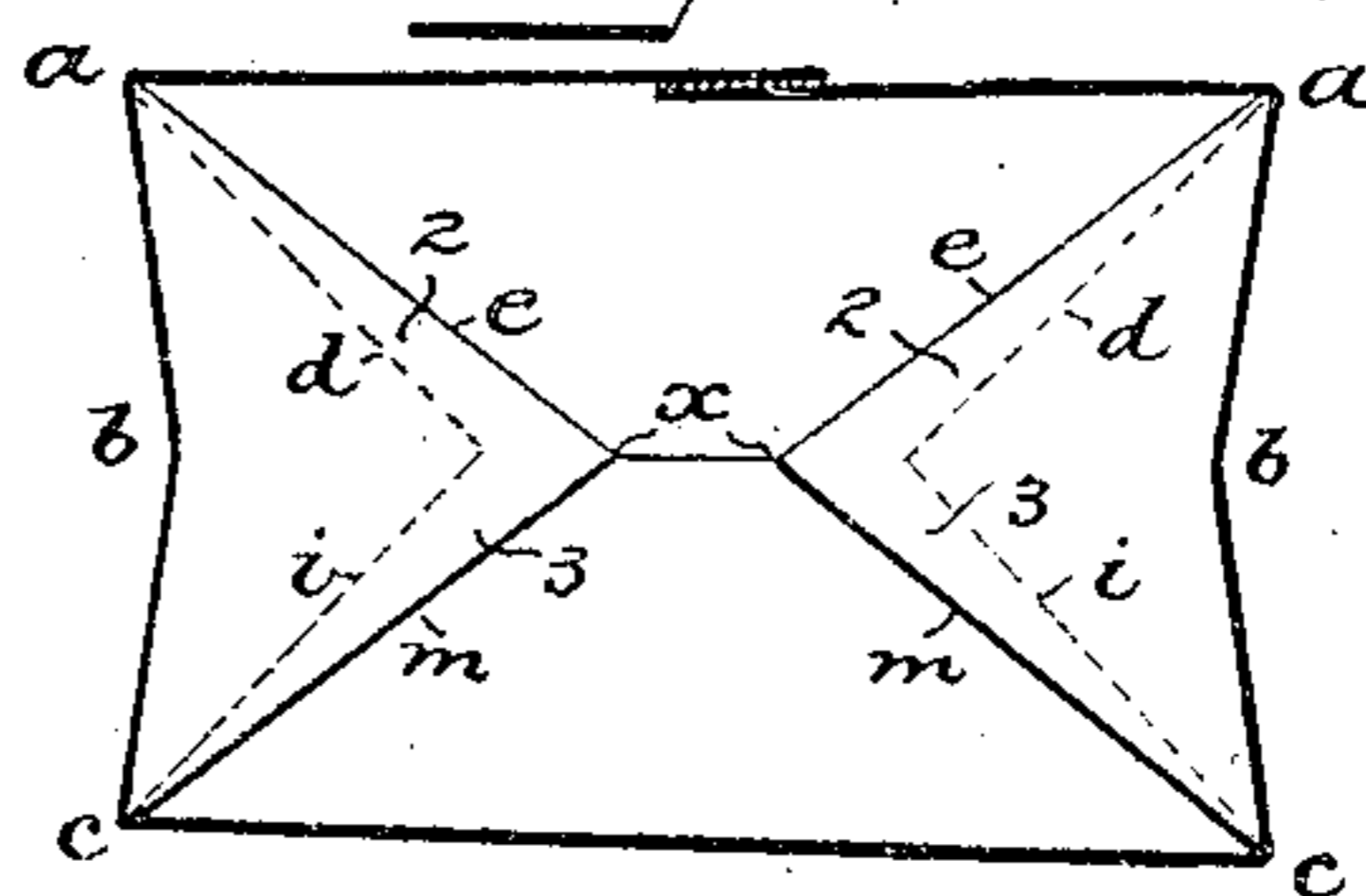


Fig. 10.



Witnesses,
Wm. A. Harris.
Sidney L. Johnson.

Inventor,
Daniel Appel.
by Foster & Freeman
Attorneys.

UNITED STATES PATENT OFFICE.

DANIEL APPEL, OF CLEVELAND, OHIO, ASSIGNOR TO THE UNION PAPER BAG MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

PAPER BAG.

SPECIFICATION forming part of Letters Patent No. 389,353, dated September 11, 1888.

Application filed September 30, 1887. Serial No. 251,114. (Model.)

To all whom it may concern:

Be it known that I, DANIEL APPEL, a citizen of the United States, residing at Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Paper Bags, fully set forth in the following specification and represented in the accompanying drawings.

This invention relates generally to paper bags, and particularly to that class of bags known as the "square" or "bellows-sided" bag, such as is fully set forth in Letters Patent No. 123,811, to L. C. Crowell. As is well known to those acquainted with this art and the use of this class of bags, it has been a great desideratum to so form the bag that certain creases shall be imparted thereto adjacent to its bottom which will definitely define the lines upon which the bag-bottom will be distended into rectangular form when the bag is opened to be filled. Many methods have heretofore been proposed looking to the accomplishment of this object; and the present invention consists in a bag provided with certain folds which define certain lines which ultimately cause the bag-bottom to assume the rectangular form when the bag is opened with more readiness.

In the accompanying drawings, Figure 1 is a view of a bag-blank provided with the longitudinal creased lines upon which the blank is folded to form it into a bellows sided tube, and with other creased lines upon which the blank is folded in accordance with this invention. Fig. 2 is a similar view of the blank, illustrating the position of certain folds in forming it into tubular form. Fig. 3 is a view of the completed tubular blank. Fig. 4 is a cross-section of the same, taken on the line 4 4. Fig. 5 is an enlarged perspective view of the end of the tubular blank, one of the bellows folds being slightly distended. Fig. 6 is a cross-section of the same, taken on the line 6 6. Fig. 7 is a longitudinal section of the same, taken on the line 7 7 of Fig. 3. Fig. 8 is a view of the completed bag in its flat condition. Fig. 9 is a perspective view of the completed bag distended, looking at its bottom. Fig. 10 is a cross-section through the distended bag, looking into the interior of the bag at its bottom.

As is well known, bags of this class are commonly made from an endless web of paper or other suitable material that is folded on longi-

tudinal lines by suitable means into bellows-sided tubular form, as shown in Fig. 3, in such manner that the outer edges of the web meet over the center of the tube and are united by a longitudinal line of paste, the said tube being severed transversely into bag-blanks, ready to be formed into bags by the formation of the bottoms. So far as the present invention is concerned, however, the improved bag may be formed from sheets or blanks, as illustrated in Fig. 1, or from the web, as just described.

In distending the bellows-sided bag from its flat condition into an open condition the disposition of that portion of the material of the bellows fold immediately adjacent to the bottom must be such that it will lie against the bottom within the bag in an angular fold, the vertical walls of the bag rising at the termination of the angular folds at right angles to the bottom. In order to define this ultimate angular fold of that portion of the material forming the bellows side, the present invention contemplates providing the opposite sides of the bag with wedge or conical shaped plicated folds C, (best seen in Fig. 5,) to insure the bottom of the bag when distended partaking the desired rectangular form, and the proper opening of the bellows sides to conform to such form. In order to a more complete understanding of the disposition of this plicated fold with relation to the bag-bottom, a general description of one manner of forming a bag with this peculiar fold will now be given, it being distinctly understood that the invention is not confined to any particular mode of manipulating the material in providing the bag therewith.

Starting from a proper-shaped blank, as seen in Fig. 1, it will be provided with the longitudinal creased lines *a b c*, which define the lines upon which the blank is folded in order to form the bellows sides of the bag and bring the outer edges of the blank together over the center of the blank, to be there united by a line of paste, as before set forth, and transforming the blank into the flat bellows-sided tube seen in Figs. 3 and 4.

The plicated folds may be formed by imparting to the blank, Fig. 1, diagonal creased lines *d e i m*, extending diagonally across the material between the longitudinal creased lines *a* and *b* and *b* and *c*, respectively, the two pairs of the diagonal creased lines meeting at com-

mon points at the creased line *b*. Each pair of these diagonal creased lines, as *d e* and *i m*, start from a common point, *n o*, on the creased lines *a* and *c*, respectively, and gradually separate as they approach the creased line *b*, thus forming between them a wedge-shaped piece, 2 3, respectively, the base or greatest width of the wedge shape being at the creased line *b* and gradually vanishing until the lines *a* and *c* are met at the points *n* and *o*. Preferably the longitudinal creased lines *a b c* will be parallel from the edge A of the blank until the lines *a* and *c* meet the points *n* and *o*, when they will be directed diagonally away from a right line, meeting the edge B of the blank at the points *r s*, the line *b* not being changed from a right line. The degree at which the lines *a* and *c* depart from a right line will be found in practice to correspond with the degree of angularity between the diagonal line *e* with respect to the line *d* and the line *m* with the line *i*, and it may be stated the position of the points *n* and *o* on the lines *a* and *c* will be coincident with the rectangular line on which the bottom will form when the bag is distended, all of which will be more fully set forth hereinafter. In forming these diagonal creased lines into the plicated or V-shaped folds C, with which the tubular blank and bag, when in their flat condition, are ultimately provided, the wedge-shaped pieces 2 and 3 are folded over on their lines *d* and *i*, so as to lie in contact with the adjacent portion of the material lying between the lines *a b* and *b c*, as seen in Fig. 2, thus foreshortening the length of the material on the line *b* and projecting that portion of the material on said line between the diagonal lines *e* and *m* and the edge B of the blank toward the center of the blank in advance of the major portion of the inner line of the bellows fold, as clearly seen in Fig. 2. This inward projecting of this portion of the bellows fold necessarily draws on the outer edges of the fold—that is, on the longitudinal lines *a* and *c*—and causes it to fold on the lines from *n* to *r* and *o* to *s*, thus in a measure contracting the apparent width of the bag, as will be seen. The other side of the blank is similarly manipulated to form the plicated or V-shaped folds therein, and the outer edges of the blank are then folded over to its center and the tubular blank is completed, as seen in Figs. 3, 4, and 5. The flaps at this B end of the blank are then provided with a line or lines of paste, and will be folded over on the transverse line 10 onto the body of the blank to form its bottom and complete the formation of the blank, as seen in Fig. 8. This transverse folding of the end of the blank should be immediately in rear of the plicated folds, so as not to fold any portion of said fold into the bottom-closing fold; but it should be directly in rear of the edge *x* of the base of the plicated fold, so that the material between said fold and the end B of the blank is insured being within the said transverse closing fold, and not leave any loose material between the

edge *x* and said transverse fold. The manner in which the plicated or V-shaped folds C lie in the completed tubular blank or bag is seen in cross and transverse section in Figs. 6 and 7.

While the blank, as before stated, is apparently lessened in width at the bottom-forming end, it does not in effect decrease the width of the bag, but permits the extent to which it is apparently decreased in width to be added to the material which lies within the diagonal lines forming the angular folds which lie upon the bottom of the bag when it is distended as in Fig. 10, so that a greater portion of the bottom is re-enforced by another thickness of material than has heretofore been the case in this class of bags. It may be remarked, in passing, that the diagonal lines *e* and *m*, upon which the bellows folds will lie on the bottom of the bag, forming the triangular pieces seen in Fig. 10, bounded by the lines *a* to *x*, *x* to *c*, and *c* to *a*, differ from similar lines upon which the bellows folds have heretofore been folded, which are substantially represented by the creased lines *d* and *i*, in that said lines *e* and *m* are not at right angles to each other, as commonly the case, and as are the lines *d* and *i*, but form with each other a more or less acute angle, the effect of which is to cause the bottom, when the bag is distended as in Fig. 9, to assume the rectangular form shown with greater readiness.

When the bag is distended as shown in Figs. 9 and 10, the plicated or V-shaped folds C will in a measure be obliterated by the adjacent portions of the bellows folds forming the angular pieces shown in Fig. 10, straightening out the folds on the lines *d i*, so as to lie flat on the bag-bottom.

What I claim is—

1. A square bag having at each of its opposite sides adjacent to its bottom two V shaped folds, substantially as described.
2. A square bag having bellows folds in each of which, adjacent to the bottom, are two V-shaped folds, substantially as described.
3. The herein-described tubular blank for a bag, having inward-folded or bellows sides, a portion of said bellows sides near one end of the blank being folded backward and inward on diagonal lines toward the center of the blank, whereby said portion of the bellows folds are extended inwardly beyond the remaining and major portion of the bellows folds.
4. The herein-described bag, provided at each of its sides with the diagonal creased lines *d e* and *i m*.
5. The herein-described bag, provided with the longitudinal creased lines *a, n, r*, and *b* and *c o s* and diagonal creased lines *d e* and *i m*.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL APPEL.

Witnesses:

E. H. BOHM,
S. S. MARSH.