

(Model.)

4 Sheets—Sheet 1.

D. APPEL.

PAPER BAG.

No. 388,614.

Patented Aug. 28, 1888.

Fig. 1.

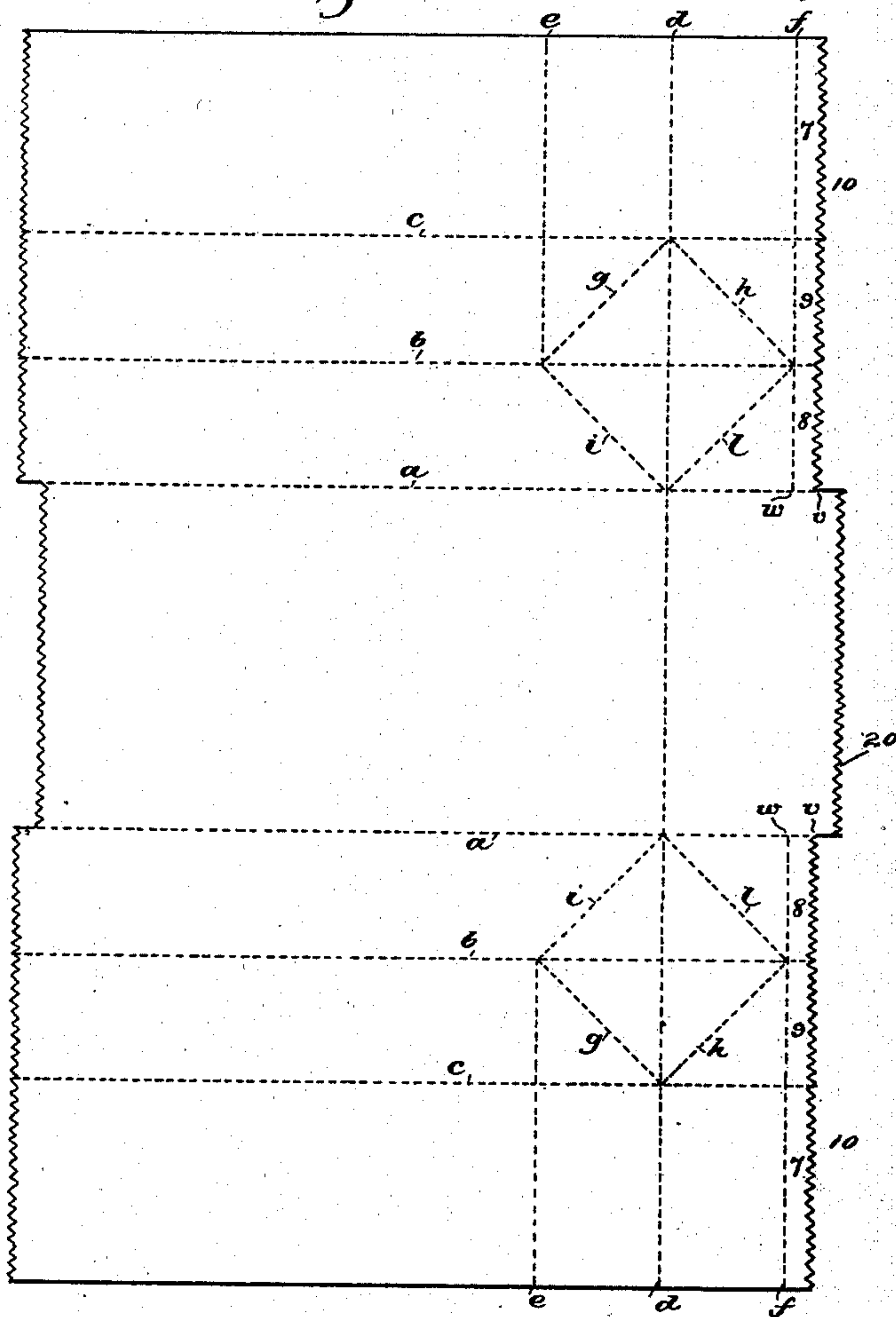
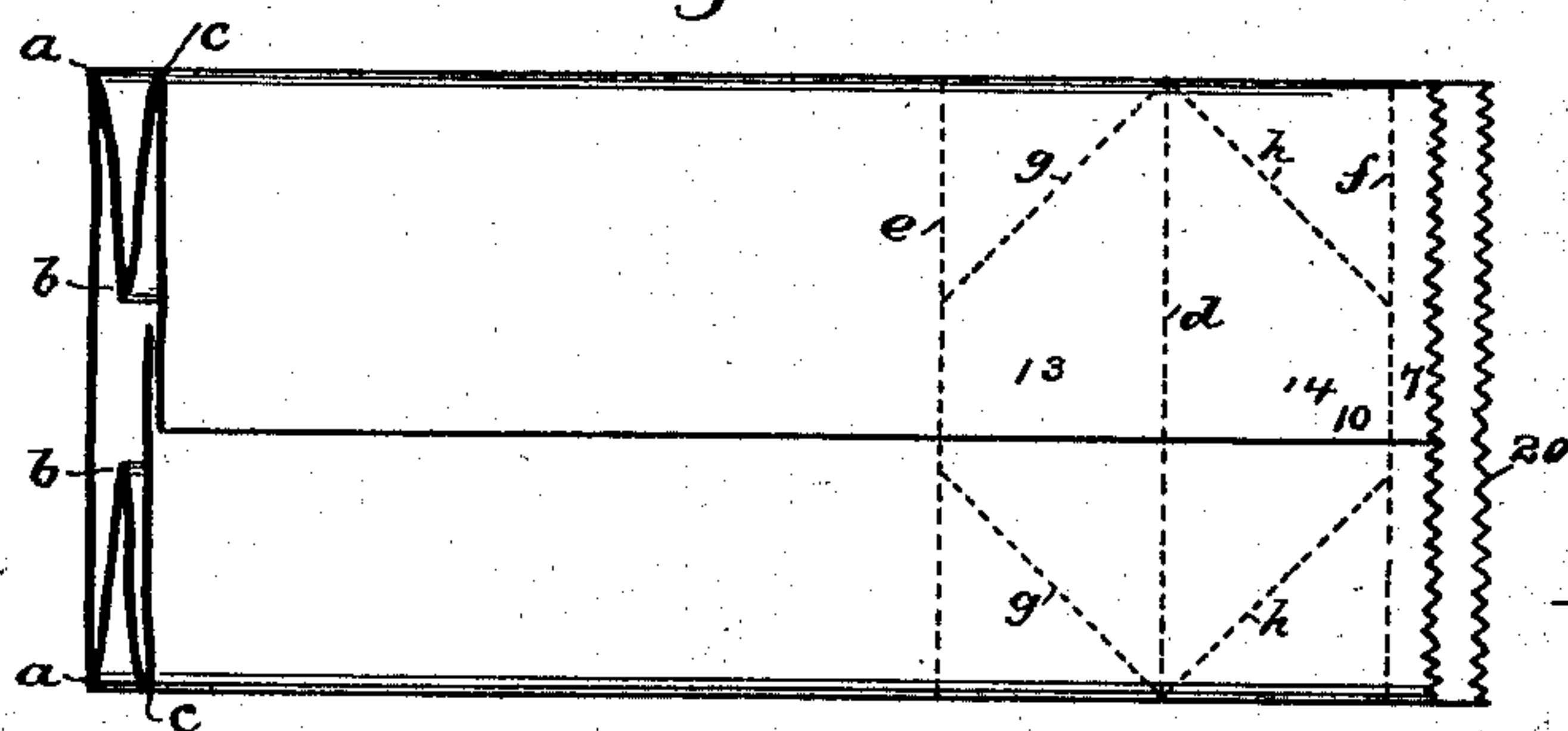


Fig. 2.



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by Messrs & Phillips.
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Fig. 3.

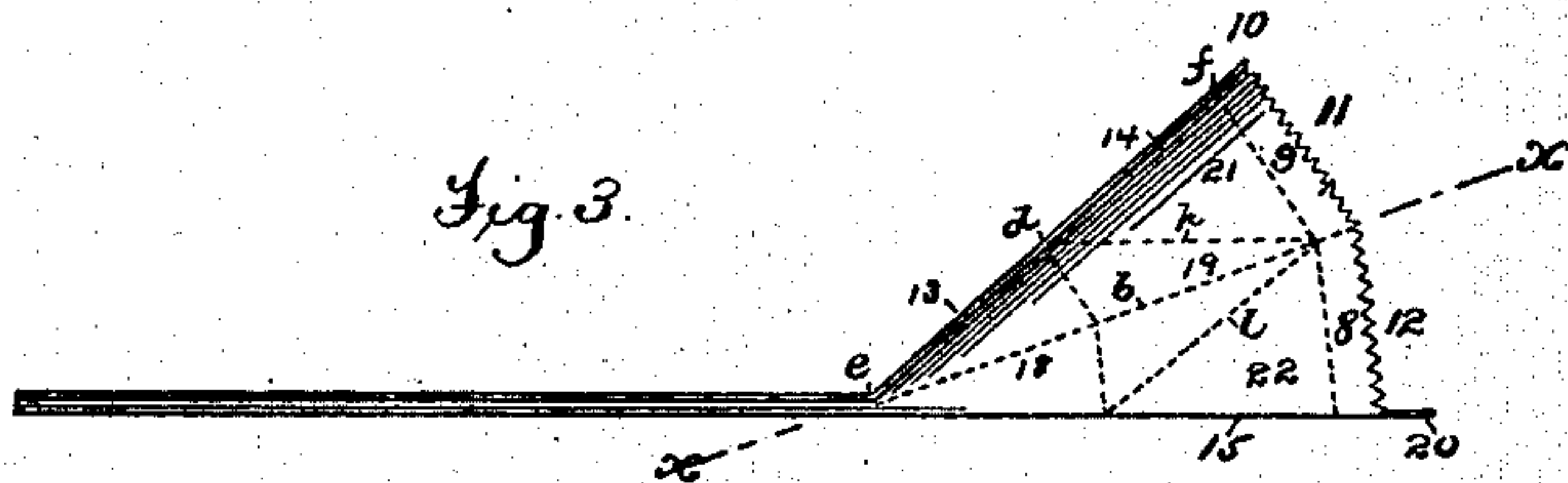


Fig. 4.

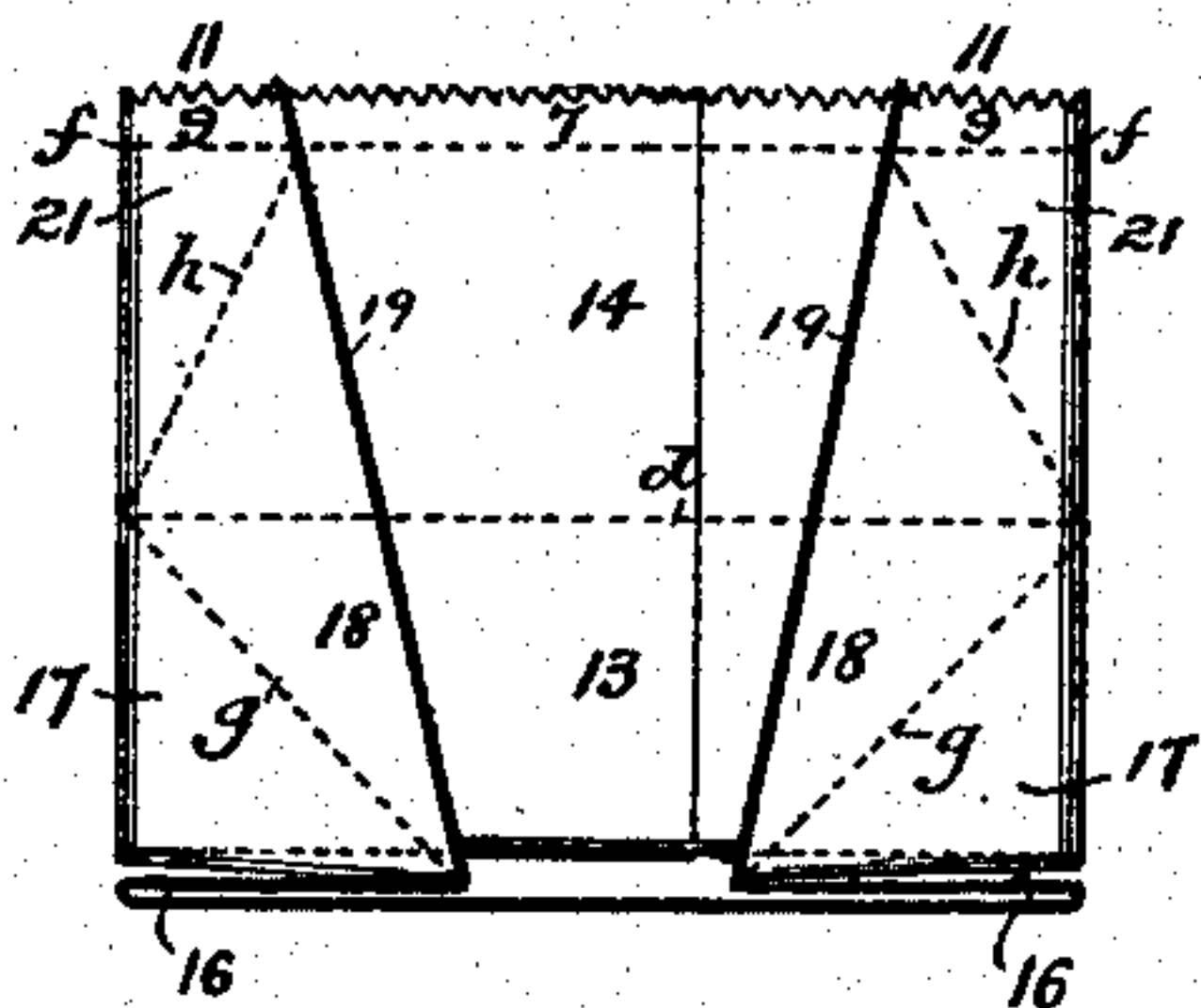


Fig. 5.

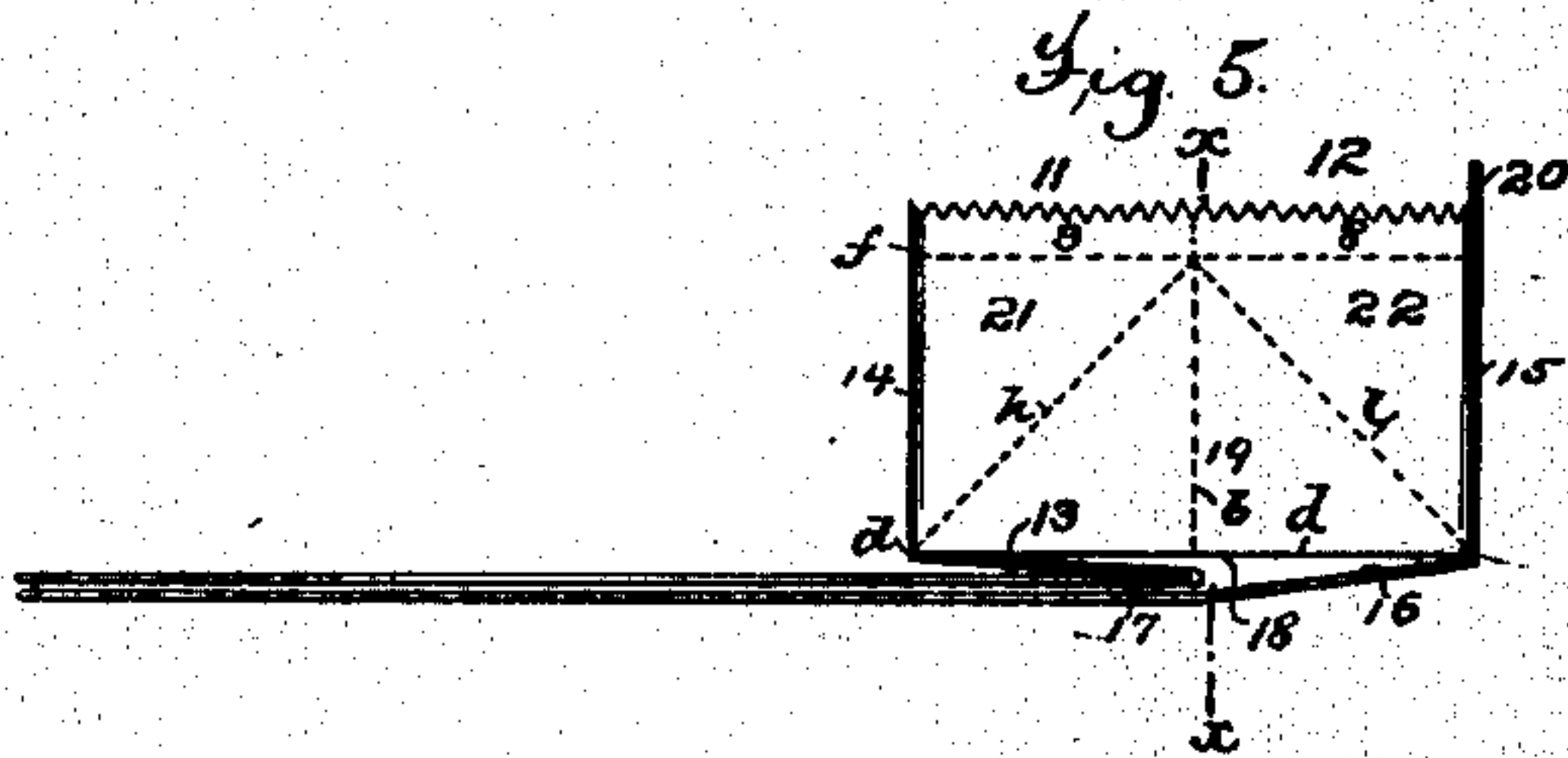


Fig. 7.

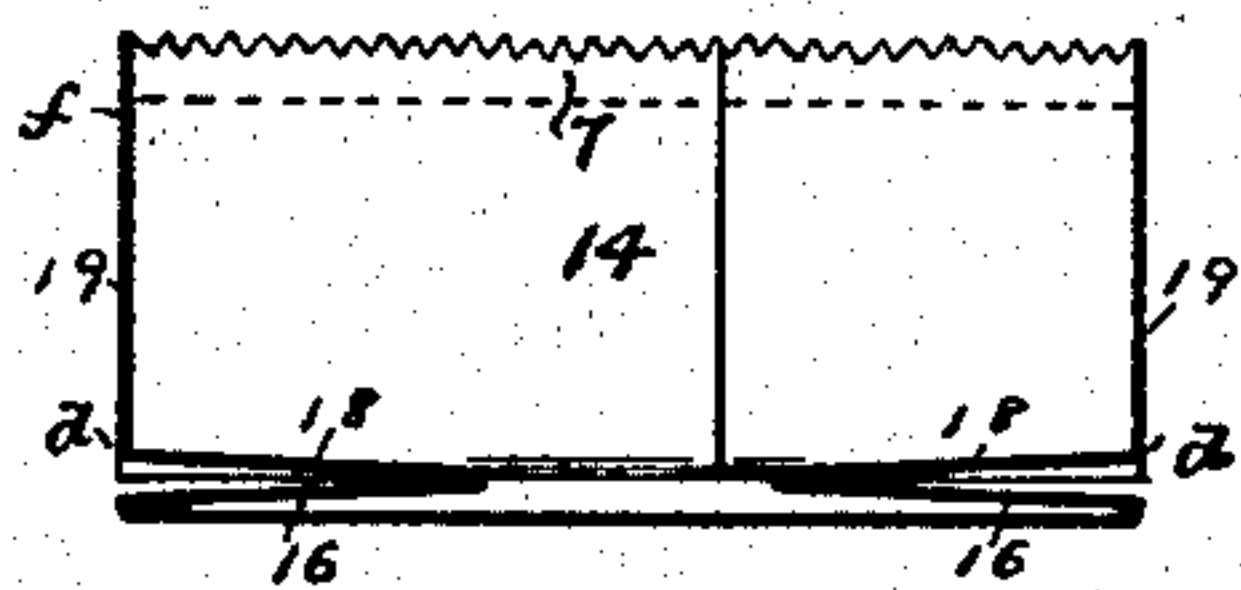


Fig. 6.

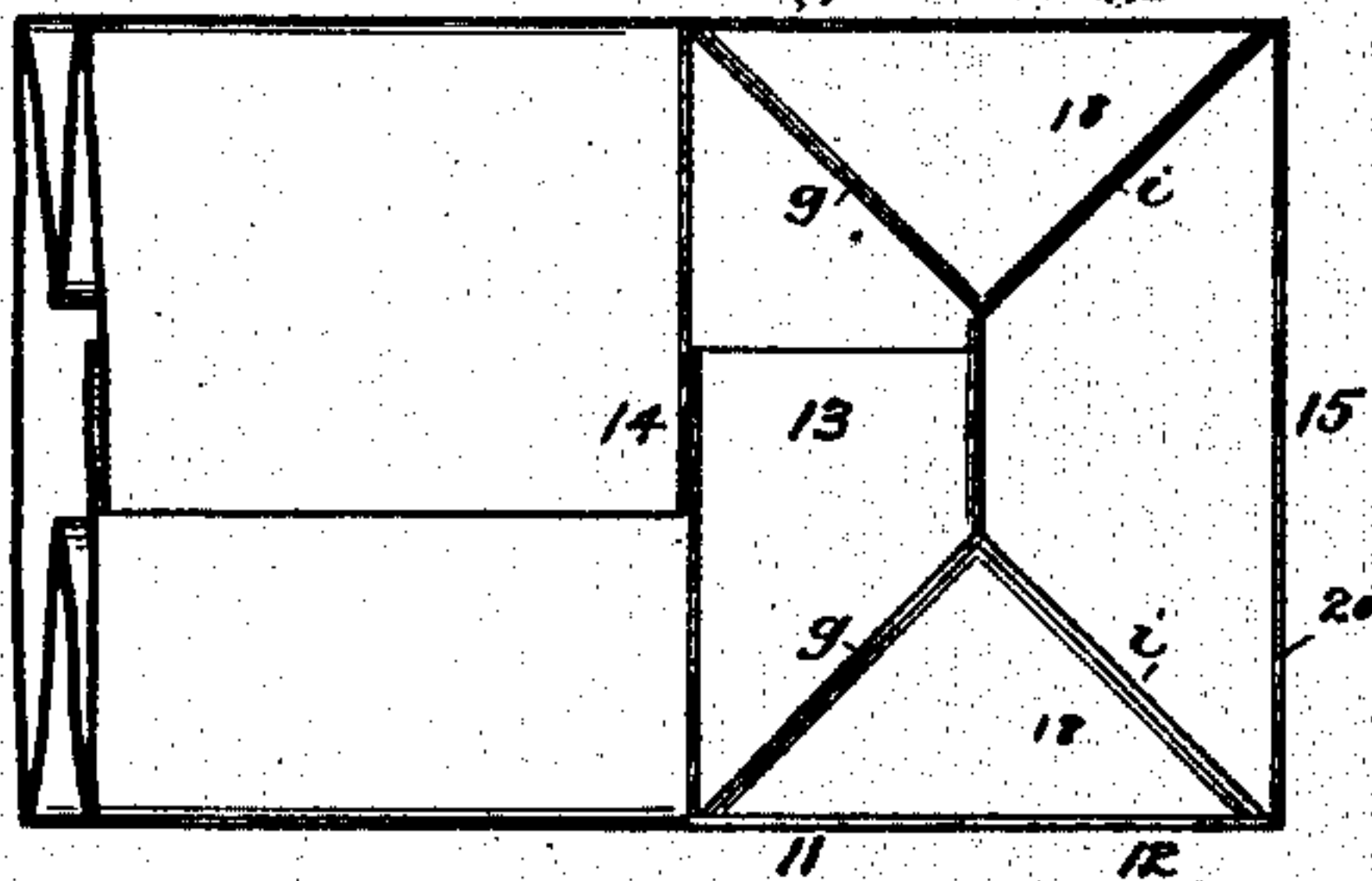


Fig. 8.

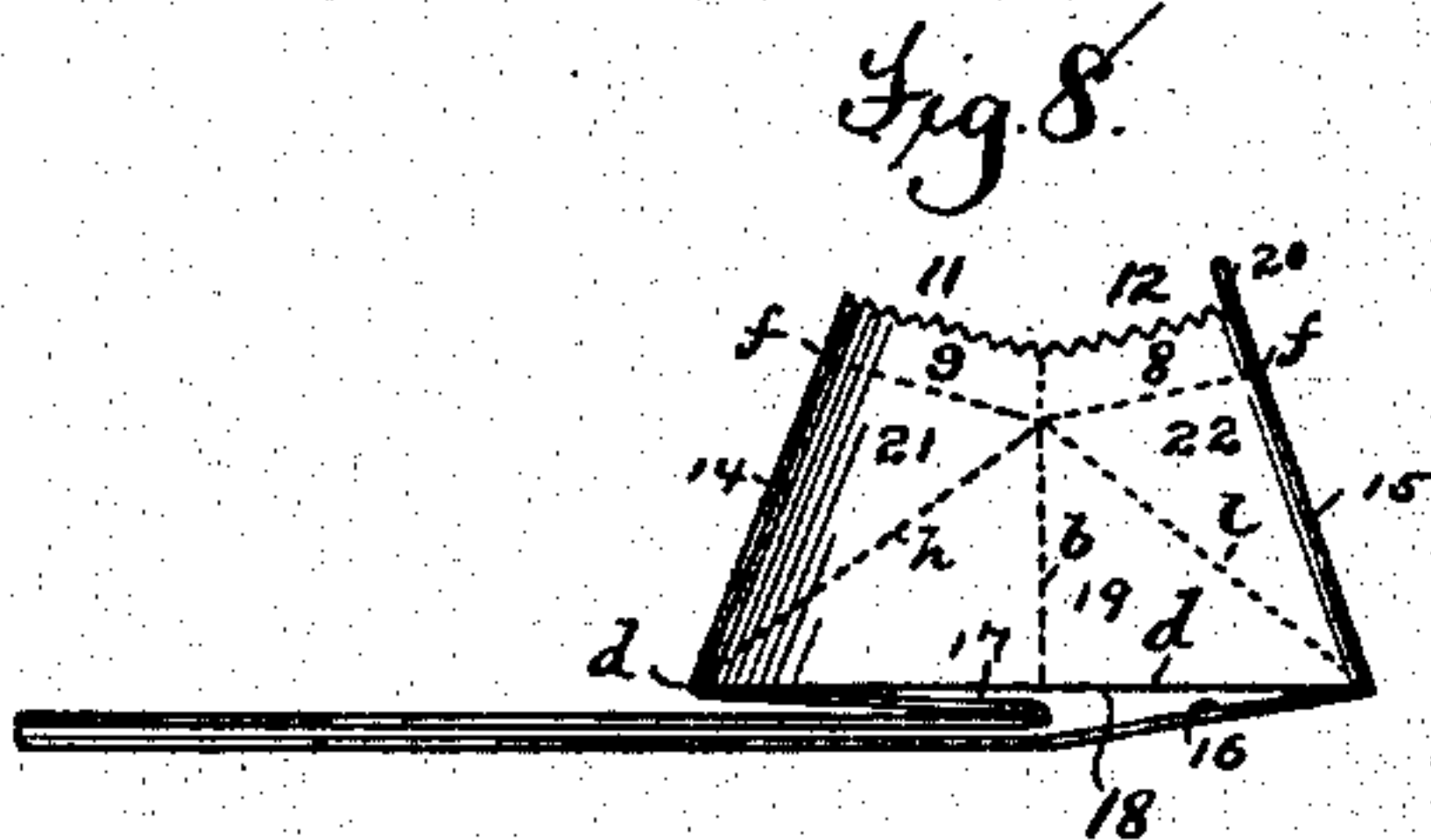
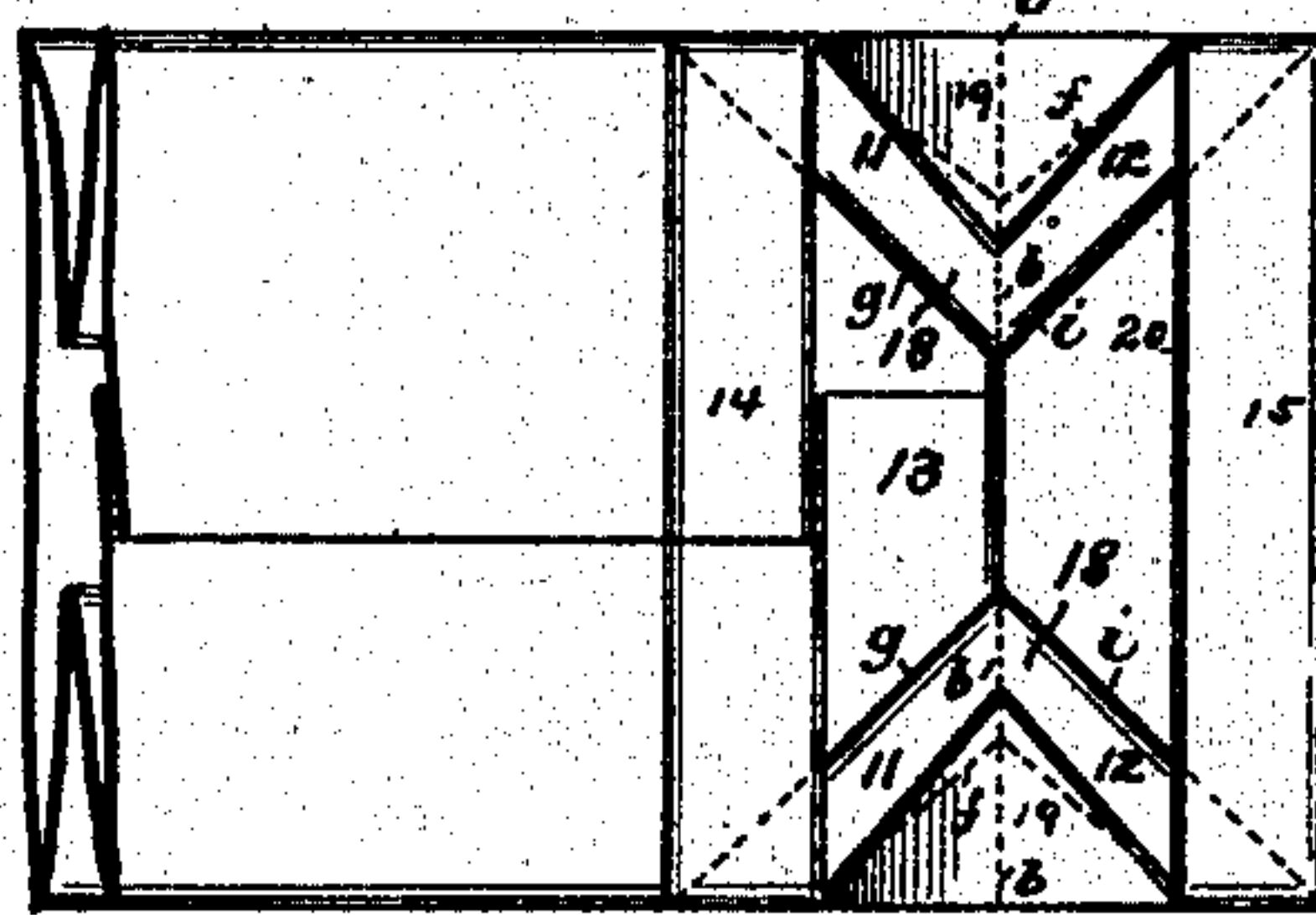


Fig. 9.



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Fig. 10.

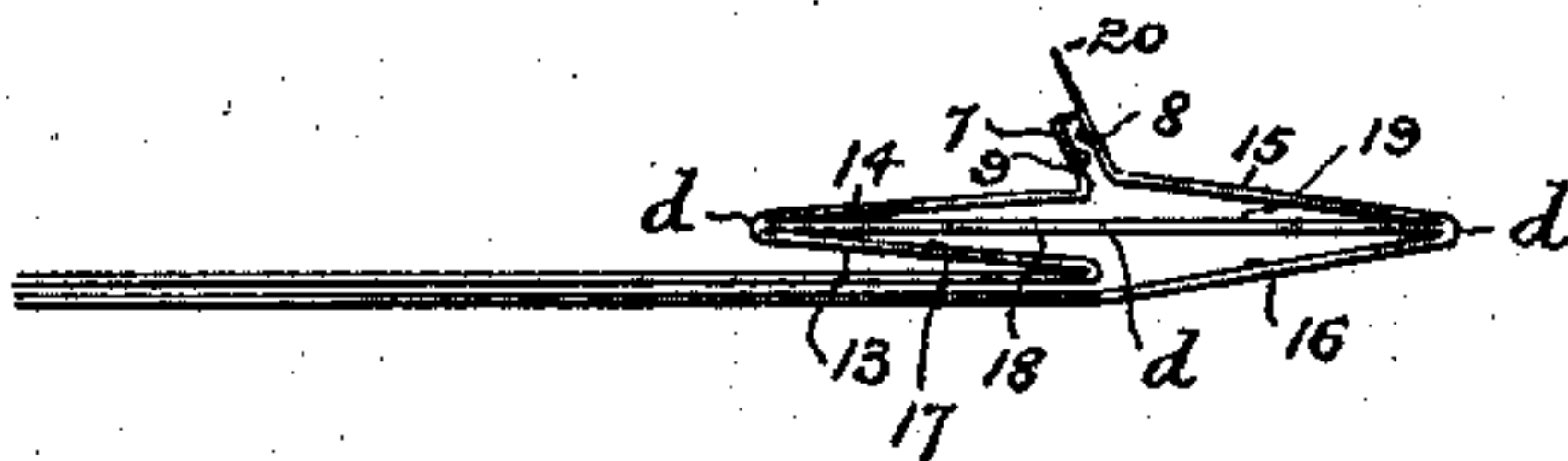


Fig. 13.

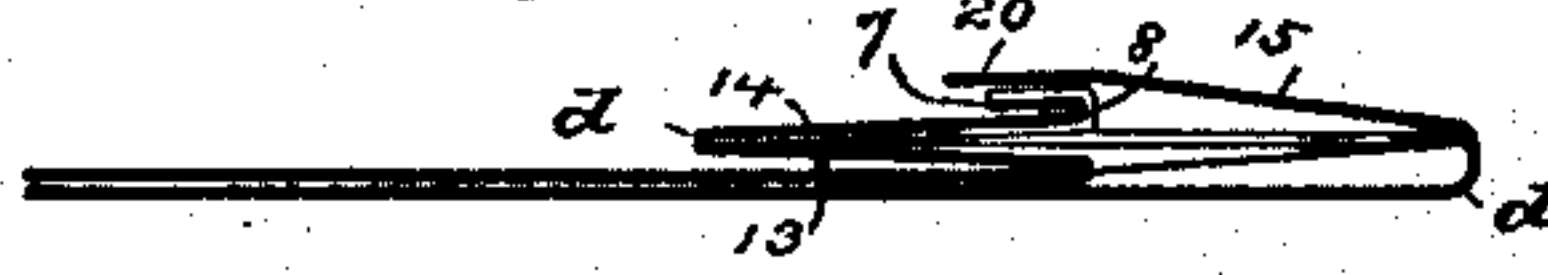


Fig. 11.

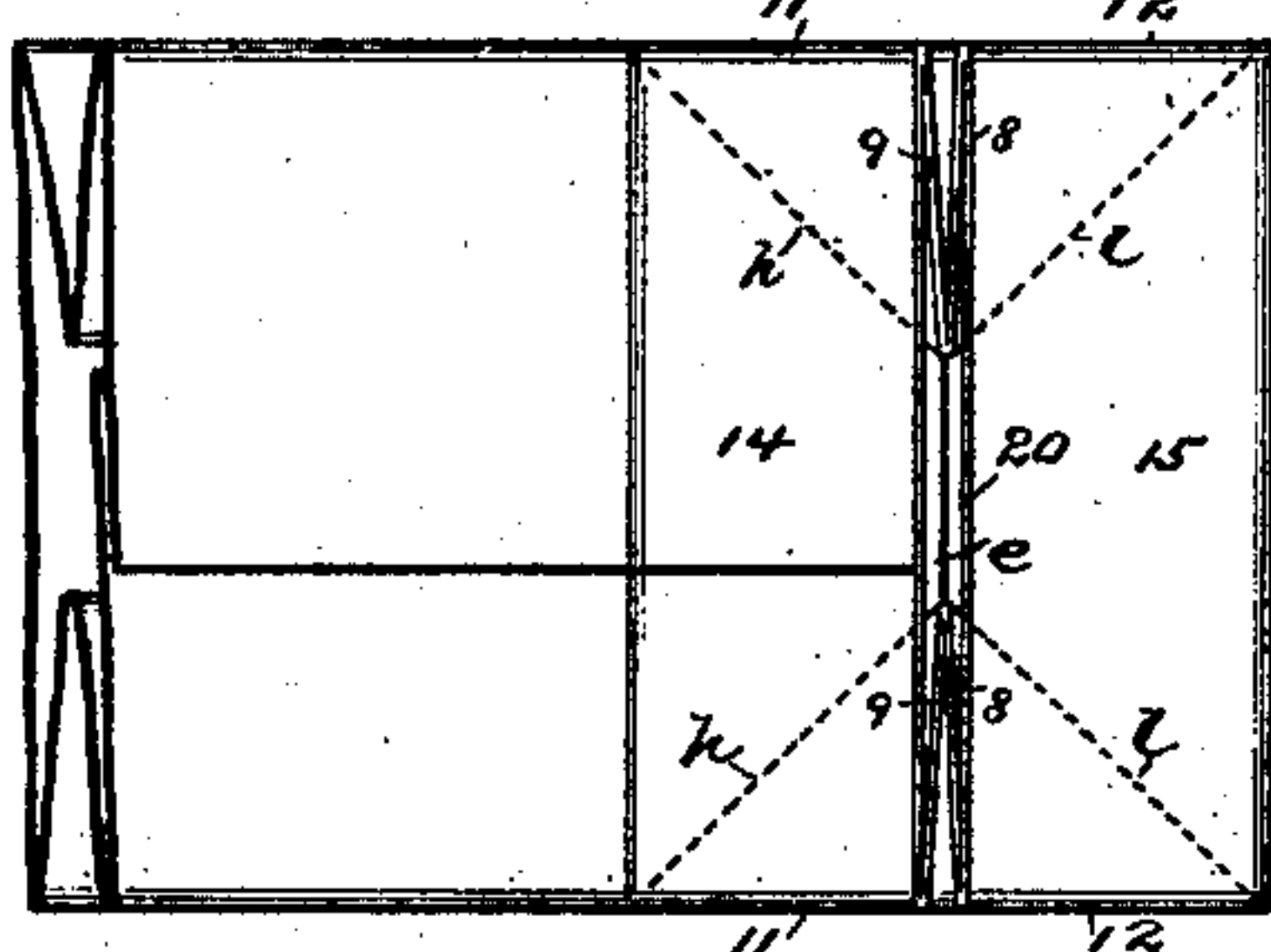


Fig. 12.

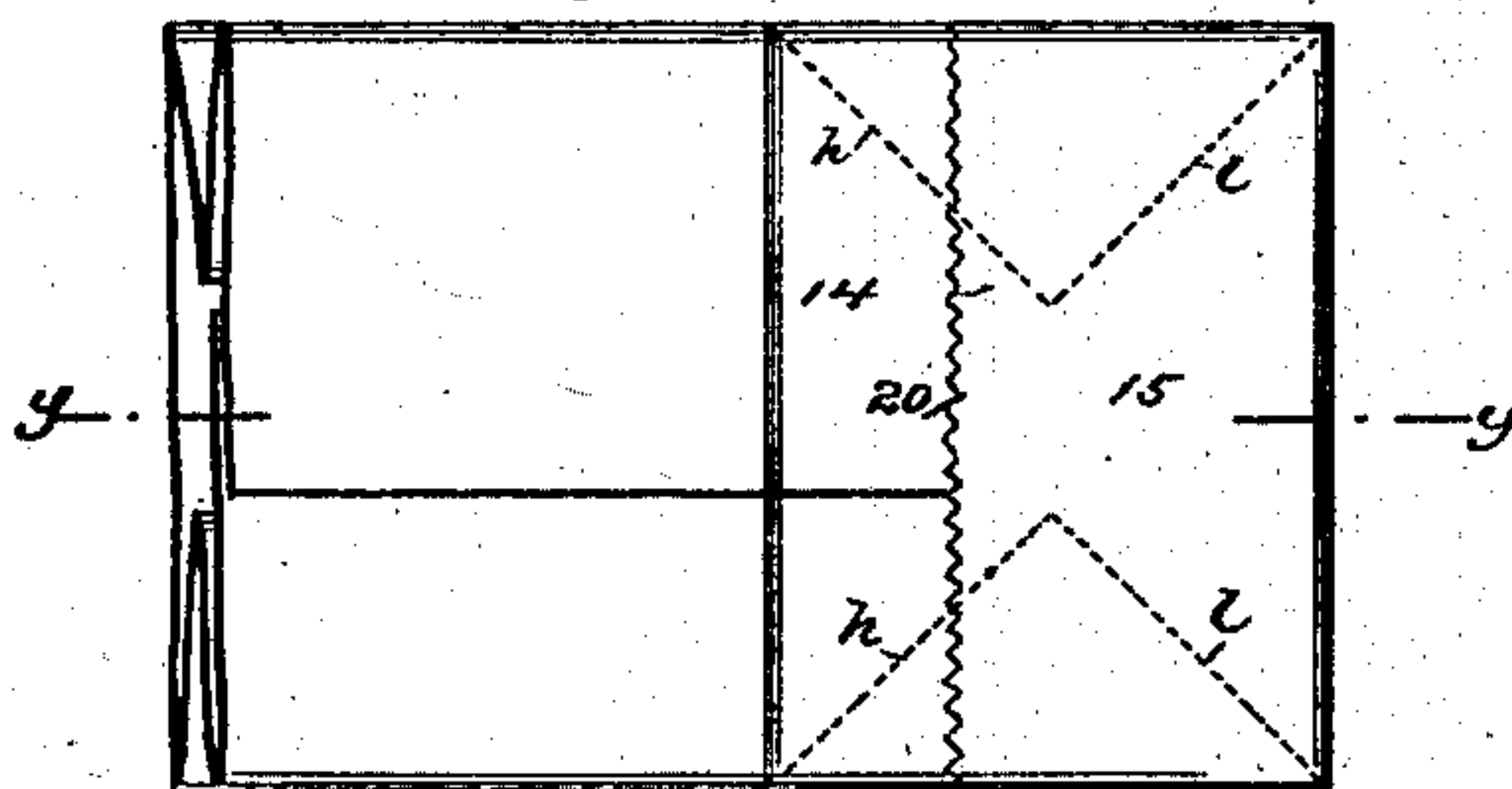
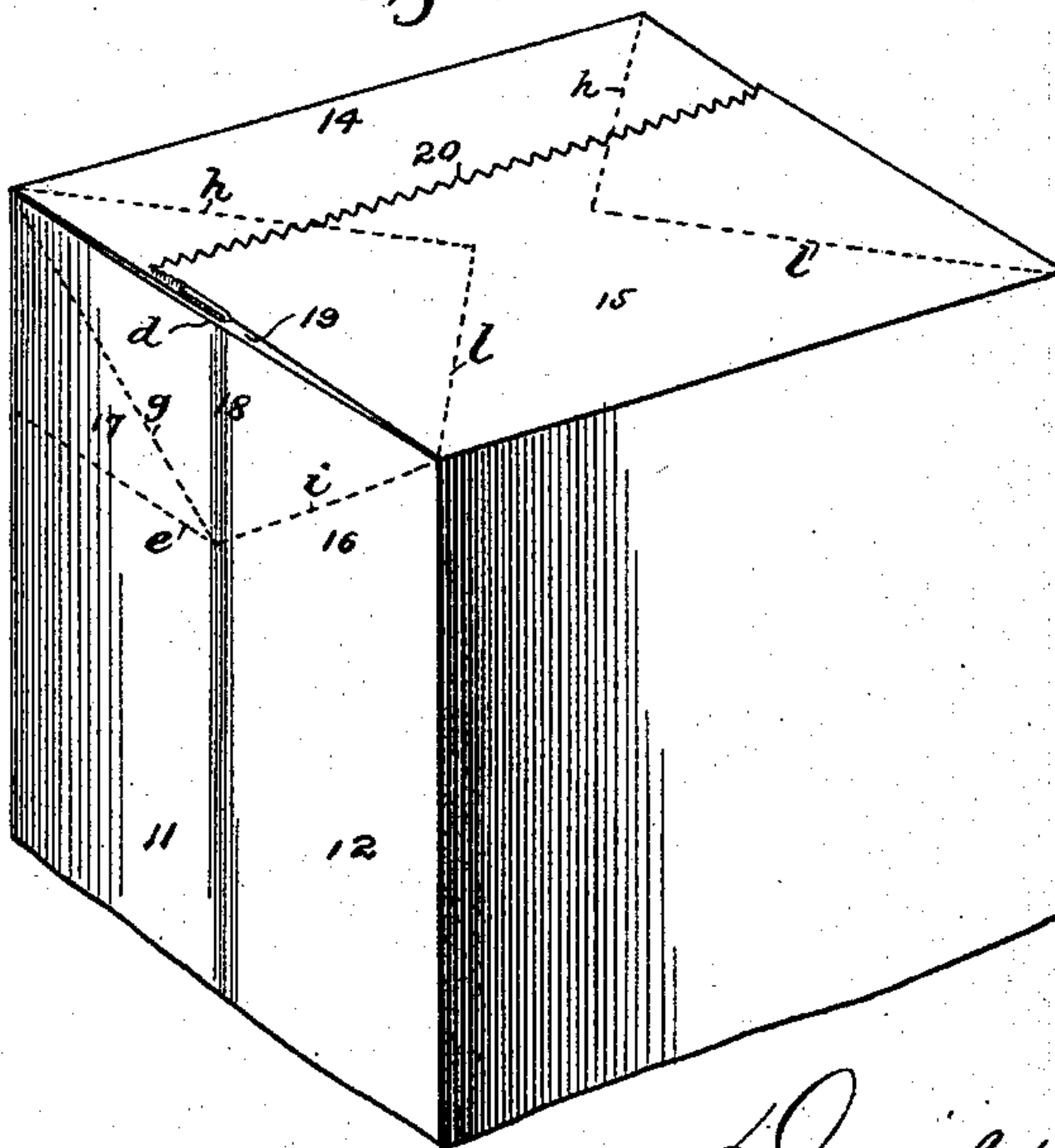


Fig. 14.



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Fig. 15.

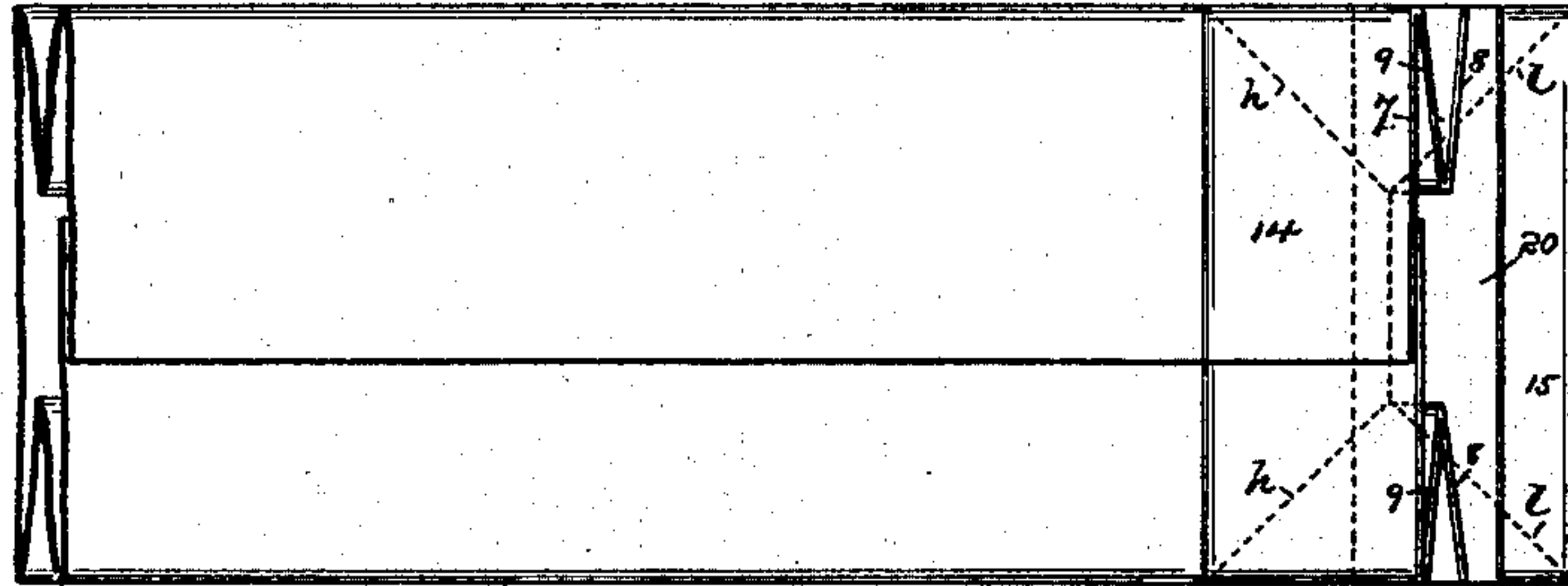


Fig. 16.

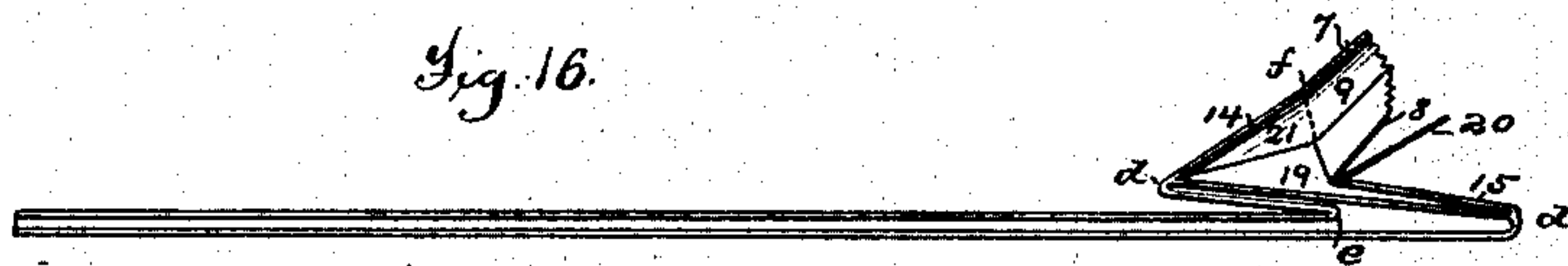


Fig. 17.

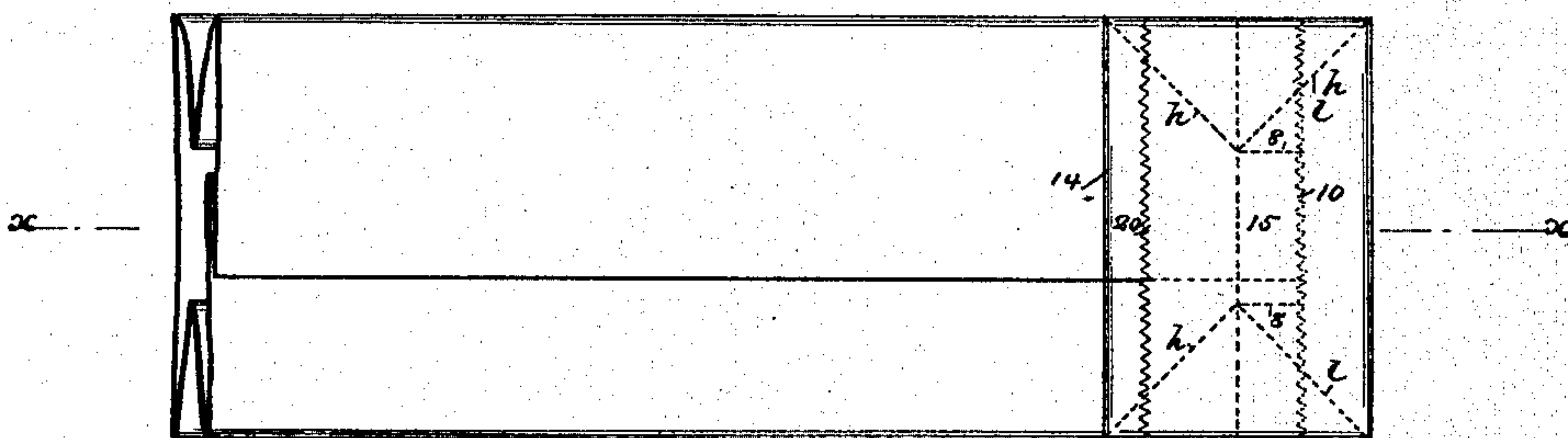


Fig. 18.



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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. 388,614, dated August 28, 1888.

Application filed October 8, 1886. Serial No. 215,672. (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 described and represented in the following specification and the accompanying drawings forming a part of the same.

10 This invention relates, generally, to what are known in the art as bellows sided square-bottom bags, and it relates particularly to the manner of forming the bottoms thereof.

This class of bags, as most commonly formed, are made from a continuous flat tube having inwardly-folded or bellows sides, which tube is severed into lengths to provide bag lengths or blanks, which latter have one end pasted and folded upon itself to form the bag-bottom.

20 Such bag lengths or blanks are, however, in some instances formed from sheets of suitable dimensions, which are folded into flat tubular form with the inwardly-folded or bellows sides and then pasted and folded in the manner just described to provide the bottom.

It is well known to those using this class of paper bags that in order to prepare a bag for the reception of the substance or article it is to hold, the bottom thereof has to be formed into rectangular or substantially-rectangular shape by passing one hand into the mouth of the bag and pressing the inner or central fold of the bellows sides outwardly at a point near the bottom of the bag, so as to cause that portion of the bellows sides adjacent to the bottom at the inside of the bag to fold upon diagonal lines starting from the bottom and extending in opposite directions diagonally upward to the outside folds of the bellows sides. At the same time the material will also be bent at right angles across the bellows fold of each side at the points at which said diagonal folds meet the outer folds of the bellows, and thus make triangular portions formed of the bellows sides which will lie upon the bottom of the bag at its inside, causing said bellows sides to be distended or straightened out so as to bring the bottom into rectangular form.

The object of the present invention is to so form the bottoms of this class of paper bags

that no hand manipulation of the bag will be required to cause its bottom to take the desired rectangular form.

To this end the invention consists in the novel construction of the bag-bottom now to be particularly described, reference being had to the accompanying drawings, illustrating the same, in which—

Figure 1 represents a view of a blank of suitable shape to form a bag according to the present invention, the dotted lines indicating the lines upon which it is folded into tubular form with inwardly-folded or bellows sides, and also the lines upon which the blank is folded in the formation of the bottom. Fig. 2 is a side view of the same when folded into tubular form with inwardly-folded or bellows sides. Fig. 3 is an edge view of the same showing the first step in the formation of the bottom, and Fig. 4 is a cross-sectional elevation taken on the line *xx* of Fig. 3. Fig. 5 is a view similar to Fig. 3, illustrating another step in the formation of the bottom, Fig. 6 being a side view of the same, and Fig. 7 a cross-sectional elevation taken on the line *xx* of Fig. 5. Figs. 8, 9, 10, and 11 are views similar to Figs. 5 and 6, showing still further steps in the formation of the bottom. Fig. 12 is a side view of the bag with its bottom completed, Fig. 13 being a central section of the same taken on the line *yy*, and Fig. 14 a perspective view looking at the bottom of the bag when it is opened and distended. Figs. 15 and 16 are respectively side and edge views illustrating a step in the formation of a modified form of bottom, while Figs. 17 and 18 are respectively a side view and a central section (the latter taken on the line *xx* of the former) showing the completed bag-bottom.

The bellows-sided tube in the manufacture of this class of bags is formed of a single piece of paper or other material by any of the well-known methods—such, for instance, as that illustrated in Letters Patent No. 138,844, dated May 13, 1873—from which tube a blank or bag length, as seen in Fig. 2, is severed in the usual manner, so that one of the plies—the under one in this instance—will extend slightly beyond the other. Bags, however, may be formed from detached sheets or blanks which have

been previously cut to the proper form, as illustrated in Fig. 1; and in order to aid in a more ready understanding of the manner in which this invention is carried out it will be assumed in the present case that such a blank is employed. This sheet or blank is of rectangular or substantially of rectangular form, and is provided at its bottom-forming end with a centrally-projecting lip, 20, said blank being of suitable dimensions to form a bag of the desired size and proportions. The blank thus formed is first folded inward on the lines *a*, then outward on the lines *b*, and then inward again upon the lines *c*, thus bringing its edges together over the center of the blank, where they overlap and are united by a suitable line of paste. This reduces the blank to the form of the bellows-sided tube best shown in Fig. 2. Preliminary to this folding operation, however, to aid in the proper formation of the bottom, the bottom-forming end of the blank, Fig. 1, may be provided with a creased line, *d*, extending entirely across the blank and with the creased lines *e* and *f*, which extend from the opposite edges of the blank to the lines *b* *a*, respectively, and also with the short creased lines *g*, *h*, *i*, and *l*, arranged angularly between the creased lines *a* *c* and *e* *f*, which creased lines define the lines upon which the paper or other material is folded in the operation of forming the bag-bottom.

As the construction of the bag-bottom will be best understood by describing one way in which the tubular blank may be folded to form the same, such description will now be given, it being understood that the steps hereinafter described and the order in which they are taken may be departed from or varied so long as the construction of the bag is not changed, without departing from the invention.

The bottom-forming end of the tubular bag-blank, Fig. 2, will have its upper ply, 10, turned upwardly on the line *e*, thus opening the bottom of the blank and distending the sides 11 12 of the bellows folds at that end in the manner shown in Figs. 3 and 4, during which time the under ply of the blank may be held down by pressure upon its lip 20. This operation will cause each of the sides 11 to bend slightly outward on the diagonal lines *g* and each of the sides 12 on the diagonal lines *i*, Figs. 6 and 9. In this position of the blank (pressure upon the lip being removed) the portion 13 of the upper ply between the lines *e* and *d*, and the sides 11 between the line *e* and the diagonal line *g*, will be folded down on said line *e*, so that the portion 13 will lie upon the body of the blank. This is effected by folding each of the triangular portions 18 of the bellows-folded sides formed by the diagonal lines *g* *i* and line *d* outwardly and down on said diagonal lines *g* *i* from the position shown in Fig. 4 to that shown in Fig. 7, so that said triangular portions 18 will lie upon the triangular portions 17 and upon the portions 16 of the bellows folds. In so doing the portion 14 of the upper ply, the

portion 15 of the under ply, and each of the sides 11 12 of the bellows folds between the line *d* and the end of the blank will be caused to bend upwardly upon said line *d* at right angles to the body of the blank and assume the rectangular shape shown in Figs. 5 and 6. The sides 11 12 of the bellows folds are now bent inwardly toward the center of the partially-formed bottom, (drawing with them the portions 14 15 of the upper and lower plies of the blank, respectively,) as seen in Figs. 8 and 9, so that the triangular portions 19 of the bellows folds formed by the diagonal lines *h* *l* and line *d* will be folded down on the line *d*, so as to overlie the triangular portions 18, before referred to. The portion 14 is then folded down toward the center of the partially-formed bag-bottom on the line *d*, so as to fold the triangular pieces 21 of the sides 11, formed by the diagonal line *h*, the fold-line *c*, and the edge of the blank, down on said diagonal line *h* upon one-half of the triangular portions 19, and thus the folded-down portion 14 will centrally overlie the portion 13 and at each side overlie the triangular pieces 21. A flap, 7, extending from the line *f* of the upper ply, and similar flaps, 9, extending from the same line on each of the sides 11 of the bellows folds, will thereupon be caused to turn upward, as shown in Fig. 10. The portion 15 of the under ply of the blank will be similarly folded down toward the center of the partially-formed bag-bottom on the line *d*, so as to fold the triangular pieces 22 of the sides 12, formed by the diagonal line *l*, the fold-line *a*, and the edge of the blank, down on the said line *l* upon the remaining one-half of the triangular portions 18, and thus the folded-down portion 15 will overlie a portion of the body of the blank and the triangular pieces 22, so that its projecting lip 20 and the flaps 8 of the triangular pieces 22 (each having had a suitable line of paste applied to it) will overlie the flaps 7 and 9, as in Figs. 10 and 11, and upon being pressed down onto the portion 14, in contact with each other, will become united, and thus complete the formation of the bag-bottom, as seen in Figs. 12 and 13.

The lip 20, it is to be observed, will be of such size as to extend beyond the flaps 10 and 9, so as to become united with the portion 14, as is shown in Fig. 13. The flaps 7 and 9 may, however, be omitted by removing those portions of the blank, Fig. 1, bounded by the edge of the blank and the dotted lines *b* and *f*, in which case the edge of the triangular pieces 22, their flaps 8, and the projecting lip 20 would lie directly in contact with the portion 14, as is obvious.

In the modification shown in Figs. 15 to 18, inclusive, the blank, Fig. 1, will be provided with short incisions extending from *v* to *w* on each of the fold-lines *a*, so as to render the projecting lip 20 free down to the dotted lines *f*; and it should be here observed that the dotted lines *f*, so far as indicating lines of the ultimate folding of the blank, will be omitted,

with the exception of that extending between the lines *a* (or the incision *v w*) to the lines *b*. This blank, modified in this particular, may be folded in the same manner as that first described, with the exception that the flaps 8, together with the flaps 9 and 7, instead of being folded down, (on the line *f*,) so as to overlie the portion 14, will be directed in the opposite direction, (see Fig. 16,) so that said flaps 8 will be folded down on the line *f*, so as to overlie the triangular pieces 22, and said flaps, together with the flaps 9 and 7, tucked under the portion 15, so that said portion with its lip 20 will overlie the portion 14, which former, having had a line of paste applied to its under surface, will become united to said portion 14, and thus complete the formation of the bag, as shown in Figs. 17 and 18.

From the foregoing it will be seen that the distinguishing features of the bag herein described consist of the two similar triangular portions, 18 19, folded down upon each other

upon the lines *d*, which constitute their common base and define the side edges of the rectangular bottom. The fold-lines, which define the rectangular bottom and the triangular portions 19, lying on said bottom, which in the old style of bag referred to were formed in opening the bag for use, are in the present construction fully defined and properly placed in the making of the bag.

What is claimed is—

A bellows-sided bag having a rectangular bottom closed by a single transverse seam, and having the triangular portions 18 19 lying inside said bottom, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

DANIEL APPEL.

Witnesses:

J. A. HOVEY,
T. H. PALMER.