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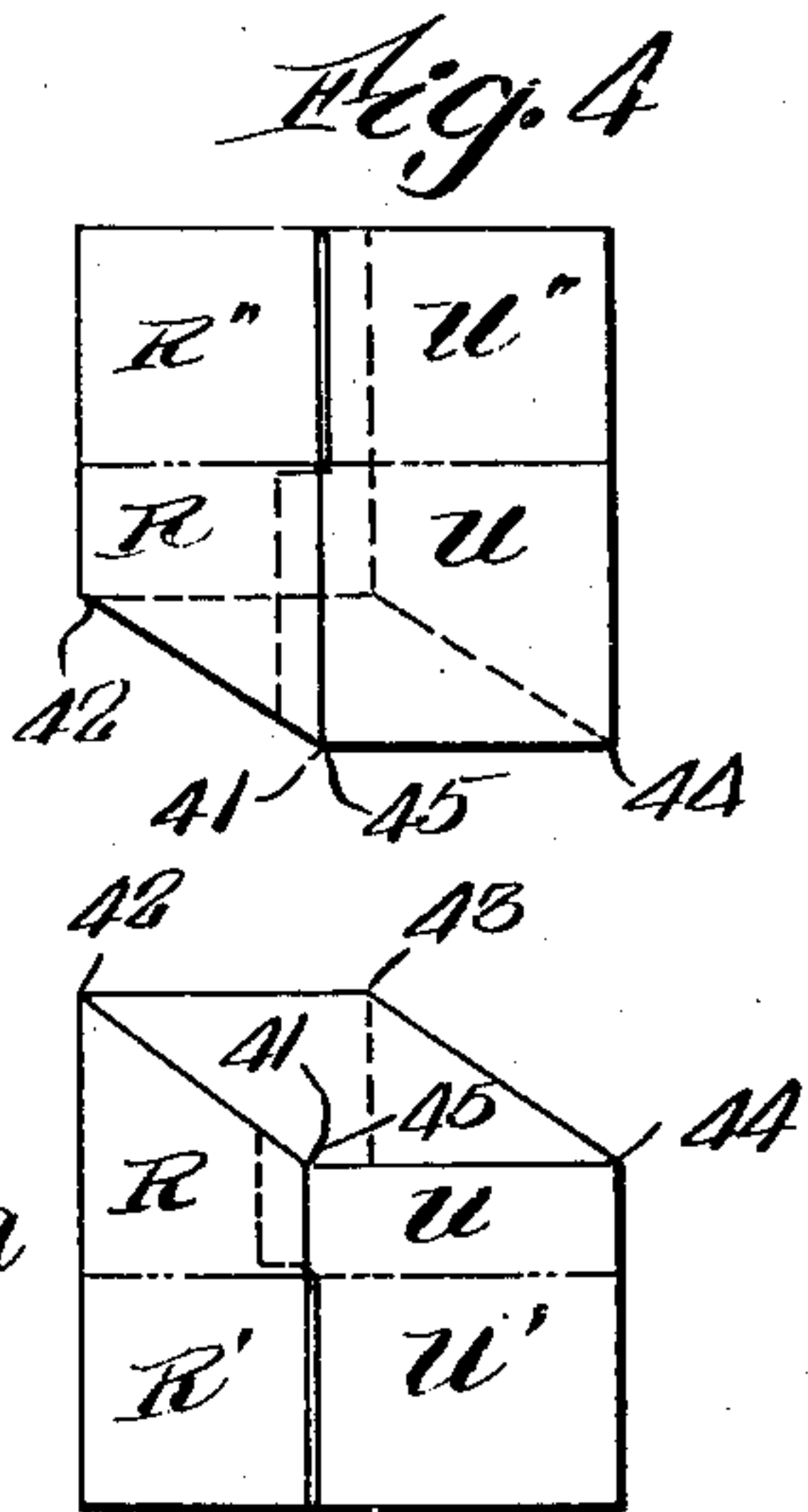
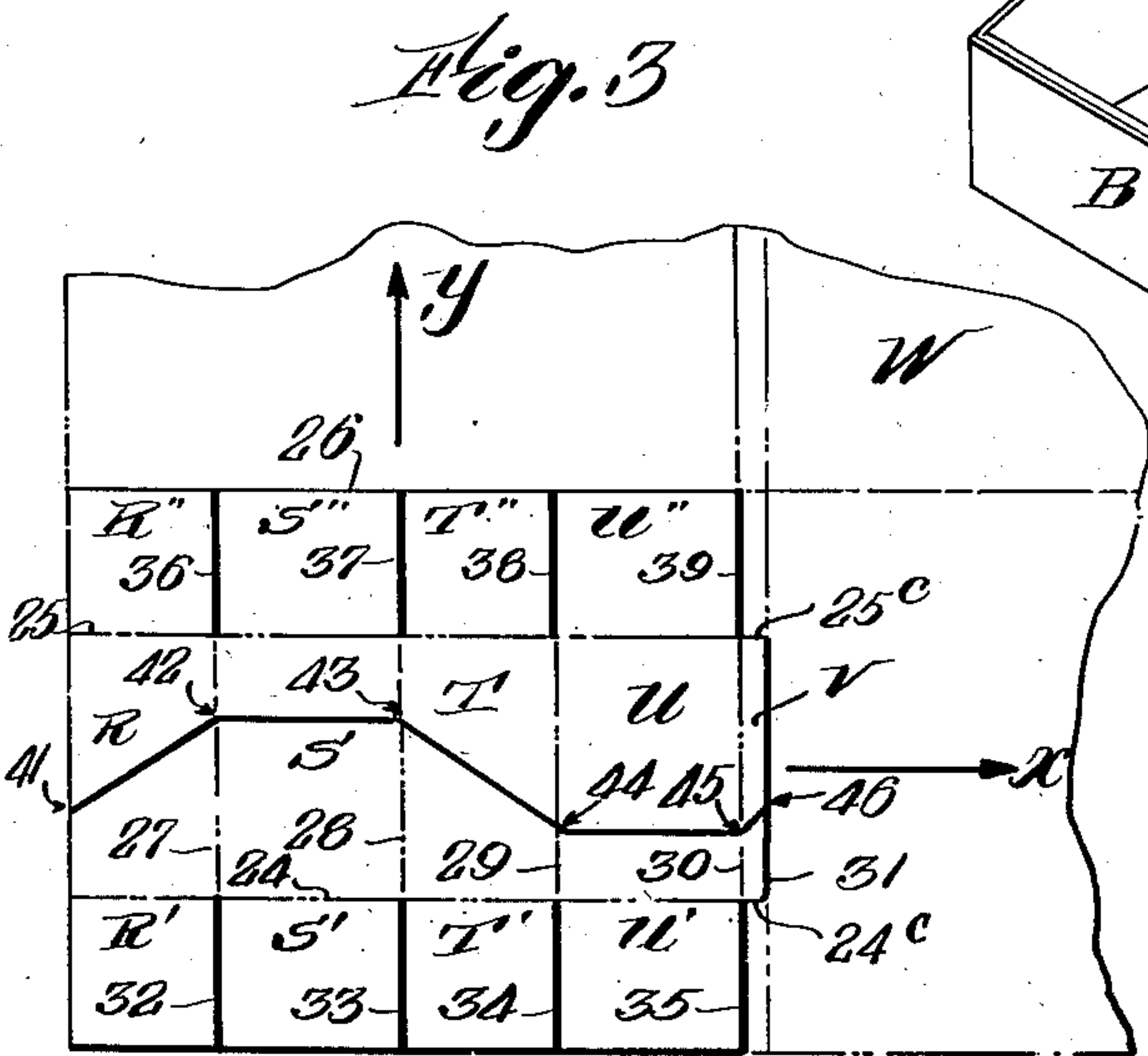
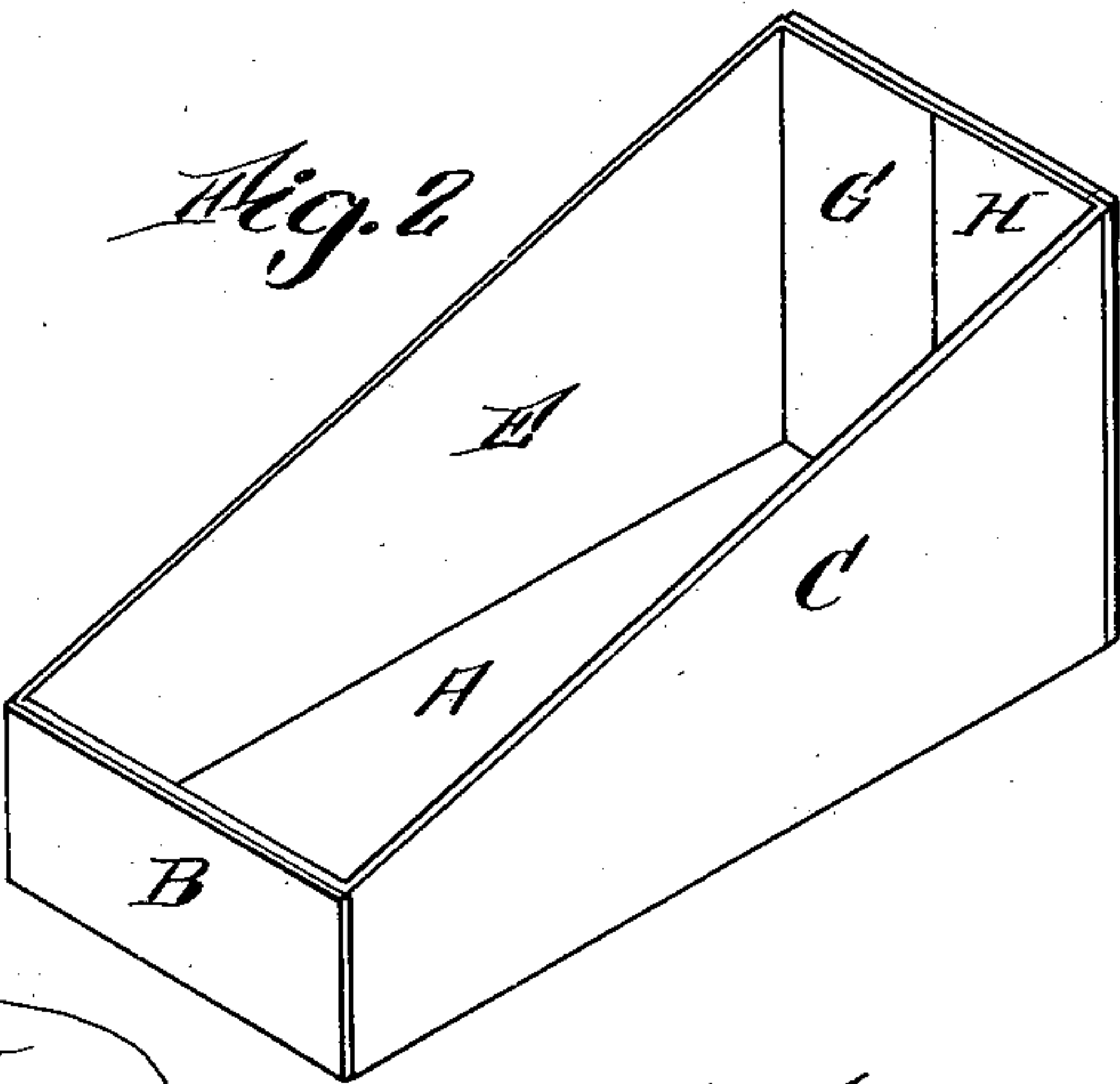
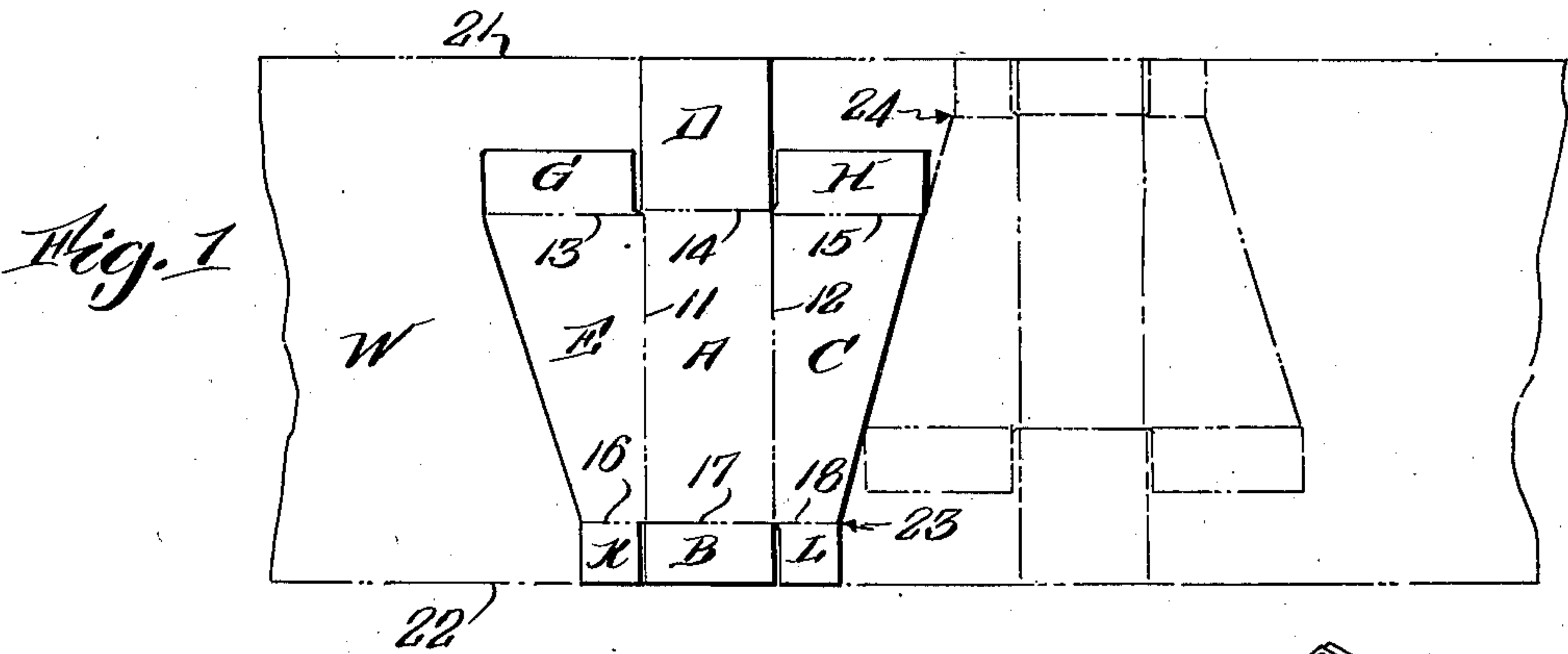
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2,022,305

METHOD OF MAKING RECEPTACLE BLANKS

Filed Aug. 17, 1933

2 Sheets-Sheet 1



*Fig. 4a*

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Nov. 26, 1935.

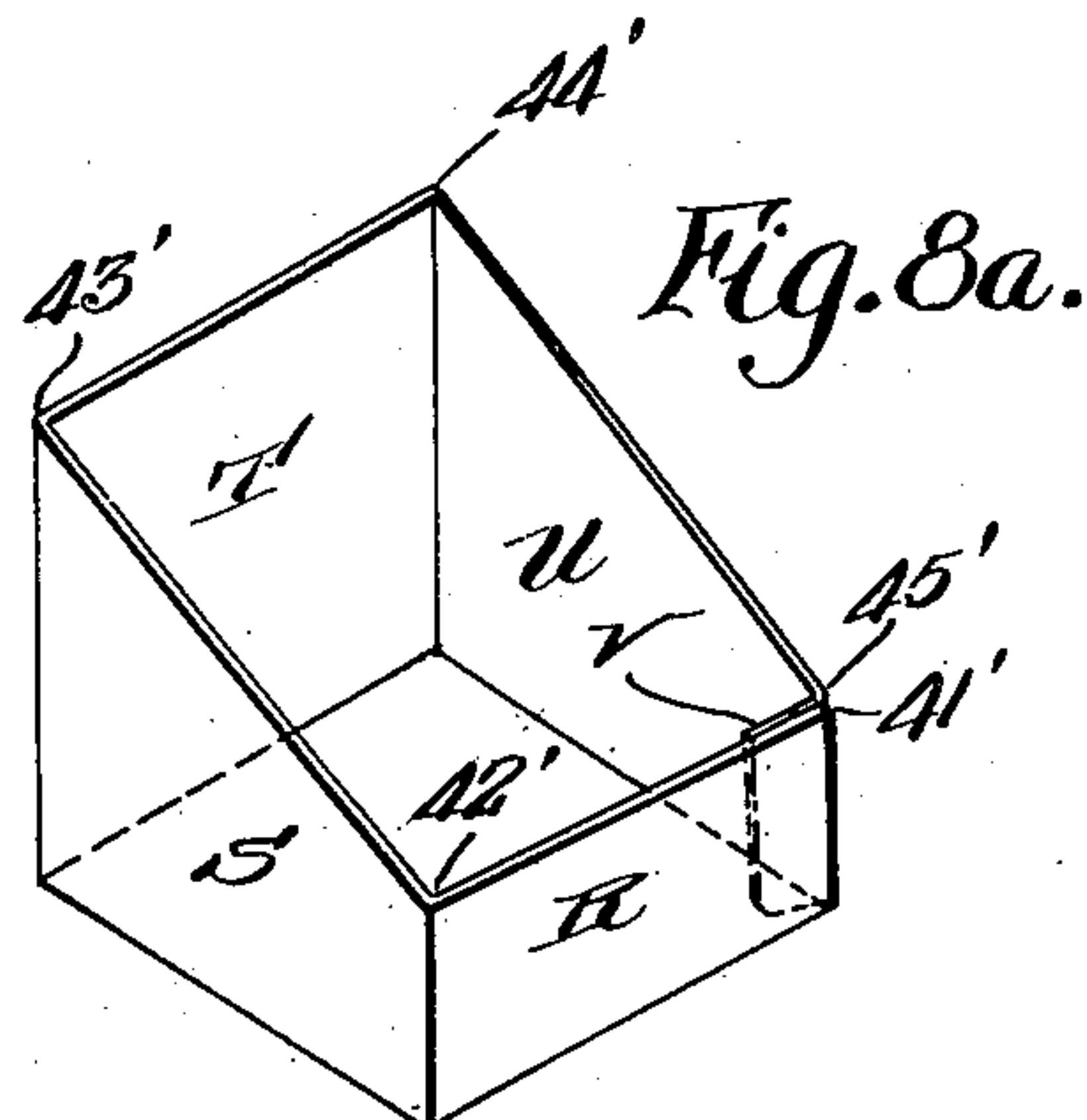
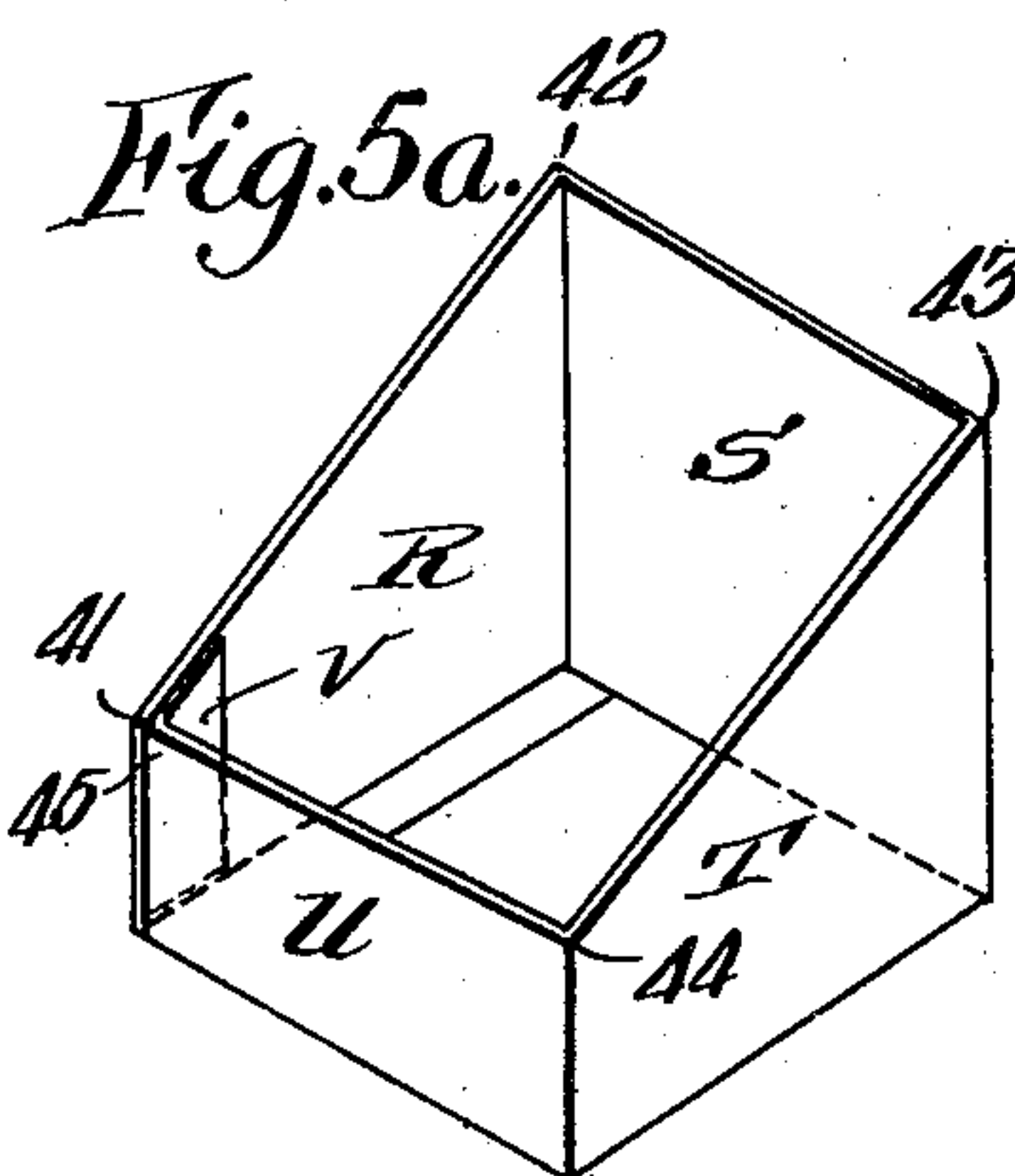
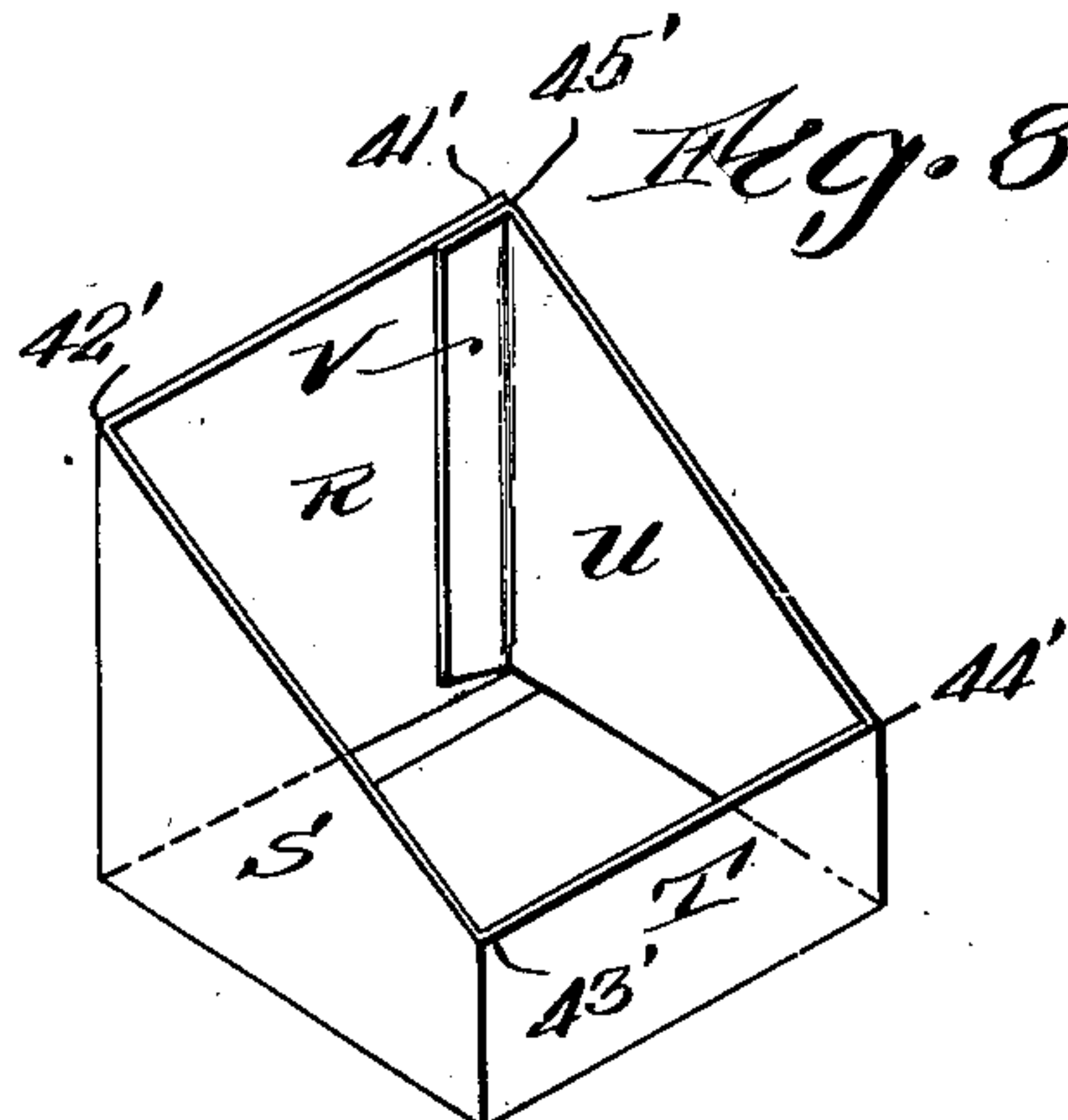
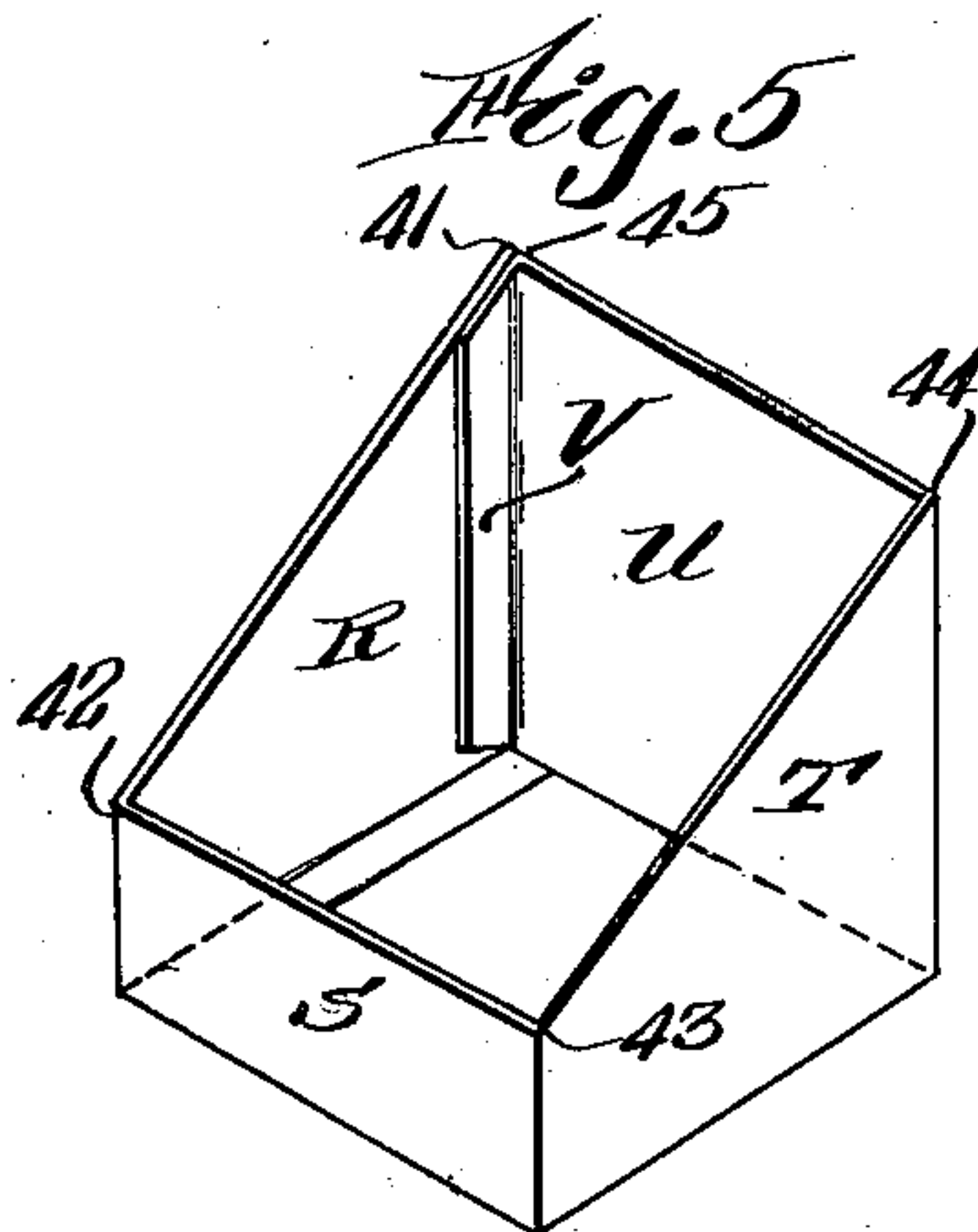
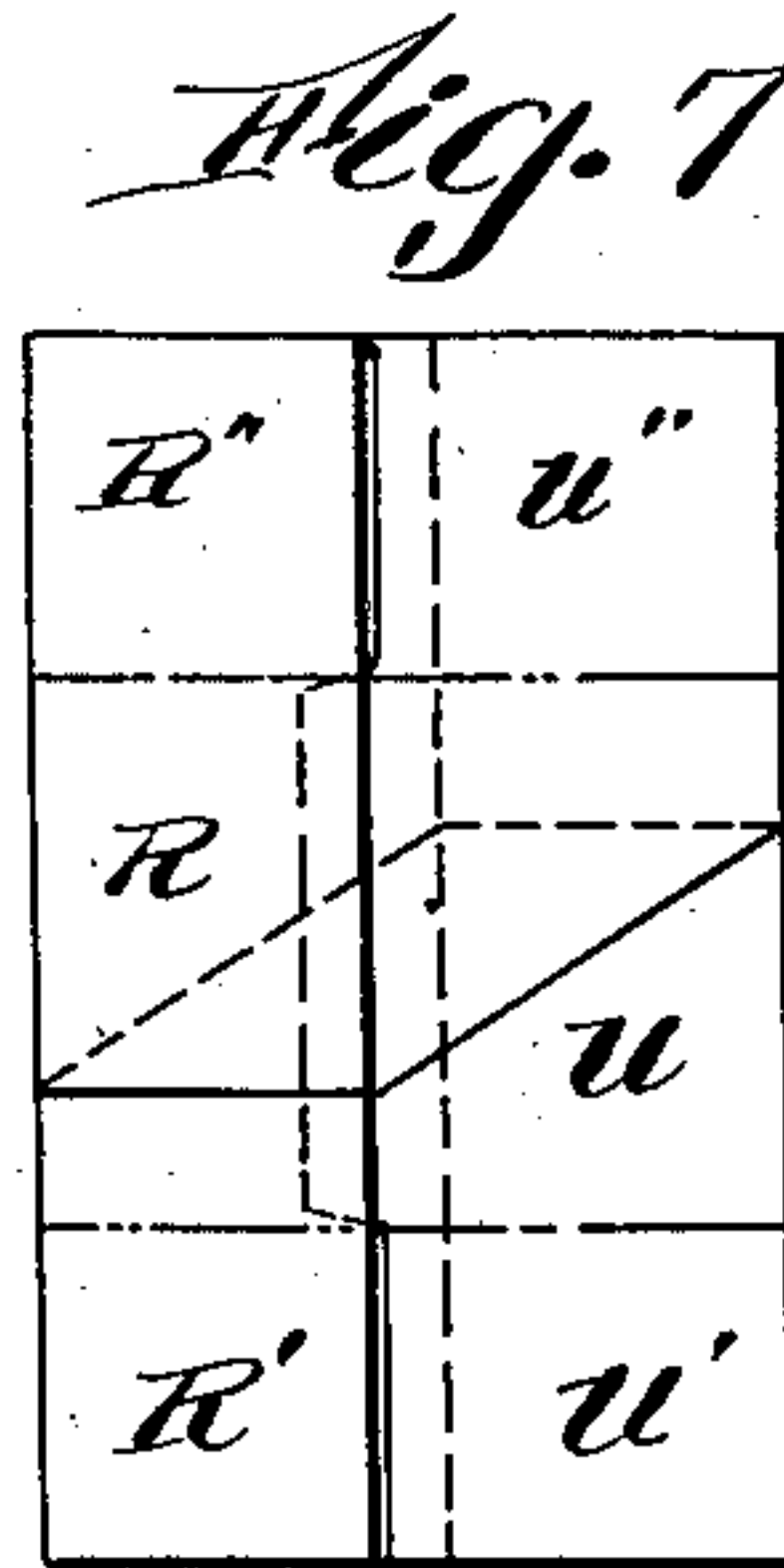
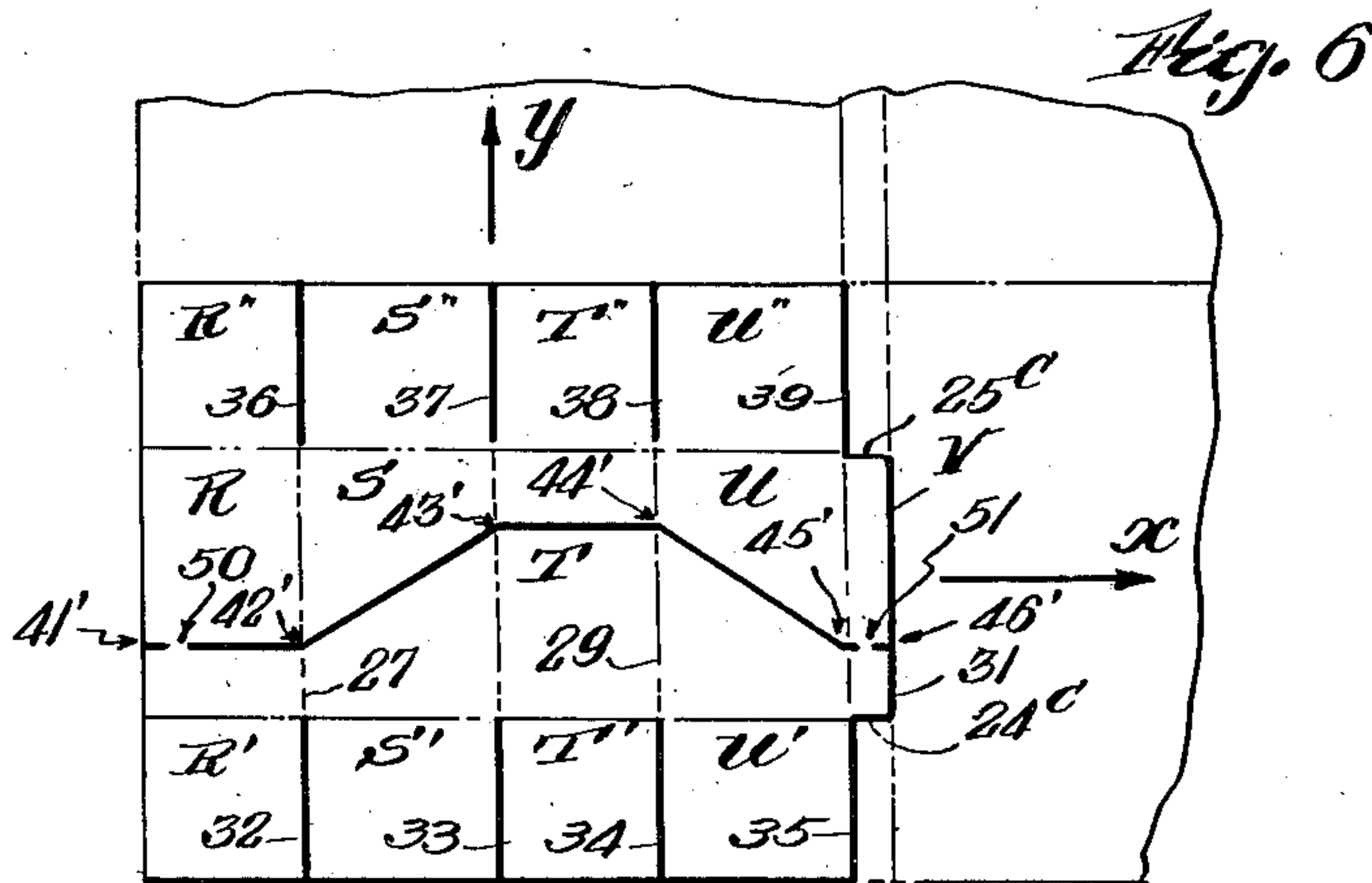
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2,022,305

METHOD OF MAKING RECEPTACLE BLANKS

Filed Aug. 17, 1933

2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,022,305

METHOD OF MAKING RECEPTACLE  
BLANKS

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Application August 17, 1933, Serial No. 685,565

7 Claims. (Cl. 93—45)

This application is in part a continuation of my copending application Serial No. 440,674, filed April 1, 1930, for Display receptacle.

This invention relates to an improved method of forming receptacle blanks and aims particularly to save material, such as cardboard, from which the blanks are cut and to simplify the operations of forming a sheet of such material into a plurality of blanks from which receptacles can readily be made.

The invention is particularly adapted for the economical manufacture of blanks for receptacles having sloping side walls, a typical example being a receptacle having a bottom, a high wall, an opposite low wall and two intermediate walls which slope in height from the level of the high wall to the level of the low wall.

Other objects of invention and features of novelty and utility will be apparent from this specification and its drawings wherein the invention is explained by way of example.

In the drawings:

Fig. 1 is a diagrammatic plan view illustrative of the laying out and cutting and scoring of material according to one form of this invention;

Fig. 2 is a perspective view of a receptacle formed from a blank made by the method of Fig. 1;

Fig. 3 is a diagrammatic plan view illustrative of the laying out and cutting and scoring of material according to another form of this invention;

Figs. 4 and 4<sup>a</sup> are plan views of formed blanks made according to the procedure of Fig. 3;

Figs. 5 and 5<sup>a</sup> are perspective views of receptacles erected from the blanks of Figs. 4 and 4<sup>a</sup>;

Fig. 6 is a diagrammatic plan view illustrative of the laying out and cutting and scoring of material according to another form of this invention;

Fig. 7 is a plan view of a composite blank for two receptacles made according to the procedure of Fig. 6; and

Figs. 8 and 8<sup>a</sup> are perspective views of the two receptacles erected from separated halves of the composite blank of Fig. 7.

In this application, where reference is made to "side", "end", and "bottom" walls of the illustrated blanks and boxes, it is to be understood that these words are used by way of description and not as limiting the invention to the production of boxes occupying the particular positions of Figs. 2, 5, 5<sup>a</sup>, 8, and 8<sup>a</sup>, since obviously the finished receptacles could be inverted or turned on their sides without affecting the principles of this invention concerned primarily with the formation and manipulation of receptacle blanks,

The form of invention to which Fig. 1 relates is exemplified by the laying out, scoring and cutting of a plurality of receptacle blanks without substantial waste from a relatively long strip of sheet material W of which the parallel longitudinal margins are indicated by the lines 21 and 22. These parallel lines 21 and 22 indicate the width of a receptacle blank, and it will be understood that the sheet of material used may be several times wider than such width, so as to permit the simultaneous manufacture of a plurality of columns of blanks.

An individual blank may for example include principally a rectangular bottom section A, having as integral extensions from its four sides, a low end wall section B, a sloping side wall section C, a high end wall section D and a sloping side wall section E, these extensions being demarked from the rectangular bottom section A by score lines or equivalent fold lines of increased flexibility 17, 12, 14 and 11 respectively. Suitable lap or connecting sections, such for example as sections L, H, G and K adapted to secure the wall sections to each other may, for example, constitute extensions of the wall sections C and E, suitably demarked therefrom by score lines 18, 15, 13 and 16 respectively.

In the production of blanks such as described, the process involves scoring the strip of material W to form the fold lines referred to, and making cuts in the material to define the several lap sections and lateral edges of the blank, these fold lines and cuts which extend in the two principal dimensions of the strip being positioned with respect to the lines 21 and 22 to cause the edges of the high and low side walls D and B to lie in these two parallel lines. The process further includes forming in the material a cut extending from the point indicated at 23 to the point indicated at 24 diagonally with respect to the lines 21 and 22. This diagonal cut 23—24 is then adapted to define the free edge of a sloping side wall C of the blank shown in full lines in Fig. 1 and also to define the free edge of an identical abutting blank, which, as shown in dotted lines, is located on the sheet in reversed position. Preferably as shown in Fig. 1, this adjacent abutting blank has its lateral edges located in the two parallel lines 21 and 22 which define the lateral edges of the previously described blank. Similarly, other blanks, also in prolongation of the full-line blank of Fig. 1 are likewise cut from the strip W, alternate blanks being reversed in position as in the manner of the two illustrated blanks, and each blank being severed from its neighbor by a



diagonal line either inclined in the direction of the line 23—24 or oppositely inclined, and defining the free edge of a sloping side wall of each of two abutting blanks.

5 Referring to Fig. 2 wherein is shown a receptacle made from any of the blanks resulting from the method of Fig. 1, it will be observed that the receptacle comprises considerably less material than a receptacle having all of its side walls of the height of section D of the blank; referring to Fig. 1, this decrease in material present in the finished receptacle is reflected in an almost equal saving in material of the sheet W. This is to be contrasted with customary methods of producing display receptacles or other receptacles having sloping walls, in which the quantity of material required has been substantially as great as that required to make receptacles having side walls everywhere of maximum height.

20 The various steps of the method are adapted for simultaneous execution, or for execution simultaneously in respect to a given portion of the sheet W which may, if desired, be advanced to devices used for scoring and cutting, for example, with appropriate dies for scoring and cutting, a large number of blanks may be simultaneously scored and cut in the form herein described, and alternate blanks severed by diagonal cuts, such as the cut 23—24, which define free edges of the sloping side walls of abutting blanks.

30 The modified procedure of Fig. 3 is particularly adapted to the production of blanks for receptacles having a bottom composed of a plurality of flaps and a body portion in the form of a tube of several sides defined by fold lines. In Fig. 3, in which the two principal dimensions, length and width, of the sheet W, are indicated by the arrows *x* and *y*, the fragmentary portion of the sheet W is shown as having one corner scored and cut into a pair of dissimilar interfitting blanks for the production of a pair of tubes shown in Fig. 4 adapted to be converted into the receptacles of Fig. 5. From the sheet W of Fig. 3 there may obviously be produced numerous other similar pairs of blanks, extending both widthwise and lengthwise of the sheet.

Referring to Fig. 3, the formation of the blanks includes making longitudinal score lines 24, and 25, cut 26, and transverse score lines 27, 28, 29, 30, and cuts 32 to 39 inclusive, which principally define side wall sections R, S, T and U, and flap sections R', S', T', U' and R'', S'', T'', U'' extending therefrom. In addition a suitable lap section V is formed integral with the section U by longitudinal cuts 24<sup>c</sup> and 25<sup>c</sup> and transverse cut 31, and demarked from section U by the score line 30. The process further includes the making of a cut which shall define free edges of sloping side wall sections of each of the two abutting blanks of a pair formed from the sections R, S, T and U and their attachments. Such a cut is indicated in Fig. 3 by the line 41, 42, 43, 44, 45, 46 in which diagonal portions 41—42 and 43—44 define sloping wall sections, and in which the parallel longitudinal portions 42—43 and 44—45 define the free edges of high and low wall sections of abutting blanks. The diagonal cut 45—46 on lap section V adapts the free edges of this section to correspond to the free edges of the diagonally divided section R.

By separating the blanks and folding them on their fold lines 29 and 27 and fastening the divided lap sections V to the corresponding portions of the divided wall sections R, the collapsed tubes of Figs. 4 and 4<sup>a</sup> are produced. Merely by open-

ing these collapsed tubes and fastening their flap sections R', S', T' and U' or R'', S'', T'' and U'', the complete receptacles shown in Figs. 5 and 5<sup>a</sup> may readily be set up. As shown in Figs. 5 and 5<sup>a</sup>, these complete receptacles differ in the location of the portion of the lap section V included therein, but are of similar size and shape.

In the modified form of procedure of Fig. 6, in which parts corresponding to those of Fig. 3 are indicated by the reference characters of Fig. 3, the side wall, lap, and flap sections are formed in the same manner as in Fig. 3, and the procedure differs from that of Fig. 3 notably in the manner of making the cut separating the two interfitting portions of the composite blank. As shown in Fig. 6, the cut 41', 42', 43', 44', 45', 46' has its portions 42'—43' and 44'—45' diagonally disposed to define free edges of sloping side wall sections, and its portions 41'—42', 43'—44' and 45'—46' longitudinally disposed to define abutting low and high wall and lap portions of the adjacent blanks.

A further preferable feature of the procedures such as illustrated in Figs. 3 and 6, wherein wall-forming sections of the material are divided by cuts to form two adjacent blanks, is the making of such dividing cut discontinuous, so as to retain the two portions together during subsequent operations such as folding and fastening into the tubular form. Thus, for example, the dividing cut in Fig. 6 may be interrupted at 50 and 51 by thin connecting portions of the material which can easily be broken to permit complete separation when desired. With this procedure, the composite and partially severed blank composed of the sections R, S, T, U and V, R', S', T', U' and R'', S'', T'', U'', is folded on the lines 29 and 27 and the lap section V fastened to the side section R. This provides the salable collapsed tube of Fig. 7 for economical shipping and comprising the two attached flat knock-down receptacles adapted to be readily pulled apart and set up in the form shown in Figs. 8 and 8<sup>a</sup>. By this method the number of folding and fastening operations can be reduced one-half, due to the simultaneous treatment of two receptacle-forming parts forming a composite blank.

It will now be apparent that the method herein described permits the formation of blanks for receptacles having sloping sides with a minimum of waste of material, and with the decrease in material in the sloping-side receptacle reflected in an equal or almost equal saving in the material from which the blanks are cut; further that the three illustrated embodiments of the invention all accomplish this result by the use of diagonal cuts in the stock or material so related to the other cuts and fold lines as to cause each diagonal cut to define the free edge of two adjacent blanks. Further, it is obvious from the foregoing explanation that these diagonal cuts are adapted to be made simultaneously with the formation of the other cuts and fold lines necessary to the particular blanks involved.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A method of forming receptacles comprising forming in a strip of material fold lines and cuts definitive of a tube-forming element including a lap-section adapted to fasten the tube to be formed therefrom, forming discontinuous cuts ex-



tending at least in part diagonally to define interfitting free edges of adjacent blanks comprising divisions of said elements, folding a fastening the tube-forming element, then completing the severance of the two divisions of said element and thereafter setting up both divisions of the severed tube in the form of boxes.

2. A method of forming receptacles comprising forming in a strip of material fold lines and cuts definitive of a tube-forming element including a lap-section adapted to fasten the tube to be formed therefrom, forming discontinuous cuts in the material to define divisions of the tube-forming element while leaving its divisions united, folding the tube-forming element upon itself and fastening its lap-section, then completing the severance of the two divisions of said element and thereafter setting up both divisions of the severed tube in the form of boxes.

3. A method of forming receptacles comprising forming in a strip of material fold lines and cuts definitive of a tube-forming element including end closure flaps and a lap-section adapted to fasten the tube to be formed therefrom, forming discontinuous cuts in the material to define divisions of the tube-forming element while leaving its divisions united, folding the tube-forming element upon itself and fastening its lap-section, then completing the severance of the two divisions of said element and thereafter setting up both divisions of the severed tube in the form of boxes, including closing said flaps.

4. A method of forming two similar knock-down receptacles from flat sheet material com-

prising creasing and cutting out an attached pair of blanks, simultaneously folding said attached blanks and simultaneously gluing them in the form of attached knock-down receptacles, and then separating them prior to erecting them as five-faced receptacles.

5. A method of forming receptacle blanks which includes the step of cutting from a sheet of foldable material receptacle-forming blanks, each having integral high and low wall sections and integral wall sections of sloping height, the blanks being cut with sloping wall sections of adjacent blanks in interfitting relation, and with edges of their high and low walls respectively lying in two parallel lines.

6. A method of making receptacles comprising forming in a strip of material fold lines and cuts defining side and bottom wall portions of a pair of blanks, separating the blanks along a line definitive of an edge of a sloping side wall of each of the blanks of the pair, and then when the blanks are separate, fastening the blanks individually into the form of erected open receptacles having sloping side walls.

7. A method of making receptacles comprising forming in a strip of material fold lines and cuts defining side walls and bottom-forming flaps of a pair of blanks, separating the blanks of said pair along a line definitive of edges of sloping side walls of each of the blanks of the pair, and then when the blanks are separate, fastening bottom-forming flaps of each to form erected open receptacles having sloping side walls.

CHARLES P. WELLMAN.

**CERTIFICATE OF CORRECTION.**

**Patent No. 2,022,305.**

**November 26, 1935.**

**CHARLES P. WELLMAN.**

**It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 3, claim 1, for "a" read and; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.**

**Signed and sealed this 14th day of January, A. D. 1936.**

**(Seal)**

**Leslie Frazer  
Acting Commissioner of Patents.**