

No. 732,071.

PATENTED JUNE 30, 1903.

G. A. HARTRAMPF.
FOLDING PAPER BOX.

APPLICATION FILED AUG. 8, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

Fig 1

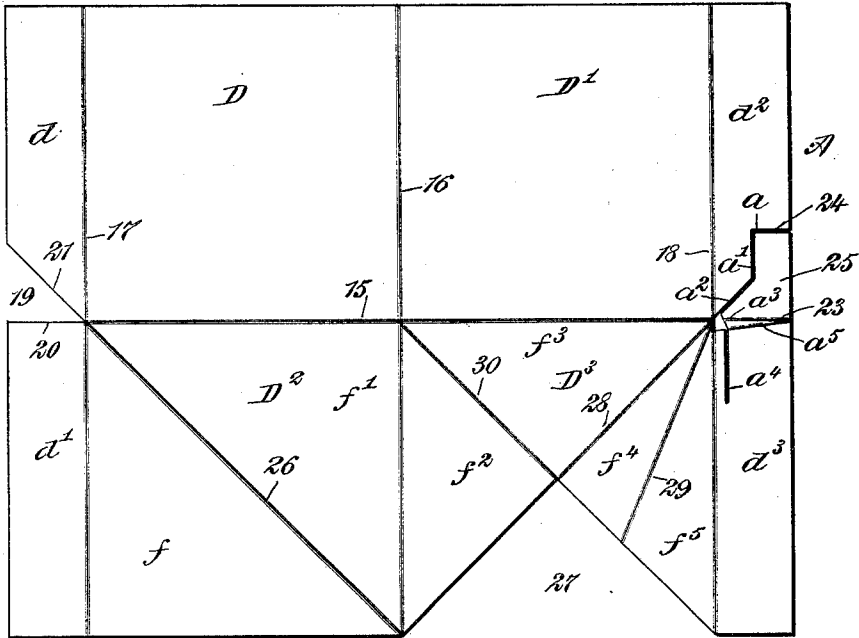


Fig 2

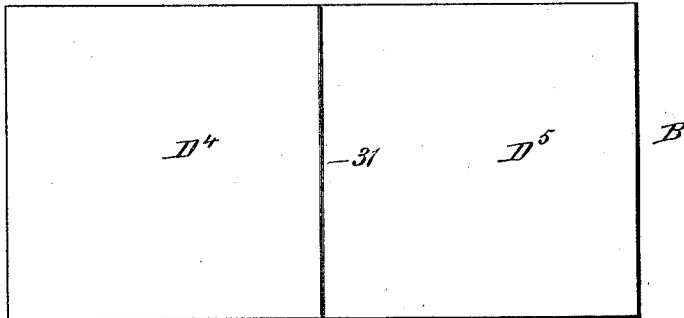
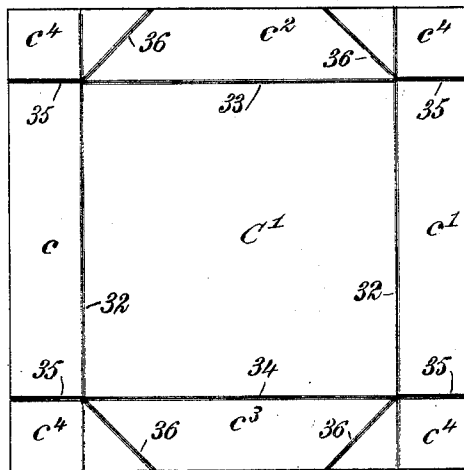


Fig 3



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No. 732,071.

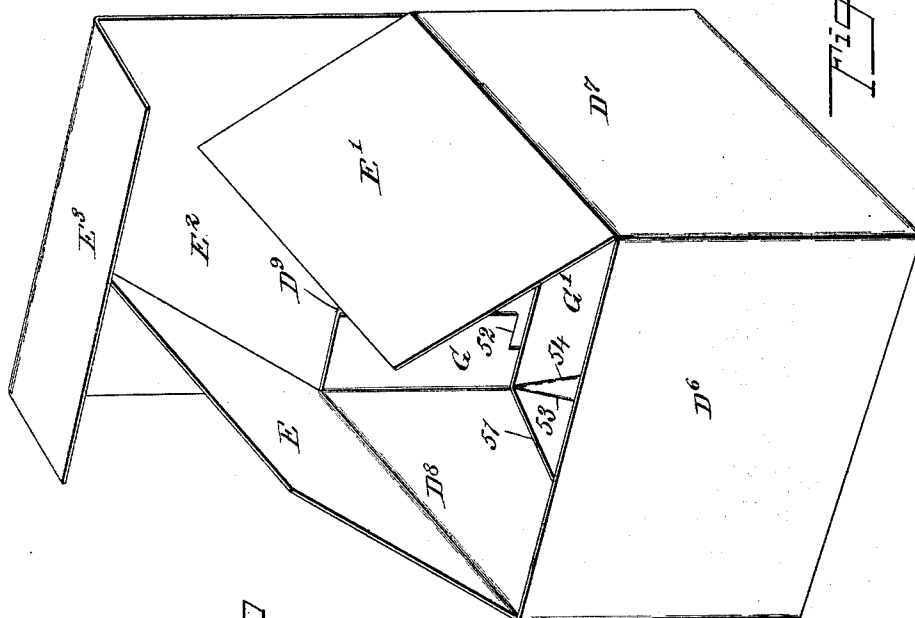
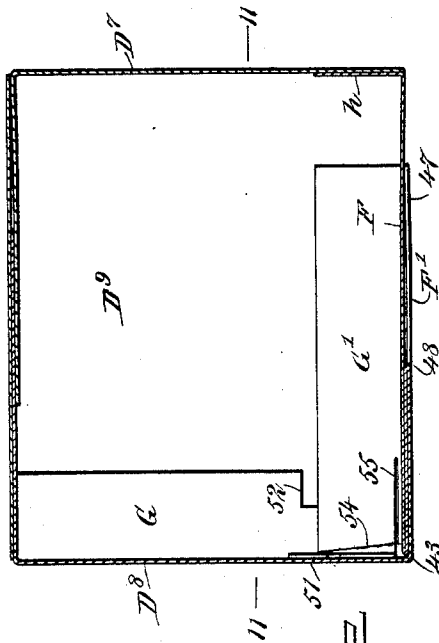
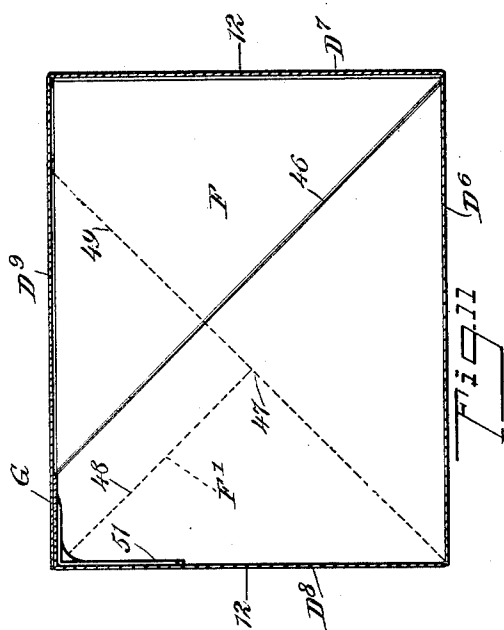
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Fig. 13

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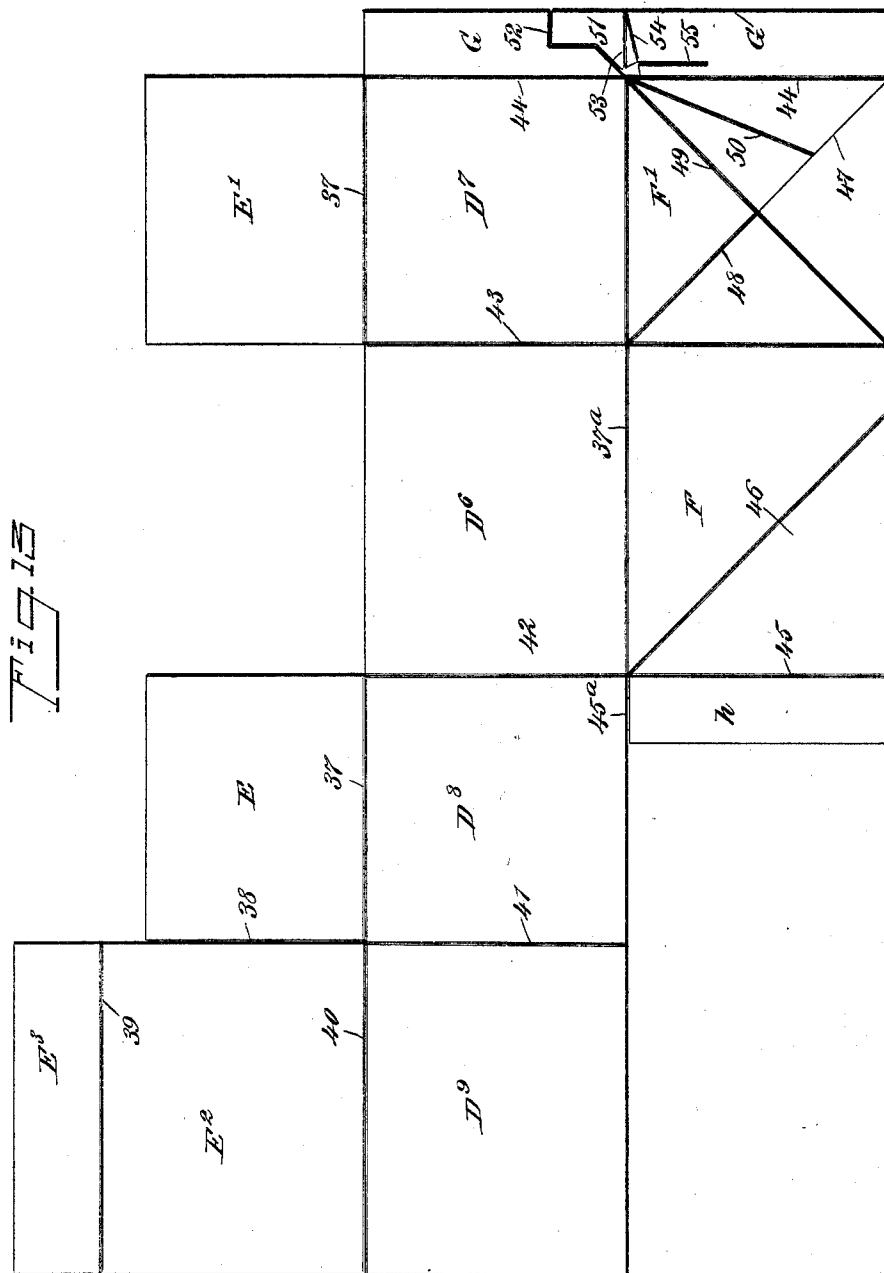
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4 SHEETS—SHEET 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GUSTAV ADOLPH HARTRAMPF, OF ATLANTA, GEORGIA.

FOLDING PAPER BOX.

SPECIFICATION forming part of Letters Patent No. 732,071, dated June 30, 1903.

Application filed August 8, 1902. Serial No. 118,924. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV ADOLPH HARTRAMPF, a citizen of the United States, and a resident of Atlanta, in the county of Fulton and State of Georgia, have invented a new and Improved Folding Paper Box, of which the following is a full, clear, and exact description.

My invention relates to folding hat or millinery boxes, candy-cartons, or any other kind of box or carton made of paper, paper-board, or any other kind of flexible material of that character which is folded to produce a package of prismatic form.

The purpose of the invention is to so construct the box that it will be simple, durable, and economic and well adapted for the purpose intended, being capable of shipment in flat form and compact masses and of being quickly and conveniently set up, the bottom being stiffened and blocked to the body when the box is set up either by the weight of the material in the box or by reason of a locking device, or both.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figures 1 and 2 are plan views of blanks for the form of the box having a removable and folding cover. Fig. 3 is a plan view of the blank for the folding cover of the box. Fig. 4 is a perspective view of the bottom-locking corner of the box when the blank shown in Fig. 1 is partially folded to position. Fig. 5 is a horizontal section through the box, the section being taken practically on the line 5 5 of Fig. 6. Fig. 6 is a vertical section through the box and its cover, the section being taken substantially on the line 6 6 of Fig. 5. Fig. 7 is a sectional perspective view of the bottom-locking corner of the make-up box with its bottom in expanded position. Fig. 8 is a longitudinal section through the box folded, and Fig. 9 is a detail perspective view of the cover of the box partially folded. Fig. 10 is a perspective view of a type of box in which the cover is integral

with the body, the box being shown open. Fig. 11 is a horizontal section through the form of box shown in Fig. 10, the section being taken practically on the line 11 11 of Fig. 12. Fig. 12 is a vertical section through the closed box shown in Fig. 10, the section being taken substantially on the line 12 12 of Fig. 11; and Fig. 13 is a plan view of the blank from which the box shown in Fig. 10 is made, which blank is constructed of one or several pieces pasted together, as may be found desirable.

The body of the box is made from two blanks A and B. (Shown, respectively, in Figs. 1 and 2 of the drawings.) The blank A is the larger of the two, and from it the larger portion of the body of the box is produced, and this blank A is practically rectangular in general contour. It is divided at its longitudinal center by a weakened line 15 and at its transverse center by a second weakened line 16, and two other weakened lines 17 and 18 are transversely produced on the said blank, shown at equal distances from the longitudinal ends of the blank, forming thereby four main panels D, D', D², and D³, of equal size, and four marginal panels d, d', d², and d³, two of which latter panels are at each longitudinal end of the blank. The weakened lines 17 and 18, however, need not be produced at equal distances apart from the longitudinal ends of the blank, or under some circumstances it might be to advantage to make one of the lines a different distance from the end than the other, and the panels D, D', D², and D³ need not necessarily be of equal size. A recess 19 separates the marginal panel d from its mating panel d', and one wall 20 of this recess is straight and constitutes an end wall of the panel d', while the other wall 21 of the recess is diagonal and constitutes the opposing end wall of the mating panel d.

Although the construction is shown as above, the panels d and d' are not necessarily separated by a recess. They may be divided by a mere cut, and again they may be divided by a recess made by cutting one piece out of the panel d', the same as that cut from the panel d. Consequently the wall 20 of the recess is not necessarily straight nor is the wall 21 necessarily diagonal.

A transverse score or weakened line 23 di-

vides the panel d^2 from the panel d^3 , and this weakened line 23 is virtually a continuation of the central longitudinal weakened line 15. An angular cut 24 is produced in the inner end portion of the marginal panel d^2 , extending in a transverse line a from the outer edge of the said panel d^2 , then in a longitudinal line a' in direction of the panel d^3 , and then in direction of the main portion of the blank through the medium of a diagonal line a^2 , thus producing a tongue 25, forming a portion of the horizontal panel d^3 , the free end of which tongue is rectangular and its attached end more or less triangular. The inner point of the triangular portion of the tongue 25 is cut off, as is shown at a^3 in said Fig. 1. It may be here stated that the cut 24 is not necessarily angular, as shown, as, if desirable, the tongue 25 may be curved through-

out. A straight longitudinal cut a^4 is shown produced in the end of the marginal panel d^3 , adjacent to the weakened transverse line 23 and extending in direction of its opposite end, the cut a^4 being quite close to the transverse end weakened line 18 of the blank, and from the upper portion of the cut a^4 to the outer end of the weakened line 23, transversely separating the panels d^2 and d^3 , a diagonal weakened line a^5 is produced in the panel d^3 ; but the cut a^4 is not necessarily a straight longitudinal cut, as said cut may be diagonal, in which event but one end of the cut a^4 would be close to the weakened line 18.

The main panel D^2 is divided into two equal parts by a diagonal weakened line 26, extending from the corner of the said panel, which is at the recess 19 in the blank, to the opposing diagonal corner, and in the outer edge of the adjoining panel D^3 a triangular recess 27 is produced, and a weakened line 28 extends from the inner or apex end of the said recess 27 diagonally to the corner of the panel D^3 , where the said panel connects with the meeting sections of the marginal panels d^2 and d^3 . Another diagonal weakened line 29 is produced in the panel D^3 at an angle to the line 28 and between the said line 28 and the end transverse weakened line 18, the line 29 leading from the recess 27 to the same diagonal point as the line 28. A third weakened line 30 is produced in the said panel D^3 , extending from the apex or inner edge of the recess 27 diagonally to the inner corner of the panel D^3 , which corner is at the junction of said panel with the other panels D D' D^2 . Therefore the weakened line 30 extends at an opposite angle to the line 28. These lines 26, 28, 29, and 30 divide the panel D^2 into two sections f and f' and the panel D^3 into four sections f^2 , f^3 , f^4 , and f^5 .

The main panel D^2 while shown and described as divided into two equal parts is not necessarily thus formed, as this equal division depends on the shape of the box. If the bottom of the box is square, then the panel D^2 is divided equally. On the other hand,

if the bottom is not square the weakened line 26 will not extend to the outer edge of the adjoining panel D^3 .

The section B of the body-blank is of rectangular formation and is divided into two panels D^4 and D^5 by a central transverse weakened line 31, the panels D^4 and D^5 being of equal size and corresponding in dimensions to each of the panels D , D' , and D^2 ; but the section B is not necessarily equally divided, as such division also depends upon the shape of the box. If it is square, it will be equally divided, and if rectangular the division will vary in proportion as the length and width of the box varies.

In Fig. 3 I have illustrated a blank C, from which the cover C^2 for the box-body is made, which cover is clearly shown in Fig. 9. This blank C consists of a main central rectangular panel C' , which is of the dimensions of the cross-sectional dimensions of the set-up box, and marginal panels c , c' , c^2 , and c^3 , together with corner-panels c^4 . The central panel C' is separated from the opposing marginal panels c and c' by weakened lines 32, which extend from edge to edge of the blank, and the said central panel C' is separated from the other two opposing panels c^2 c^3 by weakened lines 33 and 34, which extend across the blank at right angles to the lines 32. Each marginal panel c and c' is separated from adjacent corner-panels c^4 by transverse cuts 35, and diagonal weakened lines 36, extending from the cuts 35 in direction of each other and to the outer ends of the marginal panels c^2 and c^3 , are produced upon the said panels.

In making up a box from the blanks shown in Figs. 1 and 2 the first fold is made by bending the blank on the weakened line 16, between the main panels D and D' and the triangular subpanels f' and f^3 . The second fold is made by turning the lower left-hand corner of the panel D^2 on the weakened line 26 back to the intersection of the lines 15 and 16. The third fold is made by turning the lower right-hand corner of the panel D^3 on the weakened line 28 back to the intersection of the lines 15 and 16. The fourth fold is made by turning all the marginal panels d , d' , d^2 , and d^3 inward, and after the latter panels are thus turned the glue or paste is applied and the smaller blank having the main panels D^4 and D^5 is pasted on to complete the body of the box. To open the box, pick it up by its upper edges and press inward, and when the body is thus pressed it will spread apart, and the bottom is then thrown in place and held in position by the locking-tongue 25. The box can be as easily closed as opened. When the box is to be closed or folded for shipment or other purposes, its sides are pressed together, which will cause the bottom panels to rise up within the body, the panel D^2 breaking on the weakened line 26, so that these panels rise up in practically triangular form and lie flat within the folded

sides of the body. When the box is to be used, the sides are pressed to form the rectangular shape, whereupon the undermost bottom panel D^3 is spread or flattened out and the uppermost bottom panel D^2 will likewise straighten out and drop upon the lower bottom panel D^3 , and a corner of the uppermost bottom panel D^2 is then forced below the locking-tongue 25, and the bottom panels will be thus held in position, enabling the box to be used. If, however, the bottom panels are not fully pressed down when the box is opened for use, the weight of the material placed in the box will force the uppermost bottom panel to a locking engagement with the said locking-tongue.

In the formation of the cover C^2 from the blank C the marginal panels c , c' , c^2 , and c^3 are bent downward at right angles to the central or main panel C' and the corner-panels c^4 are carried over from one marginal panel to the other to form a locking engagement between the panels, and when the box is to be shipped the marginal panels c^2 and c^3 , having the weakened lines 36, are folded inward and lie flat on the inner face of the main panel C' , whereupon the other marginal panels c and c' will of necessity fold upon the folded corresponding panels.

In Figs. 10, 11, 12, and 13 I have illustrated a blank from which to form a box in which the cover constitutes an integral portion of the box. The construction of the blank shown in Fig. 13 is as follows: The blank is divided by longitudinal weakened lines 37 and 37^a into panels D^6 and D^7 , and in the same longitudinal alinement with the said panels D^6 and D^7 panels D^9 and D^8 are formed. The panels D^6 , D^7 , D^8 , and D^9 constitute the four sides of the box, and above the panel D^3 a flap E is formed, while above the panel D^7 a corresponding flap E' is produced. These flaps are cover-flaps and are adapted to extend over the top of the body of the box when the box is formed and the top is to be closed. Above the panel D^9 a cover-panel E^2 is produced, and at the upper edge of this panel E^2 a locking-flap E^3 is formed. The cover-panel E^2 when the box is formed extends over the flaps E and E' and constitutes the actual cover for the box, while the flap E^3 is carried down into the body of the box to lock the cover E^2 in position. The cover-flap E in the blank is separated from the cover-panel E^2 by a cut 38, and the locking-flap E^3 is separated from the cover-panel E^2 by a weakened line 39. The cover-panel E^2 is separated from the body-panel D^9 by a weakened line 40, and the body-panel D^9 is separated from the body-panel D^8 by a weakened line 41. The body-panel D^6 is separated from the body-panel D^8 by a weakened line 42, and the remaining body-panel D^7 is separated from the panel D^6 by a weakened line 43. At the right-hand end of the blank shown in Fig. 13 two marginal panels G and G' are produced corresponding to the marginal panels

d^2 and d^3 , (shown in Fig. 1,) and these panels G and G' are correspondingly cut and scored. Below the body-panel D^6 an upper bottom panel F is formed, separated therefrom by the weakened line 37^a and corresponding to the panel D^2 , (shown in Fig. 1,) while below the panel D^7 an under bottom panel F' is formed, separated from the panel F by the weakened line 43 and from the body-panel D^7 by the aforesaid weakened line 37^a. The body-panel D^7 is separated from the marginal panel G , and the under bottom panel F' is separated from the marginal panel G' by a weakened line 44. A locking-tongue 51, corresponding to the locking-tongue 25, (shown in Fig. 1,) is produced in the marginal panel G by producing in said panel a proper cut 52, and where the two marginal panels G and G' connect a transverse weakened line 54 is made corresponding to the line a' , described with reference to the blank shown in Fig. 1. In the marginal panel G' a longitudinal cut 55 is made, which extends from the weakened diagonal line 54, corresponding to the cut a^4 . (Shown in Fig. 1.) The upper bottom panel F is provided with a diagonal weakened line 46, corresponding to the line 26, (shown in Fig. 1,) and the under bottom panel F' has weakened lines thereon corresponding to the weakened lines in the corresponding lower bottom panel D^3 , (shown in Fig. 1,) namely, the panel F' has a triangular recess 47 produced in its outer edge, and at the apex of this recess a weakened line 48 extends diagonally to the upper inner corner of the panel F' , and a corresponding weakened line 49 extends from the apex of the recess 47 to the outer upper corner of the said panel F' , while a third diagonal weakened line extends from the right-hand side of the said recess 47 to the upper terminal point of the weakened line 49, a line 50 being between the line 49 and the line 44 at an angle to both of said lines. At the left-hand end of the upper bottom panel F a marginal panel h is formed, separated therefrom by a weakened line 45 and separated from the body-panel D^8 by a cut 45^a. In the formation of this form of box the blank is bent upon itself to bring the panels D^6 , D^7 , D^8 , and D^9 at angles to each other to form a rectangular structure, and the said panels are held in this position by carrying the marginal panel G to an engagement with the inner face of the body-panel D^9 and securing the two panels together by glue or otherwise. In bringing the aforesaid body-panels together to form the body of the box the marginal panel h is carried upward within the body and is attached to the inner face of the body-panel D^8 , thus bringing the bottom panel F to a horizontal position, and the auxiliary or lower bottom panel F' is then bent on the weakened line 48 and is folded horizontally beneath the uppermost bottom panel F , the marginal panel G' being carried to the upper position for attachment to the inner face of the body-panel D^9 . The lock-

ing-tongue 51 is then bent inward on its weakened lines 53 and 54 and is secured to the inner face of the body-panel D⁷, so as to lock the uppermost bottom panel F in its horizontal position when the box is in form for use. When the body of the box is thus formed, the flaps E and E' are at opposite sides and are adapted to be bent down over the top portion of the body of the box one over the other, and the cover-panel E² when the box is to be closed is folded over the folded flaps E and E', and the locking-flap E³ is introduced into the body of the box between the outer edges of the flaps E and E' and adjacent side panel of the body. The box is flattened for transportation in the same manner as has been described with reference to the box shown in Figs. 4, 5, and 6 and is placed in condition for use also in the same manner. The only difference between the two forms of boxes described is that the first-described box is provided with a detachable folding cover, while the form of the box last described is provided with an integral cover and with closing-flaps to be located beneath the cover.

The weakened lines referred to may for the general purpose of the invention be made by any suitable or well-known process. However, I propose to make the weakened lines by embossing the material so as to form a narrow raised ridge. This is a special advantage and is a common process now in use. The term "weakened" lines as herein used indicates lines of easy flexure which are sometimes commonly called "score-lines."

I desire it to be understood that the box need not necessarily be of the rectangular formation shown, but may be elongated or may be made in the form of a parallelogram or may be given other desired shape, the essential feature of the invention consisting in the formation of the bottom portion of the box and the manner in which the said bottom is locked in position when the box is required for use.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a folding paper box, a bottom in two connected sections, arranged when the box is set up to overlie one another, one of said sections having a weakened line diagonally produced thereon, dividing the section into two parts, the other section having weakened diagonal lines produced thereon dividing the section into four parts whereby when the body of the box is folded the bottom section will fold with a triangular formation between the opposing sides of the body, and when the body of the box is set up one of the bottom sections will hold the body in its set-up position, as described.

2. In a folding paper box, a bottom in two connected sections, arranged when the box is set up to lie one over the other, both sections being provided with weakened diagonal lines whereby to fold the said bottom sections with-

in the box-body when the latter is folded, and a locking element secured to the body of the box and beneath which the upper bottom section is sprung to hold the bottom sections in said position at right angles to the side walls of the body when the body of the box is set up, as specified.

3. In a folding paper box, a bottom consisting of an upper and a lower connected section, the upper section being provided with a weakened diagonal line on which said section may be folded and dividing the section into two parts, the lower section having weakened diagonal lines dividing the section into four parts, the uppermost bottom section conforming in outline to the inner contour of the box-body and the undermost bottom section partially conforming to the said inner contour of the box-body, the two bottom sections lying in close horizontal relation to each other when the box is set up, and folding triangularly in the body when the latter is folded, as specified.

4. In a folding paper box, a bottom consisting of an upper and a lower connected section, provided with weakened lines on which said sections may be folded, the uppermost bottom section conforming in outline to the inner contour of the box-body and the undermost bottom section partially conforming to the said inner contour of the box-body, the two bottom sections lying in close horizontal relation to each other when the box is set up and folding triangularly in the body when the latter is folded, and a locking element located within the box-body adjacent to one of its corners, beneath which locking element the upper bottom section is sprung when the bottom is placed in position to close the lower portion of the body, as described.

5. In a folding paper box, a bottom consisting of an upper section and a lower connected section, the said sections being connected likewise with the side walls of the body of the box, the uppermost bottom section conforming in contour to the inner contour of the body of the box, and having a weakened line diagonally produced thereon, the lowermost bottom section having a triangular recess produced in its outer edge, the said section having a weakened diagonal line extending from the inner or apex end of the recess to the inner corner of the section at its junction with the uppermost bottom section, the said line being parallel with the diagonal line on the uppermost bottom section, the said lowermost bottom section being further provided with a weakened diagonal line extending from the apex end of the recess to the opposite inner corner of said section, and with a third weakened diagonal line extending from the last-mentioned inner corner of the section to one edge of the said recess, the uppermost bottom section of the box, when the box is set up, occupying a horizontal position, fitting closely within the side walls of the box-body, the undermost bottom section being folded upon itself, crossing the lower por-

tion of the body diagonally and extending from two adjacent sides only of the body, both bottom sections of the box being adapted to extend up triangularly within the body 5 when the box is folded, as described.

6. In a folding paper box, a bottom consisting of an upper section and a lower connected section, the said sections being connected likewise with the side walls of the body 10 of the box, each bottom section being provided with diagonal weakened lines on which the sections may be folded, the uppermost bottom section conforming in contour to the inner contour of the body of the box, the 15 lowermost bottom section having a recess at one of its edges, the uppermost bottom section of the box, when the box is set up, occupying a horizontal position, fitting closely within the side walls of the box-body, the 20 undermost bottom section being folded upon itself, crossing the lower portion of the body diagonally and extending from two adjacent sides only of the body, both bottom sections of the box being adapted to extend up triangularly within the body when the box is 25 folded, as described, and a locking-tongue

forming a portion of the construction of the body and located at the inside of the body, the said tongue being adjacent to the corner of the body, having an angular under edge, 30 the uppermost bottom section being adapted, when the box is set up, to be sprung at one of its corners beneath the angular lower edge of the tongue, as set forth.

7. In folding paper boxes, a box having a 35 collapsible body, and a folding bottom adapted to occupy a horizontal bracing position when the body is set up, and a triangular position within the body when the body is folded, the said bottom comprising upper and 40 lower connected sections, a locking-tongue beneath which the upper section is sprung when the body is set up, and a folding cover for the body independent of the said body, as described.

In testimony whereof I have signed my 45 name to this specification in the presence of two subscribing witnesses.

GUSTAV ADOLPH HARTRAMPE.

Witnesses:

PHILIP P. SHAW,
GEORGE ROERIG.