

A. GOLDENETZ.

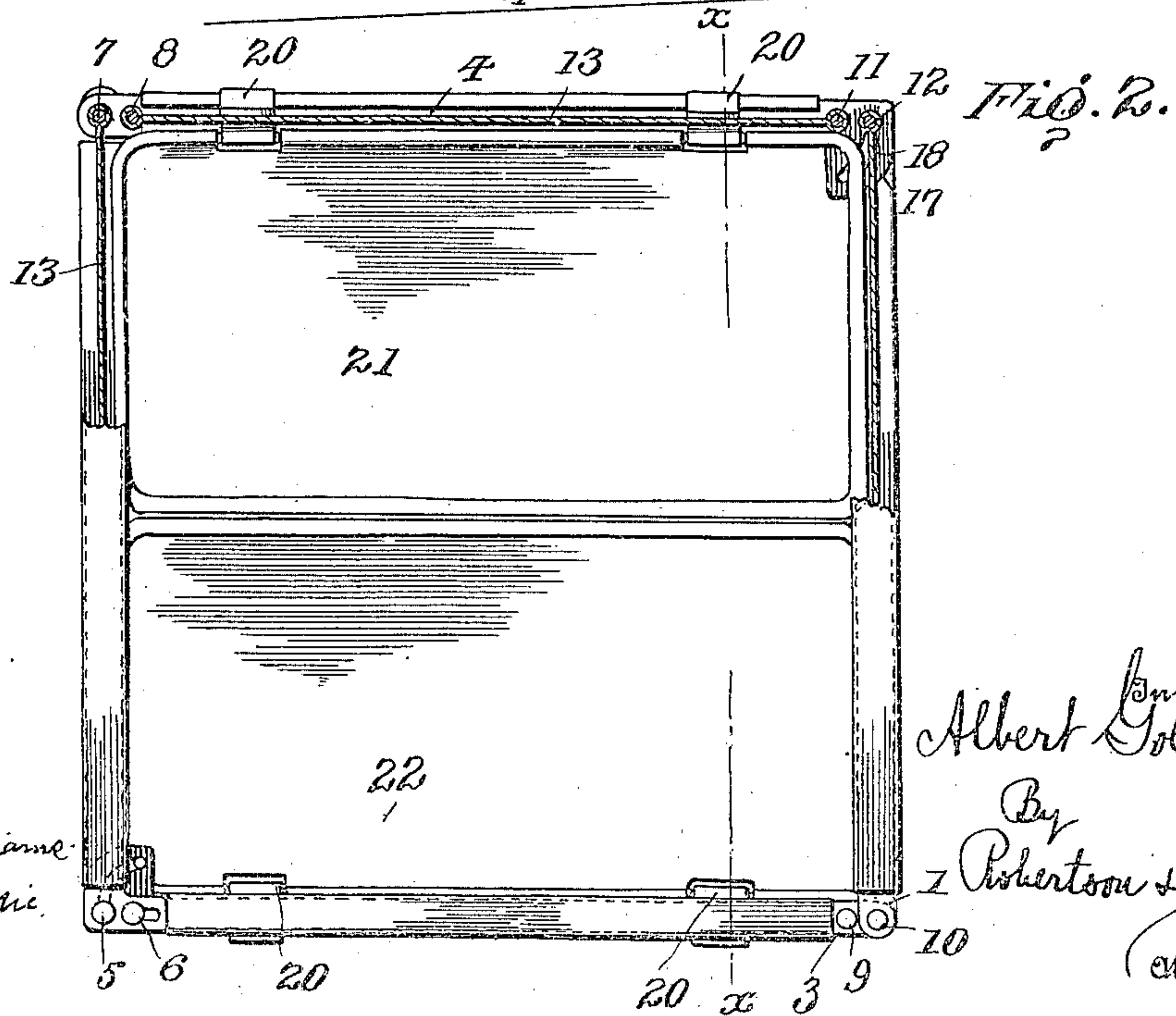
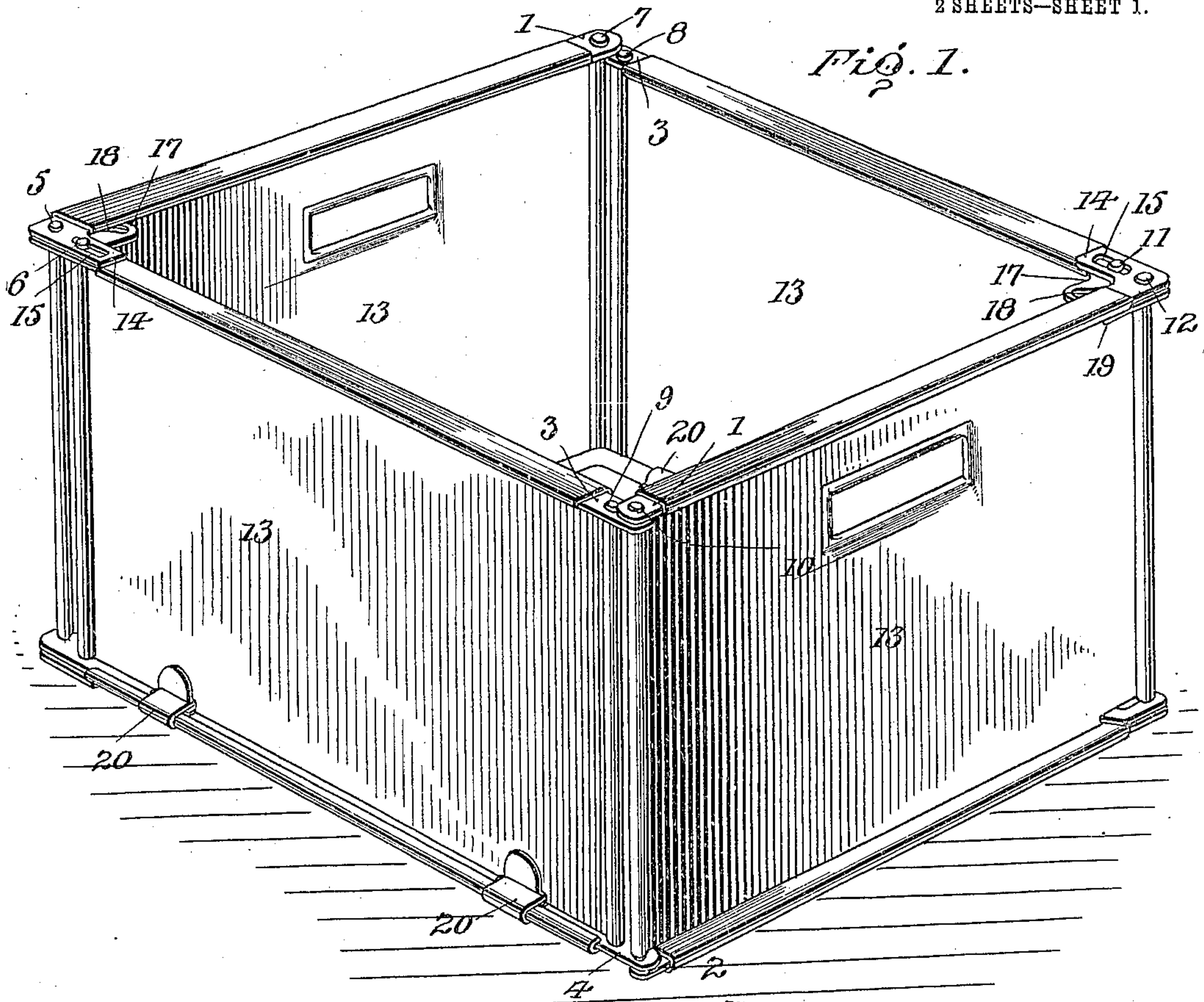
FOLDING BOX.

APPLICATION FILED MAY 14, 1908.

952,444.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 3.

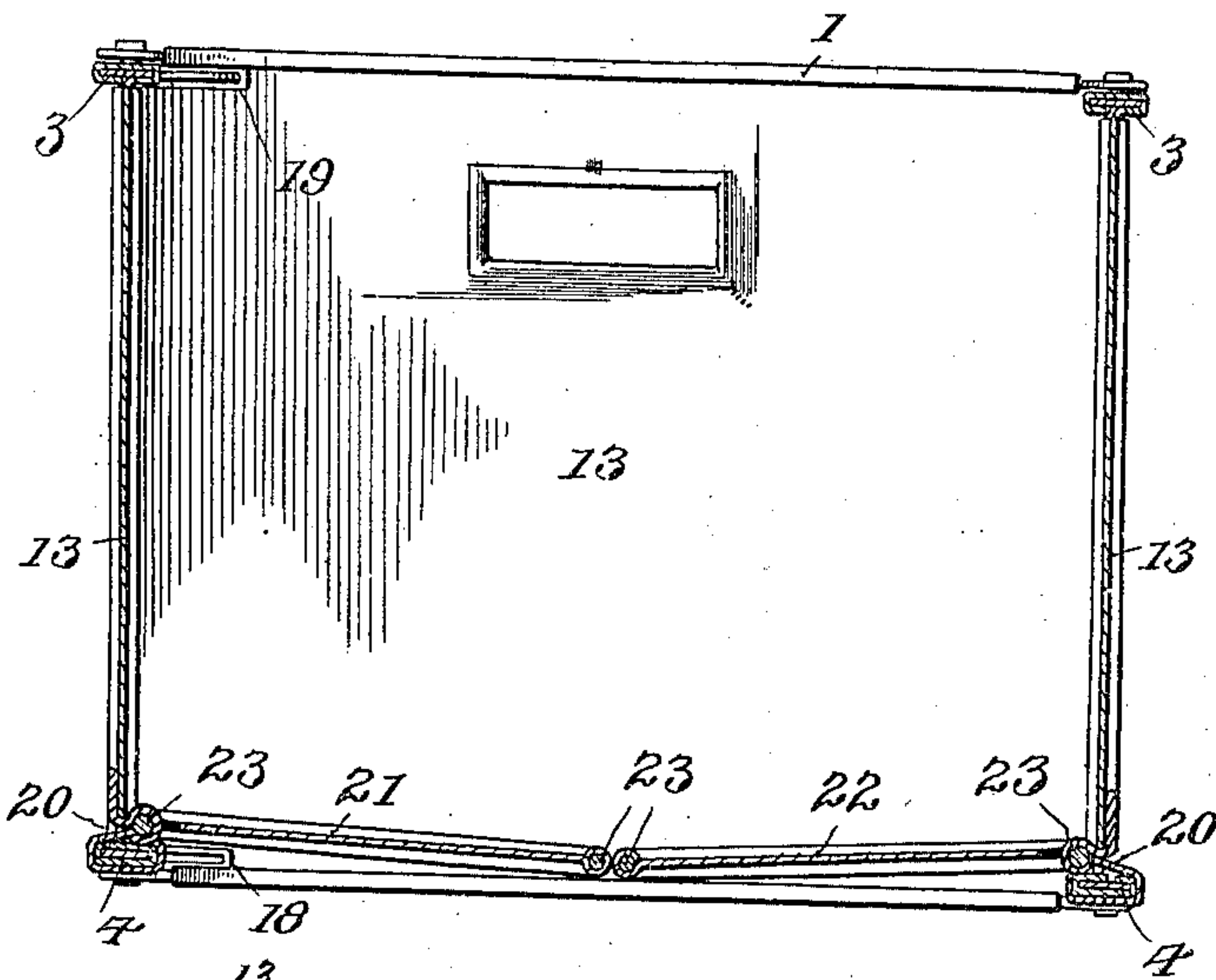


Fig. 4.

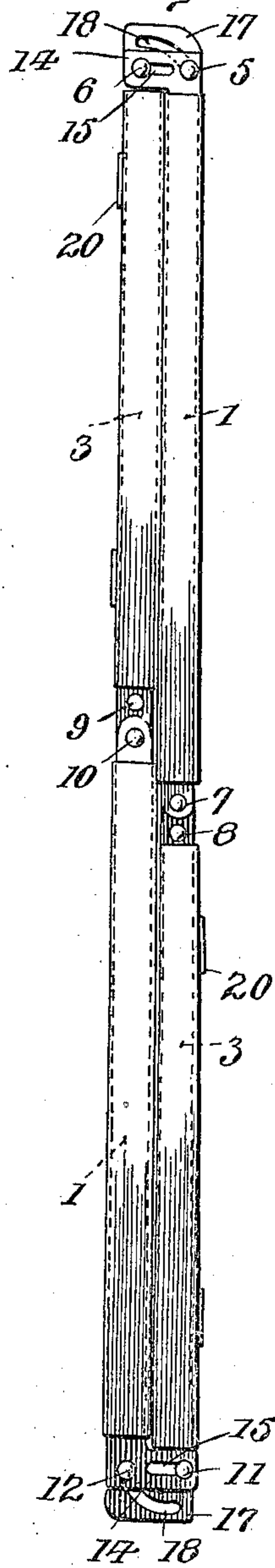
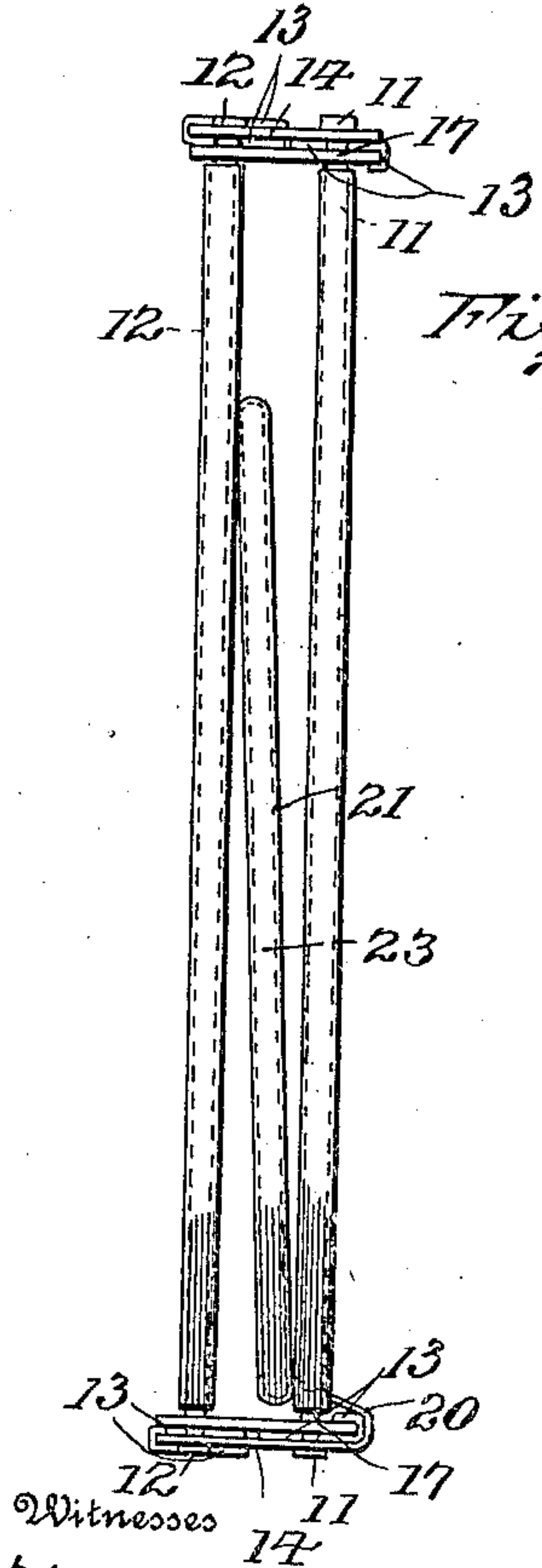
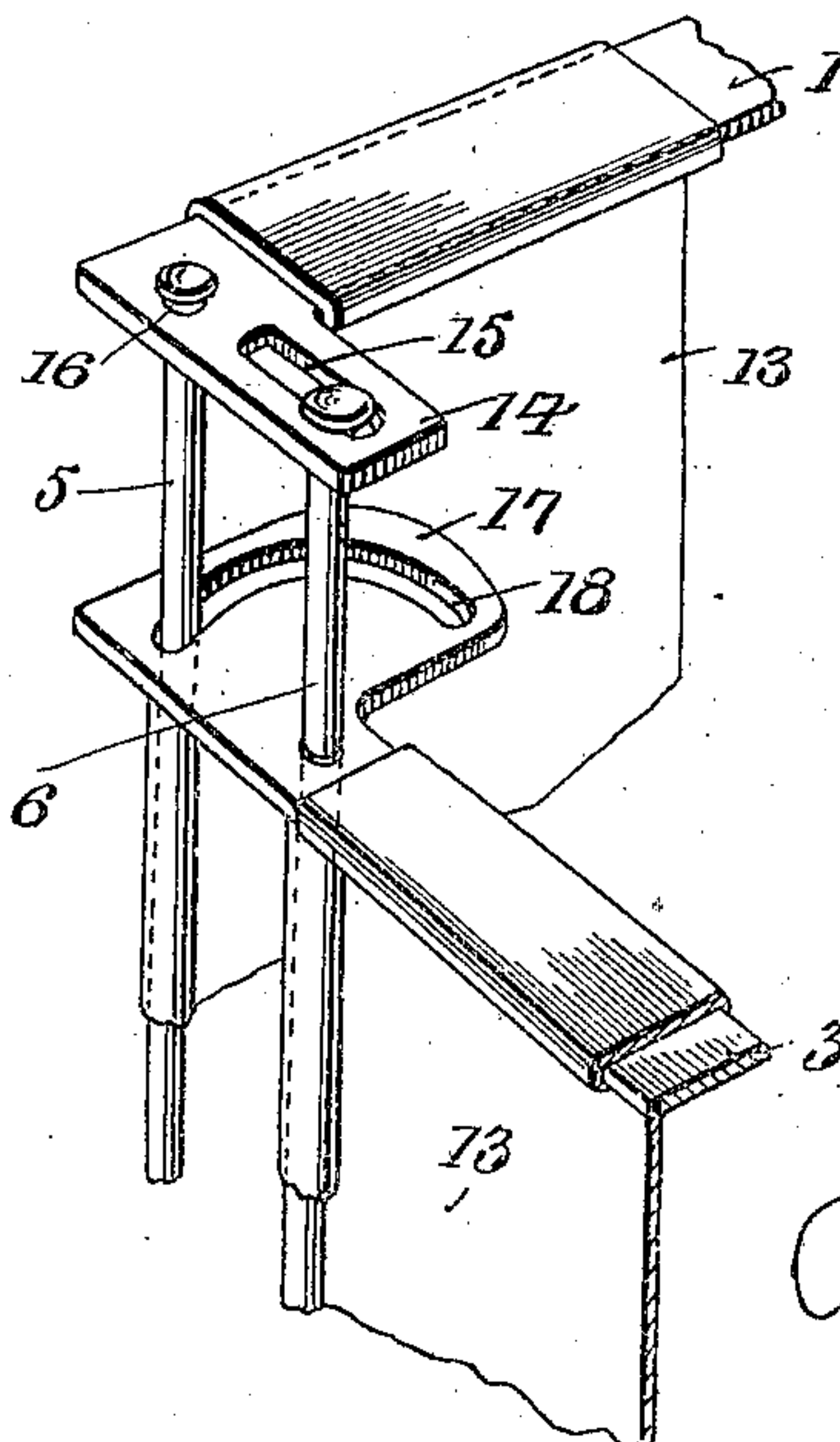


Fig. 5.



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Fig. 6.



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FOLDING BOX.

952,444.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed May 14, 1908. Serial No. 432,922.

To all whom it may concern:

Be it known that I, ALBERT GOLDENETZ, a citizen of the United States of America, and a resident of Defiance, in the county of Defiance and State of Ohio, have invented certain new and useful Improvements in Folding Boxes, of which the following is a specification.

My invention relates to folding boxes which are to be used in delivering and shipping merchandise from place to place; and the object of the invention is to provide a box of light material, preferably sheet metal, which may be folded up flat to occupy but little space, and therefore be especially adapted for the purpose of delivering groceries or transporting fruit, etc., to the market.

Broadly speaking, my invention comprises a folding box having a framework comprising upper and lower members connected together by vertical members, both the upper and lower members being so connected at their ends as to permit of the box being folded so that when folded the sides are parallel and therefore occupy as little space as possible. Sheet material, preferably metal, is attached to the upper and lower framing and to the vertical members connecting the same, to form the sides and ends of the box, and a bottom is provided suitably hinged to the lower framing and adapted to fold up thereagainst and to fold therewith when the box is folded.

In the drawings forming part hereof: Figure 1 is a perspective view of my folding box open. Fig. 2 is a horizontal section of the same. Fig. 3 is a vertical section taken on the line $x-x$, Fig. 2. Fig. 4 is a top plan view of the box when folded. Fig. 5 is an end view of the same. Fig. 6 is a detail view of the extensions formed on the ends of the framing members.

In its preferable embodiment my box comprises a framework of upper and lower longitudinal and transverse members connected together by vertical rods or standards, the framework being pivotally connected at two diagonally opposite corners, and loosely connected at the other two diagonally opposite corners.

Referring to the drawings; the upper and lower longitudinal framing members 1 and 2 are formed of flat metal bars. These bars are connected to similarly formed upper and lower transverse framing members 3 and 4

by means of vertical rods or standards 5, 6, 7, 8, 9, 10, 11 and 12. The sides and ends of the box are preferably formed of sheet metal 13 which is suitably secured to each upper and lower framing member and to the rods connecting them, the said sheet metal being preferably folded around said top and bottom members 1, 2, 3 and 4 and being wrapped around the aforesaid rods 5—12.

The vertical rods 7 and 10 connecting the ends of the longitudinal framing members at diagonally opposite corners serve as pivot rods on which the adjacent ends of the upper and lower transverse framing members 3 and 4 are pivotally mounted. The other ends of the upper and lower longitudinal framing members 1 and 2 are formed with lateral extensions 14 at diagonally opposite corners. These extensions are formed with slots 15 in which slide the ends of the vertical rods 6 and 11 connecting the ends of the upper and lower transverse framing members 3 and 4 adjacent the extensions 14. The ends of the longitudinal framing members 1 and 2 adjacent the extensions 14 have perforations 16 to receive the ends of the vertical rods 5 and 12 connecting the ends of the upper and lower longitudinal members 1 and 2 having the extensions 14. As already stated, the upper and lower transverse framing members 3 and 4 are pivotally secured to the rods 7 and 10 connecting the longitudinal members 1 and 2 at diagonally opposite corners. At the other two diagonally opposite corners where the extensions 14 are located the upper and lower transverse framing members 3 and 4 are provided with extensions 17 which are formed with curved slots 18 in which slide the rods 5 and 12 mounted in the perforations 16 at the extension ends of the longitudinal members 1 and 2. The sheet material attached to the upper and lower longitudinal members is cut away at 19 to receive these extensions 17 and to permit the same to slide therethrough.

It will thus be seen that the framing of the box is simply pivoted at two of its diagonally opposite corners and, by means of the slotted extensions 14 and 17, in which slide the vertical rods 6, 11, 5 and 12, it is slidably connected at the other two diagonally opposite corners.

Attached to the lower transverse framing members 4 are clips 20 to which are hinged the sections 21 and 22 forming the bottom

of the box. These bottom sections 21 and 22 are formed of sheet metal and the edges are secured to a strengthening wire 23 which extends about the outer edges of each section and by means of which each section is hinged to said clips 20. When the box is opened out and the bottom sections let down, the edges of each section adjacent the frame rest upon the edges of the flat metal bars composing the lower framing. These framing bars thus support the bottom sections upon which the weight of the contents of the box will rest. These sections are approximately the same width as the sheet material forming the ends of the box and are adapted to fold up against these ends when it is desired to fold the box. It will thus be observed that the bottom sections 21 and 22, when the box is opened ready for use, occupy the full space between the sides and ends, and also abut against each other, and thus the box is locked so that it cannot be folded until these bottom sections 21 and 22 are first folded upwardly against the ends. Therefore, it is impossible to fold the box when any produce is supported on the bottom sections.

The curved slots 18 limit the outward movements of the rods 5 and 12 and keep the members in their proper relative positions, preventing the box from being opened too far. The folding bottom sections, as before stated, lock the box on the inside and prevent it from folding as long as the bottom sections are let down. It will thus be seen that when my box is set up its members will retain their proper relative positions as when set up they are locked against inward movement by the folding bottom sections 21 and 22, and against further outward movement by the length of the aforesaid curved slots 18.

It will be seen that the slotted extensions 14 and 17 at the ends of the framing members allow the sides of the box to be folded flat and parallel to each other. The sheet material composing the sides and ends of the box cannot contact because of the greater width of the flat metal bars forming the framing and this leaves a space between the material forming the sides and ends up into which the sections forming the bottom of the box are folded. The bottom sections can thus be folded up against the ends and the entire box folded together so that the surfaces are flat and parallel.

The ends of the upper longitudinal framing members 1 are shown as resting on top of the upper transverse members 3 while with the lower framing members 2 and 4 the arrangement is reversed. It is obvious however that the arrangement of the lower members may correspond with that of the upper members or vice versa without affecting the operation of the device.

To fold the box, the bottom sections are first lifted up against the ends. The box is then folded by bringing together the two diagonally opposite pivoted ends as shown in Fig. 4. When this is done the rods 5 and 12 connecting the upper and lower longitudinal members at one end will slide in the curved slot 18 in the extension 16 and the rods 6 and 11 connecting the adjacent ends of the upper and lower transverse members 3 and 4 will slide in the slots 15 formed in the extension 14 on the longitudinal members 1 and 2 thus yielding to the outward pressure at the ends of the box caused by the two diagonally opposite pivoted ends being brought together at the center, and allowing the sides and frame work to fold together and all lie in parallel planes. As has been seen the bottom sections fold up against the ends of the box and allow the box to be folded so that its sides and framework are parallel, with the bottom sections inclosed thereby.

It will thus be seen that I have invented a folding box of light but durable material which can readily be set up or folded, which is adapted to be folded with its sides and frame-work parallel and thus take up as little space as possible; and at the same time withstand hard service; and be comparatively inexpensive to manufacture.

What I claim as my invention is:—

1. In a device of the character described, a box comprising foldable sides connected together at their ends and extensions projecting from said sides at the corners of the box, one of said extensions having a slot, and means co-acting with said slot limiting the outward movement of the sides when opened.

2. In a device of the character described, a box comprising foldable sides connected together at their ends and extensions projecting from said sides at the corners of the box, one of said extensions fitting over the other, and said extensions having slots and means co-acting with said slots limiting the outward movement of the sides when opened.

3. In a device of the character described, a box comprising foldable sides connected together at their ends, extensions projecting from said sides at the corners of the box, one of said extensions having a slot, means co-acting with said slot limiting the movement of the sides when opened and a bottom foldable against the sides and co-acting with the sides to lock the box open; the aforesaid slot and the means co-acting therewith thus preventing too great outward movement and the bottom preventing inward movement.

4. In a device of the character described, a box comprising two pairs of foldable sides, two ends of each pair being pivoted together, and the other ends of each pair having ex-

tensions, said extensions having slots, and means co-acting with said slots limiting the outward movement of the sides when opened.

5 5. In a device of the character described, a box comprising two pairs of foldable sides, two ends of each pair being pivoted together and the other ends of each pair having extensions having slots therein, and rods on the co-acting sides passing through said slots, the said slots limiting the outward movement of the sides and their rods when the box is open.

10 6. In a device of the character described, a box comprising two pairs of foldable sides, two ends of each pair being pivoted together and the other ends of each pair having extensions having slots therein, rods on the co-acting sides passing through said slots, a bottom foldable against the sides and co-acting with the sides to lock the box open, whereby the slots limit the outward movement of the sides and the bottom prevents the folding of the box.

20 7. In a device of the character described, a frame work comprising substantially flat upper and lower, longitudinal and transverse framing members and vertical members connecting the same, and connections at the adjacent ends of said framing members, two or more of said end connections being constructed and arranged to permit a sliding movement of their connected ends relative to each other.

25 8. In a device of the character described, a frame work comprising upper and lower longitudinal and transverse framing members formed of substantially flat material arranged horizontally, vertical members connecting said upper and lower framing members, vertically disposed sheet material connected to said upper and lower framing members and forming the sides of the box, and connection at the adjacent ends of said framing members, two or more of said end connections being constructed and arranged to permit a sliding movement of their connected ends relative to each other.

30 9. In a device of the character described, a frame work comprising upper and lower longitudinal and transverse framing members, vertical members connecting the upper and lower framing members, and connections at the ends of said members, one or more of the said end connections being constructed and arranged to permit a sliding movement of their connected ends relative to each other.

35 10. In a device of the character described, a frame work comprising upper and lower longitudinal and transverse framing members, vertical standards connecting each pair of upper and lower framing members, means for pivotally connecting the ends of the upper and lower framing members at diagonally opposite corners of the box, and con-

nections between the ends of the framing members at the other two diagonally opposite corners being constructed and arranged to permit a sliding movement of their connected ends relative to each other.

70 11. In a device of the character described, a frame work comprising upper and lower longitudinal and transverse flat metal bars, a vertical rod connecting each pair of upper and lower bars at each end, the ends of the upper and lower bars of adjacent pairs at two diagonally opposite corners being hinged together; and the ends of the upper and lower bars at the other two diagonally opposite corners having slotted extensions with which the adjacent vertical rods slidably engage.

75 12. In a device of the character described, upper and lower longitudinal and transverse framing members, vertical members connecting each pair of upper and lower framing members, sheet material interposed between the upper and lower framing members; a bottom attached to the lower framework, and connections at the adjacent ends of the framing members, two or more of said end connections being constructed and arranged to permit a sliding movement of their connected ends relative to each other.

80 13. In a device of the character described, a frame work comprising upper and lower longitudinal and transverse bars and vertical standards connecting the same, sheet material attached to each upper and lower bar and to the vertical standards connecting the same, bottom sections hinged to opposite lower bars, means for pivotally connecting the adjacent ends of upper and lower bars at two diagonally opposite corners, the adjacent ends of upper and lower bars at the other two diagonally opposite corners being slotted and co-acting with the rods connecting the upper and lower bars at said ends to permit a sliding movement of the said ends relative to each other.

85 14. In a device of the character described, upper and lower longitudinal and transverse members formed of flat metal bars, vertical rods connecting the same, sheet material connected to the upper and lower bars and to the rods connecting the same and forming the sides and ends of the box, leaves hinged to two opposite lower bars and forming the bottom of the box, means for hinging together the upper and lower bars at two diagonally opposite corners, the ends of the upper and lower bars at the other two diagonally opposite corners being slotted and co-acting with the rods connecting the upper and lower bars at said ends to permit a sliding movement of the said ends relative to each other.

90 15. In a device of the character described, a box comprising substantially flat horizontally arranged frame work at the top and

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bottom, sheet material secured to said frame work and forming the sides of the box, a bottom secured to the lower frame work and foldable therewith, and connections at the adjacent ends of the framing members, two or more of said end connections being constructed and arranged to permit a sliding movement of their connected ends relative to each other.

16. In a device of the character described, a box having substantially flat, horizontally arranged upper and lower longitudinal and transverse framing bars, sheet material secured to said bars and forming the sides of the box, a bottom hinged to the lower frame work and foldable therewith, and hinging connections at the adjacent ends of said framing bars, two or more of said end connections being constructed and arranged to permit a sliding movement of their connected ends relative to each other.

17. In a device of the character described, a frame work comprising upper and lower longitudinal and transverse members formed of flat metal bars, and vertical rods connecting the same, sheet material connected to the upper and lower bars and to the rods connecting the same and forming the sides and ends of the box, hinging means attached to two opposite lower framing bars, sheet material secured to said hinging means at opposite sides of the framing and forming the bottom of the box, means for hinging together the upper and lower bars at two diagonally opposite corners, lateral extensions formed on the ends of the upper and lower

bars at the other two diagonally opposite corners, said extensions being slotted and co-acting with the rods connecting the adjacent ends of the upper and lower bars at said corners to permit the box to be folded together with its frame-work, sides and bottom substantially parallel.

18. In a device of the character described, a frame work comprising upper and lower longitudinal and transverse members formed of flat metal bars and vertical rods connecting each pair of upper and lower framing bars at each end, sheet metal secured to the upper and lower framing bars and to the vertical rods connecting the same at each end, clips attached to the lower framing bars at opposite sides, sheet metal leaves hinged to said clips and supported by the lower framing bars, means for hinging together the upper and lower bars at diagonally opposite corners, and lateral slotted extensions at the ends of the upper and lower bars at the other two diagonally opposite corners engaging with the vertical rods connecting the adjacent ends of the upper and lower framing members at said diagonally opposite corners, whereby the box may be folded with the sides and frame work substantially parallel.

Signed by me at Defiance Ohio this 4 day of May 1908.

ALBERT GOLDENETZ.

Witnesses:

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HARRIET BLAIR.