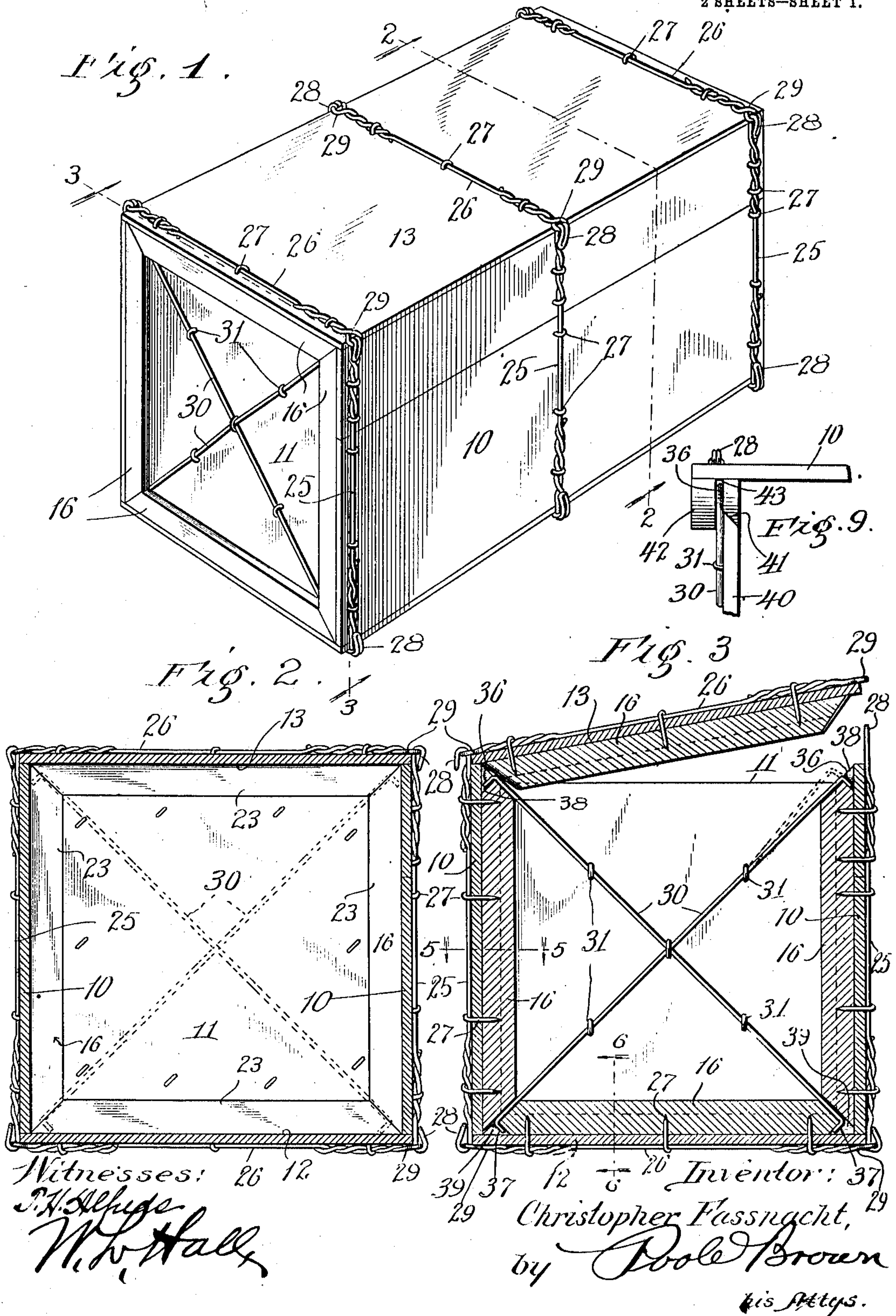


C. FASSNACHT.
SHIPPING BOX OR CASE.
APPLICATION FILED MAR. 31, 1909.

945,383.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.



Witnesses: J. H. Alfrey
W. H. Hall

Inventor: Christopher Fassnacht,
by Poole Brown
his Attys.

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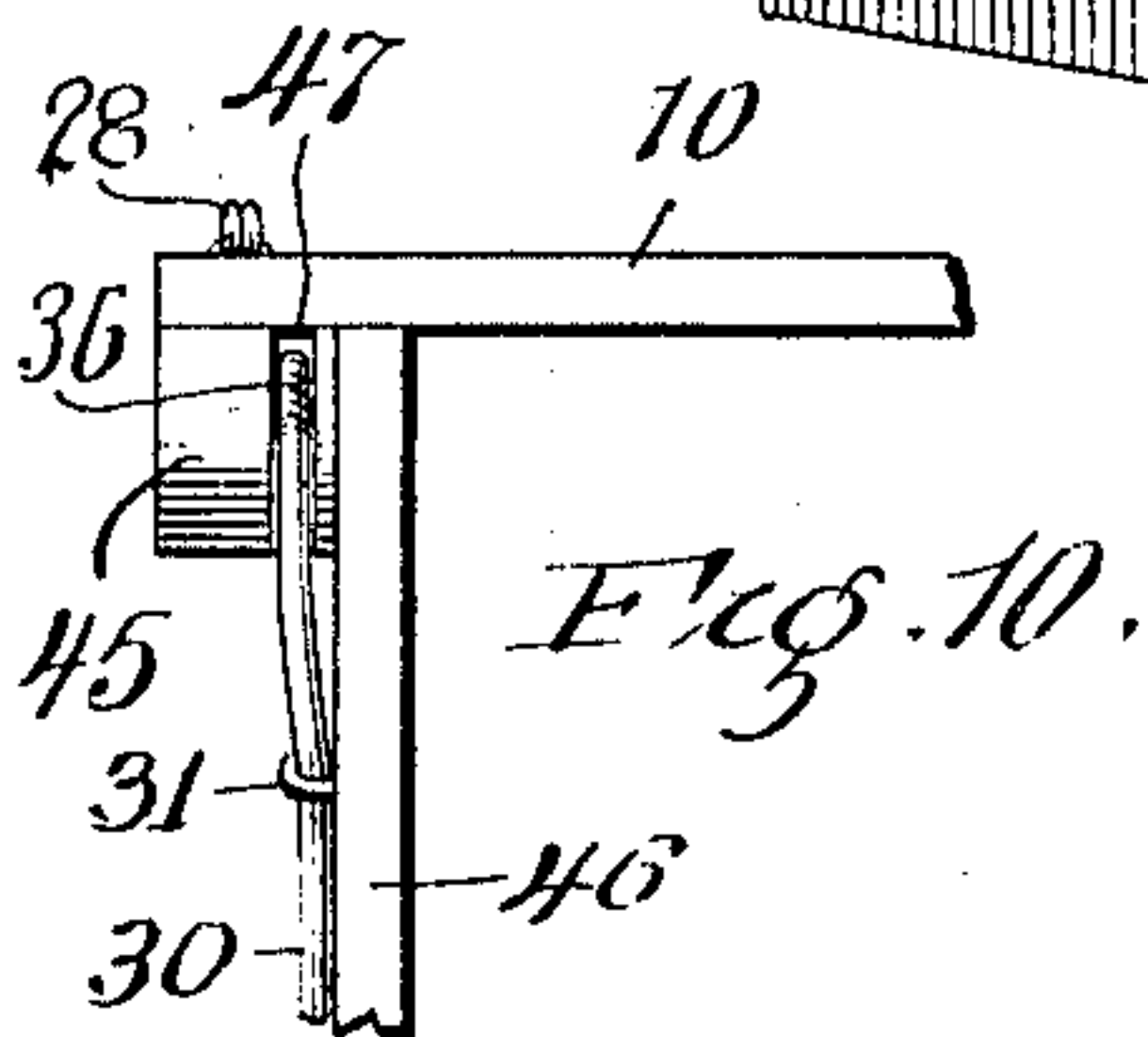
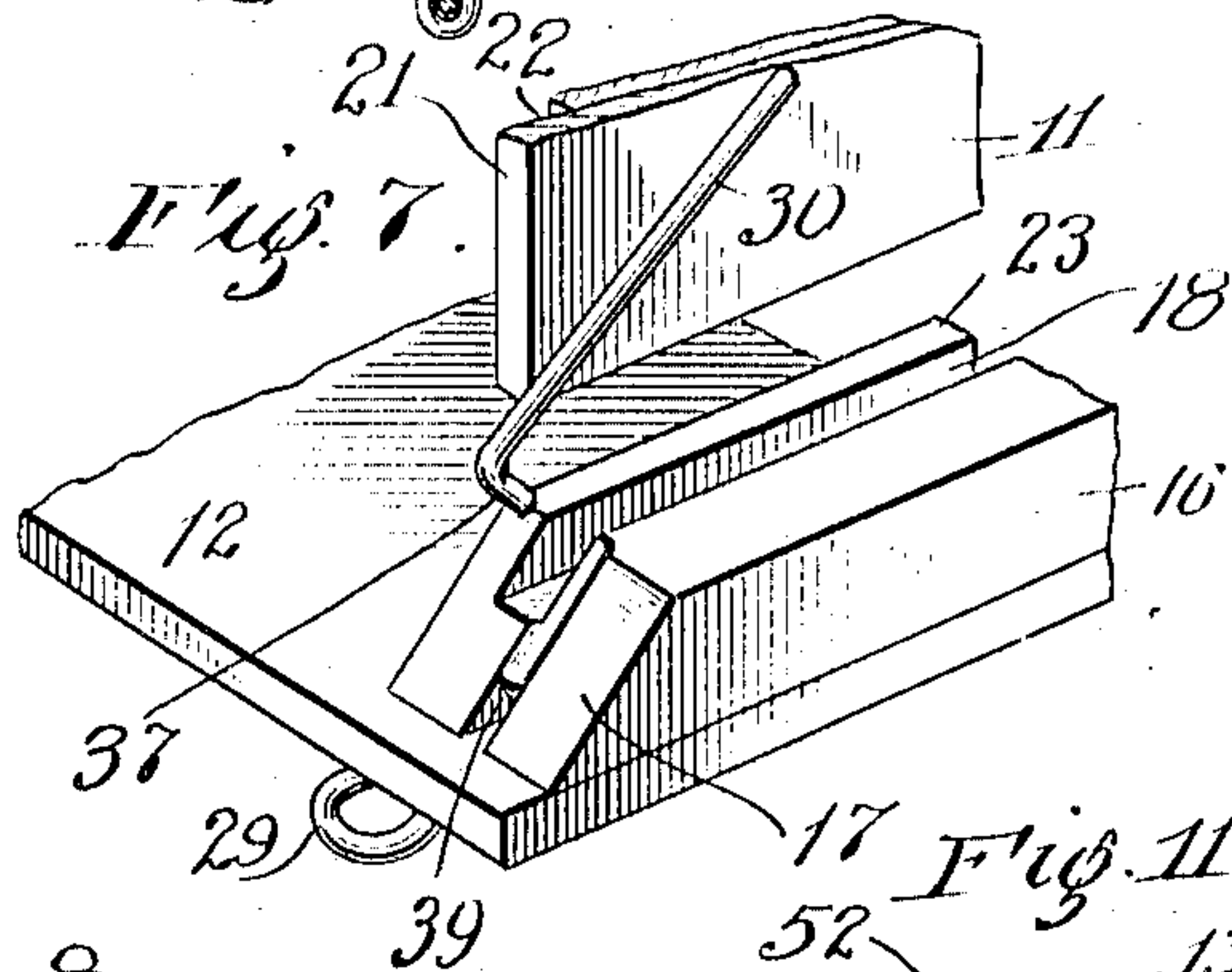
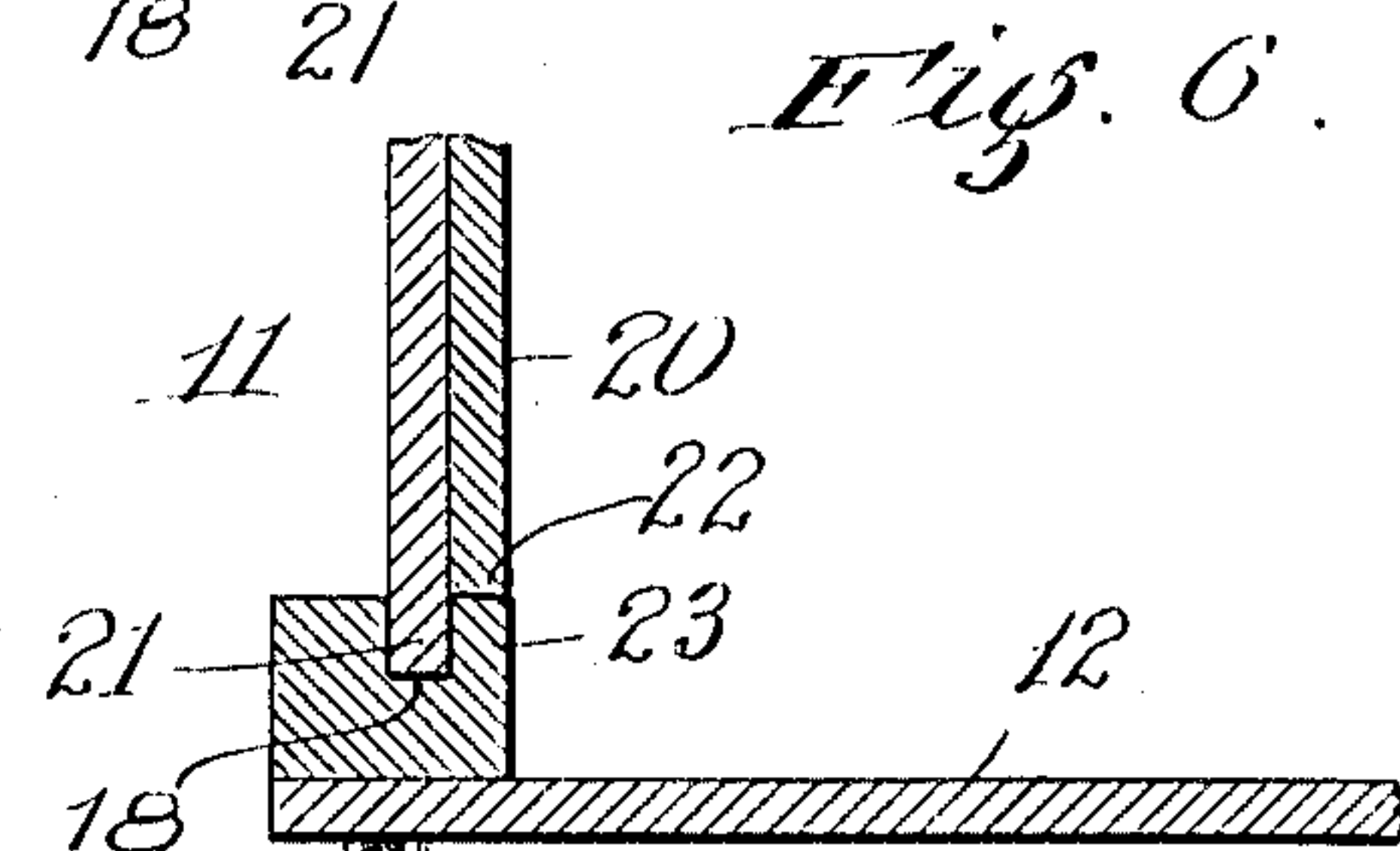
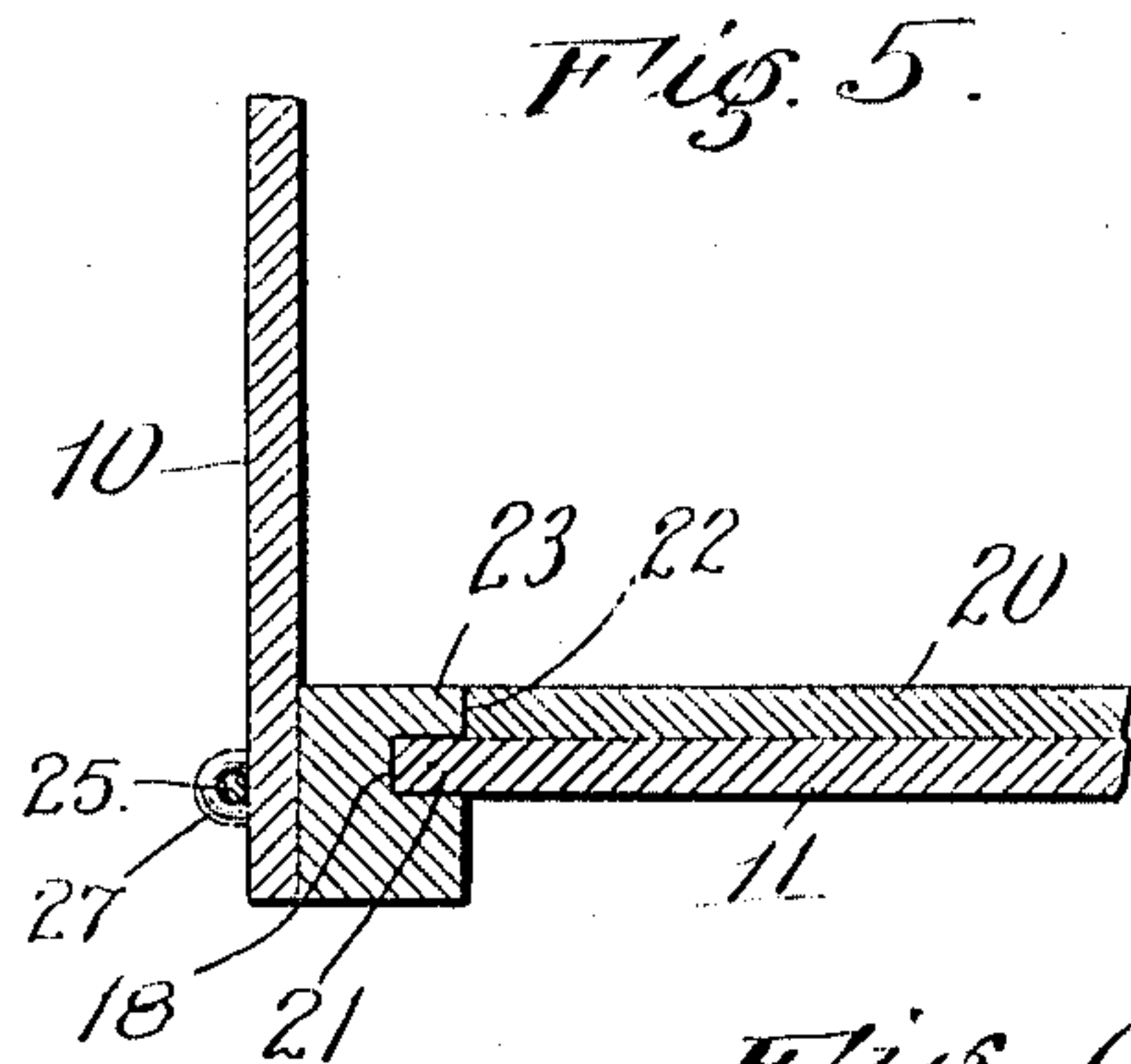
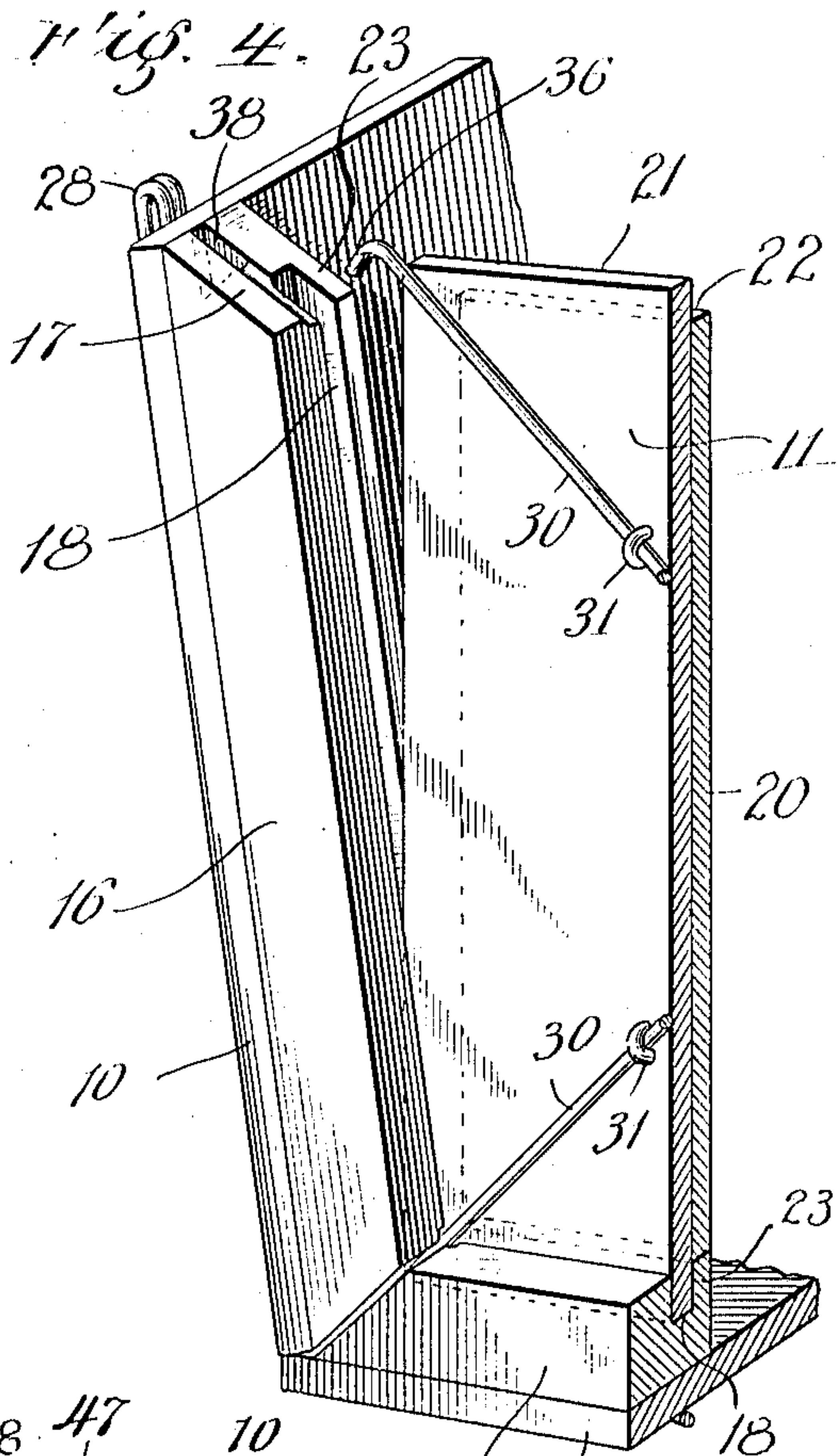
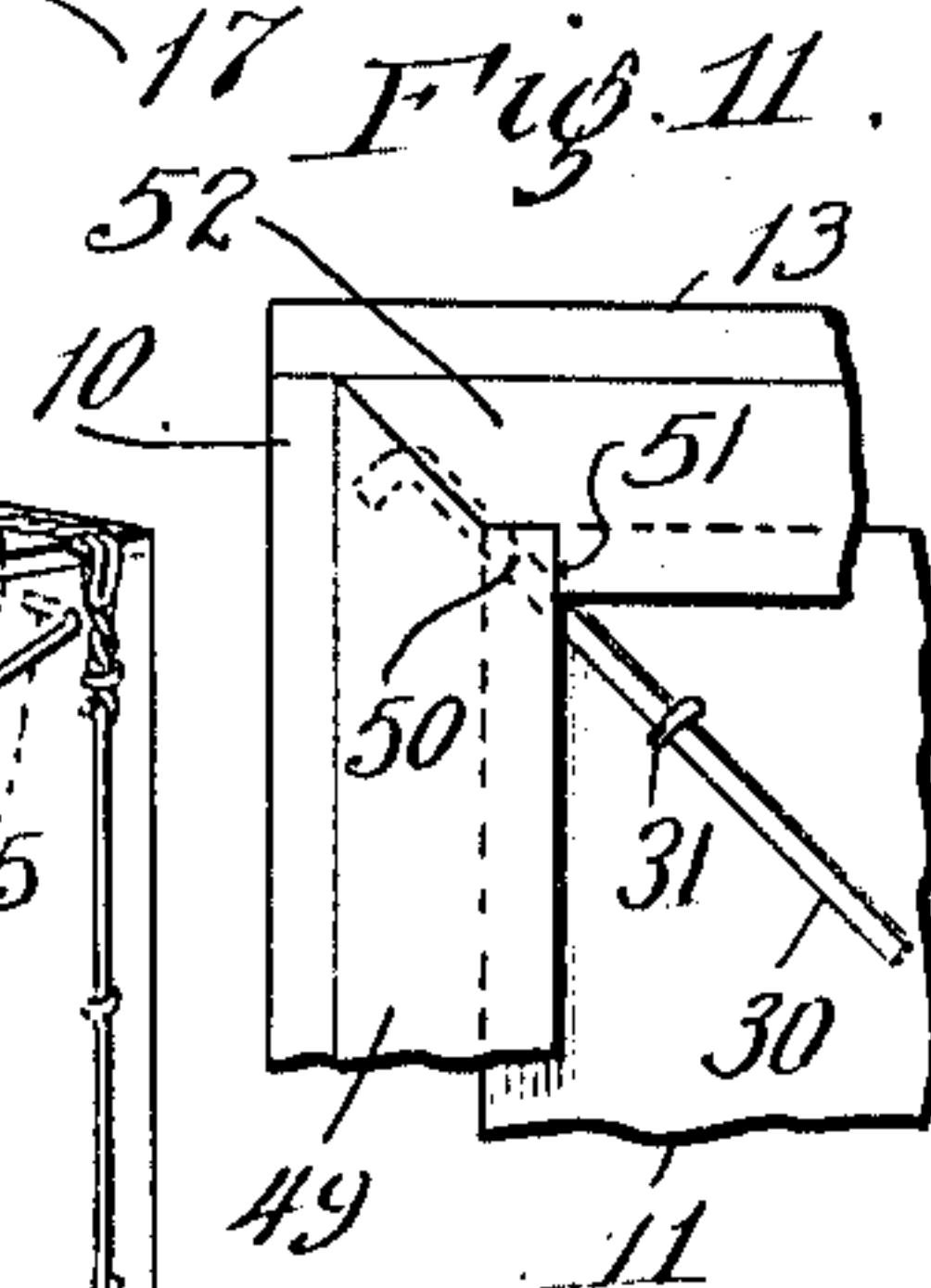
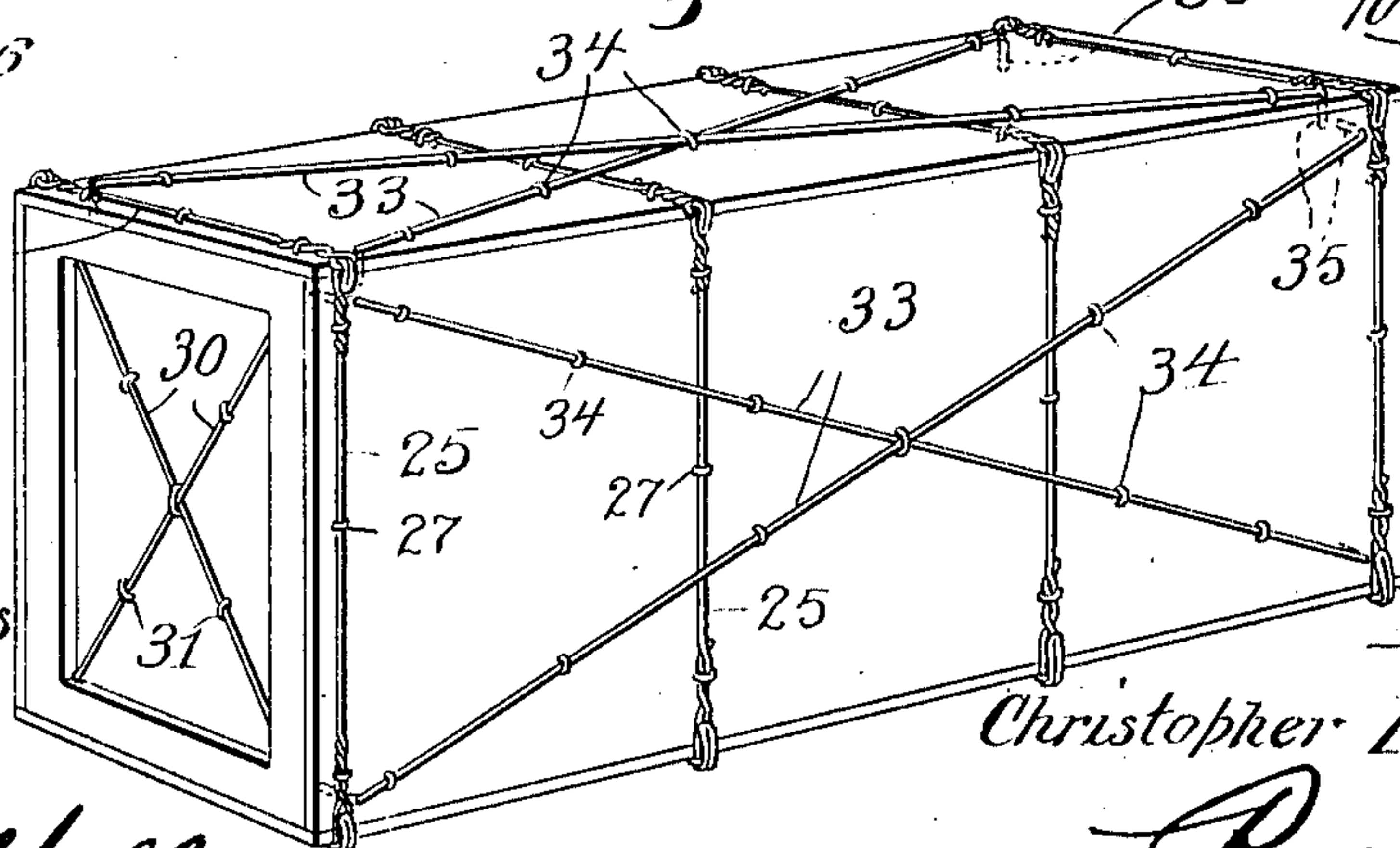


Fig. 8



Witnesses
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UNITED STATES PATENT OFFICE.

CHRISTOPHER FASSNACHT, OF SOUTH BEND, INDIANA.

SHIPPING BOX OR CASE.

945,383.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed March 31, 1909. Serial No. 486,969.

To all whom it may concern:

Be it known that I, CHRISTOPHER FASSNACHT, a citizen of the United States, and a resident of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Shipping Boxes or Cases; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to improvements in shipping boxes, crates or cases, and refers both to means for strengthening the box or case and also to an improved construction of a collapsible or knock-down box or case, the members of which are adapted to be detachably locked together in such manner that they may be "knocked down" and folded flat for re-shipment.

The invention relates further to other features of improvement in shipping cases or boxes, designed to improve and simplify the construction thereof, and the invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a perspective view of a "knock-down" box or case embodying my invention. Figs. 2 and 3 are cross-sections taken on lines 2—2 and 3—3, respectively, of Fig. 1. Fig. 4 is a perspective fragmentary view of one corner of the box or case, showing the means of joining the end walls to the side and bottom walls. Figs. 5 and 6 are detail sections, taken on lines 5—5 and 6—6, respectively, of Fig. 3. Fig. 7 is a perspective view of one corner of the bottom wall, showing adjacent parts of the end wall, separated a distance therefrom. Fig. 8 is a perspective view of a box or casing showing means for further bracing the same. Fig. 9 is a detail illustrating a modification of the end walls and the cleats. Fig. 10 is a further modification of the end walls and cleats. Fig. 11 is a detail illustrating a modification of the mitered ends of the cleats.

The box comprises side walls 10, 10, end walls 11, 11, a bottom wall 12 and a top wall 13. The said walls may be made of thin boards, veneer or the like, and the side bottom and top walls may be made of one or more longitudinal pieces or strips. The walls

of the box or case herein shown are solid, but obviously may be made of spaced slats of open construction in the manner of a typical crate. The side, top and bottom walls are provided at their end margins with strips or cleats 16, the outer side faces of which are flush with the margins of said walls. The said cleats 16 are beveled or mitered at their end faces 17, and they constitute, when fitted together, the end frame of the box or case. The cleats may be provided on their inner edges with grooves 18, to receive the side, top and bottom margins of the end walls, thereby giving a panel effect to the end walls. The panel effect may be otherwise given to the ends, as shown in Fig. 9, hereinafter to be described. Applied to the inner sides of the end walls are filler boards 20 which, as shown in Figs. 1 to 7, inclusive, form at their margins outwardly facing shoulders 22, which bear against the inner edges of the cleats, and which serve to strengthen the box or case at the ends thereof. The said filler boards 20 when employed are made of a thickness equal to the thickness of the parts 23 of the cleats inside the grooves thereof, whereby when the walls are assembled the inner faces of the boards 20 are flush with the inner side faces of the cleats, thus producing smooth, continuous, inner walls of the case without projections at the corners thereof. Obviously, the ends, consisting of the boards 11 and 20 may be made of a single board, cut at its margins to form the shoulders 20.

The sides of the box, that is to say the side walls 10 and the top and bottom walls 13 and 12, respectively, are bound together and to the end walls by binding wires or strips which are detachably interlocked at the corners of the box in such manner that the walls are securely tied together, while permitting them to be removed or detached one from the other. In the construction shown round wire is used. In the present construction, each wall is provided with a plurality of binding wires 25 or 26, three being herein shown, one located at each end and the third near its longitudinal center. The said binding wires are fastened to the walls by staples 27 and may constitute means to join or connect the two or more strips or slats of a wall when the wall is made of more than one piece. The staples 27, by which the binding wires are attached to the ends of the box

sides, constitute the means for fastening the cleats 16 thereto. One set of said binding wires, the wires 25 as herein shown, have tongues 28, 28 at their opposite ends which may be formed by turning the ends of the wires back upon themselves and twisting the terminals of the wires about the body thereof. The other set of wires, the wires 26, have eyes 29 at their opposite ends which may in like manner be formed by turning the ends of the wires back upon themselves and twisting the terminals about the bodies of the wires. The eyes 29 project beyond the walls or sides which carry them, and the tongues 28 likewise project beyond the sides or walls which bear them, so that when the walls are assembled the tongues are inserted through the eyes at the outer sides of the corners of the box and are bent backwardly upon themselves in the manner clearly shown in Figs. 1, 2 and 3. The connection described constitutes a hinged connection, whereby either wall or side may swing about its margins relatively to an adjoining wall or side when the box is being assembled or knocked down. Moreover, the top wall or side 13 constitutes a hinged cover when one margin thereof is released, as shown in Fig. 3. By forming all the tongues on one set of wires, as the wires 25, and all of the eyes on the other set of wires, as the wires 26, it will be observed that the turned over or folded terminals of the tongue will occur on opposite sides of the box or case, the lateral sides as herein shown, so that the other sides thereof, the top and bottom sides, as herein shown, are free from projections, such as would interfere with the box being shifted or slid on a floor on which it rests.

The end walls are provided with one or more brace members 30, 30 which extend diagonally across the walls from corner to corner. When two are used they cross each other at the centers of the ends. They are fixed to said ends by staples 31 or other suitable fastening devices. The said oblique cross braces serve to strengthen the end walls against diagonally applied crushing pressure. Like brace members or wires 33, 33 may be applied to the sides 10, 12 and 13 of the box or case, as shown in Fig. 8. Said brace members are attached to the sides by staples 34 and extend diagonally across the sides and cross at the centers of the sides. Said brace members 33 may be provided at their ends with inwardly turned prongs 35 which may be driven into the sides. In the construction of box herein shown, said prongs are driven through the sides into the cleats at the end margins of the sides. The bracing thus applied strengthens or stiffens the box in all directions and enables the walls to be made comparatively light while possessing ample strength.

The system of bracing may be applied to

boxes, crates, or shipping cases of various kinds, and is especially valuable in "knock-down" box or case structures which are designed to be re-shipped in "knock-down" form, inasmuch as it enables the box walls to be made light without impairing their necessary strength, and thus reduces shipping cost. Moreover, the system of bracing aids to prevent warping of the thin boards of veneer, or other material of which "knock-down" boxes or cases are preferably made. As a further and separate improvement, the said brace members or wires may be arranged to constitute a connection between adjoining walls and thereby aid to hold the walls together when assembled. Such connection between the brace wires or members and adjoining walls is herein shown as applied to the end wall braces. To this end the said brace wires 30 may extend beyond the end walls at the corners thereof, and may be provided with angular turned portions or hooks 36, 37 which are adapted to enter appropriately located notches 38, 39 in the beveled or mitered end faces 17 of the cleats. The laterally turned portions or hooks 36 at the upper ends of the brace members are directed outwardly and engage the upwardly opening notches 38 at the upper ends of the end cleats of the lateral side walls. The hooked or laterally turned portions 37 at the lower ends of said brace members are directed inwardly and downwardly and engage the notches 39 at the ends of the cleats of the bottom side wall. The said hooked ends of the braces are sufficiently resilient to allow them to spring inwardly or outwardly for engagement with or disengagement from the cleats, and the spring or resiliency of the braces serves to hold the hooked portions thereof securely engaged with the notched portions of the cleats when the parts are assembled.

The construction described affords, as will be clearly obvious from an inspection of Fig. 3, means to securely connect the bottom and side walls of the box with the end walls, and to prevent the lateral side walls from swinging outwardly when the hooks 36 are engaged with the upper notched ends of the cleats of the side walls. This construction, it will be observed, provides a connection for holding assembled the five walls of the box, to wit, the end walls, the bottom and lateral side walls, so that the box, with the top wall omitted, is sufficiently rigid to hold the parts securely together while the box is being filled, thus avoiding the necessity of placing the box in a form to hold the walls in position during the filling operation. The interlocking connection of the braces of the end walls of the box, when combined with the shouldered engagement of said end walls with the cleats

or lateral side walls, produces a box or case of great strength to resist crushing pressure or tendency of the box walls to spread apart.

5 In assembling the box or case the bottom wall is first placed on a support and the end walls are placed with their lower tongued margins 21 engaging the grooves of the bottom wall cleats. In forcing the end walls into the grooved bottom cleats the lower hooked ends of the brace wires 30 spread apart and are automatically engaged with the notches 39 of said bottom cleats. The side walls are then assembled on the bottom and end walls, the tongues 28 of the binding wires of said side walls being passed through the eyes 29 of the bottom wall and bent backwardly upon themselves to constitute a locking engagement of the binding wires of the side and bottom walls. Thereafter the side walls are pressed toward the end walls to engage the grooved cleats thereof with the side margins of said end walls. As the upper sides of the side walls move into place the hooked upper ends of the braces 30 are automatically engaged with the notches 38 at the upper ends of the side wall cleats. The box or case is now in position to be filled, and when filled the top wall is applied by engaging the eyes of the binding wires at one side thereof with the upwardly extending tongues on one side wall of the box, and thereafter bending the tongues back upon themselves. The top at this time constitutes a swinging lid or cover and is swung downwardly in the manner of an ordinary lid to pass the eyes 29 at the free margin thereof over the tongues 28 of the adjacent side wall, after which said tongues are folded backwardly upon themselves to complete the locking of the walls of the box together. When the box is to be knocked down or disassembled, the bent over tongues are straightened so that they may be disengaged from the eyes to permit the walls to be separated. In detaching the upper sides of the side walls from the end walls the brace wires 30 are sprung inwardly or toward each other at their upper ends to release the hooks 36 from the notches 38. The lower ends of the brace wires are spread apart to release the hooks 37 from the notches 39. I may provide both ends of the side wall cleats with the notches 38 in order that the side walls may be reversed, edge for edge, while providing for proper locking connection between the upper ends of the brace wires and the side wall cleats. The arrangement of each binding wire or strip 25 or 26, with an eye formed on each end, or a tongue on each end, permits the parts to be thus reversed and to properly interlock when assembled.

As shown in Fig. 9, the end wall 40 is a single thickness wall or panel and is beveled at its margins to fit beveled grooves 41 of

the cleats 42. In this construction the inner face of the single thickness thin end or panel is flush with the inner sides of the cleats 42 to provide smooth or non-projecting walls at the corners of the box. The brace wires 30 of said end walls or panels engage at their ends notches 43 formed in the end faces of the cleats somewhat closer to the inner sides of the cleats than in the construction previously described.

In the construction illustrated in Fig. 10, the cleats 45 are made without grooves and the end walls or panels 46 are located wholly inside, and overlap at their margins the inner faces, of said cleats. Said ends or panels 46 are made of such dimensions as to closely fit at their margins the inner faces at the bottom, top and lateral sides of the box or case. In this construction the brace rods 30 will be sprung outwardly from the ends 46 for engagement with the notches 47 in the ends of the cleats, which notches are located closely adjacent to the inner sides of said cleats. The lateral sides of the box or case will be held to the ends in the same manner as before, and resiliency of the ends of the braces 30 act to hold the ends up against the cleats. If the contents of the box or case are such as to exactly fill the same this construction will be found to be amply strong.

In some instances I may find it desirable to shoulder the mitered ends of the cleats, as shown in Fig. 11, and thus strengthen said cleats against relative displacement. As shown in said Fig. 11, one of the cleats 49 is formed at its mitered end with a projecting squared or other suitably shaped shoulder 50 which engages a like shaped notch 51 formed in the mitered end of the adjacent cleat. The end joints of the cleats may be otherwise formed to strengthen the connections between the same.

It is to be understood that the construction may be otherwise varied and modified within the scope and spirit of my invention, and I do not limit the invention to the structural details shown except as hereinafter made the subject of specific claims.

Reference made in the appended claims to box sides are intended to designate the bottom and top sides as well as the lateral sides, except where the sides or side walls are more specifically designated.

I claim as my invention:—

1. A knock-down box or crate comprising separable side and end walls, the side walls being provided with inwardly facing shoulders which abut against outwardly facing marginal shoulders of the end walls, stiffening braces extending across said end walls and having interlocking connection at their ends with the side walls, and binding means extending around the side walls for releasably holding the walls together.

2. A knock-down box or crate comprising side and end walls, each separable from the other, and stiffening braces extending across said end walls and having interlocking connection at their ends with the side walls.

3. A knock-down box or crate comprising end, side and bottom walls, each separable from the other, and means to detachably fasten the side walls to the end walls and to fasten each side wall to both sides of the bottom wall.

4. In a knock-down box or crate, end, side and bottom walls, and means for detachably fastening the side and bottom walls to the end walls and the upper edges of the side walls to the diagonally opposite edges of the bottom wall.

5. A knock-down box or crate comprising side and end walls, each separable from the other, and means carried by the end walls to releasably fasten the side walls to the end walls, embracing stiffening braces attached to the end walls, and to brace said end walls.

6. A knock-down box or crate comprising end, top and bottom end lateral side walls, and bracings for the end walls which serve as means for connecting the same with the lateral side and bottom walls.

7. A knock-down box or crate comprising side and end walls, each separable from the other, and stiffening braces for the end walls adapted for detachable engagement with the side walls to releasably interlock the side walls to the end walls.

8. A knock-down box or crate comprising separable side and end walls, the side walls being provided at their ends with cleats and the end walls having overlapping and shouldered engagement with said cleats and arranged to provide at the end corners smooth or non-projecting wall surfaces, and stiffening braces for the end walls arranged for releasable interlocking engagement with the side walls.

9. A knock-down box or crate comprising side and end walls, each separable from the other, and stiffening braces extending diagonally across said end walls and crossing at the centers of the end walls, said braces being arranged at their ends for releasable interlocking engagement with the side walls.

10. A knock-down box or crate having separable side and end walls, the side walls being provided at their ends with cleats engaged by the margins of the end walls, and stiffening braces extending diagonally across the end walls and meeting at the centers of said walls, the ends of said braces being arranged to engage the cleats at the ends of the latter to lock the side walls to the end walls.

11. A knock-down box or crate having separable side and end walls, the side walls being provided at their end margins with cleats which are fitted together at their ends,

and the end walls having engagement with said cleats, and stiffening braces extending diagonally across the end walls and meeting at the centers thereof, the said cleats being provided at their ends with notches and the ends of the braces being adapted for engagement with the notches of the cleat ends.

12. A knock-down box or case comprising end and lateral, bottom and top sides, each separable from the other, and combined bracing and fastening means for releasably connecting the ends with the bottom and lateral sides to form a rigid open box or crate without the top side said means comprising stiffening braces extending across said ends and having interlocking connection at their ends with the side walls.

13. A knock-down box or crate comprising end and lateral, bottom and top sides, each separable from the other, combined bracing and fastening means for releasably connecting the ends with the bottom and lateral sides to form a rigid open box or crate without the top side said means comprising stiffening braces extending across said ends and having interlocking connection at their ends with the side walls, and binding means extending transversely around the assembled sides.

14. A knock-down box or crate comprising ends and lateral and bottom and top sides separable each from the other, means for releasably connecting the ends with the bottom and lateral sides to form a rigid open box or case without the top side, binding devices extending across each side, and means for releasably interlocking the ends of the binding devices at the corners of the box sides.

15. A knock-down box or crate comprising end and side walls, binding devices carried by the side wall for releasably fastening the side walls together, said side walls being provided at their ends with grooved cleats and the end walls fitting at their margins in the grooves of said cleats and provided with exterior diagonal braces which cross at the centers of the end walls and are interlocked at their ends with said cleats.

16. A knock-down box or crate comprising separable end and side walls, the side walls being provided with binding wires which extend transversely across the same and beyond the side margins of the side walls and are provided at their ends with interlocking means, the lateral side walls being reversible and the top and bottom side walls being likewise reversible.

17. A knock-down box or crate comprising end and side walls, the side walls being provided with binding wires extending transversely across the same and beyond their side margins, the binding wires of one wall being provided at each of their ends with eyes and the binding wires of an adjoining wall being provided at each of their ends with tongues

adapted to pass through said eyes and to be bent backwardly upon themselves to interlock the binding wires of adjoining walls.

18. A box or crate comprising end and side walls and stiffening braces extending diagonally across said walls and crossing at the centers of the walls and connected at their ends to said walls at the corners of the box or crate.

19. A knock-down box or crate comprising separable end and side walls, and stiffening braces extending diagonally across said walls and crossing at the centers of the walls and fixed at their ends to said walls at the corners of the box or crate, the end wall braces being releasably connected with the side walls.

20. A knock-down box or crate comprising separable end and side walls, stiffening braces extending diagonally across said walls and crossing at the centers of the walls and fixed at their ends to said walls at the corners of the box or crate, the end wall braces being releasably connected with the side walls, and binding devices extending transversely around the side walls and releasably interlocked at their ends.

21. A knock-down box or crate comprising separable end and side walls, and stiffening

braces extending diagonally across said walls and crossing at the centers of the walls and fixed at their ends to said walls at the corners of the box or crate, and binding wires extending around the side walls of the box or case parallel with the end edges thereof.

22. The combination with a box or crate, of bracing means for the wall thereof comprising brace rods or wires extending diagonally across the wall and crossing at the center thereof and attached along their length to the wall.

23. The combination with a box or crate, of bracing means for the wall thereof comprising brace rods or wires extending diagonally across the wall and crossing at the center thereof, said wires or rods being provided at their ends with prongs which are driven into the wall, and means for attaching the brace rods or wires along their length to the box wall.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 19th day of March A. D. 1909.

CHRISTOPHER FASSNACHT.

Witnesses:

R. G. INWOOD,
JAMES W. TAYLOR.