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2,653,652

COLLAPSIBLE TABLE AND CHAIR

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2 Sheets-Sheet 1

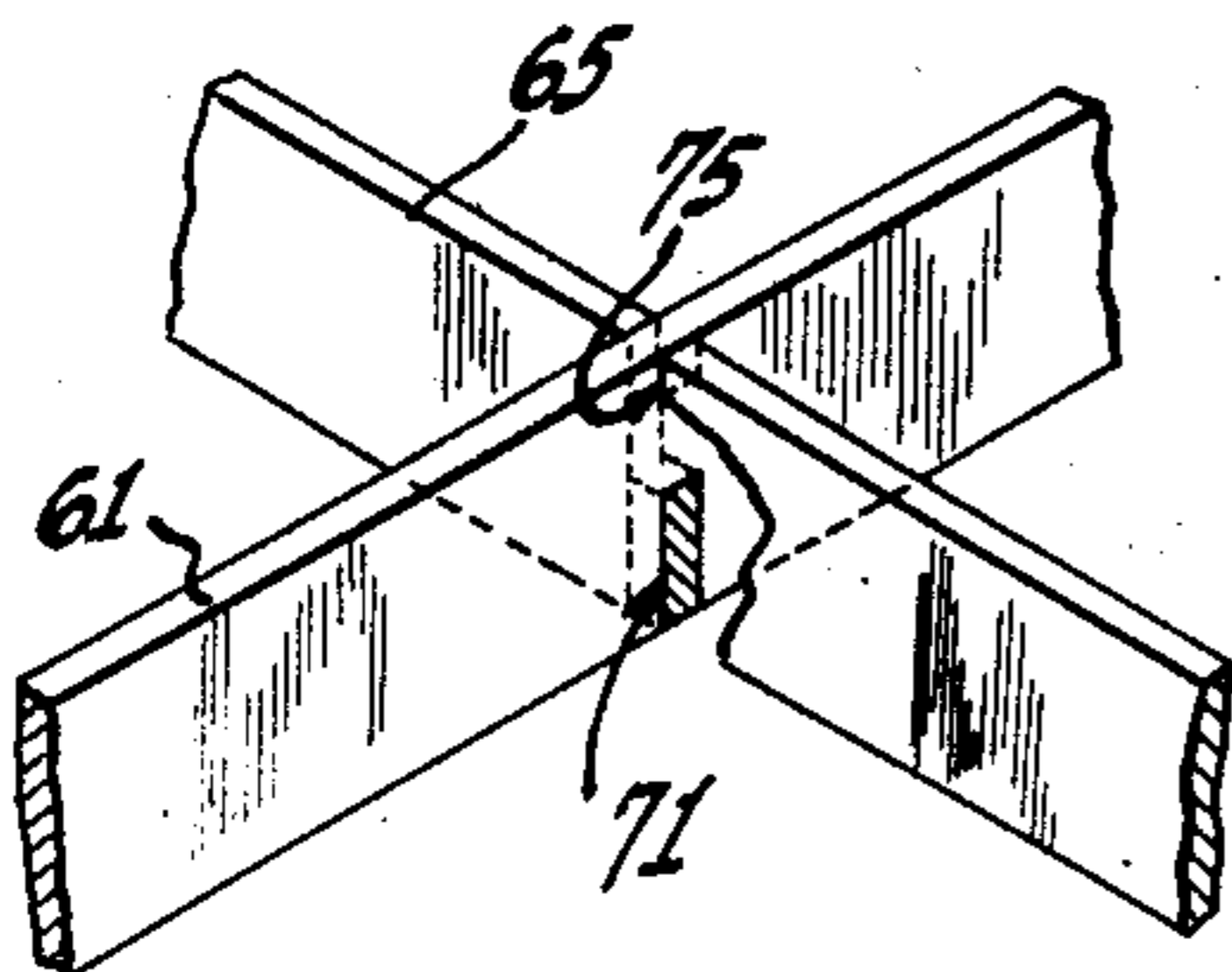
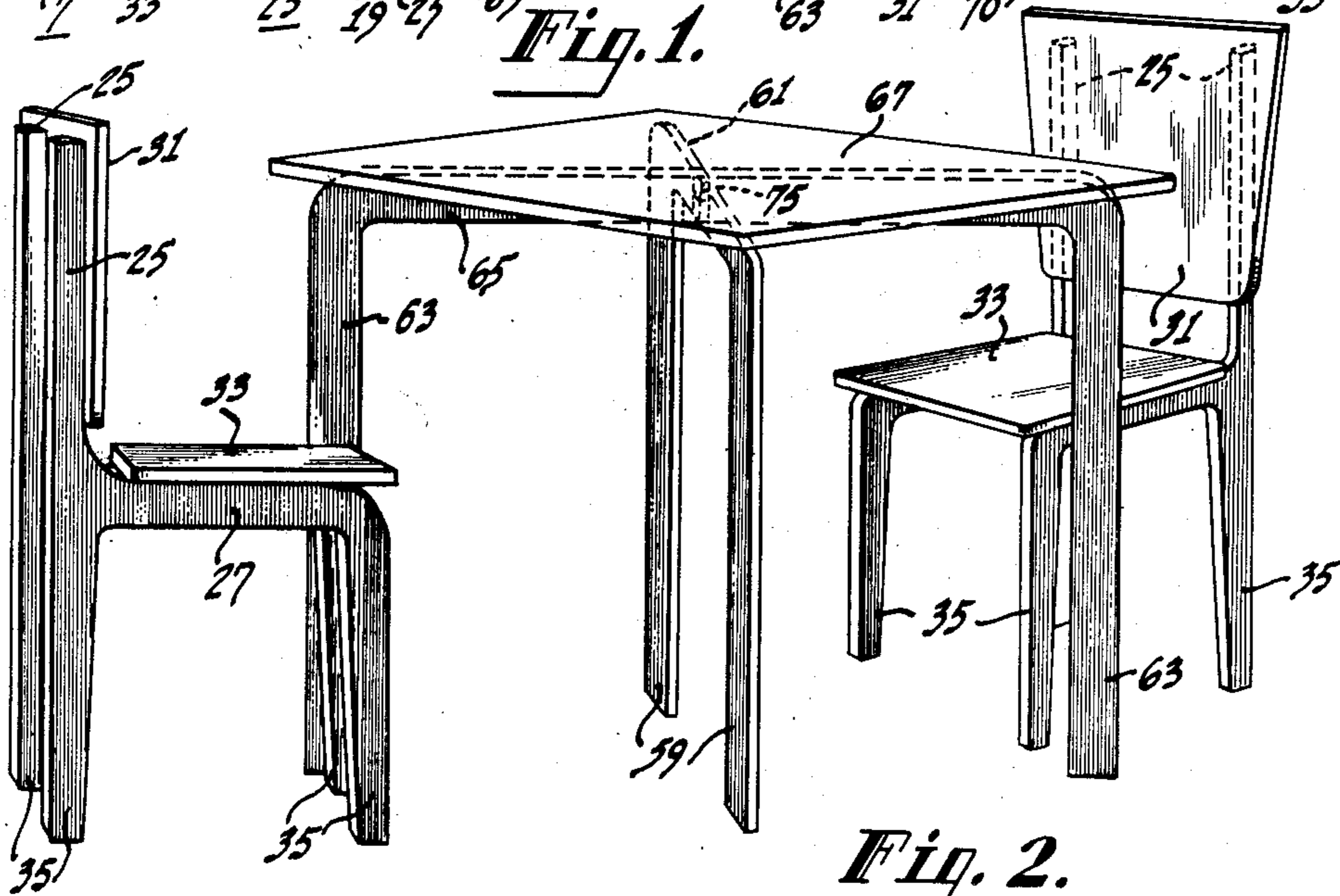
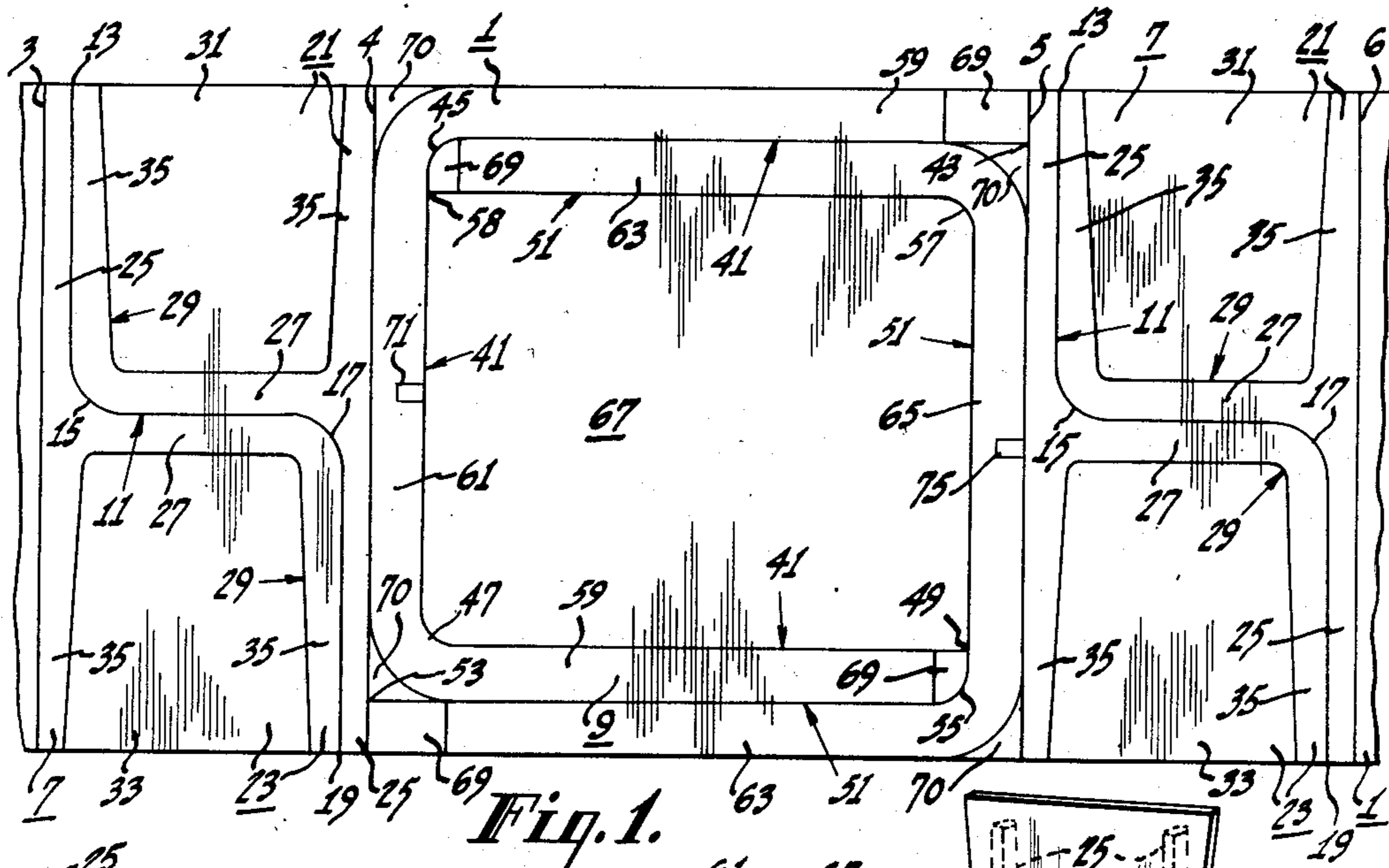


Fig. 3.

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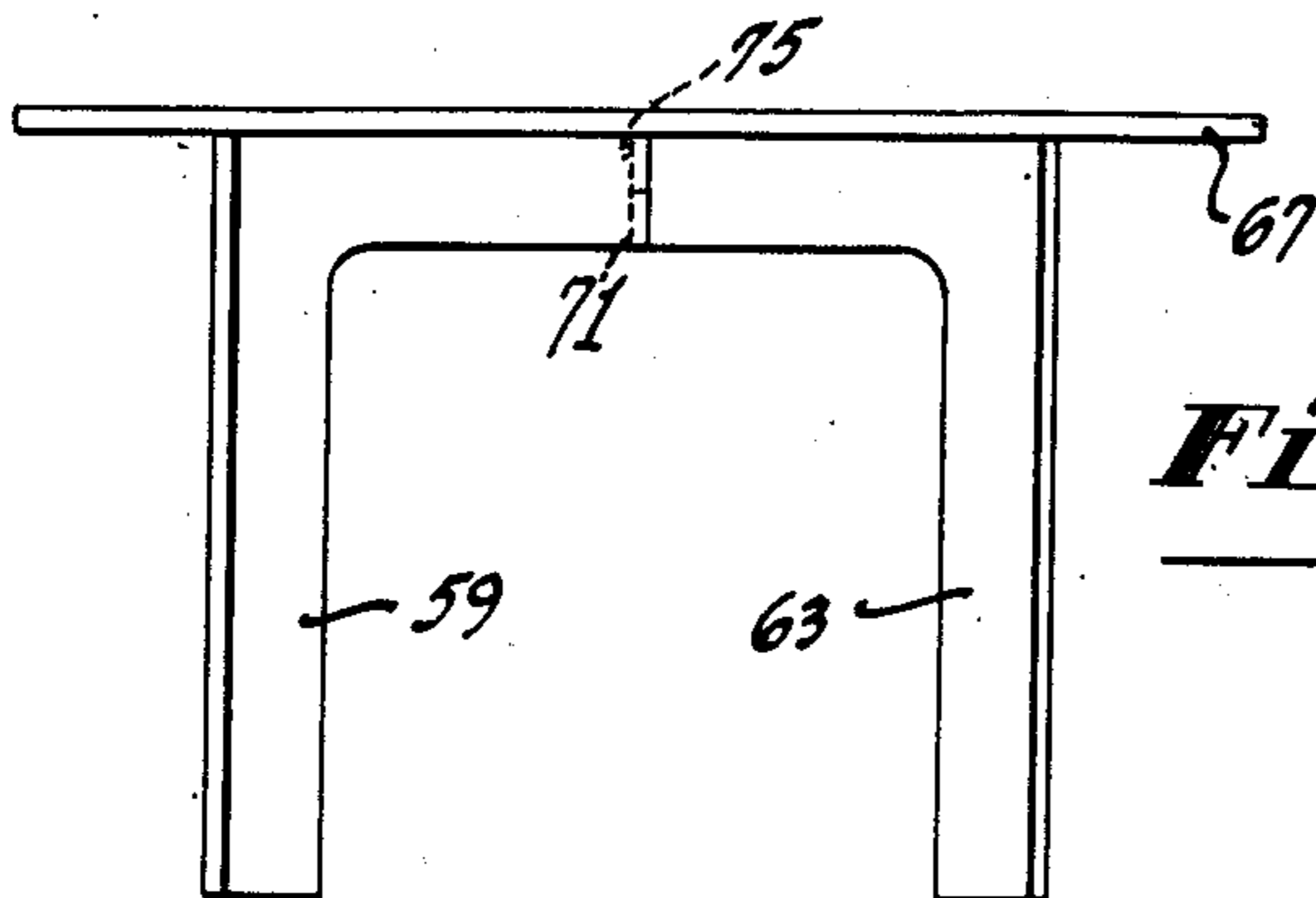
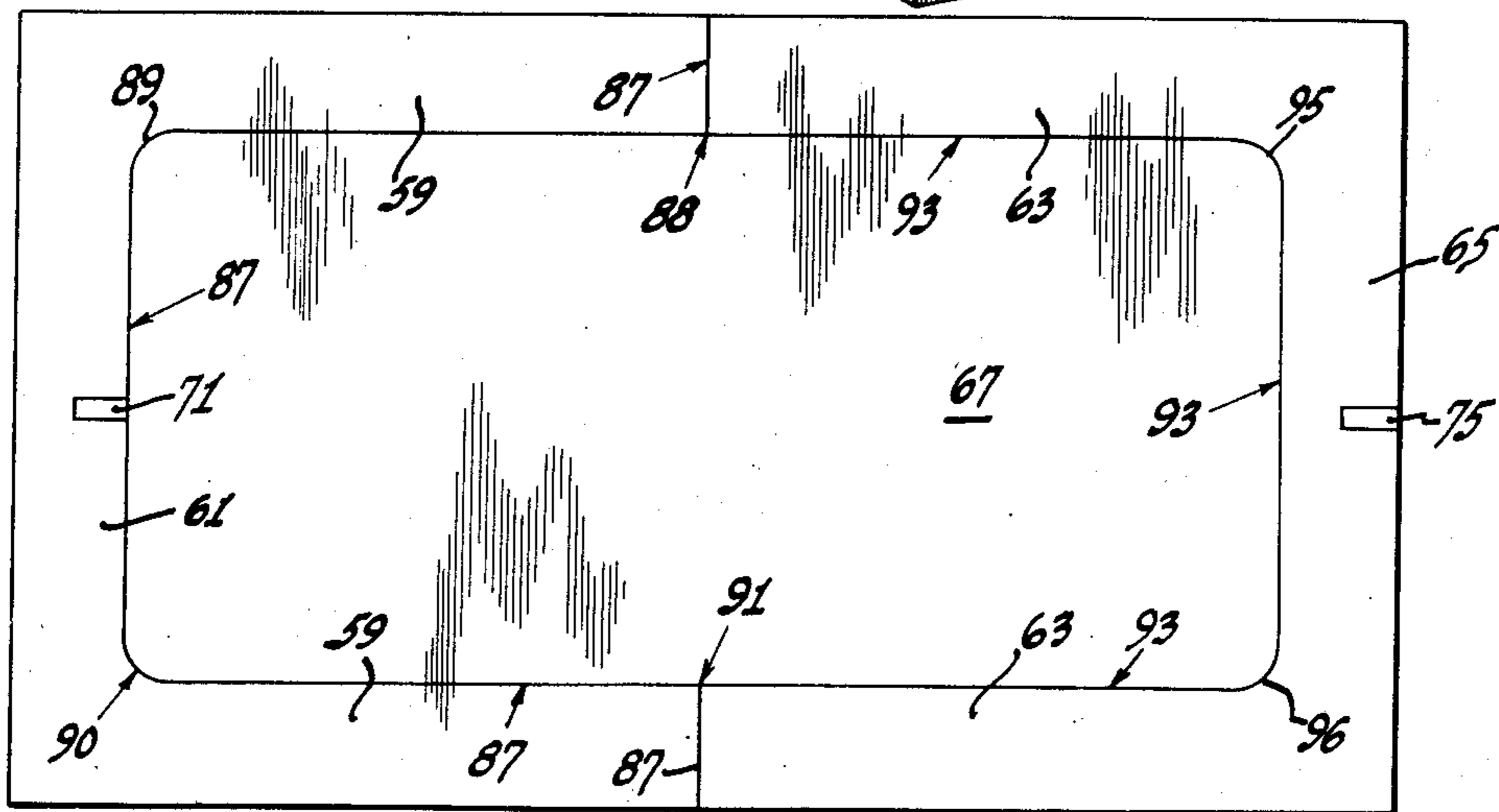
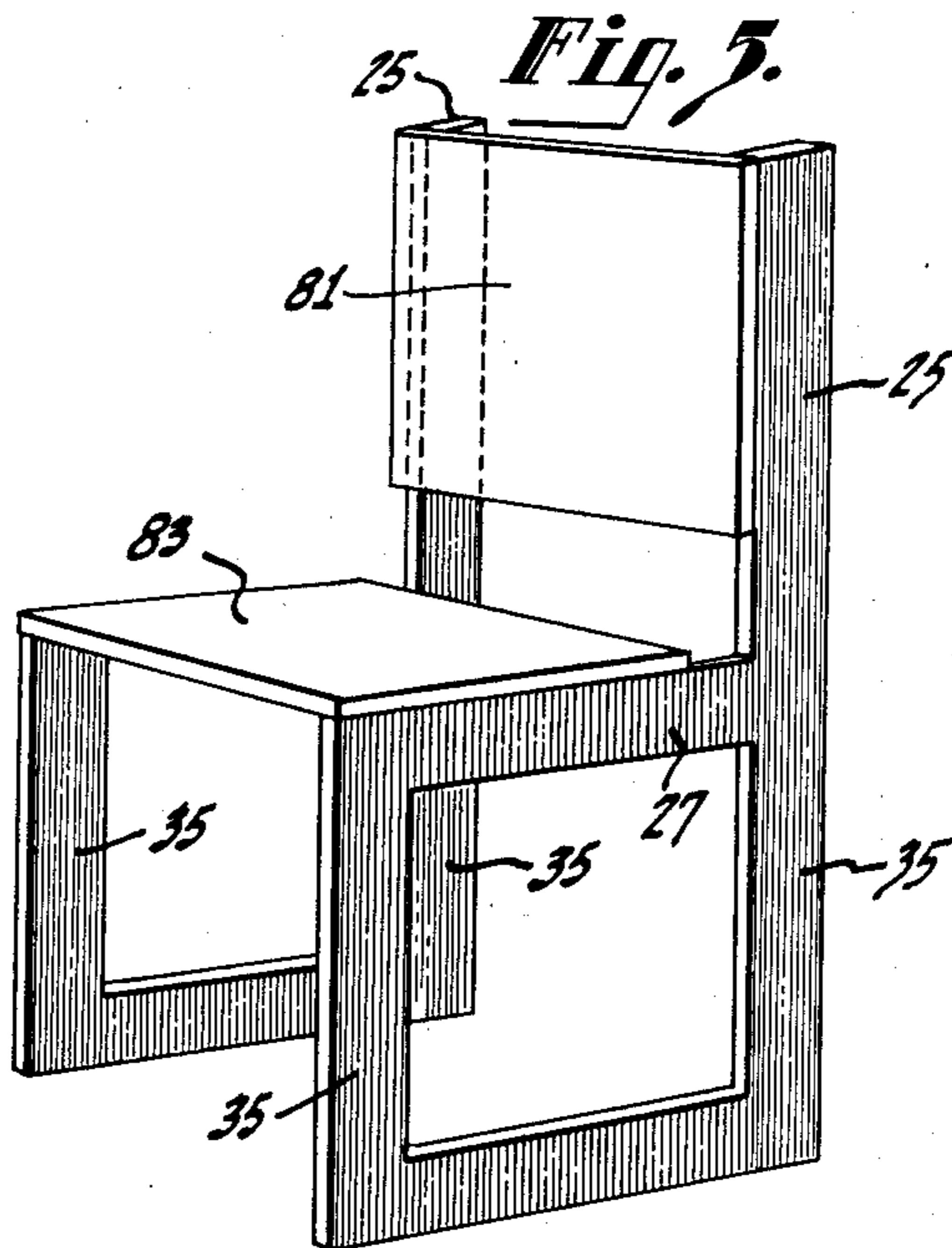
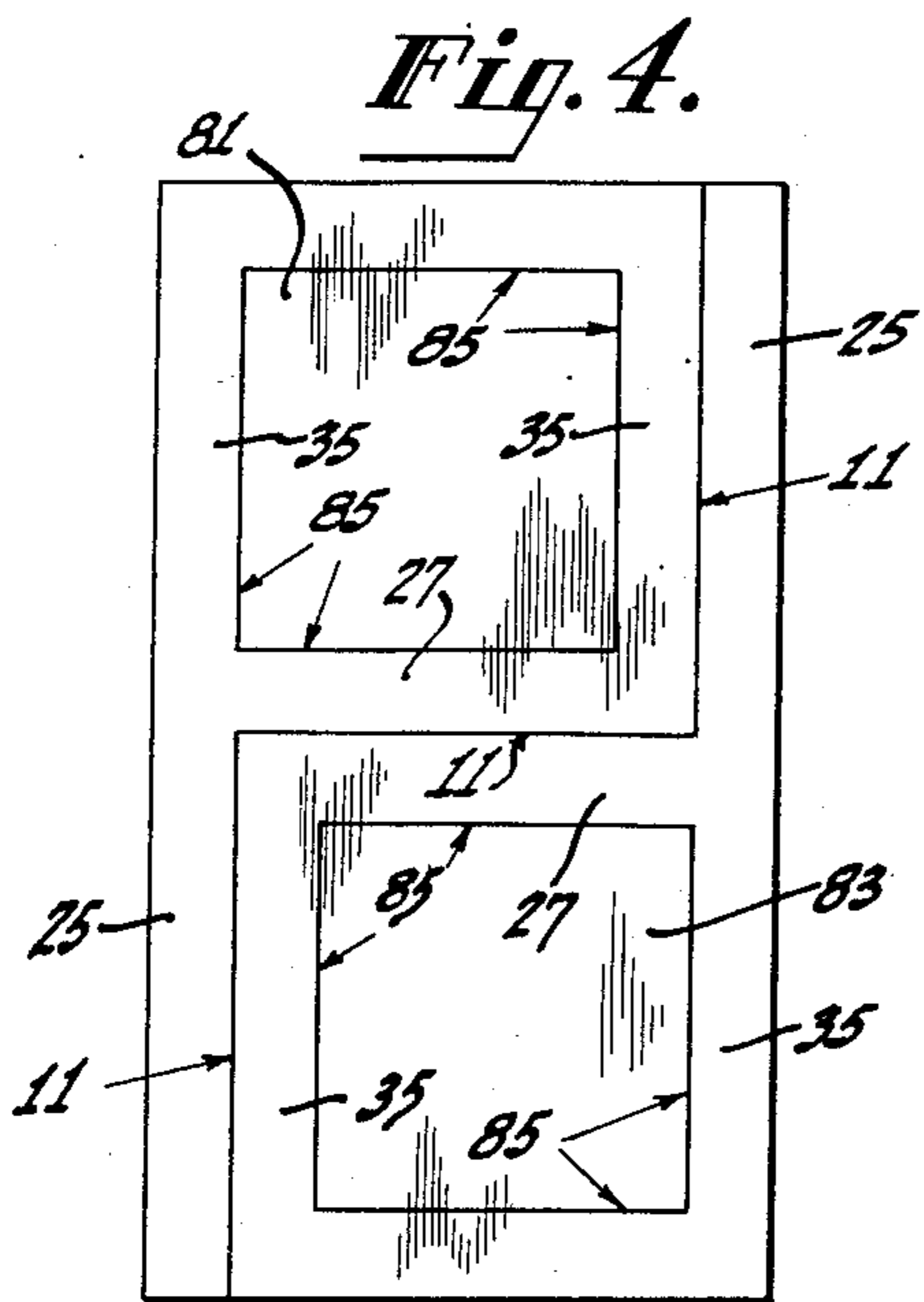
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**Fig. 6.**

**Fig. 7.**

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## UNITED STATES PATENT OFFICE

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## COLLAPSIBLE TABLE AND CHAIR

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6 Claims. (Cl. 155—194)

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This invention relates to articles of furniture such as chairs and tables, and more particularly to an improved method of making such articles, the principal object of my invention being to provide a greatly simplified method of fabricating such articles and similar objects from sheet or board material by a few simple operations which can be carried out quickly, easily, and with great accuracy even by those not skilled in the art of making furniture.

More particularly, it is an object of my present invention to provide an improved and simplified method of producing, by either a single operation, or at most a few simple operations, parts of such articles of furniture as chairs and tables in readiness for quick and facile assembly into the completed articles.

Another object of my invention is to provide an improved method of producing furniture parts or the like as aforesaid which will result in parts that interfit or nest snugly so as to be capable of compact packaging in knocked-down condition for compact storage and shipment and for display in a limited space.

Still another object of my invention is to provide an improved method of producing furniture that is sturdy in construction when the parts thereof are assembled and that will readily withstand hard use and even abuse.

A further object of my invention is to provide an improved method of manufacturing articles of furniture or the like which will involve a very minimum of waste of material—in fact, no waste at all in some cases.

Still a further object of my invention is to provide an improved method of fabricating articles of furniture which is especially useful in the manufacture of children's furniture and toys.

It is also an object of my present invention to provide an improved method of fabricating various articles of furniture or similar objects which is extremely simple and inexpensive to carry out, which is highly efficient in practice, and which readily lends itself to high speed quantity production.

In accordance with my invention, articles of furniture having legs and tops or other supports, such as seats, are made from board or sheet material by a single cutting or stamping operation, or at most by a mere few simple operations of this sort, to provide the parts necessary for assembly into complete units. The articles may be made of strip, sheet or board material, such as plywood, plastic, metal, cardboard or the like, and the parts are produced by as few as two or three dis-

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crete saw-cuts, or by a single die stamping operation. These result in a plurality of nested or interfitting parts which can be packed flat and in compact arrangement for storage, shipment or display purposes and which can be readily separated to provide components for ready and facile assembly into complete, sturdy units.

The novel features that I consider characteristic of my invention are set forth with particularity in the appended claims. The invention itself, however, as well as additional objects and advantages thereof, will best be understood from the following description when read in connection with the accompanying drawings in which

Figure 1 is a plan view of a length of board showing how this board may be severed to provide a set of furniture comprising a table and two chairs,

Figure 2 is a perspective view of the table and chair parts of Fig. 1 fully assembled into complete table and chair units,

Figure 3 is a fragmentary perspective view of the two sets of legs of the table of Figs. 1 and 2 showing the connection therebetween,

Figure 4 is a plan view of a board showing how this board may be severed in accordance with a modified form of my invention to provide a chair,

Figure 5 is a perspective view of the chair parts of Fig. 4 assembled into a complete chair,

Figure 6 is a plan view of a board showing how this board may be severed according to a modified form of my invention to provide a table, and

Figure 7 is an end view of a table assembled from the table parts of Fig. 6.

Referring more particularly to the drawing, there is shown, in Fig. 1, a fragment of sheet or board material 1 which may be severed transversely along lines 3, 4, 5 and 6 to provide "end" blanks 7 from which chairs are to be formed and an intermediate blank 9 from which a table is to be formed. Each "end" blank 7 may then be cut along a line 11 which starts adjacent one corner 13 thereof, extends down along the blank 7 to a curve 15 near the middle thereof, and then continues transversely across the blank to a curve 17 from where it continues downwardly to terminate adjacent the diagonally opposite corner 19 of the blank 7. The line 11 is of such contour as to provide two side pieces or sections 21 and 23 of substantially h-shape each having a back support 25 and a seat support 27 but with the space between the legs of the h filled in by the pieces 31 and 33 to be referred to in greater detail hereinafter. Each of the sections 21 and 23 may then be cut along a U-shaped, V-shaped or other

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reversely curved line 29 of suitable contour each beginning and terminating at the edge of its side piece which is opposite its seat support 27. The cuts 29 complete the side pieces into h-form and provide legs 35 and the pieces 31 and 33, one of which may serve as a back and the other as a seat for the chair.

The cuts 11 and 29 may either all be made simultaneously by a suitable cutting die, for example, or they may be made sequentially as discrete cuts, as by a band saw or the like. The single die-cut operation may be found more suitable where the sheet or board 1 is made of plastic, while the saw-cut operations may be preferred if the board 1 is of wood, metal or the like. I have found  $\frac{3}{4}$  inch plywood to be excellent material which not only lends itself readily to band saw operation, but which is easy to handle and provides extremely sturdy furniture. In any event, after the completed side pieces, which are of identical shape, have been formed, they are arranged in laterally aligned relation and the pieces 31 and 33 are secured thereto by suitable means such as screws, nails, glue, etc. to provide the completed chairs shown in Fig. 2. In this figure, the piece 31 is secured to the back supports 25 to constitute a back and the piece 33 is secured to the seat supports 27 to constitute the seat or "top." It is to be understood, however, that the pieces 31 and 33 are interchangeable, since they are identical in shape, and that the term "top" as used in this specification is intended to indicate any supporting surface or element.

The table shown in Fig. 2 is formed by cutting the blank 9 along a first reversely curved line 41 which starts at a point 43 at the edge 5 of the blank and extends therealong parallel to the side edges of the blank toward the opposite edge 4 until it forms a curve 45. From the curve 45, the line 41 continues transversely across the blank 9 parallel to the edges 40 and 5 to a second curve 47 and thence back toward the edge 5 in parallel relation to the side edges of the blank 9, the line 41 terminating at a point 49 where it meets a second cut line 51. The line 51 is similar to the line 41 but is oppositely directed. Thus, the line 51 starts at a point 53 at the edge 4, continues along a path parallel to the side edges of the blank 9 to a curve 55, thence across the blank parallel to the edges 4 and 5 to a curve 57, and from there again parallel to the side edges to a point 58 at the cut 41. It will be seen that the cut 41 provides a first piece having a pair of legs 59 and a top support 61 while the second cut 51 provides (1) a second piece having a pair of legs 63 and a top support 65, and (2) a top 67. The legs 59 and 63 may then be trimmed to proper length by removing the pieces 69, and the supports 61 and 65 may be suitably curved at the corners, if desired by removing the pieces 70. The top 67 may then be secured to the supports 61 and 65 with these supports either in parallel relation along the side edges of the top, or, and preferably, the supports are crossed with a joint afforded by opposed slots 71 and 75 formed, respectively, in the supports 61 and 65, as shown in Figs. 2 and 3, and the top is then secured to the crossed supports.

From the foregoing description, it will be apparent that the table and chair parts are formed by a few simple cuts which may be executed simultaneously or in sequence, as is deemed best. In the case of the chair, only three simple cuts,

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namely, the cuts 11, 29, 29 are required at most, and there is no waste of material whatsoever. In the case of the table, only two major cuts 41 and 51 are necessary and the trim cuts for removing the pieces 69 and 70, the waste being exceedingly small. Of course, if desired, all the parts of a complete set of table and two chairs as described above may be stamped out in a single stamping or die-cutting operation, and this is one of the great advantages of my present invention since it makes economical large scale operation possible. In any event, it will be further apparent that the parts may be packed flat in a minimum of space, since all parts fit or nest together somewhat in the manner of the well-known jig-saw puzzle. Hence, the parts can be packed compactly for storage, shipment or display purposes and can be sold in knocked-down condition. At the same time, the parts can be easily separated and assembled quickly and with great ease to provide strong, sturdy units capable of supporting considerable mass and of withstanding hard use as well as much abuse.

The chair shown in Figs. 4 and 5 is made similarly to that of Figs. 1 and 2. A cut 11 first divides the blank into two side pieces of substantially h-shape, and pieces 81 and 83 of square or other suitable shape are removed from these side pieces along endless cuts 85. One of the pieces 81 is then secured to the back supports 25 and the other piece 83 is secured to the seat or "top" supports 27. This form of chair, in which the bottoms of the legs 35 of each side piece are connected to each other, is best formed by a die cutting or stamping operation.

In the table of Figs. 6 and 7, the legs 59, 59 and their connecting support 61 are formed by a cut 87 which extends from one edge of the blank along a short, transverse line till it changes direction sharply at a curve 88 and continues to a curve 89, thence transversely to a curve 90 where the cut 87 reverses itself to a point 91, and there it curves sharply again and continues down to the opposite edge of the blank. The legs 63, 63 and their connecting support 65 are similarly formed by an oppositely directed, reversely curved cut 93 which continues from the point 88 to a curve 95, thence transversely to a second curve 96 and joins the cut 87 at the point 91. The cuts 87 and 93 may be made in a single stamping or die cutting operation to provide, without any appreciable waste, (1) the two sets of legs and their connecting supports, and (2) the top 67, the only waste being the small pieces which are removed during the same stamping operation to provide the slots 71 and 75. The legs and top of the table can then be assembled with ease to provide a firm, sturdy structure.

Although I have described my invention with specific reference to articles of furniture, it will undoubtedly be apparent to those skilled in the art that it is equally applicable to the production of many other objects such as toys, puzzles, doll houses, building structures, etc. Furthermore, many variations are possible even in the particular items of furniture described above. For example, in the case of the chair, if the seat supports 27 are made wide enough in a vertical direction and the seats 33 are secured either to the bottoms of the seat supports or in suitable slots therein, these seat supports can also act as arm rests. Many other variations of like character will, no doubt, readily suggest themselves to those skilled in the art. Hence, I desire that

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the foregoing shall be taken merely as illustrative and not as limiting.

I claim as my invention:

1. A chair structure comprising a pair of oppositely disposed side pieces each having (1) a pair of spaced legs, (2) a seat support, and (3) a back support, a seat secured to each of said seat supports, and a back secured to said back supports, said seat, back and side pieces being separable from each other for assembly in predetermined, interfitting relation in a common plane for packing, said seat being of such size and contour as to fill the space between the legs of one of said side pieces, and said back being of such size and contour as to fill the space between the legs of the other of said side pieces all when said seat, back and side pieces are arranged in said interfitting relation.

2. A chair structure according to claim 1 wherein said seat and said back are of like contour.

3. A chair structure according to claim 1 wherein said side pieces are identical to each other in contour, and wherein each of said seat and back are also identical to each other in contour.

4. A chair structure according to claim 1 wherein each of said side pieces comprises a unitary member of h-shape.

5. A chair structure according to claim 1 wherein each of said side pieces comprises a unitary member of h-shape, and wherein the back support of each said side member extends vertically upwardly from the seat support thereof in prolongation of one of the legs thereof.

6. An article of furniture comprising a pair of unitary supporting members each having (1) a

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pair of legs spaced from each other and (2) a top supporting part connecting said legs, and a top secured to said top supporting parts, said top and said supporting members being separable for assembly of said supporting members in a relatively reversed, interfitting, embracing relation with each other and with said top all in a common plane for packing, and said top being of such size and contour as to fill the space between certain of said legs when said members and said top are arranged in said interfitting relation.

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