Nov. 8, 1927. 1,648,706

E. M. WALKER

BUILDER BOARD

Filed May 3. 1926 2 Sheets-Sheet 1

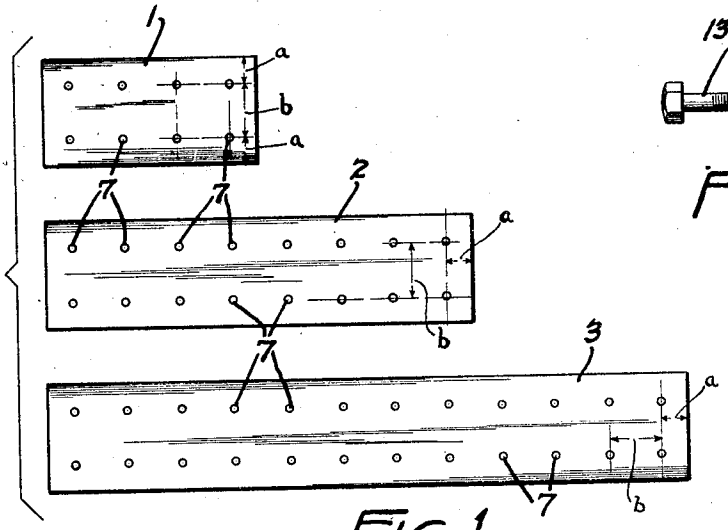


FIG. 1

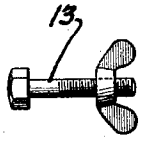
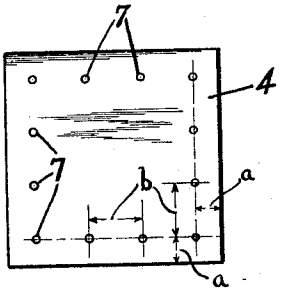


FIG. 5



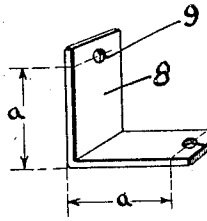
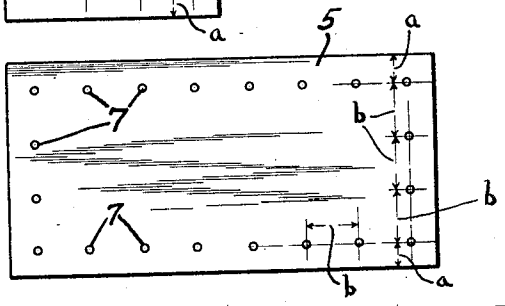


FIG. 4



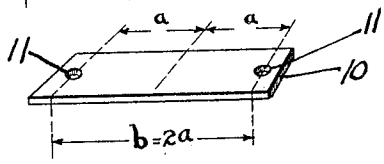


FIG. 3

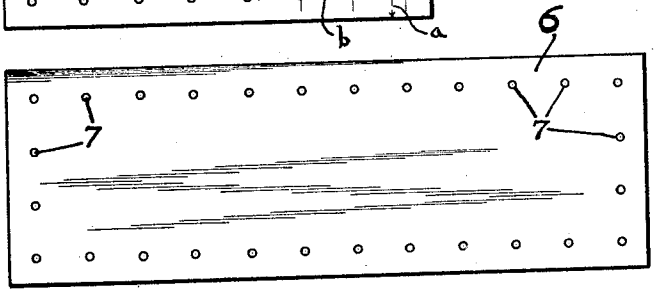


FIG. 2

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BUILDER BOARD

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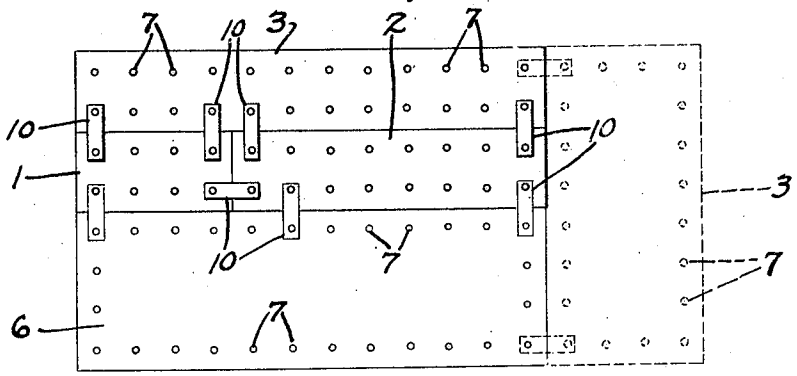


FIG. 6

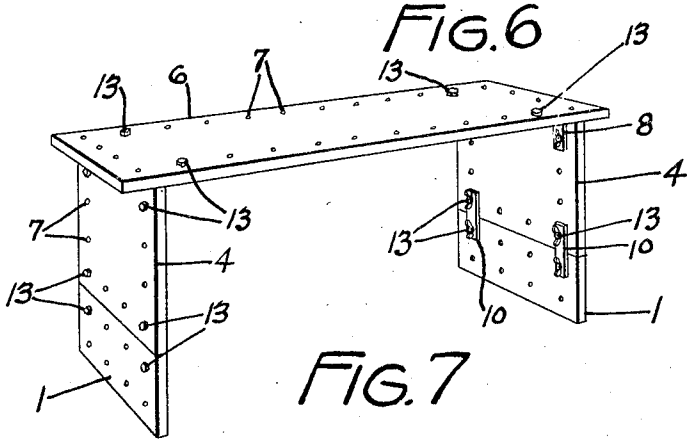


FIG. 7

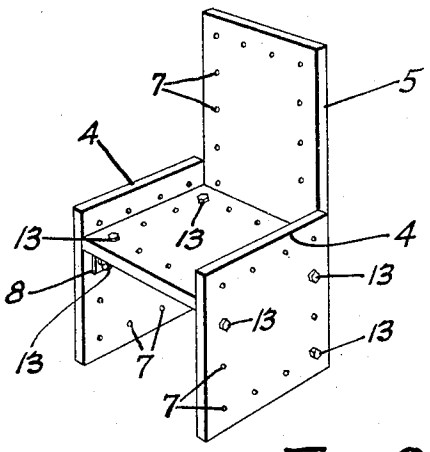


FIG. 8

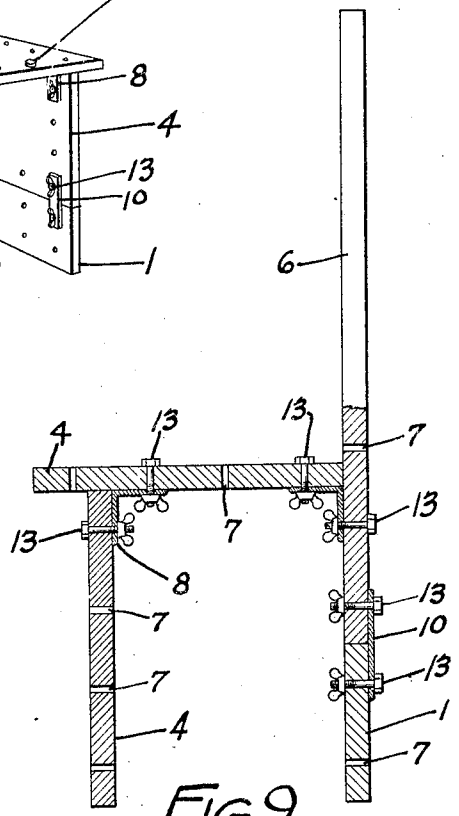


FIG. 9

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Patented Nov. 8, 1927. 1,648,706

UNITED STATES PATENT OFFICE.

ELIZABETH M. WALKER, NOW BY MARRIAGE ELIZABETH M. ROGERS, OF MINNEAPOLIS, MINNESOTA.

BUILDER BOARD.

Application filed May 3, 1926. Serial No. 106,385.

This invention relates to an educational play device particularly adapted for younger persons, wherein a number of builder boards are provided, having openings therein, the openings being related to the edges of all boards, and the spacing of the openings on all boards being such that the boards may be connected together edge to edge, and in co-planar or angular relation, in innumerable combinations, for forming various full size or miniature structures, such as tables, chairs, bookcases, closets, kitchen cabinets, doll houses, etc.

An object is to provide for the building of substantially full size wooden structures from a plurality of board sections, of different sizes, said sections adapted to be connected edge in co-planar relation, such a variety of sizes of boards being had, as will permit plural piece sections or lengths of large size or area to be constructed from smaller sizes whereby comparatively large and useful structures can be produced.

The device further provides a plurality of connectors or tie pieces, having openings therein spaced in correspondence to the spacing of the adjacent openings, and to the inward spacing of the rows of openings from the edge of the boards, so that the openings of the connectors can be made to register with adjacent spaced openings of the boards, to permit bolts to be passed therethrough to strap all parts together in co-planar or angular abutted relation.

The chief features of the invention reside in the like spacing of all openings in all boards relative to one another and relative to the spacing of the rows of openings from the four edges of each rectangular board. Thus by building up the smaller into larger boards, the size of the structure can be made to suit the size or height of the builders, thus adapting the set for an extended range of usefulness, particularly for children of all ages and sizes.

Objects and advantages will appear in the description of the drawings forming part of this specification and in said drawings:

Figures 1 and 2 respectively represent sets of narrow and wide boards, each set comprising three members;

Figures 3 and 4 respectively represent enlarged detail of flat and angled connectors;

Figure 5 represents one of the bolts with a winged nut;

Figure 6 is illustrative of the manner in which a plurality of small boards can be secured together in co-planar relation to form a larger board;

Figures 7 and 8 respectively show a bench and chair constructed from board sections;

Figure 9 is a vertical section through a chair, illustrating the manner of attaching the sections, both in co-planar and angular relations.

The boards are respectively indicated by numerals 1, 2, 3—4, 5, 6. Thus far it has been found that a set of six boards having the dimensional relations given below provides a more economical arrangement. Larger sets may comprise multiples of these sets respectively containing, for example, twelve, eighteen, thirty-two and up to ninety or more boards.

Each board is provided with a series of openings indicated at 7, the spacing between the openings being substantially the same for all boards so that the boards can be connected edge to edge either in co-planar or angular relations, by means of irons 8, 10 respectively having openings 9, 11 (see Figures 3 and 4). If we represent the distance of the center of a board opening inwardly from the board edge by a then the distances b between the openings 11 of the plates or connectors 10 will be 2^a, which in this instance is also the linear distance between consecutive openings of all boards. The distance of the openings 9 from the outer corner of each angle iron 8 is also equal to a. Thus when two boards are strapped together at one point, by registering the openings of an iron with corresponding openings of the board, with the bolt traversing the registered openings to secure the structure, the boards can be similarly secured at other points, because other openings will be oppositely alined in pairs to permit strapping over.

Although the rectangular form of board is preferred as being more simple, and thus more suitable in the education of younger children, as for example, those in the kindergarten, yet the inventive idea can be applied to boards having any regular geometric figure, wherein the inward spacing of the openings as well as the spacing between consecutive openings can be made to properly correspond in all boards. The larger sets as used at present, include ninety

boards, one hundred angle irons, fifty flat connectors, and three hundred bolts with the winged nuts.

In the embodiment illustrated, each rectangular board has adjacent each of its four sides, spaced inwardly therefrom and parallel therewith, a straight row of openings 7, the spacing between adjacent members of which is the same, the rows of openings herein being consecutively related as the sides of a rectangle. The spacing of the rows inwardly from the sides of the boards and linear spacing from center to center of adjacent openings, is the same for all boards, whereby the boards may be arranged in angular or co-planar relation in many combinations, and connected edge to edge in such co-planar or angular relations, by the use of connector straps or connector angle pieces, and the bolts 13 with their complementary wing nuts.

The dimensional relation of the members of the set is regular, or in other words, the pieces have a fixed dimensional ratio to one another, so that by selecting and securing together in co-planar relation the proper combinations of smaller pieces, a large plural piece board, of a size corresponding to one of the large single piece boards, can be produced, (see Figure 6). Thus the smaller pieces can be utilized for the production of a desired larger single flat piece (see Figure 6), and likewise larger built-up plural piece boards can be produced and attached in angular relation to large single piece boards.

The smallest board, 1 of the set herein illustrated, has a dimension of 5 x 10″, the ratio of the length of the sides being as one to two, and this board has eight openings therein equally spaced apart from center to center and each of the four rows spaced inwardly the same distance from a corresponding edge. The next larger board 2 is 5 x 20″, a ratio of one to four, and has sixteen openings therein. The next larger board 3 is 5 x 30″, a ratio of one to six, and has twenty-four openings. In this series of three boards, the width of all boards is the same, with the lengths consecutively increased, and the consecutively larger boards are respectively two and three times the length of the smallest board.

In the second series of three boards, the size of the first board 4, is 10 x 10″, a ratio of one to one, and has twelve openings. The second board 5 is 10 x 20″, a ratio of one to two and has twenty openings, the size of the third board 6 is 10 x 30″, a ratio of one to three, and has twenty-eight openings. In this series, also, the width of all boards is the same but the length is increased, and the consecutively larger boards are respectively two and three times longer than that of the smaller.

The ratio of the widths of the series are as one to two, or five inches to ten inches. In both series, the increase of the number of openings of consecutive larger members over the preceding, is eight. Moreover, the difference in number of openings between corresponding members of the two series, is four.

I claim as my invention:

1. A device of the class described comprising a plurality of boards each having only four rows of openings, said openings extending through the board from one face side of greatest area to the other end in the same direction, a row parallel with each side, the spacing between consecutively related openings of all boards being equal and the rows of all boards being spaced the same distance inwardly.

2. A device of the class described comprising a plurality of boards each having only four rows of openings, said openings extending through the board in the same direction, a row parallel with each side, the spacing between consecutively related openings of all boards being equal and the rows of all boards being spaced the same distance inwardly the inward spacing of the rows being one-half of that between consecutive openings.

3. A device of the class described comprising a plurality of boards each having only four rows of openings, said openings extending through the board in the same direction, a row parallel with each side, the spacing between consecutively related openings of all boards being equal and the rows of all boards being spaced the same distance inwardly the inward spacing of the rows being one-half of that between consecutive openings, and metal straps, having two openings spaced apart twice the distance of the inward spacing of the rows, adapted to connect the boards in coplanar edge to edge relation.

4. A device of the class described comprising two series of rectangular boards the members of each series having dimensions which are simple multiples of each other and of the members of both series, each board having only four rows of openings all extending in the same direction, a row parallel with each side, the space between consecutively related openings of all boards being equal, and the rows of all boards spaced the same distance inwardly from the edges.

5. A device of the class described comprising a plurality of boards each having only four rows of openings, said openings extending through the board in the same direction, a row parallel with each side, the spacing between consecutively related openings of all boards being equal and the rows of all boards being spaced the same distance inwardly the inward spacing of the rows

being one-half of that between consecutive openings and angle irons each having an opening in each leg, each opening spaced from the corner a distance equal to the inward spacing of the rows, said irons adapted to connect the boards in right angular relation.

6. A device of the class described comprising two series of rectangular boards the members of each series having dimensions which are simple multiples of each other and of the members of both series, each board having only four rows of openings all extending in the same direction, a row parallel with each side, the space between consecutively related openings of all boards being equal, and the rows of all boards spaced the same distance inwardly from the edges, the inward spacing of the rows being one-half of that between consecutive openings, and the number of openings in consecutively larger boards of each member of each of the series being increased by eight openings.

7. A device of the class described comprising two series of rectangular boards the members of each series having dimensions which are simple multiples of each other and of the members of both series, each board having only four rows of openings all extending in the same direction, a row parallel with each side, the space between consecutively related openings of all boards being equal, and the rows of all boards spaced the same distance inwardly from the edges, the inward spacing of the rows being one-half of that between consecutive openings, and the number of openings in consecutively larger boards of each member of each of the series being increased by eight openings and connector plates and angle irons having openings therein adapted to register with the board openings for attaching the boards edge to edge in coplanar relation, or for attaching them at right angles to one another.

In witness whereof, I have hereunto set my hand this 29th day of April, 1926.

ELIZABETH M. WALKER.