June 20, 1944. A. SOMMERFELD 2,351,885

METHOD AND APPARATUS FOR MOLDING TOY BUILDING ELEMENTS

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FIG 1.

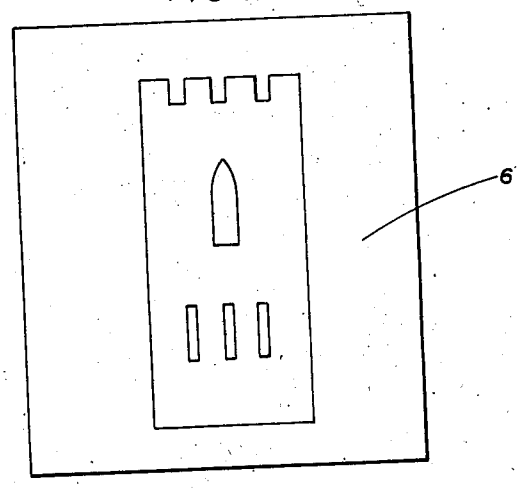

FIG. 2.

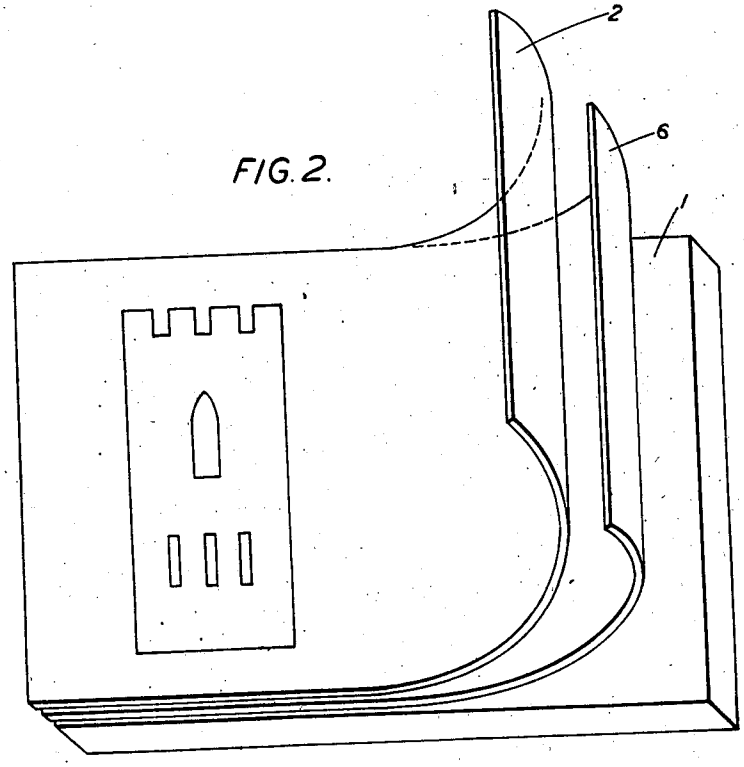

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FIG. 3.

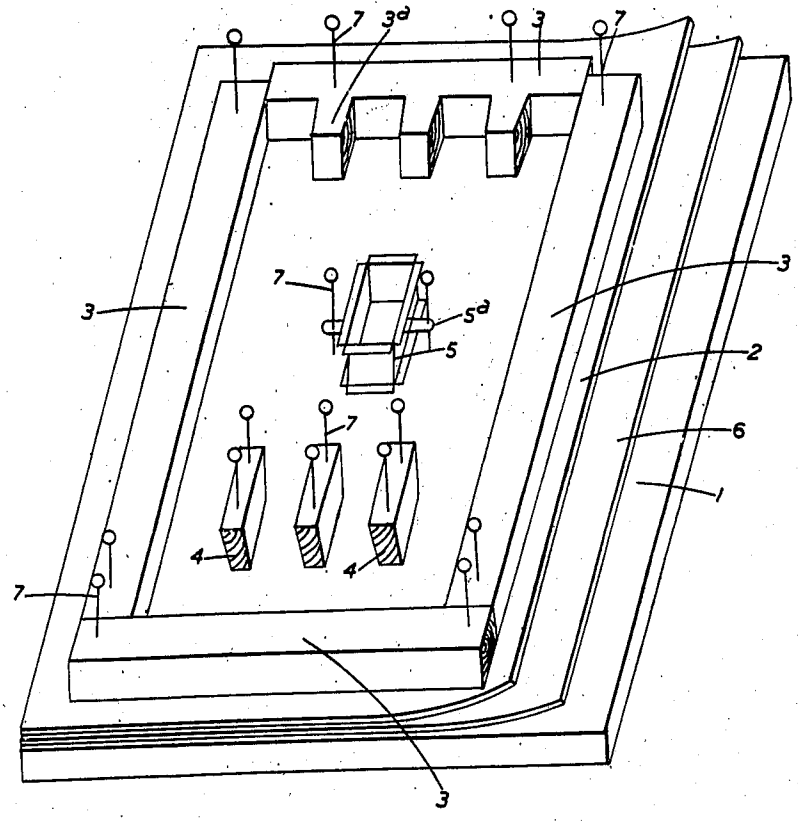

FIG. 4.

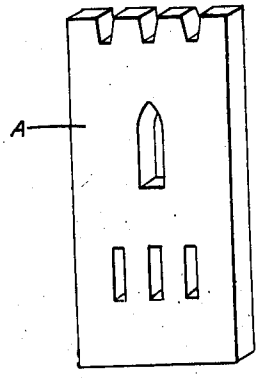

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FIG. 5.

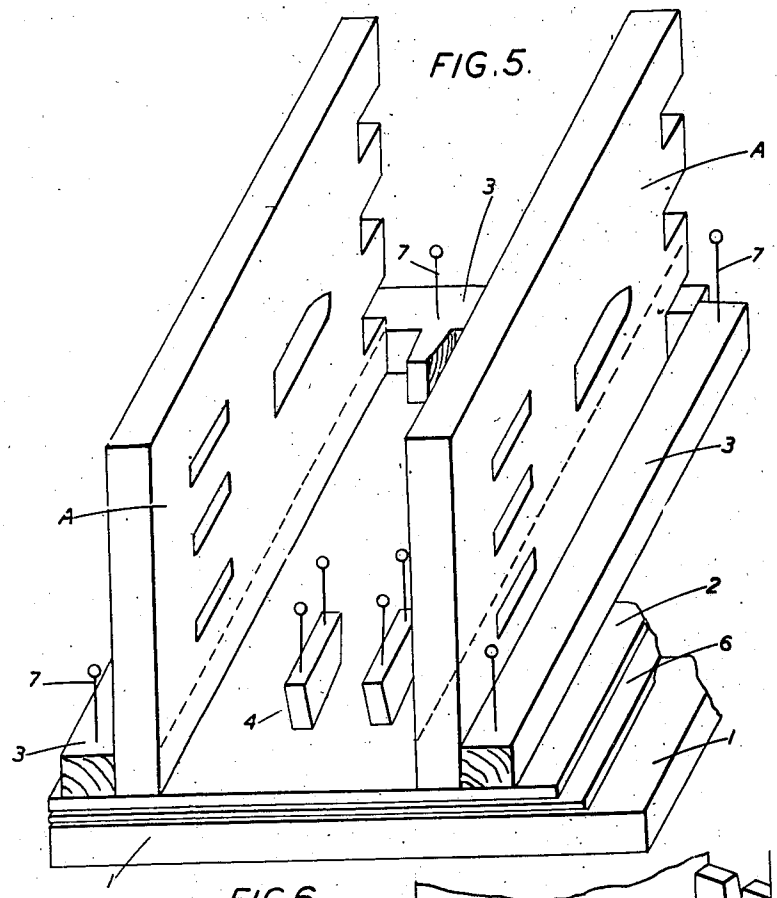

FIG. 6.

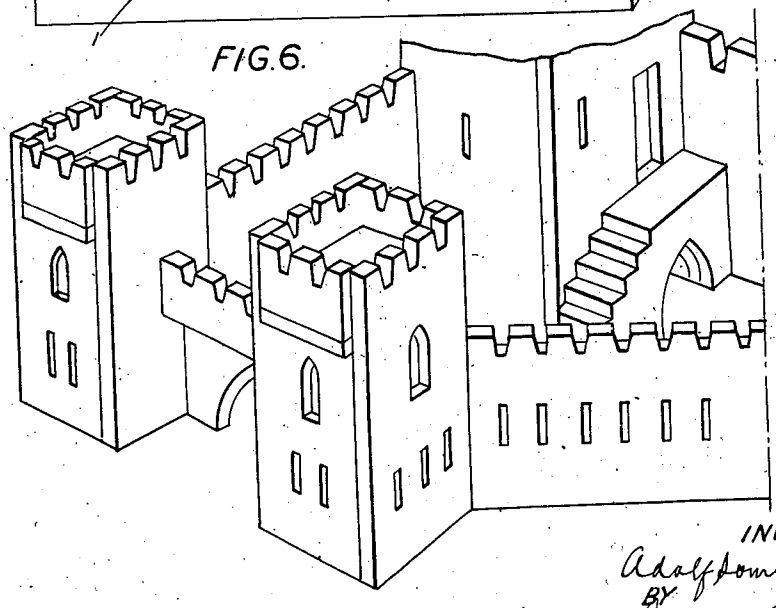

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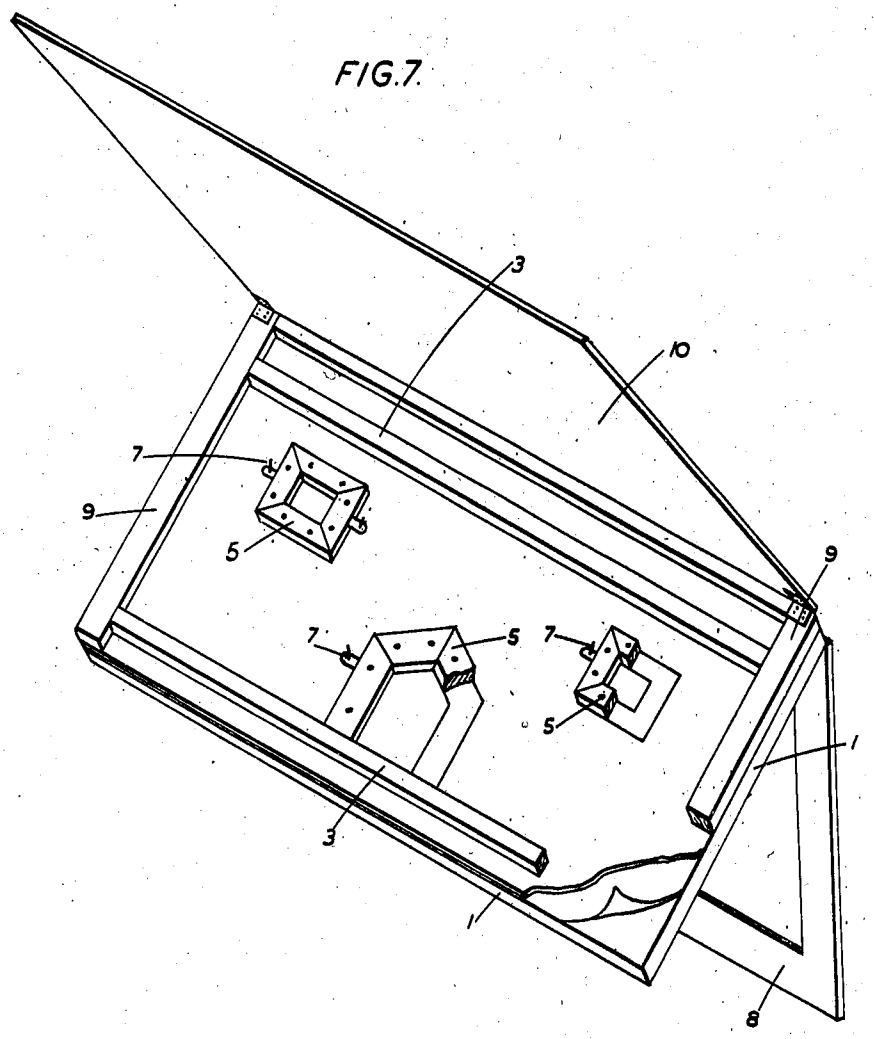
FIG.7.



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Patented June 20, 1944

2,351,885

UNITED STATES PATENT OFFICE

2,351,885

METHOD AND APPARATUS FOR MOLDING TOY BUILDING ELEMENTS

Adolf Sommerfeld, Cowley, England

Application January 27, 1942, Serial No. 428,429
In Great Britain January 27, 1941

8 Claims. (Cl. 25—121)

This invention relates to building toys and models, and has for its object to enable building elements to be produced by actual casting in such a manner as to simulate real building architecture.

According to this invention, there is provided a casting frame so constructed and arranged that a drawing or picture of the building element to be constructed can be positioned under a transparent sheet in the frame, and cores for openings and/or models of detail members of buildings or structures for placing and securing on the transparent sheet over the representation of the openings or the representations of the detail members on the drawings or pictures, and whereby after the cores and/or models have been positioned a casting material can be poured into the frame on the transparent sheet which on setting has the openings made by the cores or incorporates the models in the set material.

The invention will be clearly understood from the following description aided by the examples shown on the accompanying drawings in which:

Figure 1 is a plan of a drawing of a wall as one example,

Figure 2 is a perspective view of the board, drawing and transparent sheet.

Figure 3 is a perspective view of the board, drawing, transparent sheet, frame and cores ready for molding.

Figure 4 is a perspective view of the wall as cast.

Figure 5 is a perspective view of the board, drawing, transparent sheet, frame and two walls already cast and positioned for a third wall to be cast.

Figure 6 is a perspective view of part of a building constructed from cast members, and

Figure 7 is a perspective view of a modified casting frame.

The invention can be carried into effect in various ways as to detail construction, and one simple example is shown in Figures 1 to 6 of the accompanying drawings, and comprises a casting frame, cores for window openings, and a detail member of a building (i. e. a window frame), drawing or picture of the building element to be constructed (i. e. a wall), and a material for casting, such as, plaster of Paris, cement and sand, clay sludge, or other castable material.

The casting frame comprises a board 1 or base, a sheet of transparent material 2, and edging strips 3.

Cores 4 for openings in the wall, and/or detail members of buildings comprising models of window frames 5, door frames, arches and any other parts usually incorporated in buildings, and may be made of wood, metal, synthetic resin or other suitable material, and may be provided with holed lugs 5a, spikes, projections, recesses or the like to act as keys.

In use and for constructing, say a wall A of part of a castle, a drawing 6 or picture of the wall A to be constructed is laid face up on the board 1, and the sheet of transparent material 2 is laid on the drawing or picture. The edging strips 3 are placed on the transparent sheet 2 in line with the edges of the wall, and cores 4 for the window openings are positioned on the transparent sheet 2 over the window openings shown on the drawing 6 or picture. The strips 3 and cores 4 are secured in place in any suitable manner, such as by pins 7, screws, nails, or the like. In this example the top strip 3 is formed with projecting blocks 3a so that the cast wall has a castellated top. When cores, such as 4, are used it is preferred to chamfer the edges so that they can be easily withdrawn from the cast wall. The free spaces in the frame are filled up with the casting material in a liquid or semi-liquid state, and when it has set and hardened the pins 7, screws or nails are removed and the wall A can be easily withdrawn and the cores 4 removed so as to provide a cast wall A with window openings.

In Figure 3 an example of a detail member of a building, in this case a window frame 5 having holed lugs 5a in its side edges, is shown and would be positioned over a corresponding window shown on the drawings or picture. After the cast material has set and the pins withdrawn the frame is secured or incorporated in the wall.

The wall can be coloured or ornamented in any suitable manner, and for a stucco appearance fine gravel or the like may be placed on the transparent sheet 2 before the casting material is poured in, likewise for a timbered house strips of wood may be first placed on the transparent sheet 2.

The various cast parts can be secured together in any suitable manner to form the building or structure, and where a square or oblong section building or structure is required two cast walls A, A (Figure 5) can be positioned edge on and parallel with each other and at the required distance apart and the third wall cast in the frame between the two walls A, A. Slots, projections or the like can be formed in the walls along the edge in which the material of the third wall can engage to key the walls together.

In a modified construction of casting frame shown in Figure 7, the base board 1 is provided with a back strut 8, and an open frame 9 for positioning on the transparent sheet 2 is provided with a hinged lid 10 or cover whereby after the drawing 6, transparent sheet 2, strips 3, detail members 5 (in this case window frames and a door) and open frame 9 have been secured to the back board 1, the lid 10 can be closed and the whole frame positioned upright or at an angle to the strut 8 and the casting material poured in through a pouring hole (not shown),

the lid 10 ensuring a definite thickness of wall.

Preferably the board is of soft wood, cork or other material in which pins or nails can be easily inserted and withdrawn many times, and the transparent sheet is preferably of Celluloid or other transparent material which can be punctured by a pin or nail, but in some cases the transparent sheet can be of glass in which case the strips 3 and cores 4 or detail members 5 would be held in position by clamps or like means.

Instead of a separate drawing or picture and transparent sheet the drawing or picture could be applied directly to the transparent sheet, or two transparent sheets could be employed with two different drawings, back to back, secured between the transparent sheets, or a transparent material to which the casting material will not adhere could be applied to the face of the drawing or picture.

The upper face of the transparent sheet could be formed with ridges or recesses, or undulating surface so that the effect of brick or block courses, or other recesses or projections are formed in the casting.

By this invention it is possible for a child or other unskilled person to cast a planned building or structure or parts of it exactly in accordance with the design or drawings, and to do it in such a manner that the detail members—windows, doors, arches or other parts, or window, door or other openings—are in proper position and held in the casting material.

The windows and doors can be so constructed that two or more pieces can be used to give either a double door, a larger window or any other opening as in actual buildings.

The detail members may also be constructed with slots to allow of inserting glass, Celluloid or the like, and other members to give various effects, as for instance, leaded windows, door panels and the like.

What I do claim as my invention and desire to secure by Letters Patent is:

1. An appliance for constructing toy building structures, comprising a drawing outlining an element of the structure to be constructed and having a representation thereon of the location of a structural detail member of said element, a transparent sheet placed over said drawing and composed of a material penetrable to fastening means for securing a structural detail member on said transparent sheet in conformity with the representation of the location of such detail member, and a casting frame placed on said transparent sheet coincident with the outline of said element on said drawing.

2. An appliance for constructing toy building structures, comprising a drawing outlining an element of the structure to be constructed and having a representation of an opening therein, a transparent sheet placed over said drawing and composed of a penetrable material, a core placed on the transparent sheet over said representation of an opening, means penetrating said transparent sheet and securing said core on said transparent sheet, and a casting frame placed and secured on said transparent sheet.

3. An appliance for constructing toy building structures, comprising a drawing outlining an element of the structure to be constructed and having thereon representations of an opening therein and of the location of a structural detail member of said element, a transparent sheet composed of penetrable material placed over said drawing, a core placed on said transparent sheet, means penetrating said transparent sheet and securing said core in place over the representation of said opening, said transparent sheet being adapted to be penetrated by means for securing a structural member on said transparent sheet in conformity with the location of the representation of the said detail member, and a casting frame placed in and secured to said transparent sheet.

4. An appliance according to claim 1, including a lid hinged to said frame and movable into a position to cover said frame and thereby determine the thickness of the element cast therein.

5. An appliance according to claim 1, including a back strut for positioning the appliance in an inclined position.

6. The method of constructing toy building structures, comprising the steps of placing upon a support a drawing representing a part of a building structure to be constructed, placing a transparent sheet over the drawing, detachably fixing edging strips on the transparent sheet in register with the edges of the part represented on the drawing, detachably fixing cores on said transparent sheet in positions corresponding with representations thereof on the drawing, pouring castable material on said transparent sheet over the area thereof enclosed within the edging strips, dismantling the edging strips after the castable material has set and removing the cast part from the transparent sheet, and removing the cores from the cast part.

7. The method of constructing toy building structures, comprising the steps of placing upon a support a drawing representing a part of a building structure to be constructed, placing a transparent sheet over the drawing, detachably fixing edging strips on the transparent sheet in register with the edges of the part represented on the drawing, detachably fixing a detail structural member on said transparent sheet in a position corresponding with a representation thereof on the drawing, pouring castable material on said transparent sheet over the area thereof enclosed within the edging strips and around said structural member to incorporate the same in said material, dismantling the edging strips after the castable material has set and removing the cast part and the structural member incorporated therein from the transparent sheet.

8. The method of constructing toy building structures, comprising the steps of placing upon a support a drawing representing a part of a building structure to be constructed, placing a transparent sheet over the drawing, detachably fixing edging strips on the transparent sheet in register with the edges of the part represented on the drawing, detachably fixing cores and a detail structural member on said transparent sheet in positions corresponding respectively with representations thereof on the drawing, pouring castable material on said transparent sheet over the area thereof enclosed within the edging strips, dismantling the edging strips after the castable material has set and removing the cast part from the transparent sheet, and removing the cores from the cast part but leaving the structural member incorporated therein.

ADOLF SOMMERFELD.