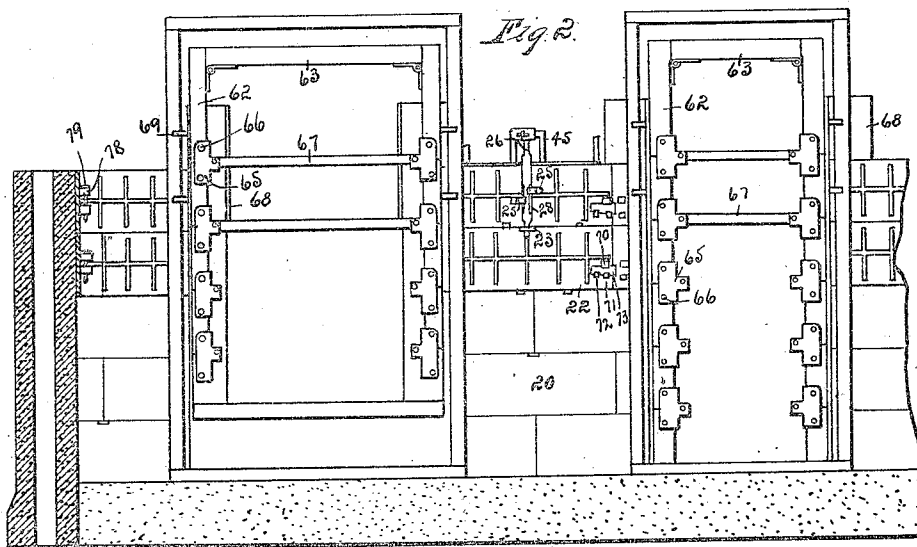
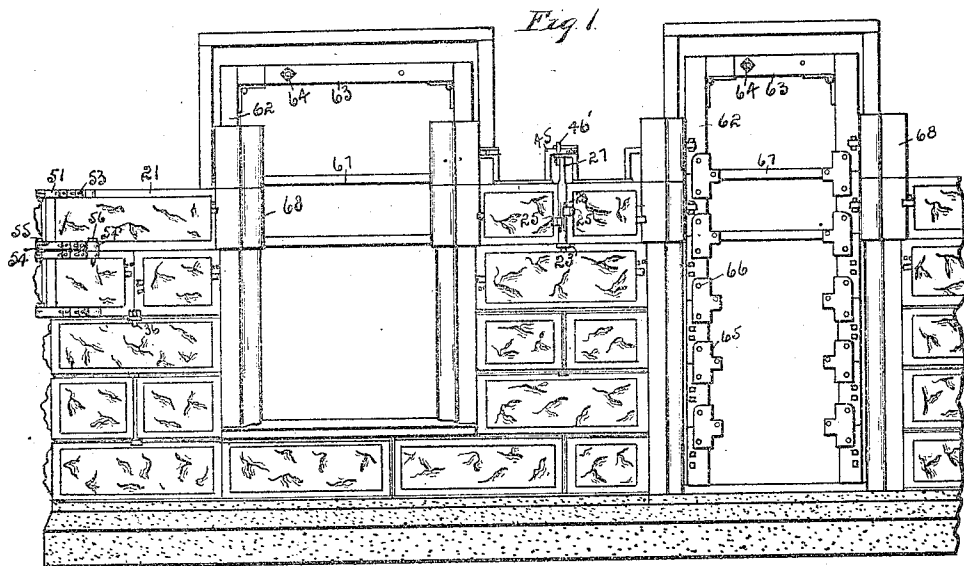


A. S. MERRIETT.
MACHINE FOR MAKING CONCRETE BUILDINGS.
APPLICATION FILED MAR. 8, 1906.

938,010.

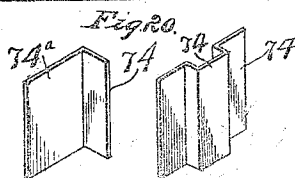
Patented Oct. 26, 1909.
3 SHEETS—SHEET 1.



Witnesses:

R. L. Hamilton.

A. W. Maxwell.



Inventor,

Olva S. Merriett,

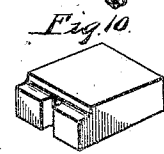
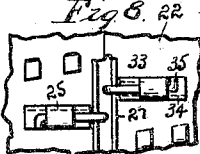
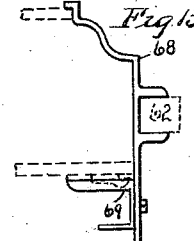
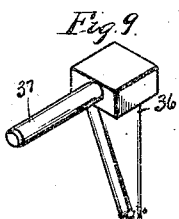
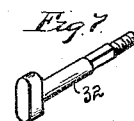
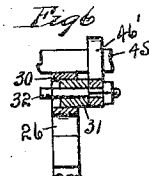
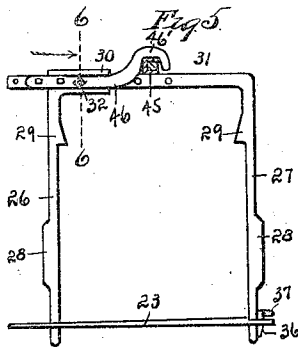
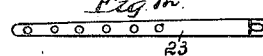
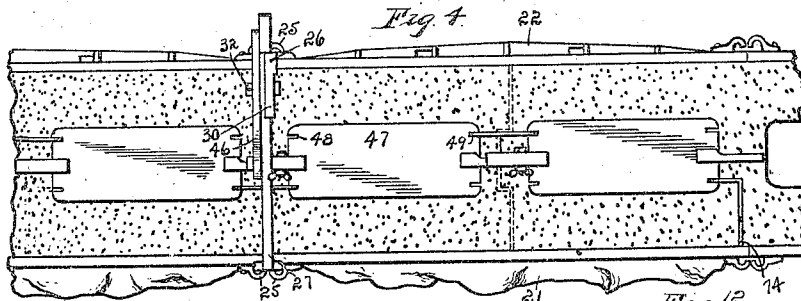
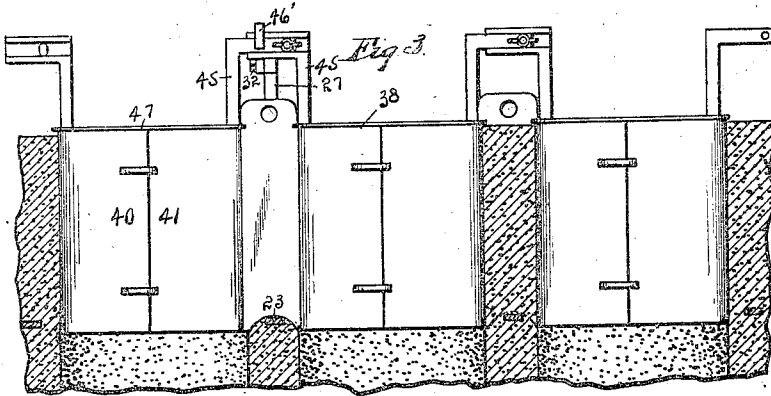
By Arthur B. Brown
Att'y.

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Patented Oct. 26, 1909.

3 SHEETS—SHEET 2.



Witnesses:
R. Hamilton.
C. M. Jones, Jr.

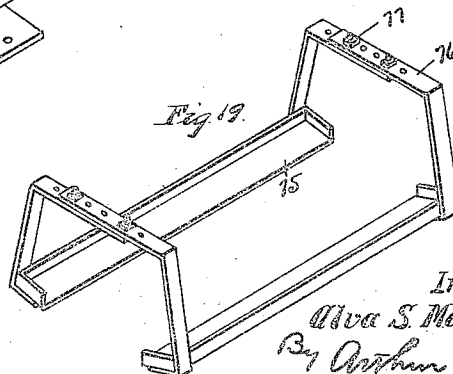
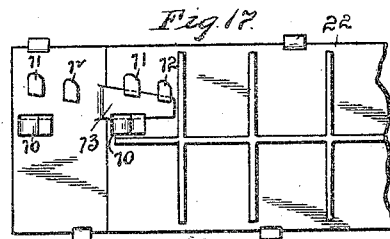
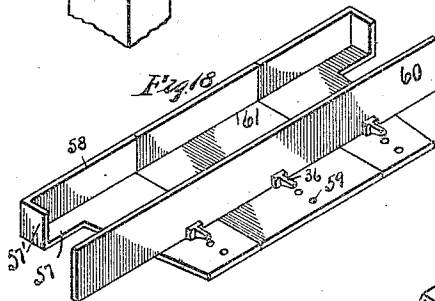
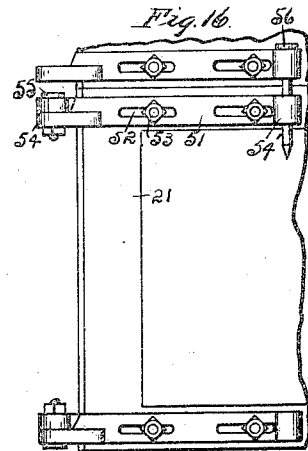
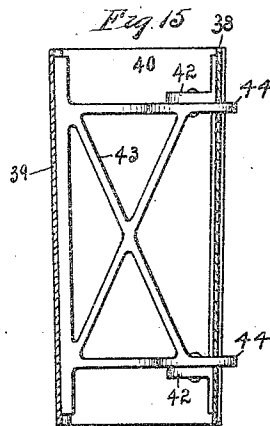
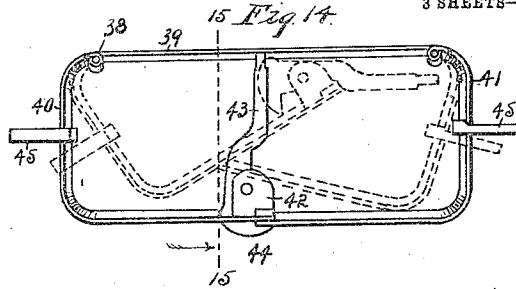
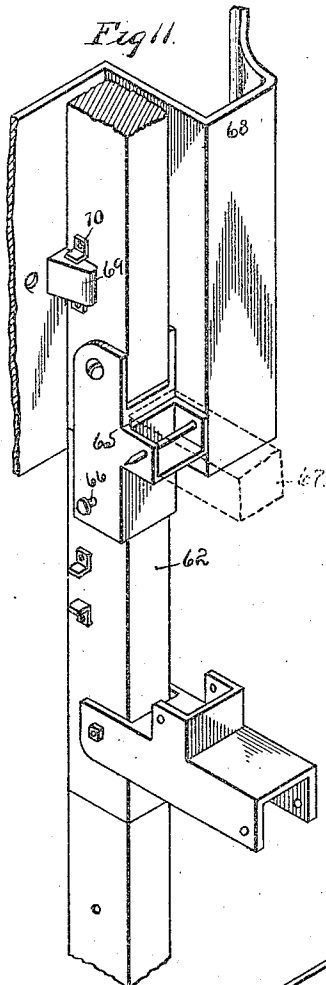
Inventor
Olva S. Merriett,
By Arthur G. Brown
Atty.

A. S. MERRIETT.
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APPLICATION FILED MAR. 8, 1906.

938,010.

Patented Oct. 26, 1909.

3 SHEETS—SHEET 3.



Witnesses:

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A. M. Maxwell.

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By Arthur C. Brown,
Att'y.

UNITED STATES PATENT OFFICE.

ALVA S. MERRIETT, OF KANSAS CITY, KANSAS.

MACHINE FOR MAKING CONCRETE BUILDINGS.

938,010.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed March 8, 1906. Serial No. 304,826.

To all whom it may concern:

Be it known that I, ALVA S. MERRIETT, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Machines for Making Concrete Buildings; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My present invention relates to an apparatus for constructing concrete buildings, and has for its object to provide an apparatus of the class described which is simple and economical in construction and operation and embodies the improved details of structure which will presently be fully described and pointed out in the claims, reference being had to the accompanying drawings forming part of this specification, in which like reference numerals refer to like parts throughout the several views, and in which,—

Figure 1 represents the outside of a portion of wall constructed with my improved apparatus, showing the parts for forming the window and door openings. Fig. 2 is a rear elevation of Fig. 1. Fig. 3 is a vertical section through a portion of wall showing the core boxes for forming the wall hollows. Fig. 4 is a top plan view of a portion of the wall, illustrating the application of my apparatus. Fig. 5 is a detail end view of a set of mold brace bars, and their supporting and connecting parts. Fig. 6 is a cross section on the line 6—6, Fig. 5. Fig. 7 is a detail view of the locking pin connecting the brace bars. Fig. 8 is a detail view of portions of abutting mold plates, a brace bar and the latch by which the plates and bars are locked together. Fig. 9 is a detail view of the brace bar anchoring pin. Fig. 10 is a detail view of a filling in block which is inserted in the opening left by the removal of stay plates. Fig. 11 is a detail view of the window or door frame and mold. Fig. 12 is a detail view of one of the wedge shaped stay plates. Fig. 13 is a top plan view of the door jamb molding parts. Fig. 14 is a top plan view of the core box. Fig. 15 is a cross section on the line 15—15, Fig. 14. Fig. 16 is a detail view of a portion of a corner mold plate.

Fig. 17 is a detail view of a portion of one of the mold plates carrying a short extension plate. Fig. 18 is a perspective view of the mold for forming a window sill or door step. Fig. 19 is a detail view of the hopper for filling between the mold plates. Fig. 20 represents two forms of cross core plates.

Referring more in detail to the parts,— 21 and 22 represent respectively, the inner and outer plates of the mold shown in Figs. 1 and 2 as mounted on a portion of previously formed wall 20.

23 are stay plates resting on a lower tier of wall 20 and immediately supporting the mold plates at their ends, said mold plates having offsets at their lower ends which fit over said stay plates to enable the lower edges of the molds to depend over the top of a previously formed tier of wall.

At each end of every mold plate is a lug 25, the lug on one end of the plate being at about the vertical center of the plate, and that at the other end being slightly below the center in order that as a successive plate is attached, the lugs will not interfere with each other.

The mold plates, when arranged on the stay plates, are held in position by the brace bars 26—27 which fit over the sides of said plates and have the outwardly projecting flanges 28 which are engaged by the lugs 25, or a suitable latch, and are provided with shoulders 29 projecting from their inner surfaces to rest on the top of the mold plates and support said bars in a uniform position.

Bar 26 is provided at its upper end with the inwardly projecting channeled arm 30, and the horizontal arm 31 of arm 27 is of a width to fit within said channel where it is locked by the pin 32, (Fig. 7) which projects through registering perforations in arms 30 and 31.

While ordinary finger lugs on the mold plates may serve to engage the brace bar arms, I prefer to provide said plates with the latches 33, which are loosely mounted in brackets 34 on the mold plates; each of said latches having a tooth 35 at each of its ends, the outer tooth being adapted to turn inwardly over the flange 28 of the brace bar and hold the latter rigidly in position. The brace bars may be placed in position from the sides and latched without the necessity of pushing them down from the top between the lugs and the plate, and are especially

adaptable for constructing walls with a reinforcement of wire net. In the large end of the stay plate, which is wedge shaped as indicated in Fig. 12, is an oblong perforation through which the lower end of the outer brace bar extends and 36 is a wedge shaped pin adapted to fit within the perforation for the purpose of binding the stay plate and brace bar firmly together. Extending inwardly from the lesser end of the stay plate is a series of round perforations adapted to receive an anchoring pin when the brace bars have been removed. On pin 36 is a round shank 37 which acts as an anchor for the inner mold plate and as a hinge pin for the mold plates under circumstances which will presently be described.

Between the mold plates are inserted core boxes 38 for forming the hollow in the wall, said boxes being made collapsible in order that they may be removed when the wall is formed. I have found that the best manner of forming such collapsible boxes is to provide a back plate 39 to which are hinged the movable members 40 and 41, each of which projects longitudinally a short distance and is then curved to form the box ends, and then backwardly to form the front box members, the front edge of the member 41 overlapping the front edge of member 40. At the top and bottom of the overlapped edge of member 40 is an inwardly projecting lug 42 to which is pivoted the gate 43, the free end of which is adapted to impinge against the inner surface of the back of the core box, and retain the box rigidly opened. On gate 43 are the fingers 44, which are adapted to project through slots in box member 40 and engage the loose end of member 41 in order to bind the edges of the box firmly together to prevent the cement or building material from flowing into the box; such construction allowing the box to be collapsed within the core which it forms when the material has hardened, and to be easily removed.

On the end portion of the box are the arms 45, the arms on each box projecting far enough to contact with the arm projecting from an adjacent core box, said arms being alternately smooth and channeled in order that they may mesh and be fastened together. On each brace bar is pivoted a keeper 46 having a finger 46' adapted to fit over said projecting core box arms for the purpose of retaining the core boxes in alignment. I prefer to provide a cover for the core boxes and provide said covers 47 with end slots 48, adapted to receive the vertical core plates 49, said plates being preferably formed of a single piece of sheet metal, which rests at the bottom on the stay plates and impinges at its edges, against the main core boxes. With such an arrangement, a narrow passage is left between the cores formed by the main core boxes when said

boxes and plates have been withdrawn and a continuous hollow is formed around the wall.

I provide with each set of mold plates, a sufficient number of corner plates, to which are attached the hinge members 51 having slots 52 adapted to fit over the bolts 53, and having end socket 54 and 54'; socket 54 being slightly offset to accommodate a similar socket plate of a hinge member on the adjacent corner mold plate of the same tier, and socket 54' extending the width of the lugs, and being adapted to receive the pin 56 which is dropped through the socket on the hinge member of a mold plate on a succeeding tier; the pin 55, holding the hinge members of the plates on the main tier together.

In forming the window and door openings I form a sill or door step by means of the mold shown in Fig. 18 which comprises a box 61 composed of a suitable number of sections, each lateral section having at its outer end a horizontal laterally projecting lip 57 having an upwardly extending flange 57', which flange is integral with the end flange 58 of the box section. The floor of the box extends backwardly a suitable distance and is provided with perforations 59 adapted to receive the anchor pins 37 which brace the back plate 60 of the box.

Supported on box 61 are the side frames 62 of the door or window, said frames carrying at their upper ends the cross braces 63, each of the braces on each frame overlapping its mate and being joined by the bolt 64, when the desired adjustment is had. Frames 62 are preferably formed in sections, as indicated; each section having pivoted to one of its ends, a T socket 65, and the free end of each frame section having a perforation therein, adapted to receive a pin 66, which may extend through both flanges of the T socket and through the frame section; the side flanges on the body of the socket fitting over the frame and the flanges of the T forming a seat for the cross brace 67 which fits within said seats on each side of the door, or window opening. Fitting between said side frames and the body of the building are the jamb molds 68, which may be of any suitable pattern. The body flange of each of said mold sections has a finger or socket 69 adapted to fit between the lugs 70 on the side frames in order to retain same in position, said finger or socket being adjustable, and preferably secured in the desired position on the frame by means of bolts. In forming such window and door openings the body wall may be built up nearer the opening on the inside than the outside, necessitating a larger inside mold plate, and in forming corner joints with walls of different thickness, plates of different lengths are necessary. While plates of

various lengths may be provided, I have found it more advisable to provide extra small plates for this purpose than to try to provide special plates for the work, and have designed the following means for securing the auxiliary plates to the mold body. On the main inside mold plates, near the end I provide three lugs 70, 71, and 72, each having a body portion, and an overhanging lip beneath which a tongue 73 projecting from the edge of the auxiliary plates may fit. The top of tongue 73 slants downwardly toward its outer end and the inner lug 72 is set lower than the lug 71 in order that both may engage tongue 73; and in this manner form a wedge joint which will firmly hold the parts together, and further facilitate their handling.

When the parts are arranged for forming each tier of the wall I insert a thin core plate 74, the flange 74^a of which fits against the main core box and the body of which extends forwardly against the mold plate; these core plates being at regular intervals so that while the walls are settling, should they contract, they will pull apart at these broken joints, and not crack through the body of the stone sections.

In Fig. 10 I show a cement plug which I insert into the opening left by the removal of the stay plates, and in Fig. 19 is a hopper, the guides 75 of which rest on the edges of the mold plates and receive the building material. With this means the tendency of the material to run down the outside of the mold, should too great a quantity be inserted is obviated and the feeding of the material is facilitated.

76 are arms attached to the ends of guards 75, and having perforations in their overlapping ends through which the bolts 77 may be inserted to bind the members together; by adjustment of bolts 77, the hopper may be widened or narrowed as desired.

On the inside corner mold plates, I place lugs 78 having central perforations through which may be inserted the hinge pins 79, as shown in Fig. 2, for the purpose of locking the inside plates of abutting corners of a mold tier.

In use, the first tier of mold sections are placed on a suitable foundation and joined in the manner indicated. The core boxes are placed in position within the mold and the adjoining boxes are connected through their arms, over which the cross bar clamps are lowered. The building material is poured into the mold around the core boxes and after it has become hardened, said core boxes are collapsed and left in the hole until another set of mold plates are placed in position for forming a succeeding tier, when said core boxes are raised and put in place for said next tier, in this way making it unnecessary to remove the boxes and insur-

ing their being at hand when desired. When the material in the first tier has hardened sufficiently, the cross bars are removed and a succeeding tier of mold sections placed thereon, the plates in the first tier being held in place by the angle pin 36 which is dropped into the perforations in the stay plate and impinges against the plates as shown in Fig. 1. In said second tier and in each succeeding tier the end of each mold is set in the center of a preceding block section in order to provide lapped joints for said sections, and give stability to the wall. Each full length mold set is provided with two core boxes which are set in the same relative positions in each tier, the core boxes in each tier being set immediately over the core left in a preceding tier, and in this way forming a continuous vertical hollow throughout the wall; and by means of the sheet metal core plates connecting the main core boxes, a passage is formed between each main core box and the one adjoining, thereby forming a continuous horizontal passage for the air, and a barrier for frost, and dampness. The core plates between the main core boxes are staggered as indicated in Fig. 4 in order that the strength may not be impaired and at the same time provide the continuous hollow desired; the plates on an upper tier also being set over the solid portion of wall in a previous tier for a like purpose.

In forming the windows and doors, the mold shown in Fig. 18 is placed in position, a body frame set thereon, and the jamb posts adjusted with their cross braces set for the proper width, and with the jamb mold plates set between said posts and the body frame; the jamb posts being made in sections in order that a desired height may be secured, and each jamb section being provided with a cross brace extending across to the corresponding section on the opposite jamb.

If so desired, the lower portion of the jambs may be formed first and after the material has hardened the molds be removed and placed to form an upper portion, or the whole may be formed at once. After the jambs are formed, material is poured into the sill mold and the sill or step formed around the jambs in a manner readily apparent; after the sill or step has hardened, the mold may be drawn, leaving a hollow under said sill or step which may be filled if desired. This apparatus makes it possible to construct such sills or steps without cutting out the stone from each side of the opening as it is ordinarily necessary to do.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is,—

1. In an apparatus of the class described, the combination of a series of mold sections

- comprising sets of abutting mold plates, brace bars straddling said plates, lugs on said plates, and latches carried by said lugs and adapted to be rocked into engagement with said brace bars, for the purpose set forth.
2. In an apparatus of the class described, the combination of a series of mold sections comprising a set of abutting mold plates, brace bars straddling said mold plates, lugs on said plates, latches loosely mounted in perforations in said lugs, and fingers on said latches for engaging said brace bars, substantially as set forth.
3. In an apparatus of the class described, the combination with a series of mold sections comprising abutting sets of mold plates, hinge members carried by abutting corner plates and socket flanges on said hinge members adapted to register with similar socket flanges on a succeeding tier of mold plates, substantially as set forth.
4. In an apparatus of the class described, the combination with the mold parts, of a collapsible core box, gates on said core box having overlapping edges, a brace frame carried within said box, and fingers on said frame adapted to bind said overlapping edges against each other.
5. In an apparatus of the class described, the combination with the mold parts, of a collapsible core box, gates on said box having overlapping edges, slots in one of the gates, a brace frame carried by one of said gates and having fingers extending through said perforations and adapted to impinge against the edge of the opposite gate, substantially as set forth.
6. In an apparatus of the class described, the combination with the mold parts of a collapsible core box having hinged gates with overlapping edges, lugs on one of said gates, a brace frame pivoted on said lugs, fingers on said frame adapted to project through perforations in said lug carrying gate and bind against the overlapping edge of the opposite gate when the frame is set, substantially as set forth.
7. In an apparatus of the class described, the combination with the mold parts of a suitable core box, an arm projecting from said box, a brace bar carried by the mold parts and a latch carried by said brace bar and engaging said box arm for the purpose set forth.
8. In an apparatus of the class described, the combination with the mold parts, of a series of core boxes, arms on each of said boxes having vertical and horizontal portions, the horizontal portion of the arm on one box resting in a suitable channel in the horizontal portion of the arm on the adjacent box, and latches on the mold parts adapted to engage said arms, substantially as and for the purpose set forth.
9. In an apparatus of the class described, the combination with the corner mold plates of adjustable hinge members, and means for locking said hinge members to their respective mold plates for the purpose set forth.
10. In an apparatus of the class described, the combination with corner mold plates of slotted hinge members carried by said plates, bolts extending through said plates and hinges, and means for connecting adjacent hinge members, substantially as set forth.
11. In an apparatus of the class described, mold plates arranged at the sides of the window or door openings, a sectional brace bar in engagement with the plates at each side of said openings, and cross braces extending between said bars.
12. In an apparatus of the class described, mold plates arranged at the sides of a window or door opening, and an adjustable bracing frame at each side of said opening in engagement with said plates.
13. In an apparatus of the class described, mold plates arranged at each side of a window or door opening, a sectional bracing frame for holding said mold plates in position, joints connecting the abutting frame sections, and braces extending from side to side of said openings.
14. In an apparatus of the class described, mold plates arranged at the sides of a window or door opening, sectional bracing frames for holding said plates in position, joints pivoted to each of said frame sections and adapted for connection with an abutting section, a seat in each joint face, and cross braces seated in the seats on the relative joints on each side of said openings, substantially as set forth.
15. A molding machine including side sections having slotted plates secured thereto, and sections associated with the side sections and provided with slotted plates pivotally connected with the slotted plates of the side sections, bolts passing through said slots and engaging adjacent sections for locking the latter in adjusted position, and a clamping bar extended transversely across the top of the side sections and provided with depending standards adapted to engage the exterior walls of said sections.

In testimony whereof I affix my signature in presence of two witnesses.

ALVA S. MERRIETT.

Witnesses:

E. E. CARPENTER,
A. M. MAXWELL.