



A. F. REICHERT.  
MOLD FOR CONCRETE WALLS.

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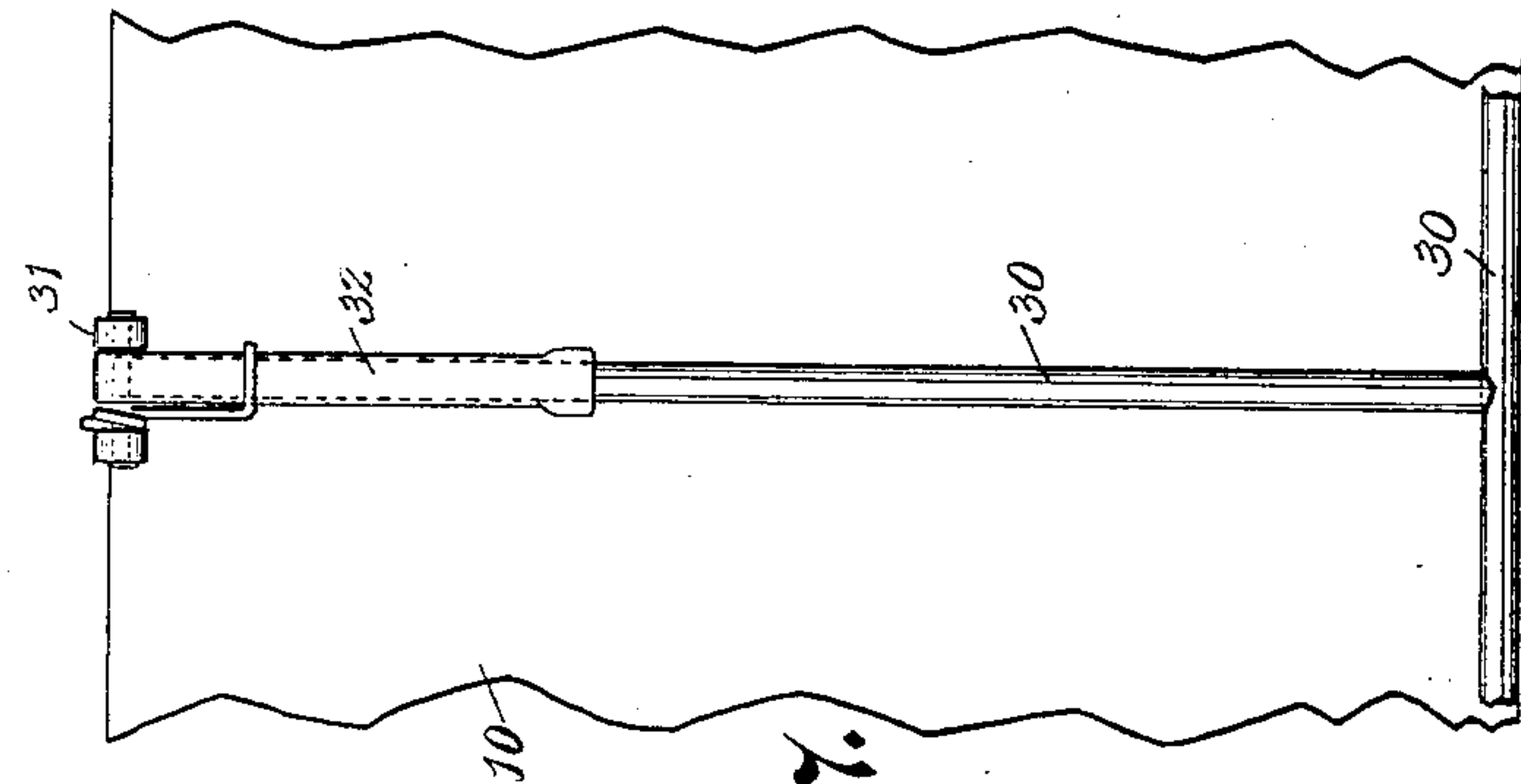


Fig. 7.

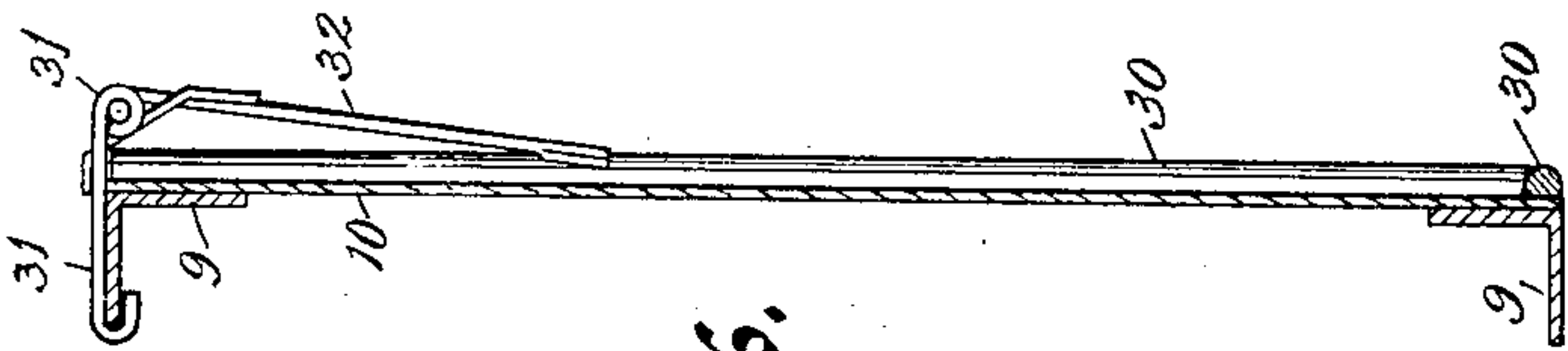


Fig. 6.

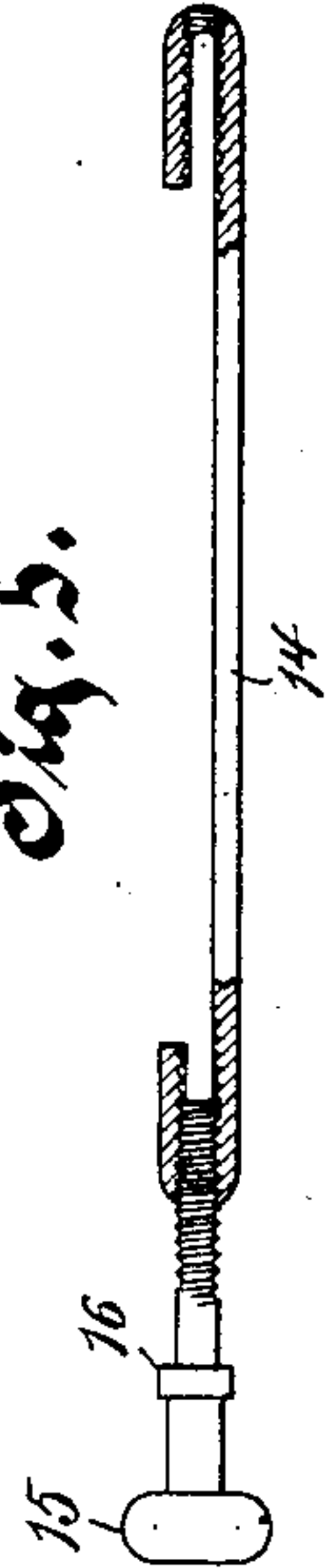


Fig. 5.

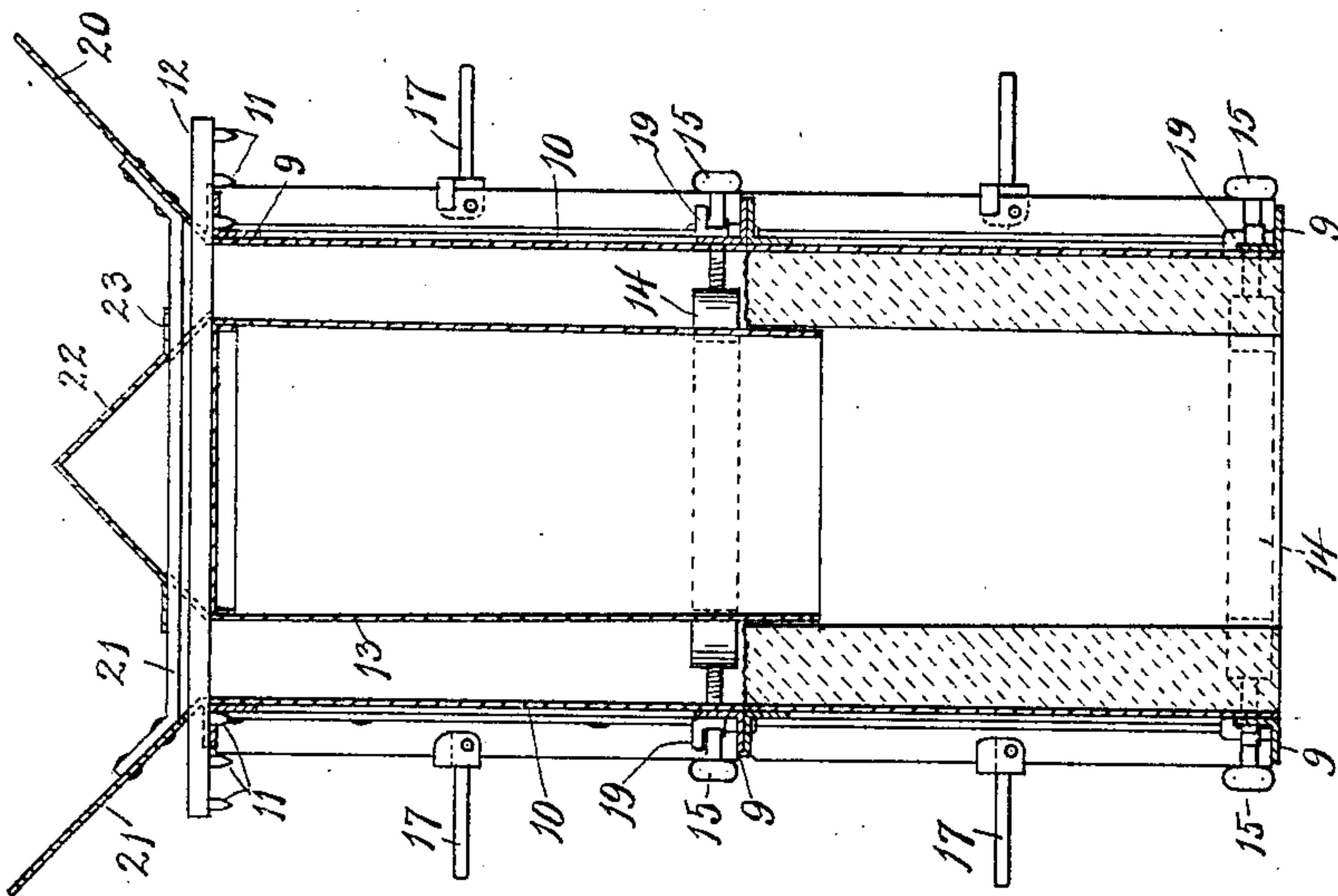
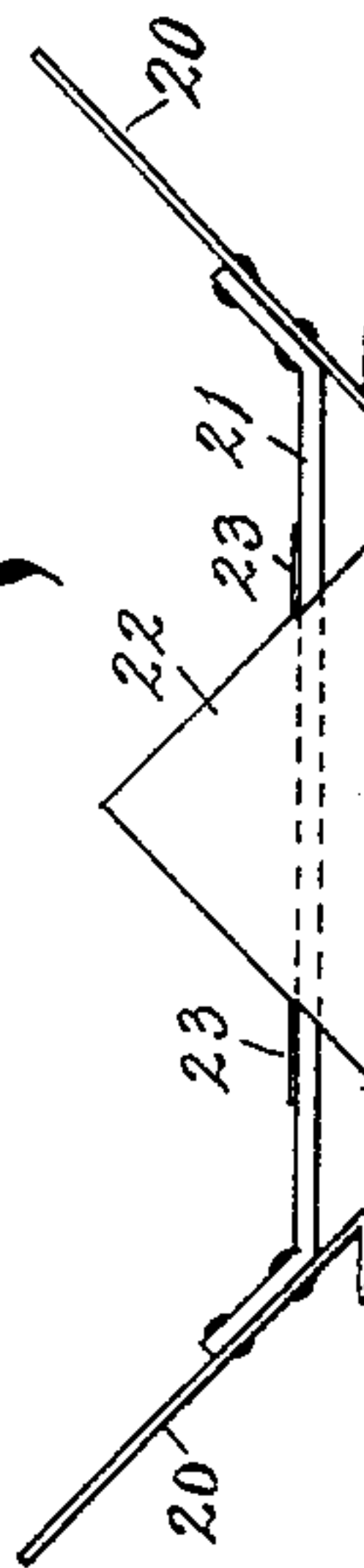


Fig. 3.

Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## MOLD FOR CONCRETE WALLS.

No. 805,819.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, AUGUST F. REICHERT, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented  
5 new and useful Improvements in Molds for Concrete Walls, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

10 This invention relates to molds for concrete walls, and has for its object to provide means suitable for the construction of walls of cement or other plastic material and constituting movable mold-sections within which the  
15 wall is formed and which are adapted to be advanced on the wall as the wall hardens, to allow of the continuous progress in the wall-building process and produce a homogeneous wall of single-piece construction free from  
20 joints and connections.

Another object of this invention is to provide such a means for building walls of plastic material, which will produce a partially-hollow wall by forming openings through its  
25 interior, thus saving material, reducing the weight of the wall, facilitating the drying of the material during construction, and increasing the insulating properties of the wall.

Another object of this invention is to provide a means which will produce a hollow wall of plastic material with opposite shells connected together by series of integral webs, which serve to rigidly brace the wall and divide it into air-spaces.

30 Another object of this invention is to provide a mold formed in sections which will be rigidly supported in their proper positions and which will be adjustable in their relation to each other to permit of constructing plastic walls of varying thickness.

Another object of this invention is to produce mold-sections for wall-building with novel means for connecting them together and to the wall.

45 Another object of this invention is to provide mold-sections for walls of plastic material with a removable hopper for guiding the material in being placed into the mold-sections.

50 Another object of this invention is to provide a means for securing mold-sections to a wall during its construction which will remain in the wall and constitute a tie therefor.

Another object of this invention is to pro-

vide mold-sections for walls of plastic material with improved means for producing suitable markings on the surface of the wall for ornamentation or for other purposes, and in combination with an improved device for releasably attaching said marking means to the  
60 mold-sections.

Another object of this invention is to improve upon the details of construction and arrangement of parts of molds for walls of plastic material.

With the above and other objects in view the invention consists in the mold, its parts and combinations of parts, as herein set forth, and all equivalents.

Referring to the accompanying drawings, 70 in which like characters of reference indicate the same parts in the several views, Figure 1 is a side elevation of a mold comprising several sections and constructed in accordance with this invention. Fig. 2 is a plan view  
75 thereof. Fig. 3 is a transverse sectional view of such a mold, showing the method of its advancement during the operation, two courses of mold-sections being here illustrated. Fig. 4 is an end elevation of the hopper. Fig. 5  
80 is a sectional detail view of a tie-rod forming a part of the mold of this invention. Fig. 6 is a sectional elevation of a side plate of a mold-section having a line-marking means attached thereto. Fig. 7 is a face view there-  
85 of, and Fig. 8 is a detail view of the adjustable side-plate-spacing connection.

In the drawings, 9 represents a rectangular frame, preferably formed of angle-iron, as shown, to the inner flanges of which is rigidly secured a sheet-metal plate 10 of sufficiently heavy gage to withstand the pressure of the contents of the mold-section without bulging to an appreciable extent. The rectangular frame, with its attached plate, constitutes a side frame or side plate of a mold-section, which includes the two opposing side plates with the means for connecting them together and to the wall.

The opposite side plates of each mold-section are provided with perforations in the upper horizontal outwardly-extending flanges, into which suitable downwardly-projecting pins 11 at the ends of stay-rods 12 are adapted to pass, the stay-rods thus serving to connect the side plates together at regular intervals and spacing them apart at the required distance for producing a wall between them  
105



of a certain thickness. The ends of the stay-rods 12 are preferably provided with several of the pins 11 at different distances from the middle of the stay-rods, so that by engaging  
 5 one or the other of these pins with the side plates the distance between said side plates may be regulated to produce a wall the thickness desired.

Each stay-rod 12 has secured to it and projecting downwardly therefrom a cylindrical  
 10 core 13, which is slightly tapered downwardly. Being located midway between the side plates of the mold-section and spaced apart these cores produce central openings through the  
 15 wall formed in the mold, with intervening webs integral with the two shells of the wall and connecting them together. The cores 13 are made slightly tapering to enable them to be readily withdrawn from the formed portion of the wall after the building material  
 20 therearound has become set, or partially so, and they are made longer than the height of the mold-sections, so that when raised to be supported by the mold-section of the next succeeding course their lower ends will project  
 25 within the spaces just formed by them in the cement of the course below, and they will be held in this way in their proper position throughout the construction of the wall.

At their lower edges the side plates of the mold-sections are held together by means of  
 30 one or more tie-rods 14, having thumb-screws 15, threaded in their ends and passing through openings in the lower edge of said side plates. The tie-rods are preferably formed of stout  
 35 strips of metal, with their ends bent over upon themselves and tapped through their bends and along their main portions and their bent-over portions, as clearly seen in Fig. 5,  
 40 to afford a secure engagement for the threaded ends of the thumb-screws 15. These thumb-screws have shoulders 16 to bear against the flange of the angle-iron frame 9 and have shanks of such length as to carry their winged  
 45 heads beyond the horizontal flange of said frame, so as not to be interfered with in their turning. The thumb-screws 15 are threaded into the ends of the tie-rods 14 to tightly clamp the lower edges of the mold-sections  
 50 against being forced apart by the building material and are so positioned as to locate the tie-rods midway between the cores 13, so that they may be permanently retained in the connecting-webs formed between these cores when  
 55 the wall is completed and constitute metallic ties connecting one shell of the wall to the other and entirely embedded in the cement, where they will not be affected by moisture.

At one end of each side plate is pivotally  
 60 mounted a connector 17, comprising a lever-hook pivoted to the outstanding flange of the frame 9 and adapted to engage the corresponding flange of the next side plate when the lever is thrown upwardly to a horizontal position  
 65 and to disengage from said flange when

the lever is moved downwardly to a vertical position. The end flanges of the side plates are provided with engaging-pin and perforation connections 18 to assure the alinement of  
 70 the several side plates forming the mold-sections of each course, the locking-lever 17 in combination therewith effecting a secure fastening together of all of the said mold-sections.

The lower angle-iron of each side frame is  
 75 provided with one or more sliding bolts 19, which pass through perforations in the outstanding flange of said angle-iron and into perforations in the flange of the mold-section  
 80 therebeneath, thus locking each course of mold-sections exactly in vertical alinement with the course of mold-sections therebeneath, and so assuring the production of a straight wall of uniform thickness throughout.

A hopper is provided to guide the material  
 85 into the spaces between the side plates of the mold-sections and between the cylindrical cores and comprises inclined side plates 20, with their lower edges bent back to form  
 90 ledges to rest upon the upper edges of the mold-sections, and cross-rods 21, by which said side plates are connected together, said cross-rods being located directly above the  
 95 stay-rods 12 by having the lower edges of the side plates 20 notched or recessed beneath the cross-rods to fit over said stay-rods. Each cross-rod 21 has mounted on it a conical cap  
 100 22 to fit upon the upper end of the cylindrical core 13 therebeneath and prevent the material falling upon said core. These caps 22 are preferably secured to the cross-rods 21 by  
 105 having tongues 23 cut therefrom at their lower edges and soldered or otherwise secured to the top of the cross-rods, which pass through the openings left thereby. The hopper is free to be bodily lifted from the mold-sections and carried along to any point where filling is desired.

In beginning the construction of a wall by means of the mold of this invention the mold-  
 110 sections are assembled upon some suitable base, which is preferably provided with openings to receive the projecting lower ends of the cylindrical cores 13, and said sections when properly coupled together are filled  
 115 with the cement or other plastic building material throughout the entire first course. The material is allowed to harden sufficiently to enable the cores 13 to be raised without the  
 120 material falling into the openings left thereby, and for the purpose of starting the cores the stay-rods are provided between their pins 11 with suitable threaded openings into which  
 125 thumb-screws 24 are turned to engage the outstanding flanges of the side frames and force the stay-rod with its core upwardly until the core is loosened from the material, when the remainder of its movement may be easily accomplished by hand on account of its  
 130 tapering construction. Without removing



the mold-sections of the first course the mold-sections of the second course are assembled thereon, and the necessary connections are made between the side plates of both courses by means of the sliding bolts 19. Then the filling-in process is repeated. Of course the taper of the core 13 produces a slight space between its lower end and the opening in which it projects; but this is so slight that it is soon closed by the material without an appreciable loss. When the building material in the second course of mold-sections has hardened sufficiently to enable the cores to be withdrawn therefrom, it is possible to remove the mold-sections of the first course to constitute mold-sections for the third course by being assembled upon the mold-sections of the second course, and this process is continued throughout the building operation. In removing the mold-sections of any course it is only necessary that the thumb-screws 15 thereof be removed and the locking-levers 17 be swung to their vertical position to disconnect the side plates from each other, when they may be stripped from the wall without difficulty, leaving the course of mold-sections thereabove securely clamped to the wall by its own connections. The tie-rods are of course left remaining in the wall and, as before mentioned, constitute strengthening means therefor, the openings left by the removal of the thumb-screws 15 being desirably pointed up to leave the wall with a smooth unbroken surface.

For the production of window and door openings I have provided an end plate 25, which is constructed substantially the same as the side plates of the mold-sections, except that it has outwardly-extending flanges 26 at its upper ends to rest upon the top flanges of the side plates for supporting it in position. Being of the exact width of the wall, it permits no building material to pass thereby and may be held in position in any suitable manner, such as by means of a brace 27, extending across the opening being formed. This end plate is preferably movable with the cores from one course to another.

For forming angles in the wall special inside and outside corner-plates 28 and 29, respectively, are provided, which are of substantially the same construction as the side plates except that their frames are mitered to the required angle, as shown in Fig. 2.

When it is desired to produce a stone-like effect or other ornamental surface to the wall, the side plates may be provided with projections on their surface to leave an imprint in the surface of the wall, and such projections may be either permanently connected to the side plates or may be detachable therefrom, a detachable means for this purpose being illustrated in Figs. 6 and 7. The projections or attachments here shown are in the nature of beads or ribs 30, formed of half-round strips

of metal, which are removably attached to the side plates by means of a spring-clip. The spring-clip comprises a hook 31 to engage the outstanding upper flange of the side frame and a spring-pressed finger 32, pivoted in its end and being curved to engage the bead 30 and serving to press it against the side plate. When this attachment is employed, the spring-clip is removed as soon as the material is filled into the mold-sections sufficiently to hold the bead-strips in their proper positions, and thus said clips do not interfere with the surface formation of the wall. When the side plates are stripped from the wall, the beads may be easily removed from the grooves produced thereby.

It is to be noted that by means of the mold construction of this invention the wall may be formed perfectly straight without the aid of the plumb-line or of the spirit-level after the first course of mold-sections has been properly set, for the side frames being constructed of angle-iron with broad flanges at right angles to the plane of the wall will all stand in the same vertical plane when their flanges are fitted together.

It is obvious that the various details of construction and arrangement of parts which are here shown and described as constituting an exemplification of this invention may be substituted and changed without departing from the spirit of the invention or from the scope thereof as defined by the claims.

What I claim as my invention is—

1. A mold for concrete walls, comprising mold-sections formed of side plates of rectangular angle-iron-frame construction, screws passed through the side plates near their lower ends, a tie-plate with which the screws are adapted to engage, and a stay-rod connecting the side plates near their upper edges to properly space them apart, said screws serving to hold the side plates in position on the wall to form a support for other side plates thereabove.

2. A mold for concrete walls, comprising opposite side plates of rectangular angle-iron-frame construction, means for connecting the side plates together near their lower edges, and a stay-rod having an adjustable pin-and-perforation connection with the outstanding flanges of the frames of the side plates.

3. A mold for concrete walls, comprising opposite side plates of sheet-metal and rectangular angle-iron-frame construction, a tie-rod consisting of a strip of metal with its ends folded back, thumb-screws passing through the side plates and threaded in the bent-over ends of the tie-rod, and a stay-rod having a series of pins to adjustably engage with perforations in the upper flanges of the side plates.

4. In a mold for concrete walls, a tie-rod for mold-sections comprising a strip of metal with its ends bent over upon themselves, and screws threaded through the bends thereof and hav-



ing engagement with the main portion and the bent-over portions.

5. A mold for concrete walls, comprising mold-sections formed of side plates suitably connected together near their lower edges, a stay-rod connecting the side plates at their upper edges, a tapering cylindrical core carried by the stay-rod to form an opening through the wall, and screws threaded through the stay-rod and bearing on the side plates to loosen the core from the wall.

6. A mold for concrete walls, comprising mold-sections formed of side plates with means for connecting them together near their lower edges, stay-rods connecting the side plates at their upper edges, cylindrical cores carried by the stay-rods, and a hopper comprising inclined side plates, cross-rods extending therebetween, and conical caps carried by the cross-rods and located over the cylindrical cores.

7. A mold for concrete walls, comprising mold-sections formed of side plates with means for connecting them together near their lower edges, stay-rods connecting the side plates at their upper edges, cylindrical cores carried by the stay-rods, and a hopper comprising inclined side plates with their lower edges bent back to form ledges resting upon the edges of the side plates of the mold-sections, and conical caps mounted on the cross-rods by having tongues cut from their lower edges and connected to the cross-rods, the spaces formed by the cutting away of said tongues receiving the cross-rods and the stay-rods.

8. In a mold for concrete walls, an attachment for the side plate of said mold comprising a hook adapted to engage the edge of the side plate, a spring-pressed finger pivoted to the hook, and a marking-strip held by the finger against the side plate to produce ornamentation on the surface of the wall.

9. A mold for concrete walls, comprising mold-sections formed of side plates with angle-iron-frame construction forming outwardly-extending flanges, a means for locking the side plates of adjoining mold-sections together comprising a lever pivoted to an outstanding flange of one side plate and having a hook to

embrace and clamp together the abutting outstanding flanges of said side plates.

10. A mold for concrete walls, comprising mold-sections formed of side plates with rectangular angle-iron-frame construction, means for securing the side plates of the mold-sections of each course together, and means for connecting each side plate with the side plate of a mold-section of the course therebeneath, comprising a sliding bolt mounted on the side plate and adapted to be projected through the abutting flanges of the two side plates.

11. A mold for concrete walls, comprising opposite mold-sections formed of sheet metal with rectangular angle-iron-frame construction having surrounding outstanding bearing-flanges, tie-rods formed of strips of metal with their ends bent back upon themselves, thumb-screws passed through the side plates near their lower edges and threaded into the bent-over ends of the tie-rods and thereby serving to connect the opposite side plates together near their lower edges, stay-rods having series of pins for engaging perforations in the top flanges of the opposite side plates and serving to properly space the side plates apart, tapering cylindrical cores carried by the stay-rods, clamp-levers pivoted to vertical flanges of the side plates and adapted to engage the abutting bearing-flanges of adjoining mold-sections in the same course, sliding bolts mounted on the side sections and adapted to enter registering perforations in the abutting bearing-flanges of mold-sections of adjoining courses, and a hopper, comprising inclined side plates with their edges bent back to bear upon the upper bearing-flanges of the side plates, cross-rods connecting the inclined side plates, and conical caps carried by the cross-rods and covering the ends of the cylindrical cores.

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

AUGUST F. REICHERT.

Witnesses:

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