United States Patent

[11] **3,628,766**

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Continuation of application Ser. No. 863,728, June 2, 1969, now abandoned. This application July 23, 1969, Ser. No. 844,076

[54] **VERTICAL MOLD ASSEMBLY**
10 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **249/129,** 104/246, 249/131, 249/162
[51] **Int. Cl.** **B28b 7/26**
[50] **Field of Search** 249/119–121, 125, 126, 129, 160–162, 163, 167; 104/246

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ABSTRACT: The present invention provides an assembly of vertical slab-casting molds in which each of a plurality of vertical molds in said assembly may be removed therefrom. The vertical molds are positioned over at least two sets of rails. Each of said molds is moved on at least two wheel assemblies. One of said wheel assemblies is on one set of rails and the other wheel assembly is on the other set of rails. Each set of rails contains at least two parallel tracks. Each wheel assembly moves on one track and the wheel assemblies of adjacent molds are positioned on adjacent tracks forming a staggered relationship relative to each other. Each wheel assembly moves on one track and is sufficiently low so that it may move under the vertical molds.

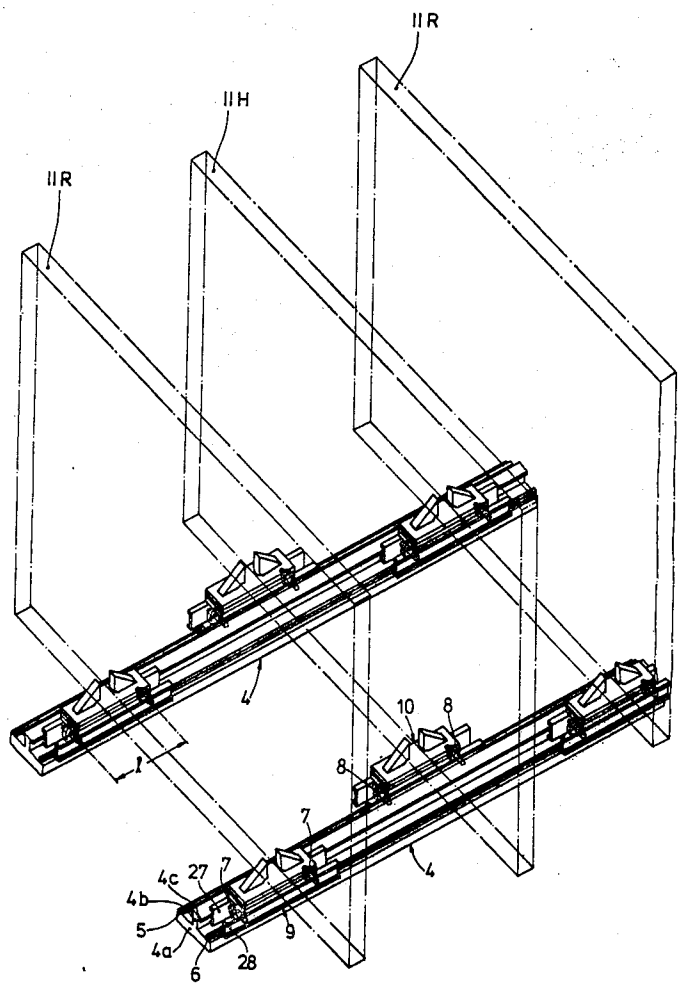
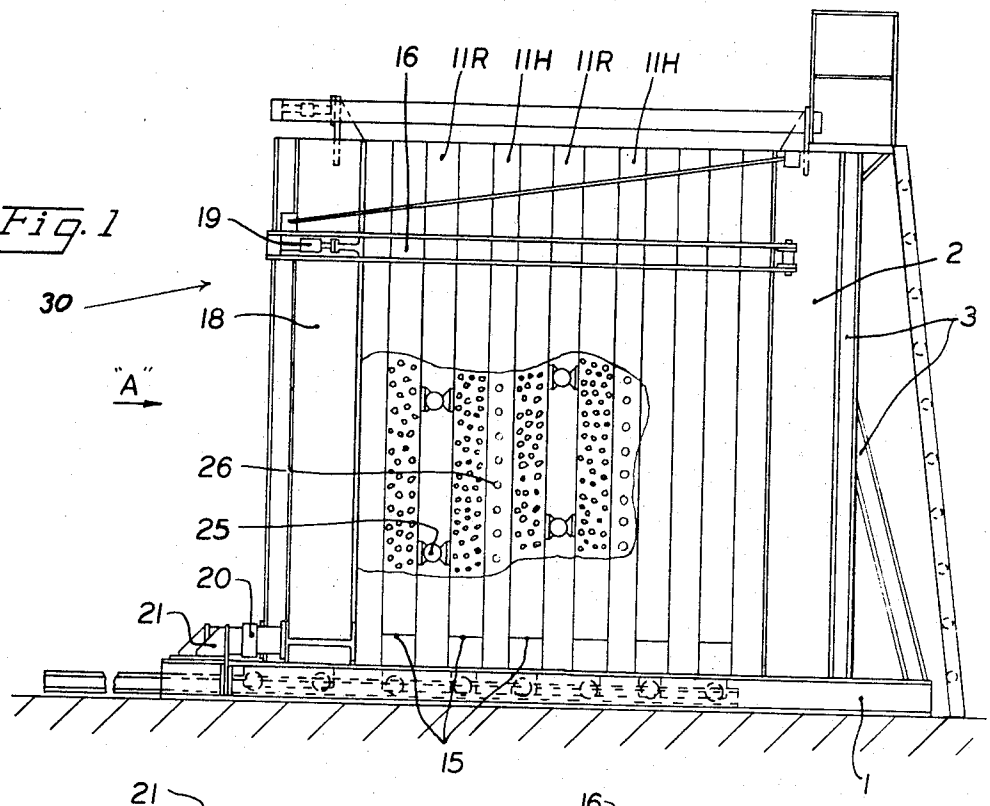


Fig. 1



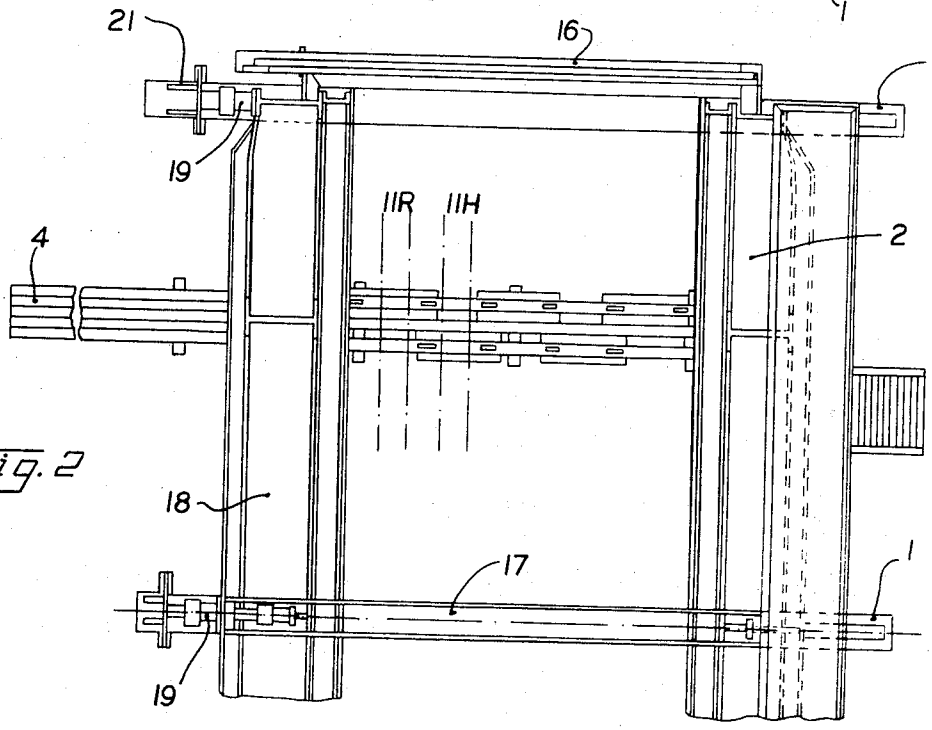


Fig. 2

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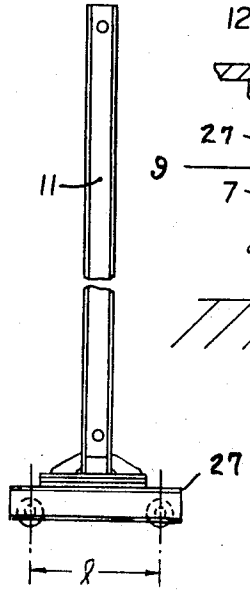


Fig. 5

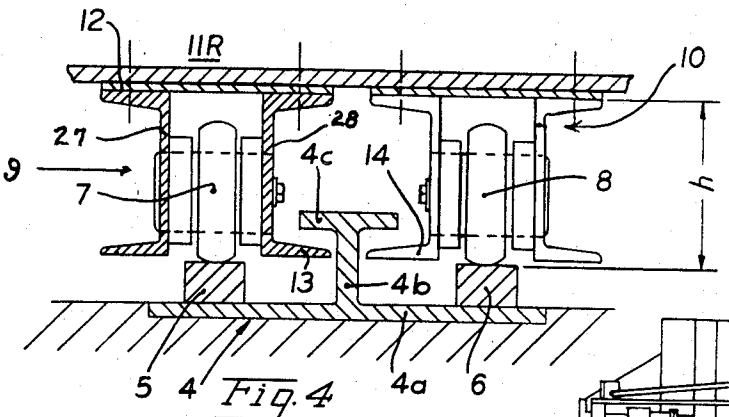


Fig. 4

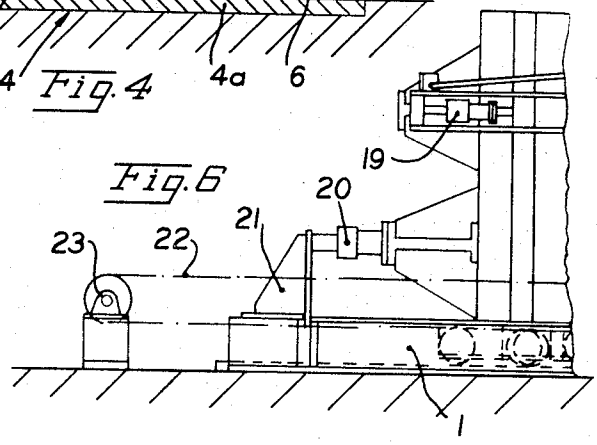


Fig. 6

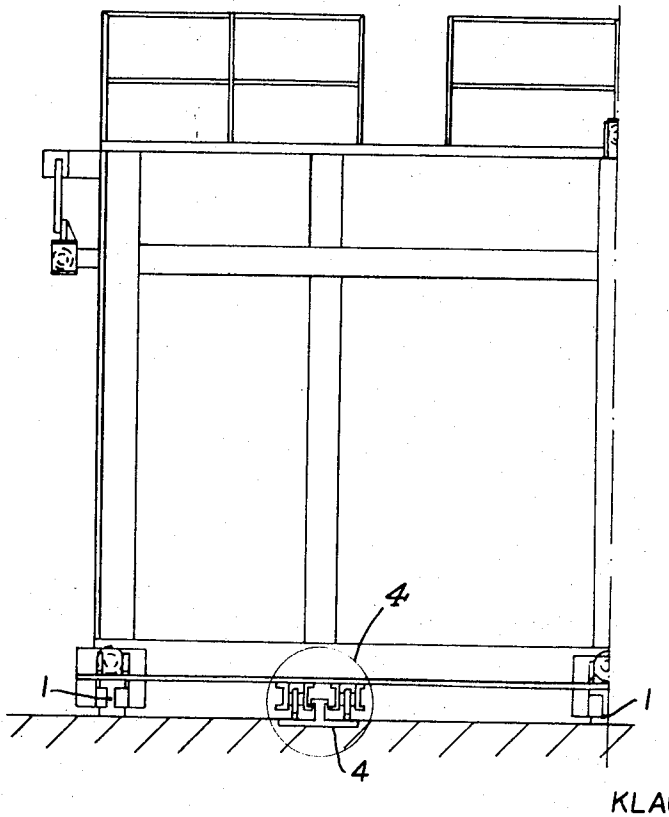


Fig. 3

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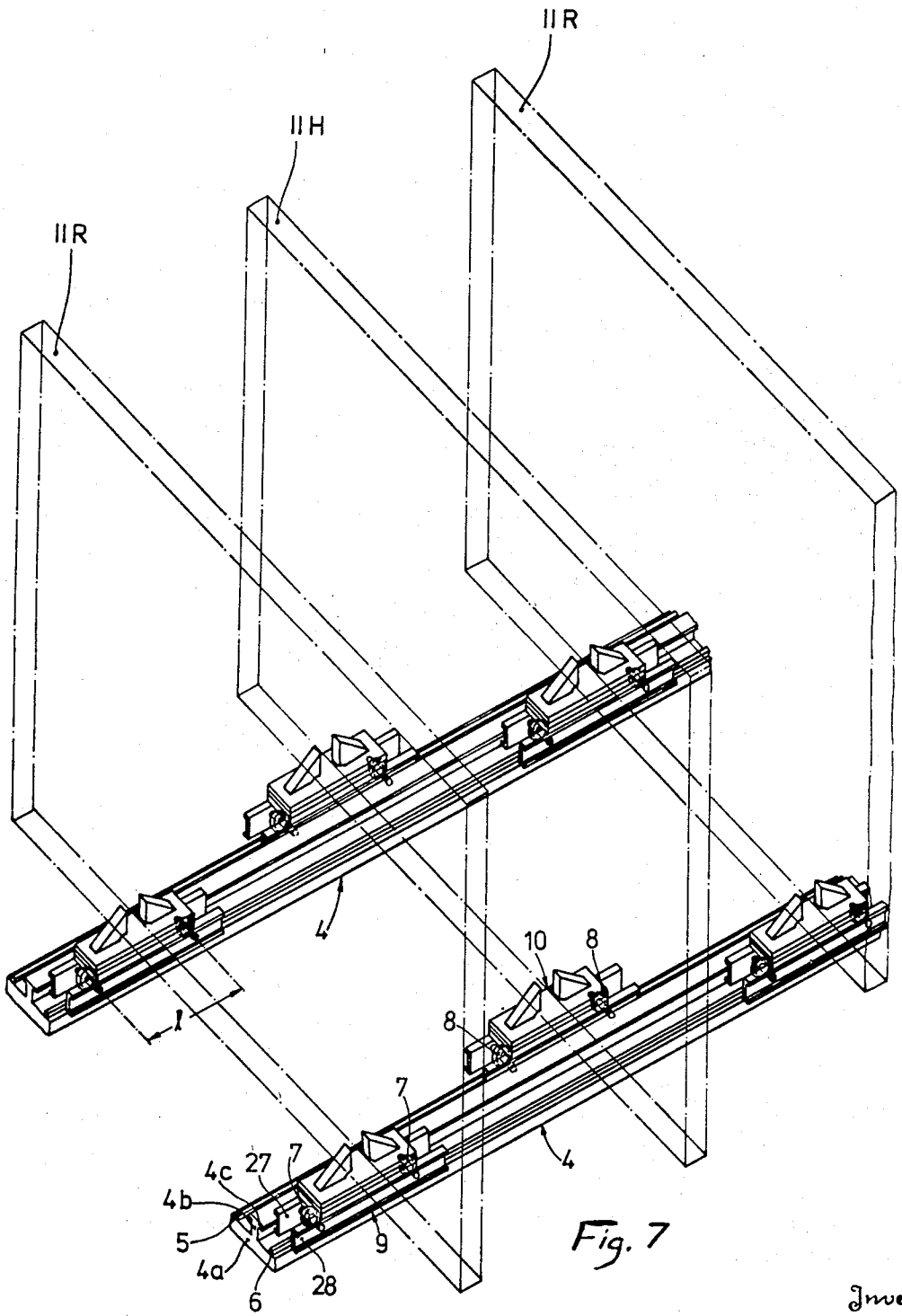


Fig. 7

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VERTICAL MOLD ASSEMBLY

This application is a continuation application of U.S. Pat. application Ser. No. 863,728, filed June 2, 1969, and now abandoned.

BACKGROUND OF THE INVENTION

The manufacture of large cast slabs, generally cement or concrete, used in building constructions, are disclosed to be manufactured in a multiple vertical mold assembly forming a battery. It is also known to arrange the individual molds in generally side by side relationship and to support the molds on two parallel rails. This functions to permit accurate alignment of the molds and to permit movement of the molds on the rails. In this arrangement, those molds which are situated between the end molds have no inherent support and must be supported by auxiliary means such as an overhead crane so that they do not tilt.

Movable molds on carriages, which are suitable for use as forms in the production of concrete walls, have been disclosed in German utility model 1,935,741. However, the mold carriage utilized is not suitable for molds which are to be assembled as a battery.

The manufacture of plates utilizing horizontal palettes as disclosed in French Pat. specification No. 1,343,461 utilizes palettes equipped with undercarriages movable on rails to more readily supply the palettes to the different manufacturing stations. This manufacturing method necessitates a stationary installation occupying a large area which may only be moved at considerably expense.

It is an object of the present invention to provide an assembly of multiple vertical slab molds which are readily manipulated as separate molds and which may be readily assembled into a battery.

BRIEF SUMMARY OF THE INVENTION

The present invention provides an assembly of vertical slab-casting molds comprising a plurality of vertical molds assembled in side-by-side relationship, said vertical molds being positioned over at least two parallel sets of rails with each set of rails disposed on opposite sides of the centerline of said molds; each of said molds being adapted to be moved on at least two wheel assemblies, one wheel assembly being on each set of rails; each set of rails comprising at least two parallel tracks; each of said wheel assemblies being adapted to move on one track and being of a sufficiently low height that they may move under said molds; and the wheel assemblies of adjacent molds are positioned on adjacent tracks forming a staggered relationship relative to each other.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of multiple molds assembled into a battery;

FIG. 2 is a plan view of a portion of the battery of FIG. 1;

FIG. 3 is a front elevation of the battery of FIG. 1 in the direction of arrow A;

FIG. 4 is a large scale section of detail IV of FIG. 3;

FIG. 5 is a side elevation of a single sidewall mold; and

FIG. 6 illustrates the hydraulic pressure means and the means for moving the molds;

FIG. 7 is a section of the middle portion of the battery in perspective.

DETAILED DESCRIPTION OF THE INVENTION

In the drawings, the three base support girders 1 support a battery 30. A fixed rear sidewall mold 2 is positioned at the back of battery 30 against back support frame 3 which is rigidly fixed to the rear of said base girders 1.

Double T-section members 4 are arranged between the base girders 1. Only one side girder 1 and the middle girder 1 are illustrated in FIGS. 2 and 3. The double T-section members 4 have a wide bottom flange 4*a* serving as a support surface with

the upright section 4*b* joining the upper narrow flange 4*c*. Track rails 5 and 6 are supported on the wide flange 4*a*. Rollers 7 and 8 of wheel assemblies 9 and 10 are mounted on track rails 5 and 6 respectively.

The wheel assemblies support and move the sidewall mold 11. Each sidewall mold 11 contains vertical hollow plates and forms the sidewalls of two slabs being cast, one on each side of mold 11. Vibrating elements 25 or heating elements 26 are positioned in the hollow spaces between the two sidewalls forming the mold element or in recesses in the sidewalls of the mold element 11 so that the walls are effective either as vibrating walls 11_R or as heating walls 11_H. The sidewalls may each be equipped with vibrating devices or with heating devices or with a combination of both. The vibrating elements 25 and/or the heater elements 26 are positioned to be accessible from above or from the end of the sidewall mold 11.

Each sidewall mold 11 is equipped with at least two wheel assemblies, each of which has two rollers. In the embodiment illustrated in the drawings, wheel assembly 9 consists of two U-section rails 27 and 28 mounted on roller 7. Wheel assembly 10 is similarly mounted on roller 8.

With particular reference to FIGS. 2, 3 and 4, the drawings illustrate the arrangement of adjacent wheel assemblies 9 and 10, which support adjacent sidewall molds 11_R and 11_H, in a staggered relationship. The height *h* of the wheel assembly may be varied by insertion of shims 12 (FIG. 4). The height is adjusted so that the wheel assemblies can be moved beneath the adjacent mold elements, for example mold element 11_R. It is possible to provide sufficient stability to each sidewall element 11 by appropriate spacing *l* (in FIG. 5) of the wheels.

The lower inwardly disposed flanges 13 and 14 of wheel assemblies 9 and 10 respectively are positioned beneath the upper flange 4*c* of the double T-section member 4. The flanges 13 and 14 act as supports which safeguard the sidewall molds 11 against tilting when subjected to relatively large lateral forces, for example those produced by gusts of wind. These flanges 13 and 14 also function to guide the sidewall mold 11 along the upright member 4*b*. Optionally, separate guide rollers may be provided for this purpose.

The edge walls 15 which define the periphery of the slab mold may be fixed on the sidewall molds 11 and/or on the wheel assemblies 9 and 10, or may also be loosely inserted between adjacent sidewall molds 11. The fastening of the bottom edge wall 15 and the end edge walls 15 to the sidewalls 11 or to the wheel assemblies 9 or 10 has the advantage that the completed cast concrete slabs can be moved together with the sidewall molds 11, and thus the battery or a portion thereof may be withdrawn as a unit.

The bracing of all the sidewall molds 11 and 15 is effected by pressure forces which are transmitted by the base girders 1 and by the tie rods 16 arranged near the upper edge of the battery of molds. The tie rods 16 are pivotally mounted on the fixed back mold 2. When the molds are sufficiently large to cast long concrete slabs, other tie rods may also be used, for example tie rod 17, illustrated in FIG. 2.

Front sidewall mold 18 is also provided with wheel assemblies such as those provided for sidewall molds 11, and is constructed to function as a stable pressure plate for transmitting the forces supporting and bracing the battery of sidewall molds.

Hydraulic means 19 and 20 are arranged on front mold 2 as illustrated in FIGS. 1, 2 and 6 to provide the pressure to brace the molds. Optionally, they may be positioned on back mold 2.

To move and separate sidewall molds 11 quickly, the lower hydraulic means 20 are supported on countersupports 21 which may be pivoted laterally so that the molds 11 may move over them.

Mold elements 11 are attached to and removed by chain 22 which is driven by chain winch 23.

The construction of the present invention provides an assembly of vertical molds of relatively economic construction. This is accomplished utilizing supporting and pressure application means which are not of complicated design and manufacture.

I claim:

1. An assembly of vertical slab-casting molds comprising

a plurality of vertical molds assembled in side by side relationship,

said vertical molds being positioned over at least two parallel sets of rails, with each set of rails disposed on opposite sides of the centerline of said molds,

each of said molds supported by at least two wheel assemblies, one wheel assembly being on each set of rails,

each set of rails comprising at least two parallel tracks,

each of said wheel assemblies being wider than the mold supported thereon and having a front wheel and a rear wheel supported by one track and being of a sufficiently low height that they may move under said molds, and

the wheel assemblies of adjacent molds are positioned on adjacent tracks forming a staggered relationship relative to each other.

2. The assembly of vertical molds of claim 1 wherein said rails are disposed substantially perpendicular to said molds and wherein the height of said wheel assemblies is adjusted to support said mold by insertion of shims between the tops of said wheel assembly and the bottom of said mold.

3. The assembly of vertical molds of claim 2 wherein an upright T-section rail is mounted between the parallel tracks of each of said set of rails, and wherein each of said wheel assemblies has a lateral projection in the direction of said T-section rail and positioned to engage under the upper flange of said T-section rail.

4. The assembly of vertical molds of claim 3 wherein said T-section rail is the upper portion of a double T-section rail having wide opposed bottom flanges which form the supporting surface upon which are mounted said parallel tracks.

5. The assembly of vertical molds of claim 4 wherein the central upright portion of the T-section rail functions as the guide means for controlling the movement of said wheel assemblies.

6. The assembly of vertical molds of claim 5 having at least two base support girders supporting said molds; having a back vertical wall mold positioned at the rear of the assembly and rigidly attached to the rear of said base support girders; and having tie rods in the upper portion of said assembly and positioned substantially across said vertical molds, whereby said base support girders and said tie rods function to support and transmit the forced utilized to brace the vertical molds.

7. The assembly of vertical molds of claim 6 wherein said tie rods are pivotally mounted on said fixed back vertical wall mold.

8. The assembly of vertical molds of claim 7 having a movable front vertical wall mold which also functions as a stable thrust plate for supporting said assembly.

9. The assembly of vertical molds of claim 8 having hydraulic devices on at least the front or the back vertical mold to produce the force supporting said assembly.

10. The assembly of vertical molds of claim 9 wherein said hydraulic devices are pivotally mounted on the front of said base support girders.

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