United States Patent

Haws

[15] **3,659,977**

[45] **May 2, 1972**

[54] APPARATUS FOR ERECTING POURED CONCRETE STRUCTURES

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[21] Appl. No.: **62,007**

[52] **U.S. Cl.** **425/62**, 249/20, 249/27, 425/63

[51] **Int. Cl.** **B28b 7/08**

[58] **Field of Search** ..... 249/18, 20, 26, 27; 25/131 B, 25/131 EM, 131 K, 131 SB, 131 Z

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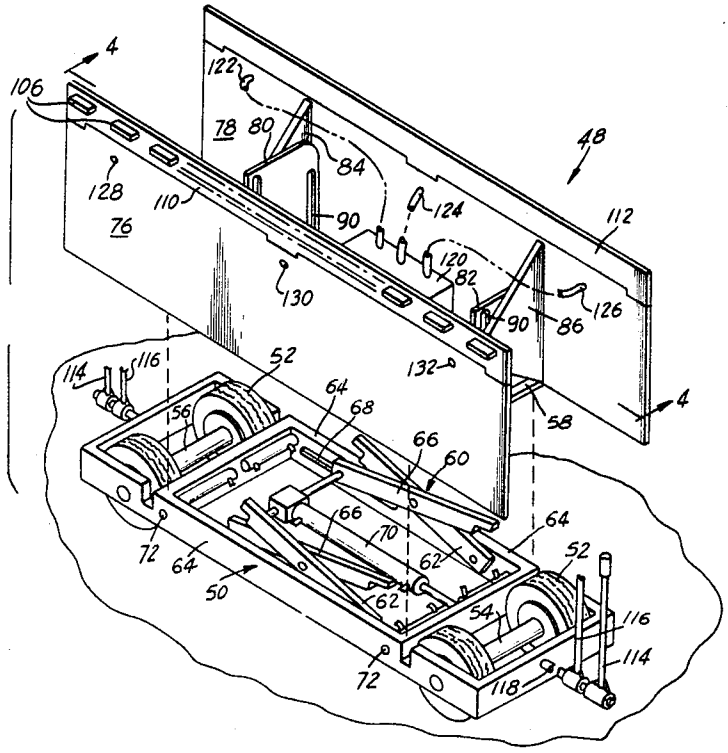
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Primary Examiner—J. Spencer Overholser
Assistant Examiner—David S. Safran
Attorney—Seidel, Gonda & Goldhammer

[57] **ABSTRACT**

Apparatus is disclosed wherein movable pouring forms are mounted on a chassis, such as the chassis of a roadable vehicle. Movement of the forms between respective selectable positions facilitates pouring of vertical and horizontal structural members, respectively. The pouring forms may be elevated with respect to the chassis to position them for pouring the upper portions of high vertical walls, or highly placed horizontal walls. The apparatus also includes means whereby the chassis itself may climb with respect to the lower portions of poured vertical members, to facilitate pouring of the upper portions of such members. In another of its aspects, the invention is a method of erecting poured concrete structures by first pouring vertically oriented members, such as walls, and permitting the walls to set; pouring the uppermost horizontal member, such as the roof, and permitting such member to set; and then pouring successively lower interior horizontal members to complete the structure.

18 Claims, 15 Drawing Figures



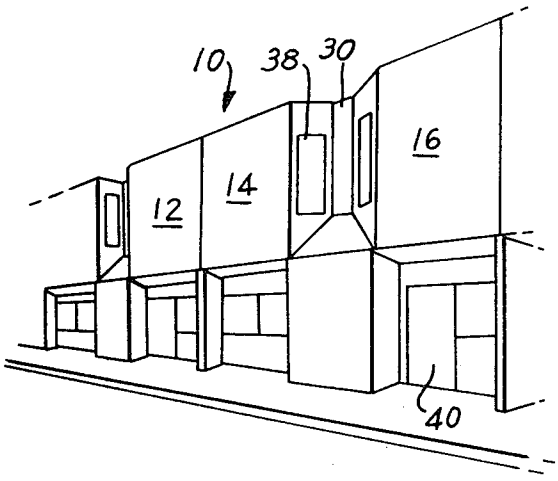


FIG. 1

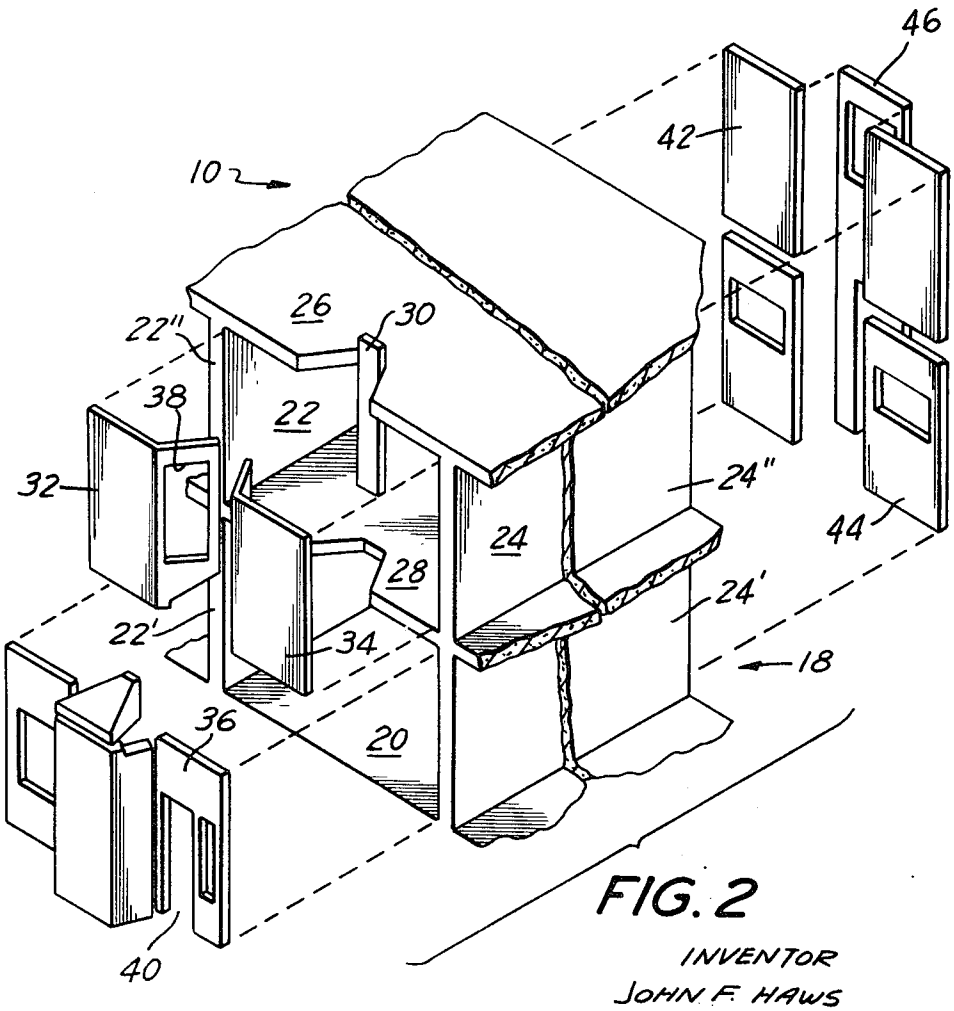


FIG. 2

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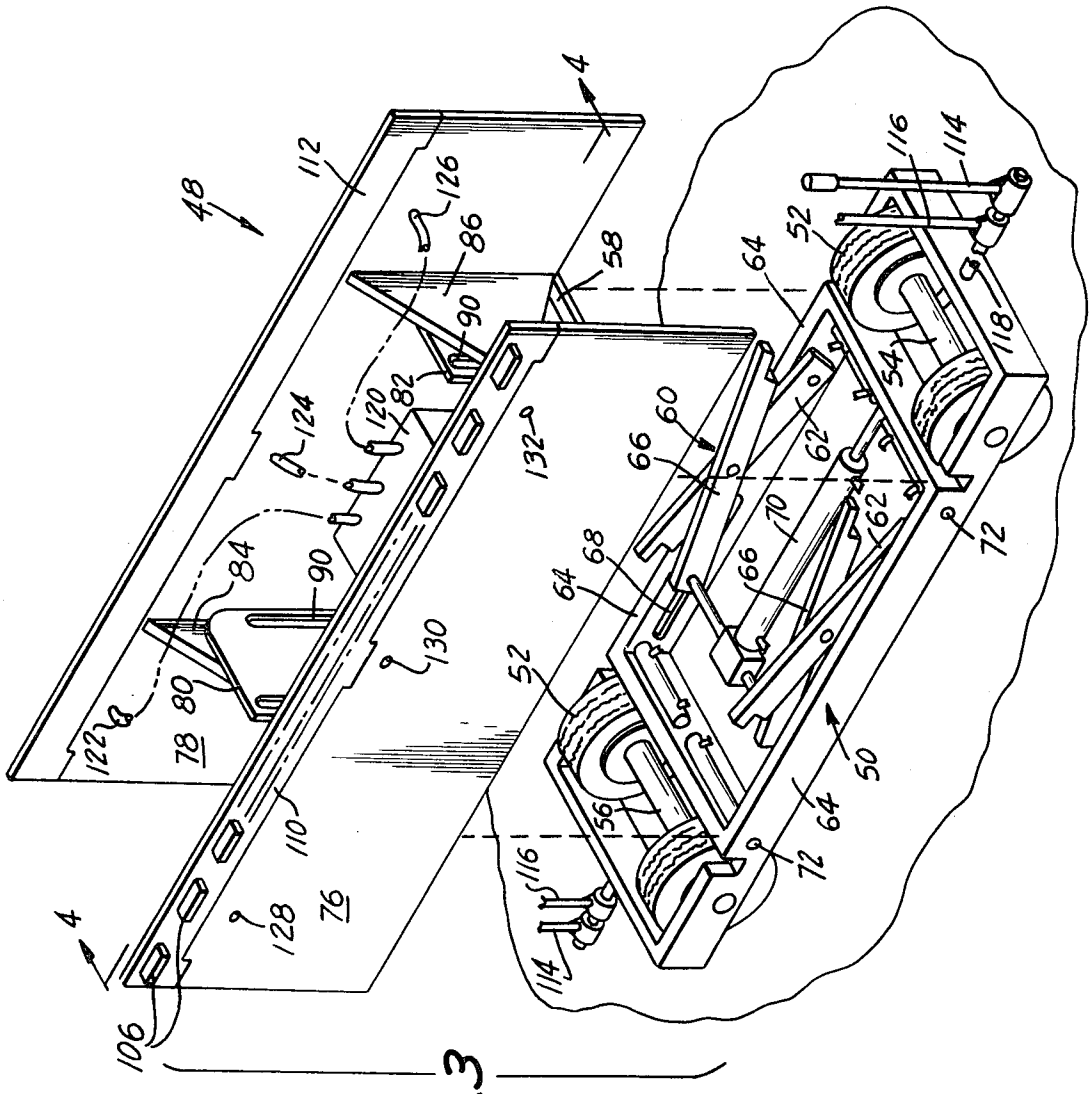


FIG. 3

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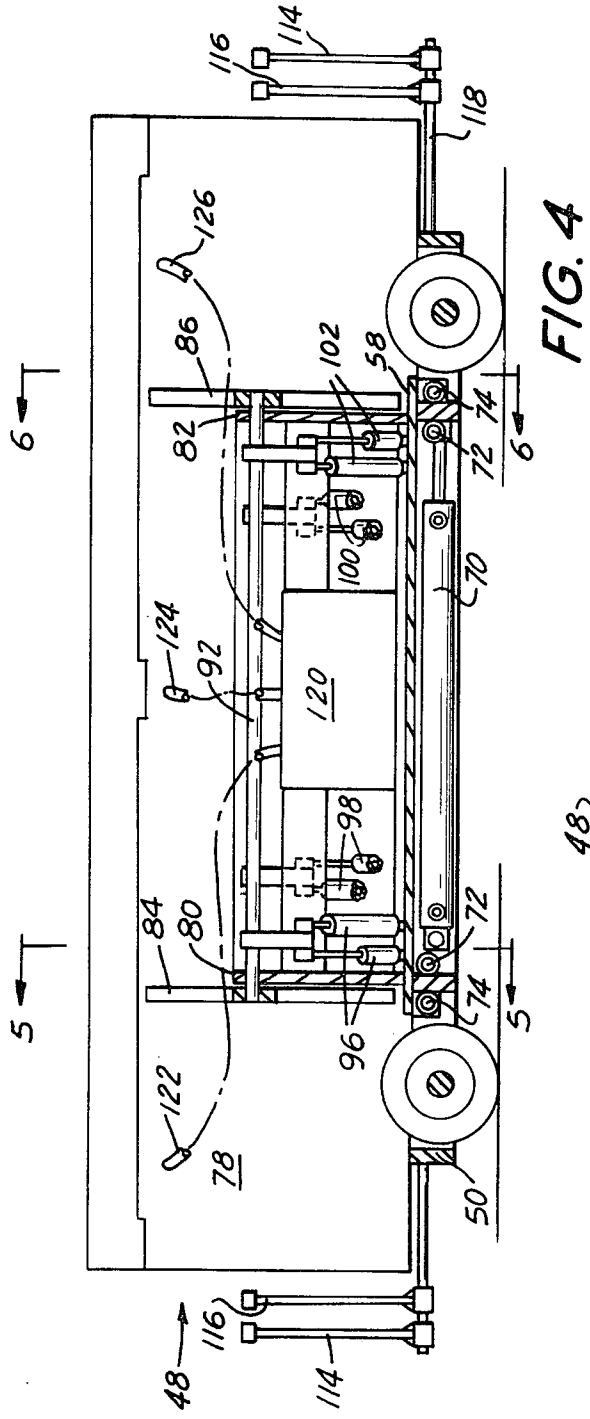
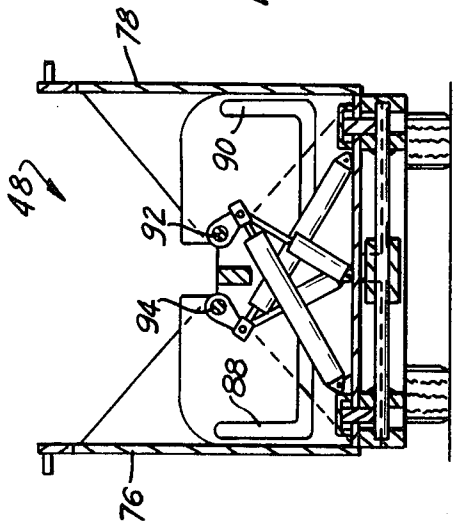


FIG. 4

FIG. 5



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FIG. 6

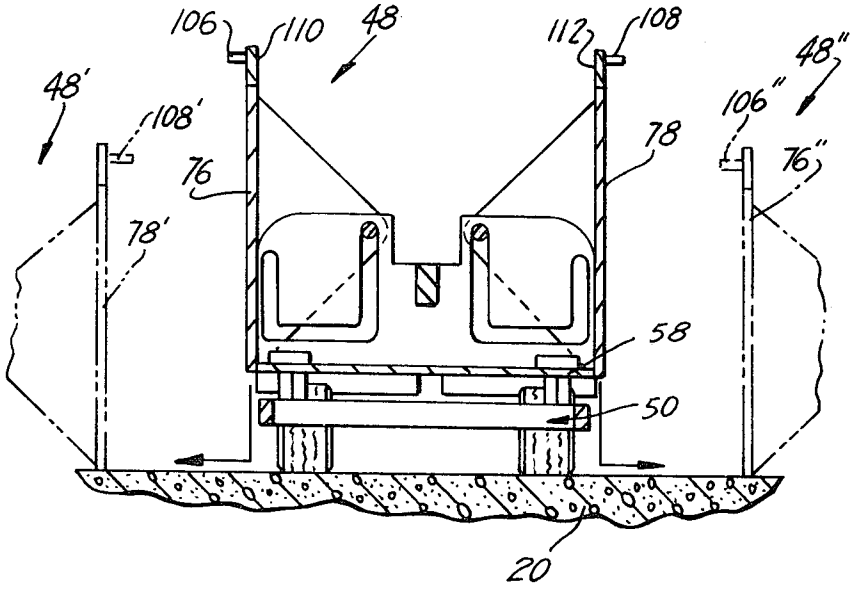
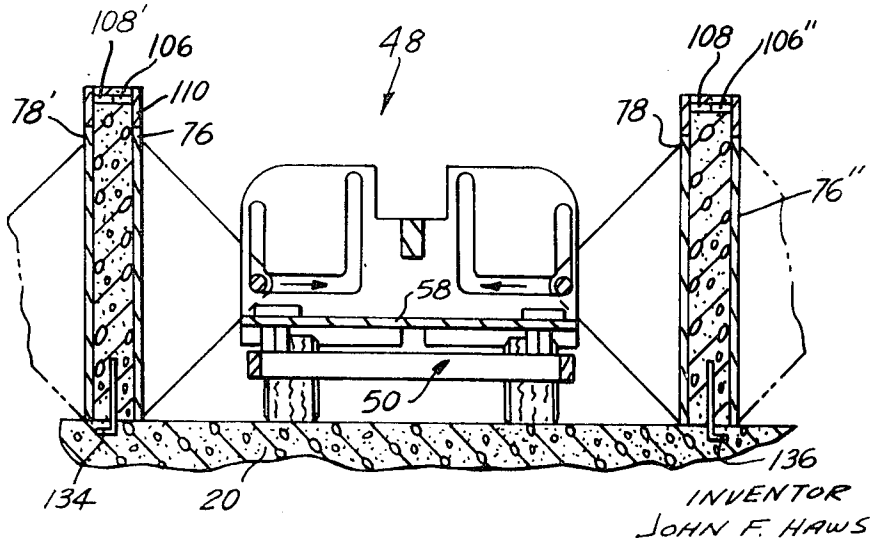


FIG. 7



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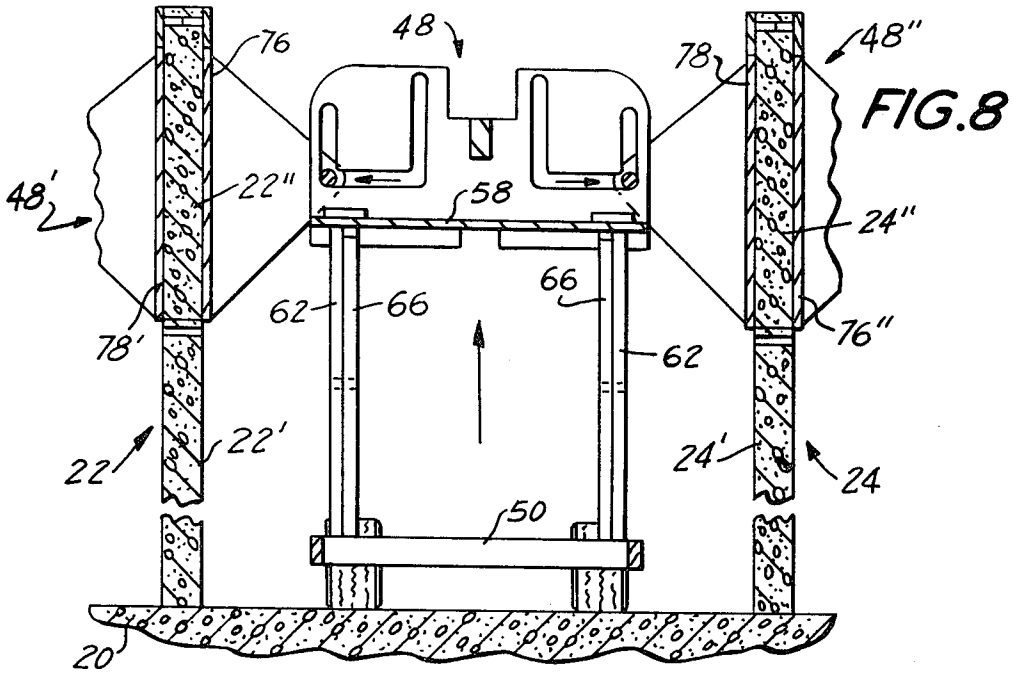


FIG. 8

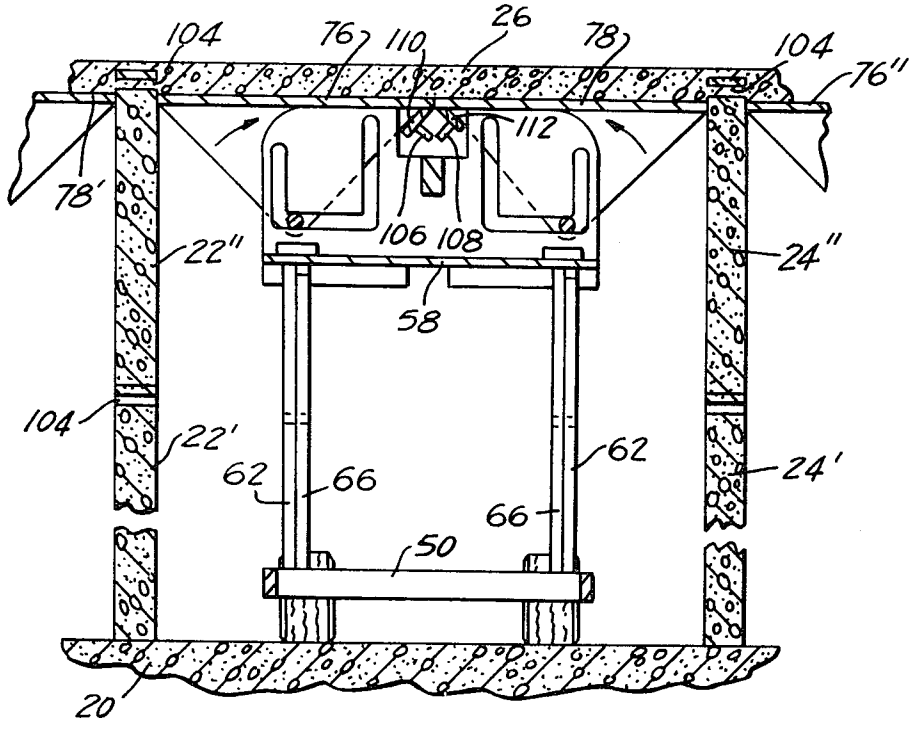


FIG. 9

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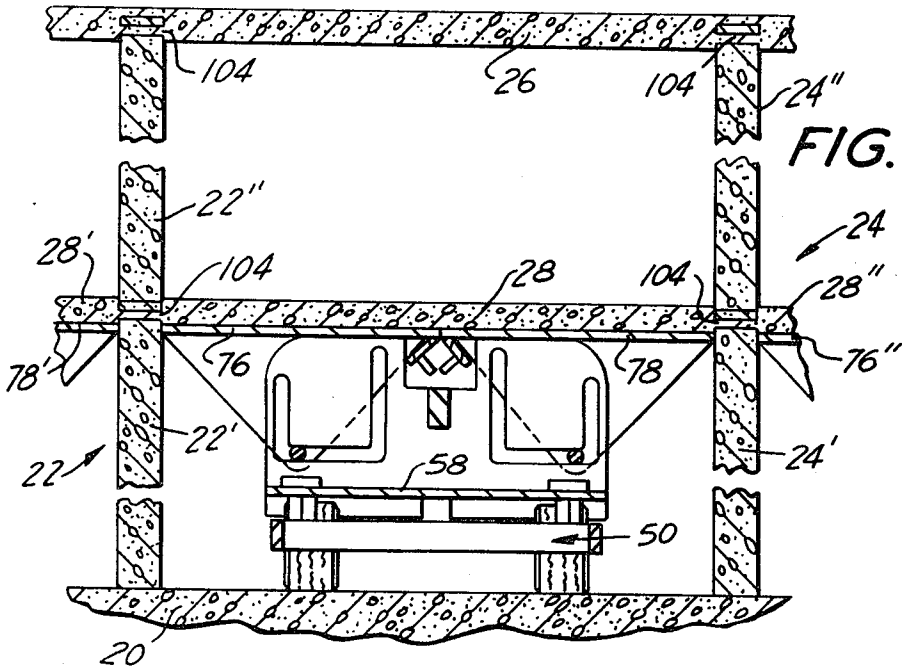


FIG. 10

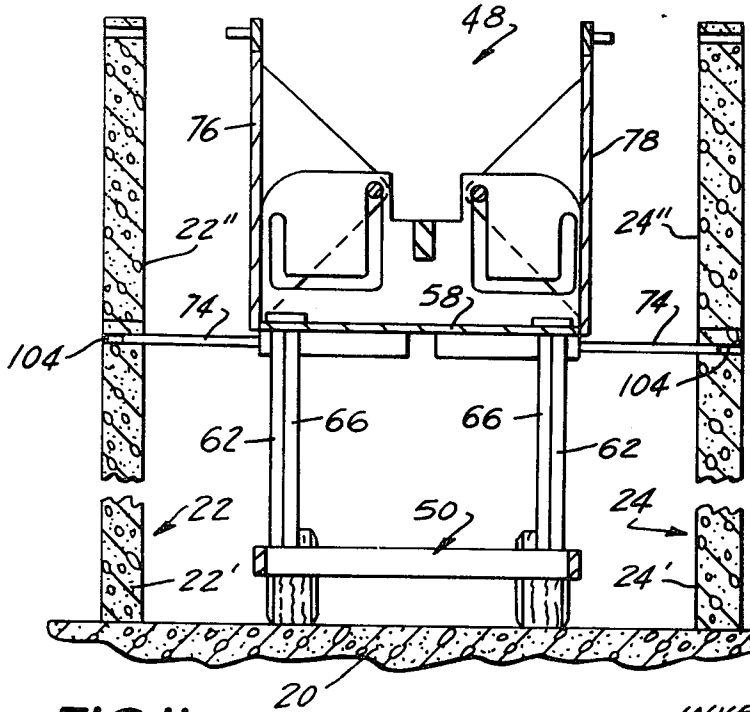


FIG. 11

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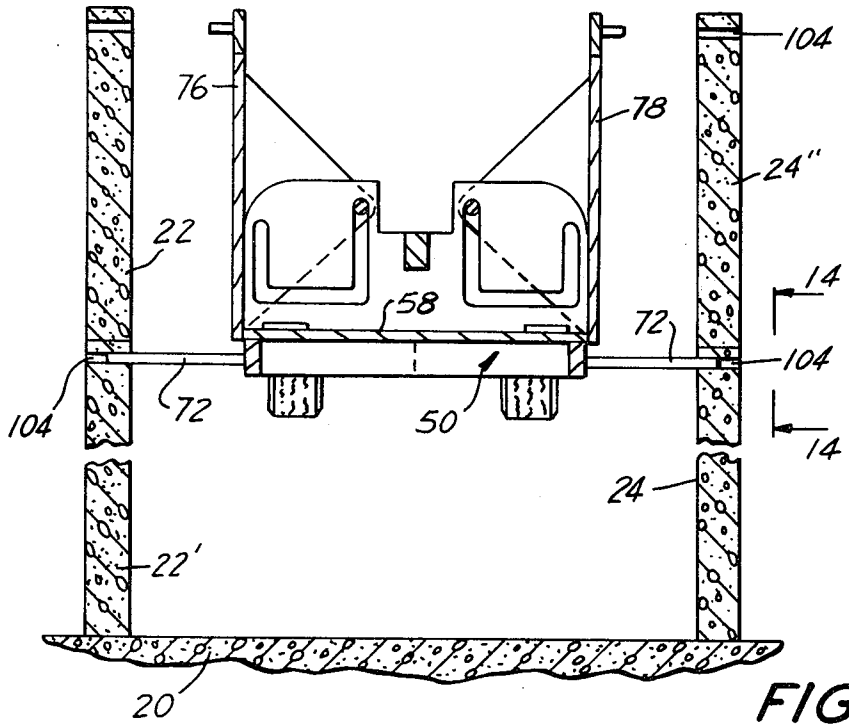


FIG. 12

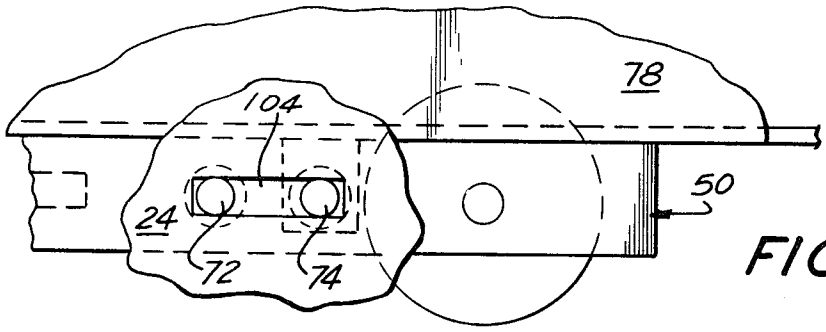


FIG. 14

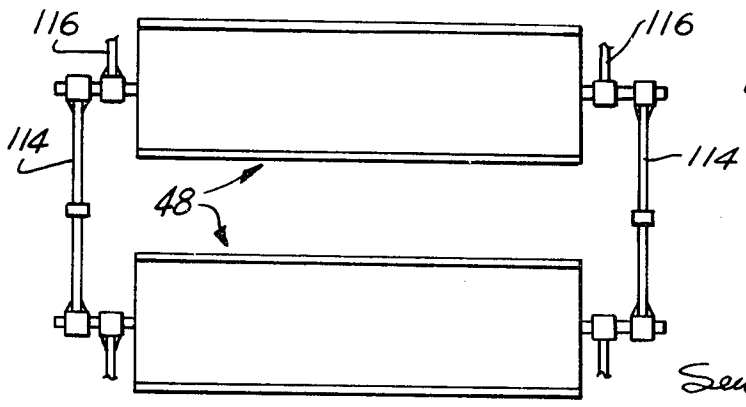
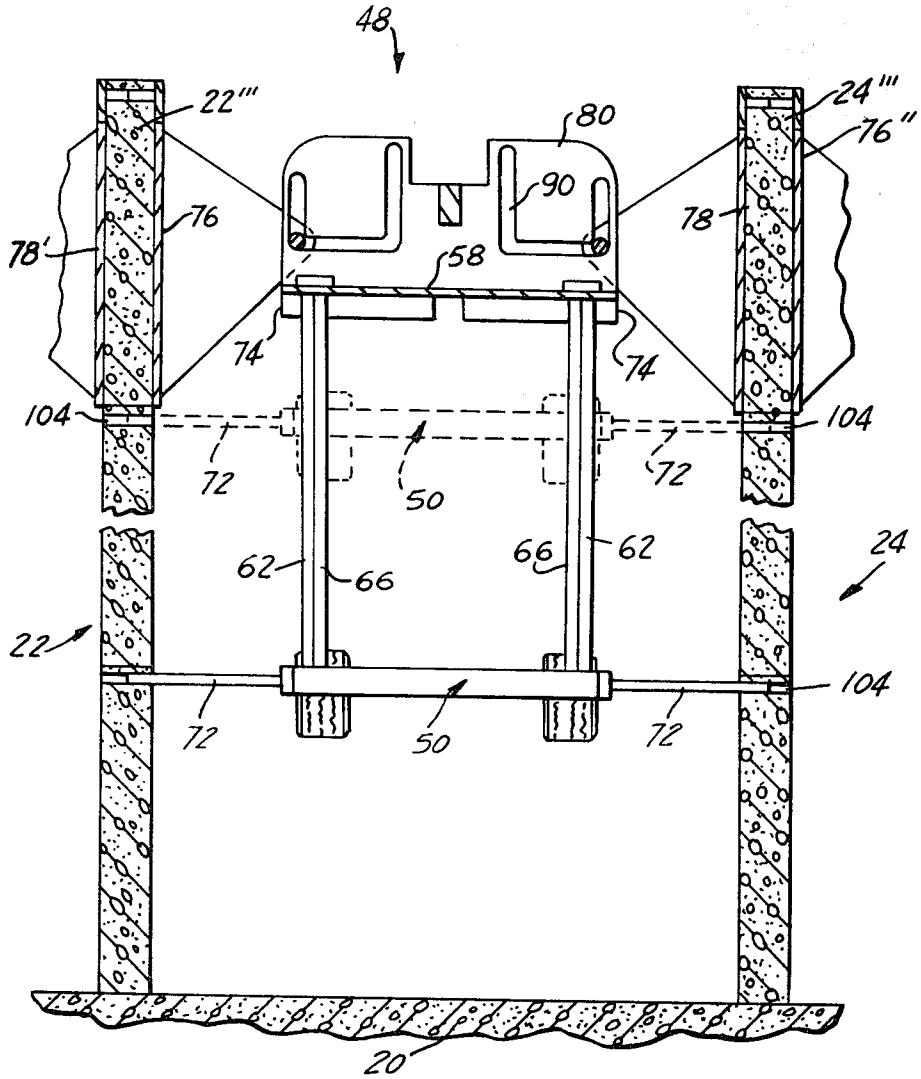


FIG. 15

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FIG. 13



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APPARATUS FOR ERECTING POURED CONCRETE STRUCTURES

This invention relates to apparatus and a method for erecting poured concrete structures, and more particularly, to apparatus and method for erecting poured concrete structures such as dwellings using mechanized, reusable, easily transportable pouring forms.

The need for relatively inexpensive, easily constructed housing has generated a wide variety of proposals for so-called industralized housing. For example, it has been suggested that buildings be constructed from factory-cast concrete components. One such proposal is described in detail in U.S. Pat. No. 2,372,200. It has also been proposed that individual rooms, apartments or other "modules" be manufactured off-site, and subsequently transported to the building site to be integrated into the finished structure.

The foregoing techniques both enjoy the distinct advantage of requiring relatively little skilled on-site labor, the need for such labor being associated with conventional on-site concrete pouring techniques.

Conventionally, poured concrete work requires the accurate assembly of complex forms, the forms being dis-assembled, and often discarded, after completion of the job.

On the other hand, in conventional on-site pouring, there is the advantage of not having to transport large finished structural elements to the job site. In some locations, such as congested urban areas and rural areas away from suitable roads, the transportation problem is of critical importance.

It is an object of the present invention to provide an apparatus and method whereby structures may be rapidly and efficiently erected by on-site pouring of concrete.

It is another object of this invention to provide an apparatus which provides a simple mechanized pouring form, capable of use for vertical as well as horizontal structural members.

It is yet another object of this invention to provide an apparatus and method whereby a number of adjoining poured concrete structures can be simultaneously erected.

It is still a further object of this invention to provide an apparatus providing mechanized concrete pouring forms, which is easily transported to and from a job site.

Other objects will appear hereinafter.

In a presently preferred form of the apparatus, the apparatus is supported on running gear, which render it roadable, and therefore easily transported to and from the job site. The running gear supports a superstructure, to which movable pouring form members are coupled. The pouring form members may be placed in a variety of positions, including positions wherein their surfaces are generally vertically oriented and face laterally outwardly with respect to a longitudinal centerline of the apparatus; and positions wherein they are disposed horizontally, facing upwardly. In the first-mentioned positions, the forms facilitate pouring of a vertically oriented member, such as a wall. In the second positions, pouring of horizontally oriented members, such as roofs and floors is possible.

In the preferred form of the apparatus, the movable pouring forms and the structure upon which they are mounted, are made selectively vertically movable with respect to the running gear. With such an arrangement, it is possible to complete pouring of a lower portion of the vertically oriented structural members, and then elevate the forms to accomplish pouring of upper portions of these members.

With the above-described apparatus, a dwelling or other structure can be erected in the following manner: the apparatus may be towed to the job site, and emplaced at a position between the intended positions for the side walls of the structure. The pouring forms associated with the apparatus can then be extended to positions wherein their outer faces correspond to the intended positions of the inner faces of the wall members. Other apparatus can be placed along side the first to provide forms defining the outer surfaces of the walls. Alternatively, however, conventional forms may be erected in juxtaposition with the apparatus-carried forms. Portions of the walls may then be poured by simply providing material to fill

the voids between the forms. Such material may be provided in the conventional manner, or, in one presently preferred form of the invention, through pressure fittings associated with the apparatus-mounted forms.

If it is desired that the side walls extend upwardly for a distance greater than the height of the apparatus-mounted forms, the forms, and the superstructure upon which they are mounted, may be raised vertically with respect to the ground-supported chassis of the apparatus. Thus, the forms may be positioned above the first-poured portions of the walls, to facilitate pouring of upper wall portions.

If it is desired that the walls extend upwardly still further, the present apparatus provides for pouring of further portions in a unique manner. The apparatus-mounted forms in accordance with the present invention are provided with retractable projections, which form recesses in the inner surfaces of the side wall. The ground-supported chassis and the superstructure upon which the forms are mounted are provided with selectively operable recess-engaging members. Such members, with the actuator for raising the superstructure, permit the entire apparatus to climb the partly completed wall to facilitate pouring of the upper portions. Walls up to four stories high may be erected in this manner.

After completion of the vertical walls, the pouring forms are rotated to horizontal positions, wherein they facilitate pouring of a roof panel. The apparatus can then be lowered with the forms in their horizontal positions, so that successively lower horizontally extending interior members can be poured.

After completion of the poured structure, pre-cast or other pre-assembled facings may be applied to the ends of the poured structure to complete the building enclosure.

By providing several of the above-described apparatus in side-by-side relation, and operating them simultaneously, a large number of adjoining "row" type structures can be erected in a relatively short period of time, and with a minimum of labor.

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIG. 1 is a perspective view of a row of dwellings erected in accordance with the principles of this invention.

FIG. 2 is an exploded view showing final assembly of a building erected in accordance with the principles of the present invention.

FIG. 3 is an exploded perspective view showing the applicant's apparatus.

FIG. 4 is a side elevation view of the apparatus illustrated in FIG. 3.

FIG. 5 is a cross-sectional view, taken along the line 5—5 in FIG. 4.

FIG. 6 is a cross-sectional view, taken along the line 6—6 in FIG. 4.

FIG. 7 is a cross-sectional view similar to FIG. 6, but showing the forms position for pouring of vertical wall members.

FIG. 8 is a cross-sectional view, showing the apparatus configured so that the pouring forms are elevated to facilitate pouring of upper portions of the walls.

FIG. 9 is a view similar to FIG. 8, but showing the pouring forms arranged for pouring of a roof member.

FIG. 10 is a view similar to FIG. 9, but showing the pouring forms arranged for pouring of an interior horizontal member.

FIGS. 11 to 13 are cross-sectional views illustrating the manner in which the apparatus may be elevated to permit pouring of extreme upper portions of the walls.

FIG. 14 is a partial cross-sectional view, taken along the line 14—14 in FIG. 12.

FIG. 15 is a view illustrating the manner in which two or more apparatus in accordance with the invention may be interconnected to assure proper alignment thereof.

Referring now to the drawings in detail, wherein like numerals indicate like elements, there is seen in FIG. 1 a row-type multiple dwelling, designated generally by the reference

numeral 10. The dwelling 10 comprises individual attached units, such as the units designated 12, 14 and 16.

FIG. 2 illustrates in a general manner the major structural components of the dwelling 10. Thus, referring to FIG. 2, a monolithic poured concrete load-bearing structure, designated generally by the reference numeral 18, is provided. The structure 18 rests on a slab 20, and includes spaced vertically extending walls 22 and 24; a roof panel 26; and a floor panel 28. Prefabricated wall panels, such as the wall panels 30, 32, 34 and 36 finish the front face of the dwelling 10, and provide suitable openings for windows, such as the window 38, and a doorway 40. The wall panels may be affixed to the load-bearing structure 18 in any suitable manner, such as by means of clips, not shown.

Wall panels 42, 44, 46 and the like are affixed to the rear of the load-bearing structure 18 in the same manner as the wall panels 30 to 36.

Referring now to FIGS. 3 and 4, there is seen an apparatus, designated generally by the reference numeral 48, in accordance with the present invention.

The apparatus 48 includes a lower chassis portion, designated generally by the reference numeral 50, provided with running gear, such as the illustrated wheels 52 and axles 54, 56. The lower chassis portion 50 supports a superstructure, or upper chassis portion 58. For this purpose, an adjustable linkage, designated generally by the reference numeral 60, is provided. It should be understood that the adjustable linkage 60 seen in FIG. 3 is merely illustrative of a wide variety of linkages which could be used. In the illustrated form, a pair of links 62 disposed on opposite sides of the lower chassis portion 50 have corresponding ends pivotably coupled to side rails 64 of the lower chassis portion 50. Another pair of links 66 have medial portions pivotably coupled to the links 62, and have respective ends thereof slidably coupled to the side rails 64. For this purpose, there is seen in FIG. 3 a slot 68 in one of the side rails 64. Operation of an actuator 70 causes relative rotation of the respective pairs of links 62 and 66 with respect to each other and the lower chassis portion 50. Such rotation results in elevation of the superstructure 58. The reason for such elevation will be explained later.

Also affixed to the lower chassis portion 50 are selectively extensible abutment members 72. With reference to FIG. 4, similar abutment members 74 are associated with the superstructure 58. The purpose of the abutment members 72 and 74 will also be explained later.

Referring to FIGS. 3, 4 and 5, pouring form members 76 and 78 are movably coupled to the upper chassis portion 58 for movement between the positions illustrated in FIGS. 3, 4 and 5, wherein their outer surfaces are oriented generally vertically, facing laterally outwardly with respect to the chassis portions; and the positions shown in FIGS. 9 and 10, wherein their outer surfaces are oriented generally horizontally, facing upwardly. In their vertical orientation, the pouring form members 76 and 78 may assume raised positions, suitable for travel (FIGS. 4, 5 and 6) or lowered and extended positions (FIGS. 7, 8, 13, etc.) to facilitate pouring of vertically oriented structural members. Any suitable mechanical interconnection may be provided between the upper chassis portion 58 and the pouring form members 76 and 78 to provide for the above-mentioned movement. In the illustrated form of the invention, with reference to FIGS. 3, 4 and 5, spaced upwardly extending support brackets 80 and 82 are provided on the upper chassis portion 58. The pouring form members 76 and 78 are provided with inwardly extending brackets 84 and 86, at spaced locations corresponding to the locations of the support members 80 and 82 on the upper chassis portion 58. The support members 80 and 82, as is perhaps best seen in FIG. 5, are provided with guide slots 88 and 90, defining the paths of movement of the pouring form members 76 and 78. Guide bars 92 and 94, the ends of which are affixed to the brackets 84 and 86 associated with each of the pouring form members 76 and 78, extend through the guide slots 88 and 90.

Referring to FIGS. 4 and 5, pairs of remotely actuable fluid operated cylinders 96, 98, 100 and 102, associated with the guide bars 92 and 94, serve to move the pouring form members 76 and 78 by causing the guide bars 92 and 94 to traverse the guide slots 88 and 90.

Referring now to FIGS. 6 and 7, the manner in which the apparatus 48 may be used to erect a building, such as the dwelling 10, will now be described.

Assuming that a suitable slab 20 has been provided, the apparatus 48 may be towed or otherwise moved into a position between the intended positions of the vertically oriented walls 22 and 24. If the structure to be erected is of the row type, other apparatus, designated by the reference numeral 48' and 48'' may be positioned alongside the apparatus 48. The pouring form members 76 and 78 of the apparatus 48 may then be lowered from their raised positions shown in FIG. 6, and projected laterally outwardly in the direction of the arrows, to assume their operative positions, illustrated in FIG. 7. The pouring form members 78' and 76'' of the apparatus 48' and 48'' are similarly positioned. Thus, as is most apparent from FIG. 7, concrete can now be poured between the pouring form members 76 and 78' and 78 and 76''. Setting of such concrete provides lower portion 22' of the wall 22.

The lower portion 22' of the wall 22 is provided adjacent its upper end with a series of spaced apertures 104. Such apertures 104 are formed by respective projections 106 and 108', associated with the forms 76 and 78', respectively. Referring to FIG. 6, the pouring form 78 of the apparatus 48 is itself provided with a row of projections 108, which are juxtaposed during pouring to projections 106'' associated with the form 76''.

Referring once again to FIG. 3, it is seen that the projections 106 associated with the form 76 are affixed to a panel 110 forming an edgewise extension of the form member 76. A similar panel 112, which carries the projections 108, not seen in FIG. 3, is associated with the form member 78. The panels 110 and 112 are hingedly connected to the respective form members 76 and 78. The purpose of this arrangement will be explained in greater detail later.

Referring now to FIG. 8, the manner in which upper portions of the walls 22 and 24 are poured will now be described. Assuming that the lower portion 22' of the wall 22 and a lower portion 24' of the wall 24 have been poured, the pouring form members 76 and 78 can be drawn by means of the cylinders 96, 98, 100, 102 away from the finished portions, and the upper chassis portion 58 of the apparatus 48 elevated with respect to the lower chassis portion 50. Such elevation is accomplished by operation of the actuator 70 (not seen in FIG. 8), to cause relative rotation of the pairs of links 62 and 66. The form members 76 and 78 can then be projected to the positions seen in FIG. 8, wherein they are positioned for pouring of further portions 22'' and 24'' of the respective walls 22 and 24. Pouring form members 78' and 76'' associated with adjacent apparatus 48' and 48'' are placed in juxtaposition to the forms 76 and 78. As an alternative, conventional forms may be erected in juxtaposition to the apparatus-mounted form members 76 and 78. Pouring of the portions 22'' and 24'' may then proceed as before.

In FIG. 9, the manner in which a horizontal structural element, such as the roof panel 26, may be poured, is illustrated.

Suitable actuation of the fluid cylinders 96, 98, 100 and 102 effects retraction of the pouring form members 76 and 78 from their positions shown in FIG. 8, and also effects their rotation to the position illustrated in FIG. 9. The function of the above-mentioned panels 110 and 112 should now be apparent. As the form members 76 and 78 approach their horizontally oriented positions, latching means, not shown, are released to permit the panels 110 and 112 to fold with their projections 106 and 108, out of the planes of their respective pouring form members 76 and 78. The panels 110 and 112, therefore, facilitate removal of the projections 106 and 108 from the plane defined by the form members 76 and 78.

The pouring form members **76** and **78** abut at the edges adjacent the hinge lines of the panels **110** and **112** to form a continuous face against which the roof panel **26** may be poured. Material forming the roof panel **26** flows into the apertures **104** in the upper wall portions **22''** and **24''**. Setting of such material results in a strong mechanical interconnection between the roof panel **26** and the walls **22** and **24**.

FIG. **10** illustrates the positions of the pouring form members **76** and **78**, and the upper chassis portion **58** during pouring of an internal horizontal member such as the floor panel **28**. The pouring form members **76** and **78** are in their horizontally disposed upwardly facing positions. The height of the upper chassis portion **58**, adjusted by means of the actuator **70** (not seen in FIG. **10**) is such that the plane defined by the pouring form members **76** and **78** is on a level with the apertures **104** in the wall portions **22'** and **24'**. The material forming the floor panel **28** flows into the apertures **104** to form a strong mechanical bond between the floor panel **28** and the walls **22** and **24**. Floor panels **28'** and **28''** in adjacent sections of the structure **18** can be poured simultaneously with pouring of the floor panel **28**. The result of such simultaneous pouring is that the floor panels **28**, **28'** and **28''** are in fact parts of a monolith, interconnected by portions extending through the apertures **104**. After setting of the floor panels **28**, **28'**, the upper chassis portion **58** can be lowered, and the apparatus towed from the slab.

FIGS. **11** to **13** illustrate an important aspect of the present invention, namely the manner in which the apparatus **48** can be made to elevate itself with respect to finished lower wall portions. In this manner, additional upper wall portions can be poured, the number being limited only by the stability of the partly completed walls.

Referring now to FIG. **11**, the upper chassis portion **58** is seen in an elevated position, after withdrawal of the form members **76** and **78** from the wall portions **22''** and **24''**. The upper chassis portion **58** has been elevated to a point at which the previously mentioned abutment members **74** associated therewith are in horizontal alignment with the apertures **104** in the walls **22** and **24**. Thus, as is seen in FIG. **11**, the abutment members **74** can be projected into the apertures **104**. If the actuator **70** is next operated to lift the lower chassis portion **50**, the abutment members **74** and wall portions **22'** and **24'** assume the weight of the apparatus **48**.

In FIG. **12**, the apparatus **48** is seen with the lower chassis portion **50** fully raised. In such position, referring to FIG. **14**, the abutment members **74** on the upper chassis portion **58** (hidden in this Figure) and the abutment members **72** on the lower chassis portion **50** are in horizontal alignment, and both in alignment with one of the apertures **104**.

Referring to FIG. **13**, it should now be apparent that if the abutment members **74** associated with the upper chassis portion **58** are withdrawn, the abutment members **72** associated with the lower chassis portion assume the entire weight of the apparatus **48**. Retraction of the abutment members **74**, however, frees the upper chassis portion **58** for further upward extension with respect to the lower chassis portion **50**. In FIG. **13**, the upper chassis portion **58** is shown in a raised position, wherein the form members **76** and **78** are positioned for pouring of wall portions **22'''** and **24'''**, disposed above the previously completed portions of the walls **22** and **24**. If it is desired to pour still higher than the wall portions **22'''** and **24'''**, the lower chassis portion **50** of the apparatus **48** may be placed in the dotted-line position in FIG. **12** by the following sequence of operations.

The upper chassis portion **58** is positioned so that the now-retracted abutment members **74** are in alignment with apertures **104** in the walls **22** and **24**. The abutment members **72** are then retracted with respect to the lower chassis portion **50**, and the lower chassis portion **50** drawn up to the dotted-line position. The abutment members **72** are then again projected, and the abutment members **74** retracted. With the apparatus **48** thus configured, the actuator **70** may be used to again raise the upper chassis portion **58** to facilitate pouring of upper wall portions.

In one presently preferred form of the apparatus, wherein the pouring form members **76** and **78** are each 8 feet in height, it is feasible to pour vertically oriented walls as high as four portions, or 32 feet, in height. Each portion, of course, represents a single story of the finished building. The depth of the building, front to rear, is determined by the length of the pouring form members **76** and **78**. In the presently preferred form, the pouring form members are 32 feet in length.

Referring to FIGS. **3**, **4** and **15**, the manner in which apparatus such as the above-described apparatus **48** may be interconnected to simultaneously erect adjacent building units is illustrated.

Referring first to FIGS. **3** and **4**, gage bars **114** and **116** are coupled to the apparatus **48** at front and rear. The gage bars **114** and **116** are pivotably mounted on axes **118** extending in a direction parallel to the longitudinal axis of the apparatus **48**. The gage bars **114** and **116** rotate in planes perpendicular to the axes **118**. Referring now to FIG. **15**, it is seen that interconnection of the gage bars **114** and **116** on adjacent apparatus **48**, by means of any convenient coupling, establishes parallelism of the adjacent apparatus **48**, and also establishes a standard spacing therebetween. Thus, assuming evenness of the slab **20** upon which the apparatus **48** rests, interconnection of the gage bars in the manner shown in FIG. **15** ensures proper positioning of the various pouring form members.

Referring again to FIGS. **3** and **4**, means are shown associated with the apparatus **48** to facilitate delivery of concrete to the forms, once positioned. For this purpose, there is seen a reservoir **120** for a quantity of material. Extending therefrom are suitable flexible conduits **122**, **124** and **126**, associated with the pouring form members **76** and **78**. Material passing through the conduits **122**, **124** and **126** emerges through openings, such as the openings **128**, **130** and **132**, seen in FIG. **3** on the pouring form member **76**. The above-described structure, it will be appreciated, facilitates delivery of concrete to the outer faces of the pouring form members **76** and **78**, and can be used, if desired, to eliminate the need for conventional material delivery systems used in the pouring of concrete. Pumps, or the like, not shown, deliver material from the reservoir **120**, and propel such material through the conduits **122**, **124** and **126**, and through the openings **128**, **130** and **132**.

In one of its aspects, the present invention resides in a method of erecting a concrete structure, in the following manner.

A site is leveled and a slab, such as the slab at **20**, emplaced thereon. During placement of the slab, upstanding rods, such as the rods **134** and **136** illustrated in FIG. **7**, may be placed in rows defining the intended positions of walls. The apparatus **48** may then be in positioned on the slab, and the pouring forms **76** and **78** positioned to facilitate pouring of the wall portions **22'** and **24'**. After pouring and setting of the wall portions **22'** and **24'**, the pouring forms are retracted and then raised, by operation of the actuator **70**, to positions facilitating pouring of the wall portions **22''** and **24''**.

If the desired structure **18** is to be only two stories in height, the pouring forms **76** and **78** can be rotated and positioned to facilitate pouring of the roof panel **26**. After pouring and setting of the roof panel, the actuator **70** may be operated to lower the pouring forms **76** and **78** to positions wherein the floor panel **28** is poured. After pouring and setting of the floor panel **28**, the pouring forms **76** and **78** may be further lowered away from the floor panel **28**, and the apparatus **48** withdrawn from between the walls **22** and **24**.

As has already been explained, in practicing the present method, apertures **104** are formed in the wall portions **22'**, **24'**, **22''**, and **24''**. If it is desired to erect a structure **18** having more than two stories, the method includes steps of projecting the abutment members **74** into engagement with the apertures **104**, operating the actuator **70** to bring the abutment members **72** associated with the lower chassis portion **50** up to the level of the abutment members **74**, retracting the abutment members **72**, and operating the actuator **70** to lift the pouring forms **76** and **78** to levels necessary for pouring of further wall por-

tions. When the wall portions are erected to their desired height, roof panels and interior horizontals are formed in the above-described manner by successively lowering the pouring form members **76** and **78** and the apparatus **48**, until the apparatus **48** again rests on the slab and pouring and setting of the lowest interior horizontal is completed.

The present apparatus **48** is preferably of roadable dimensions (no more than 10 feet in width) when the pouring forms **76** and **78** are in their retracted positions. The present method and apparatus permit rapid erection of a structure **18** and completed dwelling **10**. Individual wall portions of 8 foot height can be completed overnight. Moreover, by using several apparatus **48** in side-by-side relation, rather than conventional forms, large numbers of row-type units can be erected in a short period of time.

Although not illustrated herein, those skilled in the art will appreciate that suitable reinforcing elements, such as steel mesh, rods or the like, can be incorporated into the poured structural members described herein, by simply positioning such members with respect to the pouring forms prior to pouring of the material.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. Apparatus for erecting poured concrete structures, comprising a lower chassis member having ground-engaging supports thereon, an upper chassis member coupled to said lower chassis member and selectively vertically adjustable with respect thereto, pouring form members extending longitudinally with respect to said upper chassis member, said pouring form members being coupled to said upper chassis member by means facilitating movement of said pouring form members from first positions wherein outer surfaces thereof are oriented generally vertically and facing laterally outwardly with respect to said upper chassis member to facilitate pouring of vertical structural members, to second positions wherein their outer surfaces are oriented generally horizontally and facing upwardly to facilitate pouring of horizontal structural members.

2. Apparatus in accordance with claim **1**, wherein said ground-engaging supports comprise running gear to facilitate transport of said apparatus.

3. Apparatus in accordance with claim **1**, and means coupled to said pouring form members for moving said members between said first and said second positions.

4. Apparatus in accordance with claim **3**, wherein said means coupled to said pouring form members include means for moving said pouring form members laterally outwardly with respect to said upper chassis member from a retracted position to an operative position.

5. Apparatus in accordance with claim **4**, wherein said means coupled to said pouring form members comprises means for moving said pouring form members vertically with respect to said upper chassis member from a retracted position to an operational position.

6. Apparatus in accordance with claim **4**, wherein said ground-engaging supports comprise running gear to facilitate transport of said apparatus.

7. Apparatus for erecting poured concrete structures, comprising a chassis having round-engaging supports thereon, pouring form members coupled to said chassis for selective vertical adjustment with respect thereto, said pouring form members extending longitudinally with respect to said chassis, and means coupled to said pouring form members to facilitate movement of said members from first positions wherein outer surfaces of said members are positioned to facilitate pouring of vertical structural members to second positions wherein said members are positioned to facilitate pouring of horizontal structural members.

8. Apparatus in accordance with claim **7**, wherein said ground-engaging supports comprise running gear to facilitate transport of said apparatus.

9. Apparatus in accordance with claim **7**, wherein said means coupled to said pouring form members includes the means for moving said pouring form members laterally outwardly with respect to said chassis from a retracted position to an operative position.

10. Apparatus in accordance with claim **9**, wherein said means coupled to said pouring form members comprises means for moving said pouring form members vertically from a retracted position to an operational position.

11. Apparatus in accordance with claim **10**, wherein said pouring form members are mounted on an upper chassis member coupled to said chassis, and means coupled to said chassis and said upper chassis member for selectively elevating said upper chassis member with respect to said chassis.

12. Apparatus in accordance with claim **1**, including first selectively operable wall-engaging means coupled to said upper chassis member, second selectively operable wall-engaging means coupled to said lower chassis member, and selectively operable means coupled to said upper and lower chassis members for selectively positioning said upper and lower chassis members with respect to each other.

13. Apparatus in accordance with claim **12**, wherein said pouring form members include aperture-forming members thereon, said wall-engaging means comprising abutment means adapted to engage the apertures.

14. Apparatus in accordance with claim **1**, and means in fluid communication with the outer surfaces of said pouring form members to conduct concrete thereto.

15. Apparatus in accordance with claim **1**, and gage means coupled to said apparatus to facilitate alignment of said apparatus with another similar apparatus, whereby the pouring form members of the respective apparatus are maintained in juxtaposition and alignment.

16. Apparatus in accordance with claim **11**, including first selectively operable wall-engaging means coupled to said upper chassis member, and second selectively operable wall-engaging means coupled to said lower chassis member, said wall-engaging means comprising abutment members adapted to engage a wall to support said apparatus therefrom.

17. Apparatus for erecting poured concrete structures, comprising a lower chassis member having running gear thereon to facilitate transport of said apparatus, an upper chassis member coupled to said lower chassis member and selectively vertically adjustable with respect thereto, pouring form members extending longitudinally with respect to said upper chassis member, said pouring form members being coupled to said upper chassis member by means facilitating movement of said pouring form members from first positions wherein outer surfaces thereof are oriented generally vertically and facing laterally outwardly with respect to said upper chassis member to facilitate pouring of vertical structural members to second positions wherein their outer surfaces are oriented generally horizontally and facing upwardly to facilitate pouring of horizontal structural members, means coupled to said pouring form members for moving said members between said first and said second positions, said last-mentioned means comprising means for moving said pouring form members laterally outwardly with respect to said upper chassis member from a retracted position to an operative position, first selectively operable wall-engaging means coupled to said upper chassis member, second selectively operable wall-engaging means coupled to said lower chassis members for selectively positioning said upper and lower chassis members with respect to each other, said pouring form members including aperture-forming projections thereon, and said wall-engaging means comprising abutment means adapted to engage the apertures.

18. Apparatus in accordance with claim **1**, and means in fluid communication with the outer surfaces of said pouring form members to conduct concrete thereto.

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