United States Patent [19]

Mauroner

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[54] **MATERIALS DISPENSING APPARATUS**

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[52] U.S. Cl. ..... **141/74;** 141/233; 141/284; 214/16 R; 425/64

[51] **Int. Cl.²** **B65B 3/06**

[58] **Field of Search** ..... 141/12, 73, 74, 80, 100, 141/231-235, 237, 242-244, 266, 284, 256, 141/324, 325, 375; 214/16 R, 17 C, 18 PH; 222/160; 425/64, 219, 447

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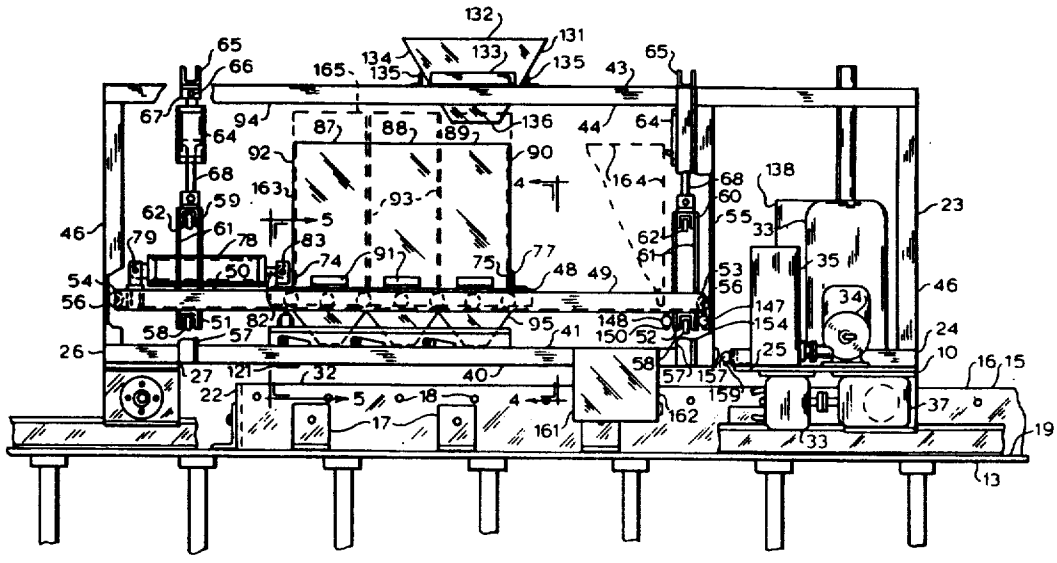
Assistant Examiner—Frederick R. Schmidt
Attorney, Agent, or Firm—Roger L. Martin, Esquire

[57] **ABSTRACT**

A trackway with horizontal forms between the rails for use in casting building wall sections from cementitious materials has a rail mounted apparatus that straddles the forms and is used for storing and dispensing the cementitious materials into the forms. The apparatus is self-propelled and has a plurality of open top bins that are mounted on a horizontally movable carriage beneath a hopper that is used to receive and discharge the cementitious materials into the bins. The carriage is mounted on a vertically movable frame that is suspended from an open box-like frame component of the apparatus. The bins have narrow elongated bottom discharge openings that are transversely arranged to dispense the materials into the forms and the openings are equipped with gates that are independently opened and closed by hydraulically powered cylinders. Hydraulically powered cylinders are used for horizontally moving the carriage and for vertically moving the supporting frame for the carriage and a vibrating assembly that has a shoe for floating concrete in the form is supported and movable with the carriage and is also equipped with means for vertically moving the assembly with respect to the carriage. The vehicle-type apparatus is also equipped with compartments for storing fluids that are dispensed through suitable nozzle equipped headers that are either mounted on the body frame of the apparatus or on the vertically movable frame.

8 Claims, 7 Drawing Figures



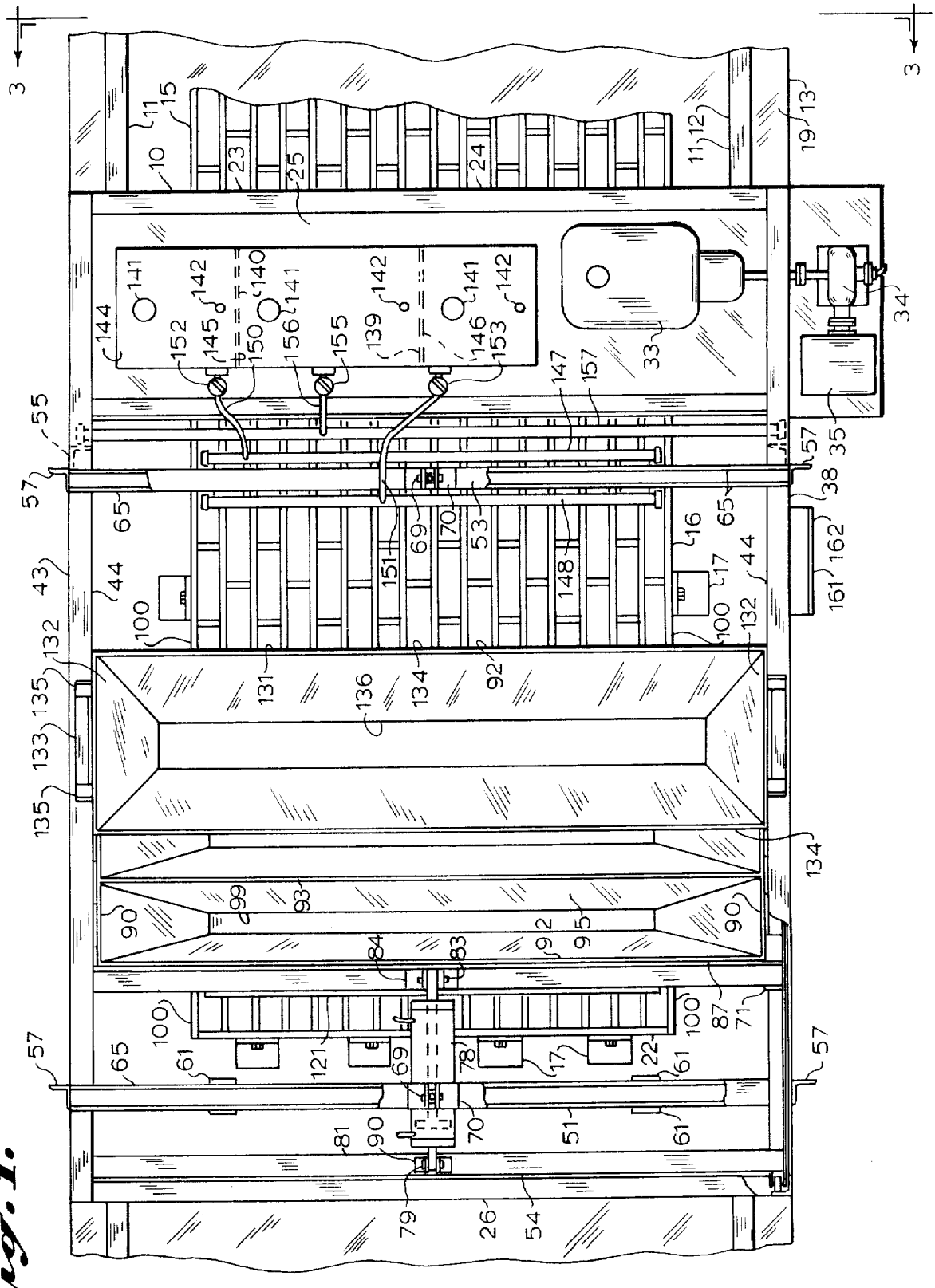

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Fig. 1.

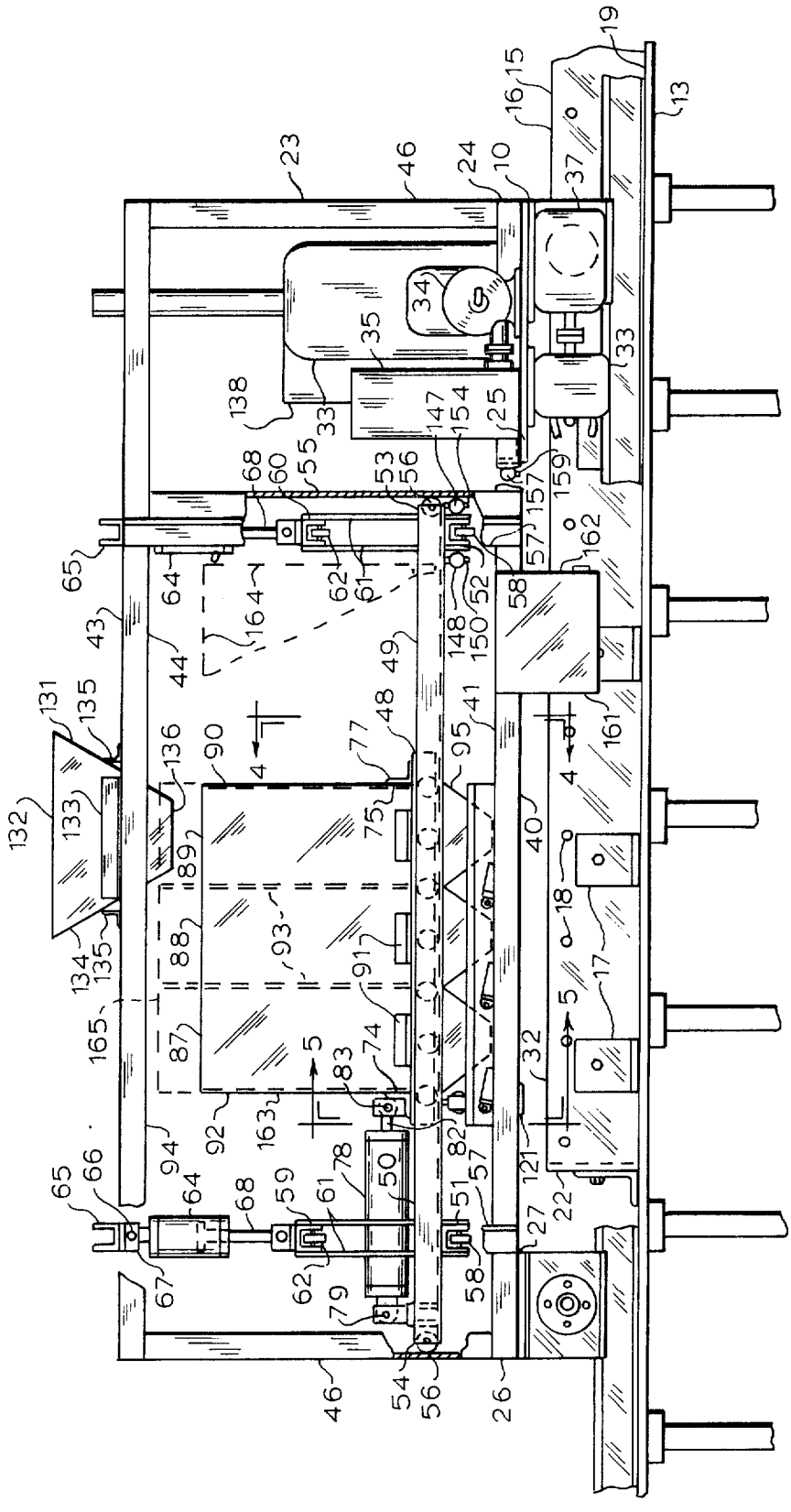

Fig. 2.

Fig. 3.

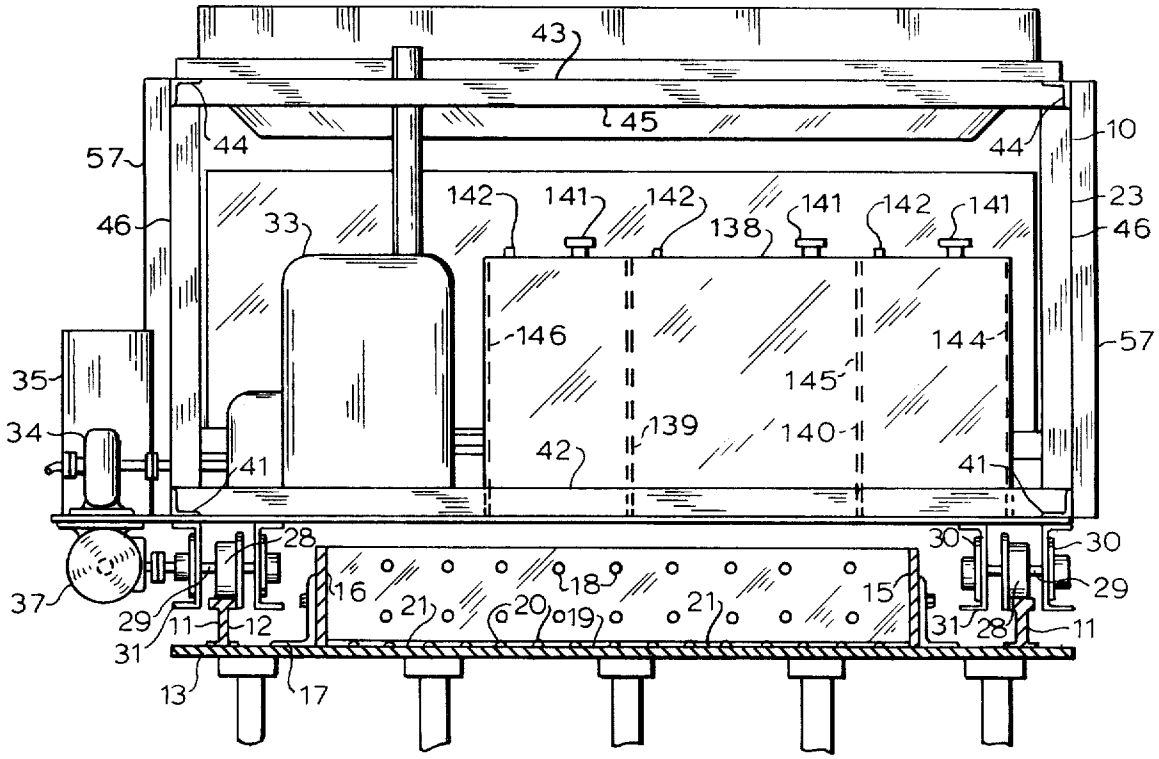
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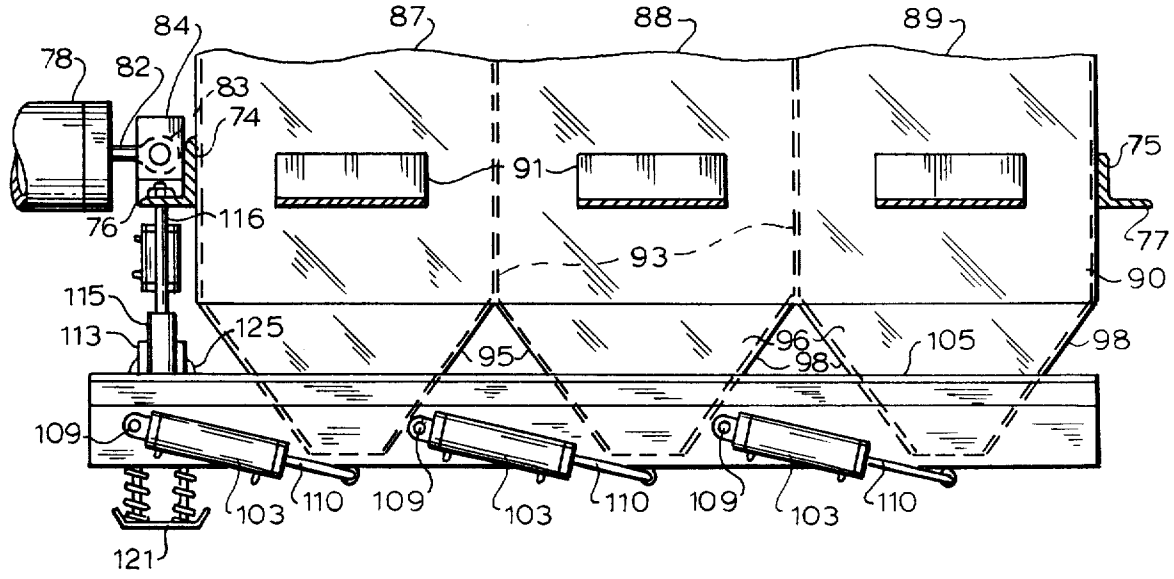
Fig. 7.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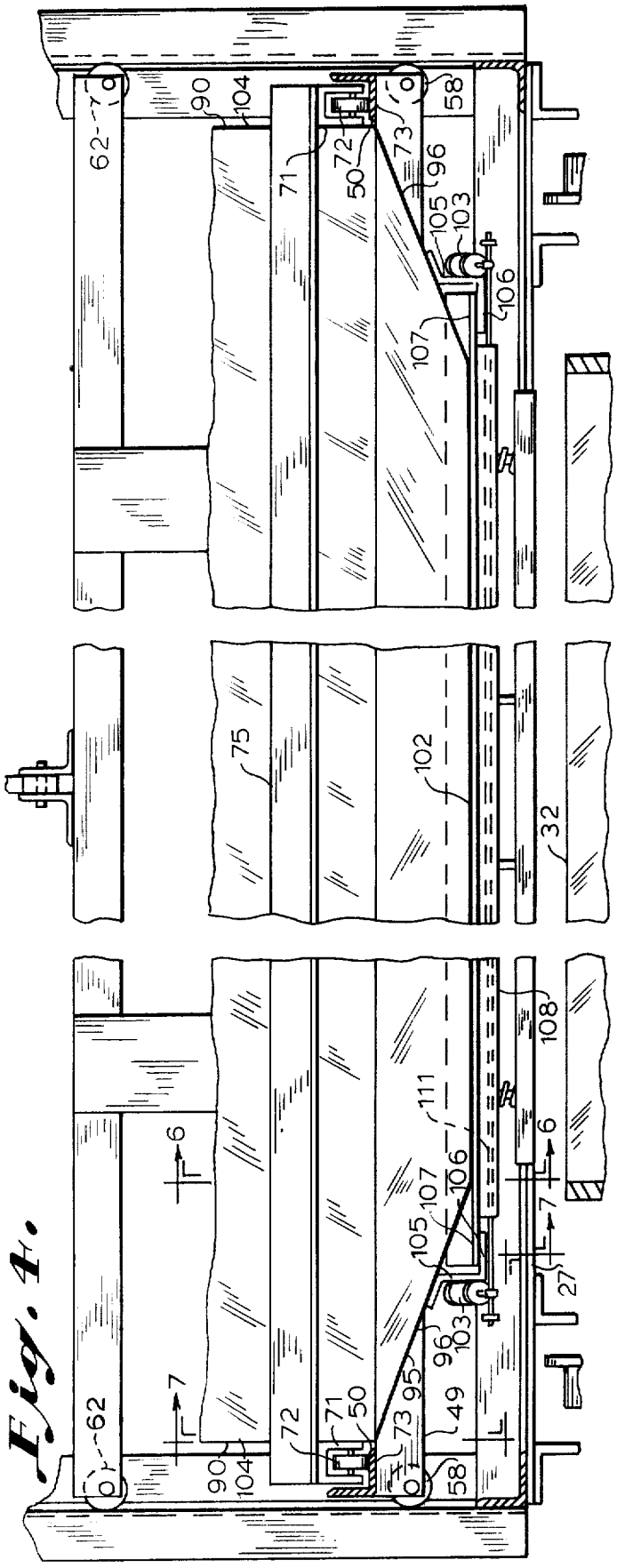
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Fig. 4.

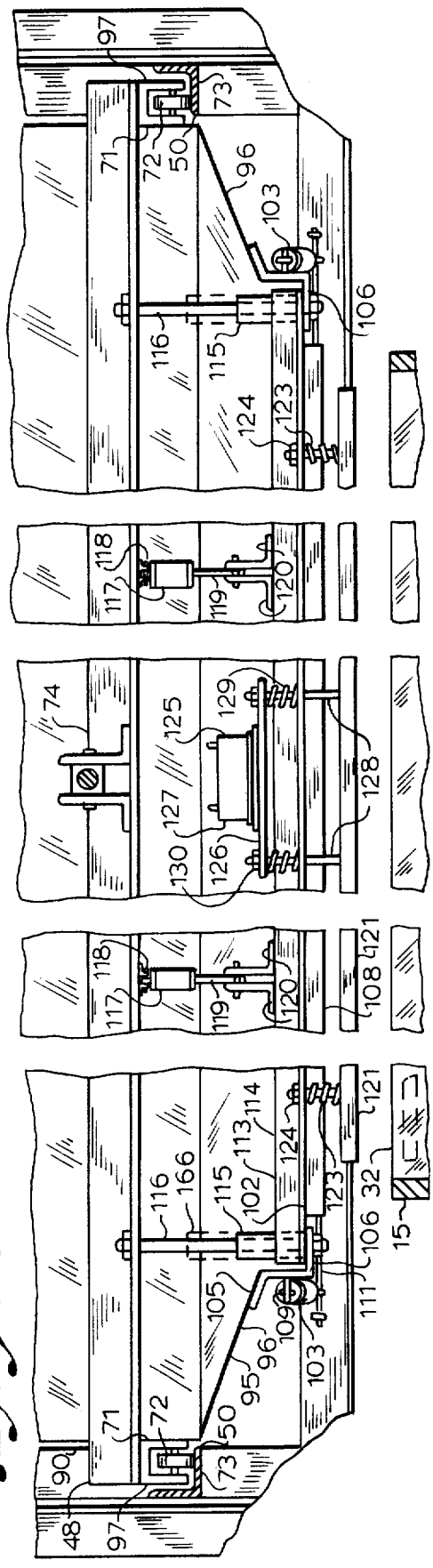
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Fig. 5.

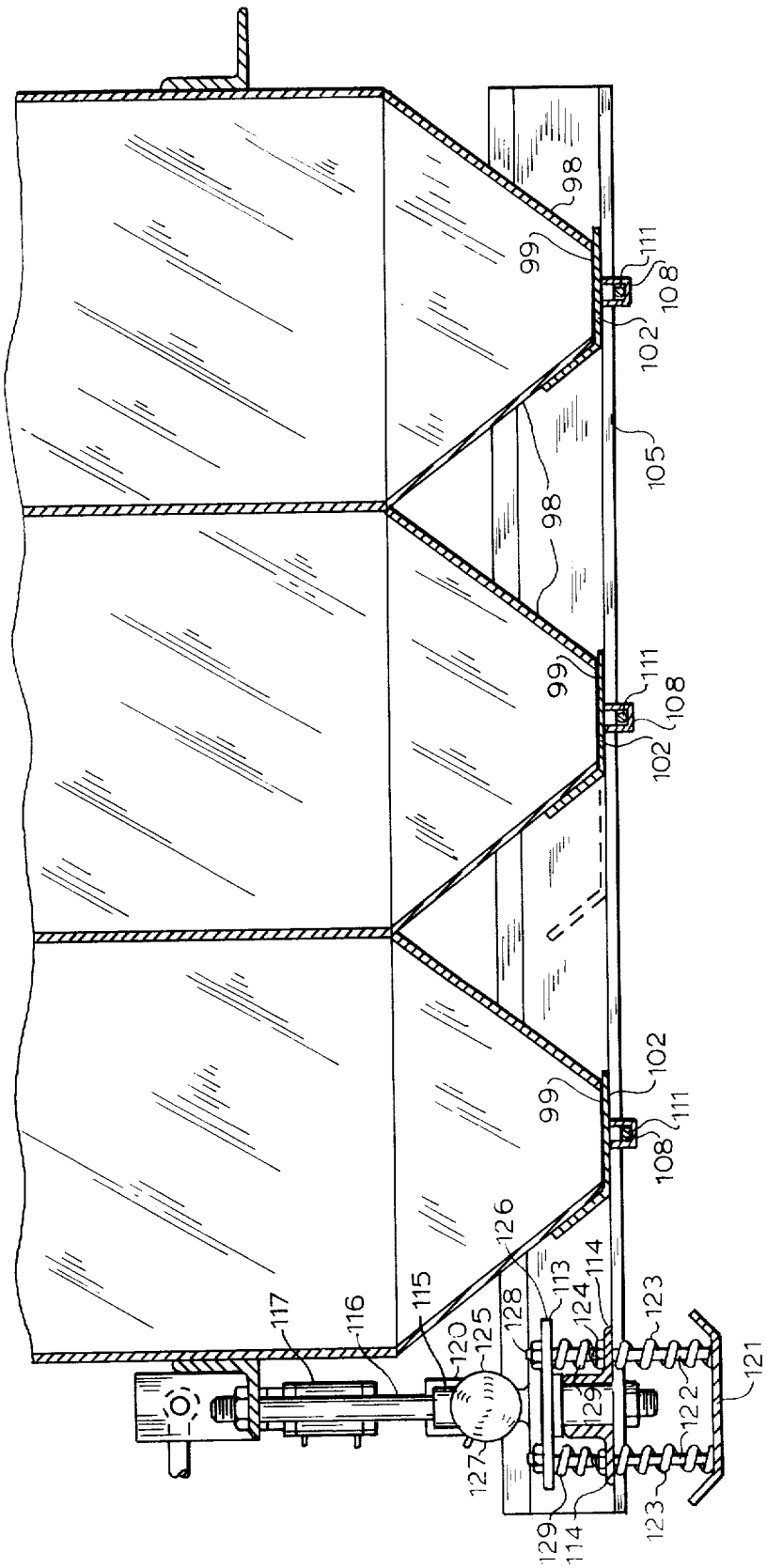
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Fig. 6.

MATERIALS DISPENSING APPARATUS

This invention relates to materials transfer and dispensing apparatus for use in the construction of vertical wall structures and more particularly building wall structures that are cast in horizontal forms from cementitious materials.

In an effort to decrease the amount of labor involved in building houses and other structures from cementitious materials, it has been advocated to cast the vertical walls of such structures in sections and in forms that are arranged horizontally. After the cementitious materials have hardened, the wall sections are removed from the forms and are placed upright on suitable foundations at the job site. Thereafter the sections are suitably secured together in the finished wall structure by various means that are well known in the art.

Various different types and designs of wall sections have been proposed for casting in this manner and among the different types are those in which bricks are initially spaced apart in the form. Mortar, concrete and other cementitious materials are thereafter poured into the form at different stages in the process of fabricating the wall section, with provisions in the fabricating procedure being made for the inclusion of concrete reinforcements and materials that later serve as wall insulation.

There are various problems which are encountered in carrying the horizontal casting concept into practice. For one, to be economically feasible, the forms used in casting the wall sections must be reusable. As such, there are labor costs involved in cleaning the forms and in preparing the forms for reuse. Furthermore, although skilled labor is required during certain stages of the casting procedures, much of the work involved can be performed by unskilled labor. In many cases the skilled labor is precluded by union contracts and/or other regulations from doing other useful work at the job site so that the skilled labor remains idle a considerable amount of the time unless mass production techniques are being employed to provide wall sections that are at all times in various stages of completion so as to more efficiently utilize the time of the labor involved.

Yet another problem encountered in carrying the horizontal casting concepts into practice is the fact that conventional methods for delivering cementitious materials to the forms require an excessive amount of labor in order to disperse the cementitious materials throughout the proper areas of the form. Apart from this there are work delays due to poor scheduling of materials deliveries, all of which tend to offset the savings in labor costs contemplated by the advocates of the horizontal casting procedures.

A general object of the invention is to provide an apparatus which can be used to reduce the labor costs involved in the mass production of horizontally cast wall sections made from cementitious materials. Yet another object of the invention is to provide an apparatus which may be used for transferring cementitious and other materials that are received at the job site to the forms in which the wall sections are cast and which can be used to store and transfer different materials that are used in the fabrication of such horizontally cast wall sections. Yet another object of the invention is to provide a transfer and cementitious materials dispensing apparatus which minimizes the amount of labor that is used in pouring and dispensing the cementitious materials into the forms and which may be used to reduce the amount of labor involved in cleaning and preparing the forms for reuse. Yet another object of the invention is to provide a transfer apparatus for cementitious materials which minimizes work delays caused by poor delivery scheduling.

The invention contemplates a transfer apparatus for cementitious and other construction materials which is mounted on tracks or rails that are spaced apart and which is adapted to dispense the materials into wall set in forms that are located between the rails and spaced apart along the length of the railway. This arrangement permits the apparatus to be used in serving one form while the wall sections in other forms are in various other stages of fabrication and it facilitates the mass production of such wall sections with a more efficient use of labor involved in the fabrication thereof.

The apparatus is preferably self-propelled for movement along the railway between the forms and a delivery station at which the building materials may be received and it has a plurality of bins that are adapted to store the different types of cementitious and other materials that are received at the delivery station and use in fabricating the cast wall sections. Each bin is equipped with a hopper at its lower end and the discharge opening of the hopper is equipped with a gate and associated power means which may be controlled by the operator of the apparatus to open and close the gate as the need arises to confine and dispense the materials from the bin. Provisions are made in the transfer apparatus to raise and lower the bins with respect to the forms and a shoe that is equipped with a vibrating device is also provided to facilitate the floating of cementitious materials used in the construction of the cast wall sections. The shoe is vertically movable with respect to the bins through powered means controllable by the operator of the apparatus. The bins are mounted one adjacent the next in the structure of the transfer device and a common hopper is used to receive the cementitious and other casting materials at the delivery station and to direct the materials into the proper bin. To facilitate the delivery of the cementitious materials to the bins via the hopper, the bins are mounted on a horizontally movable carriage which by powered means is controllable by the operator to orient the bins with respect to the hopper when the cementitious materials are being received.

The transfer device also has provisions for storing and dispensing fluids that are used in the clean up and preparation of the forms for reuse as well as for paint which may be used to provide a decorative coating on the cured wall sections before they are removed for installation in the building structure.

The novel features which are believed to be characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a top plan view of the transfer and dispensing apparatus as seen when located over one of the horizontal forms used in casting the vertical wall sections;

FIG. 2 is a side elevational view of the transfer and dispensing apparatus as seen from the operator's side of the device;

FIG. 3 is a front end view of the apparatus as generally seen along the lines 3—3 of FIG. 1;

FIG. 4 is an enlarged elevational sectional view taken generally along the lines 4—4 of FIG. 2;

FIG. 5 is an enlarged sectional view taken generally along the lines 5—5 of FIG. 2;

FIG. 6 is a sectional view taken generally along the lines 6—6 of FIG. 4; and

FIG. 7 is a sectional view taken generally along the lines 7—7 of FIG. 4.

Reference is now made to the embodiment of the invention shown in the drawings and wherein the transfer apparatus **10** is seen as mounted on the rails **11** of a railway **12** which is elevated above ground level and supported on an elongated table structure **13**. The rails **11** are spaced apart and mounted in parallel on the table structure **13** and between the rails **11** are a plurality of open top forms which are used in casting the wall sections and which are spaced apart along the railway **12** for service by the transfer apparatus **10**.

Only one of the forms is seen in the drawings and as mounted on the table structure **13**, the form **15** is an open top form which has side walls **16** that are bolted to spaced lugs **17** that are suitably fixed at the upper surface of the table structure **13**. The side walls **16** are provided with aligned holes **18** that may be used in supporting reinforcing rods which are embedded in the wall section cast in the form. The form **15** illustrated contemplates that the cast wall sections will have a brick veneer outer surface and hence between the walls **16** the top **19** of the table structure **13** is provided with suitable spacers **20** which define cavities in which the bricks are positioned at the commencement of the wall fabricating procedure and which shape the mortar joints in the finished wall sections.

The transfer apparatus has an open, generally box-type, rigid body frame structure **23** that is equipped at the front end **24** with an underlying and transversely extending platform forming metal plate **25**. At the rear end **26** of the transfer apparatus, the frame **23** is equipped with an underlying narrow transversely extending metal plate **27**. At the front end **24** each of the flanged wheels **28** is mounted on a shaft **29** that is journaled at its opposite ends in bearings **30** that are mounted on spaced channel components **31**, and the channels are fixed dependingly from the metal plate **25**. At the rear end **26** the channels **31** for these wheel assemblies are fixed dependingly from the metal plate **27**.

The transfer apparatus **10** in this instance is self-propelled and at the front end **24**, the apparatus **10** is equipped with an internal combustion engine **33** that drives a fluid pump **34** which delivers pressurized fluid to a pressure tank **35**. Tank **35** provides a source of pressurized fluid for the various hydraulically powered and operated drive components of the apparatus. The engine **33** is mounted internally of the box-type body frame on the platform provided by plate **25**. Plate **25** extends laterally at the operator's side **38** of the body frame **23** to provide a support structure for mounting the pump **34** and tank **35**. At this side **38** of the apparatus, the apparatus is equipped with a pressurized fluid drive motor **36** and motor **36** has a shaft which is coupled through a gear box **37** to a drive connection with the shaft **29** of the adjacent flanged wheel. Motor **36** and gear box **37** are fixed dependingly from the lateral extension of the platform **25** as seen in the drawing.

The bottom portion **40** of the body frame **23** includes opposite side angles **41** and opposite end angles **42**. These angles **41** and **42** are welded together in a rectangular arrangement and plates **25** and **27** underlie and are fixed to the body portion as seen in the drawings. The top portion **43** of the body frame **23** has opposite side angles **44** and opposite end angles **45** that are similarly welded together in the frame structure. This top portion is supported spacedly above the bottom portion **40** by means that includes four angle-type vertically extending corner posts **46** that rigidly interconnect the upper and lower portions in the box-like body frame.

Within the frame structure **23** and aft of platform **25**, the transfer apparatus **10** has a carriage **48** that is mounted for horizontal longitudinal movement on a vertically movable frame component **49**. Frame **49** has a pair of opposite side angles **50** on which the carriage **48** is supported and these side components **50** of the auxiliary frame **49** are rigidly interconnected at the front **53** and rear **54** ends of the frame **49** by a pair of transversely extending channel members **51** and **52**. At its opposite sides and adjacent the platform **25**, the body frame has a pair of upright angles **55** that are welded to the adjacent side angles **41** and **44** of the body frame. The track forming side angles **50** of the auxiliary frame **49** are equipped with rollers **56** at their opposite ends, and the rollers at the rear ends **54** of the auxiliary frame bear against the corner posts **46** while those at the front end **53** of frame **49** bear against the upright angles **55**. This arrangement serves to limit longitudinal movement of the auxiliary frame **49** with respect to the body frame **23**.

The body frame **23** is also equipped at each of its opposite sides with a pair of upright angles **57** that are aligned with the ends of the cross channel members **51** and **52** of frame **49**. These cross channels **51** and **52** have end rollers **58** that bear against the side angles **57** of frame **23**. The auxiliary frame **49** is also provided with a pair of transversely extending channel members **59** and **60** that are supported spacedly above channels **51** and **52** respectively by means of vertical plate components **61** of the auxiliary frame. The opposite ends of these channels **59** and **60** are also equipped with rollers **62** that bear against the side angles **57**. This arrangement serves to limit lateral movement of frame **49** within the structure of the body frame **23**.

The auxiliary frame **49** is suspended within the box-like frame structure **23** by means of a pair of hydraulic cylinders **64** that are longitudinally spaced apart and centrally located between the opposite sides of the body frame. These cylinders **64** are mounted dependingly from a pair of transversely extending channel members **65** that are vertically aligned with the channel components **59** and **60** of the auxiliary frame. Channels **65** are supported and fixed at their opposite ends to the side angle components **44** of the top portion **43** of frame **23** as seen in the drawings. The base of each cylinder **64** is pivotally connected by a pivot pin **66** to a pair of lugs **67** that are fixed to the underside of the adjacent cross channel **65**. The piston arm **68** of each cylinder on the other hand is pivotally connected by a pivot pin **69** to a pair of lugs **70** that are in turn fixed to the adjacent one of the channels **59** and **60** therebelow. The cylinders **64** are hooked in parallel through a suitable control valve to the pressurized source of fluid in tank **35** and are simultaneously controllable by the operator of apparatus **10** to retract and extend the

piston arm **68** to accordingly raise and lower the auxiliary frame **49** within the body frame structure **23.**

The opposite side angles **50** of the auxiliary frame **49** provide a track way on which the carriage **48** is movably mounted. The carriage **48** comprises a pair of side channels **71** and each is equipped with a plurality of rollers **72** that rest on and are rotatable along the inner legs **73** of the side angle component **50** of frame **49.** The opposite side channels **71** of the carriage **48** are rigidly interconnected by a pair of transversely extending cross angle components **74** and **75** that are spaced apart and located at the rear **76** and front **77** ends of the carriage. The carriage is moved horizontally in the body frame by means of a hydraulic cylinder **78** which is pivotally mounted at its base end by a pivot pin **79** to a pair of lugs **80** that are mounted at the top side of a transversely extending channel member **81** which interconnects and is fixed at its opposite ends to the opposite side angle components **50** of the auxiliary frame. The piston arm **82** of the cylinder **78** is on the other hand pivotally connected by a pivot pin **83** to a pair of lugs **84** that are mounted on the rear cross angle component **74** of the carriage.

The bins for the cementitious materials are mounted on and movable with carriage **48** and three such bins are illustrated in the embodiment and designated at **87, 88** and **89** respectively. The structure for the bins includes a pair of vertically oriented and transversely spaced rectangular side plates **90** that are welded to lugs **91** which are spaced apart and fixed to the adjacent side channel members **71** of frame **49.** The structure also includes a pair of transversely extending and vertically oriented plates **92** that are spaced apart and welded to the front and rear cross angle components **74** and **75** of the carriage **48.** Internally the space defined by the exterior wall plates **90** and **92** is divided into three narrow transversely extending compartments by a pair of transversely extending and uprightly arranged inner wall plates **93.**

At the bottom of the compartments each bin is provided with a discharge hopper **95** for the cementitious material. The hopper includes opposite end walls **96** that incline inwardly and are located internally of the body frame at the opposite sides **97** of the apparatus. These end walls **96** in each hopper are interconnected by a pair of inclined side walls that extend transversely of the apparatus **10** and are spaced apart in the narrow transversely arranged bin structure. Walls **96** and **98** converge downwardly in the hopper structure of the bin to a narrow, rectangular bottom discharge opening **99** that extends transversely and substantially spans the distance between the opposite sides **100** of the underlying arrangement for the forms **15.**

Each of the bins **87** through **89** is provided with a gate **102** that can be independently moved between an open position and a closed position by the operation of a pair of hydraulic cylinders **103** that are associated with the bin gate and mounted at the opposite ends **104** of the bin on a pair of brackets designated at **105.** The cylinders **103** are hooked in parallel through a suitable valve to the pressurized source of fluid in tank **35** and may be simultaneously controlled by the operator to open and close the gate.

The brackets **105** on which the gates **102** and cylinders **103** associated therewith are mounted extend longitudinally and are welded horizontally at the opposite sides of the apparatus to the end walls **96** of the hoppers **95.** These brackets **105** are best seen in FIGS. **4** and **5** and have inwardly oriented flanges **106.** The gate **102** for each bin comprises an elongated, flat metal plate which is supported at its opposite ends **107** on the inner flanges **106** of the brackets. Between its opposite ends **107** the plate is reinforced by a transversely extending channel member **108** that is welded at the underside of the plate. One side edge of the gate forming plate is also inclined (see FIG. **6**) to further reinforce the gate structure and limit movement of the gate at its closed position shown in FIG. **6.** The hydraulic cylinders **103** for each gate are mounted on the brackets **105** at the opposite ends of the bin openings **99** by suitable pivot pins **109.** The piston arms **110** for the cylinders associated with each gate are coupled to an elongated, transversely extending rod **111** which extends through the plate reinforcing channel member **108** of the gate. These rods have threaded ends and the piston arms are secured on the rods by suitable nuts. Retraction of the piston arms **111** associated with the gate will, of course, open the gate while extension of the arms associated with the gate will serve to close the gate.

The transfer apparatus **10** is also equipped with an assembly **113** that can be independently raised and lowered relative to the frame **49** to aid in distributing the cementitious materials in the form **15** and to also aid in floating the materials when the need arises. This assembly **113** (see FIGS. **5–6**) comprises a pair of transversely arranged angles **114** that are spaced apart and fixed at their opposite ends to a pair of vertically oriented open ended cylindrical sleeve elements **115.** These sleeves **115** are slidably mounted on vertical rods **116** that are fixed upright between the rear ends of each of the brackets **105** and the transverse angle member **74** of the carriage thereabove by means of nuts that engage the threaded ends of the rods. The sleeves **115** are vertically slidable on the rods **116,** and between the rods, the assembly **113** is connected to a pair of depending hydraulic cylinders **117** that are transversely spaced apart and pivotally suspended by pins **118** from lugs that are fixed to the cross angle component at the rear end **76** of the carriage. Each of the piston rods **119** of these cylinders **117** is pivotally connected to a pair of lugs **120** that are fixed to the upper surfaces of the angles **114.**

The assembly **113** has an elongated transversely extending shoe **121** that is formed by a flat plate with upturned sides as seen in FIG. **6.** At each of its opposite ends the shoe **121** is equipped with a pair of vertically extending elements **122.** These elements **122** extend through suitable holes in the angles **114** thereabove and are secured to the angles by nuts **124.** Between the angles and shoe each element is equipped with a compression spring **123** that serves to maintain the shoe spacedly below the transversely arranged angles **114.**

Generally centrally located between the opposite ends of the assembly **113** the assembly is equipped with a shaker device **125** that is shown in the form of a fluid motor **127** that has an eccentric weight on its shaft and which is fixed to a small horizontal plate **126.** The mounting plate **126** for the motor **127** is supported spacedly above the angles **114** on four vertically extending elements **128** that are fixed at their lower ends to the shoe **121.** These elements extend through appropriate holes in the angles **114** and each has a coiled compression spring **129** that is confined between the angle and plate **126** by means of a nut **130.** Operation of the motor **124** of course imparts a vibrational move-

ment to the shoe **121** and which aids in settling the cementitious materials in the form and in floating concrete as is well known.

The bins **87-89** have open tops and they are filled through the use of an elongated, transversely arranged hopper **131** that is mounted on the top portion **43** of the body frame **23.** Hopper **131** has inclined end plates **132** that are located at the opposite sides of the top portion of the frame **23** and welded to angle components **133** that in turn are fixed to the adjacent side angle **44** of the top portion **43.** The sides of the hopper **131** are formed by transversely arranged and inclined side plates **134** and which are mounted on transversely arranged angles **135** that are fixed at their opposite ends to the side angles **44** as seen in the drawings. Plates **132** and **134** converge inwardly on a narrow transversely arranged bottom opening **136** from which the material discharges by gravity into the open top of the hopper therebelow.

The transfer apparatus **10** is also equipped with a fluids storage tank **138** that is divided into three separate compartments by internal walls **139** and **140.** This tank **138** is mounted on platform **25** at the front end of the apparatus **10** and each compartment is fluid tight and isolated from the other in the structural arrangement. Each compartment is also provided with an inlet which is closed by a pressure cap **141** since the fluids in the compartments are maintained under pressurized conditions by pressurized air that may be admitted to the compartment through a suitable air valve designated at **142.**

In the illustration, the three compartments **144-146** are designed to hold paint, water and oil respectively. The auxiliary frame **49** is equipped with a pair of transversely extending headers **147** and **148.** These headers are spaced apart and fixed to the adjacent vertically extending plates **61** at the front end of the frame **49** as seen in FIG. **2.** The header **147** is designed to dispense paint through appropriate nozzles **154** and onto the cast wall sections after they have cured so as to provide a decorative interior wall finish. The header **147** is connected by a flexible conduit **150** through a suitable manually manipulatable valve **152** to the outlet for the paint compartment **144.** Header **148** is designed to dispense oil through suitable nozzles **160** into the form and which serves as a release agent. This header **148** is connected by a suitable flexible conduit **151** via a manually controllable valve **183** to the discharge outlet for compartment **146.**

The water compartment **145** on the other hand is connected through a valve **155** by means of a conduit **156** to a transversely arranged header **157** that is fixed to a transversely arranged plate supporting angle component **158** of the body frame structure. Conduit **156** extends transversely in the arrangement and is equipped with suitable nozzles **159** so that the water can be sprayed not only within the form but externally thereof between the tracks so as to facilitate clean up operations.

The control valves for the various hydraulically operated power components of the apparatus **10** are housed in a control box **161** that is mounted at one side of the bottom portion **40** of frame **23.** This box **161** has a hinged door **162** through which access is gained to the control valves, and the table structure **13** is provided for the system so that the apparatus and forms are elevated to provide the operator full view of the working area from a standing position in front of the control box.

The carriage **48** may be moved longitudinally of the track way on frame **49** between the aft position **163** shown in solid lines in FIG. **2** and a forward position **164** shown in broken lines in this figures. This is accomplished by controlling cylinder **78** to extend and retract the piston arm and enables the operator to orient the open top portion of the appropriate bin beneath the discharge opening for hopper **131** when the bin is to be filled with the construction material assigned to the bin at the receiving station. When this is done cylinders **64** are normally controlled by the operator to retract the piston arms and to elevate the bins for example to the elevated position shown at **165** in FIG. **2.** At this position the discharge opening for hopper **131** is confined between the wall structure of the selected bin so that materials received in the hopper **131** flow directly into the bin that is oriented therebelow. This arrangement greatly facilitates the filling of the narrow bin and minimizes the need for clean ups of the apparatus for reasons of mishandling of the loading devices used at the delivery station.

In the system depicted, the forms along the track way **12** are all serviced by the apparatus **10** and as the apparatus is serving one form or one form area, the workers may be readying the other form areas and other partially completed wall sections for servicing by the apparatus.

In preparing the apparatus for dispensing one of the cementitious materials into a form area, the hydraulic cylinders **117** of the shoe assembly **113** are controlled to retract the piston arms and thus elevate the assembly above the plane of the gates and for example, to the elevated position **166** shown by reference to the sleeves in FIG. **5.** With the shoe assembly **113** thus elevated, motor **33** is controlled by the operator to orient the opening of the bin containing the selected cementitious material over the form area and adjacent to one of the end side walls **22.** Thereafter, in the normal course of events, cylinders **64** are controlled so that the gate of the bin containing the selected cementitious material is located immediately adjacent the tops **32** of the form **15.** With the gate in this position the operator then controls the cylinders **103** associated with the gate to retract the cylinders to the extent necessary to provide the desired flow of cementitious material from the gate opening and simultaneously the operator controls motor **33** to advance the apparatus **10** in the direction of the other of the opposite end walls **22** of the form. As this is happening the operator can control the gate to dispense more or less cementitious materials as he determines by visual observation of the dispensing operation. In those cases where it is desired to float the concrete, the eccentric motor **125** may be actuated and the assembly **113** lowered through the control of cylinders **117** to a position at which the shoe **121** engages the surface of the material dispensed in the form and serves to impart a vibratory motion to the dispensing material to aid in the floating process.

During the interim between dispensing of cementitious materials into the forms the apparatus **10** may be used to aid in the clean up of a form area by controlling the apparatus to move over the form area while flushing the area with water dispensed through header **157.** Similarly to prepare the form area for the acception of the cementitious materials, the form area may be subjected to like coating of oil that serves as a release

agent by dispensing the oil through header **148**. Similarly, a decorative coating may be applied to a finished wall section before it is removed from the supporting table structure by dispensing a suitable coating from header **147** while moving the apparatus **10** over the horizontally disposed wall section.

From the foregoing it is believed evident that the apparatus may be used in the mass production of cast wall sections in horizontal forms in that material savings in labor costs may be realized through use of the apparatus. The apparatus has the advantage that among other things it can store cementitious materials received at the job site until such times as they are needed to be dispensed without the need for tying up delivery vehicles. Furthermore, the apparatus **10** may be used to dispense the materials into the forms in an efficient manner and without the need for an excessive amount of other labor.

I claim:

1. The combination comprising an elongated trackway having spaced apart parallel rails, a plurality of open top horizontally arranged forms that are located in the space between said rails and spaced apart along the trackway for use in casting vertical wall sections from cementitious materials, and an apparatus for storing and dispensing said materials into said forms, said apparatus comprising a rigid body frame having a bottom portion and a top portion which is vertically spaced from said bottom portion, wheels rotatably mounted on said rails and supporting said body frame over the space therebetween, a rigid frame mounted on said body frame and vertically movable between the top and bottom portions thereof, a carriage supported on the vertically movable frame, said carriage being horizontally movable on said vertically movable frame and in parallel with said rails, a plurality of elongated bins arranged transversely of the trackway and mounted on and movable with said carriage, each of said bins having an open top portion for receiving cementitious material to be stored therein, an elongated transversely arranged narrow bottom opening for discharging the stored cementitious material into said forms, and a gate movable between open and closed positions with respect to the bottom opening of the bin, said apparatus further comprising manually controllable powered means secured to the body frame for vertically moving the vertically movable frame, manually controllable powered means secured to the vertically movable frame for horizontally moving said carriage on said vertically movable frame, and manually controllable powered means supported by and movable with the carriage for moving the gate between the open and closed positions therefor.

2. The combination in accord with claim **1** where said apparatus comprises an assembly supported by and movable with the carriage for use in floating concrete in said forms, said assembly comprising an elongated transversely arranged shoe receivable in the open tops of said forms, and powered means for vibrating said shoe.

3. The combination in accord with claim **2** where said apparatus comprises manually controllable powered means mounted on said carriage for vertically moving said assembly with respect to said carriage.

4. The combination in accord with claim **1** where said apparatus comprises means supported by the body frame and defining a compartment for a fluid, an elongated header supported by the body frame and connected to receive fluid from said compartment, said header being arranged transversely of the trackway and having nozzles for dispensing said fluid into the space between said rails.

5. The combination in accord with claim **4** where said header is mounted on and movable with said vertically movable frame.

6. The combination in accord with claim **1** where said apparatus comprises a hopper fixed to the top portion of said body frame above said bins and having an elongated transversely arranged narrow bottom opening for discharging cementitious materials into the open top portions of the bins mounted on said carriage.

7. The combination in accord with claim **1** where said apparatus comprises manually controllable powered means connected to one of said wheels for propelling said apparatus along said trackway.

8. The combination in accord with claim **1** comprising table means supporting said trackway, forms, and apparatus spacedly above ground level.

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