April 1, 1958 G. C. CORLEY 2,828,869

HOIST FOR BUILDING SECTIONS

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Fig. 1.

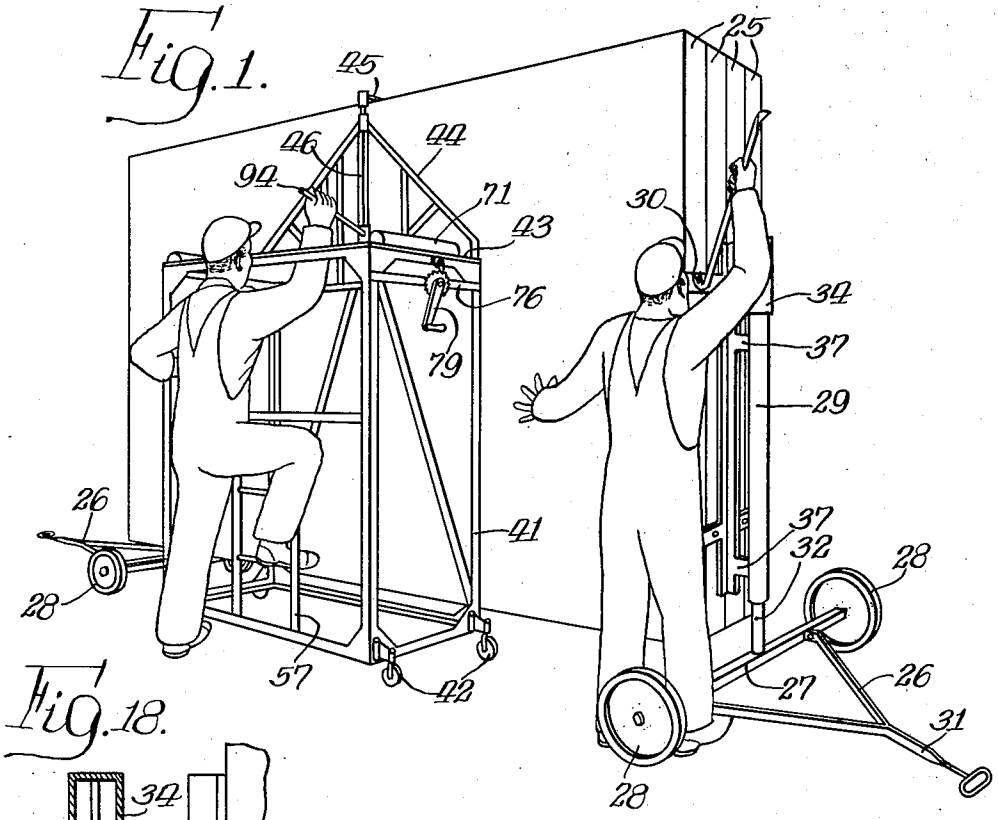


Fig. 18.

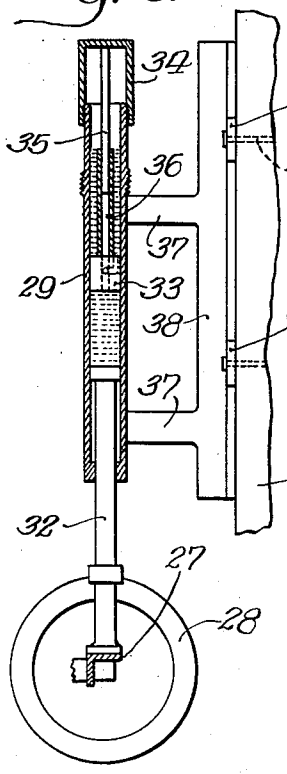
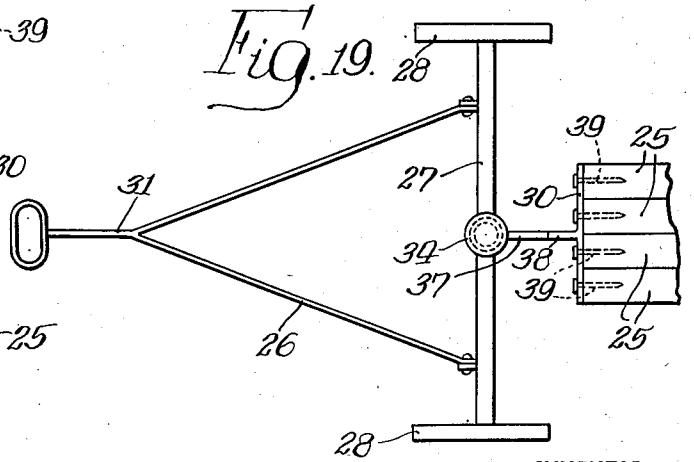


Fig. 19.



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HOIST FOR BUILDING SECTIONS

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Fig. 2.

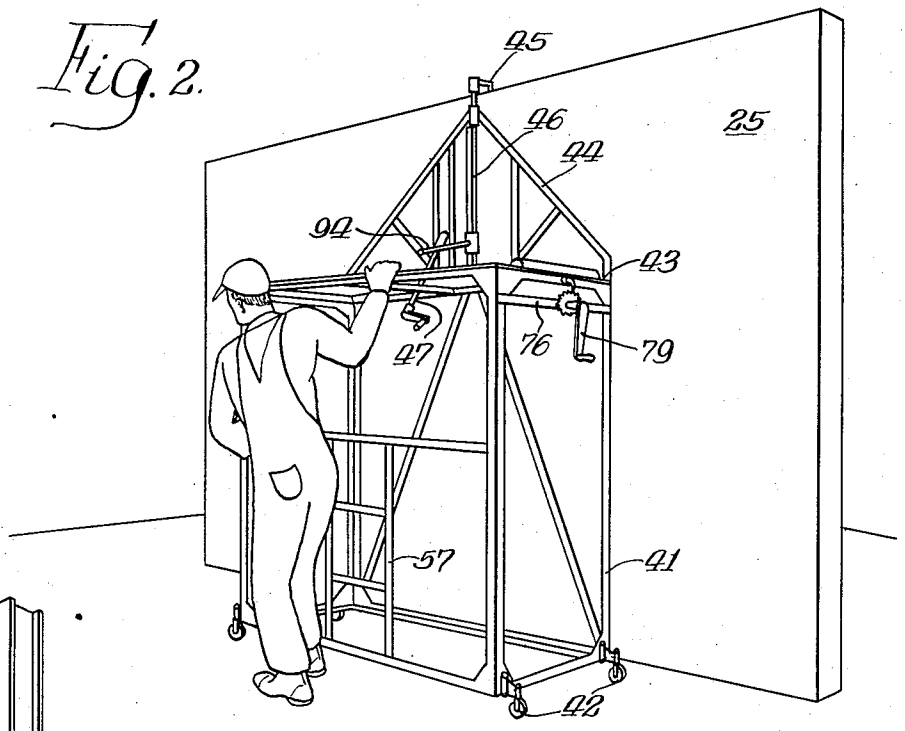
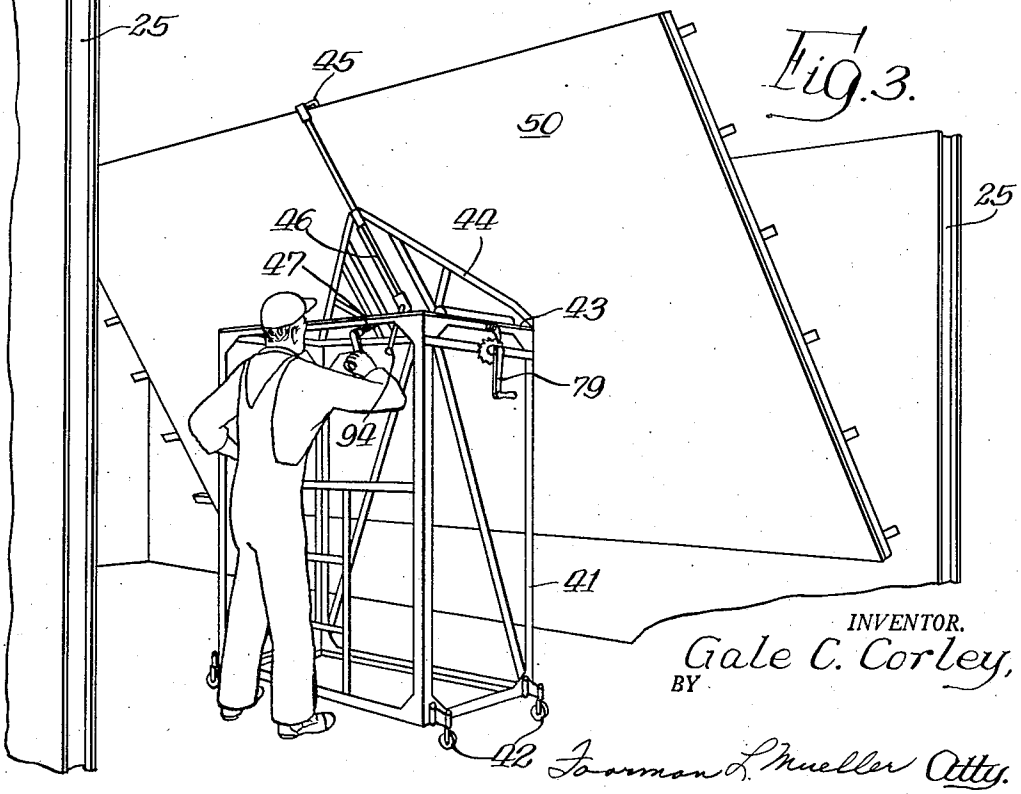


Fig. 3.



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HOIST FOR BUILDING SECTIONS

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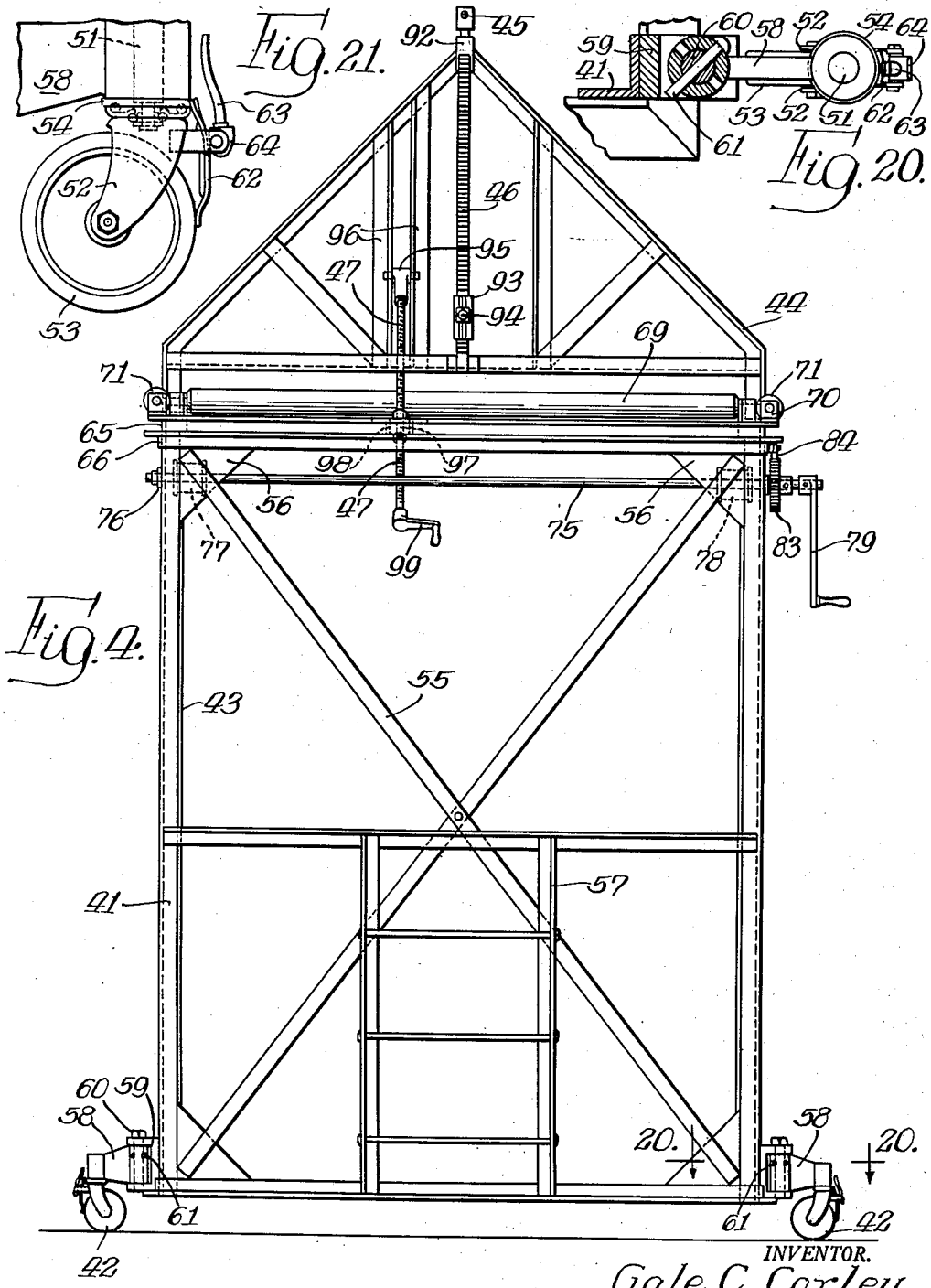


Fig. 21.

Fig. 20.

Fig. 4.

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HOIST FOR BUILDING SECTIONS

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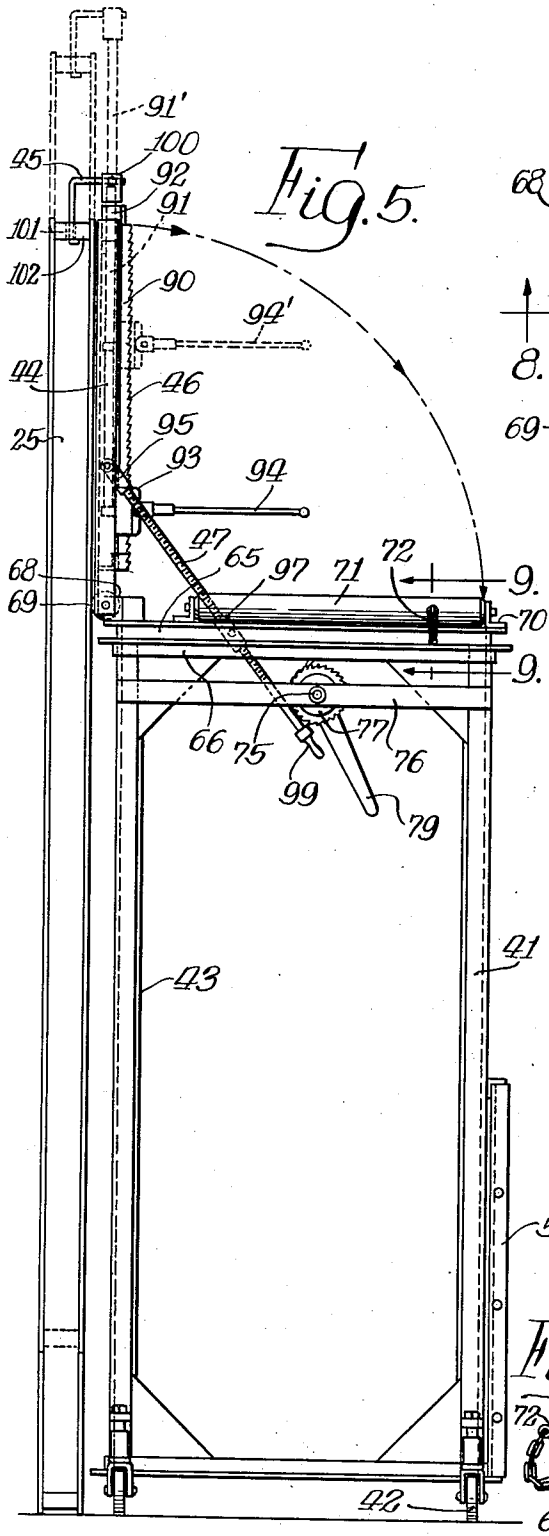


Fig. 5.

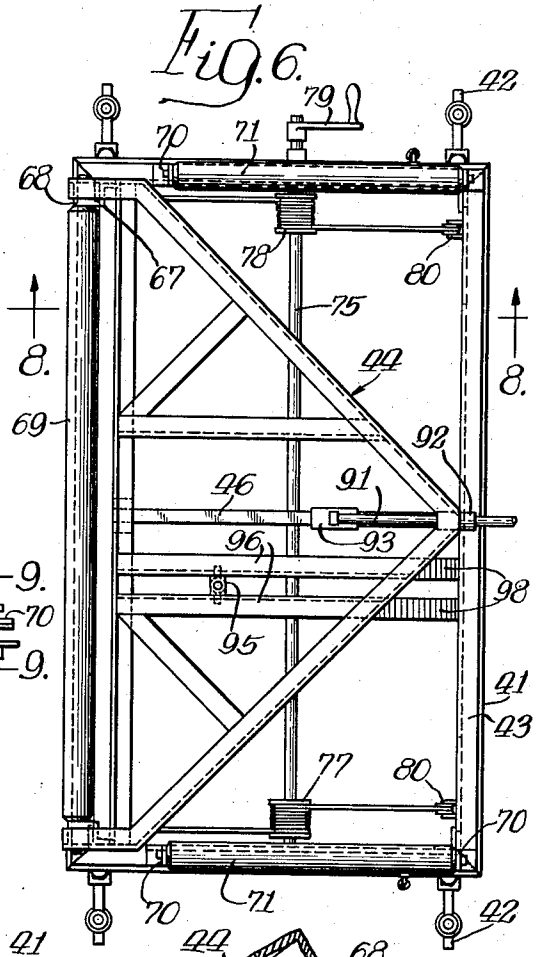


Fig. 6.

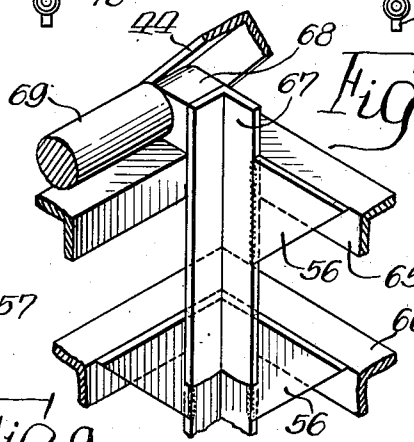


Fig. 7.

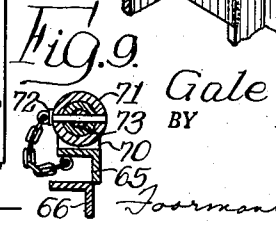


Fig. 9.

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HOIST FOR BUILDING SECTIONS

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Fig. 10.

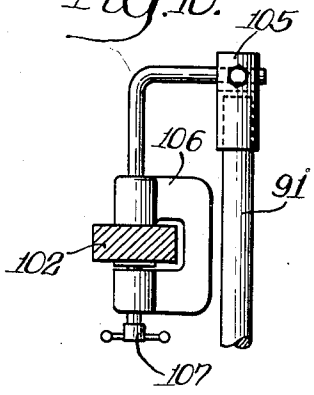


Fig. 11.

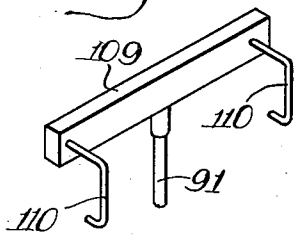


Fig. 12.

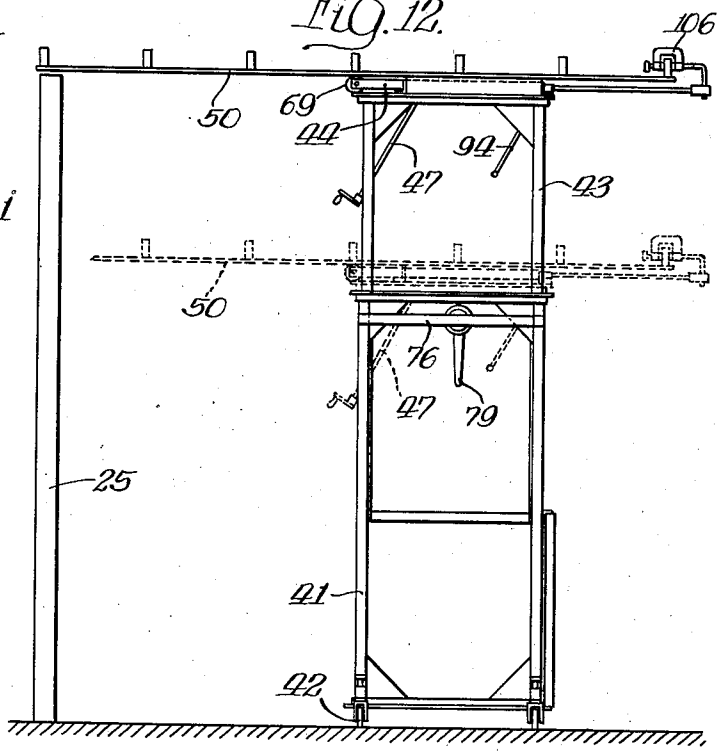
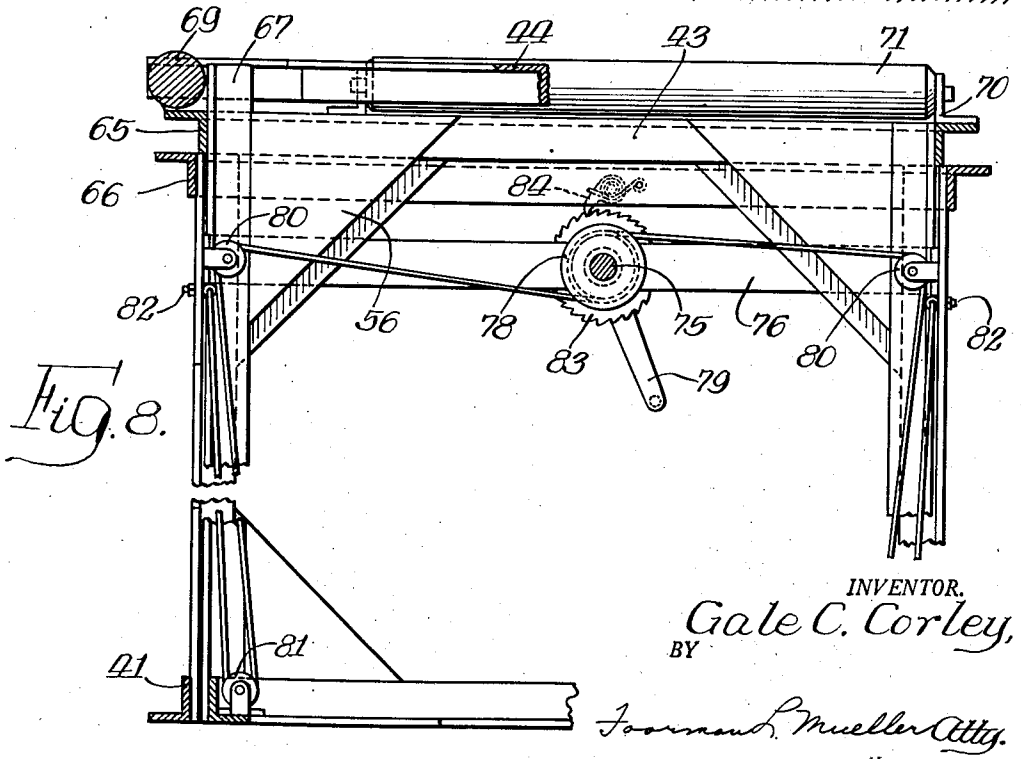


Fig. 8.



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HOIST FOR BUILDING SECTIONS

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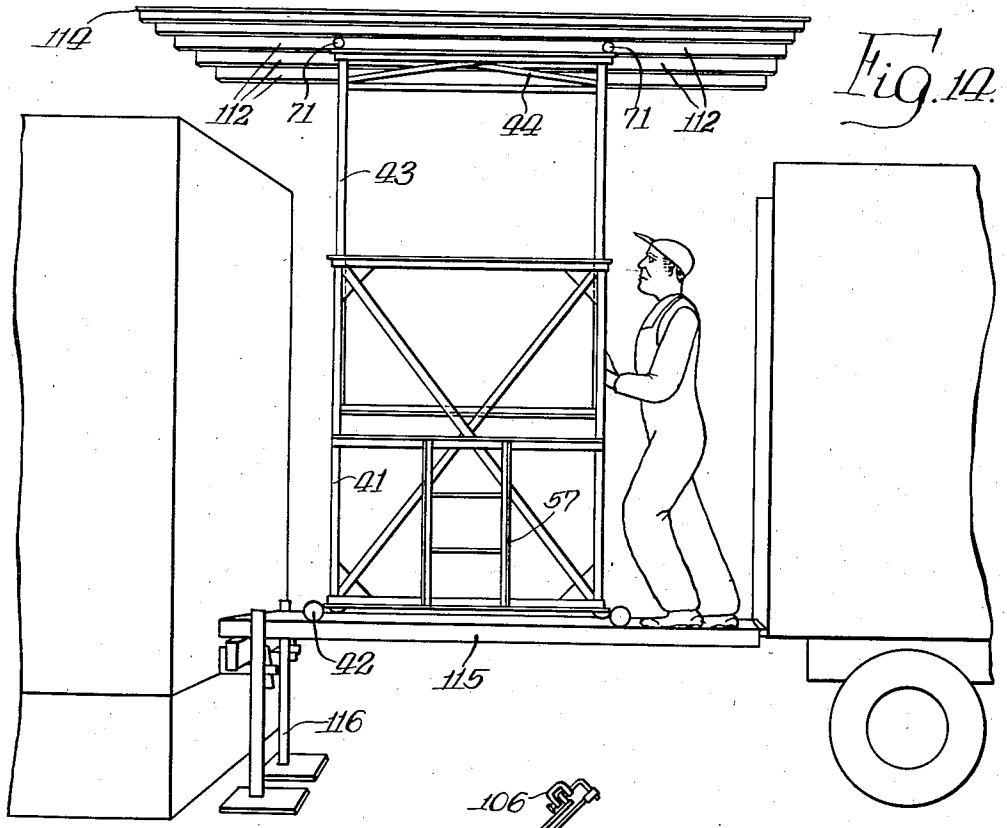


Fig. 14.

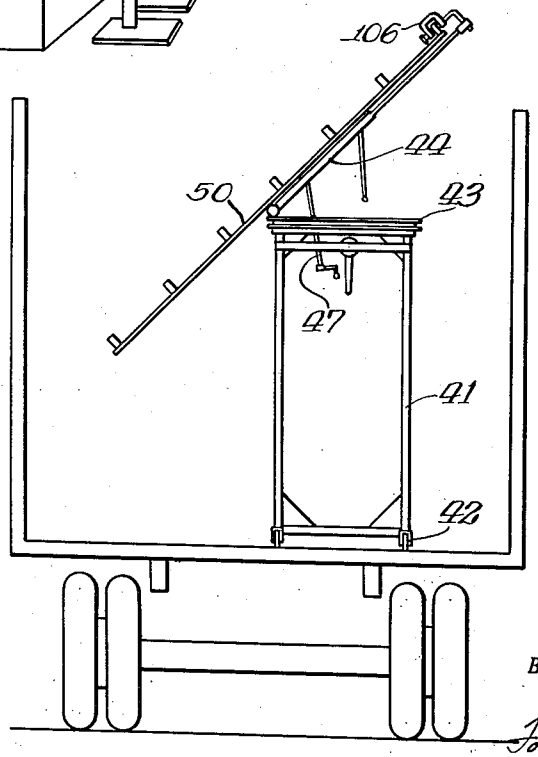


Fig. 13.

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HOIST FOR BUILDING SECTIONS

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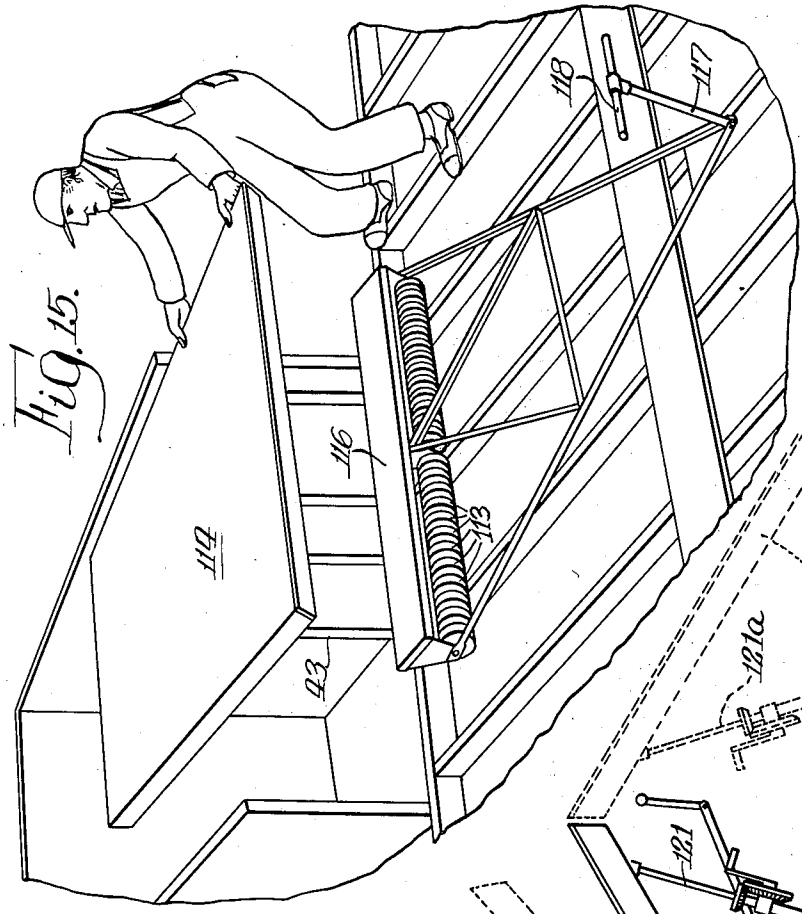


Fig. 15.

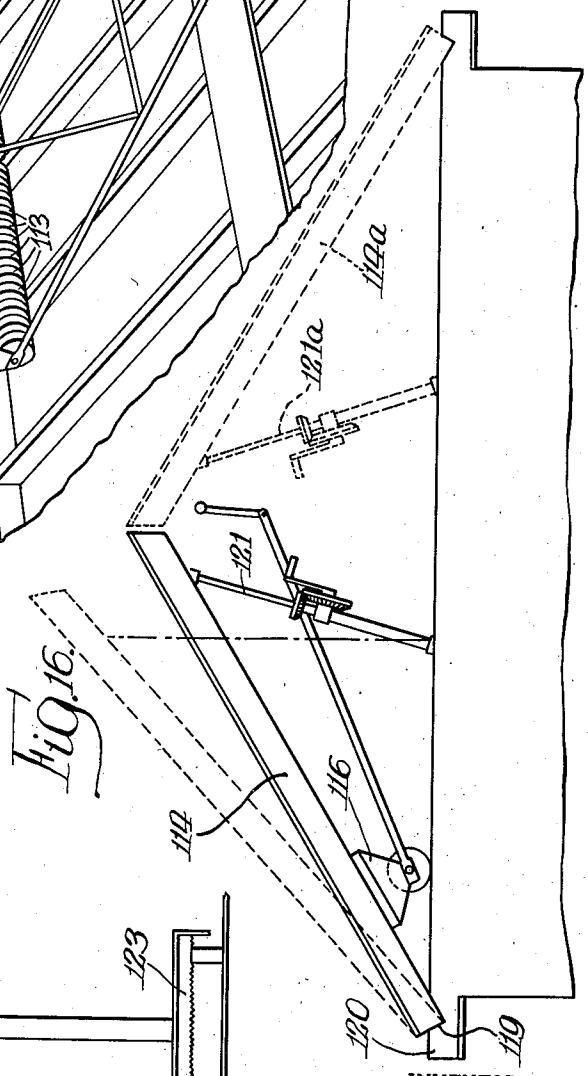


Fig. 16.

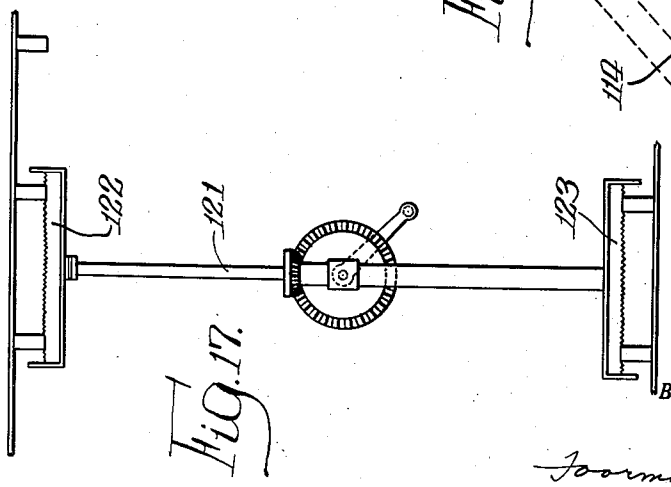


Fig. 17.

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Patented Apr. 1, 1958

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HOIST FOR BUILDING SECTIONS

Gale C. Corley, Valparaiso, Ind.

Application April 15, 1952, Serial No. 282,594

15 Claims. (Cl. 214—1)

This invention relates generally to the construction of prefabricated buildings, and more particularly to methods and apparatus for positioning prefabricated building panels to facilitate assembly thereof into a building.

In order to facilitate the construction of buildings and to reduce the time and cost of such construction, it has been proposed to use sections or panels which are first fabricated and then moved to the building location, with the sections being assembled at the location. In such construction the walls, ceiling, and roof may each be formed of prefabricated sections which are joined together on a foundation at the desired location. Such construction permits fabrication of the panels or sections in factories by mass production methods permitting the efficient utilization of labor and the use of more efficient equipment, to thereby reduce the cost of a panel and at the same time maintain high quality. It is desirable to keep the number of panels low, both in order to permit rapid assembly of the structure and also because this provides a better construction. Accordingly, the individual panels used may be as large as 8 to 10 feet wide and as much as 16 to 20 feet long. It will be apparent that the handling of such panels poses quite difficult problems.

It is, therefore, an object of the present invention to provide an improved construction for buildings formed of large prefabricated panels.

A further object of this invention is to provide a method of positioning large building panels used to construct the walls, ceiling and roof of a building which requires a minimum number of men and reduces the time required for the construction.

A further object of this invention is to provide improved apparatus for handling large prefabricated sections used for construction of a building, for moving the sections from a truck or other position of storage to the final position of the panels in the assembled building.

A still further object of this invention is to provide a hoisting truck for lifting the panels, tilting the same to various positions, raising the panels to the desired level in various positions, and generally positioning the panels in the desired positions in the building.

A feature of this invention is the provision of a building construction method whereby two men can move a plurality of panels at once from a truck or other storage position to the building site, move the panels singly to the precise positions in which they are to be used, and fix the panels in such positions. According to the method, all of the panels required for a complete building may be assembled by only two men, including the ceiling and roof panels.

A further feature of this invention is the provision of a hoisting truck for handling large prefabricated panels or sections, which truck lifts individual panels from a vertical position and moves the panels to various horizontal, vertical and angular positions without damaging the same. The hoist includes adjustable raising and tilting means, means for connection to the panels at a balance point thereon, and roller means for bearing against the panels to prevent damaging of the same.

Still another feature of the invention is the provision of apparatus for moving a roof panel over the ceiling of a building to the desired location and adjusting the position of the panel thereon as desired.

Further objects and features and the attending advantages of the invention will be apparent from a consideration of the following description when taken in connection with the accompanying drawings in which:

Fig. 1 is a perspective view illustrating the use of carts for moving a plurality of panels and the tilting hoist truck for positioning individual panels;

Fig. 2 illustrates the tilting hoist truck holding a single panel;

Fig. 3 shows the tilting hoist truck holding a panel in tilted position;

Fig. 4 is an elevation view showing the construction of the tilting hoist truck;

Fig. 5 is an end view of the tilting hoist truck;

Fig. 6 is a top view of the tilting hoist truck;

Fig. 7 is a fragmentary detail view of the hoist truck;

Fig. 8 illustrates the details of the hoisting device;

Fig. 9 is a cross sectional view along the lines **9—9** of Fig. 5;

Figs. 10 and 11 illustrate hanger structures for securing panels to the hoist;

Fig. 12 illustrates the hoist truck with the tilting portion in two vertical positions;

Fig. 13 illustrates the hoist truck as used for removing panels from a delivery truck;

Fig. 14 illustrates the handling of roof panels by the hoist truck;

Fig. 15 further illustrates the handling of roof panels;

Figs. 16 and 17 illustrate the raising of roof panels to a desired position;

Figs. 18 and 19 illustrate the detail construction of the panel carts shown in Fig. 1; and

Figs. 20 and 21 illustrate in detail the construction and mounting of the casters of the hoist.

In practicing the invention there is provided an improved construction of buildings formed of large prefabricated sections or panels. These sections or panels may be hauled from a factory to the building location in a large delivery truck. The panels may then be removed from the truck and installed in place and assembled together by only two men working for a relatively short period of time. Hoisting carts are provided which may be secured to the ends of a plurality of sections for moving the sections as a group from the truck to the foundation for the building, or any other suitable position at the building location. Individual panels may then be moved to their precise position in the assembled building by a tilting hoist truck. This truck lifts the panel at a balance point, and may move the same to the desired horizontal position and then lower the panel to the precise location where it is to be used. This hoist truck holds the panel in position while it is anchored, either to brace supports or to other panels, to provide the complete building assembly. The hoist truck operates to move a panel in a vertical position or to tilt the same as various angles or to a horizontal position, and may raise or lower the panel when in a horizontal position to facilitate positioning of ceiling panels or the like.

Various fixtures may be provided for the hoist truck for attachment to panels of different constructions. The hoist includes rollers for engaging the panels in various positions so that the panels are not damaged in any way in the lifting and moving operation. The construction in accordance with the invention also permits easy positioning and assembly of the roof panels of the building after the ceiling panels are supported in place. The tilting hoist may be used to transfer the panels from a vertical to a horizontal position and to raise the same to a level above the ceiling. The panels can then be pulled

off the hoist by means of the rollers thereon onto a roller cart on the ceiling. The roller cart can be used to move the panels to the desired position on the ceiling, and the panels can then be set at the desired angle by means of jacks which cooperate with the roller cart for positioning the roof panels above the ceiling.

Referring now to the drawings, in Fig. 1 there is illustrated a plurality of prefabricated panels or sections **25** which are supported on carts **26** at either end thereof. These carts have horizontal axles **27** supported by wheels **28**, and vertical members **29** with crossbars **30** supported thereon. The panels **25** are secured to the carts by connection of the ends thereof to the crossbars **30**. Handles **31** are provided to facilitate moving the carts with the panels supported thereon. The vertical shaft **29** includes a jack arrangement for raising and lowering the same so that the panels may be picked up from a supporting surface such as the floor of a delivery truck, and moved by the carts as required to the location at which the panels are to be assembled.

In Figs. 18 and 19 the details of one embodiment of a panel cart are illustrated. The jack illustrated is of the hydraulic type, with the vertical member **29** being in the form of a hollow cylinder having a plunger **32** moving vertically therein. The plunger **32** is anchored to the horizontal axle **27** of the cart. Some liquid material is provided in the cylinder **29** and is pumped into the space between the top of the plunger **32** and the valve structure **33** fixed to the cylinder to raise the tubular member **29** with respect to the plunger **32**. The liquid material is pumped by reciprocal up and down action of the cap **34** which has secured thereto a piston **35** operating in a cylinder **36** secured to the valve structure. Movement of the piston **35** in the cylinder **36** is effective to pump the liquid from the space above the fixed valve structure **33** into the space below the fixed valve structure **33** and thereby raise the jack. The valve structure **33** also permits the liquid to flow back above the valve structure when the cap **34** is pushed all the way down. As clearly shown in Fig. 19, the crossbars **30** are secured to the vertical member **29** by arms **37** and **38** and may be attached to the panels **25** by nails **39** or other suitable means. The hydraulic structure illustrated is in itself known and commercially available and is merely shown as illustrative of jack structures which are suitable for this purpose.

After the panels are moved adjacent the assembly location, which may be a foundation previously prepared, they are individually moved by the hoist truck **40**. The hoist truck includes a rectangular base structure **41** which may be formed of angle iron, with casters **42** supporting the same from a horizontal surface and permitting horizontal movement of the truck. The truck includes an inner frame **43** (best shown in Figs. 8 and 12) which telescopes vertically within the base structure and which supports at the top thereof the tilting frame **44**.

The tilting frame **44** includes a jack **46** having a fixture **45** at the top thereof adapted to be secured to a building panel at a balance point thereof. Various different fixtures for this purpose are illustrated in Figs. 5, 10 and 11. The jack **46** is effective to raise and lower the fixture to permit attachment thereof to the panel and to raise the panel for moving the same. Fig. 2 illustrates the use of a hoist for moving a panel, and it will be apparent that the panel can be moved to various positions on the foundation by the hoist and supported thereby while the panel is being anchored in position.

For positioning ceiling panels it is necessary to first turn the panel from a vertical to a horizontal position. This is achieved by the tilting frame **44**. The jack **46** of the tilting frame will lift the panel to a position so that the central portion of the panel (vertically) is adjacent the top edge of the inner frame, at which point a roller **69** is provided which bears against the panel (Figs. 5 and 13). The panel may therefore be tilted back to a horizontal position and can then be raised by upward movement of the inner frame to a position above the side walls of the building. This is illustrated by Figs. 3 and 12, with the panel **50** being shown in a tilted position in Fig. 3 and in horizontal positions in Fig. 12. Fig. 12 shows the panel in the lowest position in which the inner frame is at its lowest point, and in an elevated position wherein the ceiling panel **50** is above the edge of the wall panel **25**. For controlling the tilted position of the frame **44**, a screw **47** is provided.

For a more detailed consideration of the tilting hoist structure, reference is made to Figs. 4 to 12 inclusive. As previously stated, the base structure **41** is of a rectangular configuration and includes frame members which may be angle iron or the like. Crossframes **55** and corner plates **56** may be provided for strengthening the frame. On the back side a ladder portion **57** is provided which permits the operator to climb up on the hoist for operating the jack **46** as will be explained more in detail.

As previously stated, the hoist is supported by casters **42**. These casters may be provided on arms **58** pivotally secured to brackets **59** secured to the main frame members of the base **41**. By using such pivoted arms having a substantial extent, a wider supporting base may be provided for the truck to render the same more stable when handling a large panel or section. The supporting pin **60** secured to the bracket **59** may be fixed, and holes may be drilled through the arm **58** and pin **60** so that the arm **58** may be anchored in various desired positions by the pin **61**. This is best shown in Fig. 20. This arrangement permits pivoting the arms **58** to positions such that the overall width or length of the hoist is kept to a minimum. This facilitates storing of the hoist or moving it through doorways or the like. The casters may include locking provisions so that rolling thereof is prevented when it is desired to hold the base steady in a fixed position.

The detail construction of the casters is illustrated in Figs. 20 and 21. The casters include vertical shanks **51** adapted to be secured in vertically extending openings in the arm **58**. Secured to the shank **51** is an annular bearing plate **54**. Pivotally mounted to the shank **51** and bearing plate **54** are U-shaped brackets **52** which support the wheels proper **53** of the casters. Ball bearings may be used to provide free movement of the bracket **52** with respect to the bearing plate **54** which may be rigidly secured in the arm **58** through the shank **51**. In order to prevent rotation of the bracket **52** with respect to the bearing plate **54**, and also to prevent rotation of the wheel **53**, so that the hoist will be firmly held in a stationary position, a locking shoe **62** may be provided. This shoe has a top end bearing against the plate **54** and a bottom end bearing against the outer surface of the wheel **53**. The locking shoe **62** may be caused to firmly engage the plate **54** and the wheel **53** by operation of an arm **63** having a cam surface **64** thereon which bears against the locking shoe **62** to hold the same firmly against the plate **54** and the wheel **53**. It is to be pointed out that the caster structure illustrated in Figs. 20 and 21 is a commercially available structure and is used merely to illustrate one form of caster structure which is suitable for use in the hoist in accordance with the invention.

As previously stated, an inner frame structure **43** is provided which telescopes vertically within the outer frame or base **41**. This inner frame may also be formed of angle irons and may include a top rim **65** which extends above the rim **66** of the base structure. The inner frame may also include reenforcing corner plates **56** to render the same more rigid. The vertical members **67** of the inner frame at the back side thereof extend slightly above the top rim **65**, and secured to these projecting portions and the rim **65** are mounting portions **68**. These portions support the roller **69** and also the tilting frame **44**. Mounting brackets **70** are provided along the sides of the top rim **66** for supporting side rollers **71**. These side rollers **71** are mounted slightly higher than the roller

69, so that a panel supported horizontally on the hoist truck may be easily pulled off horizontally by action of the rollers. Locking means may be provided for the rollers to provide a more steady support for a panel thereon, when this is desired. Such locking means may be provided, for example, by a pin **72** adapted to be inserted in openings in the rollers **71** and the supporting shaft **73** therefor as indicated in Fig. 9.

Considering now the arrangements for lifting the inner frame **43** within the base or outer frame **41**, reference is made to Figs. 5, 6 and 8. A shaft **75** extending across the truck is mounted in bearings on the side frames **76** of the main support **41**. The shaft **75** carries drums **77** and **78** at the ends thereof and a crank **79** which extends outside the base frame, as clearly shown in Fig. 4. Cables are secured to and wound around the drums **77** and **78** and extend over pulleys **80** secured to the base structure, and continue around pulleys **81** at the bottom of the inner frame and are anchored to the base structure at **82** just below the pulleys **80**. It is therefore seen that as the cable is wound up on the drums **77** and **78**, the pulleys **81** will be lifted and thereby lift the inner frame. A toothed wheel **83** is provided on the shaft **75** as clearly shown in Fig. 8 and a detent finger **84** bears against the wheel to hold the shaft in fixed position so that the inner frame can be held in any desired position. The finger **84** may be moved out of the way to prevent lowering of the inner frame when this is desirable. The position of the pulleys **80** and **81** are such that at the topmost position the pulleys **81** engage pulleys **80**, and the inner frame is held firmly to the base structure and cannot tip over.

It is to be pointed out that various other means may be provided for operating the inner frame. It may be desirable to provide positive action for lowering the inner frame, as well as for raising it.

As previously stated, the tilting frame **44** includes a jack **46** so that the fixture secured to the top of the frame may be raised or lowered as desired. This jack may be of the type generally used for lifting automobile bumpers, for changing wheels or the like, and includes a rack **90** rigidly secured to the frame **44** and a shaft **91** movable with respect to the rack. The shaft **91** extends through sleeve **92** at the top of the tilting frame and is secured at the bottom to the jackslide **93** which operates on the rack **90**. The jackslide **93** includes a handle **94** for moving the same with respect to the rack **90**. This handle extends toward the front side of the truck so that the operator can reach the same. As the handle **94** moves upwardly with the jackslide, it may be necessary for the operator to move up the ladder **57** in order to operate the handle **94**. An elevated position of the handle **94** and of the shaft **91** is shown in dotted lines, with the handle and shaft being designated **94'** and **91'** respectively.

The tilting frame **44** is pivotally supported on the mounting portions **68** of the inner frame **43**. The position of the frame is controlled by the screw **47**. This screw is rotatably connected to a sleeve **95** which is pivotally supported by the frame **44**, being pivoted to the brace members **96** thereof. The screw is threaded in a sleeve **97** which is pivotally supported by brace members **98** (Fig. 6) of the inner frame **43**. A crank **99** is provided on the end of the screw **47** so that the position of the tilting member can be easily adjusted.

The fixture **45** at the top of the jack on the tilting frame may be of various different configurations for different applications. As shown in Figs. 1 to 5 this is a simple finger projecting outwardly from a cap **100** positioned on the end of the shaft **91** of the jack. The finger extends backwardly and downwardly and has a hook on the end so that it may be positioned in an opening **101** in a crosspiece **102** of the panel being held thereby. This opening **101** is positioned at a balance point so that the panel may be lifted uniformly by the hoist and jack.

In Figs. 10 and 11 other forms of fixtures are shown, with the fixture of Fig. 10 being suitable for use on a ceiling panel or roof panel having frame members projecting from one side thereof. In a wooden construction these frame members might be two-by-fours which render the panel strong and rigid. Figs. 3, 12 and 13 illustrate the use of a fixture such as shown in Fig. 10. This fixture has a cap **105** similar to the cap **100** of Fig. 5, which is adapted to fit on the top of the rod **91**. A rod extends backwardly from the cap **91** and downwardly to a bracket **106**. A clampscrew **107** is provided for fastening the bracket rigidly to a portion of the panel.

The structure of Fig. 11 is generally similar to the structure of Fig. 5 except that a cross piece **109** is provided having a pair of fingers **110** at each end thereof. This construction would provide a more steady support for a long panel, and would not be as critical as to the position of attachment as a single finger which must be secured very accurately at the balance point.

As previously stated, the tilting hoist truck is used for positioning wall panels, ceiling panels and roof panels. It is believed that from the foregoing description of the hoist itself, and from a consideration of Fig. 2 it will be clear how the hoist is used for wall panels, to set the same in the desired positions and hold the panels while they are anchored. When handling roof panels, these panels may be lifted in the manner indicated in Fig. 5 until the roller **69** is substantially at the midpoint vertically of the panel. Then the panel is tilted over by action of the frame **44** and roller **69** to a horizontal position as illustrated in Figs. 3 and 12. The panel may then be raised to a level above the side walls **25** as shown in solid lines in Fig. 12, and moved to the desired horizontal position. The panel may then be lowered to rest on the side walls **25**, with the hoist being further lowered and removed out of way. It is therefore seen that the hoist will position ceiling panels in the final desired position.

For positioning roof panels, an arrangement may be used as illustrated in Figs. 14 and 15. It is necessary to provide a platform adjacent the outside of the building, and this may be accomplished by the use of a bottom-hinged delivery truck door as indicated at **115**. This door is supported adjacent the building by jacks **116**, which may be of standard construction. The panels are picked up by the hoist, tilted over and elevated to a vertical position above the walls and ceiling of the building. The hoist truck then is moved to the edge of the building so that the panel extends above and partly over the ceiling. It is noted that the panel is positioned with the brace members **112** (two-by-fours) extending downward since the top surface of the roof must be weatherproof and will usually be substantially flat. These brace members are supported on the rollers **71** on the ends of the hoist so that the panel may be easily rolled off of the hoist. This is illustrated in Fig. 15 wherein the panel **114** is shown being pulled forward onto a roller cart **116** which is supported on the ceiling of the building.

Since the top surface of the ceiling is not a flat surface but has brace members extending upwardly therefrom, it is necessary that the cart **116** include a large number of rollers **113** which form a substantially continuous bearing surface. In order to increase the maneuverability of the cart, it is preferable to have a large number of separate rollers rather than one long roller, and it may be desired to provide a large number of rollers such as skate rollers which are commercially available. The panel **114** will be pulled forward on the end rollers **71** of the hoist until it extends adjacent the handle **117** of the roller cart. This handle may have a pivoted top member **118** which can be turned to prevent the panels from tipping backward off the cart. When a panel is positioned on the cart, it may be moved over the top surface of the ceiling to the desired position.

As illustrated in Fig. 16, the cart may move the roof panel **114** to a position wherein the edge sets in a groove **119** in the projecting edges **120** of the ceiling. The other end of the roof panel may be supported by a jack **121** which may lift the roof panel **114** to a position wherein the cart **116** may be pulled out of the way. The panel **114** may be lowered to a position in engagement with a corresponding roof panel **114***a* on the other side of the building. This second roof panel may be supported by a second jack **121***a* so that the two panels may be properly positioned and adjusted for anchoring together in a fixed position. It is to be pointed out that the construction in accordance with the invention is not limited to the particular structural embodiments shown.

In Fig. 17 the jack **121** is shown more in detail. The two ends of the jack include cross pieces **122** and **123** respectively which are wide enough to span a pair of frame members on the roof panel and on the ceiling panel respectively. These sections have teeth formed thereon so that they will remain in the desired position and will not slide with respect to the roof and ceiling panels. The jack shown has a crank and screw type of drive, but it is obvious that various other types of drives may be used.

The Fig. 13 illustrates a feature of the hoist which facilitates handling of ceiling and roof panels thereby. In many instances there is not sufficient room on the delivery truck in which the panels are transported to permit the panel to be picked up by the hoist in the delivery truck and tilted directly to a horizontal position. In such case the panel may be tilted partially and then raised above the edges of the truck (or other projection), and after the edges are cleared, the panel can then be laid down horizontally and further moved as desired.

It has been found that by using the construction described it is possible to erect an average size home of six rooms or so by two men in a single day. Previously a larger number of men was required, because the panels were so large and heavy that two men could not handle the same. Further, a greater number of total man hours was required since the handling was so much more difficult. Still further, the disclosed construction results in complete elimination of any lifting operations by the men themselves so that their work is made much easier.

The improved construction obviously reduces the cost of the completed building because of the reduction in labor. It also results in other advantages which facilitate the use of prefabricated constructions. As an example, two men can go to a job with a truck containing the various building panels required. These two men can without other help completely assemble the house in one day and then return, ready to set up another house the next day. Thus full advantage can be taken of the skill of men who have been trained to set up the prefabricated buildings.

Although certain embodiments of the invention have been illustrated, it is obvious that various changes and modifications can be made therein within the intended scope of the invention. The means for raising the inner frame, tilting the same, and raising the jack have all been illustrated as manually operable means. It is obvious, however, that the operation of the hoist can be made easier by the use of mechanical driving means such as hydraulic means, pneumatic means, or electrical means. For example, pneumatic means might be used with a tank of compressed air provided on a suitable platform on the hoist. Alternatively, hydraulic means could be used with a pump provided on the hoist operated by a battery driven electric motor. Further, it would be entirely practical to use electric motors operated by storage batteries to directly operate the hoist structure.

It is therefore intended to cover all such modifications of the structure, within the scope of the appended claims.

I claim:

1. A hoist for handling large flat prefabricated building sections including in combination, a base structure, caster means for supporting said base structure, a rigid frame structure telescopingly positioned with respect to said base structure, means for moving said frame structure vertically with respect to said base structure, a swinging frame pivotally secured to said frame structure on a horizontal axis and extending above said frame structure, said swinging frame being mounted for movement from a horizontal to a vertical position, a jack included on said swinging frame and extending from the portion of said swinging frame adapted to be pivoted to an upward position, means on said jack adapted to be attached to a building section, and roller means along the lowermost edge of said swinging frame and cooperating with said swinging frame for tilting a building section supported on the hoist.

2. A hoist for handling large flat prefabricated building sections including in combination, a base structure, caster means for supporting said base structure, a frame structure telescopingly positioned with respect to said base structure, means for moving said frame structure vertically with respect to said base structure, a swinging frame pivotally secured to said frame structure on a horizontal axis and extending above said frame structure, said swinging frame being mounted for movement from a horizontal to a vertical position, a jack included on said tilting frame and extending from the portion thereof which is at the top when said swinging frame is in a vertical position, means on said jack adapted to be attached to a building section, and roller means mounted along the edge of said swinging frame which is lowest when said swinging frame is in vertical position and on a horizontal axis substantially parallel with the horizontal pivotal axis of said swinging frame, said tilting frame and said roller means cooperating to tilt a building section supported on the hoist.

3. A hoist for handling large flat prefabricated building sections including in combination, a rectangular base structure, caster means for supporting said base structure, a frame structure telescopingly positioned with respect to said base structure, means for moving said frame structure vertically with respect to said base structure, a tilting frame pivotally secured to said frame structure along one horizontal edge thereof and extending above said frame structure, means on said tilting frame adapted to be attached to a building section, first roller means on said frame structure along said horizontal edge cooperating with said tilting frame for tilting a building section supported on the hoist, and second roller means extending horizontally along the ends of said frame structure and substantially at right angles to said first roller means, said second roller means extending slightly above said first roller means and facilitating movement of a building section from the top of the hoist.

4. A hoist for handling large flat prefabricated building sections including in combination, a rectangular base structure, a tilting frame pivotally secured to said base structure along one horizontal edge thereof and extending thereabove, means on said tilting frame adapted to be attached to a building section, first roller means on said frame structure along said horizontal edge cooperating with said tilting frame for tilting a building section from a vertical position to a horizontal position on the top of the hoist, and second roller means extending horizontally along the ends of said frame structure and substantially at right angles to said first roller means, said second roller means extending slightly above said first roller means and thereby supporting a panel positioned horizontally on the hoist, and facilitating movement of a building section from the top of the hoist.

5. A hoist for handling large flat prefabricated building sections including in combination, a rectangular base structure, caster means for supporting said base structure, a frame structure telescopingly positioned with respect to

said base structure, means for moving said frame structure vertically with respect to said base structure, a tilting frame pivotally secured to said frame structure along one horizontal edge thereof and extending above said frame structure, means on said tilting frame adapted to be attached to a building section, first roller means on said frame structure along said horizontal edge cooperating with said tilting frame for tilting a building section supported on the hoist, second roller means extending horizontally along the ends of said frame structure and substantially at right angles to said first roller means, said second roller means extending slightly above said first roller means and facilitating movement of a building section across the top of the hoist, and means for preventing rotation of said second roller means.

6. A hoist for handling large flat prefabricated building sections including in combination, an outer base structure, an inner frame structure telescopingly positioned with respect to said outer base structure, means for moving said inner frame structure vertically on said base structure, a tilting frame pivotally secured to said frame structure and extending above said frame structure, said tilting frame being mounted for movement from a substantially horizontal position to a substantially vertical position, and jack means on said tilting frame and extending from the portion of said tilting frame which is at the top when said tilting frame is in a vertical position, said jack means including a portion adapted to be attached to a building section.

7. A hoist for handling large flat prefabricated building sections including in combination a rectangular base structure, a plurality of casters supporting said base structure, a plurality of arms pivotally connected to said base structure and extending outwardly therefrom and individually connected to said casters for providing a broader support base for said base structure, means for fixing the angular position of said arms with respect to said base structure, a frame pivotally secured to said base structure along a horizontal axis and extending above said base structure, and jack means on said frame including a portion adapted to be attached to a building section, said frame being mounted for movement from a horizontal to a vertical position and said portion of said jack means extending from the portion of said frame which is at the top thereof when said frame is in the vertical position, whereby said frame and jack means is adapted to move a large building section from a horizontal to a vertical position.

8. A hoist for handling large flat building sections including in combination, a base structure, caster means secured to said base structure to permit movement thereof over a horizontal surface, rigid telescopic means secured to said base structure and having a portion movable vertically with respect thereto, a swinging frame pivotally secured to said movable portion of said telescopic means along a horizontal axis, said swinging frame being movable from a substantially horizontal position to a substantially vertical position, a jack secured to said swinging frame having an adjustable portion extending from the portion of said swinging frame which is uppermost as said frame is moved to the vertical position and adapted to support a building section therefrom, and roller means positioned along the lowermost edge of said swinging frame to engage the building section supported on said jack for tilting the building section in response to pivotal movement of said swinging frame.

9. A hoist for handling large flat prefabricated building sections including in combination, a base structure, said base structure including caster means for permitting movement thereof over a horizontal surface, said base structure including rigid telescopic means having a portion movable vertically, a swinging frame pivotally secured to said movable portion of said telescopic means along a horizontal axis, a jack secured to said swinging frame having a portion movable in a plane perpendicular to said axis, said movable portion of said jack including means extending above said swinging frame for supporting a building section therefrom, and roller means positioned along the lower edge of said swinging frame to be engaged by the building section supported on said jack so that the building section tilts thereabout in response to pivotal movement of said swinging frame.

10. A hoist for handling large flat prefabricated building sections including in combination, a base structure, said base structure including caster means for permitting movement thereof over a horizontal surface, said base structure including telescopic means having a portion movable vertically, a swinging frame pivotally secured to said movable portion of said telescopic means along a horizontal axis, said swinging frame being movable from a substantially horizontal position to a substantially vertical position, and jack means secured to said swinging frame having a portion adjustable in a plane perpendicular to said axis, said adjustable portion of said jack means extending from the portion of said swinging frame which is uppermost when said frame is in the vertical position and including means for supporting a building section therefrom.

11. A hoist in accordance with claim 10 wherein said adjustable portion of said jack means includes a finger for engaging the building section at the balance point thereon.

12. A hoist in accordance with claim 10 wherein said adjustable portion of said jack means includes clamp means for engaging the building section.

13. A hoist in accordance with claim 10 wherein said adjustable portion of said jack means includes a plurality of fingers for engaging the building section at a plurality of spaced points thereon.

14. A hoist for handling large flat building sections including in combination, a base structure, caster means secured to said base structure to permit movement thereof over a horizontal surface, rigid telescopic means secured to said base structure and having a portion movable vertically with respect thereto, a swinging frame pivotally secured to said movable portion of said telescopic means along a horizontal axis, said swinging frame being movable about said axis from a substantially vertical position to a substantially horizontal position, jack means secured to said swinging frame having an adjustable supporting portion extending from the portion of said swinging frame which is uppermost as said frame is moved to the vertical position, said supporting portion being adapted to support a building section therefrom, and roller means positioned along the lowermost edge of said swinging frame to engage a building section supported on said supporting portion as said swinging frame is pivoted from a vertical position toward said horizontal position.

15. A hoist for handling large flat building sections including in combination a base structure including caster means for providing movement of the hoist over a horizontal surface, said base structure including vertically extending telescopic means having a movable supporting portion, said telescopic means including means for moving said supporting portion vertically, a swinging frame pivotally secured to said supporting portion along a horizontal axis, said swinging frame being movable from a substantially vertical position to a substantial horizontal position, jack means secured to said swinging frame having an adjustable portion extending from the portion of said swinging frame which is uppermost when said swinging frame is in the vertical position, said adjustable portion including means for connection to a building section, and means forming a bearing surface on said swinging frame adjacent the part thereof which is lowermost when said swinging frame is in the vertical position, said swinging frame being operable to tilt a building section connected to said adjustable portion with said bearing surface engaging the section.

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