Dec. 15, 1953 A. P. LE VAY 2,662,565

TABLE FOR CONSTRUCTING BUILDING FRAMES

Filed May 25, 1953 3 Sheets-Sheet 1

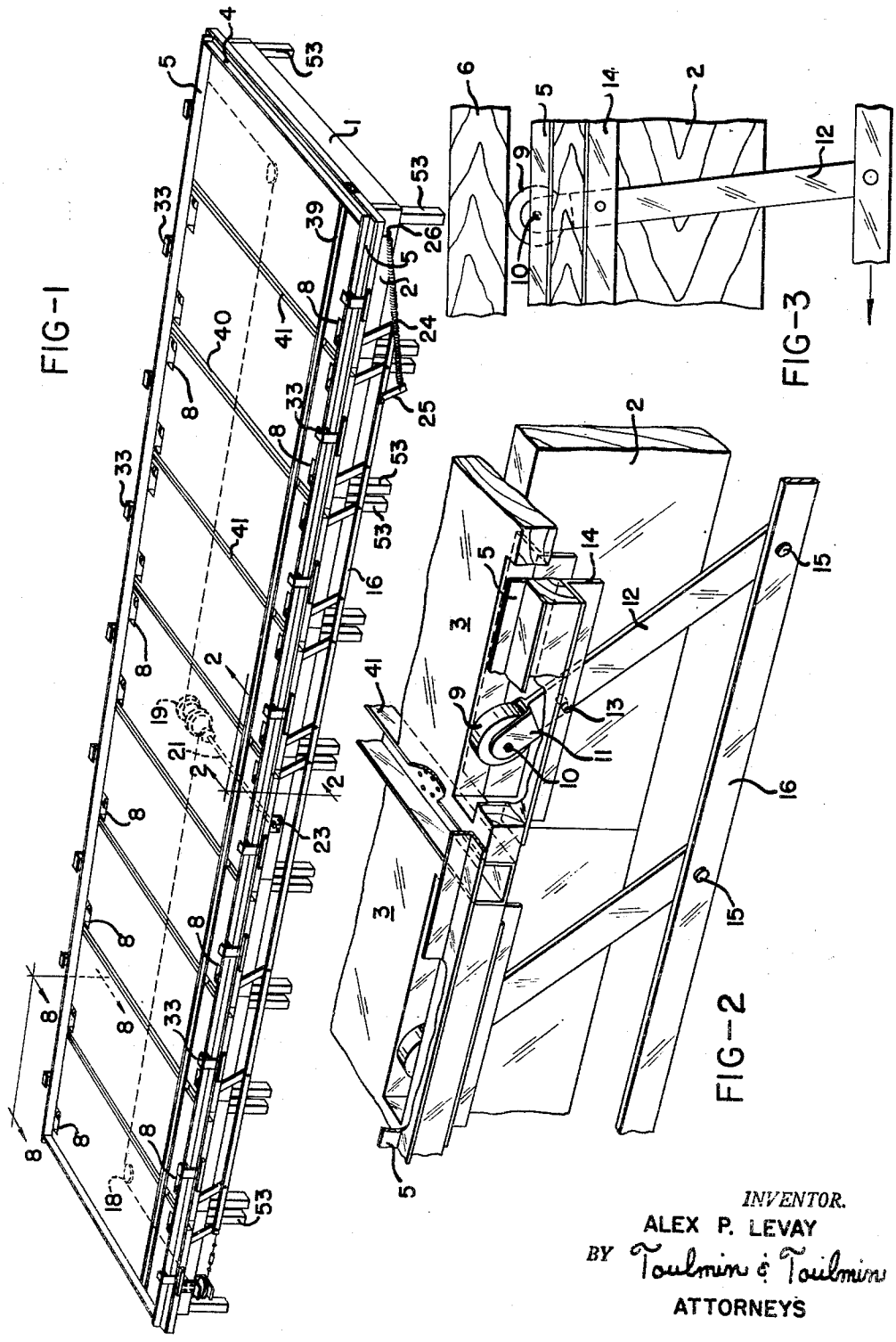


FIG-1

FIG-3

FIG-2

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TABLE FOR CONSTRUCTING BUILDING FRAMES

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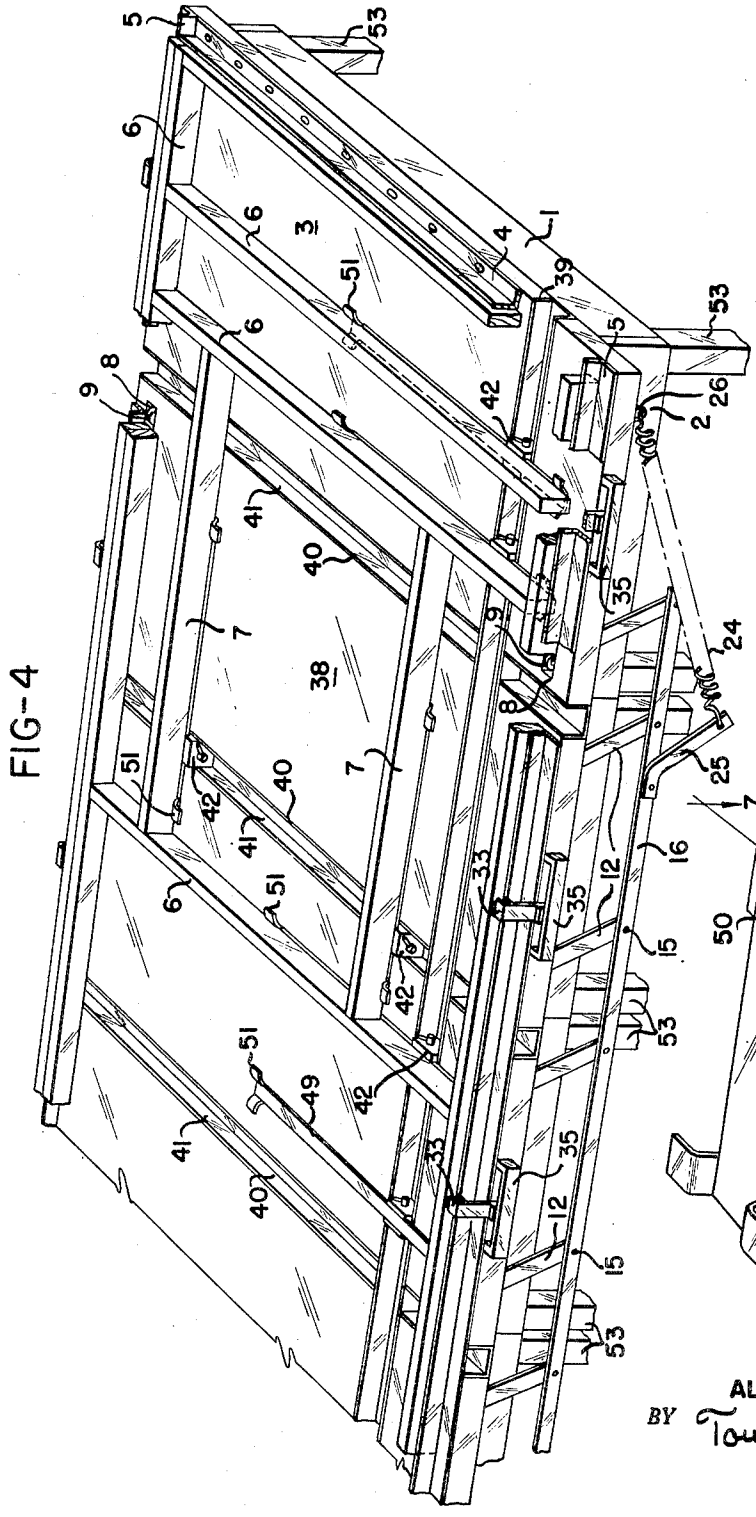


FIG-4

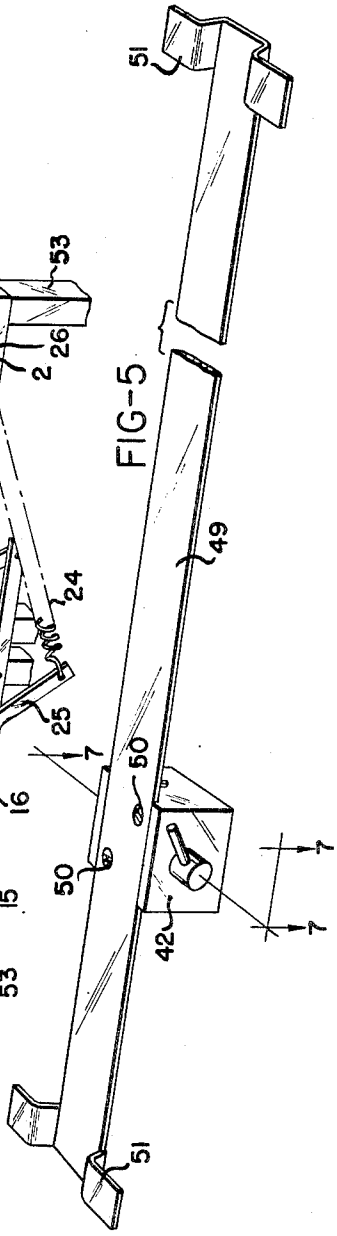


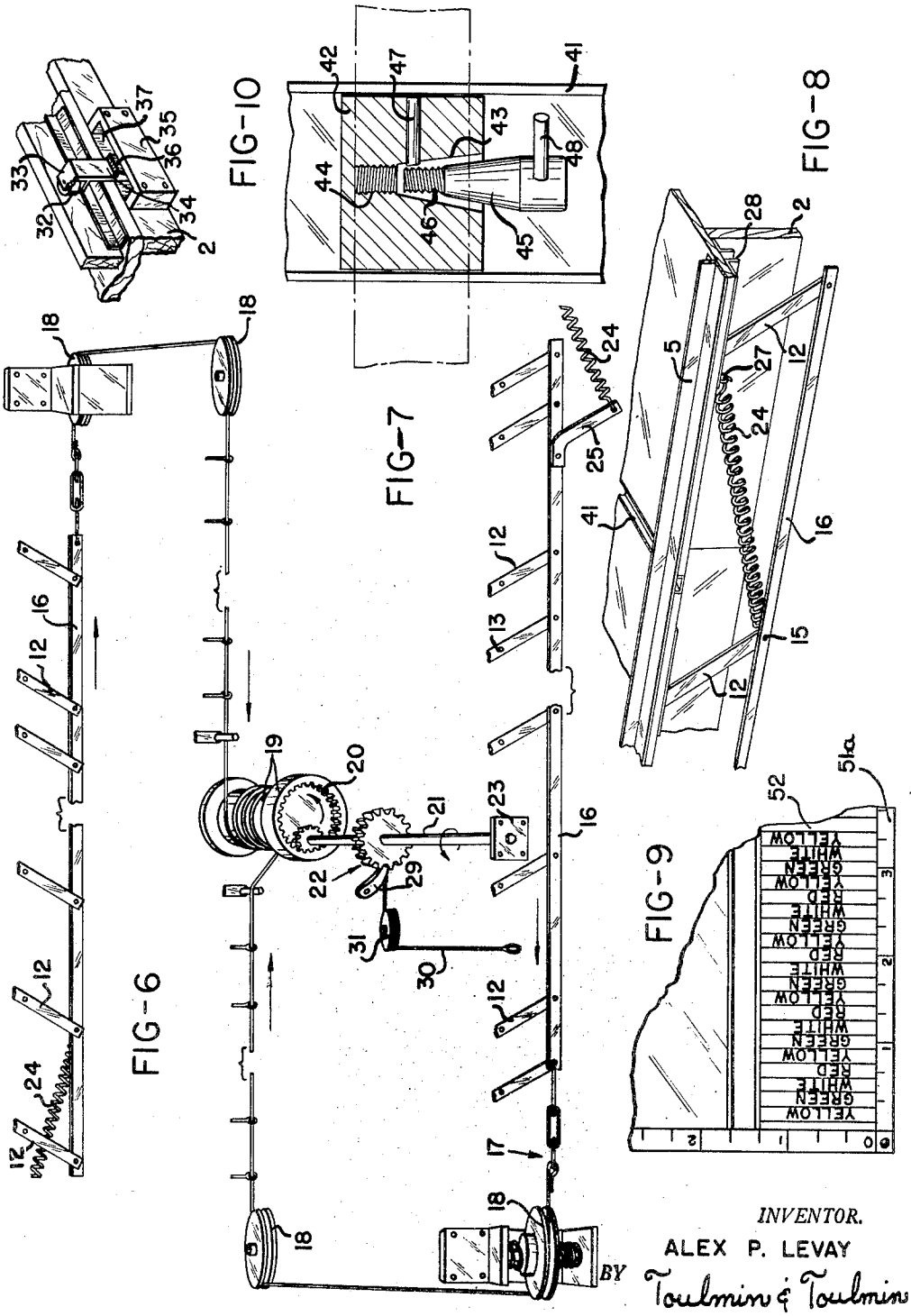
FIG-5

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Dec. 15, 1953 A. P. LE VAY 2,662,565

TABLE FOR CONSTRUCTING BUILDING FRAMES

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TABLE FOR CONSTRUCTING BUILDING FRAMES

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Application May 25, 1953, Serial No. 357,308

5 Claims. (Cl. 144—288)

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The present invention relates to building construction and, more particularly, to jigs and layout tables for assembling, aligning and, in general, facilitating the manufacture of side and end frames, also floors of prefabricated houses.

When frame houses are made on a quantity production basis, the side and end walls, also the floors, are usually fabricated in assembled form at a mill and then erected on a foundation at the building site. Due to the ever increasing sizes of these houses, the job of determining the length of the joists and studs, arranging these various parts, and nailing them together becomes more and more difficult, not only due to the long lengths of the beams, but also the weight of the completed frames or panels. This weight may reach many hundreds of pounds, particularly in the case of frames of large houses, calling for heavy beams which makes the frame extremely hard to handle.

The primary object of the invention is to provide a set-up and measuring table on which the various lengths of wood can be readily and accurately determined, assembled, and finally nailed or bolted together.

Another object is to provide a jig table of the type mentioned but in which the heavy wooden frame, after being made, can be lifted from the table without strain, ready for transportation to the site of erection.

Still another object is to provide a table upon which a building frame of any practical size can be made, the parts being measured while on the table and secured by nailing at the proper angles with respect to one another.

Another object is to provide an erecting table on which studs and joists can be arranged and secured together with a provision by which markings on the table or adjustable supports for the studs or joists determine the lengths required and also their position with respect to one another.

Still another object is to provide a jig table on which heavy building panels can be made and then power-lifted from the table and finally guided off the table to the transportation vehicle or to storage.

Still another object is to provide an erector table for house panels or floors which require studs and joists and in which indications or markings are provided on the table to determine sizes and positions of the various studs and joists, depending on the character of the panel or floor being constructed.

These objects are carried out, in brief, by providing a flat table of length and breadth sufficient to accommodate the largest panels to be built, and secured to the table at predetermined positions,

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there are rails or guide members properly marked off as to cause the wooden beams to conform to a predetermined pattern and spacing.

Other objects and features will be apparent as the specification is perused in connection with the accompanying drawings, in which:

Figure 1 represents a perspective view of the improved work or jig table;

Figure 2 is an enlarged fragmentary view of the table and support showing the panel-lifting devices, also the limit or dimensional channels which facilitate the spacing of the studs and joists; this view is taken along the lines 2—2 in Fig. 1, looking in the direction of the arrows;

Figure 3 indicates the height to which the panel can be raised after completion, preparatory to removing it from the table;

Figure 4 is a view similar to Fig. 1 except that it shows a panel in place with the parts thereof sized, positioned and nailed together;

Figure 5 is an enlarged view of a slidable positioning fixture for spacing the plates or studs;

Figure 6 is a perspective view of the cable and lever system by which the lifting rollers are raised and lowered;

Figure 7 is an enlarged sectional view of the clamping device for one of the positioning fixtures; this view is taken along line 7—7—7 in Fig. 5, looking in the direction of the arrows;

Figure 8 is an enlarged fragmentary perspective view of one end of the table, showing one of the retractible springs; this view is taken along lines 8—8—8 in Fig. 1, looking in the direction of the arrows;

Figure 9 is a plan view of one corner of the table showing a typical form of indicia that may be used on the table to indicate dimensions and proper positions of the wooden beams or plates forming the panels; this indicia is shown as color rectangles, also measurements of length; while

Figure 10 is a fragmentary perspective view of an improved roller guiding apparatus by which the completed panels can be guided as they move from the table in a lifted position.

General description

The improved table, in effect, constitutes a horizontal support or platform on which the building panel members can be assembled and nailed, and finally lifted and moved by a sliding action from the table. The frame of the table is formed by rectangular end and side beams 1, 2 arranged with their edges upward for supporting a heavy table of wood. The various parts can be folded together in any suitable manner.

The size and shape of the table should be

somewhat larger than the panel or panels to be built. The latter may comprise end, side frames or floors of houses which are to be erected on a prepared foundation. The ends and sides of the table are bordered with angle iron strips or rails 4, 5, with a horizontal portion of each strip extending inwardly to allow screws to be inserted for securement of the strips to the table. These rails determine the outside dimensions of the panel although, as will be pointed out hereinafter, adjustable stop bars may be employed to limit the size of a panel being momentarily constructed.

The panels may comprise a series of studs 6 in case side frames are being constructed, or joists, in the case of floors. These studs or joists may take any suitable and predetermined position on the table but, in general, the studs are arranged abutting the interior surfaces of the rails 4, 5.

These studs are cut to size as determined by the boundaries of the rails and intermediate studs are inserted in between the predetermined distances. Nails at the various joints may be driven at positions just above the rails. Window or door spaces can also be provided, as indicated by the studs 7.

It is apparent that by controlling the outermost dimensions of the panel as a whole and providing a flat surface on which the beams can be arranged and nailed together, great saving of time can be effected, as well as marked improvement in the quality of the panel.

After the studs have been placed in position and nailed together in the manner described, weatherproof sheets are secured to the top edges of the studs and then the siding (not shown) is applied in the usual manner. Considering the fact that each panel, together with its studs and siding may constitute the side of a relatively large house, requiring a considerable number of heavy wooden beams, the ultimate weight of the finished panel is quite large which, in view of its cumbersome size, makes it difficult to handle and remove from the table for transportation to the site of erection.

Panel lifting mechanism

As shown in Figs. 1 and 4, the sides of the table preferably overlap the side beams 2, and over this extended portion, along the length of the table, there is provided a plurality of rectangular openings 8 which pass through the table. These openings are along both sides of the table and, as shown in Fig. 1, are arranged in line with one another, of which 12 are shown at each side.

Within each of these openings there is positioned a roller 9 which is journaled at 10 in a yoke member 11, this member being formed as an extension of a rigid metal bar 12. This bar, of which there are twelve at each side of the table, is pivoted at 13 to a short piece of angle iron 14 secured to the underside of the overlapping ledge of the table. The lower end of the bar 12 is adapted to swing about a pin 15 which is attached to a long metal bar 16. By moving the bar 16 to the left, for example, the roller 9 will be caused to swing about the pivot 13 and to be elevated up out of the slotted opening 8 to a position considerably above the upper surface of the table 3.

All of these rollers 9 at each side of the table are caused to move synchronously upward at the same time by means of the bars 16 and the latter are operated together through a cable and drum mechanism shown in Fig. 6.

A cable generally indicated at 17 and attached to the left-hand end of the lower bar 16, as shown in Fig. 6, and the right-hand end of the upper bar 18 pass over pulleys 18 suitably attached to the underside surface of the table, to a drum 19, the arrangement being such that as the drum is rotated in the counter-clockwise direction, as seen in Fig. 6 and indicated by the arrow, the upper bar 16 is caused to move to the right. These movements will cause the levers 12 to rotate about their axes 13 and thus cause the rollers 9 to be raised in synchronism at both sides of the table.

It will be understood that these rollers in their rest position are positioned slightly below the upper surface of the table, and in the horizontal direction are located under the longitudinally extending outermost studs 6. Thus, as the rollers are raised over the length of the table, the panel is caused to be moved upwardly, as shown in Fig. 3, to a height somewhat above the upper edge of the rail 4.

For rotating the drum 19 there is provided a planetary gear system 20 which is actuated by a shaft 21 carrying a pawl and ratchet device 22. The shaft 21 is journaled at the front end in a plate 23 and extends beyond the plate to a distance for receiving a handle device (not shown) which can be rotated by the operator. This handle is adapted to be removed when not being used.

After the rollers 9 have been moved to their uppermost position, as shown in Fig. 3, the completed panel can be rolled off the table. The rollers are automatically returned to their receding or initial position by means of a pair of tension springs 24. The spring at the right-hand end of the table nearer the observer, in Fig. 1, is attached at one end to a bracket 25, and the other end is fastened to a staple or hook 26 which is bolted or otherwise secured to the underside of the table at the overhanging ledge.

The spring 24 positioned at the left-hand end, rear side of the table has a somewhat different mode of fastening, as seen in Fig. 8. One end of the spring is looped around one of the pins 15 of the metal bar 16, while the other end is secured to a staple member 27 secured to a short piece of angle iron 28.

It is apparent that as the shaft 21 is rotated counter-clockwise, as seen in Fig. 6, by a handle, and the levers 12 are swung about their pivots 13 to elevate the rollers 9, the springs 24 are moved in tension because of the directions that the cables reach the drum as indicated by the arrows, the cable is caused to be wrapped around the drum in opposite directions. In order to prevent these springs from prematurely returning the levers 12 in their receding position and thus move the drum in the unwinding direction when the hand is moved from the operating handle, a spring-urged pawl 29 may be inserted into the teeth of the ratchet wheel. This pawl can be released from the wheel by means of a cable 30 which passes around a pulley 31 and is attached to the tip of the pawl so that as the cable, which is accessible to the operator, is pulled and the pawl released, the rollers 9 are caused to move downwardly to their original or receding position.

However, it is understood that, if desired, this lowering movement can be accomplished solely by means of reversing the rotation of the crank handle. Thus, there is shown and described a mechanism by which the entire completed panel, whether it is a floor or the sides or ends of a

house and to which flooring or siding has been applied, can be moved upwardly equal distances over the entire length and breadth of the table so as not to produce any strain, and to such a position that the entire floor or panel can be easily rolled over the rails 4 and loaded on a truck.

In view of the symmetrical operation under which these rollers operate and the evenness of the lift, the panel or floor can normally be moved the entire length of the table without any tendency to swing to one side or the other of the table. This is shown by the fact that as the completed panel is moved upwardly on the rollers and then the latter caused to recede, the panel will be found to be dropped snugly within the rails 4 and thus assume its original position, showing that there is no longitudinal or transverse movement of the panel during the lifting operation.

However, in actually rolling the panel over the table, and particularly if the design of the panel requires studs that are not symmetrically positioned within the panel, the latter may tend to weave to one side or the other of the table.

In order to assure removal of the completed panel in absolute alignment with the table, I may provide some side-steadying rollers 32 (Fig. 10) which are so positioned that they contact the external side surfaces of the panel. These rollers are journaled in a bracket 33 forming part of a metal plate 34. This plate is carried within a rectangular box-like member 35 secured in any suitable manner to the sides 2 of the table.

The opening in the member 35 is considerably longer than the width of the bracket 34 and is somewhat wider in order to accommodate a wooden wedge 36. This wedge, when struck with a hammer or mallet, will hold the bracket in place within the rectangular opening 37 at any suitable height and the opening is sufficiently long to allow adjustment of position of the bracket in the longitudinal direction. As many of these rollers 32 along the sides of the table may be provided as is necessary in order to steady the panel when in an elevated position and is being rolled from the table.

Measuring and positioning of the studs and joists

In order to accommodate the table to various kinds of constructions and arrangements of the panel, i. e. to accommodate windows, doors, etc., the positioning of the studs must be changed, as also their various lengths. For example, in Fig. 4 which shows a side panel before the siding has been applied, a window space 38 is indicated, bounded at the top and bottom by the horizontal studs 7 and at the sides by the vertical studs 6. While the positioning of these studs and plates can be readily laid out on the table before being placed in position, I have devised a structure, in accordance with another aspect of my invention, which permits any positioning arrangement of the wood beams as may be necessary.

Extending lengthwise of the table there is a longitudinal groove 39 and similar grooves 40 extend widthwise of the table. Each of these grooves receive a U-shaped metal member 41 which fits snugly in the grooves and the upper edges of which come flush with the surface of the table 3.

A metal block 42 (Fig. 7) is adapted to slide within the members 41 but can be clamped at any position within the member 41. For this purpose, the block 42 is provided with a conical shaped opening 43 which terminates in a threaded bore 44, opening from one side of the block. A conically shaped pin 45 is adapted to be inserted within the bore 44, this pin terminating in a threaded extension 46 which engages the threads of the bore 44. A pin 47 extends transversely of the block 42 through a bore, this pin being adapted to be pressed outwardly against the side of the metal member 41 as the pin 45 is inserted in the conical bore and is received by the threads 44.

For turning the pin 45, a short metal extension 48 may be provided so that the block 42 can be slipped along the U-shaped member 41, and by causing the pin 47 to be driven outwardly when the pin 45 is turned, the block 42 is rigidly clamped in position.

The block 42 is grooved at the top surface to receive a metal bar 49 which is screwed to the block as indicated at 50. The metal bar, as seen in Fig. 5, is provided with a pair of wing-shaped brackets 51 at its ends. The distance between the wings of the bracket and also the width of the bar 49 are such as to receive endwise one of the studs 6 or 7.

As many of these longitudinal and transversely extending grooves 39, 40 may be provided as is desirable, together with the block accessories 42, to position the studs and plates anywhere within the area of the table at both longitudinal and horizontal positions. These U-shaped members 41 can be marked off in feet or inches in order to give desired positions of the blocks 42 within their respective grooves, and thus determine the position the studs or plates for a given design of panel.

Panels can be accurately duplicated by this method, since the position of the blocks 42 in their respective grooves remain the same when making panels that require duplication. Moreover, these blocks, in sliding along their respective grooves and carrying with them the guide brackets 51, assure that the studs and plates will be positioned parallel or exactly at right-angles with one another as occasion may require, so that no faulty construction of the panel is possible.

In addition to or as a substitute for these traveling block carriages 42 in determining the length and position of the studs or plates, I may employ markings or other visible indicia on the table, such as indicated in Fig. 9. One end of the table, for example, may be marked in inches, as indicated at 51*a* at least over the working position assumed by the operator or workman.

Along the sides of the table there may be rectangles, colored in red, yellow, green, white, etc. as indicated at 52 all showing to the carpenter lengths along the table and terminating positions for the studs and plates. The indicia shown in Fig. 9 can be arranged to cooperate with the position of the blocks 42 in any of their respective grooves so as absolutely to locate the various studs and joists according to a predetermined design and specification.

Black and white tile having individual or standard dimensions can also be inlaid or painted over the table to give dimensions and positions for the various structure elements to assume. In fact, my invention contemplates all markings of this character, used either separately or in conjunction with the proper positioning of the blocks 42 within their respective grooves.

The table is supported from the floor by means

of sturdy legs 53, properly distributed throughout the length of the table, giving the latter the proper height for ideal conditions of assembly and securing the panel elements together. The latter conform to modular or standard dimensions or design which, in turn, produces panels or floors of equally modular or standardized sizes or forms. The finished panel or floor can then be lifted even by single workman operating the crank handle, and rolled off the table, being held when necessary, in an aligned position during the rolling operation by the side rollers 32.

From the foregoing it is evident that I have disclosed an erector table on which building panels or floors can be fabricated under ideal, sheltered conditions and to close dimensions as determined by markings on the table. The various studs and joists are positioned in any predetermined manner, of which two methods and structures have been disclosed, namely the use of the slidable blocks 42 within the especially provided grooves, and the use of the markings or other color indications on the table at the operator's position.

It will be understood that various modifications and arrangements in structure could be made without departing from the spirit of my invention and, accordingly, I desire to comprehend such modifications and substitutions of equivalents as may be considered to come within the scope of the appended claims.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. An erector table for fabricating panels for prefabricated buildings, said table having a work platform on which the panel pieces are assembled and secured together, means cooperating with said table for raising the finished panel therefrom preparatory to removing the panel from the table, and means for guiding the finished panel longitudinally of the table during the removal operation after the panel has been raised, said last mentioned means comprising a plurality of side-steadying members mounted on the edges of the table and presented edgewise to the panel, each of said side-steadying members having a limited adjustment along the edges of the table and being adjustable in height to accommodate the edges of the finished panel in its elevated position.

2. An erector table for fabricating panels for prefabricated buildings, said table having a work platform on which the panel pieces are assembled and secured together, means cooperating with said table for raising the finished panel therefrom preparatory to removing the panel from the table, and means for guiding the finished panel longitudinally of the table during the removal operation after the panel has been raised, said last mentioned means comprising a plurality of rollers mounted on bars detachably secured to the edges of the table and presented edgewise to the panel, each of said rollers having a limited adjustment along the edges of the table and being adjustable in height to accommodate the edges of the finished panel in its elevated position.

3. An erector table for fabricating panels for prefabricated buildings, means for determining the position of the parts of the panel on the table according to a predetermined design, said means including grooves in the table adapted slidably to receive blocks, a bar secured to each of said blocks and work-piece holding brackets secured to opposite ends of said bar, each of said brackets being adapted to receive one of the panel parts for locating the part within the panel as the blocks are moved along their respective grooves.

4. As an article of manufacture, a block adapted to be received by the grooves of an erector table, a bar secured to the upper surface of said block, said bar being provided at each end with upwardly directed work-piece holding brackets for receiving and locating a wooden member forming part of a building panel, and mechanism contained within said block for providing a clamping effect along the sides of the block when the block is employed within said grooves of the erector table, said mechanism comprising a member threaded into the side of said block, pin means slidably mounted in an opening in said block, said opening extending from said threaded member outwardly through said block and communicating with the groove in which the block is slidably positioned, said threaded member having a conically shaped portion engageable with the inner end of said pin means upon threading said member into the block whereby the pin is forced outwardly in clamping engagement with a wall of said groove, and an extension on said threaded member forming a handle to facilitate movement of said block and the turning of the threaded member to actuate said pin means.

5. An erector table for fabricating panels for prefabricated buildings, said table having a work platform on which the panel pieces are assembled and secured together, and means cooperating with said table for raising the finished panel therefrom preparatory to removing the panel from the table, said means including a plurality of swivelly mounted lifting devices positioned along the table at each side thereof, said devices being actuated at one side by a lever, and means for applying an actuating force to said lever including a cable which passes around pulleys and is taken up on a hand operated drum.

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