Jan. 2, 1962 G. E. LEONARD 3,015,144

POURING FORM ASSEMBLY WITH INTERLOCK

Filed June 4, 1959 2 Sheets-Sheet 1

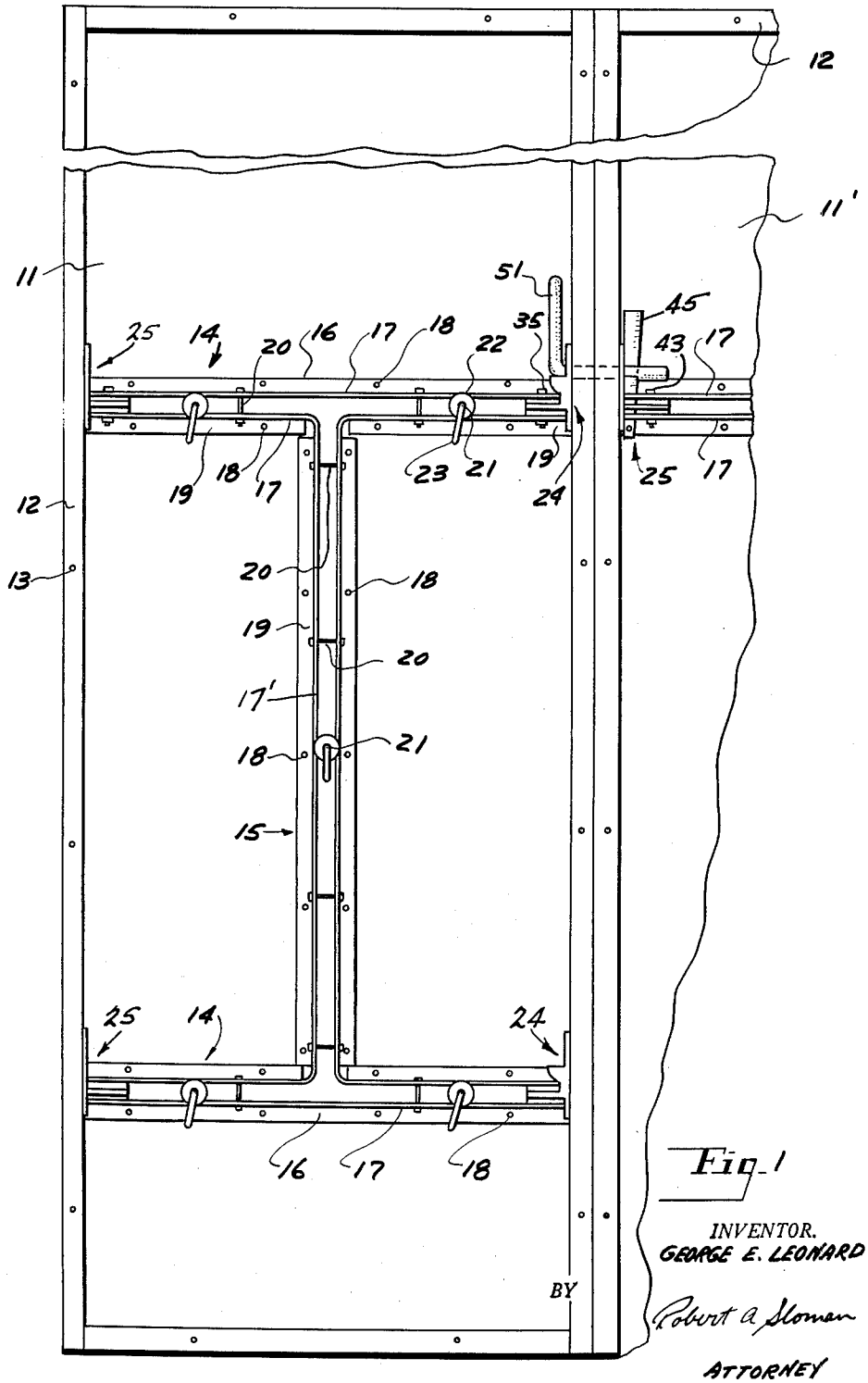


Fig. 1

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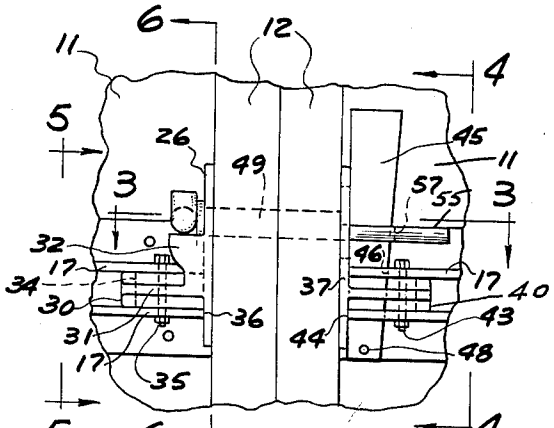


Fig. 2

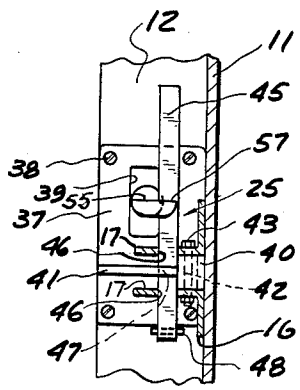


Fig. 4

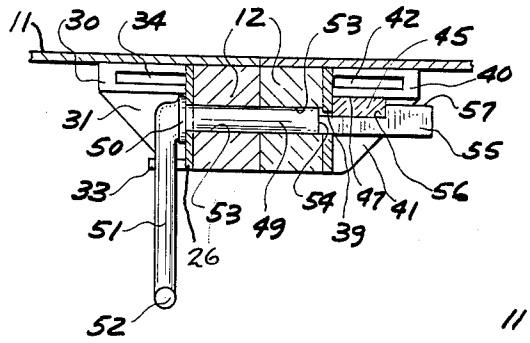


Fig. 3

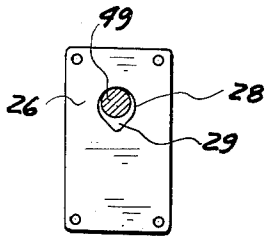


Fig. 6

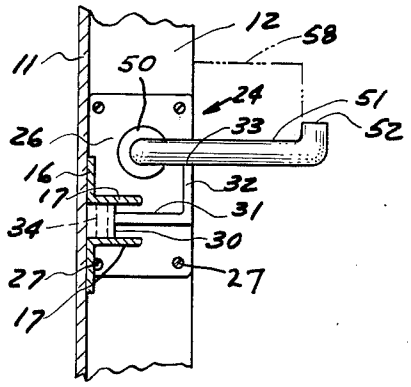


Fig. 5

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POURING FORM ASSEMBLY WITH INTERLOCK

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2 Claims. (Cl. 25—131)

This invention relates to concrete pouring forms and more particularly to an interlock for laterally adjacent forms.

Heretofore various difficulties have existed in laterally aligning and effectively securing together in a line a series of concrete pouring forms.

It is the object herein to provide a novel easily operable and simply constructed interlock for pouring forms.

It is a further object to provide a pouring form assembly with manually releasable interlocks whereby said forms may be assembled and secured together expeditiously and easily disassembled as desired.

These and other objects will be seen from the following specification and claims in conjunction with the appended drawings in which:

FIG. 1 is a fragmentary front elevational view of a pair of pouring forms with the present interlock.

FIG. 2 is a fragmentary elevational view thereof showing the interlock on an enlarged scale.

FIG. 3 is a fragmentary section taken on line 3—3 of FIG. 2.

FIG. 4 is a vertical section taken on line 4—4 of FIG. 2.

FIG. 5 is a fragmentary section taken on line 5—5 of FIG. 2.

FIG. 6 is a fragmentary section taken on line 6—6 of FIG. 2.

It will be understood that the above drawings illustrate merely a preferred embodiment of the invention and that other embodiments are contemplated within the scope of the claims hereafter set forth.

Referring to the drawings, in FIG. 1 there is shown fragmentarily a pair of laterally aligned concrete pouring forms adapted to define one side of a concrete wall, there being similar laterally aligned concrete pouring forms transversely spaced therefrom at a predetermined distance and fixedly connected therewith when in use.

The present pouring form consists of an upright sheet 11 preferably of plywood which has secured to one side as by fasteners 13 the peripheral rearwardly extending hollow frame element preferably of a 2" x 4" wood construction. Said frame element includes the opposing side frames 12 extending along the side edges of sheet 11. On assembly the frame of one form is in lateral registry with the frame of the adjacent form.

The present pouring form 11 includes the vertically spaced bar members 14 which extend substantially across the width of the form within its frame element and the central upright bar member 15 interconnecting the horizontal bar members.

There are various ways of forming said bar members such as using blocks, channels, right angles, rods, etc. In the present illustrative embodiment the bar members consist of right angular flanges.

Bar members 14 include elongated plate 16 preferably of aluminum, secured by fasteners 18 to the plywood 11, each plate, including the outwardly projecting flange 17.

The inner portions of bar members 14 include similar elongated plates 19 with right angular flanges 17. The plates 19 are so formed that the horizontal portions terminate in the central upright vertical portions 19 with the continuous right angular flange 17' corresponding to and forming an extension of flange 17 to complete the

assembly of the bar member construction, including spacer bolts 20.

The purpose of the bar members is to provide an effective means of securing one pouring form to a second transversely spaced pouring form, as shown in my copending patent application, Serial Number 772,884, filed November 10, 1958, relating to Wall Form Tie Rods.

Said pouring forms through the medium of said bar members are interconnected by a series of transverse tie rods 21 each having a disc 22 or collar engageable with and spanning flanges 17 and 20 respectively and including the handle 23.

A suitable easily releasable interlocking means is established between tie rod 21 and the bar members of a pair of spaced pouring forms as shown in the above mentioned copending application.

The present invention is more particularly directed to the means of interconnecting and disconnecting laterally aligned pouring forms.

For this purpose, there are mounted within the frames 12 opposed pairs of complemental clamp brackets 24—25 in vertically spaced relation whereby one pouring form 11 may be laterally aligned and interlocked with adjacent upright pouring forms upon its opposite sides. One such assembly is fragmentarily shown in FIG. 1.

The detailed construction of said clamp brackets is illustrated in the enlarged fragmentary FIGS. 2 through 6 of the drawing. Clamp bracket 24 includes upright plate 26 which bears against the interior surface of frame 12 and is secured thereon adjacent its corners by fasteners 27.

Transverse aperture 28, FIG. 6 is formed through plate 26 with the lower portion of said aperture slightly elliptical at 29, adapted to receive the enlarged key 57, FIG. 3 upon the end of locking arm 49, as will be hereafter described, for effecting the releasable interlock between a pair of oppositely arranged clamp brackets 24—25 for a registering pair of frames on adjacent forms 11.

Elongated block 30 projects from and forms a part of plate 26 and is of such dimensions as to snugly and cooperatively extend or project between the horizontal flanges 17 of bar members 14.

Block 30 has an elongated slot 34 therethrough by which said block is secured by bolt 35 in position between said bar member flanges respectively, as shown in FIG. 1.

Clamp bracket 24 includes horizontal tapered reinforcing web 31 between plate 26 and block 30.

The inner portion of said web adjacent plate 26 terminates in the upright outwardly projecting right angular stop 32 with horizontal top surface 33 adapted to supportably receive the locking arm handle 51 in locked position.

As shown in FIG. 2, plate 26 of clamp bracket 24 is snugly interpositioned between frame 12 and the ends of flanges 17 as at 36 to complete the mounting of the clamp bracket upon the interior of the frame. Preferably two of these clamp brackets are employed in vertically spaced relation upon the right frame 12 for each of the pouring form assemblies.

Complementary clamp brackets 25 are secured upon the left side of each of said forms upon frame 12, in opposed relation to clamp brackets 24 of adjacent forms. Each of the clamp brackets 25 includes plate 37 secured at 38 upon the interior upright wall of frame 12, having formed therethrough upright rectangular slot 39. Said slot registers with slot 28 of clamp bracket 24.

Elongated rectangular block 40 projects from plate 37 and is of such size and shape as to cooperatively and snugly project between flanges 17 of bar members 14 and is secured thereto by bolt 43, FIG. 4, which extends through vertical slot 42 in block 40.

Plate 37 snugly engages the corresponding ends of flanges 17 as at point 44, FIG. 2. Reinforcing web 41 projects from plate 37 and extends to and joins block 40, there being an elongated rectangular slot 47 formed through said web adapted to receive vertically adjustable locking wedge 45, shown in FIG. 4. Corresponding vertically aligned slots 46 are formed through bar member flanges 17 to receive wedge 45. Transverse pin 48 extends through the lower end of wedge 45 to prevent removal thereof from said flanges.

Elongated locking arm 49 of circular cross section has a right angular handle 51 with enlarged collar 50 interposed adapted to cooperatively bear against the front surface of clamp bracket 24, as shown in FIG. 3. Said handle terminates in upright stop 52, shown in FIG. 5.

Transverse apertures 53 are formed through frames 12 in registry with the corresponding apertures 28—39 in said clamp brackets to cooperatively receive locking arm 49.

The end portion of said arm is transversely cutaway and flattened on one side as at 55 defining shoulder 54 which is spaced from the inner surface of clamp bracket plate 37, FIG. 3. The arm element 55 as viewed in the locking position, FIG. 3, has a transverse notch 56 of rectangular form defining the locking key 57 at the end of the locking arm. Key 57 has a height greater than the diameter of arm element 49.

On assembly, with the upright wedge 45 loosely in the position shown, the locking arm 49 is projected through apertures 28 and 39 of said clamp brackets with handle 51 in the upright position shown in FIG. 1. This positions the flattened surface 55 of the locking arm in an upright position to facilitate assembly thereof through said slots at the same time positioning said flat surface on one side of wedge 45 until the locking key 57 lies beyond the edge of said wedge. Thereafter arm 49 through handle 51 is rotated 90 degrees clockwise taking the position shown in FIGS. 2, 3, 4 and 5 with handle 51 resting upon stop 32 of clamp bracket 24. At the same time key 57 interlockingly engages the outer edge of wedge 45. The assembly may be further tightened, if desired, by hammering wedge 45 downwardly to the extent necessary.

Handle 51 may be so arranged that key 57 is placed in locking position relative to wedge 45 on rotation less than 90 degrees.

A similar locking arm is provided for each of the opposed pairs of clamp brackets 24—25 whereby a series of framed forms 11 may be secured in lateral alignment by the simple projection of the locking arm 49 through the adjacent clamp brackets and rotation of said arm 90 degrees to locking position, FIGS. 2 through 5.

To disconnect the pouring forms, wedge 45 is tapped upwardly, after which handle 51 is rotated counterclockwise 90 degrees from the position shown in FIG. 5 to the position shown in FIG. 1, after which the same may be manually withdrawn inwardly of the form.

The upright stops 52 at the outer ends of a pair of handles 51 may be used, if desired, for supporting a horizontal scaffolding between pouring forms.

An elongated 2" x 4" board 58, FIG. 5, is horizontally positioned so as to span two or more handles 51. Board 58 is tightly wedged between the adjacent frame and stop 52 so as to be self-securing and tight. Scaffolding 58 engages a series of said frames and adjacent stops 52 for the further function of aligning adjacent forms.

While elongated frames 12 are shown throughout the height of the forms, these can be shorter or in the form of blocks. Other means may be employed for securing the clamp brackets to said forms in opposed relation, or they may be directly mounted onto said forms.

The bar members 14—15 have slots therein adapted to receive the blocks 30—40 of clamp brackets 24—25. Flanges 17 have been employed defining said slots. Any other form of bar member may be used which provides such a slot and the means of cooperatively engaging the tie rods 21, 22, 23 by which parallel forms are secured together in fixed spaced relation.

Wedge 45 may be tapped down operatively engaging the notch side of key 57. The reverse is also contemplated with the wedge or plate stationary and said key 57 having a tapered cam surface so that rotation of key 57 effects a drawing up of the frames 12 in FIG. 3.

Having described my invention, reference should now be had to the following claims.

I claim:

1. A clamping device for securing concrete pouring forms in lateral alignment, each form including upon its exterior outwardly extending frames along its opposite side edges, with the frame of one form in registry with the frame of an adjacent form, an apertured first clamp bracket secured upon the interior of the frame of one form, an opposing apertured second clamp bracket secured upon the interior of the frame of an adjacent form, an upright wedge slidably mounted upon said second bracket, a rotatable locking arm loosely projected through said brackets and frames operatively engaging said first bracket and rotatable into retaining engagement with said wedge, said wedge adapted to be projected in one direction axially of its length for tightening the interlock between the forms and in the opposite direction for loosening said interlock, a pair of opposed transverse angle members including spaced slotted flanges secured upon the exterior of said forms adjacent said clamp brackets, blocks projecting from said clamp brackets respectively nested between said flanges adjacent said forms, and fasteners extending through said flanges and blocks respectively, securing said blocks and clamp brackets to said forms.

2. A clamping device for securing concrete pouring forms in lateral alignment, each form including upon its exterior outwardly extending frames along its opposite side edges, with the frame of one form in registry with the frame of an adjacent form, an apertured first clamp bracket secured upon the interior of the frame of one form, an opposing apertured second clamp bracket secured upon the interior of the frame of an adjacent form, an upright wedge slidably mounted upon said second bracket, and a rotatable locking arm loosely projected through said brackets and frames operatively engaging said first bracket and rotatable into retaining engagement with said wedge, said wedge adapted to be projected in one direction axially of its length for tightening the interlock between the forms and in the opposite direction for loosening said interlock, said locking arm having an end portion cutaway and flattened arranged on one side of said wedge, said flattened portion having a transverse notch therethrough defining a key outwardly of said notch retainingly engageable with the outer edge of said wedge on rotation of said locking arm, said notch cooperatively receiving said wedge.

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