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CAM ACTUATED CONCRETE FORM CLAMP

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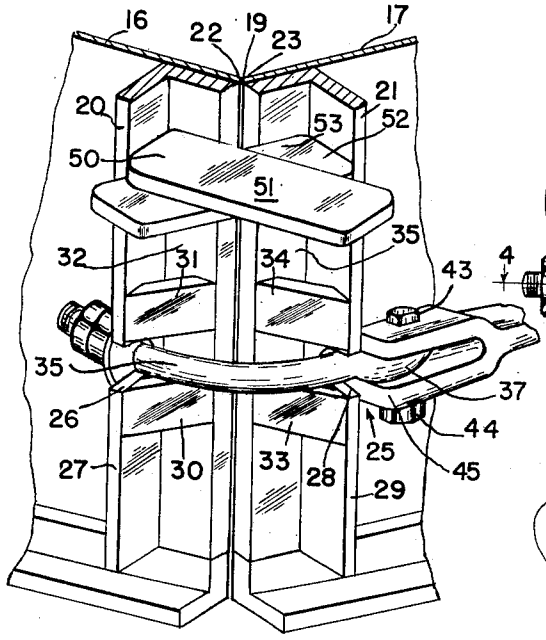


FIG-2

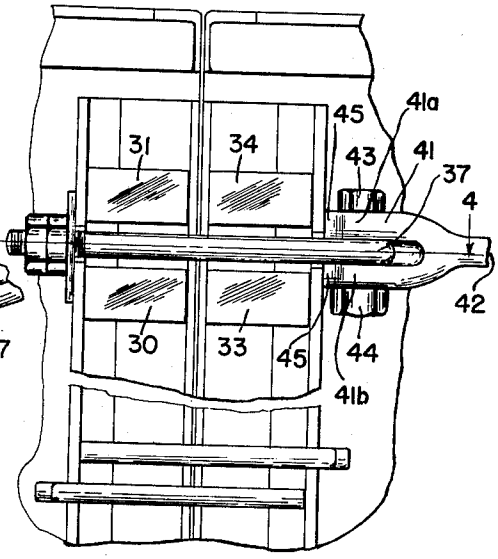


FIG-3

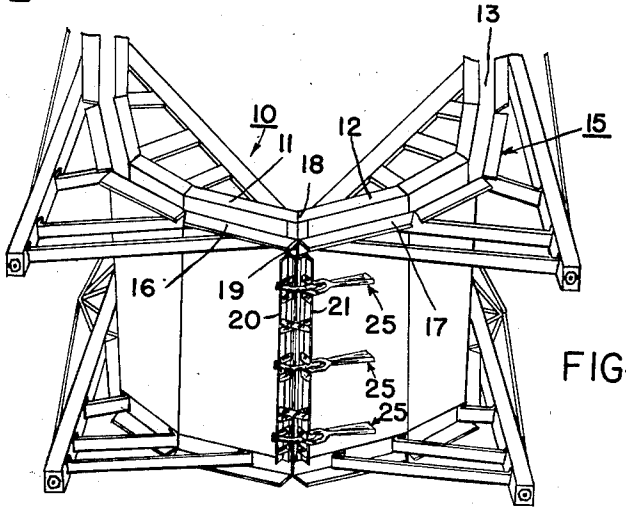


FIG-1

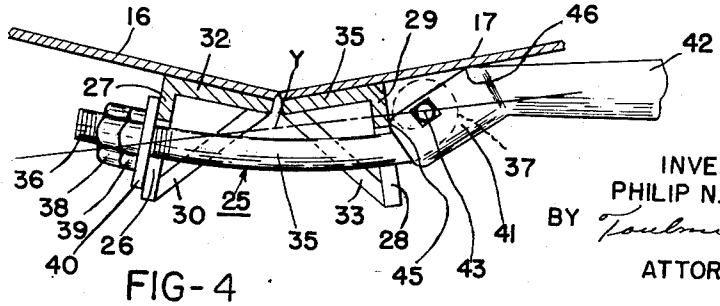


FIG-4

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CAM ACTUATED CONCRETE FORM CLAMP

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3 Claims. (Cl. 144—291)

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This invention relates to fastening devices adapted for use in securing together sectional forms that are particularly adapted for use in connection with the pouring of semi-fluid substances such as concrete in the building of various structures.

The invention is particularly adaptable for use in connection with sectional forms that are used for the manufacture of concrete septic tanks, it being the purpose of the use of the invention to removably attach together form sections so that they may readily be disengaged from a concrete wall after it has set. While the invention will be particularly described with reference to the use of sectional forms adapted for the manufacture of concrete septic tanks, yet it will be understood that the fastening device can be used in connection with other types of sectional forms to secure together adjacent form sections.

An object of the invention is to provide a fastening device that is readily removable from form sections to permit release and removal of form sections relative to one another and which is readily replaceable into the form sections when in their selected position to releasably hold the sections together.

It is another object of the invention to provide a fastening device of the kind referred to in the foregoing object wherein the device locks itself in position for securing form sections together.

It is another object of the invention to provide a fastening device in accordance with the foregoing objects wherein the device is adjustable to correct for wear in the device or to provide for correction between spaced elements on the form sections that cooperate with the fastening device in the event the spaced elements are bent out of normal position.

It is a further object of the invention to provide a fastening device that will have the features of the foregoing objects wherein the device is simple and inexpensive to construct.

It is another object of the invention to provide a fastening device that is completely removable from form sections that are releasably held together by the fastening devices to thereby eliminate loose fastening connections on any part of the form sections which would readily become damaged in handling of the form sections.

Another object of the invention is to provide apparatus for releasably connecting form sections and concurrently aligning the edges of the form sections relative to each other upon securing the form sections together with fastening

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devices that are releasable from the form sections.

Further objects and advantages will become apparent from the drawings and the following description:

Figure 1 is a perspective and elevational view of a portion of a form composed of form sections adapted for the manufacture of a concrete septic tank.

Figure 2 is a perspective elevational view of a portion of the form illustrated in Figure 1 with the fastening device of this invention shown in cooperation therewith.

Figure 3 is a front elevational view of a fastening device of this invention illustrated in cooperation with form sections.

Figure 4 is a cross sectional view taken substantially along line 4—4 of Figure 3.

In Figure 1 there is illustrated a sectional form adapted for the manufacture of a concrete septic tank. The sectional form consists of an inner form wall 10 that comprises the form sections 11 and 12, each form section 11 and 12 forming one-fourth of the periphery of the inner wall of an elliptical septic tank wall.

An outer form wall 15 is spaced from the inner form wall 10 to provide for a uniformly spaced area 13 between the form walls 10 and 11 into which concrete can be poured to form the wall of a concrete septic tank.

The outer form wall 15 is composed of form sections 16 and 17. These sections 16 and 17 each form one-half of the outer periphery of the wall of the elliptical septic tank.

The form sections 11 and 12 are separated at the juncture 18, while the outer form walls 16 and 17 are separated along the juncture 19. The form sections 11, 12 and 16, 17 can, therefore, be separated and removed from a concrete wall poured in the space 13 provided between the form walls 10 and 15 for removal of the sectional form walls from the formed product when the concrete has set sufficiently.

The form sections 11, 12 and 16, 17 are releasably held together by fastening devices that are more particularly illustrated in Figures 2, 3 and 4. While the fastening devices are illustrated as releasably securing the form sections 16 and 17, yet it will be understood that the same kind of fastening device can be used to hold the form sections 11 and 12 in their secured position.

The form sections 16 and 17 are each provided with a vertically positioned angle iron member 20 and 21 respectively that extends along the

edges 22 and 23 of the respective form sections 16 and 17, the edges 22 and 23 forming the parting juncture 19 between the form sections 16 and 17. A plurality of fastening devices 25 extend between the angle iron members 20 and 21, as illustrated in Figure 1; these fastening devices 25 being completely releasable from the angle iron members 20 and 21 when it is desired to separate the form sections 16 and 17.

The angle iron member 20 is provided with a slot 26 extending inwardly from the edge of the web 27 that is positioned vertically to the form section 16. Similarly, the angle iron member 21 has a slot 28 extending inwardly from the web 29 that is at right angles to the form section 17. The slots 26 and 28 are in substantial planar alignment.

Reinforcing members 30 and 31 are placed at each side of the slot 26 and extend between the web 27 and the web 32 of the angle iron member 20. Similarly, reinforcing members 33 and 34 extend between the web 29 and the web 35 of the angle iron member 21, the reinforcing members 33 and 34 being positioned at opposite sides of the slot 28 in the web 29.

Each of the fastening devices 25 consists of a rod 35 that has a threaded end 36 on one end thereof and an eye 37 on the opposite end thereof. The threaded end 36 is adapted to receive the pair of locking nuts 38 and 39 and the washer 40.

The eye 37 of the rod 35 fits within the forked yoke 41 that terminates in a handle 42. A bolt 43 extends across the forked yoke 41 and through the eye 37 of the rod 35, whereby the rod is pivoted within the forked yoke 41 at one end of the handle 42. A nut 44 holds the bolt 43 in the forked yoke 41. The forked yoke 41 is provided with a cam element 45 on each of the forks 41*a* and 41*b* that is adapted to engage the web 28 of the angle iron member 21 when the fastening device 25 is in position between the angle iron members 20 and 21 as illustrated in the drawings.

When the fastening device 25 is in locking position holding the form sections 16 and 17 together, as illustrated in the drawings, the cam elements 45 are positioned outwardly of a line Y extending between the pivot axis of the eye 37 and the engagement of the opposite end of the rod 35 with the web 27 of the angle iron member 20, thereby urging the handle 42 in a counter-clockwise direction holding the heel 46 on the handle 42 against the form section 17 and thereby locking the fastening device 25 against opening thereof.

An aligning guide 50 is secured to the angle iron member 21 so that the edge 51 of the guide 50 is parallel to the wall of the form section 16. Similarly, an aligning guide 52 is secured to the angle member 21 with the edge 53 parallel to the wall of the form section 17. Thus, when the form sections 16 and 17 are positioned adjacent each other, the aligning guide 50 engages the edge of the angle member 21, while the aligning guide 52 engages the edge of the angle member 20, the two members 50 and 52 crossing in the form of the letter X so that the edges 22 and 23 of the form sections 16 and 17 are brought into immediate engagement. As many of the cooperating aligning members 50 and 52 as desired may be placed along the angle members 20 and 21 to obtain proper edge alignment between the form sections 16 and 17.

In use, the form sections 16 and 17 are first

placed in the position illustrated in Figure 1. The fastening devices 25 are then placed with the rod 35 in the slots 26 and 28 of the angle iron members 20 and 21 respectively with the washer 40 against the member 20 and the cam element 45 against the angle iron member 21. The lock nuts 38 and 39 are rotated to adjust the length of the rod 35 to cause a meeting of the edges 22 and 23 of the form sections 16 and 17 when the handle 42 is rotated in a counter-clockwise direction to place it in the position illustrated in Figure 4 to lock together the form sections 16 and 17.

As the form sections 16 and 17 are drawn together into their locked position, the aligning members 50 and 52 position the edges 22 and 23 of the form sections 16 and 17 in proper edge alignment.

To release the fastening device 25, the handle 42 is rotated in a clockwise direction, thereby allowing the rod 35 to be removed from the slots 26 and 28. The form sections 16 and 17 can thereafter be separated.

While the apparatus disclosed and described herein illustrates a preferred form of the invention, yet the apparatus is capable of mechanical alteration without departing from the spirit of the invention, and all modifications that fall within the scope of the appended claims are intended to be included herein.

What I claim is:

1. In a concrete wall form having a plurality of wall sections in angularly disposed relationship to each other around the periphery of said form, a fastening device for connecting a pair of said sections together along their edges comprising an angle iron member vertically positioned along each of said edges, transverse slot means in each of said angle members and an arcuate rod removably positioned in said slot means, said rod having a threaded portion on one end receiving nut means for frictional engagement with one of said angle iron members, an eye on the opposite end of said rod, a cam element rotatably mounted on said rod with pivot means extending through said eye, said cam element engaging the other angle iron and its associated wall section, a handle on said cam element for connecting and disconnecting said wall sections, said handle lying substantially against the adjacent wall sections in said connecting position.

2. In a concrete wall form having a pair of wall sections disposed at an angle relative to each other, means for connecting said sections together along their adjacent edges comprising angle iron members positioned along each of said edges, slot means in each of said members and a rod removably positioned in said slot means, said rod having a threaded portion on one end thereof and receiving a nut means for frictional engagement with one of said angle members, an eye on the opposite end of said rod, a cam element rotatably mounted on said rod with pivot means extending through said eye, said cam element engaging the other angle iron and its associated wall section, a handle on said cam element for connecting and disconnecting said wall sections, each of said angle members having a guide member secured thereto, said guide members lying in flat engagement with one another when said handle is in its connecting position.

3. In a concrete wall form having a pair of angularly disposed wall sections with abutting vertical edges, L-shaped support members ex-

tending along each of said edges, each L-shaped support member having one leg secured to the wall section adjacent the edge thereof, slot means disposed in the other leg of each of said L-shaped support members said slots being disposed in planar alignment, a rod removably positioned in said slot means, one end of said rod having means for frictionally engaging one of said support members, the other end of said rod having a camming means thereon for connecting and disconnecting said sections, and a means for aligning said edges comprising a flat bar extending from each of said support members, said bars lying in engagement when said camming means is in its connecting position.

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