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SCAFFOLD RAISER AND REMOVER

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Fig. 1.

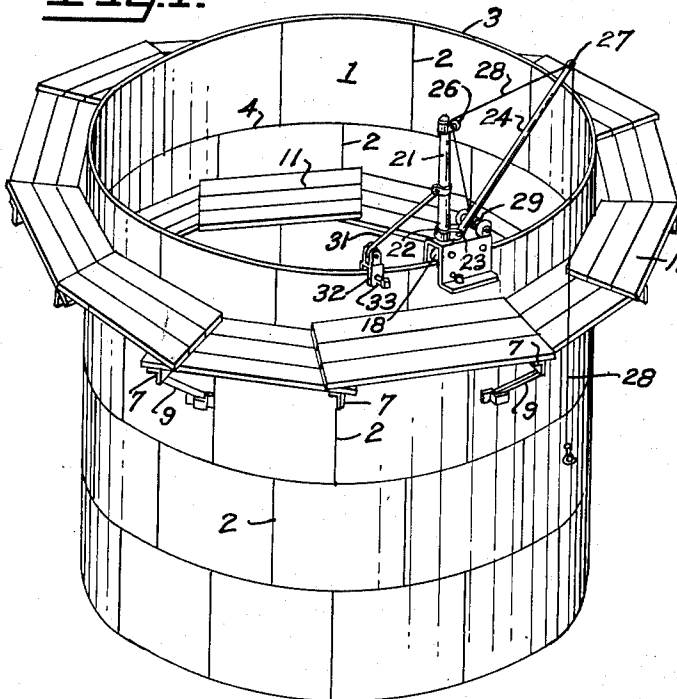


Fig. 2.

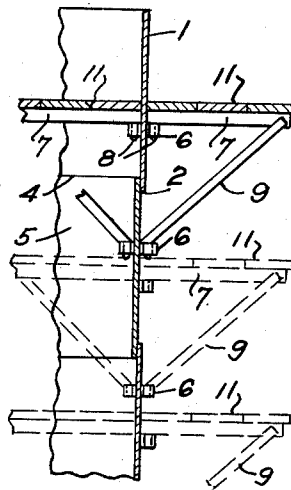


Fig. 3.

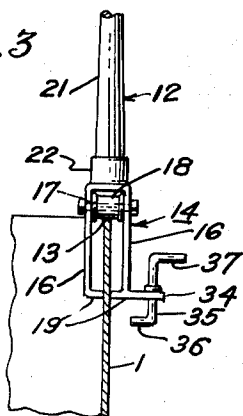
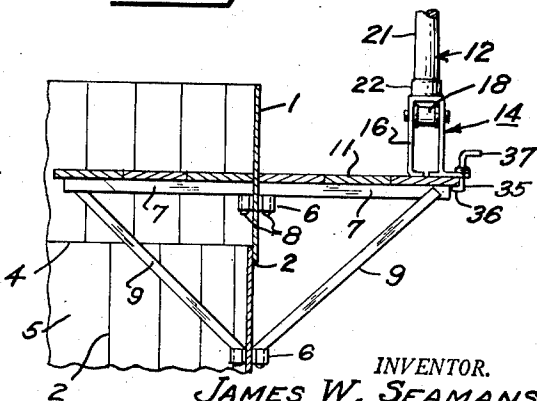


Fig. 4.



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SCAFFOLD RAISER AND REMOVER

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5 Claims. (Cl. 212-59)

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This invention relates to a method and device for raising or lowering scaffold boards during the construction of tanks and the like.

In present practice tanks of large size such as tanks for petroleum or other liquids or gases, are built in sections. Large sheets of metal are rolled and welded together into a ring. Then another row of sheets is placed and welded on top of the first ring to form a second ring. The same operation is repeated until the tank reaches its desired height. For the purpose of placing the sheets in place and for welding them, it is necessary that scaffolding be placed around the tank so as to provide support for the workers to perform the necessary operations for constructing and welding in place the respective upper rings upon the lower ones.

It is an object of my invention to provide a means whereby scaffolding boards for such scaffolds can be raised or lowered into and out of place by a device which is supported respectively on the edge of an upper ring of the tank or on the higher scaffolding board.

Particularly it is an object of the invention to provide a traveling crane or whirly boom which can be supported on and rolled along the top edge of one of the rings of tank structure in the course of construction and which can be easily manipulated or controlled for lifting scaffold boards into position, said whirly boom is also adapted to be supported on the scaffolding board for the purpose of lowering the scaffolding boards when the scaffolding is dismantled ring by ring; in the latter operation the scaffold is necessary ring by ring for chipping off bracket clips on the way down.

It is another object of the invention to provide a device whereby scaffold boards may be raised either for a platform on the inside of the tank or on the outside, by the use of the same device supported on the edge of a ring of the tank in the course of construction.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claims, hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

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With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

Fig. 1 is a perspective view of a tank in the course of construction showing one row of scaffolding boards on the inside and one on the outside and the whirly boom on the edge of the top ring.

Fig. 2 is a sectional view of the tank showing the relative position of the scaffolding inside and out of the tank.

Fig. 3 is a sectional view showing an end view of the whirly boom for the raising and lowering of scaffold boards.

Fig. 4 is a section fragmental view of the tank showing the whirly boom as supported on the boards during the lowering operation.

In the use of my device, board supporting bracket clips are suitably welded to the tank and brackets are hooked into the clips on the plates which form a ring section of the tank. A traveling crane or whirly boom is placed upon the upper edge of the highest ring of the tank. Then boards are gripped and raised by said whirly boom to position to place on the brackets. The traveling crane or whirly boom is pushed and rolls around on the top edge of the uppermost ring so as to raise and place boards for the scaffolding all around.

In lowering the boards the said whirly boom is placed upon the scaffold boards on the brackets and engages and lowers the other scaffold boards. As the boom is shifted on scaffold boards it removes another row of scaffold boards until the entire circle of scaffold boards are lowered. Before the last of the boards is lowered from one level the whirly boom is itself removed and placed upon the next lower scaffolding, step by step until it reaches the ground.

As illustrated in the drawing sheet metal plates 1 are suitably rolled and curved to form a portion of the circular periphery of a ring of the tank are welded together at seams 2 so as to form the complete ring 3. After the first ring is finished similar sheets 1 are bent in shape and welded together at seams 2 so as to form the complete ring 3. After the first ring is finished similar sheets 1 are bent in shape and welded together at the vertical seams 2 as well as at their horizontal bottom edges 4 to the adjacent lower sheet 5 so as to form a second ring 3 in edge to edge engagement with the lower ring 3. The sheets 1 have thereon hooks 6 into which a

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bracket 7 is hooked by its slotted or curved end 8. A diagonal brace 9 is extended substantially from the outer end of the bracket 7 to bear against the wall of the ring or plate 1 and thereby aid in supporting the scaffold boards.

The walk or platform formed on these brackets 7 is constructed of scaffold boards 11. These scaffold boards are preferably made of such lengths that they extend from the top of one bracket 7 to the top of the next bracket 7 and rest on both. There are several such boards 11 side by side so as to form a continuous walk of suitable width. The same structure is repeated on the inside of these rings to form a scaffold platform both inside and outside of the tank ring.

For the purpose of carrying the scaffold boards I provide a comparatively small portable whirly boom 12 which is adapted to roll and be supported on the upper edge 13 of the uppermost ring in the construction of the tank. This whirly boom 12 includes a base 14 from the opposite side edges of which extend downwardly flanges 16 forming a substantially U-shaped saddle construction to straddle the top edge of the ring. In the side flanges 16 are journaled transverse shafts 17 which support traveling rollers 18 near the underside of the base 14. The lower edges of the flanges 16 are bent inwardly to form bracing flanges 19 near the opposite surfaces of the respective sheet plates. From the top of the base 14 extends a vertical post 21 which is fixedly secured to the base 14. On the lower end of the post 21 is a journal bracket 22 and a transverse pivot 23 on which is pivoted a boom 24 which extends at an angle from said pivot 23. This boom 24 can be swung around with the journal bracket 22 to extend either to the outside or over the inside of the tank or tank ring. On the top of the post 21 is a pulley 26 and on the top or outer end of the boom 24 is a pulley 27. A hoisting cable or line 28 is extended over the pulleys 26 and 27 and then down along the post 21 over a winch or drum 29 which is provided with any suitable operating or braking means known to the art. This winch or drum 29 can be rotated either electrically or cranked by hand as the case may be. In the herein form the end of the shaft of the drum 29 is adapted to be cranked by a ratchet handle so as to render the entire whirly boom lighter and facilitate the lifting and carrying of the same. The line 28 has a suitable loop or the like at its free end for fastening it to a scaffold board to be raised or lowered.

In order to facilitate the handling of this whirly boom and to prevent the topping over of the same, a brace 31 is extended from the post 21 and is inclined rearwardly and downwardly with respect to the base 14 and is spaced therefrom. On the free end of this brace 31 is a clamp yoke 32 adapted to straddle the top edge of the tank ring as shown. The clamp yoke is provided with a suitable clamping bolt or screw 33, or the like, to tighten the clamp into selected position on the top edge of the tank ring. In this manner the entire whirly boom can be easily and quickly fastened in any position and after the completion of the raising of the scaffold boards in its vicinity, the clamp can be released and the whirly boom can be shifted to another position to raise scaffold boards to other portions of the platform.

The lower edge of one of the sides 16 of the base 14 has an outwardly extended generally

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horizontal retaining flange 34 which provides wider footing for supporting the whirly boom upon the boards during the scaffold board lowering operation. A locking hook 35 is journaled in said flange 34. The hook 35 has a suitable retaining arm 36 spaced below the flange 34. A handle 37 on the upper end of this hook 35 allows the turning of the hook into and out of locking position as shown in Figs. 3 and 4. When the hook is so turned that its arm 36 is under the edge of the outer scaffold board 11 of the platform as shown in Fig. 4 it holds the whirly boom tightly upon said board and facilitates the operation for lowering the scaffold board.

The structure heretofore described permits the easy and quick raising or lowering of scaffold boards. The unit can be easily assembled for the platform on the respective sides of the tank ring; the whirly boom can be easily shifted into selected position around the upper edge of the tank ring and fastened in any position for the purpose of raising scaffold boards up to the top of the brackets on the same ring either on the inside or the outside at will. The same whirly boom can be easily detached and held upon the boards for the purpose of gradual lowering of the scaffold boards step by step until the scaffold is taken off.

The device herein described facilitates and expedites the raising and lowering of the platform and it involves a great saving of time and labor as well as permits convenient platforms for the erecting of tanks of the type described.

I claim:

1. In a device for raising and lowering scaffold boards for scaffolding on sectional tank construction and the like, a frame adapted to straddle the edge of a tank section and a swingable hoisting mechanism on said frame swingable to either side of said frame, and demountable scaffolding supported on said tank section near said edge, said frame including a base, and spaced sides extended from said base to form a saddle, anti-friction supporting means between said sides and near the underside of said base, a supporting flange extended from at least one of said sides, and means on said flange to clamp said frame upon a board at will.

2. In a device for raising and lowering scaffold boards for scaffolding on sectional tank construction and the like, a frame adapted to straddle the edge of a tank section, and a swingable hoisting mechanism on said frame swingable to either side of said frame, said frame including a base, and spaced sides extended from said base to form a saddle, anti-friction supporting means between said sides and near the underside of said base, a supporting flange extended from at least one of said sides, and means on said flange to clamp said frame upon a board at will, a brace extended from said hoisting mechanism and spaced from said frame, and clamping means on the spaced free end of said brace adapted to clamp upon the element on which said frame is supported at a spaced position from said frame.

3. In a device for raising and lowering scaffold boards for scaffolding on sectional tank construction and the like, a frame adapted to straddle the edge of a tank section and a swingable hoisting mechanism on said frame swingable to either side of said frame, and demountable scaffolding supported on said tank section near said edge,

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said hoisting mechanism including a post extended from said frame, a swingable boom on said frame and post, a system of pulleys on said post and boom, a hoisting line extended around said pulleys and to said frame, and a device on said frame for pulling said line toward said frame, or letting out said line at will.

4. In a device for raising and lowering scaffold boards for scaffolding on sectional tank construction and the like, a base, sides extended from the base to form a saddle to straddle the edge of a tank section, means on said sides for engaging a supporting surface at will substantially at the lower end of said sides, a hoist post extended from top of said base, a brace extended from the hoist post spaced endwise with respect to said base, a clamping device on the free end of said brace adapted to clamp upon a tank section on which said device is used, a swingable hoisting element operatively related to said post and base, a hoist line suspended from said hoisting element and said post, and hoist line operating means on said base to raise or lower said line at will for raising or lowering scaffold boards.

5. In a device for raising and lowering scaffold boards for scaffolding on sectional tank construction and the like, a base, sides extended from the base to form a saddle to straddle the edge of a tank section, means on said sides for engaging a supporting surface at will substantially at the lower end of said sides, a hoist post extended from

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the top of said base, a brace extended from the hoist post spaced endwise with respect to said base, a clamping device on the free end of said brace adapted to clamp upon a tank section on which said device is used, swingable hoisting means operatively related to said post and base, a hoist line on said hoisting means, and operating means for the line of said hoisting means to raise or lower said line at will for raising or lowering scaffold boards, said engaging means on said sides including a flange extended from one of said sides and a rotatable hook spaced below said flange to clamp a board between said flange and said hook.

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