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3,183,997

SUSPENDED WORKING PLATFORM UNIT

Filed Feb. 7, 1963

2 Sheets-Sheet 1

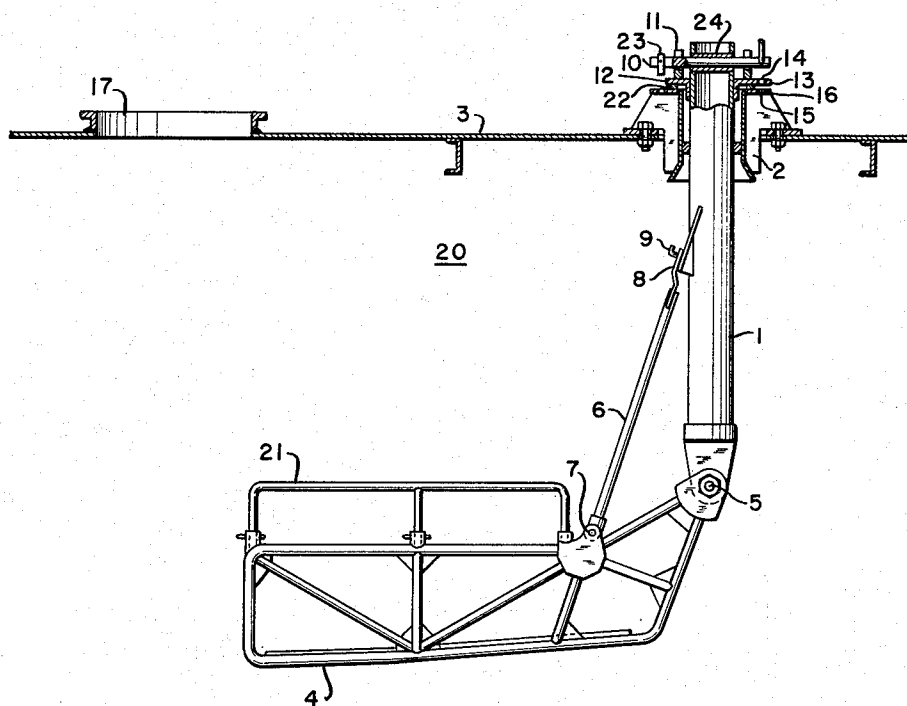


FIG. 1

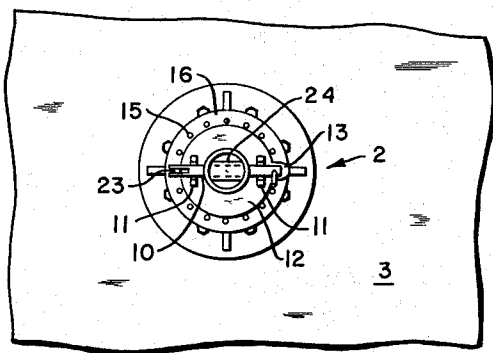


FIG. 2

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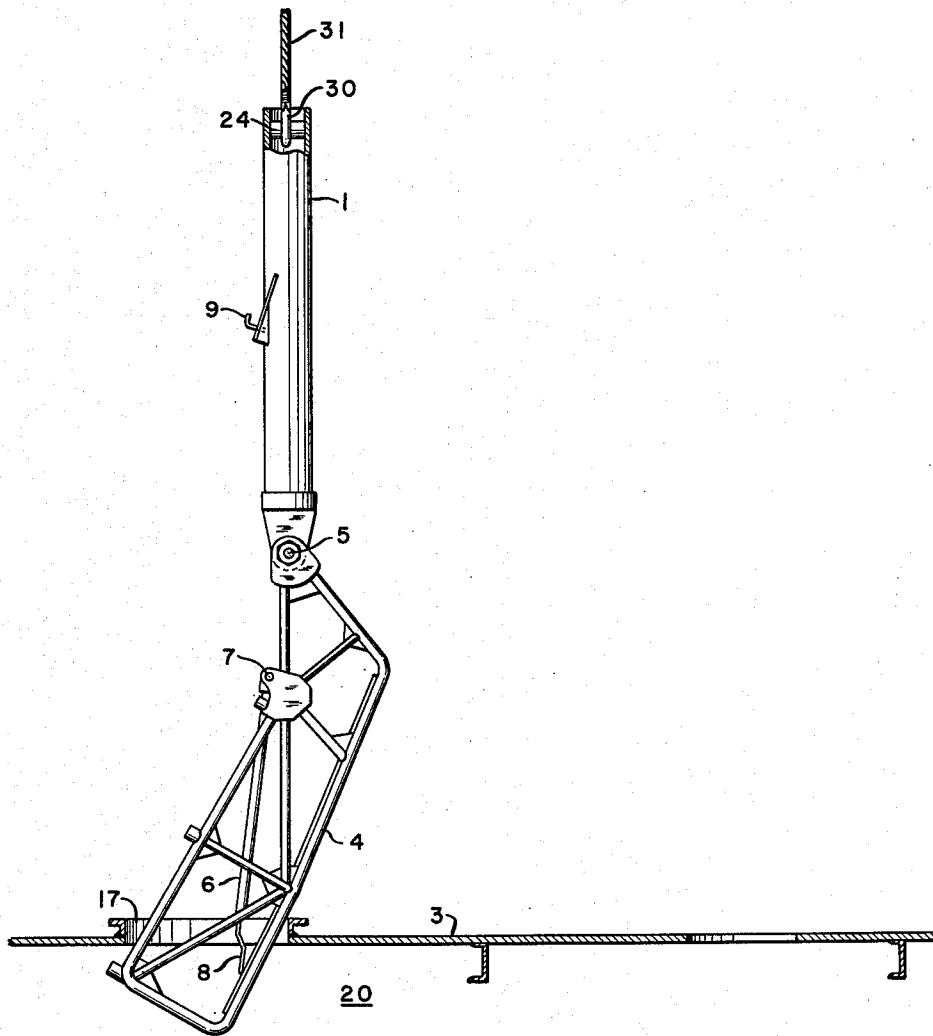


FIG. 3

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SUSPENDED WORKING PLATFORM UNIT

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2 Claims. (Cl. 182—82)

The invention relates to a suspended working platform unit for carrying out operations in tanks, holds, bunkers and similar spaces. In order to carry out certain operations, such as the inspection and painting of the inner walls of tanks, it is often necessary to erect scaffolding in the tank in order to make the top part accessible to the workmen. The assembly and subsequent dismantling of this scaffolding, which may be designed in the form of suspended working platform units, is a time-consuming task. This drawback occurs in particular when the scaffolding has to be made up of numerous parts as in spaces which are only provided with narrow access openings. An example of such difficulty accessible spaces is afforded by the tanks of tankers. It is the object of the invention to provide a suspended working platform unit of a simple design which can be rapidly arranged in a tank or another space.

The suspended working platform unit according to the invention is characterized in that it consists of a shaft to be hung vertically, the top part of which shaft can be secured in a carrying member which can be positioned above an opening in the tank roof, and the bottom part of which shaft is provided with a platform which in the horizontal position can be fixed to the shaft.

A unit of this type can be lowered through a relatively narrow opening into the tank, but when it is secured in the operating position it covers a large operating area. The suspended working platform unit is preferably designed with a platform which can be moved hingeably in a vertical plane so that the suspended working platform unit can be readily inserted as a whole in an oblong shape.

By rotatably suspending the shaft in the carrying member the area of the tank which can be covered by the platform is substantially increased, but should it still be impossible to reach the whole surface which is to be treated in the tank the suspended working platform unit can be shifted in a simple and rapid manner to an adjoining surface.

An embodiment of a suspended working platform unit according to the invention will now be described with reference to the accompanying drawing. Referring to the drawing:

FIG. 1 is a lateral view of the suspended working platform unit suspended in operating position.

FIG. 2 is a top plan view of the carrying member as shown in FIG. 1.

FIG. 3 is a diagram of a lateral view of the suspended working platform unit being introduced into a tank of a tanker.

Referring to FIG. 1, the top part of a shaft 1 is secured in a carrying member 2 mounted above an opening in a cover plate 3 of the tank. At the bottom part of the shaft 1 is arranged a platform 4 consisting of a tubular frame and plates and so secured at one end to the shaft 1 by means of a hinge 5 as to be rotatable in a vertical plane. The platform 4 can be fixed in a horizontal position by means of a connecting element 6 one end of which is joined to the platform 4 by means of a hinge 7, the other end being provided with an eye 8 fitting detachably around a hook 9 of the shaft 1.

The shaft 1 is suspended in the carrying member 2

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from a detachable tumbler bolt 10 which is inserted transversely through the end of the shaft 1 projecting beyond the carrying member 2 and secured therein by means of a rotatable retaining member 23. A liner 25 is provided in the shaft 1 around the bolt 10. In order to lower and hoist the shaft 1 with the platform 4, a hook 30 secured to a rope 31 may be fastened around the liner 24 (as will be seen from FIG. 3). After the bolt 10 has been removed from the shaft 1 the latter can be lowered by means of the carrying member 2. The bolt 10 rests in openings of supporting plates 11, the latter being secured to a plate 12 which rotatably mounted on the carrying member 2 via a slip ring 22, so that the entire assembly of the platform 4, the shaft 1, the bolt 10, the supporting plates 11 and the plate 12 is rotatable relative to the fixed carrying member 2. Instead of the slip ring 22 use may also be made of a ball bearing or the like. The assembly may be rotated by exerting a tangential force on the end of the bolt 10, for instance by a workman on the roof of the tank. If necessary, the workman can revolve himself on the platform 4 by leaning against reinforcement beams, etc. of the tank. The rotatable plate 12 is provided with an eye 13 having an opening 14 which is, in various positions of the plate 12, above one of the openings 15 of the top flange plate 16 of the carrying member 2. When a retaining pin is inserted through superposed openings 14 and 15 the rotatable plate 12 and the parts connected thereto can be fixed in a given angular position relative to the tank.

The dimensions of the platform 4 should be so adapted to the size of the openings present in the tank deck that the suspended working platform unit can be moved into and out of the tank space. In general, this is the case when the platform 4 is so designed that in the best position it can still be slid through the largest access opening of the tank.

The openings in the tank deck in which the suspended working platform unit is suspended may, however, be much smaller than the largest access opening; the suspension openings need only be large enough to make it possible for the carrying member 2, which is narrow compared to the platform 4, to be placed on the cover plate 3. Such openings are usually present in tanks of tankers.

If necessary, the platform 4 may be provided with a detachable guard rail 21.

In order to use the suspended working platform unit the carrying member 2 is secured as a separate part above the suspension opening of the tank by means of the bolts already provided for closing the opening. The connecting element 6 detached from the shaft 1 is rotated into a position alongside the platform 4; the latter is capable of rotating freely about the hinge 5, so that the suspended working platform unit, when suspended from the shaft 1, occupies a more or less extended position. In this position the platform is now placed above an access opening 17 of a tank 20 and then passed into the tank 20 through this opening 17 (see FIG. 3). The suspended working platform unit is lowered onto the bottom of the tank 20 or to a reinforcement frame which is higher than the bottom, where a workman situated at this point fixes the platform 4 to the shaft 1 in a horizontal position by engaging the connecting element 6 around the hinge 7 and hooking it onto the shaft 1.

The suspended working platform unit is now lifted and suspended by means of the bolt 10 from the shaft 1 in the carrying member 2. Workmen can reach the platform 4 by means of a rope ladder from the bottom of the tank or from reinforcement beams therein; from the platform they can carry out work on the inside walls of the tank 20.

Since the shaft 1 is made rotatable in the carrying

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member 2, a large part of the inner surface of the tank 20 can be covered by the platform 4 without the necessity of suspending the unit elsewhere. If, however, the area to be worked within the same tank 20 is greater than that covered by the rotatable platform the unit can be placed in a simple manner in a suspension opening situated further away; this can be done by pulling the bolt 10 out of shaft 1, lowering the shaft 1 with the platform 4, removing the carrying member 2 and securing it above the new suspension opening, again raising the shaft 1 in the carrying member 2 and inserting the bolt 10 through the top of the shaft 1. The unit is removed from the tank in the same way as it is introduced therein, but the necessary steps are then taken in the reverse order.

Although in the embodiment the starting point was a suspended working platform unit of which the shaft 1 is secured in the carrying member 2 so as to rotate and permit removal, this is not essential. If, however, the shaft is arranged rigidly in the carrying member the latter cannot be separately secured to the tank roof from outside but should be inserted together with the shaft through the suspension opening from inside the tank. In order to introduce the carrying member it is then necessary for this opening to be somewhat larger than when the carrying member is designed as a separate member. After the carrying member had been inserted in the opening auxiliary plates are secured above the opening on the tank deck on either side of the carrying member, on which auxiliary plates the carrying member can be fastened.

Even if the shaft itself is secured to the carrying member in a non-rotatable manner it is possible to cover a large working area with the platform, for instance by so designing the platform that it rotates about the fixed shaft. The suspended working platform unit shown in the drawing is to be preferred, however, as it is very simple and effective in use and can be cheaply manufactured.

I claim as my invention:

1. A rotatable suspended working platform supported solely from a single overhead carrying member and

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adapted for use in closed tank structures that have at least one access opening in the top thereof, comprising:

- (a) a vertical support shaft;
- (b) a carrying member having means for rigid attachment to the tank at said access opening, for suspending said shaft for rotation about a vertical axis;
- (c) a horizontal plate surrounding the shaft and positioned in supported relation to said carrying member, said plate being movable with respect to the shaft, and a horizontal rod inserted transversely through to the top part of the shaft and connected to said plate in supported relation, whereby the shaft can be lowered from the carrying member by sliding through said plate after removal of the rod;
- (d) a rigid platform pivotally secured directly to the lower portion of said shaft to one side thereof for movement about a horizontal axis, whereby said platform, with the shaft pivotally attached, can pass through a narrow opening when the platform is pivoted upwardly; and
- (e) means to interconnect said platform and shaft into a rigid unit wherein said platform is substantially horizontal.

2. A platform as defined in claim 1 wherein the said plate carries means fixing the plate to the shaft against relative rotation, said plate being rotatable with respect to the carrying member, and a detachable fastener for securing said plate and carrying member against relative rotation in selected angular positions of the shaft.

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