

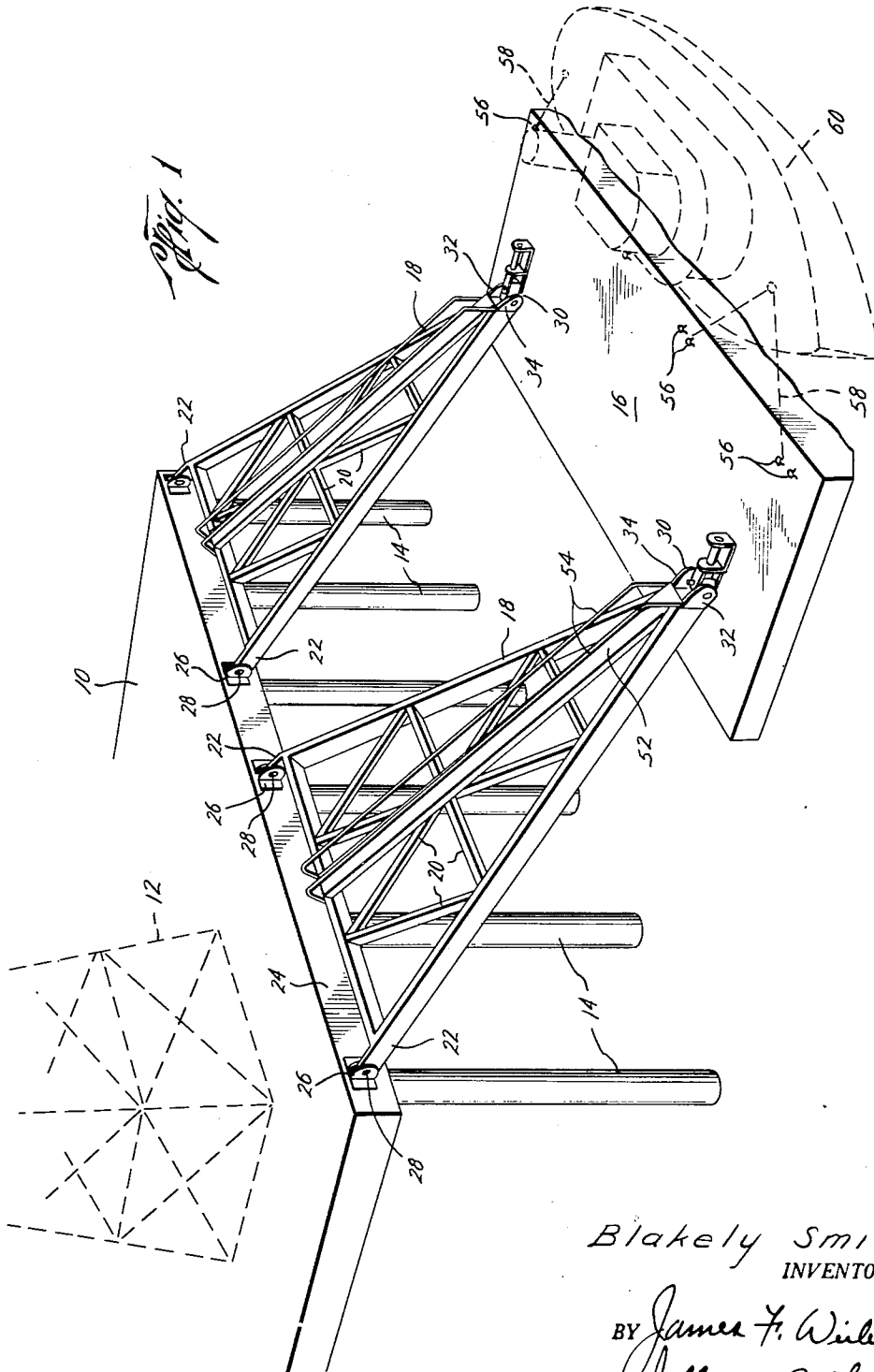
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B. SMITH
FLOATING WHARF

2,715,314

Filed May 2, 1955

2 Sheets-Sheet 1



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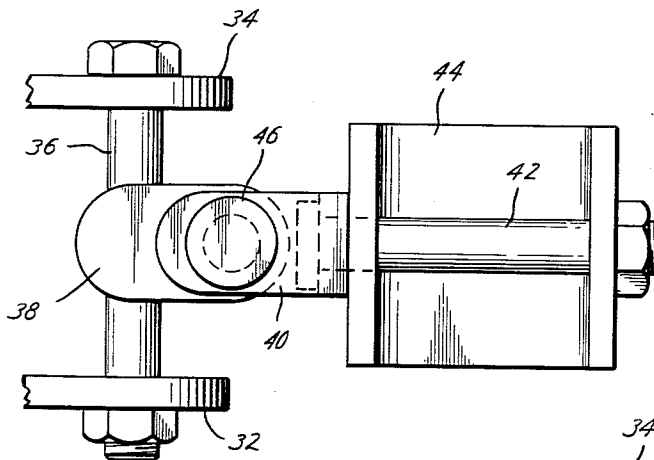
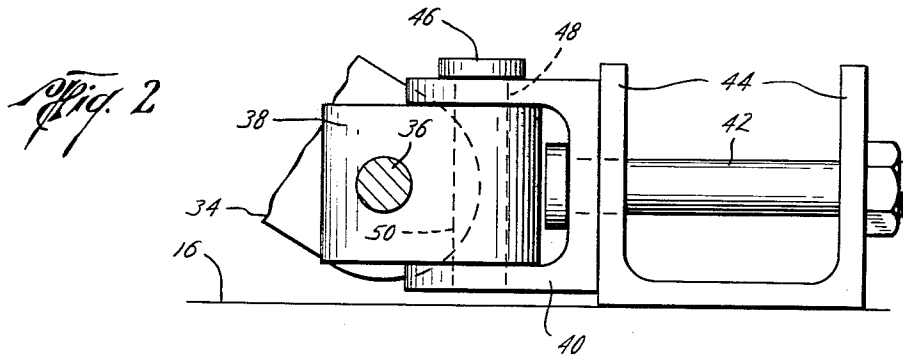
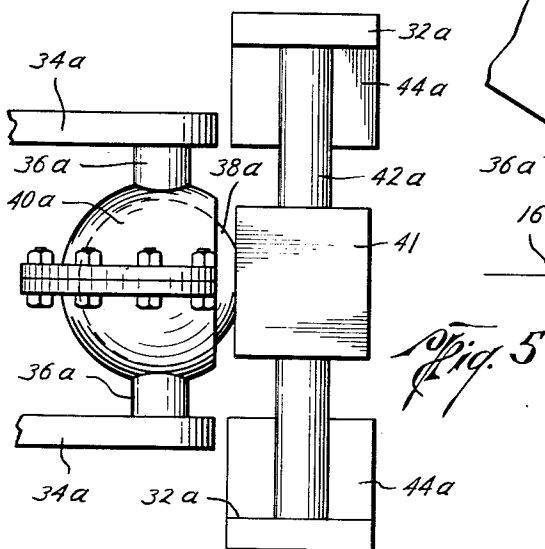
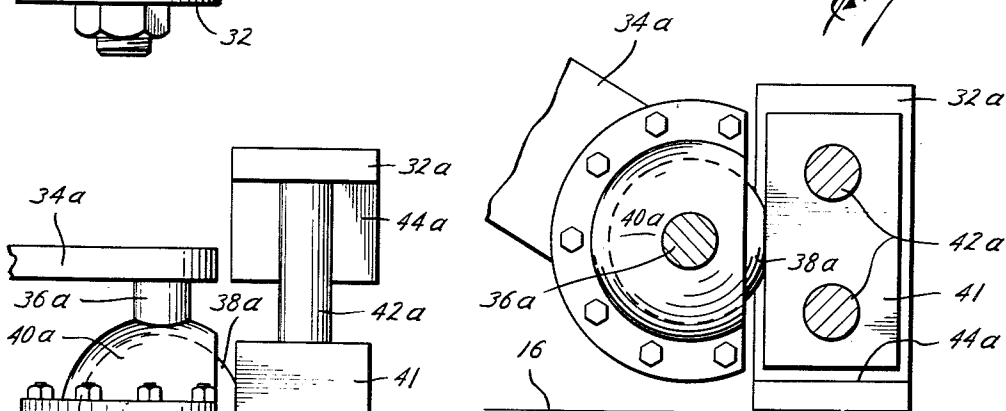


Fig. 4



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FLOATING WHARF

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4 Claims. (Cl. 61—48)

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The present invention relates to a floating wharf or mooring and more particularly relates to a floating wharf or mooring for mooring or anchoring vessels to drilling platforms erected in coastal or inland waters for drilling of oil, gas and like wells.

Considerable difficulty has been experienced in providing a safe, reliable and efficient mooring or wharf for vessels for personnel embarking and disembarking from drilling platforms used in the drilling of oil, gas and like wells in coastal or inland waters due to the shifting of the vessel. This has resulted in a number of serious accidents and has resulted in loss of life. It would be highly advantageous to provide a floating wharf or mooring which is free to move with the waves yet at the same time relative sliding movement between the floating wharf or mooring and vessel and platform is prevented.

Accordingly, it is a major object of the present invention to provide a safe, reliable and efficient floating mooring or wharf for mooring vessels to drilling platforms erected in coastal or inland waters so that personnel may safely embark and disembark to and from the platform.

A still further object of the present invention is the provision of such a floating mooring or wharf which may also serve as an auxiliary wharf in transferring equipment, supplies, tools and provisions to the platform if desired.

Yet a further object of the present invention is the provision of such a floating wharf or mooring in which relative sliding movement is prevented between the vessel, floating wharf or mooring and platform yet which includes means which permits the floating wharf or mooring to readily ride the waves.

A still further object of the present invention is the provision of such a floating wharf or mooring which may quickly and readily be released from the platform when necessary, such as in heavy weather.

Yet a further object of the present invention is the provision of such a floating wharf or mooring which is relatively inexpensive to manufacture and which is reliably efficient in use and operation.

Other and further objects, features and advantages will be apparent as a description of preferred examples of the invention are given, taken in conjunction with the accompanying drawings, where like character references designate like parts throughout the several views and where

Figure 1 is a fragmentary perspective view illustrating a presently preferred example of a floating mooring or wharf in combination with a drilling platform according to the invention,

Figure 2 is a fragmentary side view illustrating a preferred universal type connection for connecting the floating wharf or mooring to the drilling platform,

Figure 3 is a plan view of the universal connection illustrated in Figure 2,

Figure 4 illustrates a modified form of universal type

connection from that illustrated in Figures 2 and 3, and Figure 5 is a plan view of the universal type connection illustrated in Figure 4.

Referring now to the drawings, and particularly to Figure 1, a typical drilling platform is illustrated and designated by the reference numeral 10 upon which is erected a conventional derrick 12 for the usual and customary drilling operations. The platform 10 may be of any type and usually is resting or erected on the bottom of the body of water such as by the legs 14. Since the floating wharf or mooring may be applied to any conventional drilling platform and the drilling platform as such forms no part of the present invention, no detailed description thereof is deemed necessary or appropriate.

A floating dock 16 is provided which may be of any preferred type and preferably has a relatively flat surface for loading and unloading and which floats upon the surface of the water. The floating dock 16 is hinged to the platform 10 by a pair of hinges or breasting off booms 18 which are disposed along one side of the platform 10 and which are secured to the floating dock 16 adjacent its ends.

The hinges or breasting off booms 18 preferably are V-shaped, as illustrated, and may be suitably braced by the braces indicated by the reference numeral 20.

The upper ends 22 of the legs of the V are pivoted to the side 24 of the platform 10 by the brackets 26 and pins 28 so that the hinges 18 swing in a generally vertical direction but cannot shift laterally or longitudinally. Thus, as the floating dock or mooring 16 rises and falls, this movement is accommodated by the generally vertical swinging movement of the hinges 18 but no lateral or horizontal movement is permitted.

In order to accommodate the rise and fall of the floating dock 16 at each end with respect to each other in response to the action of the waves, the lower ends of the hinges 18 are secured by what might be termed universal-type or gimbal connections 30. It should be noted that while these universal or gimbal type connections 30 permit relative downward and upward movement of each end of the floating barge 16 with respect to the other end or portion, they do not permit lateral or horizontal movement with respect to the hinges 18 and platform 10 due to the fact that they are placed snugly against the outer side 32 of each bracket 34.

As best seen in Figures 2 and 3 the bracket 34 secured to the lower end of the V hinge 18 has a transverse pin 36 disposed therethrough upon which is slidably mounted a gimbal element 38 interfitting with a gimbal element 40 which is rotatably secured by the pin 42 to the bracket 44, the latter being rigidly mounted on the deck of the floating dock 16, as seen in Figure 1. Turning again to Figures 2 and 3 the interfitting portions of the gimbal elements 38 and 40 are held in interfitting relationship by means of the pin 46 which extends through the aligned openings 48 and 50 in the interfitting gimbal members 40 and 38, respectively.

Thus, universal action is permitted to accommodate the rise and fall of one end of the floating dock 16 with respect to its other end and the gimbal element 38 slides along the pin 36 to accommodate this relative movement. In connection with Figure 3, the gimbal element 38 is shown in a more or less central position on the pin 36 which would be the position on dipping of the end causing a shortening of the horizontal direction of the floating dock, but it is critical that the universal type connections are at the outward position when the floating dock is in a horizontal plane to prevent sliding or relative horizontal movement of the floating dock 16 and the platform 10.

An alternate universal type connection is illustrated in Figures 4 and 5 where the reference letter *a* has been added

to corresponding parts for convenience of reference. Turning now to these figures the lower end 34a of the hinge 18 is secured to the socket 40a by means of the pin 36a, which socket 48 receives the ball element 38a secured to the sliding block 41 which slides along the pair of arms 42a secured to the bracket 44a which is secured to the deck of the floating dock 16. Thus, a universal action is provided by the interfitting ball and socket elements 38a and 40a, respectively, and sliding movement is permitted with respect to the dock 16 when the horizontal length thereof is shortened due to the fall and rise of the dock 16 due to wave action. In this connection, while in Figure 5 the sliding block 41 is illustrated in a central position, this is during a fall or rise, and it is critical that when the floating dock 16 is in a horizontal position the block 41 abuts the outer side 32a of each of the brackets 44a so that there is no possibility of any sliding movement between the floating dock 16 and the platform 10.

Referring now to Figure 1, the hinges or breasting off booms 18 have a stairway 52 which has the guard rails 54 for personnel to go from the floating dock 16 to the platform 10 and back.

The mooring chocks 56 are provided at the outer end of the floating dock 16 to which the cables 58 of the vessel 60 may be secured for securely mooring the vessel 60 to the floating dock 16.

In use the floating dock or mooring may be assembled as illustrated in Figure 1 and the vessel 60 secured thereto by means of the cables 58 being secured to the mooring chocks 56. Thus, no movement is permitted between the vessel 60 and the floating dock 16 and due to the hinges 18 being hinged for only generally vertical movement with respect to the platform 10 and limited sliding movement only for the rise and fall of the floating dock 16 there is no substantial independent lateral movement. This provides for safe and efficiently reliable embarking from the vessel 60 to the floating dock 16 then to the platform 10 or vice versa. In addition, the stairways 52 and guard rails 54 provide safe access to and from the platform 10.

In connection with the embodiment illustrated in Figures 1-3, inclusive, in the event of high seas and it is desirable to be free of the floating dock 16, it is only necessary to remove the pins 46 thereby providing a quick release when necessary. A similar quick release may be provided in connection with the ball and socket connection of Figures 4 and 5 by providing a quick releasing pin in connection therewith.

Numerous changes may be made in details of construction and arrangement of parts. It is only necessary that the hinges be secured for generally vertical swinging movement with respect to the platform and have no lateral or sliding motion and that a universal or gimbal type connection be made with the floating dock 16 in combination with a limited sliding movement to take care of the rise and fall of the floating dock, but the universal or gimbal type connection and limited sliding movement should be so constructed and arranged to prevent any horizontal or lateral movement of the dock 16 when in a horizontal plane with respect to the hinges 18. Also, any suitable hinges or breasting off booms may be used and any type stairway may be provided. In some cases, it may be desirable to provide an adjustable stairway so that the steps of the stairs are ordinarily in a generally horizontal plane. In addition, while only two hinges are illustrated, obviously two or more may be used as desired.

While the present invention has been described for and has particular application and utility with respect to platforms located in water for the drilling of oil, gas and like wells, obviously the floating wharf or mooring may be attached to any dock or wharf which is in use generally or for any particular purpose.

Accordingly, the present invention is well adapted and suited to carry out the objects and attain the ends and

advantages mentioned as well as others inherent therein. The present invention is to be limited only by its spirit and the scope of the appended claims.

What is claimed is:

1. A floating mooring for fixed platforms, docks and the like comprising, a floating dock, a pair of laterally-spaced hinges, means at one end of each of said pair of hinges for hingedly connecting each hinge to a side of a fixed platform for generally vertical hinge movement only, universal means connecting the other end of each of the pair of hinges to the floating dock for universal movement with respect to the floating dock, each of said universal means including a sliding connection in a lateral direction, each said sliding connection being at its outward extremity with respect to the other when the floating dock is in a generally horizontal position thereby preventing lateral shifting of the floating dock with respect to the platform but permitting rise and fall of one end of the floating dock with respect to the other end thereof, and means on the floating dock for securing a vessel thereto.
2. A floating mooring for fixed platforms, docks and the like comprising, a floating dock, a pair of laterally-spaced V-shaped hinges, pivot means at the upper end of each leg of the V-shaped hinges for pivoting the hinges to a side of a fixed platform for generally vertical pivoting movement only of the hinges, universal means connecting the other ends of the V-shaped hinges for universal movement with respect to the floating dock, each of said universal means including a sliding connection in a lateral direction, each said sliding connection being at its outward extremity with respect to the other when the floating dock is in a generally horizontal position thereby preventing lateral shifting of the floating dock with respect to the platform but permitting rise and fall of one end of the floating dock with respect to the other end thereof, and means on the floating dock for securing a vessel thereto.
3. A floating mooring for fixed platforms, docks and the like comprising, a floating dock, a pair of laterally-spaced hinges, means at one end of each of the pair of hinges for hingedly connecting the hinges to a side of the fixed platform for generally vertical hinge movement only, universal means connecting the other end of each of the pair of hinges to the floating dock for universal movement with respect to the floating dock, each of said universal means including a sliding connection in a lateral direction, each said sliding connection being at its outward extremity when the floating dock is in a generally horizontal position thereby preventing lateral shifting of the floating dock with respect to the platform but permitting rise and fall of one end of the floating dock with respect to the other end thereof, each said universal means including a pair of interfitting members provided with aligned apertures, a pin extending through the apertures for quick release of the interfitting members, and means on the floating dock for securing a vessel thereto.
4. A floating mooring for fixed platforms, docks and the like comprising, a floating dock, a pair of laterally-spaced hinges, means at one end of each of the pair of hinges for hingedly connecting the pair of hinges to a side of a fixed platform for generally vertical hinge movement only, universal means connecting the other end of each of the pair of hinges to the floating dock for universal movement with respect to the floating dock, said universal means including interfitting ball and socket elements and including a sliding connection in a lateral direction, each of said sliding connections being at its outward extremity with respect to one another when the floating dock is in a generally horizontal position thereby preventing lateral shifting of the floating dock with respect to the platform but permitting rise and fall of one end of the floating dock with respect to the other end thereof, and means on the floating dock for securing a vessel thereto.

No references cited.