March 29, 1960 S. PERKINS 2,930,200

PORTABLE APPARATUS FOR SUPPORTING OFF SHORE DRILLING EQUIPMENT

Filed Dec. 12, 1955

5 Sheets-Sheet 1

Fig. 1.

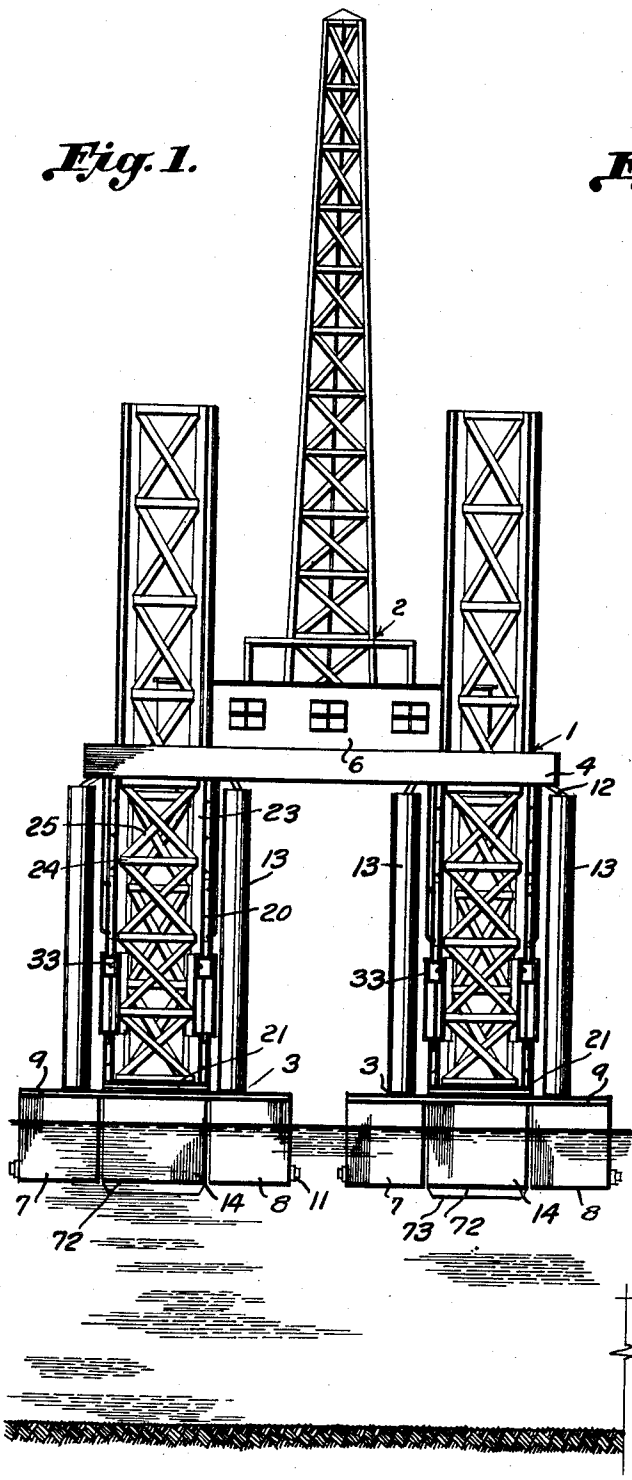
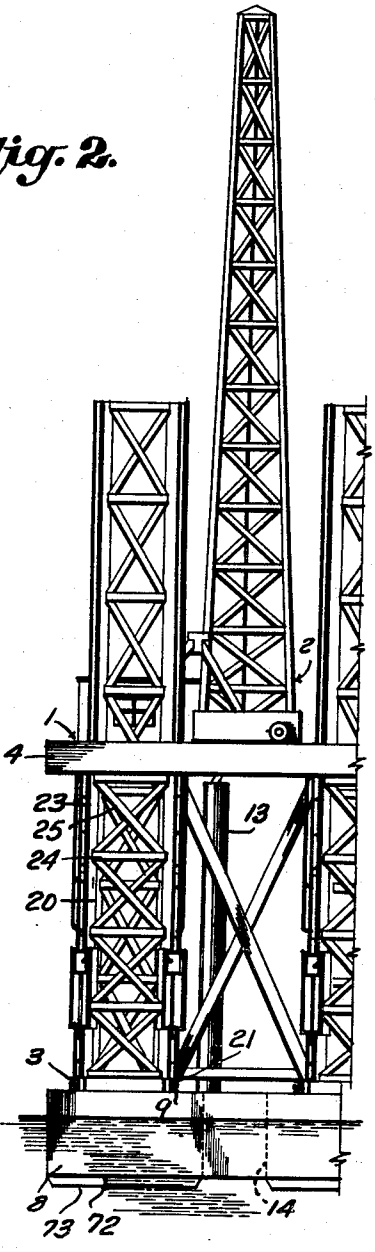



Fig. 2.




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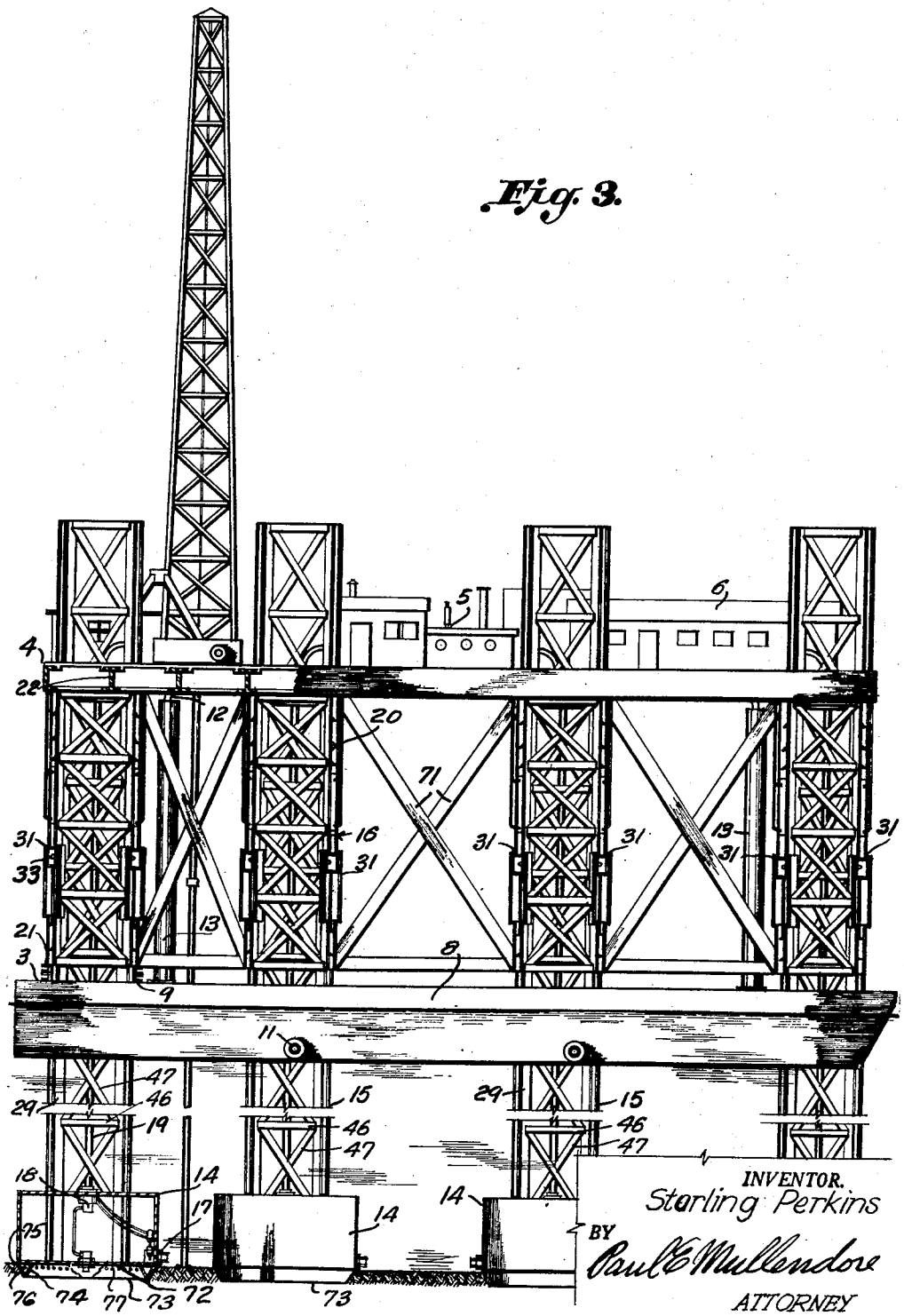
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*Fig. 3.*



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PORTABLE APPARATUS FOR SUPPORTING OFF SHORE DRILLING EQUIPMENT

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Fig. 4.

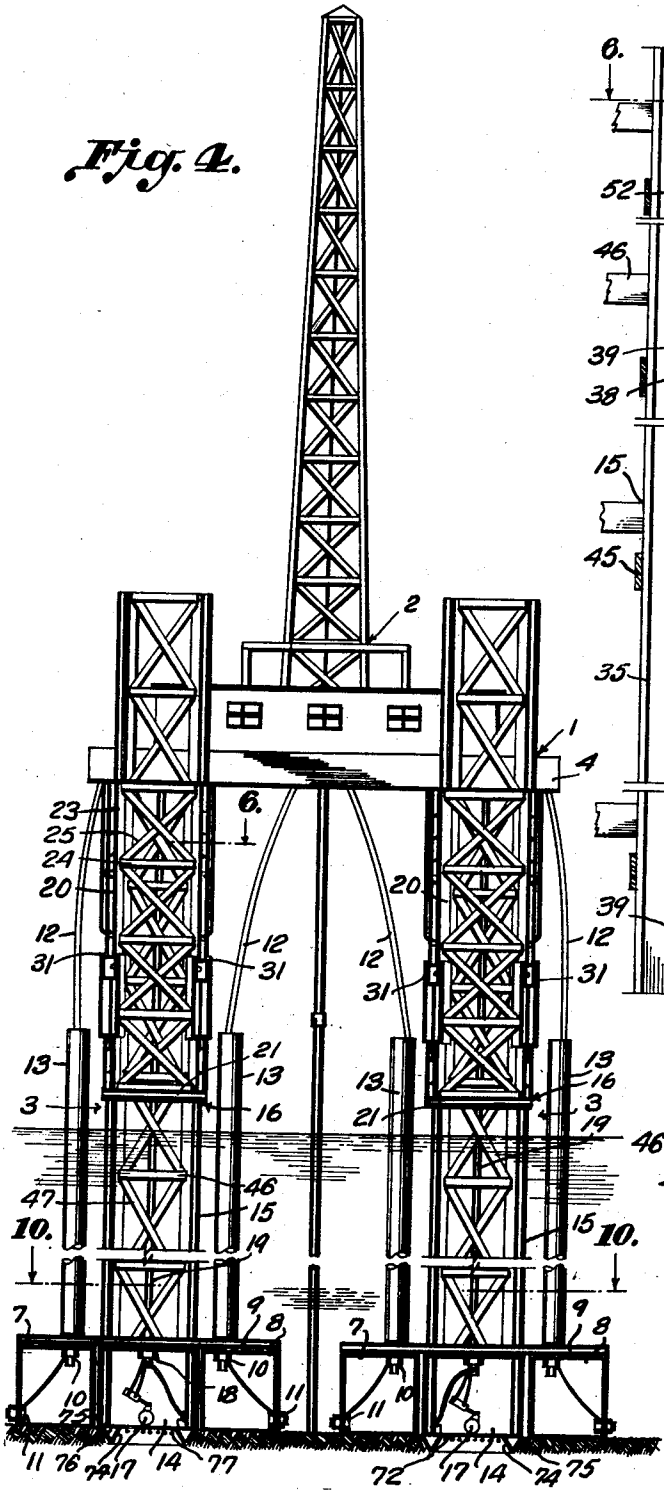


Fig. 5.

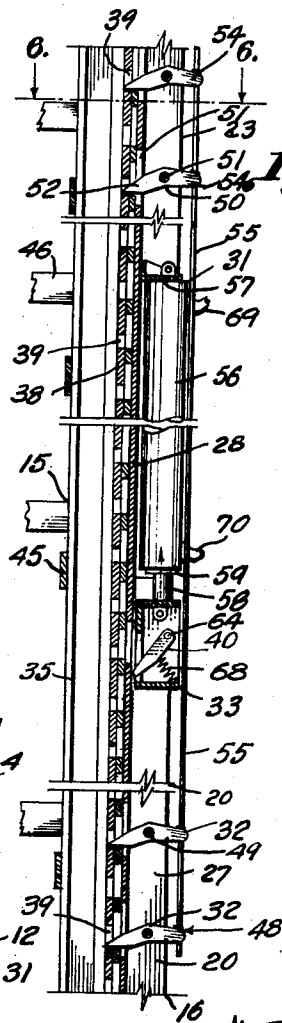
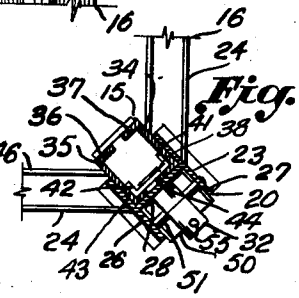


Fig. 6.



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Fig. 7.

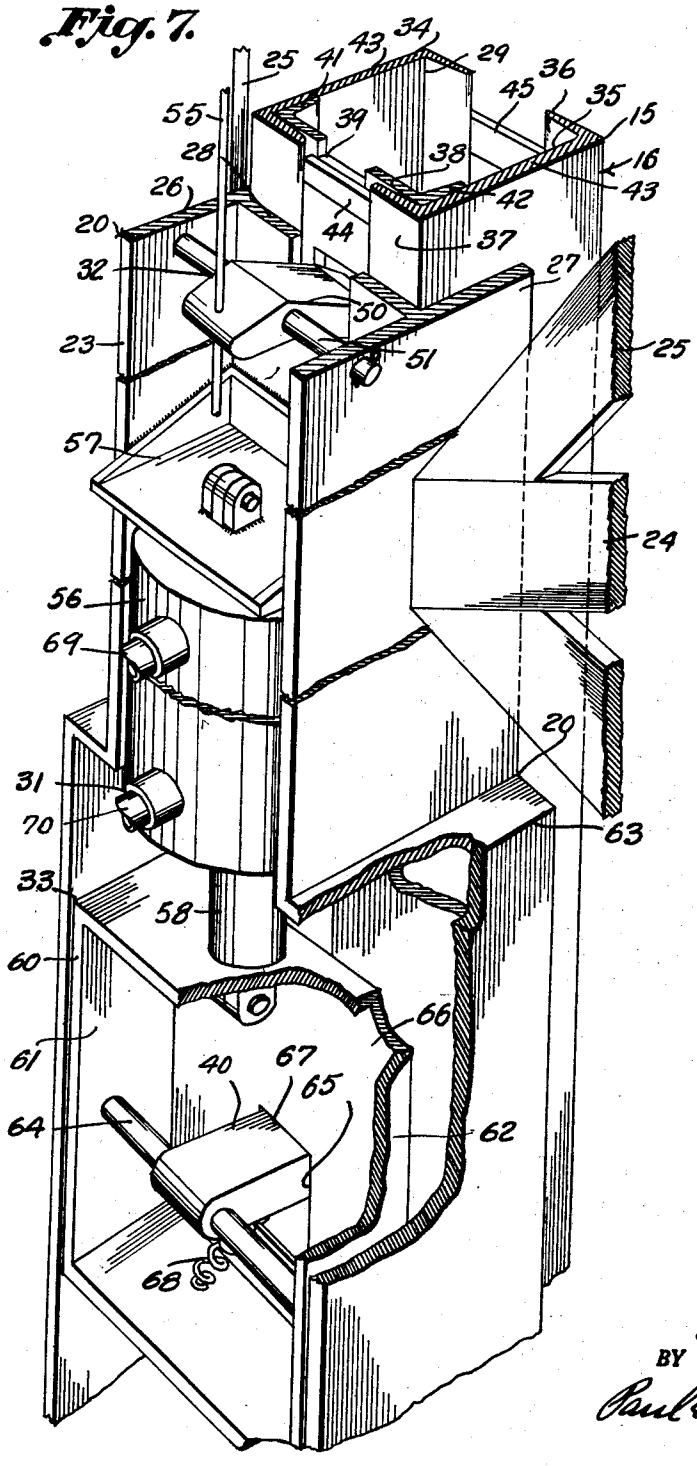
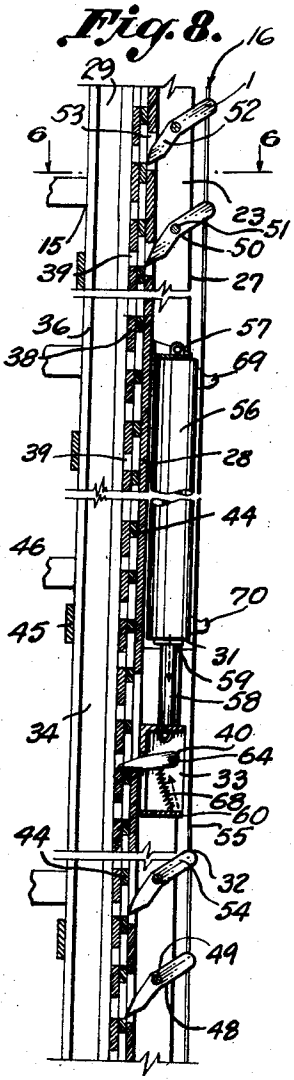



Fig. 8.




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PORTABLE APPARATUS FOR SUPPORTING OFF SHORE DRILLING EQUIPMENT

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Fig. 11.

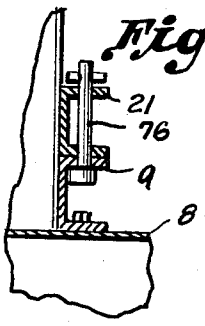



Fig. 9.

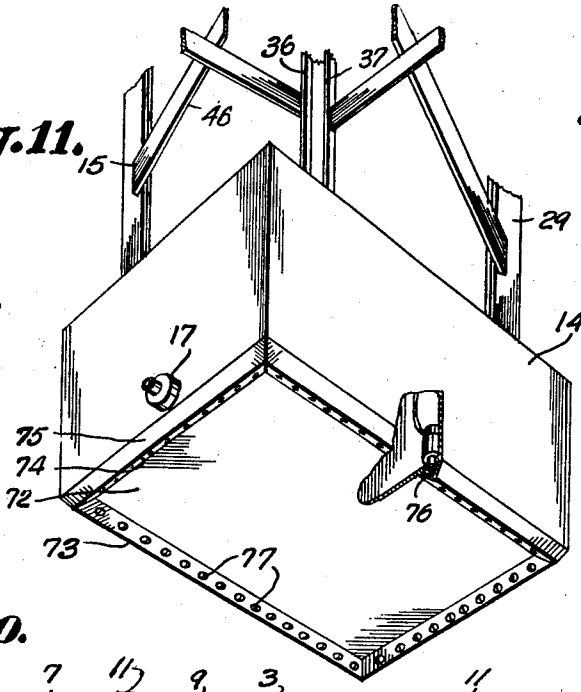
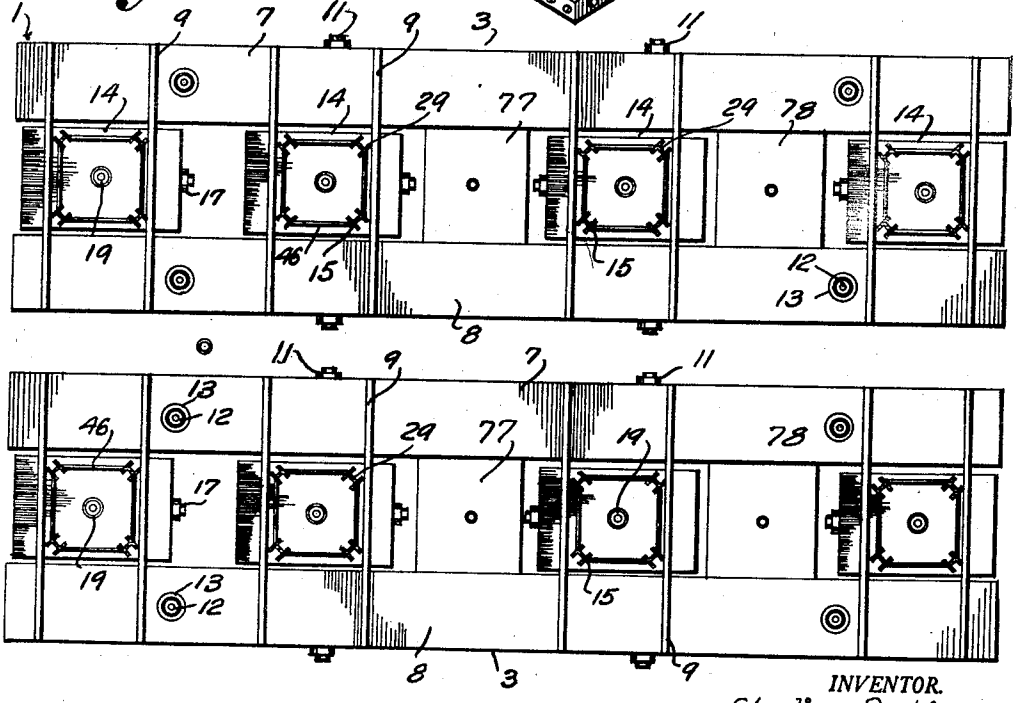



Fig. 10.




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United States Patent Office 2,930,200 Patented Mar. 29, 1960



2,930,200

# PORTABLE APPARATUS FOR SUPPORTING OFF SHORE DRILLING EQUIPMENT

Starling Perkins, Chouteau, Okla., assignor of one-half to Beulah Perkins, Chouteau, Okla.

Application December 12, 1955, Serial No. 552,500

8 Claims. (Cl. 61—46.5)

This invention relates to a portable apparatus for supporting off shore drilling equipment and has for its principal object to provide an apparatus of this character whereby the drilling equipment, materials, machinery, living quarters and other essentials for off shore drilling may be transported to the site on towers that are carried by barges and which are extendable to the floor of the ocean for transferring support of the equipment from the barges to the ocean floor when the site of drilling is reached.

Other objects of the invention are to provide means for leveling off the surface of the ocean floor under each tower for providing stability of the supporting apparatus; to provide a main platform on the upper end of the towers for carrying the drilling equipment; to provide each tower with jacks for seating the extensions of the towers under weight of the platform and drilling equipment and for leveling of the platform; to provide means for sinking the barges below the action of the waves and preferably for support on the ocean floor; to provide the apparatus with towers having outer and inner sections, the outer sections being supported by primary barges and the inner sections by secondary barges or pontoons which are adapted to be sunk when the inner sections are lowered to support the weight of the drilling equipment on the ocean floor; to provide the bottom of the secondary barges with means for establishing a vacuum or non-slip footing for the towers; and to provide the secondary barges with under jets to assist in surfacing of the secondary barges when the apparatus is to be moved to another drilling site.

A further object of the invention is to provide a platform support which consists of a plurality of units that may be grouped in desired number for support of a platform suitable for the drilling operations thereby using the smallest amount of equipment possible when establishing off shore drilling plants.

It is also a prime object of the invention to provide apparatus which is substantially safe and of relatively simple operation for locating and setting up drilling equipment for off shore locations.

In accomplishing these and other objects of the invention as hereinafter described, I have provided improved structure the preferred form of which is illustrated in the accompanying drawings wherein:

Fig. 1 is an end elevational view of a portable apparatus for supporting off shore drilling equipment and showing the apparatus in the position for transporting the drilling equipment to the drilling location.

Fig. 2 is a partial side elevational view showing the primary and secondary barges in floating position.

Fig. 3 is a side elevational view showing the primary barges in floating position and the secondary barges after they have been lowered to the floor of the ocean to extend the inner sections of the towers for supporting the drilling platform independently of the primary barges, portions being broken away to better illustrate the construction of the drilling platform and one of the secondary barges.



Fig. 4 is an end elevational view with the primary barges sunk to a position below the wave action and showing the primary and secondary barges in section.

Fig. 5 is a fragmentary section of one of the corner portions of the inner and outer sections of one of the towers and particularly illustrating the jack mechanism and locks or latches for connecting the inner and outer sections.

Fig. 6 is a section on the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary perspective view of portions of the inner and outer sections condensed as to length and showing the jack and lock mechanisms.

Fig. 8 is a section similar to Fig. 5 but showing the ram of the jack mechanism with the pawl thereof in position for shifting the sections as when leveling the drilling platform and showing the locks or latches in disengaged position.

Fig. 9 is a perspective view of the lower end of an inner section of one of the towers and particularly illustrating the secondary barge support therefor, a part of the barge being shown in section to better illustrate the construction.

Fig. 10 is a horizontal section on the line 10—10 of Fig. 3.

Fig. 11 shows a means for connecting the towers to the barges and prevent independent movement of the barges when the apparatus is moved to a drilling site.

Referring more in detail to the drawings: 1 designates a portable apparatus for transporting and carrying drilling equipment generally represented by the derrick 2. In carrying out the present invention the supporting apparatus will comprise a series of units 3 that may be grouped together in accordance with the extent of the drilling equipment to be carried thereby. For example, the apparatus 1 will include at least two units 3 for supporting a drilling platform 4 which is of a size for establishing a sufficient working field for the average drilling operations that are to be carried out thereon. For example, the platform should adequately carry the drilling equipment as represented by the derrick 2, the tools and machinery 5 necessary in servicing the derrick, and the buildings 6 that serve for living quarters for the drillers and other personnel. The platform should also be of a size to stack the drill pipe, casings and the like, and in more extensive operations a landing field for aircraft such as helicopters.

If a unit 3 includes two or more primary barges 7 and 8 they are arranged in spaced apart parallel relation to be connected together across the top by transverse beams 9 at spaced points along the length of the barges. The barges are preferably elongated and may be of various size and shape to provide sufficient floating capacity required of each unit. The barges are also of ample strength for supporting the load and for water pressures existing at depths of 100 feet or more. The barges are equipped with air and water valves generally indicated by the numerals 10 and 11 and which are operated from the platform 4 through suitable controls and ducts contained within cables 12 that connect with the control mechanisms and machinery such as compressors, pumps and the like (not shown) that are necessary to service the primary barges. The cables 12 are protected by extending them through vertical caissons 13 that are carried on the barges and which extend upwardly to a point above the water line when the barges are sunk to the floor of the ocean, as later described. The caissons are also of a size to accommodate ladderways by which workmen may descend into the interior of the barges.

Operable between the primary barges 7 and 8 of each unit is a series of secondary barges 14 which are of a size and capacity for buoyantly supporting inner sections 15 of towers 16, later described. The secondary

barges are also equipped with water valves 17 and air valves 18 which are remotely operated on the derrick platform through control lines and ducts 19 that extend upwardly through the towers.

The secondary barges 14 cooperate with the primary barges 7 and 8 in floating the apparatus to the drilling site, and also constitute footings when the inner sections 15 of the towers 16 are lowered to the floor of the ocean.

The outer sections 20 of the tower have base beams 21 that seat on the transverse beams 9 and the upper ends preferably extend above the platform and are attached to the beams 22 composing the platform 4 to support the platform above the action of the waves when the weight of the platform is carried on the barges and also when the weight of the platform is carried on the floor of the ocean, as later described.

Each outer section of the towers includes vertical legs 23 that are interconnected along the height thereof by girths 24 and cross braces 25, there being four of the legs 23 to form a transversely rectangular structure. The legs 23 are best shown in Figs. 6 and 7 as being of generally H-shape cross-section in that they have spaced side flanges 26 and 27 connected by webs 28 to form inner vertical channel shaped guides for legs 29 of the inner sections of the towers. The opposite sides of the legs 23 form similar channels in which jack mechanisms 31, locking pawls 32 and a ram 33 are mounted.

The legs 29 of the inner sections are shown as comprising channels 34 and 35 having flanges 36 and 37 (Fig. 7) thereof spaced apart and connected on the side of the legs of the outer section by a plate 38 having a vertical series of transverse apertures 39 to form vertical racks for the locking pawls or latches 32 and the pawls 40 of the rams 33 previously mentioned. The plates 38 may lap the inner faces of the flanges 36 and 37 and have side flanges 41 and 42 (Fig. 7) welded to the inner faces of the webs 43 of the channels, as best shown in Fig. 7. The plates are preferably reinforced along the lower edge of each opening 39 by transverse bars 44 that are welded to the edges of the flanges 36 and 37, as shown in Fig. 7. The opposite or inner flanges of the channels 36 and 37 may be connected by transverse bars 45, as shown in Fig. 7. The legs of the inner sections of the towers are also connected by girths 46 and cross braces 47 to provide a rigid self supporting structure.

The locking latches 32 include a lower set 48, Figs. 5 and 8, that are pivotally mounted on cross shafts 49 having their ends carried by the outwardly extending flanges of the legs 23 and an upper set 50 that are mounted on similar cross shafts 51. The latches have ends 52 that project through openings 53 formed in the webs 28 for engaging in the slots 39. There is a sufficient number of latches in each set so as to adequately connect the sections of the towers and support the load of the platform. The latches have tail portions 54 that are connected by rods 55 and which are operated above the platform 4. When the legs 23 are moved upwardly relatively to the legs 29, the shafts 49 and 51 being carried by the legs 23 swing downwardly so that the ends 52 thereof withdraw from the openings 39 to free the latches, as shown in Fig. 8 and later to be described.

Fixed to the web portion 28 of the legs of the outer sections of the tower are the jack mechanisms 31. Each jack mechanism includes a cylinder 56 fixed to and depending from brackets 57 which project outwardly from the webs 28. Slidable in the cylinders are piston rods 58 that extend through packing boxes 59 in the lower ends of the cylinders. Fixed to the lower ends of the rods are rams 33 each including a substantially rectangular frame 60 having sides 61 and 62 slidable between the flanges 26 and 27. In the illustrated instance the flanges 26 and 27 are offset outwardly at the point in which the rams operate as shown at 63 in Fig. 7. The pawls 40 are fixed to shafts 64 having the ends thereof journaled in the sides 61 and 62 of the rams. The pawls extend through slots 65 in plate 66 that close the inner sides of the ram and form stops 67 at the upper ends of the slots against which the pawls 40 engage under action of springs 68. The ends of the pawls are thus kept in sliding contact with the bars 44 to successively engage in the openings 39 and against the stop 67 upon operation of the rams as hereinafter described.

A fluid pressure medium is admitted and exhausted to one and the other ends of the cylinders 56 through ducts 69 and 70 leading to a suitable control mechanism and pressure supply located on the platform 4. While the towers are self supporting, the upper sections are preferably braced above the water line and below the platform 4 by cross braces 71. The under face 72 of each secondary barge has a depending rim 73 preferably formed by angles having the flanges 74 and 75 welded to the bottom face 72 as shown in Fig. 9. The angles thus cooperate to form a passageway 76 extending completely around the marginal edges of the secondary barges for distributing a pressure fluid such as air or liquid that is discharged through a plurality of apertures or jets 77 that are arranged within the inner flanges 74 of the angles so as to direct the fluid under pressure downwardly and inwardly across the bottom faces 77 of the secondary barges or pontoons for washing away and leveling off the ground on which the secondary barges are to be seated, the excavation by the jets being sufficient to provide for stability of the towers. The flanges 74 and 75 thus converge downwardly and form relatively sharp edges to assist in penetration into the soil at the floor of the ocean and to provide a seal so that a vacuum may be effected under the bottoms of the secondary barges to prevent slipping thereof and movement of the apparatus out of drilling position during times of storms and high waves. The jets are supplied with a pressure fluid by ducts in the cables 19.

The inner and outer sections of the towers are connected together for transportation of the apparatus to the drilling site. This may be accomplished as shown in Fig. 11 by means of pins 76 which connect the transverse beam members 9 and 21, the pins being removable to permit sinking of the barges 7 and 8 when desired.

The barges 7 and 8 may be connected intermediate the secondary barges by tanks 77 and 78 to contain fresh water, fuel oil, lubricating oil, and other materials used for drilling.

It is assumed that the apparatus is set up as shown in Figs. 1 and 2 with the towers in telescoped position and carried by the primary barges 7 and 8 and secondary barges 14, with the platform 4 above the action of the waves and the drilling equipment, materials, living quarters and the like all assembled on the platform. The derrick 2 will preferably be of the folding type so that it may be carried in an inclined position on the platform. The apparatus is now floating because the barges are used in number and size to provide the floating capacity necessary for sustaining the towers, platform and the weight carried thereon. The apparatus is floated to the drilling site with the aid of suitable tugs. When the drilling site is reached the pins 76 are removed and water is pumped into the secondary barges 14 so that the secondary barges sink to the floor of the ocean with the inner sections 15 of the towers moving downwardly in guided relation with the outer sections of the towers while the outer sections, platform and drilling equipment are carried on the primary barges. When the secondary barges have reached the floor of the ocean fluid is discharged under pressure through the jets 77 to level off the area on which the respective secondary barges are to be seated. Pressure fluid is admitted to the jack cylinders 56 through the ducts 69 to force the rams downwardly. As soon as the pawls 40 register with an opening 39, the springs 68 push them into the registering opening to be engaged by the stops 67. The pawls are then engaged by the stops, and being supported by the bottoms of the notches, the downward

movement of the rams is stopped thereby. The effective force then acts through the cylinders 56 to lift the legs 23. The hydraulic jacks thus apply pressure on the pawls to exert a downward force on the legs of the inner sections 15 of the towers to assist in penetration of the secondary barges in seeking a firm foundation on the ocean floor and exert upward lift on the platform 4. Any variation in the level of the platform 4 may be adjusted by continuing the operation of the jack means. If a greater movement is required than the stroke of the pistons to properly seat the secondary barges and to level the platform 4 than that which can be obtained by the length of the jack cylinders, the rods 55 are actuated to raise the locking latches so that they engage in the nearest apertures 39 (Fig. 5) to make a solid connection between the inner and outer sections of the towers. When the lifting force is released, the latches will tilt upwardly to be engaged by the upper edges of the openings 39. In other words, the ends of the latches will wedge between the bars 44 and the upper edges of the openings in which they are engaged. Pressure fluid is then exhausted through the ducts 69 from the upper end of the cylinders and admitted to the lower ends of the cylinders through the ducts 70 to raise the rams to a position where the jack means are again effective in applying a downward force on the secondary barges and a lifting force on the platform. As soon as the rams are lifted, the pawls 40 will ride along the bars 44, and when the movement is stopped, the springs 68 will cause the pawls 40 to reengage in the nearest opening 39. If a greater length of the inner sections is required as when drilling in greater depths of water or a greater penetration of the ocean floor is required to obtain a solid footing, extensions may be added to the upper ends of the inner sections. Provision should also be made to maintain an adequate interlap between the outer and inner sections to assure stability and eliminate any possibility of buckling under load and/or wave and winds during storms.

It is obvious that the secondary barges form footings for the towers and that the respective inner sections may be lowered differential amounts depending upon where a solid footing is found to support the platform. The locking latches are also set and locked after the towers have been firmly seated.

After the towers have been adjusted the primary barges are released from connection with the towers to transfer all the weight onto the floor of the ocean. Then the primary barges may be sunk below the action of the waves upon opening of the flood valves 11 and admitting the ocean water therein. This is begun slowly until it is assured that all the towers are holding firmly. The primary barges fill with water and settle downwardly in guided relation with the towers to ultimately rest on the ocean floor. The marginal ridges 7 on the secondary barges are forced under weight into the earth formation and prevent slipping or sliding of the towers under action of the waves and wind resistance. If desired a vacuum may be formed under each of the secondary barges by reversing the flow through the jets 77.

The apparatus on the platform 4 may then be prepared for drilling, the derrick is erected on the platform so that the drill pipe extends downwardly in the space between the pairs of primary barges as shown in Fig. 4. All of the drilling operations may be carried on from the platform in substantially the same manner as the drilling operations on land.

After drilling is completed the apparatus may be moved to another drilling site. This is effected by first raising the barges 7 and 8 by forcing the water therefrom by injection of air under pressure through the air valves 10 to restore buoyancy sufficiently to cause the barges to rise upwardly on the towers to again float on the surface in engagement with the base members of the outer sections of the towers. The locking latches 32 and pawls 40 are released. Water is then likewise forced out of the secondary barges and jets of fluid are discharged thereunder to release the secondary barges from contact with the soil so that they float upwardly causing the inner sections to telescope within the outer sections until the secondary barges float between the primary barges and are in a position where they may be connected with the transverse beams 9. The pins 76 are then inserted and the apparatus is ready to be towed to another drilling site.

From the foregoing it is obvious that the construction of the towers permits ample adjustment thereof to accommodate the footings thereof to the ocean floor and to distribute the load on all of the towers. It is also obvious that adequate footing is attained to distribute the pressure uniformly over the critical area on the ocean floor.

Also, the jets under the secondary barges will greatly assist when surfacing the secondary barges. If desired, similar jets may be discharged under the primary barges to assist in raising thereof from off the ocean floor.

The towers may be lowered and raised all at one time orthey may be separately operated.

The jack means may be used to assist in lifting the secondary barges and restore telescoped relation of the sections of the tower after the primary barges have been raised and are supporting the load. This is effected by engaging the pawls 40 when the rams are raised.

It is to be understood that the primary barges 7 and 8 are securely tied together by the girders 9 and tanks 78 and 79 so that they will be a substantially rigid unit when they are released from the other parts of the structure and ready to be submerged.

What I claim and desire to secure by Letters Patent is:

1. A portable apparatus for supporting off shore drilling equipment upon the floor of the ocean and at an elevated position above the action of the waves, said apparatus including, a platform for mounting the drilling equipment, towers for supporting the platform each including inner and outer sections telescoping one within the other, means connecting the platform with upper ends of the outer sections of the towers, a pair of spaced apart primary barges adapted for seating opposite sides of lower ends of the outer sections of the towers thereupon, secondary barges, means for securing lower ends of the inner sections to the secondary barges for supporting the inner sections thereon and cooperating with the primary barges for transporting the platform in substantially elevated position to a drilling site, means for sinking the secondary barges for lowering the inner sections of the towers between the primary barges while the primary barges are supporting the outer sections to bring the secondary barges into bearing contact with the ocean floor, and jack means interconnecting the inner and outer sections of the towers to extend said sections for urging said secondary barges into bearing support with the ocean floor for establishing uniform load of the platform on the respective towers and lift the load from the primary barges whereby the platform is adapted to be supported on the towers substantially in level position.

2. A portable apparatus for supporting off shore drilling equipment upon the floor of the ocean and at an elevated position above the action of the waves, said apparatus including, a platform for mounting the drilling equipment, towers for supporting the platform each including inner and outer sections telescoping one within the other, means connecting the platform with upper ends of the outer sections of the towers, a pair of spaced apart primary barges adapted for seating opposite sides of lower ends of the outer sections thereupon, secondary barges in the space between the primary barges and supporting the inner sections thereon and cooperating with the primary barges for transporting the platform in elevated position to a drilling site, valve means for admitting water into the secondary barges for sinking the said secondary barges

for lowering the inner sections of the towers between the primary barges while the primary barges are supporting the outer sections to bring the secondary barges into bearing contact with the ocean floor, jack means interconnecting the inner and outer sections of the towers to urge said secondary barges into bearing support with the ocean floor for establishing uniform load of the platform on the respective towers and to free the primary barge means of the weight of the platform whereby the platform is supported on the towers independently of the primary barges, means connected with the interior of the secondary barges for ejecting the water therefrom for reestablishing buoyancy of the secondary barges for raising the inner sections when the apparatus is to be moved to another drilling site, and jet means around outer portions of the secondary barges to release the secondary barges from suctional contact with the ocean floor.

3. A portable apparatus for supporting off shore drilling equipment upon the floor of the ocean and at an elevated position above the action of the waves, said apparatus including, a platform for carrying the drilling equipment, towers for supporting the platform with the drilling equipment thereon including inner and outer sections telescoping one within the other, means connecting the platform with upper ends of the outer sections of the towers, a pair of spaced apart primary barges seating lower ends of the outer sections therebetween, secondary barges between the primary barges for supporting lower ends of the inner sections thereon and cooperating with the primary barges for transporting the drilling equipment in elevated position to a drilling site, means for sinking the secondary barges for lowering the inner sections of the towers between the primary barges while the primary barges are supporting the outer sections to bring the secondary barges into contact with the ocean floor, means for jetting a pressure fluid under the secondary barges to provide a stable seat therefor, means interconnecting the inner and outer sections of the towers, and jack means between the inner and outer sections to move the sections apart for leveling the platform which carries the drilling equipment.

4. A portable apparatus for supporting offshore drilling equipment upon the floor of the ocean and at an elevated position above action of the waves, said apparatus including a platform for mounting the drilling equipment, towers for supporting the platform each including inner and outer sections telescoping one within the other, means for connecting the platform with upper ends of the outer section of each tower, a pair of spaced apart primary barges adapted for seating opposite sides of the lower ends of the outer sections of the towers thereupon, secondary barges between the primary barges, means for securing lower ends of the inner sections to the secondary barges for supporting the inner sections thereon and cooperating with the primary barges for transporting the platform in substantially elevated position to a drilling site, means for sinking the secondary barges for lowering the inner sections of the towers between the primary barges while the primary barges are supporting the outer sections to bring the secondary barges into bearing contact with the ocean floor, and jack means connecting the inner and outer sections of the towers for transferring support of the outer sections and platform from the primary barges to the inner sections and the secondary barges to support the platform on the floor of the ocean.

5. A portable apparatus for supporting offshore drilling equipment upon the floor of the ocean and at an elevated position above action of the waves, said apparatus including a platform for mounting the drilling equipment, towers for supporting the platform each including inner and outer sections telescoping one within the other, means for connecting the platform with upper ends of the outer section of each tower, a pair of spaced apart primary barges, adapted for seating opposite sides of the lower ends of the outer sections of the towers thereupon, secondary barges between the primary barges, means for securing lower ends of the inner sections to the secondary barges for supporting the inner sections thereon and cooperating with the primary barges for transporting the platform in substantially elevated position to a drilling site, means for sinking the secondary barges for lowering the inner sections of the towers between the primary barges while the primary barges are supporting the outer sections to bring the secondary barges into bearing contact with the ocean floor, means for jetting fluid under the secondary barges to level off and establish a stable bearing contact with the ocean floor, and jack means connecting the inner and outer sections of the towers for transferring support of the outer sections and platform from the primary barges to the inner sections and the secondary barges.

6. A portable apparatus for supporting offshore drilling equipment upon the floor of the ocean and at an elevated position above action of the waves, said apparatus including a platform for mounting the drilling equipment, towers for supporting the platform each including inner and outer sections telescoping one within the other, means for connecting the platform with upper ends of the outer section of each tower, a pair of spaced apart primary barges adapted for seating opposite sides of the lower ends of the outer sections of the towers thereupon, secondary barges between the primary barges, means for securing lower ends of the inner sections to the secondary barges for supporting the inner sections thereon and cooperating with the primary barges for transporting the platform in substantially elevated position to a drilling site, valve means on the secondary barges for admitting water into the secondary barges for sinking the secondary barges for lowering the inner sections of the towers between the primary barges while the primary barges are supporting the outer sections to bring the secondary barges into bearing contact with the ocean floor, jack means connecting the inner and outer sections of the towers for transferring support of the outer sections and platform from the primary barges to the inner sections and the secondary barges, and means connected with the secondary barges for ejecting water therefrom for reestablishing buoyancy of the secondary barges for raising the inner sections when the apparatus is to be moved to another drilling site.

7. A portable apparatus for supporting offshore drilling equipment upon the floor of the ocean and at an elevated position above the action of the waves, said apparatus including a platform for mounting the drilling equipment, towers for supporting the platform each including inner and outer sections telescoping one within the other, means for connecting the platform with upper ends of the outer section of each tower, a pair of spaced apart primary barges adapted for seating opposite sides of the lower ends of the outer sections of the towers thereupon, secondary barges between the primary barges, means for securing lower ends of the inner sections to the secondary barges for supporting the inner sections thereon and cooperating with the primary barges for transporting the platform in substantially elevated position to a drilling site, valve means on the secondary barges for sinking the secondary barges for lowering the inner sections of the towers between the primary barges while the primary barges are supporting the outer sections to bring the secondary barges into bearing contact with the ocean floor, means for jetting fluid under the secondary barges to level off and establish a stable bearing contact with the ocean floor, jack means connecting the inner and outer sections of the towers for transferring support of the outer sections and platform from the primary barges to the inner sections and secondary barges, and means connected with the secondary barges for ejecting water therefrom for reestablishing buoyancy of the

secondary barges for raising the inner sections when the apparatus is to be moved to another drilling site.

8. A portable apparatus for supporting offshore drilling equipment upon the floor of the ocean and at an elevated position above the action of the waves, said apparatus including a platform for mounting the drilling equipment, towers for supporting the platform each including inner and outer sections telescoping one within the other, means connecting the platform with the upper section of each tower, a pair of spaced apart primary barges adapted for seating opposite sides of lower ends of opposite sections of the towers thereupon, secondary barges, means for securing lower ends of the inner sections to the secondary barges for supporting the inner sections thereon and cooperating with the primary barges for transporting the platform in substantially elevated position to a drilling site, means for sinking the secondary barges, means for jetting fluid under the secondary barges



to level off and establish a stable bearing contact with the ocean floor, and jack means interconnecting the inner and outer sections of the towers to extend said sections for urging said secondary barges into bearing support with the ocean floor for establishing uniform load of the platform on the respective towers and to lift the load from the primary barges whereby the platform is adapted to be supported on the towers substantially in level position.


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