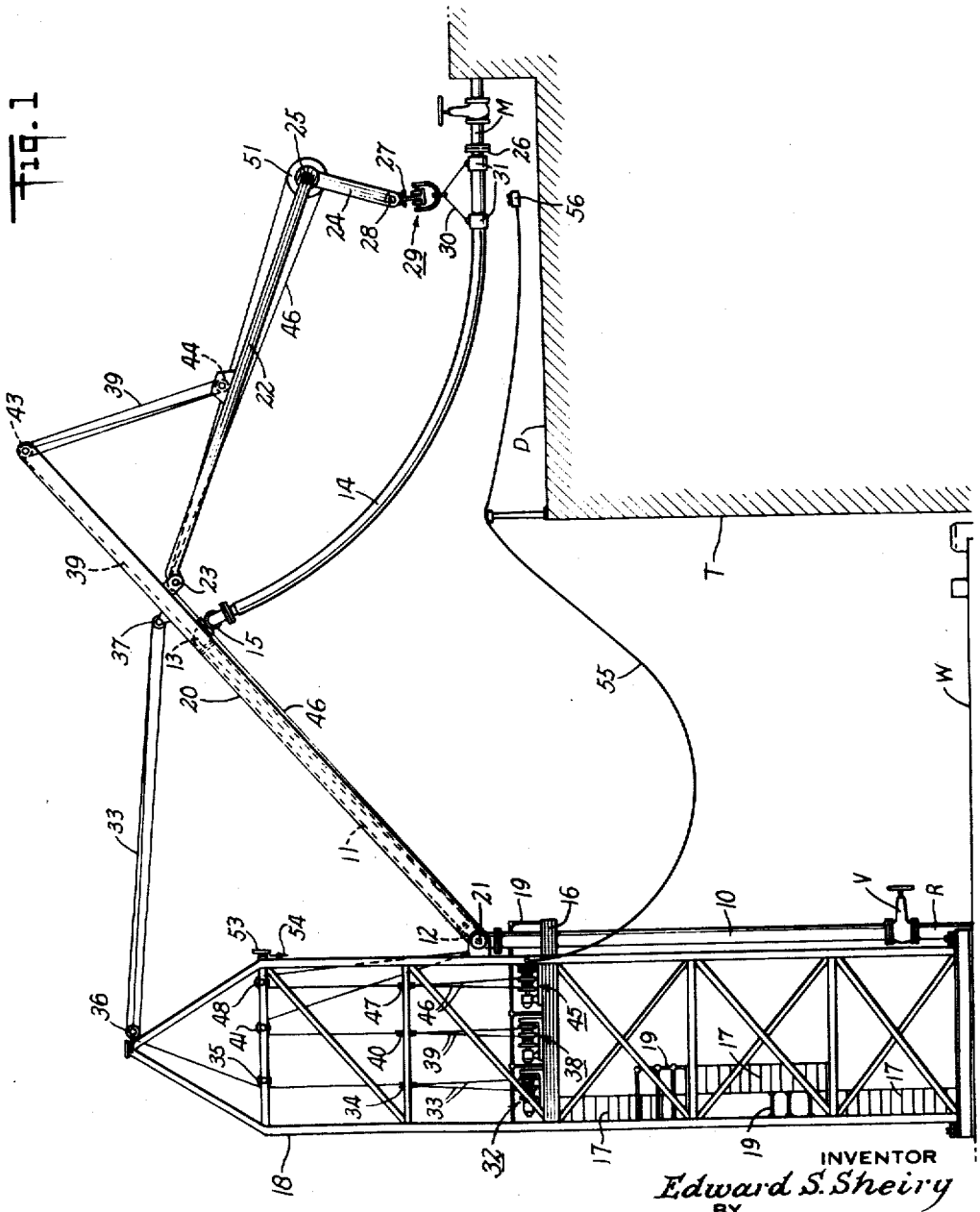
Jan. 26, 1960 E. S. SHEIRY 2,922,446

MARINE HOSE LOADER

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Fig. 1



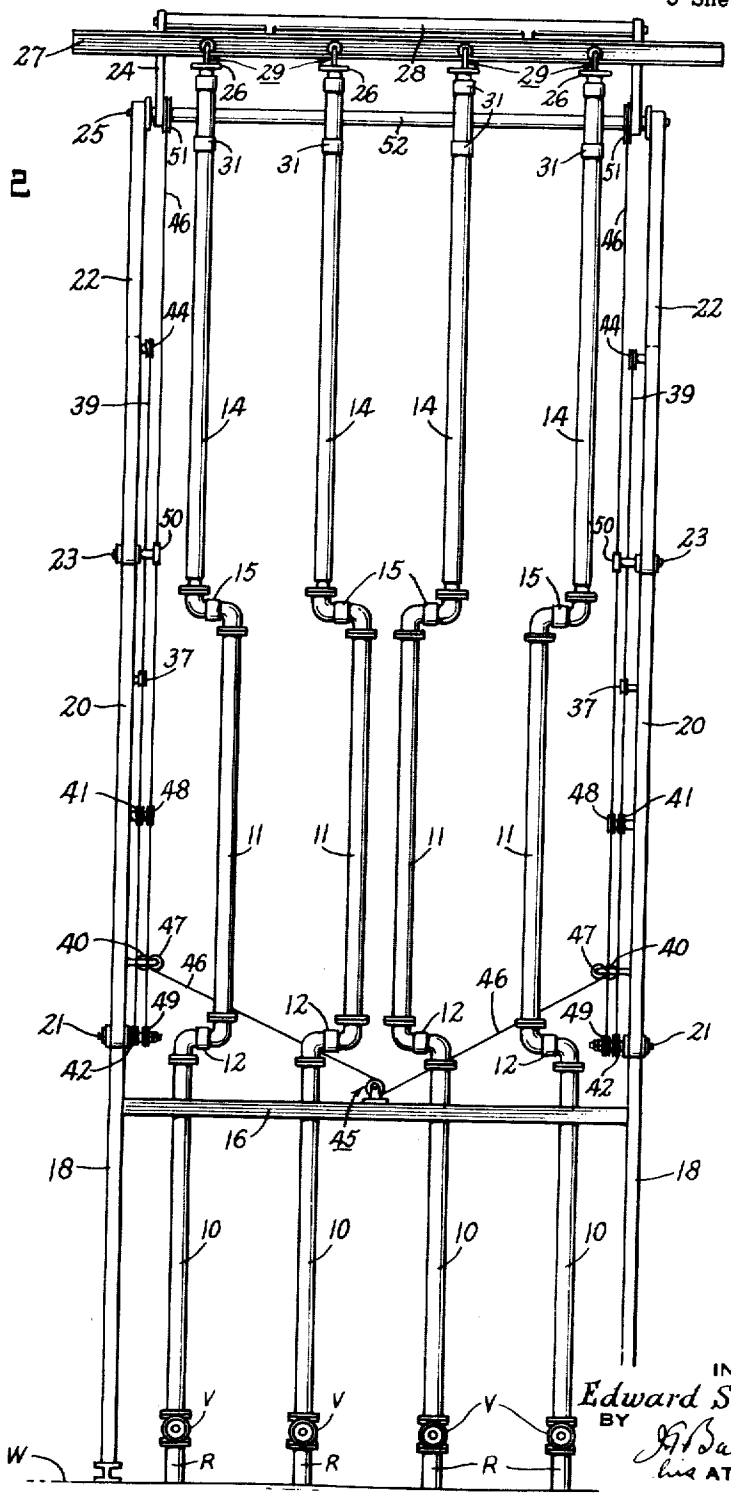
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MARINE HOSE LOADER

Filed April 16, 1958 5 Sheets-Sheet 2

Fig. 2



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MARINE HOSE LOADER

Filed April 16, 1958 5 Sheets-Sheet 3

Fig. 3

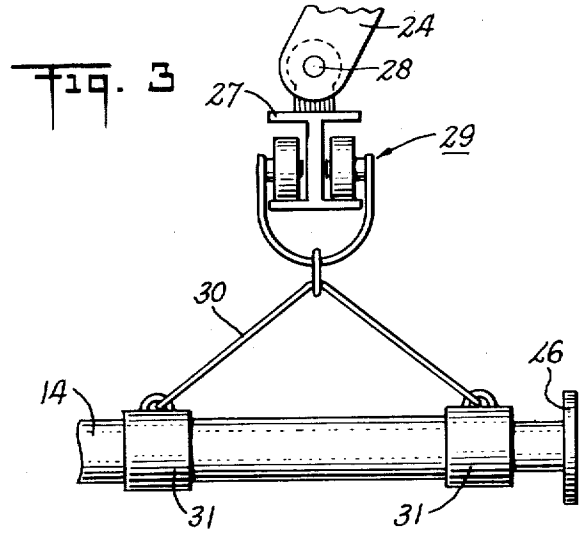
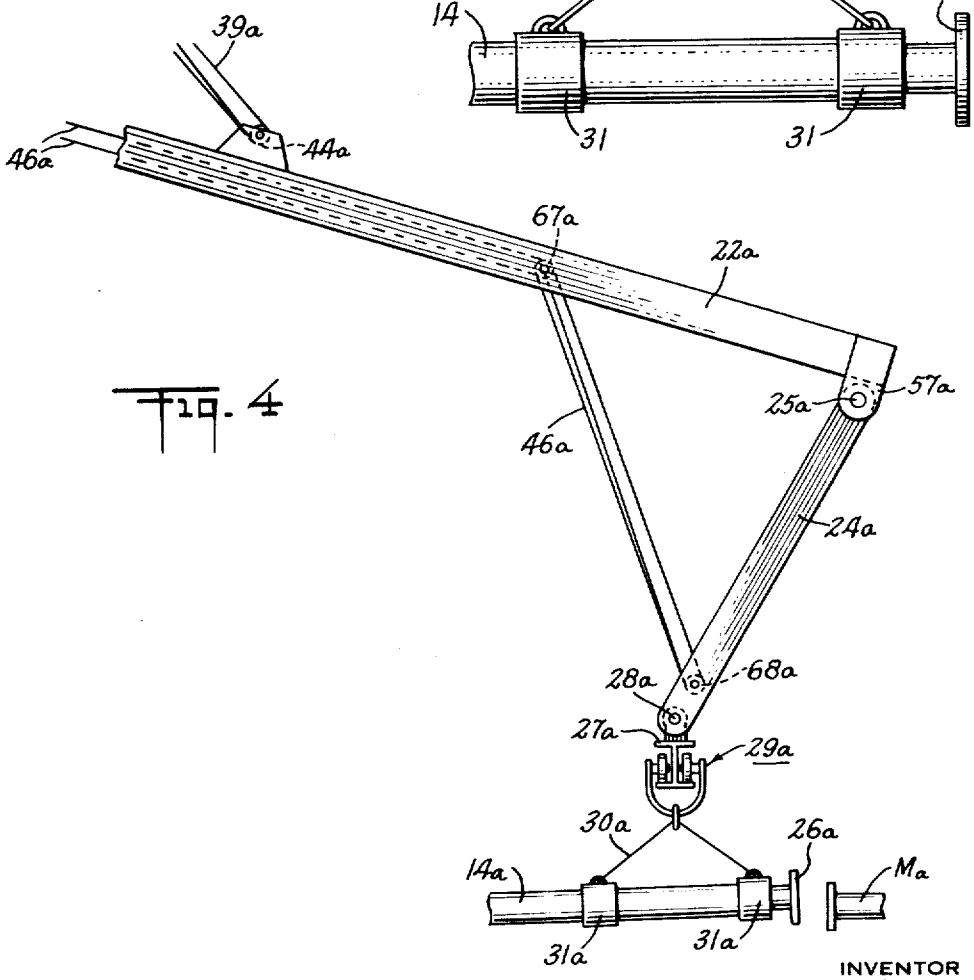


Fig. 4



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MARINE HOSE LOADER

Filed April 16, 1958 5 Sheets-Sheet 4

Fig. 6

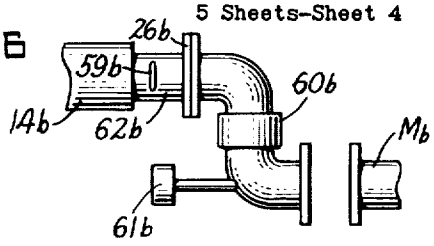
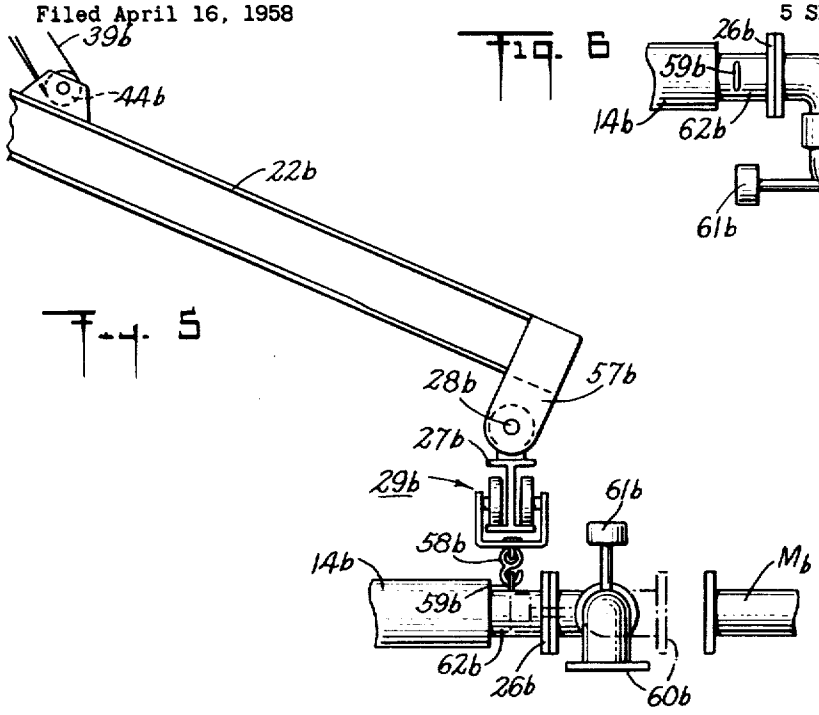


Fig. 5



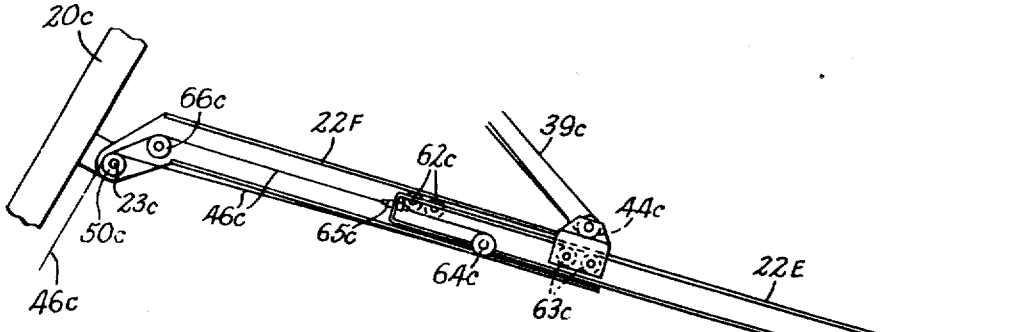
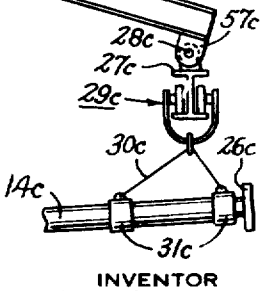


Fig. 7



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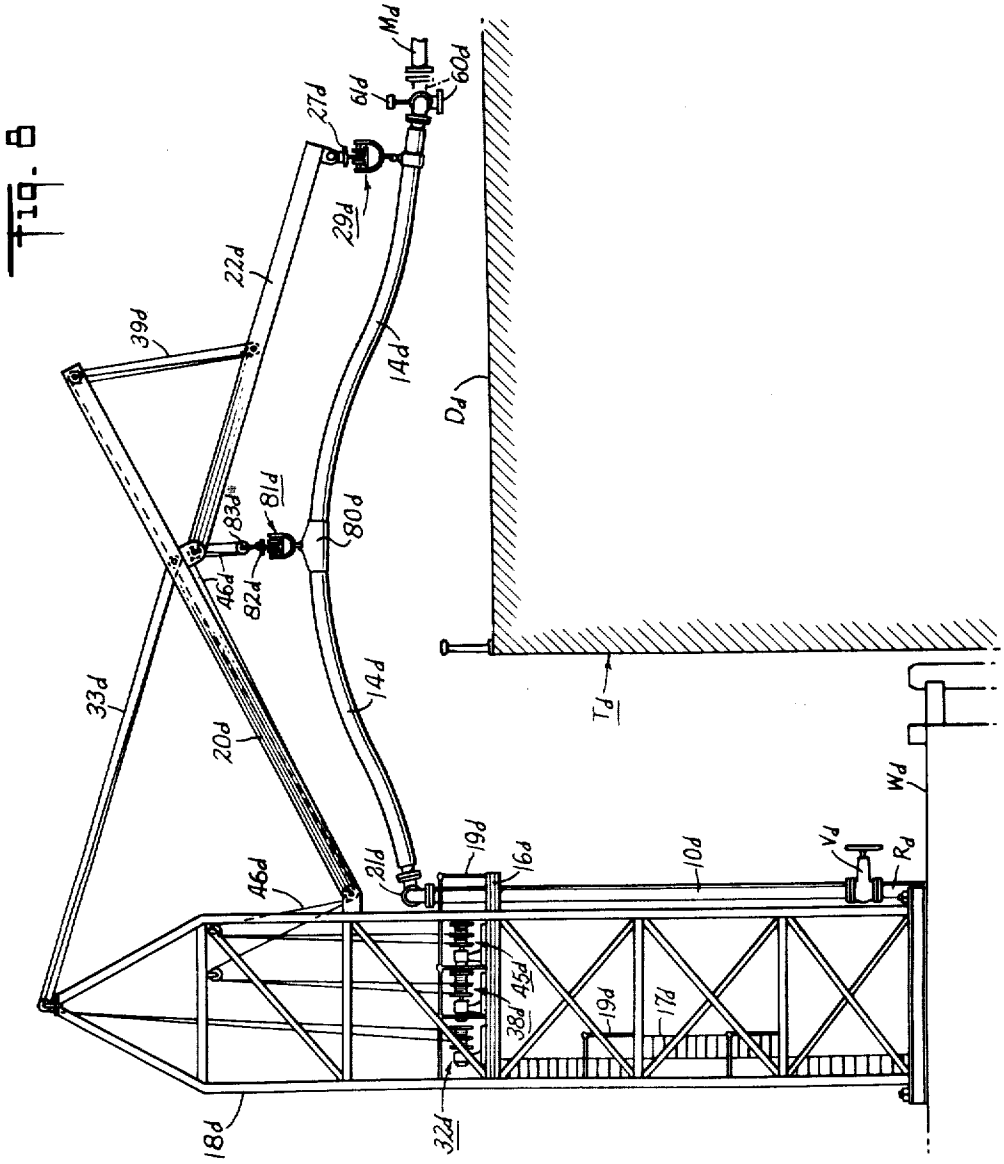
Jan. 26, 1960 E. S. SHEIRY 2,922,446

MARINE HOSE LOADER

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5 Sheets-Sheet 5

Fig. 6



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United States Patent Office 2,922,446
Patented Jan. 26, 1960

2,922,446

MARINE HOSE LOADER

Edward S. Sheiry, Bronxville, N.Y., assignor of one-half to Parsons, Brinckerhoff, Hall & MacDonald, New York, N.Y., a partnership

Application April 16, 1958, Serial No. 728,870

15 Claims. (Cl. 141—388)

This invention relates to a device for handling, manipulating and storing movable conduits for conveying liquids between stationary and movable connection terminals.

One phase of my invention is concerned with the provision of a derrick having as its object the carrying out of operations of handling, manipulating and connecting conduits that are to convey fluids or liquids from a source of supply to receiving facilities, such as transporting petroleum products between the ends of permanent supply lines on a pier, or wharf, and the manifolds of a tanker berthed at the wharf for loading or unloading.

Known to me are various existing methods of handling and conveying hoses to be connected between relatively stationary conduit outlets and the manifolds of a tanker in order to load or unload petroleum products, water, chemicals and other liquids, which methods involve the use of booms and hoists located on a pier and which frequently require assistance from the booms and winches aboard the ship to transport and support the connecting conduits. The distances to be traversed between the pier connections and the ship's manifolds usually require lengths of hose of such size that power-operated hoists are required to handle them, not only because of the great weight of the hose but particularly because of its awkward and unwieldy nature, which makes the operation of transporting the hose and coupling it to the ship's manifold arduous and time-consuming operations. Such variables as the mean level of the water with relation to the floor of the pier, the stage of the tide, and the freeboard of the tanker, have heretofore made it expedient to employ extensive lengths of flexible hose, which further magnifies the unwieldiness and manpower required in handling them to complete connections and permit pumping operations to begin.

Accordingly, it is the object of my invention to provide a co-ordinated combination of articulated structural frames to support and manipulate a combination of rigid and flexible conduits by mechanical means in such a manner that a rapid and efficient connection can be made between permanent piping ashore and the manifolds of a tanker while requiring a minimum amount of manpower.

Still more particularly, it is an object of my invention to provide a device which, in addition to handling and transporting large-dimensioned hose, will position and orient the flanges of the hose so that they may be bolted to the ship's manifold outlets with speed and facility under varying conditions in height or angle of the ship's deck with relation to the pier. Knowing that such connections between ship's manifolds and fixed conduits ashore have been customarily made by using long lengths of flexible hose between the two points, or else by using lengths of rigid piping connected together by swivel joints,

and observing that each of these methods has its own operational advantages and disadvantages, it is an object of my invention to provide a device for handling, manipulating and supporting a conduit having a combination of swivel-jointed lengths of rigid pipe coupled to a length of flexible hose, each being utilized in such manner, and at such locations, that the advantageous characteristics of both are fully realized while many of the disadvantages of each are eliminated. Still further phases of my invention reside in the provision of a derrick type of device for efficiently handling, manipulating and supporting conduits, such as rigid pipe or hose, singly, or a combination of the two.

Having observed that conduit connections between shore outlets and ship's manifolds must be made under many varying conditions and at locations having a large disparity among physical dimensions, tidal stages and types of ships to be served, it is a further objective of my invention to provide a device having basic elements designed to transport conduits to desired positions under any combination of local dimensions and elevations, and, in addition, to provide an auxiliary element, the function of which is to precisely position and align the outer ends of the conduits in such a manner that they can be connected to the ship's manifold outlets quickly and with a minimum of manual effort, the design of which additional element may be varied to meet the desires of an owner and the particular characteristics of the location.

I have found, in the broadest aspect of my invention, that the basic elements comprising a supporting tower, located on a wharf or pier and equipped with power-operated winches, together with a connected main boom containing, constituting or consisting of, or supporting swivel-jointed segments of rigid-pipe conduit, and having an auxiliary boom mounted thereon as by hinged connection that supports and manipulates flexible hose extensions of the said rigid-pipe segments of the conduits, provides an efficient and economical combination of elements with which to mechanically handle and transport the conduits to and from desired positions over the deck of a moored tanker rapidly. Once the conduits have been transported and are supported in that location, there is combined therewith another element of my invention which functions to precisely position and align the outer ends of the flexible hose portions of the conduits in such a manner that they may be bolted directly to the flanges of the ship's manifold outlets rapidly and without requiring the exertion of heavy manual effort by operating personnel.

The particular efficiency of my invention in one phase thereof, in handling and manipulating a conduit to be connected between shore and ship outlets, may be attributed to its utilization of a combination, and coordination with the handling device, of rigid but movable pipe conduits connected to a length of flexible hose conduit which can be transported and moved bodily in a manner that both of its ends are placed in positions that facilitate the rapid completion of the connection with no manual effort on the part of the operators, all mechanical operations being performed and directed by remote controls when desired.

A further advantageous feature of my invention is that the operations of disconnecting the conduits from the ship's manifold when pumping is finished, retracting the conduits to clear the face of the wharf for departure of the ship, and storing the conduits conveniently and safely in positions from which they may be lowered and extended rapidly to complete the connections with the next vessel that arrives, may be performed by a minimum

number of required operating personnel, and that the control of these mechanical operations may be performed by remote control by one man located at the most convenient position, either on the winch platform of the tower, or on the deck of the wharf, or on the deck of the ship.

A further objective of my invention is to provide a device for handling, manipulating and precisely positioning any number of conduits for liquids, that are to be connected to a tanker's manifold outlets, by means of a minimum number of hoisting winches located in a stationary supporting structure, without requiring the use of auxiliary hoists or operating machinery attached to such movable elements as the booms, in which locations the dead weights of such auxiliary machinery would require additional strength to be designed into the entire device, and they would be inaccessible for convenient servicing and maintenance.

To attain these objectives, and such others as may appear herein or be hereinafter pointed out, I make reference to the accompanying drawings forming a part hereof, in which:

Figure 1 is a side view of the basic elements consisting of a supporting tower, a main boom and a first auxiliary boom with the necessary winches and cable lines to operate them when transporting conduits to and from positions of hoses above the deck of a moored tanker, and a side view of a second auxiliary boom with its actuating winch and set of cable lines, trolleys and equalizing slings for precisely positioning and levelling the outer ends of hoses to permit bolting them to ship's manifold outlets without manual handling;

Figure 2 is a front view of the device as shown in Fig. 1, with all three booms raised;

Figure 3 is a fragmentary magnified detailed view of the trolleys, equalizing slings and hose clamps shown in Fig. 1;

Figure 4 is a fragmentary side view illustrating another embodiment of my invention for finally positioning hose ends by the use of a simplified second auxiliary boom that can only be retracted by power and returns to its vertically pendant position by gravity;

Figure 5 is a fragmentary magnified side elevation of another embodiment in which the second auxiliary boom, and the winch and cables that operate it, can be eliminated through the use of swivel joints mounted on the outer ends of the hoses to accomplish the final precise positioning and the completion of connections preparatory to pumping;

Figure 6 is a fragmentary plan view thereof;

Figure 7 is a fragmentary side elevational view illustrating still another embodiment of my invention in which the second auxiliary boom is eliminated, and the first auxiliary boom is constructed so that it may be telescoped inward and outward to accomplish the final precise positioning of the outer ends of hoses in order to complete their final connections to the manifold outlets of a tanker; and

Figure 8 is a side elevation of another embodiment of my invention.

Referring to Figure 1, I illustrate my invention with a device, mounted on a wharf W, or a pier or bulkhead, said device being designed to facilitate the operations involved in connecting conduit risers R and valves V, on wharf W, to manifold M, on the deck D of a tanker T, with the objective of transferring fluids between the tanker and shore supply lines or storage reservoirs, which are not shown but which will be readily understood.

The said conduits for conducting fluids are composed of stationary riser extension pipes **10**, movable or articulated rigid pipes **11** coupled at their inner ends to said riser extensions **10** through swivel joints **12**, and terminating at their adjustable outer ends in elbows **13**, to which flexible hoses **14** are connected through swivel joints **15**.

In accordance with my invention, a rigid supporting tower **18** is located on, and anchored to, the wharf W, or a pier or bulkhead. At an intermediate position in this tower **18** is winch platform **16**, that is reached by stairs **17**, and that has an extension through which riser extension pipes **10** pass. The winch platform **16**, the stairs **17**, and the platform extension are enclosed by hand rails **19** for safety.

A main framed boom **20** is mounted on the offshore face of tower **18** by means of duplicate pin-joint hinges **21**, one for each arm of the boom. At an intermediate point of main boom **20** a first auxiliary framed boom **22** is connected by means of hinges **23**.

In one form of my invention, a second framed auxiliary boom **24** is connected to the first auxiliary boom **22** by means of pivot pins **25**. The function of boom **24** is to provide a means of manipulating by mechanical power the outer ends of hose **14** into horizontal positions, and to adjust them at appropriate distances and elevations that will permit the hose flanges **26** to be bolted directly to the outlets of manifold M.

Other means than the use of said second auxiliary boom **24** for mechanically manipulating the outer ends of hoses **14**, in order to complete their connections to manifold M, are included in my invention. These alternative expedients that are described hereinafter may be more desirable under certain stated conditions, locations, and controlling physical limitations.

Still referring to Figure 1, a trolley beam **27** is connected to the second auxiliary boom **24** by pivot pins **28**, and on it are mounted trolleys **29**, one for each hose **14**, which can be moved along trolley beam **27**, parallel to the face of the wharf in order that the ends of hoses **14** can be laterally positioned in line with the corresponding outlets of manifold M to which they are to be connected. Hanging from, and supported by, trolleys **29** are equalizing slings **30**, which support hoses **14** by means of sleeve clamps **31** spaced at appropriate intervals in order to permit equalizing slings **30** to function automatically when levelling the outer ends of hoses **14**.

Mounted on winch platform **16**, in tower **18**, are three winches consisting of electric, air, steam or internal combustion motors driving cable drums for the purpose of actuating the three booms. Winch **32** manipulates main boom **20** by means of duplicate cable lines **33**, one at each end of tower **18**, which pass through idler sheaves **34** and **35** and through blocks **36**, at the top of tower **18**, to blocks **37** mounted on boom **20** at appropriate points. These cable hoisting lines may be reeved through blocks **36** and **37** in any desired number of parts to provide the mechanical advantage required by the weights of the booms, conduits and other equipment to be lifted, which will vary in different installations by the dimensions of the structure and the number of conduits to be installed.

Winch **38** manipulates the first auxiliary boom **22** through duplicate hoisting cables **39**, one at each end of tower **18**, reeved through idler sheaves **40**, **41**, and around twin idler sheaves **42** mounted in line with pivots **23** of boom **20**, thence through blocks **43** mounted at the extreme outer end of boom **20** and thence to blocks **44** mounted at appropriate points of first auxiliary boom **22**. These hoisting cables may be reeved with any desired number of parts between blocks **43** and **44** to provide the mechanical advantage necessitated by the loads to be handled.

Winch **45** manipulates the secondary auxiliary boom **24** through duplicate lines **46**, one at each end of tower **18**, running through idler sheaves **47** and **48**, from which they pass around twin idler sheaves **49** mounted in line with pivots **21** of boom **20**, and thence around twin idler sheaves **50** which are mounted in line with pivots **23** of auxiliary boom **22**, and thence to opposite sides of bull wheels **51**. The two bull wheels **51** are keyed to a shaft **52** on which is securely mounted second auxiliary boom

24 in such a manner that it is actuated by the turning of bull wheels 51, either directly or through intervening reduction gears not shown in this illustration.

When idle between uses, this version of my invention will be stored with main boom 20 standing vertical against boom stops 53, which are designed to actuate a limit device 54 that automatically stops winch 32 when boom 20 reaches the vertical position, and with auxiliary booms 22 and 24, together with hoses 14, folded down into vertical positions immediately in front of main boom 11 and risers 10. Hoses 14 may be lashed to risers 10 in order to secure them against being blown around by strong winds instead of leaving them hanging freely during storms.

As a tanker T approaches its berth at wharf W, an operator will adjust first auxiliary boom 22, second auxiliary boom 24, and pendant hoses 14, to such positions and elevations that they will clear deck D and other parts of tanker T while it is being moored to wharf W. After tanker T is securely moored, the operator will manipulate main boom 20 and auxiliary booms 22 and 24, by means of winches 32, 38 and 45, in such a manner that the outer flanges 26 of hoses 14 closely approach manifold M on deck D of tanker T. Either this operator or his assistant may then go aboard tanker T carrying pendant control line 55, by means of which winches 32, 38 and 45 may be operated by remote control 56 while he is standing on deck D of tanker T, in close proximity to manifold M, where he can efficiently control the final and precise levelling and positioning of hose flanges 26 against manifold outlets M to make them ready for inserting the flange bolts that complete the coupling operations.

The entire operation of completing the connections between risers R and ship's manifold M can be mechanically performed by two men within a minimum of time after tanker T is made fast to wharf W, regardless of the stage of tide at the time and the freeboard of the tanker T, without requiring any manual lifting of heavy equipment or the assistance of the ship's booms and winches.

When pumping has been completed, the operation of disconnecting involves only the removal of the bolts in flanges 26 and the raising of main boom 20 and auxiliary booms 22 and 24 sufficiently to clear the face of wharf W so tanker T can depart without striking any part of the handling rig.

In order to allow for anticipated lateral movements and changes in the elevation of tanker deck D and manifold M during pumping operations, slings 30 may be disconnected from sleeve clamps 31 and the booms raised, leaving hoses 14 free to flex in any direction necessary to accommodate motions of tanker T, including a possible movement away from wharf W due to slack or parted mooring lines.

When operations require the crossing of conduit connections to the various outlets of ship's manifold M, one of the hoses 14 may first be connected to its designated manifold outlet, after which its sling 30 is disconnected from its supporting trolley 29. The remaining hoses 14, still being supported on their respective slings 30, may be raised a few feet by booming up. The end of the hose 14 that is to cross over the one already connected to manifold M, may be moved laterally, while in this elevated position, by rolling its supporting trolley 29 to the required position in line with any other desired manifold outlet, after which the booms may be lowered and the second connection made with this latter hose 14 crossing the one previously connected.

When a hose 14 is hanging free in a laterally angular position with respect to the manifold M, the final bolted connection can be readily and rapidly completed in the following manner: By manipulating the booms and trolleys, the operator can place flange 26 in edge contact with the face of the outlet flange of manifold M, with an angular gap between them. A drift pin then is inserted into a corresponding pair of bolt holes in the two flanges, after which a translation of the supporting trolley 29 along the trolley beam 27 in the proper direction will move the hose 14 laterally until it flexes sufficiently to close the said angular gap, placing its flange 26 in full face contact with the said manifold outlet flange so that bolts may be inserted to complete the connection.

By means of the mechanical operations made possible by my invention, any desired number of conduits, to transport all types of fluids, can be stored ashore in positions that clear the dock face for an approaching vessel; lowered and transported above the deck of a tanker and connected to the vessel's manifold outlets under all stages of tides regardless of the freeboard of the tanker and the distance from the side of the ship to its manifold outlets; released to ride freely with all movements of the ship while pumping is proceeding; shifting from one to another manifold outlet even when this requires the crossing of conduits; disconnected from the tanker's manifold when pumping is finished; and raised rapidly to clear the tanker for departure; performing all of these operations under its own power and, because of its range and agility, requiring no supplementary assistance from the ship's tackle or winches, and with no heavy lifting, pulling or pushing required to be exerted by the operating personnel or the ship's crew, all with a minimum of personnel and with a minimum of delay in connecting for pumping or disconnecting to permit the ship to depart.

The device described in the preceding paragraphs, and illustrated in Figures 1 to 3, inclusive, actually consists basically of a supporting tower and two articulated booms serving as the single means, by means of which a combination of rigid and flexible conduits can be mechanically transported and manipulated until their outer ends are in close proximity to the manifolds of a moored tanker, while their inner ends are connected to permanent piping ashore. Beyond those basic constituents, the device also combines an additional expedient, the operation of which, in combination wtih the aforementioned basic elements, enables an operator to place the outer connection flanges of the conduits squarely against any desired flanges of a vessel's manifold outlets ready to complete the connection of them with a minimum of delay and with to manual effort required to be exerted by personnel beyond operating winch controls. In the above-described version of my invention, this additional operational feature is supplied by boom 24 and winch 45, together with the cable lines, sheaves, blocks, bull wheels and gearing needed to actuate and manipulate boom 24 as an indepedent element of the entire device.

Under certain physical conditions and dimensional requirements at some of the location where my invention is to be installed, it may be more economical and convenient to provide as another embodiment, means of accomplishing the final precise positioning required for connecting the outer ends of the conduits to the tanker's manifold. Three of such possible embodiments are illustrated by Figures 4 to 7, and these three, together with other expedients, devices or equipment that could be provided to accomplish in a measure somewhat similar objectives for final precise positioning and levelling of the outer ends of the conduits are included as selectively desirable, or necessary integral elements, of my invention, the selection and use of any one of which makes it possible for the device to function and perform any or all of the operations described herein and illustrated by Figures 1, 5 and 7, as will appear more fully.

Figure 4 illustrates one simplification of my invention that may be advantageously adopted in locations where tidal variations are minor and the depth of the harbor restricts the sizes of ships that can be served. In this example, all elements are the same as in the basic device

illustrated in Figures 1 to 3, inclusive, with the one exception that, as shown in Figure 4, the second auxiliary boom 24*a* is actuated directly by cable lines 46*a* instead of by means of interposed bull wheels or gears. Winch 45 (shown in Figure 1) actuates cable lines 46*a* which, in this embodiment, is reeved through the sheave blocks 67*a* in boom 22*a*, and thence through sheave blocks 68*a* in boom 24*a*. Rigged in this manner, boom 24*a* can only be pulled inward towards boom 22*a*, and it swings downward to a vertical position by the force of gravity when the tension in lines 46*a* is released by the winch operator. In this embodiment slacking of the cables may take place with minimum supervision.

Figure 5 illustrates another embodiment of my invention that is particularly useful at locations where the tidal range is great and the largest tankers are to be serviced. In this example, the second auxiliary boom 24 and its actuating hoist 45, cable lines, gears and/or bull wheels, as shown in Figure 1, need not be employed, and in a measure their functions are performed by providing swivel joints connected to the outer ends of the hoses. The manipulation of these swivel points permits the final connection of the conduits to their respective tanker manifold oulets to be made in a rapid and efficient manner. Referring now specifically to Figure 5, first auxiliary boom 22*b* is pivoted from main boom 20 (shown in Figure 1) and is manipulated by winch 38 (shown in Figure 1) through cable lines 39*b* that run to blocks 44*b*. The outer end of boom 22*b* in this example is fitted with pin plates 57*b* from which trolley beam 27*b* is suspended by pivot pins 28*b*. Trolleys 29*b* are equipped with swivel safety hooks 58*b* which engage pick-up loops 59*b* welded to hose nipples 62*b*. Bolted to hose flanges 26*b* are standard swivel joints 60*b* which can be rotated to accommodate any angular differences between hose flanges 26*b* and the flanges of manifold outlets M*b* to which they are to be bolted. Counterweights 61*b* are attached to the movable elbows of swivel joints 60*b* in order to assist the operator manually to swing these elbows into position (shown in dotted lines) for bolting to the outlet flanges of manifold M*b*.

Figure 7 illustrates another embodiment of my invention that is particularly advantageous in locations where the reach of the device is required to be adjustable over an unusually wide horizontal range. In this example of my invention, the first auxiliary boom is composed of segments that may be extended and retracted telescopically to accomplish the final precise positioning of the conduit, with or without the use of swivel joints (as described in connection with Figure 5), attached to the outer ends of the hoses. Referring to Figure 7, auxiliary boom segment 22F is pivoted from main boom 20*c* at hinge 23*c*, and it is raised and lowered by cable lines 39*c* running through blocks 44*c*, to winch 38 (shown in Figure 1). A telescoping boom segment 22E is supported by boom segment 22F either nested as shown, or suspended in overlapping position by trolleys beneath segment 22F. The telescoping of segment 22E inward and outward is actuated and controlled by winch 45 (shown in Figure 1) through cable lines 46*c*, which are reeved in continuous loops through idler sheaves 50*c*, 64*c* and 66*c* on segment 22F, and which are attached by socket 65*c* to segment 22E in such a manner that a movement of the looped cable line in one direction pulls segment 22E to its outward extending position, while the reverse movement of the looped cable retracts segment 22E, telescoping it into, or beneath (as described) segment 22F. At the outer end of segment 22E, pin plates 57*c* support hinge pins 28*c*, from which hangs trolley beam 27*c* on which are mounted trolleys 28*c* and equalizing slings 30*c* to support the ends of hoses 14*c* and to adjust them laterally, exactly as in the example illustrated in Figure 1 and described hereinbefore. The operation of levelling the outer ends of hoses 14*c* and squaring their flanges 26*c* to connect to the tanker's manifold outlet flanges may be accomplished by flexing the hoses through the operational procedure of extending or retracting segment 22E of the telescoping boom as required, or the final precise positioning to facilitate making the final connections between the conduits and the tanker's manifold may be accomplished through the use of swivel joints 60*b* bolted to flanges 26*c* of the hoses, as illustrated in Figure 5 and described hereinbefore.

A further illustration of the versatility of my invention is its adaptability to the handling and manipulating of conduits consisting of flexible base conduits directly coupled pivotally to stationary pipe risers at one end. Referring to Figure 8, it will be noted that each of the basic elements, consisting of supporting tower 18*d* constructed on wharf W*d* and containing winch platform 16*d*, winches 32*d*, 38*d* and 45*d*, stairs 17*d* with handrails 19*d*, and pivotally supporting main framed boom 20*d* to which is pivotally attached auxiliary framed boom 22*d*, at the outer extremity of which is pivotally suspended trolley beam 27*d* containing trolleys 29*d*, one for each base, are in every respect exactly as illustrated in Figure 1 and described hereinbefore. In this instance, however, any desired number of flexible hose conduits 14*d* are pivotally coupled to riser extension pipes 10*d* by means of swivel joints 21*d*, and they are supported approximately at their mid-lengths in saddles 80*d* suspended from trolleys 81*d* which travel on trolley beam 82*d* that is suspended from blocks 83*d* in such a manner that the hoses 14*d* may be raised and lowered by winch 45*d* actuating cable lines 46*d*. All elements at the outer ends of flexible hoses 14*d* are the same as those shown in Figure 6, and described hereinbefore, by which to accomplish the final precise positioning of the flanges of swivel joints 60*d* in order to bolt them to the flanges of manifold outlets M*d* on deck D*d* of tanker T*d*. By the coordinated operation of winches 32*d*, 38*d* and 45*d*, framed booms 20*d* and 22*d*, and saddles 80*d* supporting hoses 14*d*, all can be manipulated into the positions required to permit coupling swivel joints 60*d* to manifold outlets M*d* at any elevation of deck D*d* of tanker T*d* resulting from tidal variations and the freeboard of the vessel.

The above explanation of my invention, and the accompanying illustrations and descriptions, serve to demonstrate its efficiency, and its adaptability, through possible modifications, to meet the needs and controlling dimensional features of all types of locations where it is installed. While its primary function is to facilitate and hasten making ship to shore connections preparatory to pumping operations, it is equally efficient in its ability to speed the operations of disconnecting when pumping is finished, and in safely, conveniently, and automatically storing the combined rigid and flexible conduits, between uses, without uncoupling them or disconnecting them from the pier risers, and in locations where they cannot be damaged by other waterfront activities and operations that may be performed in the immediate vicinity.

Having thus described my invention and illustrated its use, what I claim is new and desire to secure by Letters Patent is:

1. A derrick device for supporting, manipulating and handling a flexible hose assembly, which hose extends from a relatively stationary terminal rigid pipe section connected pivotally at an inner end thereof, said hose assembly having an outer terminal hose flange for coupling and uncoupling said assembly to manifold means comprising, in combination with said hose assembly, a supporting frame having mounted thereon a main boom frame, one end of which boom frame is pivotally mounted relatively to said supporting frame and including powerized manipulating means for said main boom frame, swingingly to support said main boom frame, an auxiliary boom frame mounted on said main boom frame at a point along the length thereof spaced from said pivoted end and including powerized means for swingingly manipulating

said auxiliary boom frame selectively relatively to and conjointly with said main boom frame and articulatable means extending from said auxiliary boom frame for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means.

2. A derrick device for supporting, manipulating and handling a flexible hose assembly, said assembly extending from a relatively stationary terminal at an inner end leading to a rigid pipe section, pivotally connected therewith, and having an outer terminal hose flange for coupling and uncoupling said assembly to manifold means comprising, in combination with said hose assembly, a supporting frame, a main boom mounted thereon having one end pivotally mounted relatively to said supporting frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof, swingingly to support said main boom, an auxiliary boom mounted on said main boom at a point along the length thereof spaced substantially from said pivotal end and including powerized means controlled from said frame for swingingly manipulating said auxiliary boom relatively to and conjointly with said main boom and articulatable means extended from said auxiliary boom for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means.

3. A derrick for supporting, manipulating and handling a conduit assembly comprising a section of rigid pipe and flexible hose pivotally joined to each other, having an outer terminal hose flange on said hose for coupling and uncoupling said assembly to manifold means as set forth comprising, in combination with said conduit assembly, a supporting frame, a main boom having one end pivotally mounted relatively to said frame, and including powerized manipulating means for said main boom extending adjacent the other end thereof, swingingly to support said boom on said frame, an auxiliary boom mounted on said main boom having powerized means controlled from said frame for manipulating said auxiliary boom relatively to and with said main boom, and articulatable means extending from said auxiliary boom for supporting said flexible hose adjacent said flange to permit levelling the position of said flange in relation to said manifold means.

4. A derrick for supporting, manipulating and handling a conduit assembly comprising a section of rigid pipe and flexible hose pivotally joined to each other, having an outer terminal hose flange on said hose for coupling and uncoupling said assembly to manifold means as set forth comprising, in combination with said conduit assembly, a supporting frame, a main boom having one end pivotally mounted relatively to said frame, and including powerized manipulating means for said main boom extending adjacent the other end thereof, swingingly to support said boom on said frame, an auxiliary boom mounted on said main boom having powerized means controlled from said frame for manipulating said auxiliary boom relatively to and with said main boom, and articulatable means extending from said auxiliary boom for supporting said flexible hose adjacent said flange to permit levelling the position of said flange in relation to said manifold means, said section of rigid pipe and said main boom having substantially coincident pivotally mounted means whereby said section of flexible hose is bodily manipulated in the manipulation of said booms.

5. A derrick device for supporting, manipulating and handling a flexible hose assembly of the character described extending from a relatively stationary terminal at an inner end and having an outer terminal hose flange for coupling and uncoupling said assembly to manifold means as set forth, comprising, in combination with said hose assembly, a supporting frame having mounted thereon a main boom along which said hose assembly is supported, said boom having one end pivotally mounted relatively to said frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof swingingly to support said main boom, an auxiliary boom mounted on said main boom and including powerized means controlled from said frame for manipulating said auxiliary boom selectively relatively to and with said main boom, and articulatable means extended from said auxiliary boom comprising a second auxiliary boom pendent from said first auxiliary boom for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means.

6. A derrick device for supporting, manipulating and handling a flexible hose assembly of the character described extending from a relatively stationary terminal at an inner end and having an outer terminal hose flange for coupling and uncoupling said assembly to manifold means as set forth, comprising, in combination with said hose assembly, a supporting frame having mounted thereon a main boom along which said hose assembly is supported, said boom having one end pivotally mounted relatively to said frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof swingingly to support said main boom, an auxiliary boom mounted on said main boom and including powerized means controlled from said frame for manipulating said auxiliary boom selectively relatively to and with said main boom, and articulatable means extended from said auxiliary boom comprising a second auxiliary boom pendent from said first auxiliary boom for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means, and powerized means for swingingly articulating said second auxiliary boom in one direction.

7. A derrick device for supporting, manipulating and handling a flexible hose assembly of the character described extending from a relatively stationary terminal at an inner end and having an outer terminal hose flange for coupling and uncoupling said assembly to manifold means as set forth, comprising, in combination with said hose assembly, a supporting frame having mounted thereon a main boom along which said hose assembly is supported, said boom having one end pivotally mounted relatively to said frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof swingingly to support said main boom, an auxiliary boom mounted on said main boom and including powerized means controlled from said frame for manipulating said auxiliary boom selectively relatively to and with said main boom, and articulatable means extended from said auxiliary boom comprising a second auxiliary boom pendent from said first auxiliary boom for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means, and powerized means for swingingly articulating said second auxiliary boom to and from said frame.

8. A derrick device for supporting, manipulating and handling a flexible hose assembly extending from a relatively stationary terminal rigid pipe section pivotally at an inner end and having an outer terminal hose flange for coupling and uncoupling said assembly to manifold means comprising, in combination with said hose assembly, a supporting frame having mounted thereon a main boom along which said assembly is supported, said boom having one end pivotally mounted relatively to said frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof, swingingly to support said main boom, said main boom having an auxiliary boom pivotally mounted on a point along said main boom and carried thereby in its swinging movement and including powerized means controlled from said frame for manipulating said auxiliary boom relatively to and conjointly with said main boom, and articulatable means extending from said auxiliary boom comprising a swivel joint attached to said outer hose flange to permit orienting coupling to said manifold means.

9. A derrick device for supporting, manipulating and handling a conduit assembly comprising a section of

rigid pipe and flexible hose pivotally joined to each other having an outer terminal hose flange on said hose for coupling and uncoupling said assembly to manifold means as set forth comprising, in combination with said conduit assembly, a supporting frame having mounted thereon a main boom along which said assembly is supported to articulate said rigid pipe and main boom, said main boom having one end vertically and pivotally mounted relatively to said frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof, swingingly to support said main boom and rigid pipe section in a vertical plane, said main boom having an auxiliary boom mounted on a point along the length of said main boom and including powerized means controlled from said frame for manipulating said auxiliary boom selectively relatively to and conjointly with said main boom and articulatable means extending from said auxiliary boom for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means.

10. A derrick device for supporting, manipulating and handling a conduit assembly comprising a section of rigid pipe and flexible hose pivotally joined to each other having an outer terminal hose flange on said hose for coupling and uncoupling said assembly to manifold means as set forth comprising, in combination with said conduit assembly, a supporting frame having mounted thereon a main boom along which said assembly is supported to articulate said rigid pipe and main boom, said main boom having one end pivotally mounted relatively to said frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof, swingingly to support said main boom and rigid pipe section, an auxiliary boom mounted on said main boom and including powerized means controlled from said frame for manipulating said auxiliary boom selectively relatively to and with said main boom and articulatable means extending from said auxiliary boom for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means, said articulatable means comprising a swivel joint.

11. A derrick device for supporting, manipulating and handling a conduit assembly comprising a section of rigid pipe and flexible hose pivotally joined to each other having an outer terminal hose flange on said hose for coupling and uncoupling said assembly to manifold means as set forth comprising, in combination with said conduit assembly, a supporting frame having mounted thereon a main boom along which said assembly is supported to articulate said rigid pipe and main boom, said main boom having one end pivotally mounted relatively to said frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof, swingingly to support said main boom and rigid pipe section, an auxiliary boom mounted on said main boom and including powerized means controlled from said frame for manipulating said auxiliary boom selectively relatively to and with said main boom and articulatable means extending from said auxiliary boom for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means, said articulatable means comprising a second auxiliary boom.

12. A derrick device for supporting, manipulating and handling a conduit assembly comprising a section of rigid pipe and flexible hose pivotally joined to each other having an outer terminal hose flange on said hose for coupling and uncoupling said assembly to manifold means as set forth comprising, in combination with said conduit assembly, a supporting frame having mounted thereon a main boom along which said assembly is supported to articulate said rigid pipe and main boom, said main boom having one end pivotally mounted relatively to said frame and including powerized manipulating means for said main boom extended to and adjacent the other end thereof, swingingly to support said main boom and rigid pipe section, an auxiliary boom mounted on said main boom and including powerized means controlled from said frame for manipulating said auxiliary boom selectively relatively to and with said main boom and articulatable means extending from said auxiliary boom for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means, said articulatable means comprising a boom section having telescopic connection with said auxiliary boom.

13. A mechanically operated frame assembly for supporting, storing, and manipulating a conduit assembly comprising a flexible hose section, which assembly extends from a relatively stationary terminal to which the inner end of said assembly is arranged to be connected to a rigid pipe section by a pivotally jointed coupling, and having an outer terminal hose flange on said flexible hose section for coupling and uncoupling to manifold means as set forth comprising, in combination, a vertically extending supporting frame, a main boom frame pivotally mounted with relation to said supporting frame, said main boom frame having an auxiliary boom frame mounted on said main boom frame at a point along the length thereof and including means carried by said supporting frame for selectively manipulating said boom frames conjointly relatively to said supporting frame and to each other, and articulatable means extending from said auxiliary boom frame and manipulatable pivotally relatively to and with said auxiliary boom frame for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means, said flexible hose section being lengthwise extendible along said boom frames by means coupling said hose and said auxiliary boom frame, and support means on said boom frames for said flexible hose section.

14. A mechanically operated frame assembly for supporting, storing, and manipulating a conduit assembly comprising a flexible hose section, which assembly extends from a relatively stationary terminal to which the inner end of said assembly is arranged to be connected by a pivotally jointed coupling, and having an outer terminal hose flange on said flexible hose section for coupling and uncoupling to manifold means as set forth comprising, in combination, a supporting frame, a main boom frame pivotally mounted with relation to said supporting frame, an auxiliary boom frame mounted on said main boom frame and including means carried by said supporting frame for selectively manipulating said boom frames relatively to said supporting frame and to each other, and articulatable means extending from said auxiliary boom frame and manipulatable pivotally relatively to and with said auxiliary boom frame for supporting said outer hose flange to permit levelling the position of said flange in relation to said manifold means, said flexible hose section being lengthwise extendible along said boom frames by means coupling said hose and said auxiliary boom frame, and support means on said boom frames for said flexible hose section, said last support means comprising variably positionable means.

15. A mechanically operated frame assembly for supporting, storing, and manipulating a conduit assembly comprising a flexible hose section, which assembly extends from a relatively stationary terminal to which the inner end of said assembly is arranged to be connected by a pivotally jointed coupling, and having an outer terminal hose flange on said flexible hose section for coupling and uncoupling to manifold means as set forth comprising, in combination, a supporting frame, a main boom frame pivotally mounted with relation to said supporting frame, an auxiliary boom frame mounted on said main boom frame and including means carried by said supporting frame for selectively manipulating said boom frames relatively to said supporting frame and to each other, and articulatable means extending from said auxiliary boom frame for supporting said outer hose flange

to permit levelling the position of said flange in relation to said manifold means, said flexible hose section being lengthwise extendible along said boom frames by means coupling said hose and said auxiliary boom frame, and support means on said boom frames for said flexible hose section, said last support means comprising variably positionable means comprising suspending means having powerized control means therefor.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,922,446 January 26, 1960

Edward S. Sheiry

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 19, for "shifting" read -- shifted --; line 47, for "to", first occurrence, read -- no --; column 7, line 22, for "points" read -- joints --; line 24, for "oulets" read -- outlets --; column 8, lines 11 and 21, for "base", each occurrence, read -- hose --.

Signed and sealed this 26th day of July 1960.

(SEAL)
Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents