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FISHING TOOL ASSEMBLY

Filed Jan. 17, 1957

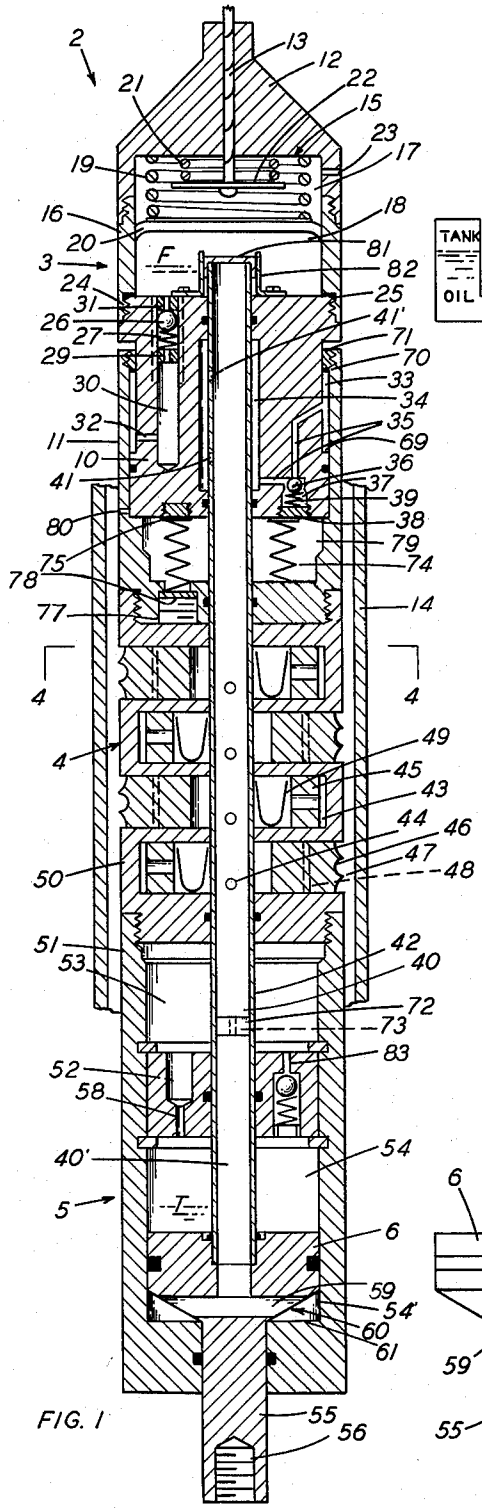


FIG. 1

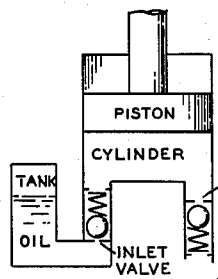


FIG. 3

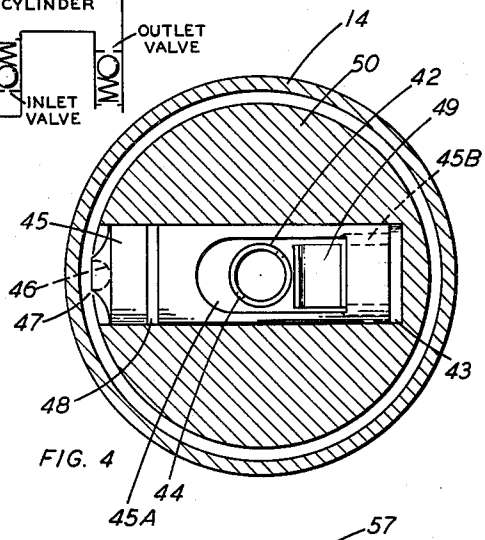


FIG. 4

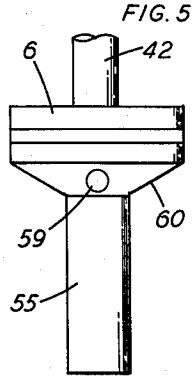


FIG. 5

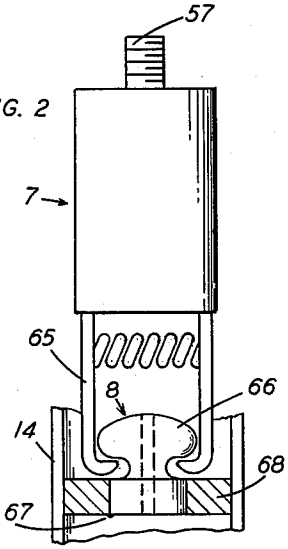


FIG. 2

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FISHING TOOL ASSEMBLY

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13 Claims. (Cl. 166—98)

This invention relates generally to oil well servicing equipment and more particularly to that class of equipment known in the trade as a "fishing tool."

The primary object of this invention is to provide a wire line operated device which may be lowered into a well bore to remove equipment stuck therein by applying a greater upward pulling force thereon than might be applied thru the wire line alone.

Another object is to provide a pulling tool of the character described which includes a hydraulic pump and corresponding pulling cylinder whereby a hydraulic jack action may be applied to the equipment to be pulled.

An additional object is to provide a wire line fishing tool which is adapted to be anchored in place within the tubing walls to provide a stable base from which the pulling force may be applied so that the wire line will not be subjected to the entire pulling force.

And still another object is to provide a cylindrical well bore tool having a captive oil supply which forms the medium for applying the necessary force to first lock the tool in place in the well bore and then applying an increased ratio force to the equipment to be pulled.

And yet another object is to provide a wire line controlled hydraulic powered fishing tool in which successive strokes are employed to provide the increased hydraulic pressure necessary to pull a piece of equipment stuck in a well, but in which tool the pressure build up is easily released upon completion of the job for removing the fishing tool and retrieved equipment from the well.

And an additional object is to provide a wire line operated fishing tool of this character which is prevented from being accidentally blown out of the well upon the rapid release of the stuck equipment.

These and other objects and advantages will be apparent from an examination of the following specification and drawing in which:

Fig. 1 represents a cross sectional elevational view of the power applying fishing tool of this invention.

Fig. 2 is a side elevational view of an oil tubing choke remover tool which is used with the device of Fig. 1 to form a complete choke remover tool assembly.

Fig. 3 is a schematic outline drawing to illustrate the operation of the oil pump section of this invention.

Fig. 4 is a cross sectional view taken along the lines 4—4 of Fig. 1.

Fig. 5 is a fragmentary detail elevational view of the pulling cylinder piston of this invention.

In many installations for the production of an oil and or gas well, in the interest of conservation, and also for the purpose of safety, it is common to install a "bottom hole" choke, or restriction, in the tubing extending from the bottom to the top of the well, for the conduction of the oil to the top. This "choke" or restriction, in spite of being made of extra hard metal, is frequently worn or eroded by the action of abrasive

materials such as sand or lime, carried at high velocities through the restriction. Thus, it has become customary, as also in the case of the "standing valves" in a pumping well, to make these chokes in the form of a retrievable apparatus, to be "set" or "pulled" from the surface, using a wire line and appropriate tools.

Generally these chokes are set from the surface, using a .072 in. steel wire line, having a breaking strength, when new, of about 1,200 pounds dead weight. Many times, due to corrosion of the mating parts, or the intrusion of sand, or other materials, or because the parts become galled, the wire line is incapable of loosening the choke, and this requires the pulling of the entire string of tubing from the well. In a high-pressure well, for safety and convenience, it is necessary to "kill the well," that is, load it with water, to prevent it from flowing oil all around while the pulling operation is going on. All this is quite expensive.

Many times, too, when the present equipment for retrieving the choke is successful, the choke is loosened, and is blown up the hole, by the escaping high pressure gas, along with the tools and wire above. This invariably leads to a long drawn out "fishing" job, and many times requires the pulling of the tubing, after "killing the well" and the laborious extraction of the wadded and kinked wire line from the tubing, a joint at a time.

Referring now more particularly to the characters of reference in the drawing, it will be observed that the overall fishing tool, indicated generally at **2** consists basically of an upper wire line operated oil pump or power means section **3**, a central holding unit or holding means section **4**, and a lower pulling cylinder or pulling means section **5**, from which projects a stem or shank **55** forming the lower portion of a piston **6** for attachment to a choke remover or pulling tool **7** in operational relationship for the purpose of removing a stuck or "frozen" choke **8** or other oil well equipment from a well bore or tubing.

The pump section **3** includes a piston **10** adapted to reciprocate vertically in a cylinder housing **11** which is supported longitudinally in tool **2** near the upper part thereof. Upper socket **12** of the pump section **3** is adapted to receive a wire line **13** by which tool **2** is operated and supported in tubing **14**. Socket **12** together with side wall **16** incloses a chamber **15** which includes an upper spring compartment **17** and a lower oil reservoir **18**. Spring compartment **17** includes a non-corrosive compression spring **19** which operates between the socket **12** and a floating reservoir balance **20** which seals off the oil in compartment **18** and maintains it constantly under pressure. The balance **20** may be constructed in any accepted manner consistent with its required function of a reservoir balance, and one such construction is seen in Fig. 1 to comprise a thin plate (not numbered) against which the spring **19** rests at its lower end, and a thicker member which extends beyond the ends of the thin plate and is curved to engage the side walls **16** to form a seal against escape of the oil F from compartment **18** into compartment **17**. A second spring **21** preloads anchor plate **22** to which wire line **13** is attached whereby the plate and spring act as a shock absorber to sudden loads applied to the wire line. A breather hole **23** permits ambient fluid in tubing **9** to enter compartment **17** and assist in pressurizing balance **20**. Side wall **16** engages the top end of piston **10** by means of threads **24** and this threaded engagement is sealed by O-ring **25**. A ball check valve **26** is preloaded by spring **27** which operates between ball **26** and lower spring seat **29** to keep ball **26** closed against upper valve seat **31**. The ball **26**, spring **27**, and seats **29**, **31** are all located in longitudinal channel

30 which opens into compartment 18 at the top and terminates intermediate the length of piston 10. A radial channel 32 connects channel 30 with an annular chamber 33, which in turn is connected to central chamber 34 by way of channel 35, whereby fluid under pressure will move from compartment 18 through channels 30 and 32 into chamber 33 and thence through channel 35 and into chamber 34. An adjustable check valve assembly comprising a ball 36, a spring 37, and a threaded spring seat 38 are installed in cavity 39 at the lower end of piston 10 in such a manner that ball 36 closes channel 35 when fluid pressure therein drops below a predetermined figure.

Once fluid enters chamber 33 it has access to the interior channel 40 through ports 41 of longitudinal tube 42 from whence it may enter a series of cylinders 43 of holding unit section 4 through ports 44. Cylinders 43 include a piston 45 having a concave outer face 46 with a circumferential ridge 47 which is adapted to bite into the inner wall of tubing 14 when engaged therewith under pressure. Each piston 45 is equipped with an O-ring (or "quad" ring) 48 and spring 49 to provide in effect what might be described as a spring return hydraulic cylinder. The holding unit section 4 is virtually all contained within housing 50 which threadedly engages the lower end of pump cylinder housing 11 at its upper end, and is itself threaded at its lower end to engage housing 51 of pulling cylinder section 5. Pistons 45 include a vertical oblong opening 45A to permit passage therethrough of tube 42, and also provide operational space for spring 49. A pair of holes 45B in piston 45 will permit fluid under pressure entering opening 45A to get between piston 45 and housing 50 so that an operating pressure may be applied to piston 45. The preferred arrangement of pistons 45 is a vertical series of four units operating in the same plane but in alternating directions as indicated on the drawing.

A baffle 52 separates the interior of housing 51 into a special reservoir compartment 53 and a piston cylinder 54 in which piston 6 is adapted to operate. The lower end or depending projecting shank or stem 55 of piston 6 projects through and beyond the lower end of housing 51 for attachment by way of its threads 56 to the mating threads 57 of choke remover tool 7. Baffle 52 is rigidly but removably installed in the interior of housing 51 and includes a restricted orifice 58 through which fluid must flow to enter reservoir 53. Tube 42 extends longitudinally and in slideable relation from pump section 3 down through piston 10, housings 11, 50 and baffle 52, and is rigidly attached only to piston 6. Chamber 40 connects with a transverse channel 59 which in turn opens into cylinder chamber 54 below piston 6. The lower side of piston 6 near its juncture with projecting end 55 is tapered at 60 to insure that a small annular volume 61 of chamber 54 will always be open to receive fluid from tube chamber 40 to start the "jacking" operation.

In operation, the complete assembly of the holding tool 2 and the choke remover tool 7 is lowered down a well bore tubing 14 until the spring loaded dogs 65 of the tool 7 engage the knob head 66 of choke 8, which, for purposes of this invention, is assumed to be stuck or frozen by corrosion 67 in its seat 68 in tubing 14. Now an upward pull of wire line 13 will lift socket 12 and pump piston 10 which slideably engages the interior of housing 11 and the exterior of tubing 42. As piston 10 moves upward, its circumferential shoulder 69 compresses the volume of annular chamber 33 toward upper seal 70 and shoulder 71 of housing 11, so that any non-compressible fluid therein is forced by ball valve 36 and thru channel 35 and into chamber 34; any continued pressure forces the fluid on thru ports 41 and into chamber 40 as far down as plug 72. Since port 44 is above plug 72 and opens into cylinder 43, the pressurized fluid will flow into cylinder 43 and expand pistons 45 outward with sufficient pressure to overcome springs 49 until the sharp ridge 47 of these pistons has engaged tubing 14 sufficiently to hold the tool assembly 2 in place in tubing 14. Any further build-up of pressure on fluid F will force the fluid thru small bleeder port 73 and into the lower chamber 40' of tubing 42 which chamber connects with cross channel 59 and into chamber 60 whereafter any additional pressurized fluid will raise piston 6 and consequently exert an upward pulling force on end 55, on remover tool 7 and ultimately on choke 8. To prevent a too sudden pull out of choke 8 and to allow the pressure in tubing 14 above seat 68 to gradually equalize to that below seat 68, a supply of trapped fluid T is placed in chamber 64; it will be observed that as the pressure is raised the fluid T will pass from chamber 54 slowly thru restricted orifice 58 and into chamber 53. This transaction acts as a shock absorber against sudden jars and also prevents the holding tool 2 from becoming dislodged and being blown up the tubing by the sudden release of pent up gases as might result upon sudden removal of choke 8.

After a quantity of fluid F is forced out of chamber 33 as it is reduced in volume, more fluid must come in to replace that evacuated as the chamber 33 is restored to its original size, and this fluid is drawn in past the check valve including ball 26 when piston 10 returns to its original position by the action of tension springs 74 assisted by its own weight and the additional weight of wire line 13. The upper end of spring 74 is anchored in plug 75 which threadedly engages the underside of piston 10 at spaced locations, and the lower end of spring 74 is attached to a thin circular anchor plate 76 installed in cavity 77 in the lower end of housing 11, after which a sealing plug 78 is threaded into cavity 77. Chamber 79 is vented at 80 to avoid creation of a vacuum by the upward movement of piston 10. When additional fluid F has thus entered chamber 30, another upward pull on wire line 13 will start a second cycle of fluid movement into chamber 54' and thus function as a hydraulic jack in applying an upward pull on choke remover tool 7. It has been calculated that in one model of this fishing tool, a 300 pound pull on the wire line will provide a 6,000 pound force on the remover tool.

After choke 8 has been loosened, pistons 45 of holding unit section 4 maintain their grip on tubing 14 until the pressure has partially equalized in the manner previously described. When the pressure below seat 68 is released by freeing choke 8, then the greater pressure below seat 68 contributes to the upward movement of piston 6. As piston 6 is further moved upward under additional upward strokes on wire line socket 12, oil in compartment 54 passes thru orifice 58 and into compartment 53, as described, until piston 6 is adjacent baffle 52 at which point the end of tube 42 containing cap 81 has moved upward toward balance 20 sufficiently to expose port 41' in tube 42 to the interior of compartment 18 so that the fluid under high pressure in chamber 40 will flow into the low pressure compartment 18. As the pressure in chamber 40 diminishes, the springs 49 will be able to retract pistons 45 and force more fluid through bleeder port 73. A pair of right angle leaf springs 82, attached to the top of piston 10 and normally pressing against cap 81, will move inward under their own spring pressure in the direction of tube 42 and in so doing will be in position to engage and hold cap 81 when the cap and attached tube 42 have moved a sufficient distance upward to allow the lower end of the cap 81 to pass above the upper end of the springs 82. Piston 6 and tube 42 will then remain in an upraised position until the complete string of fishing tool 2, choke remover tool 7 and choke 8 are removed from the wire line 13 at the surface of the well. Thereafter socket 12 and sidewall 16 may be removed and cap 81 may be manually restored to its initial position for subsequent

fishing operations by pulling end 55 until piston 6 is in its lowermost position. To facilitate flow of trapped fluid from chamber 53 back into cylinder 54, a check valve 83 is placed in spacer 52.

From the foregoing description it will be readily seen that there has been produced a device which substantially fulfills the objects of the invention as set forth herein. The invention is not limited to the exemplary constructions herein shown and described, but may be made in many ways within the scope of the appended claims.

What is claimed is:

1. A wire line operated fishing tool for removing equipment from a well bore, comprising: a housing including a power section, a holding section, and a pulling section having means thereon connectable with a removing tool; longitudinally movable means forming a part of said power section adapted to connect same with a flexible line operative from the surface of the well bore to activate said power section; means connecting the power section with said holding section and pulling section for transmitting hydraulic fluid from said power section to said holding section and said pulling section, said power section including a cylinder, said longitudinally movable means including a piston means movable longitudinally in said cylinder of said power section for pumping hydraulic fluid from said power section to said holding section and to said pulling section, said holding section including a laterally disposed cylinder and a laterally movable gripping means biased toward retracted position in said holding section cylinder and exposed to the pressure of hydraulic fluid from said power section to be moved outwardly toward projecting gripping position with respect to said holding section to hold said section against longitudinal movement in said well bore, said pulling section comprising a longitudinal cylinder and a piston movable longitudinally within said pulling section cylinder and exposed to actuation by said hydraulic fluid from said power section to be moved longitudinally of said pulling section cylinder by hydraulic fluid from said power section to activate said pulling section to move said piston longitudinally in said pulling section cylinder after said laterally movable gripping means in said holding section has been moved outwardly to extended position.

2. A wire line operated fishing tool for removing equipment from a well bore, comprising: a housing including a power section having a cylinder therein with a piston movable longitudinally in said cylinder for forcing hydraulic fluid outwardly from said cylinder, a holding section having a laterally disposed cylinder therein with a laterally movable gripping member slidable longitudinally in said cylinder and biased inwardly of said cylinder, said gripping member being exposed to hydraulic fluid pressure conducted into said laterally disposed cylinder from said power section to be moved laterally outwardly of said holding section into engagement with the wall of said well bore for gripping the walls of said well bore, and a pulling section comprising a longitudinally extending cylinder having a plunger movable longitudinally therein and provided with means for engaging a removing tool; means connecting said power section with said holding section and said pulling section for conducting hydraulic fluid from said power section to said cylinders of said holding section and said pulling section; wire line means connected to said piston of said power section and operative at the surface of said well bore to activate said power section; and hydraulic fluid means in said housing forced by said longitudinally movable piston in said power section to said holding section to force said laterally movable gripping member laterally outwardly with respect to said holding section first and subsequently to said pulling section cylinder to move said plunger upwardly in said pulling section cylinder to apply an upward pulling force moving said plunger upwardly of said pulling section cylinder.

3. A wire line operated fishing tool assembly for removing equipment stuck in a well bore comprising: a hydraulic power means, a holding means, a pulling means, means on said pulling means providing for connection of a pulling tool with said pulling means to engage equipment in said well bore; fluid conduit means connecting said hydraulic power means, said holding means and said pulling means; said hydraulic power means comprising a cylinder and a piston movable longitudinally therein for forcing hydraulic fluid from said power means to said holding means and said pulling means through said conduit means; said piston being movable longitudinally upwardly of said cylinder to force said hydraulic fluid to said holding means and to said pulling means; said holding means including a housing having a lateral cylindrical opening therein and a laterally movable gripping member slidable in said opening from a retracted position to an extended gripping position; means biasing said gripping member inwardly of said opening, said conduit means communicating with the interior of said opening to admit fluid thereto to force said gripping member outwardly to extended position; said pulling means including a housing having a longitudinal opening therein and a plunger movable longitudinally in said opening, said means for connecting said pulling means with a pulling tool being on said plunger; said conduit means from said power means communicating with said opening in said pulling means housing for conducting hydraulic fluid to said pulling housing for moving said plunger means longitudinally upwardly of said pulling means housing; said piston of said power means having means thereon adapted to be connected with a flexible line operating means operative from the surface of said well bore to move said piston of said power means longitudinally upwardly in the cylinder of said hydraulic power means to transmit hydraulic pressure from said power means through said conduit means to said holding means and said pulling means, first to said holding means to lock said tool assembly in said well bore, and second to said pulling means to forcibly lift said pulling tool and said equipment engaged by said pulling tool upwardly in said well bore.

4. A wire line operated pulling tool comprising: a housing including a power section, a holding section, and a pulling section, at least one cylinder formed in each section, said cylinder in said power section being longitudinally disposed, said cylinder in said holding section being laterally disposed, said cylinder in said pulling section being longitudinally disposed; means providing a fluid conduit from the cylinder of said power section to the cylinders of said holding section and said pulling section for conducting a hydraulic medium from said power section cylinder through said conduit means to said cylinder in said holding section and to said cylinder in said pulling section, each of said cylinders having a piston movable therein, and means providing for connecting the piston in the cylinder of the power section with a longitudinally movable wire line means operable to apply a force to said piston to move said piston in the cylinder in said power section to pressurize said hydraulic medium, said conduit means transmitting said pressurized medium from said power section cylinder first to said holding section cylinder to move the piston disposed therein laterally outwardly of said cylinder and next to said pulling section cylinder to move the piston disposed therein longitudinally, the area of said piston in said cylinder of said power section exposed to said hydraulic medium being smaller than the area of said piston in said cylinder of said pulling section exposed to the hydraulic medium whereby a mechanical advantage is obtained between said pistons of said pulling and power sections.

5. A wire line operated pulling tool for lowering into a well bore tubing for removing equipment stuck in said

bore comprising: a housing including a power pump section having means providing a longitudinally disposed cylinder therein, a holding section having means providing a plurality of substantially radially disposed cylinders therein opening to the exterior of said housing in spaced positions about the circumference of said holding section, and a pulling section having means providing a longitudinal cylinder therein opening downwardly; each of the cylinders having a piston movable therein; means providing a fluid conduit from the cylinder of said power pump section to each of the cylinders of said holding section and to the cylinder of said pulling section; a hydraulic medium in said cylinder of said power pump section and movable therefrom by movement of the piston in said cylinder through said conduit means to each of the cylinders in each other mentioned section; means providing a connection by which a wire line may be attached to said power pump piston and adapted when pulled to move said pump piston in the power pump cylinder to force said hydraulic medium from said cylinder through said conduit means to each of the cylinders of each of said other sections, said conduit means transmitting said pressurized medium to said holding section cylinders to force the pistons therein outwardly of said cylinders to projecting positions, the outer ends of said pistons of said holding section being adapted to forcibly engage the wall of said well bore tubing to prevent longitudinal movement of said housing in said tubing, said conduit means also transmitting a hydraulic medium to said pulling section cylinder to move the piston located therein longitudinally upwardly; said piston in said pulling section cylinder having depending means connected therewith extending outwardly through the open lower end of said cylinder of said pulling section and adapted to have a well tool connected therewith to engage the equipment stuck in said well bore, whereby movement of said piston in said pulling section cylinder applies force to said equipment stuck in said tubing, the area of said piston in said pump section exposed to said hydraulic medium being smaller than the areas of said pistons of said holding and pulling sections exposed to said hydraulic medium whereby said pistons of said holding and pulling sections move smaller distances than said piston of said pump section upon movement of said piston of said pump section so that a mechanical advantage is gained between said piston of said pump section and said pistons of said other sections.

6. A wire operated fishing tool assembly for removing equipment from a well bore, including: a housing comprising a power section having a cylinder and a plunger movable therein, a holding section having a plurality of laterally extending substantially diametrically disposed cylinders each having a piston moving longitudinally of said cylinders, each piston having means on its outer end adapted to grip the walls of the well bore, and a pulling section having a longitiudinally disposed cylinder formed therein and a piston movable therein and having a section extending downwardly therefrom, means on said downwardly extending section of said piston in said cylinder of said pulling section providing for connection of a pulling tool with said piston of said pulling section to engage equipment in said well bore, means on said plunger providing for connecting with said plunger wire line means operative from the surface of said well bore to move said plunger in said cylinder of said power section by the application of a non-rotary upward force only, and conduit means in said housing providing for communication between the cylinder of the power section and the cylinders of the holding section and the cylinder of the pulling section, and hydraulic fluid means within said cylinders and said conduit means movable from the power section by movement of said power section plunger in said power section cylinder to activate said holding section and said pulling section to forcibly lift said equipment from said well bore.

7. A fishing tool assembly for removing equipment stuck in a well bore, comprising: a power operated wire line flexibly suspending said assembly from the surface of the well, a housing having hydraulic pump means in the upper portion of said housing and connected with said wire line and directly operable by upward pulls on said wire line, said housing also having thereon a holding means comprising a plurality of laterally disposed substantially diametrical cylinders each having a piston movable longitudinally of said cylinder and biased inwardly of said cylinder, said pistons having means on their outer ends disposed to engage and grip the wall of the well bore; said housing also having thereon a pulling means in the form of a longitudinally disposed cylinder at the lower end of said housing; a piston movable longitudinally therein and having a depending portion extending through the opening in the lower end of said cylinder; and a pulling tool means connected with the downwardly projecting portion of the piston of the pulling means and movable with said piston of said pulling means to engage and pull said stuck equipment; and a hydraulic fluid conduit connecting said hydraulic pump with the cylinders of said holding means to hydraulically move the pistons therein laterally outwardly of said housing into engagement with the wall of the well bore to hold the housing against longitudinal movement in said well bore, and also connecting said pump with the cylinder of the pulling means to hydraulically move the piston upwardly in said cylinder of said pulling means to lift said pulling tool means to forcibly remove equipment in said well bore by applying a much greater upward force on said stuck equipment than said wire line is capable of transmitting from the surface of said well.

8. A wire line operated fishing assembly for removing equipment stuck in a well bore, comprising: a housing having a cylinder provided with an open upper end, a power piston extending upward from said housing and slidable longitudinally within said cylinder, said housing having means providing a plurality of horizontally disposed cylinders in its medial portion enclosed at one end and open at the other end and having their open ends spaced circumferentially around the exterior periphery of said housing; a horizontally disposed hydraulic piston in each of said horizontally disposed cylinders in said housing and adapted to project radially beyond the side walls of said housing and into binding engagement with the wall of said well bore to lock said housing against up or down movement, means biasing said pistons inwardly of said horizontal openings toward retracted position; a hydraulic conduit from said first mentioned cylinder of said housing to each of said horizontally disposed cylinders, whereby hydraulic fluid may be forced by said power piston through said conduit into said horizontally disposed cylinders to project said horizontally disposed pistons radially beyond said walls of said housing; a pulling means comprising a longitudinally extending cylinder at the lower portion of the housing having an opening at its lower end, and a piston slidable longitudinally in said cylinder having a downwardly projecting stem portion extending outwardly through said opening; means at the lower end of said stem portion providing a connection whereby a fishing tool may be connected with said stem portion and adapted to apply an upward force on said stuck equipment in response to movement of said piston of said pulling means; a fluid conduit from said first mentioned cylinder of the housing to the longitudinal pulling means cylinder for conducting hydraulic fluid from said first mentioned cylinder of the housing to said pulling means cylinder to operate said piston in said cylinder in response to said operating movements of the power piston in said upper end of the housing; and a wire line connecting means at the upper end of said power piston adapted to be connected to a flexible wire line whereby said fishing tool assembly may be attached to and operated by said flexible wire line

from the surface of the well to move said power piston to force hydraulic fluid from the upper end of the housing through the conduits to all of the cylinders to actuate the pistons therein, and release means operable upon upward movement of said pullng means cylinder to release hydraulic pressure from said fluid conduits to permit the horizontally disposed hydraulic pistons to disengage the well bore walls when said pulling means is moved upward a predetermined distance.

9. A wire line fishing tool of the character set forth in claim 2 wherein the piston movable longitudinally of said power section is movable upwardly to apply an operative force to the hydraulic fluid therein to operate the gripping member of the holding section and the plunger of the pulling section.

10. A fishing tool assembly for removing equipment stuck in a well bore including: a housing having a hydraulic pump therein; a plurality of laterally disposed cylinders in said housing each having a laterally movable plunger slidable therein outwardly of said housing into engagement with the wall of the well bore to hold the housing against movement in said well bore, means biasing said plungers inwardly of said lateral cylinders; a hydraulic fluid conduit from said hydraulic pump to said cylinders for conducting hydraulic fluid from said pump to said cylinders to move said plungers outwardly; a pulling means at the lower end of said housing including a cylinder at the lower end of said housing extending longitudinally of said housing and having an opening at its lower end; a piston longitudinally movable in said pulling means cylinder and having a depending section extending through said opening at the lower end of said housing; a pulling tool connected to the lower end of said projecting portion of said pulling means piston, said pulling tool being adapted to engage and apply a force to well equipment stuck in said well bore; a hydraulic conduit extending from said hydraulic pump to said pulling means cylinder at the lower end of said housing for conducting hydraulic fluid to said cylinder to move the pulling means piston therein upwardly to lift the pulling tool; and means at the upper end of said housing providing a connection between said hydraulic pump and a flexible member extending upwardly through the well bore to the surface of the earth for operating said hydraulic pump to force fluid through the conduits to the several cylinders to actuate the pistons therein.

11. A fishing tool assembly of the character set forth in claim 10 wherein the hydraulic pump includes a reservoir, means providing communication between the reservoir and the hydraulic fluid conduit from the pump to the cylinders of the holding and pulling means; and valve means controlling flow from said conduit to said reservoir openable to relieve hydraulic fluid pressure from said conduit into said reservoir.

12. A hydraulic fluid power tool for operating a fishing tool for removing well equipment stuck in a well bore, said hydraulic fluid power tool including: an elongate housing having at its upper end a hydraulic fluid pump means; a plurality of laterally disposed cylinders in said housing below said pump means and each having a piston slidable longitudinally therein and adapted to be projected therefrom to forcibly engage the wall of the well bore to prevent longitudinal movement of said housing in said bore; means biasing said plungers inwardly of said lateral cylinders out of projecting position; a longitudinally extending pulling means cylinder in the lower portion of said housing and having an opening at its lower end; a pulling means piston slidable longitudinally in said cylinder at the lower end of said housing and having a reduced portion projecting downwardly through the opening at the lower end of said housing; means on said projecting portion adapted to provide a connection between the pulling means piston and a pulling tool adapted to engage a well tool; a hydraulic fluid conduit from said pump means to each of the laterally disposed cylinders, whereby hydraulic fluid pumped from said pump means to said cylinders forces the plungers in said cylinders outwardly to project from said housing and engage the walls of the well bore; conduit means in said housing for conducting hydraulic fluid from said hydraulic pump means to the longitudinal pulling means cylinder at the lower end of the housing to move the piston therein upwardly of said housing; and means on the hydraulic pump means at the upper end of the housing adapted to provide a connection between said pump means and an operating means extending upwardly in the well bore to the surface for operating said hydraulic pump.

13. A fishing tool assembly of the character set forth in claim 12 wherein the hydraulic pump includes a reservoir, means providing communication between the reservoir and the hydraulic fluid conduit from the pump to the cylinders of the holding and pulling means; and valve means controlling flow from said conduit to said reservoir openable to relieve hydraulic fluid pressure from said conduit into said reservoir.

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