Oct. 18, 1932. R. V. PLYLER 1,882,878

PORTABLE SHACKLE LINE PICK-UP DEVICE

Filed May 21, 1930 . 2 Sheets-Sheet 1

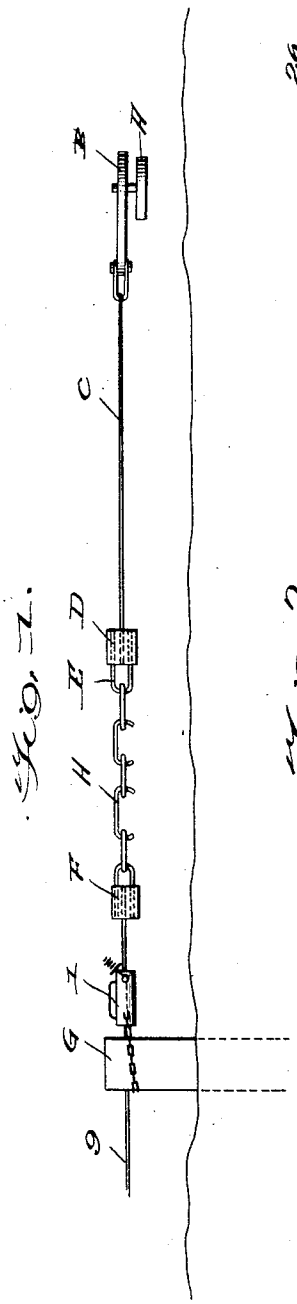


Fig. 1.

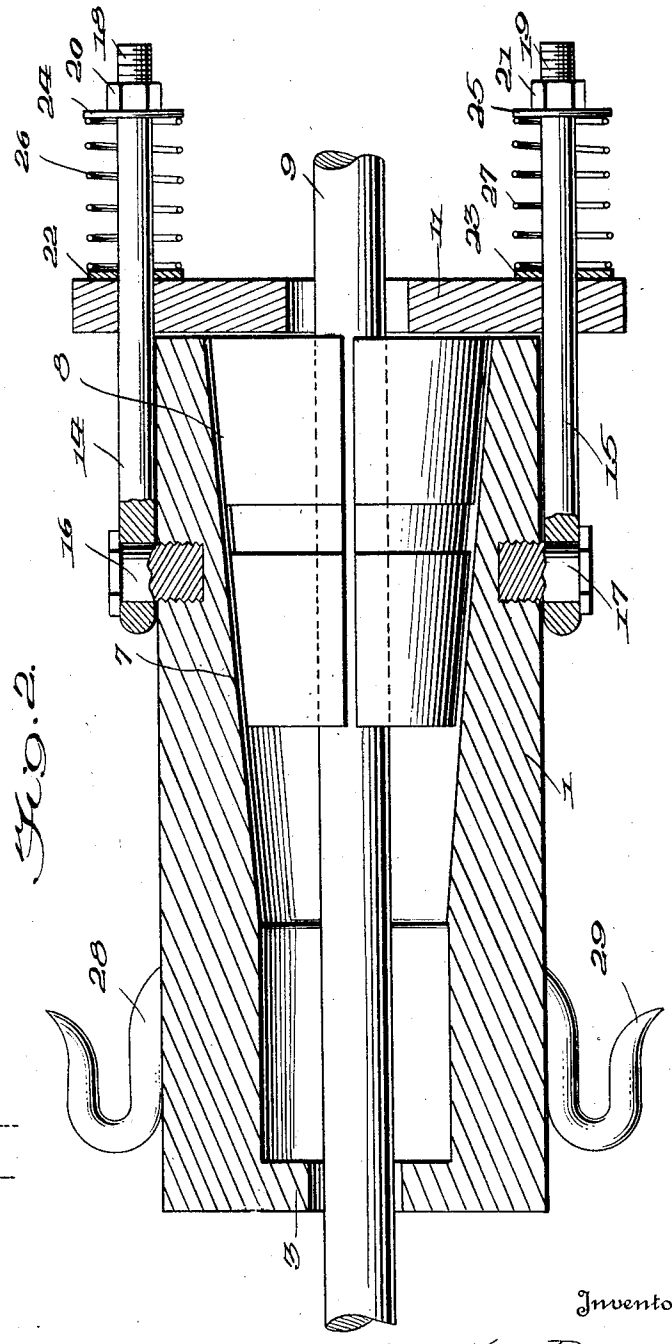


Fig. 2.

Inventor

Rush Vann Plyler,

By Smith, Michael & Gardiner

Attorneys

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Fig. 3.

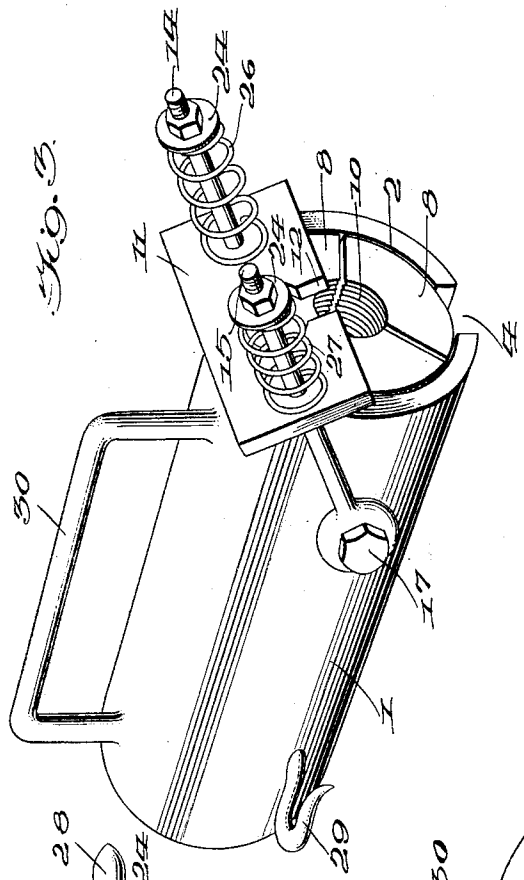


Fig. 5.

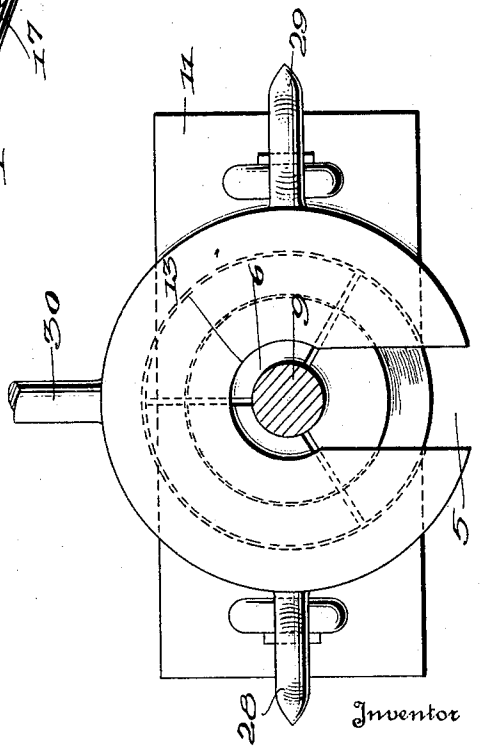
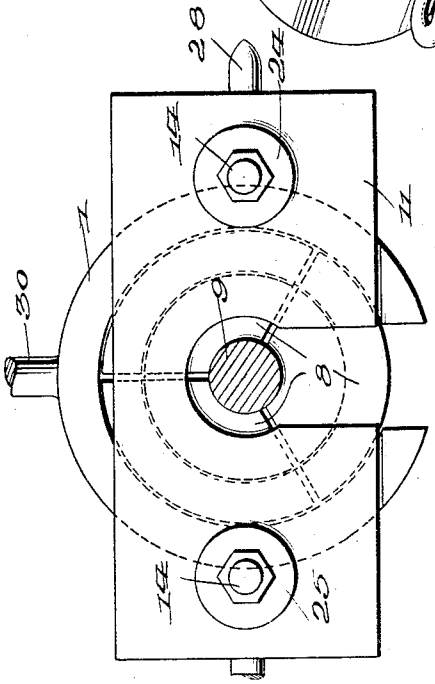


Fig. 4.



Inventor

Rush Vann Plyler,

By Smith, Michael & Gardiner

Attorneys

Patented Oct. 18, 1932

1,882,878

UNITED STATES PATENT OFFICE

RUSH VANN PLYLER, OF SARATOGA, TEXAS

PORTABLE SHACKLE LINE PICK-UP DEVICE

Application filed May 21, 1930. Serial No. 454,500.

This invention relates to a portable shackle line pick-up device and more particularly to a device of the above nature that is automatic and positive in operation.

It has become common practice in the oil fields to operate the pumping jacks of a number of wells located at different points in the field from a common or central power unit. This unit is in constant operation and provision must be made, therefore, to permit the pump jacks to be disconnected from the power source when, for any reason, such as repair or replacement of parts, it is found desirable or necessary to cut out one or more of the wells of the group deriving power from the central power unit.

If one of the pump jacks were so disconnected without some provision being made to support the shackle line, which is the line connecting the pump jack with the power line, the weight of the pump rods and associated mechanisms would cause the same to drop in the well and thereby pull the shackle line away from the power source.

This is undesirable because it means the loss of an appreciable amount of time and the expenditure of considerable effort to again restore the shackle line to position so that it can once more be attached to the power unit.

The present device, therefore, aims to provide a construction that will operate automatically to hold the shackle line while slack is being taken up preparatory to the final connection with the power unit and which can be used to hook-off the shackle line from the source of power when it is found necessary to shut down any particular well of the group.

Among the objects of the invention are to be found its portability, enabling it to be easily carried from place to place; its adaptability to any of the shackle lines in the group without change of construction; its automatic action permitting the hooking-on or hooking-off to be accomplished by one operator where two were previously required; its safety in manipulation since the attendant is not required to come in contact with any moving parts when the shackle line is being picked-up and its simple, rugged and inexpensive construction.

With these and other objects in mind, which will appear as the description proceeds, the invention consists in the combination and arrangement of parts herein shown, described and specifically claimed, it being understood that the drawings are for illustrative purposes solely and are not to be taken as limiting the scope of the invention.

In the drawings forming part hereof:

Figure 1 is a view illustrating an installation, parts of the power unit being omitted.

Fig. 2 is a central, longitudinal sectional view of the device as applied to a shackle line.

Fig. 3 is a perspective view with the guard plate partially elevated.

Fig. 4 is a front view with the guard plate lowered, and

Fig. 5 is a rear view of the same.

Referring more particularly to the drawings, a cylindrical casing is shown as indicated at 1 provided with an open front end 2 and a closed rear end 3.

The wall of the casing 1 is slotted as at 4 throughout its length and this slot is continued through the rear wall 3 as indicated at 5 to communicate with an opening 6 passing centrally through the rear wall 3.

The bore of the casing 1 is provided with an inwardly tapered annular seat 7 against which the conical segmental slip 8 fits, the conical faces of the slip 8 and the tapered seat 7 cooperating to wedge the slip against the shackle line 9 when moved in one direction and to release the slip when moved oppositely, it being understood that the longitudinal dimensions of the slip are such as to permit limited longitudinal movement thereof within the casing 1.

The slip 8 is here illustrated as comprising three segments each having gripping

teeth 10 on their inner faces but it is obvious that the slip may be of other construction and that the number of segments may be increased or decreased as desired.

In order to limit movement of the slip 8 within the cylindrical casing 1 and to prevent the same from being expelled from the open end 2, a guard plate 11 having a slot 12 terminating in a central circular enlargement 13 therein, is pivoted to the casing 1 by means of links 14 and 15 secured on opposite sides of the casing by headed studs 16 and 17 threaded into suitable openings in the casing 1.

Enlargement 13 receives the shackle line 9 when the guard plate is in lowered position and the plate can be swung so as to remove the same from engagement with the slip 8 because of the slot 12.

The links 14 and 15 project through suitable openings in the guard plate 11 and are provided at the free ends with threaded portions 18 and 19 receiving the nuts 20 and 21.

Surrounding the links 14 and 15 and lying against the outer face of the guard plate 11 are washers 22 and 23. Similar washers 24 and 25 bear against the inner faces of the nuts 20 and 21 and between the sets of washers 22, 24 and 23, 25, coil springs 26 and 27 are mounted, each spring surrounding its respective link.

It will be seen, therefore, that the springs 26 and 27 normally urge the guard plate 11 when lowered against the open end 2 of the casing and hold the same in such position as to prevent removal of the slip 8. By adjusting the nuts 20 and 21 compression of the springs 26 and 27 may be varied as found necessary.

On opposite sides of the casing 1 adjacent the rear end thereof hooks 28 and 29 are provided by means of which the device can be secured to the bumper post and after removal from the shackle line it may be readily carried from place to place by means of the handle 30 projecting from the top thereof.

Having described in detail the various parts of my invention, the operation is as follows, reference being had to Fig. 1 wherein a typical installation is illustrated.

In this view a conventional power unit is illustrated at A having the usual eccentric B which reciprocates the power rod C. The short power rod C is equipped with a clamp D having an elongated eye E. The shackle line 9 is provided at its free end with a similar clamp F and the shackle line 9 passes through a bumper post G with the clamp F on the power side thereof.

Under normal working conditions, the two clamps D and F are connected by means of a single pick-up hook H so that rotation of the eccentric B imparts reciprocating motion to the power line C and shackle line 9. However, when the shackle line is first being connected to the power, it is necessary to use a set or plurality of pick-up hooks H between the clamps D and F as will be explained later.

The bumper G through which the shackle line 9 extends serves to hold the end of the shackle line up off the ground and also as a retainer to hold the power end of the shackle line within a few feet of the power unit instead of permitting it to be pulled backwards toward the well whenever the shackle lines become disengaged from the power. This is accomplished by the clamp F striking the bumper post as the shackle line is run through the body thereof.

As illustrated in Fig. 1 the present invention is installed on the shackle line 9 on the power side of the bumper post G but between said post and the clamp F.

The action of the present invention may be explained in the following manner:

Consider the shackle line 9 to be disengaged from the power unit A due to a break in the shackle line or to the necessity of making repairs on the well. The power unit, however, continues to operate because of the fact that it is employed to actuate the pumping jacks on a number of other wells in the group. Under such conditions the clamps D and F are not connected and the clamp D reciprocates freely on the ground and clamp F hangs against the power side of the bumper post G. When it is desired to connect the well to the power, enough slack is pulled in on the shackle line 9 to permit installation of the present invention between the bumper post G and the clamp F. To install the pick-up device it is merely necessary to slip the cylindrical casing 1 laterally over the shackle line 9 until the casing comes to rest with the shackle line positioned in the central aperture 6 in the casing 1, the slip is then inserted in the bore of the device around the rod and the guard plate 11 is pulled down over the face of the slip to hold it in place and the device is then securely held in position against the power side of the bumper post by passing a suitable chain around the bumper post and engaging its ends with the hooks 28 and 29.

Having been installed, it will be seen that with the side sweep of the eccentric B extended toward the shackle line 9 the clamps D and F are connected by means of a set or plurality of pick-up hooks H. As the eccentric then rotates through 180° the shackle line is pulled inwardly toward the power. However, there is always a certain amount of slack in the shackle line due to its own weight, to the lost motion in the moving parts of the pumping jack and to the loose method of making this connection. Thus the first connection of the clamps D and F does not transmit the reciprocating motion of the eccentric through the shackle line to the pumping jack of the well. It is in this instance that the

present invention functions, for the slack in the shackle line which was pulled in toward the power during the rotation of the eccentric B is caught and held by the slip 8. Therefore, the power end of the shackle line is held rigid during the balance of the cycle of the eccentric and the back thrust of the eccentric, that is, when the wide sweep thereof is again moving toward the shackle line, releases the tension on the pickup hooks H and they disengage from the clamps D and F and drop free. The clamps D and F are then connected with one less pick-up hook since the relative position of the clamp F has been advanced toward the power unit A.

The second cycle of the eccentric pulls in more slack in the shackle line and these operations are repeated until all of the slack has been pulled in when the clamps D and F may be connected with a single permanent hook whereby the motion of the eccentric transmits reciprocating motion through the shackle line to the pumping jack of the well.

In order to permit the reciprocation of the shackle line 9 through the cylindrical casing 1, some means must be provided for removing the slip 8 and this is accomplished by elevating the guard plate 11 just before the final connection is to be made, so that the reciprocation of the shackle line 9 toward the power will cause the slip 8 to be expelled from the casing 1. Thus the return stroke of the shackle line will not be prevented and the permanent pick-up hook will not be disengaged from the clamps D and F.

The permanent connection having been made, the device may then be unchained from the bumper post, lifted off the shackle line and transferred to another location.

It is believed to be obvious that when it is desired to use the present invention for hooking-off the shackle line from the power, the device is used in substantially the same manner, that is, the casing is placed over the shackle line, the slip 8 inserted in the tapered bore and the guard plate 11 swung downwardly so as to prevent expulsion of the slip 8 whereupon the back sweep of the eccentric B will cause the permanent hook between the clamps D and F to become disengaged.

Having now completely described the invention and its manner of use, it will be seen that a very compact and rugged construction is provided which is entirely automatic in operation and which can be manipulated with ease and safety by a single operator as distinguished from known methods in which it is necessary for one operator to take up the slack in the chain or in the jack assembly as the shackle line is picked up and a second operator is required to insert the sets of pick-up hooks. Any mishaps in the operation result in injury to the operators and it is well known that many operators have actually lost a finger in this manner.

I claim:

1. The combination with a central power unit and a bumper post, of a casing on said bumper post having a central aperture therein adapted to receive a shackle line and means confined within and freely slidable in said casing to permit movement of the shackle line therethrough in one direction only.

2. The combination with a central power unit and a bumper post having a shackle line passing therethrough, a pick-up device comprising a casing secured to said bumper post and having a tapered bore therein surrounding said shackle line and a slip confine within and freely slidable in said casing cooperating with said tapered bore to grip said shackle line and prevent motion thereof in one direction.

3. The combination with a central power unit and a bumper post having a shackle line extending therethrough, of a pick-up device on said bumper post comprising a casing through which the shackle line extends and sliding means freely confined within the casing automatically operable to prevent motion of the shackle line through the casing in one direction.

4. The combination with a central power unit and a bumper post having a shackle line extending therethrough, of a pick-up device comprising a casing secured to said post and having a tapered bore therein through which the shackle line extends, a tapered slip confined within and freely slidable in said bore and surrounding the shackle line, said slip being automatically operable to engage the shackle line and prevent motion thereof through the casing in one direction.

5. The combination with a central power unit and a bumper post through which a shackle line extends, of a pick-up device comprising a casing on said post through which the shackle line extends, means freely movable and confined within said casing for preventing motion of the shackle line therethrough in one direction, and means associated with said casing for preventing expulsion of the first mentioned means from the casing when the shackle line is moving in the opposite direction.

6. A device of the character described comprising a casing having a bore through which a reciprocating shackle line is adapted to pass, a slip confined within and freely slidable in said bore automatically operable to engage the shackle line and prevent movement thereof in one direction, and means on the casing for preventing expulsion of the slip from the casing when the shackle line moves in the opposite direction.

7. A device of the class described comprising a casing having a tapered bore through which a reciprocating shackle line is adapted to pass, a tapered slip confined within and freely slidable within said bore surrounding

said shackle line and cooperating with the taper of the bore to automatically grip the shackle line when moved in one direction and a guard plate secured to said casing and engaging said slip to prevent expulsion thereof from the casing when the shackle line is moved in the opposite direction.

8. A device of the character described comprising a casing having an open end and a tapered bore through which a reciprocating shackle line is adapted to pass, a tapered slip in said bore surrounding the shackle line and cooperating with the tapered bore to grip the shackle line when moved in one direction, and a plate movable into position to close the open end of said cylindrical casing.

9. A device of the class described comprising a casing having a tapered bore and an open end, a tapered slip within said bore cooperating therewith to expand or contract the slip and a guard plate pivoted to said casing and movable to close the open end of the casing and retain the slip therein.

10. In a device of the character described comprising a cylindrical casing having an open end and a tapered bore through which a shackle line is adapted to pass, a tapered slip within said bore surrounding the shackle line and cooperating with the taper bore to prevent movement of the shackle line in one direction, a guard plate pivoted to said casing and operable to close the open end thereof and retain the slip within the casing.

11. A device of the character described comprising a casing through which a reciprocating shackle line is adapted to pass, a slip within said casing automatically operable to prevent movement of the shackle line in one direction, a guard plate pivoted to said casing operable to retain the slip within the casing, and means for yieldingly pressing said guard plate against the end of said slip.

12. The combination with a central power unit and a bumper post, of a casing on said bumper post having an aperture therein adapted to receive a shackle line, a slip in said casing to permit movement of the shackle line therethrough in one direction only and means associated with said casing operable to allow automatic expulsion of the slips from the casing when the shackle line moves in the opposite direction.

13. The combination with a central power unit including a power line and a bumper post, of a casing on said bumper post having a central aperture therein adapted to receive a shackle line, a slip in said casing to permit movement of the shackle line therethrough in one direction only, means for connecting the power and shackle lines, and means on the casing operable to allow automatic expulsion of the slip from the casing when the shackle line moves in the opposite direction.

14. The combination with a constantly operating central power unit and a bumper post, of a casing on said bumper post having an aperture therein through which a shackle line passes, a power line, means for detachably connecting the power and shackle lines and means confined within and freely slidable in said casing automatically operable to permit movement of the shackle line therethrough in one direction only whereby continued movement of the power line automatically disengages the power and shackle lines.

In testimony whereof I hereunto affix my signature.

RUSH VANN PLYLER.