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PUMP OPERATING MECHANISM.

APPLICATION FILED JAN. 27, 1920.

1,354,557. **Patented Oct. 5, 1920.**

Fig. 1

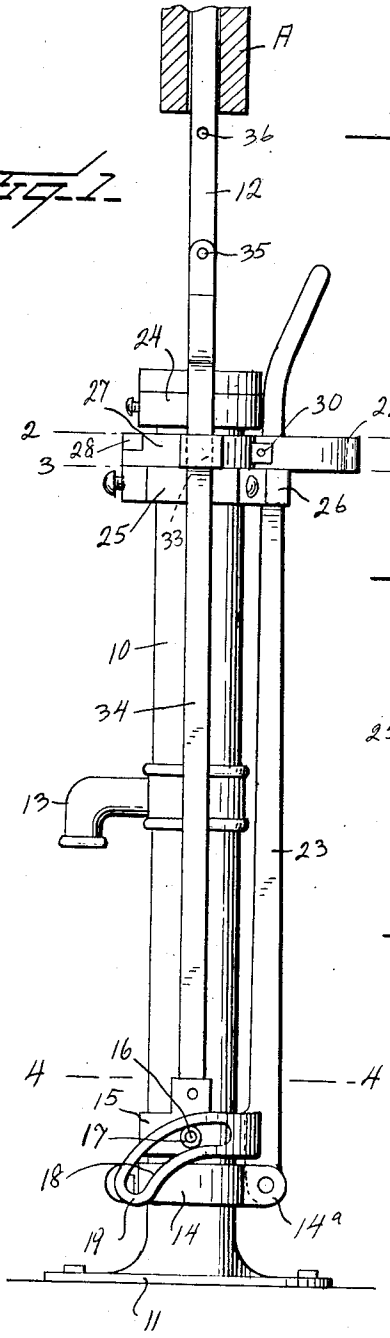


Fig. 5

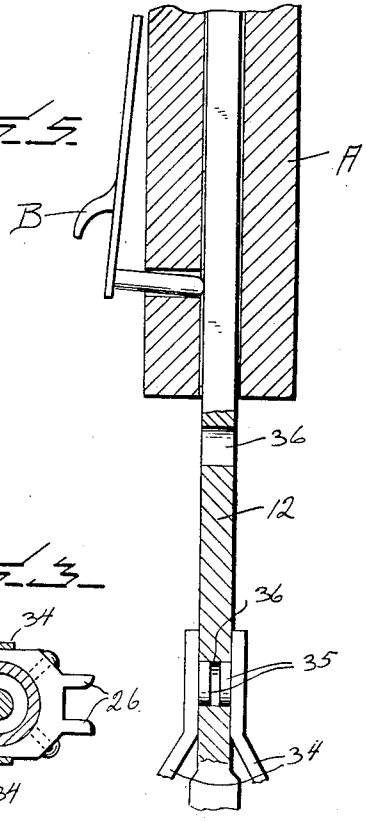


Fig. 3

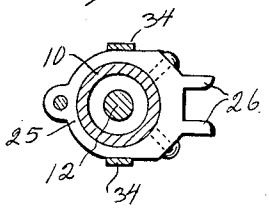


Fig. 2

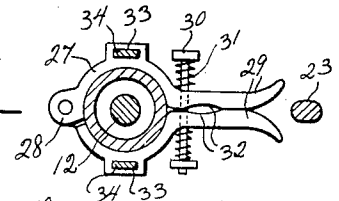
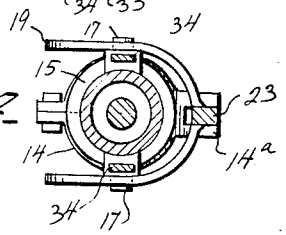


Fig. 4



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PUMP-OPERATING MECHANISM.

1,354,557. Specification of Letters Patent. Patented Oct. 5, 1920.

Application filed January 27, 1920. Serial No. 354,441.

To all whom it may concern:

Be it known that I, ORLA L. HUFFMAN, a citizen of the United States, residing at Weatherford, in the county of Parker and State of Texas, have invented certain new and useful Improvements in Pump-Operating Mechanisms, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to pumps, and particularly to that class of pumps in which the pump rod is reciprocated by windmill mechanism.

The general object of the invention is to provide a mechanism of this character so constructed that the pump rod may be reciprocated either by hand or by the power of the windmill.

A further object in this connection is to provide means whereby an operating lever may be used, and means be provided for automatically engaging the operating lever with the pump rod, when the operating lever is moved to a position where it may be handled or operatively disengaging the pump rod from the lever when the lever is shifted to a vertical and inoperative position.

A further object is to provide means whereby as soon as the windmill starts to turn, if the handle or operating lever be in an operative position, the strokes of the piston rod or pump rod actuated by the windmill will cause the operating lever to be shifted to an inoperative position and operatively disengaged from the pump rod.

A further object of the invention is to provide a construction wherein the operating lever is relatively long so as to secure a relatively great leverage, and wherein the operating lever is so disposed that it may be readily manipulated.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a view partly in side elevation and partly in section of a pump operating mechanism constructed in accordance with an embodiment of my invention, the handle being shown in an inoperative position;

Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken substantially on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 1; and

Fig. 5 is a fragmentary sectional view of a portion of the pitman, the pump rod and the upper ends of the links, showing the pump rod disconnected from the pitman.

Referring to these drawings, 10 designates the barrel of the pump, which extends upward about six feet above the base 11. This barrel 10, of course, is connected to the pipe which extends down into the well. Operating through the barrel or stock 10 is the pump rod 12, which is operatively connected to a windmill, in any suitable manner. The barrel or stock 10 is, of course, provided with the outlet nozzle 13. So far all of the parts of the pump are of any ordinary or suitable construction.

Fixed to the stock 10 adjacent the base or platform 11 is a sleeve or collar 14 including outstanding spaced ears 14ª between which is pivotally mounted an end portion of a lever handle 23, which is substantially 5 ft. long although the same may be any suitable length equal to or greater than the height of the stock 10 above the collar or sleeve 14. Slidably mounted upon the stock 10 above the collar 14 is a sleeve 15 provided with the outstanding and diametrically opposed stub shafts 16 on each of which is mounted an anti-friction sleeve or roller 17. Each of these sleeves or rollers 17 rides in a cam slot 18 produced in an upstanding arm 19 carried by the pivoted end portion of the handle or lever 23.

Mounted upon the upper end of the stock is an upper collar 24 and a lower collar 25 spaced from the upper collar and having outwardly extending ears 26, which are spaced from each other and have divergent inside faces. Disposed between the collars 24 and 25 is a member formed to provide two jaws 27, which are hinged to each other as at 28, these jaws embracing the stock 10. From the jaws extend two outwardly divergent guide lugs 29, which are disposed above the guide lugs 26. The jaws are urged toward each other by means of transversely extending springs 31 encircling the bolt 30, these springs bearing against the outer faces of the guide lugs so that normally the guide lugs are in contact with each other. The inner face of each guide lug is slightly recessed as at 32, and each jaw is formed upon its outer face with a protuberant portion having a vertical slot 33.

Pivotally attached at diametrically opposed portions of the sleeve 15 are a pair

of straight links 34, which are each made of a strip of metal, each strip extending through a corresponding guide slot 33. Above the guide slot, the strips are bent inward to extend over the head of the pump barrel or stock and the extremities of the strips are provided with inwardly projecting studs 35 designed to engage with perforations 36 formed in the pump rod. When the jaws 27 are separated, the strips 34 are drawn laterally away from the pump rod and the studs 35 become disengaged from the pump rod. When, however, the jaws 27 are forced inward by the springs 31, then the studs 35 engage in the perforation 36 in the pump rod and the pump rod is operatively engaged as a consequence with the lever or handle 23.

In the practical use of this device, the lever 23 is normally in a vertical position with its upper end disposed between the clamping lugs 29 and disposed within the recesses 32. This separates the jaws 27 sufficiently to carry the pins 35 or studs out of engagement with the pump rod and the pump rod may be reciprocated by the windmill or other power. Now if it be desired to operate the pump by hand, the lever 23 is pulled downward and this permits the springs 31 to force the jaws toward each other, thus carrying the studs 35 into engagement with the perforation 36 in the pump rod, and thus the pump rod and handle are operatively connected. Upon an oscillation of the handle, in the usual manner, the sleeve 15 causes the reciprocation of the pump rod. If now the handle be left in a depressed position, and the motor should start up as, for instance, the windmill mechanism should start to reciprocate the rod 12, then upon the first downward movement of the pump rod, the handle or lever 23 will be turned upward to its vertical position and forced in between the lugs 29 forcing these lugs 29 apart, opening the jaws 27, and separating and detaching the upper ends of the links 34 from their engagement with the pump rod. Thus the disconnection of the handle with the pump rod is automatically secured upon the first downward stroke of the pump rod under the action of wind power.

It is to be particularly noted that by placing the pivotal support for the handle lever 23 adjacent the lower end of the barrel or stock 10 that I am able to use a relatively long lever 23 so that great leverage is secured in pumping. This is particularly necessary in deep well pumps which cannot be operated by a short handle. Furthermore, it will be noted that the weight of the mechanism attached to the pump barrel is near the base of the pump barrel and not near the upper end of it. This is necessary inasmuch as where this mechanism is at the upper end of the pump barrel, the pump barrel tends to bend laterally getting it out of alinement with the supply pipe leading into the well and out of alinement with the pump rod. With my device there is no strain on the upper portion of the pump stock or barrel. It will be seen that the mechanism is very simple, can be readily attached to pump stocks, that by reason of the handle being operatively connected to the pump rod by means of a sector gear, the stroke will be long, and the leverage exerted by the handle will be very great.

It is, of course, understood that the pump rod extends into the usual hollow pitman A, this pitman being provided with the usual latch B to engage the pump rod upon a downward movement of the pitman after a disconnection between the pump rod and the pitman, this latch engaging with any of the perforations in the pump rod. Before the pump is operated by hand, of course, the pump rod and the pitman must be disconnected by lifting this latch, but the pitman will be automatically connected to the pump rod upon a rotation of the wind wheel by the means just described.

Having described my invention, what I claim is:—

1. In a pump, a pump stock, a pump rod reciprocating therein and operatively connected to power operated reciprocating means, a handle lever, and means automatically disconnecting the handle lever from the pump rod when the handle lever is turned to an inoperative position and automatically connecting the handle lever to the pump rod when the handle lever is turned to an operative position.

2. In a pump, a pump stock, a pump rod reciprocating therein under power, a handle lever, means for operatively connecting the handle lever to the pump rod when the handle lever is turned from a position parallel to the pump stock, and means operatively disengaging said connecting means from the pump rod when the handle is turned to a position parallel to the pump stock.

3. In a pump, a pump stock, a pump rod reciprocating therein under power, a handle lever, means for operatively connecting the handle lever to the pump rod when the handle lever is turned from a position parallel to the pump stock, and means operatively disengaging said connecting means from the pump rod when the handle is turned to a position parallel to the pump stock, and including separable jaws resiliently urged toward each other and receiving the end of the handle when it is turned to a vertical position.

4. In a pump, a pump stock, a member mounted upon the pump stock and including separable jaws resiliently urged toward each other, an operating lever, links oper-

atively engaged by said lever and extending through said separable sections, a pump rod, means at the upper ends of said links for engaging the pump rod, said means disengaging from the pump rod upon a separation of the links due to a separation of the jaws, and a pivotally mounted handle lever operatively engaging said links to reciprocate them, said handle lever when turned to a vertical position engaging between said separable members to thereby disconnect the links from the pump rod.

5. In a pump, a stock, a pump rod reciprocating therein, power operative means for reciprocating the pump rod, a sleeve slidably mounted on the stock, a handle lever in operative engagement with the sleeve, the handle lever having a movement in a vertical plane from a horizontal to a vertical position, oppositely disposed jaws mounted upon the upper end of the stock and having divergent lugs, and springs urging said jaws toward each other, a pair of links connected to the sleeve extending upward through said jaws and at their upper ends being formed with inwardly projecting studs adapted to engage with the pump rod when the links are forced inward, but disengaged from the pump rod when the links are forced outward, due to a separation of the jaws, said handle lever when turned to a vertical position entering between the divergent lugs and separating the jaws to thereby disconnect the links from the pump rod.

6. In a pump, a pump stock, a power operated pump rod reciprocating in the stock and having perforations, a pair of jaws pivoted to each other and embracing the upper end of the stock and having outwardly extending divergent lugs, the jaws being formed with vertical slots, springs urging the jaws toward each other, a vertically reciprocatory sleeve mounted upon the pump stock, links pivoted to the sleeve extending upward therefrom, passing through the slots in the jaws, their upper ends being deflected toward the pump rod and formed with inwardly projecting studs to engage the perforations of the pump rod, and a handle lever operatively engaged with the rack bar, said handle lever when turned upward to a vertical position being disposed between the divergent lugs on the jaws and separating said jaws to thereby separate the upper ends of the links from their engagement with the pump rod.

7. In a pump, a pump stock, a pump rod reciprocating therein, a vertically reciprocatory sleeve surrounding the lower portion of the stock, links pivotally connected to the sleeve extending upward to a point above the pump stock and operatively connected to the pump rod, a handle lever operatively engaged with the stock and provided with a cam slot, and a part carried by the sleeve and extending in said slot.

8. In a pump, a pump stock, a pump rod reciprocating therein, a vertically reciprocatory sleeve surrounding the lower portion of the stock, links pivotally connected to the sleeve extending upward to a point above the pump stock and operatively connected to the pump rod, a handle lever operatively engaged with the stock and provided with a cam slot, and a part carried by the sleeve and extending in said slot, said handle lever having a length equal to the distance between the bracket and the upper end of the pump stock.

9. In a pump, a pump stock, a power operated pump rod reciprocating therethrough, a handle lever operatively connectible with the pump rod, and means for automatically disconnecting the handle lever from the pump rod upon a reciprocation of the pump rod under power.

10. In a pump, a pump stock, a power operated pump rod reciprocating therethrough, a handle lever pivotally supported for movement in a vertical plane from a position parallel to the stock to a position at an angle to the stock, means for automatically connecting the handle lever to the pump rod, on shifting the handle lever to a position at an angle to the stock and for automatically disconnecting the handle from the pump rod upon shifting the handle lever to a position parallel to the stock.

In testimony whereof I hereunto affix my signature.

ORLA L. HUFFMAN.