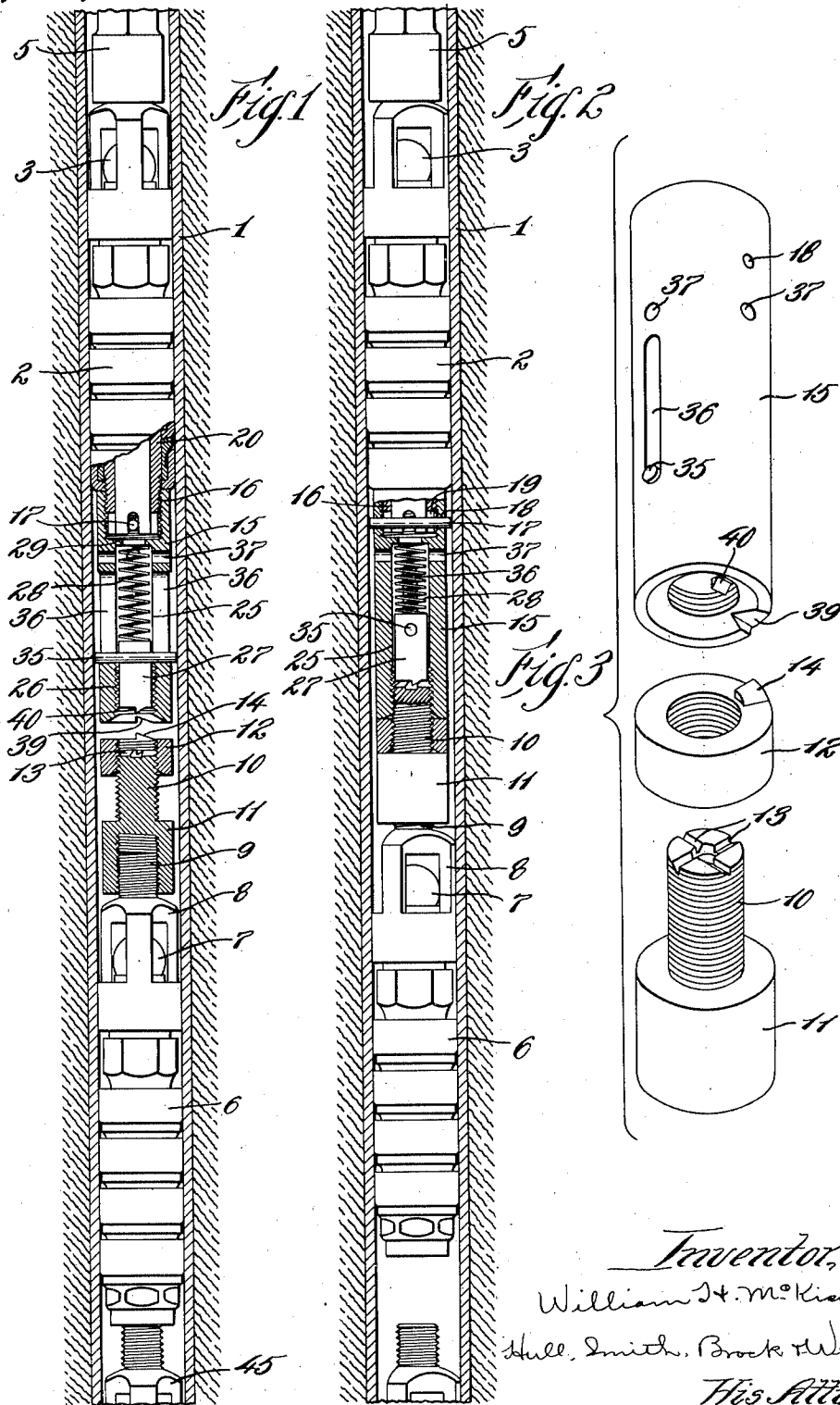


W. H. McKISSICK.
SCREW-ON ATTACHMENT.
APPLICATION FILED NOV. 29, 1920.

1,372,031.

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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM H. McKISSICK, a citizen of the United States, residing at Tulsa, in the county of Tulsa and State of Oklahoma, have invented a certain new and useful Improvement in Screw-On Attachments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to a device, known as a "screw-on" attachment, for use in connection with oil wells or the like and has to do more particularly with the pumping equipment employed in wells of this character.

The broad object of the invention is the provision of means whereby an auxiliary piston or set of cups, which has been previously deposited in the well, may be picked up and brought into use after the main piston or set has been worn out, thus obviating the trouble and delay occasioned by the withdrawing of the worn-out piston from the well tubing and the substitution of a fresh one therefor, a matter of no small consequence in work of this sort.

More specific objects are the provision of an efficient yet comparatively simple device of the aforesaid character that is very convenient of use; is positive in its operation; is durable; is not likely to get out of order; and through which a connection may be made between a main and an auxiliary piston that is not liable to disconnection in the tubing.

The foregoing objects, and others which will become apparent as this description proceeds, are attained in the embodiment of my invention illustrated in the drawing accompanying and forming a part hereof, and wherein Figure 1 is a sectional view through a well tubing inclosing a main and an auxiliary set of cups or pistons equipped, respectively, with the separated parts of my screw-on attachment, the attachment being shown in central section; Fig. 2 is a view, similar to Fig. 1, showing the main and auxiliary pistons connected by means of the screw-on attachment, the attachment being shown in section at right angles to the plane of Fig. 1; and Fig. 3 is a perspective view of the main parts of the screw-on attachment in separated condition.

The parts wherewith I have shown my invention associated are standard and a de-

tailed description of these parts is therefore deemed unnecessary. With reference to these parts, 1 designates the well tubing and 2 the main piston or set of cups incorporating the usual ball check 3 and attached to the operating means 5, which may be a string of sucker rods. 6 designates the auxiliary piston or set of cups which is substantially identical with the main set 2, the same incorporating the ball check 7, confined within a cage 8 that terminates at its upper end in the threaded pin 9.

A sub-pin 10, having an internally threaded socket 11, is adapted to be screwed onto the pin 9 of the auxiliary piston 6, and a thread protector 12 is threaded onto the sub-pin and, until the auxiliary set of cups is connected to the main set by means of the screw-on attachment, the thread protector 12 reposes at the upper end of the sub-pin 10, as illustrated in Fig. 1, to protect the threads and upper end of the sub-pin, said upper end being provided with diametrical grooves 13. It will be noted in Figs. 1 and 3, that the thread protector is provided with a tooth 14.

A tubular fitting or sleeve 15 is threaded onto the lower end of the main piston 2, as indicated at 16, and a pin 17 extends through holes 18 in the sleeve, and through registering notches 19 that are formed in the lower end of the barrel 20 of the piston. The bore 25 of the sleeve 15 is threaded a suitable distance upwardly from its lower end, as indicated at 26; and thereabove it is smooth and of a diameter to comfortably accommodate a block 27 and a compression spring 28. This spring is interposed between the upper end of the block and a shoulder 29 which is formed by reducing the diameter of the bore at its extreme upper end, through which reduced portion of the bore communication is established between the bore of sleeve 15 and the barrel 20 of the piston 2. The block 27 is restrained from turning within the sleeve 15, and is held against removal therefrom, by means of a pin 35 that passes through the block and through slots 36 in the sides of the sleeve 15. A series of ports 37 extend through the wall of the sleeve 15 adjacent the upper end of its bore for the free passage of fluid to the bore and upwardly through the barrel of the piston 2, when the piston is reciprocated during the pumping operation. The lower

ends of the sleeve 15 and block 27 are provided, respectively, with a notch 39 for coöperation to the tooth 14 of the thread protector 12, and a tooth 40 for coöperation 5 with the diametrical groove 13 of the sub-pin 10.

In the use of the device, the sub-pin 10, with the thread protector 12, is connected to the auxiliary piston 6 and the piston is 10 then dropped into the well tubing 1 and descends until it comes to rest upon the usual standing valve 45. The main piston 2, with the sleeve 15 attached, and carried by the operating means 5, is lowered into the tubing 15 until it reaches the proper depth, and is there reciprocated in the usual pumping operation. This may continue until the main set of cups is worn out, when the main piston may be lowered until the sleeve 15 engages the thread protector 12. Then, by 20 turning the main piston 2, through the medium of the operating means 5, in an appropriate direction—to the right, as the parts are herein illustrated—the thread protector, by reason of its clutch connection with sleeve 15 through the interengagement of tooth 14 with notch 3, will be fed down along the sub-pin 10 so that said pin may be received by the threaded portion 26 of the 30 sleeve. While the sub-pin 10 is advancing within the bore of the sleeve 15, the block 27 is receding against the tension of spring 28, the tooth 40 of the block in the meantime ratcheting over the raised portions between 35 the grooves 13 of the sub-pin. When the parts are completely screwed together, as illustrated in Fig. 2, the tooth 40 of the block 27 interlocks with one of the grooves 13 of the sub-pin to effectually hold the parts 40 against unscrewing. With the auxiliary piston 6 thus connected to the main piston 2, the pumping operation may be continued with the former piston serving the purpose formerly fulfilled by the main one.

45 It is obvious that any number of auxiliary pistons may be deposited in the tubing and all equipped with my invention so that they may be picked up successively and brought into operation as the previous one wears 50 out.

Having thus described my invention what I claim is:

1. In pumping apparatus of the character set forth, the combination with a main and 55 an auxiliary piston, of a member carried by each piston and through which members the pistons are adapted to be connected together, and means for locking the members against accidental disconnection.

60 2. In pumping apparatus of the character set forth, the combination with a main and an auxiliary piston, of a member carried by each piston, said members having parts adapted to interengage for connecting the 65 members together, and means carried by one

of said members for coöperation with a part of the other member for locking said parts against accidental disengagement.

3. In pumping apparatus of the character set forth, the combination with a main and 70 an auxiliary piston, of a member carried by each piston, said members being arranged for screw connection with each other, and means carried by one of said members and coöperating with a part of the other mem- 75 ber for holding said members against unscrewing.

4. In pumping apparatus of the character set forth, the combination with a main and an auxiliary piston, of a member carried by 80 each piston, said members being arranged for screw connection with each other, and means slidably but non-rotatably carried by one member for coöperation with a part of the other member for holding said members 85 against unscrewing.

5. In pumping apparatus of the character set forth, the combination with a main and an auxiliary piston, of a member connected to one of said pistons, said member having 90 a threaded socket, a locking device movably carried by said member, and a pin connected to the other piston and threaded for interengagement within the socket of the aforesaid member, said pin having a part for co- 95 operation with a part of the aforesaid locking device whereby the aforesaid member and pin are held against relative rotary movement in a direction to unscrew the mem- 100 ber from the pin.

6. In pumping apparatus of the character set forth, the combination with a main and an auxiliary piston, of a member connected to one of said pistons, said member having a threaded socket, a locking device 105 movable axially of said socket, means tending to move the device outwardly of said socket, and a sub-pin connected to the other piston and threaded for interengagement within the socket of the aforesaid member, 110 said sub-pin having a part for coöperation with a part of the aforesaid locking device whereby the aforesaid member and sub-pin are held against relative rotary movement in a direction to unscrew said members from 115 the pin.

7. In pumping apparatus of the character set forth, the combination with a main and an auxiliary piston, of a member connected to one of said pistons, said member having 120 a bore the entrance end of which is internally threaded, a locking device reciprocable within said bore, means restraining said device against rotary movement with respect to the member while permitting the same to 125 move longitudinally thereof, means tending to force the device in a direction outwardly of the bore, and a sub-pin carried by the other piston threaded for coöperation with the threaded portion of the bore of said 130

member the sub-pin and aforesaid locking device having parts cooperating for holding the member against turning with respect to the sub-pin in a direction to unscrew the member from the pin.

8. In pumping apparatus of the character set forth, the combination with a main and an auxiliary piston, of a member attached to one of said pistons, said member having a bore that is internally threaded adjacent its entrance end, a block reciprocable within the bore, the aforesaid member having a slot, a pin projecting from the block into said slot and a sub-pin carried by the other piston and threaded for screw engagement within the threaded portion of the bore of said member, the aforesaid block and sub-pin having interengaging parts for holding the member from turning with respect to the sub-pin in a direction to unscrew the member from the pin.

9. In pumping apparatus of the character

set forth, the combination with a main and an auxiliary piston, of a member attached to one of said pistons, said member having a bore that is internally threaded adjacent its entrance end, a block reciprocable within the bore, the aforesaid member having diametrically opposed slots in its side walls, a pin extending through the block and through said slots, a spring interposed between the block and an opposed wall of the bore, and a sub-pin carried by the other piston and threaded for screw engagement within the threaded portion of the bore of said member, the aforesaid block and sub-pin having interengaging parts for holding the member from turning with respect to the sub-pin in a direction to unscrew the member from the pin.

In testimony whereof, I hereunto affix my signature.

WILLIAM H. McKISSICK.