

Oct. 14, 1958

P. C. SPENCER
RUNNING AND RETRIEVING TOOLS

2,856,008

Filed July 26, 1954

3 Sheets-Sheet 1

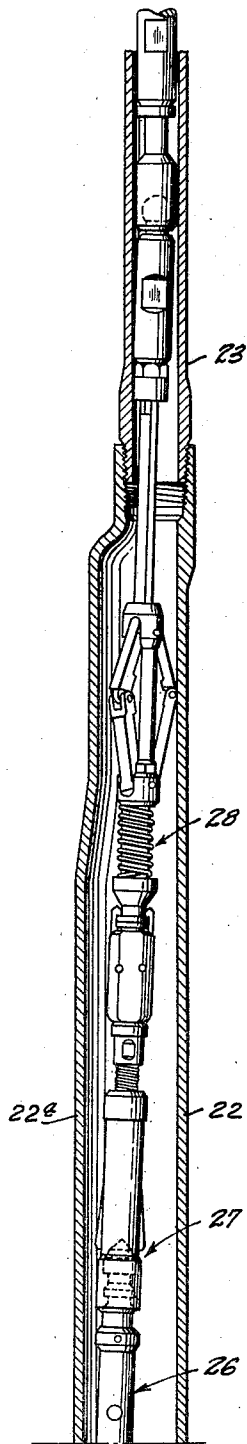


Fig. 1

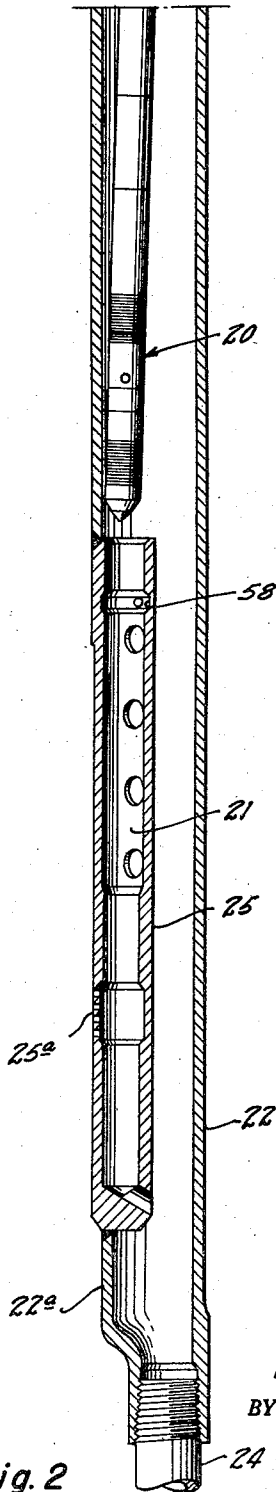


Fig. 2

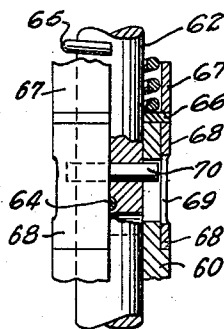


Fig. 11

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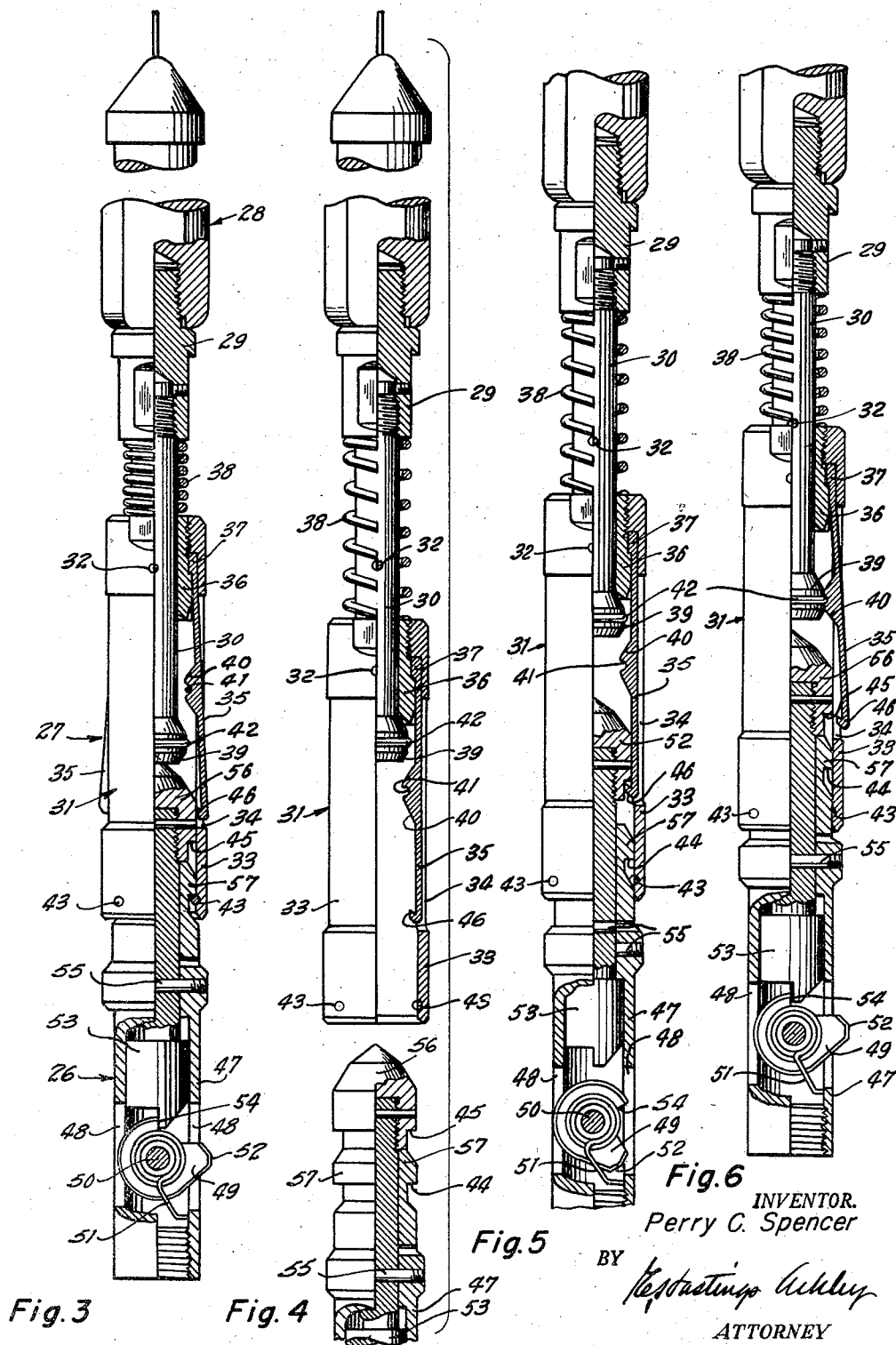
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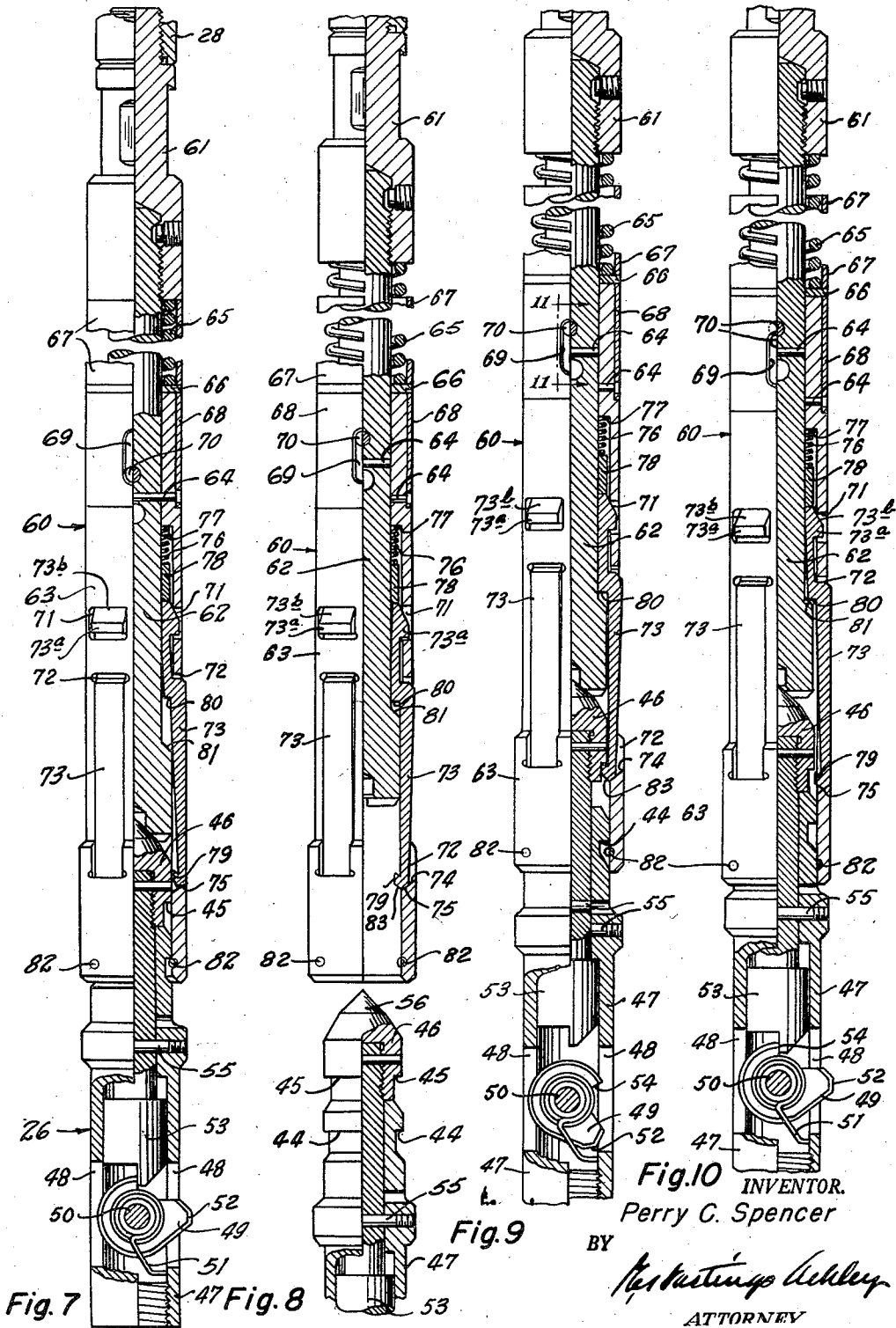


Fig. 10 INVENTOR.
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2,856,008

RUNNING AND RETRIEVING TOOLS

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18 Claims. (Cl. 166—218)

This invention relates to new and useful improvements in running and retrieving tools.

One object of the invention is to provide a new and improved running and retrieving tool which may be used, in conjunction with other well tools, to lower or run a well device into a well flow conductor by means of a flexible line to a desired position, release the well device at the desired position and which then may be used to retrieve the same or another well device from the well flow conductor.

Another object of the invention is to provide a new and improved running and retrieving tool, of the type described, having a first means for detachably holding a well device to be lowered into the well flow conductor and a second means for releasably engaging a well device to be removed from the well flow conductor.

A further object of the invention is to provide a new and improved running and retrieving tool for well devices, of the type described, having dogs for engaging the well device to be retrieved and having a shearable means for releasing the dogs from engagement with the well device in the event the well device is immovably lodged in the well flow conductor.

Still another object of the invention is to provide a running and retrieving tool for placing and removing well devices in pockets of offset landing nipples of the well flow conductor, said tool being capable of placing one device in one pocket of an offset landing nipple and then removing another device from the pocket of another offset mandrel without the necessity of being brought to the surface after the placement of the first device.

A still further object of the invention is to provide a running and retrieving tool, of the type described, having shearable means for holding a well device to be placed in a pocket of an offset landing nipple and dogs for engaging a second well device to be removed from a pocket of another offset landing nipple.

Still another object of the invention is to provide a running and retrieving tool, of the type described, having means for releasing the dogs from engagement with a well device if the device is immovably lodged in the pocket.

A particular object of the invention is to provide a running and retrieving tool, of the type described, which may be run into and out of a well flow conductor on a flexible line and be operated by jars imparted to it by means of the flexible line.

Additional objects and advantages of the invention will be readily apparent from the reading of the following description of devices constructed in accordance with the invention and reference to the accompanying drawings thereof, wherein:

Figure 1 is a view, partly in elevation and partly in section, showing a running and retrieving tool being used in conjunction with another well tool to lower a well device into a pocket of an offset landing nipple, only an upper portion of the offset landing nipple and well device being shown;

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Figure 2 is a side view showing the lower portion of the offset landing nipple and well device of Figure 1;

Figure 3 is a view, partly in elevation and partly in section, of the running and retrieving tool, showing the elements of the tool as they appear while the tool is being used to lower a well device into position in a pocket of an offset landing nipple, only the latch of the well device being shown;

Figure 4 is a view, partly in elevation and partly in section, of the tool showing the elements of the tool as they appear after the tool is detached from the latch of the well device;

Figure 5 is a view, partly in elevation and partly in section, showing the elements of the tool as they appear when the tool is being used to retrieve a well device from a pocket of an offset landing nipple, and showing the dogs of the tool in engagement with the latch of the well device;

Figure 6 is a view, partly in elevation and partly in section, of the tool showing how the dogs are moved into disengaged position with respect to the latch of the well device if the valve is immovably lodged in the pocket;

Figure 7 is a view, partly in elevation and partly in section, of a modified form of the running and retrieving tool showing the elements of the tool as they appear while the tool is being used to lower a well device into position in a pocket of an offset landing nipple, only the latch of the well device being shown;

Figure 8 is a view similar to Figure 7 showing the elements of the tool as they appear after the tool is detached from the latch of the well device;

Figure 9 is a view similar to Figure 7 showing the elements of the tool as they appear when the tool is being used to retrieve a well device from a pocket of an offset landing nipple, and showing the dogs of the tool in engagement with the latch of the well device;

Figure 10 is a view similar to Figure 7 showing how the dogs are moved into disengaged position with respect to the latch of the well device if the device is immovably lodged in the pocket; and

Fig. 11 is a fragmentary vertical sectional view taken on the line 11—11 of Figure 9.

Referring now particularly to Figures 1 and 2 of the drawings, a well device 20 is shown being lowered into the pocket 21 of an offset landing nipple 22 of a well flow conductor, the offset landing nipple being connected between upper and lower sections 23 and 24 of the well tubing or flow conductor. The pocket 21 is provided by a tubular nipple 25 rigidly secured in the laterally offset portion 22a of the offset landing nipple.

The well device may be in the form of a valve of any suitable type for controlling flow of fluids through lateral apertures 25a formed in the wall of the tubular nipple 25 intermediate its ends to establish communication between the exterior and the interior of the well tubing string in which the offset landing nipple is connected. The well device or valve 20 is provided with a latch or locking assembly 26 at its upper end which is employed to lock the valve in position in the nipple 25, and a running and retrieving tool 27 is detachably secured to the latch in a manner to be hereinafter more fully described. The running and retrieving tool is in turn secured to a suitable conventional "kickover" tool 28 which serves to "kick" or push the valve angularly from the longitudinal axis of the well flow conductor in the offset portion 22a of the offset landing nipple to direct the valve into the pocket 21 when the valve is moved downwardly into such offset landing nipple. The operation of the kickover tool being well known, it will not be further described. The upper end of the "kickover" tool 28 is secured to a flexible line lowering and operating mechanism which will usually include a weight or

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sinker bar and link jars (not shown) by means of which the whole assemblage is lowered into the well flow conductor.

In many installations, a plurality of offset landing nipples 22 are connected in the well flow conductor and the well devices or valves 20 in the pockets 21 thereof must often be removed, adjusted or serviced, and replaced. The running and retrieving tool 27 permits the placement of one well device and the removal of the next higher valve during a single trip of the tool into the well flow conductor.

Referring now particularly to Figures 3 to 6 of the drawings, the running tool 27 includes a top sub 29 whose upper end is threaded into the lower end of the kickover tool 28. A prong or core 30 has a threaded upper end received in a threaded bore in the lower end of the top sub, and a dog carrier 31 is slidably mounted on the core and is secured in an upper position on said core by means of a shear pin 32. The dog carrier comprises a tubular sleeve 33 having one or more longitudinally extending lateral apertures or windows 34 in which the lower portions of a corresponding number of resilient dogs 35 are adapted to move. The upper ends of the dogs are provided with inwardly extending flanges 37 which are engaged by a bushing 36 threaded in the upper end of the sleeve 33 to clamp and secure the upper ends of the dogs between the bushing and the sleeve. The shear pin 32 extends through registering apertures in the core 30, the bushing 36 and the sleeve 33 to hold the dog carrier 31 in an upper position on the core.

A spring 38 disposed about the core 30 and confined between the top sub and the dog carrier biases the dog carrier toward a lower position, Figure 4, on the core. The core is provided at its lower end with an enlarged expander head 39 which is engageable with internal bosses or spreader wedges 40 intermediate the ends of the dogs to move the dogs into expanded positions. The bosses 40 are provided with recesses or grooves 41 which receive an external annular flange 42 on the expander head, the dog carrier being held in an intermediate position on the core 30, Figure 6, when the annular flange is in the grooves. When the dog carrier is in this intermediate position, the dogs are in expanded disengaged positions.

The upper end of the latch 26 of the well device is received in the lower open end of the dog carrier sleeve 33 and is secured therein by shear pins 43 which extend substantially tangentially across the lower portion of the bore of the dog carrier and are engaged by a lower downwardly facing shoulder 44 of the latch. An upper downwardly facing shoulder 45 on the latch is engageable by inwardly projecting hooks 46 at the lower ends of the dogs 35.

The form of the latch 26 shown includes a sleeve 47 having a pair of opposed windows 48 in which a latch dog 49 is movable. The latch dog is pivotally secured to the latch sleeve by a pivot pin 50 and is biased for clockwise rotation by a spring 51. Clockwise rotation of the latch dog from the position shown in Figure 3 to the position shown in Figure 5 causes the nose 52 of the latch dog to retract into the latch sleeve. A plunger 53 engages a shoulder 54 of the latch dog to limit such clockwise movement of the dog while the latch sleeve is held in the upper position on the plunger shown in Figure 3 by the shear pin 55. The spring permits counterclockwise movement of the latch dog so the nose may pass obstructions.

The upper downwardly facing shoulder 45 of the latch is provided by the latch head 56 threaded on the upper end of the latch plunger while the lower downwardly facing shoulder 44 is provided by an external flange 57 on the upper end of the latch sleeve.

In use, when it is desired to remove and replace a plurality of the well devices 20 in the pockets 21 of the offset landing nipples, the kickover tool 28 and the running and retrieving tool are lowered through the well

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flow conductor with the dog carrier 31 of the running and retrieving tool in its lower position on the core 30 as shown in Figure 4. The "kickover" tool 28 is operated in the conventional well known manner to hold the running and retrieving tool longitudinally aligned with the bore of the well flow conductor to permit it to pass by all higher nipples 25 in the offset portions of the offset landing nipples until the lowermost offset landing nipple is reached. The "kickover" tool is then operated to cause the running tool to be tilted toward the well device in the nipple and the running tool is then lowered until the dog carrier sleeve 33 telescopes over the upper end of the latch which extends upwardly out of the nipple 25. The hooks 46 of the dogs 35 of the running and retrieving tool then engage the downwardly facing upper shoulder 45 of the latch head 56. Upward jars imparted to the running and retrieving tool through the flexible line now cause the shear pin 55 to shear and allow the latch plunger to be moved upwardly in the latch sleeve. This releases the latch dog 49 for clockwise movement and its nose 52 moves out of engagement in the recess 58 of the nipple 25, into which it projects, to free the well device 20 for upward movement from the nipple 25. The whole assemblage is then raised to the surface and this valve is removed from the running tool.

The dog carrier sleeve 33 of the running tool is then raised against the resistance of the spring to its upper position on the core 30 and a shear pin 32 is inserted in the registering apertures of the dog carrier sleeve 33, the bushing 36 and the core to hold the dog carrier sleeve in this upper position. The upper end of the latch 26 of a new well device 20 is then inserted in the lower end of the dog carrier and is secured in this position by shear pins 43 which are inserted through apertures of the dog carrier sleeve to abut the lower shoulder 44 of the latch. The new well device is thus secured to the running and retrieving tool and this assemblage is now lowered through the well flow conductor to the offset landing nipple from which the old well device 20 was removed as has already been described. The kickover tool is then operated to cause the well device to move angularly toward and into the pocket 21 of the nipple 25. The new well device is lowered into the nipple and the latch dog 49 of its latch 26 enters into the recess 58 of the nipple to prevent upward movement of the well device from the nipple.

Upward jars are then imparted to the running tool through the flexible line mechanism to shear the pin 32. The spring 38 then moves the core 30 upwardly in the dog carrier sleeve. Further upward jars are then imparted to the running and retrieving tool to shear the pins 43 and thus free the running and retrieving tool from the well device which remains locked in the nipple 25 by its latch dog 49.

The running and retrieving tool is then raised to the next higher offset landing nipple and the well device 20 in such nipple is then engaged and removed by the running and retrieving tool in the same manner as the device first removed. This operation may be repeated until all the well devices of the well flow conductor are removed and replaced. It will be noted that after the initial trip of the running and retrieving tool, each succeeding trip results in the installation of a new well device in one offset landing nipple and the removal of an old well device from the next higher offset landing nipple.

If for any reason the latch dog 49 of the valve cannot be released so that the valve cannot be removed, the hooks 46 of the dogs 35 must be disengaged from the shoulder 45 to permit the running and retrieving tool to be removed upwardly out of the well flow conductor. This is accomplished by imparting downward jars to the running tool to cause the core 30 to move downwardly in the dog carrier sleeve until its expander head 39 engages the bosses 40 of the dogs and moves them to expanded position, the flange 42 entering the recesses 41 of the bosses to hold the dogs in their expanded positions

as shown in Figure 6. The running and retrieving tool is then raised off the latch of the stuck well device and may then be removed from the well flow conductor; or, if desired, a reciprocating jarring movement may be applied to the running tool to cause the dog carrier to move downwardly to its lower position on the core 30, Figure 4, wherein the running and retrieving tool may be used to engage the next higher well device 20.

It will now be seen that a new and improved running tool 27 has been illustrated and described which has a means 43 for detachably holding a new well device to lower it into a well; and means (dogs 35) which are rendered operable after the old well device is detached from the running tool for engaging another well device at a different location in the well to remove it from the well. It will also be seen that means (expander 39 and bosses 40) is provided for disengaging the running and retrieving tool from an old device which is stuck or immovably locked in the well.

In Figures 7 through 10 a modified form of the running and retrieving tool 60 is illustrated. The tool includes a top sub 61 whose upper end is threaded into the lower end of the kickover tool 28, and a prong or core 62 has a threaded upper end which is received in a threaded bore in the lower end of the top sub. A dog carrier sleeve 63 is slidable on the core 62 and is releasably secured in an upper position on the core by a shear pin 64. A spring 65 is disposed about the core 62 and is confined thereon between the top sub and a washer 66 abutting the upper end of the dog carrier sleeve 63, and this spring biases the dog carrier sleeve downwardly with respect to the core 62. A spring retaining sleeve 67 rests on the washer 66 and surrounds the spring 65, while a shear pin retainer sleeve 68 is slidably mounted on the reduced upper end of the dog carrier sleeve.

The dog carrier sleeve and the shear pin retainer are provided with registering longitudinally extending lateral slots 69, and a shear pin 70 which is mounted in a transverse aperture in the core 62 has its ends projecting into the slots in the dog carrier sleeve. The function of the shear pin 70 will be hereinafter described.

The dog carrier sleeve has a plurality of pairs of vertically aligned apertures or windows 71 and 72 intermediate its ends, and dogs 73 have upper outwardly extending bosses 73a which extend into the upper apertures 71 while their lower portions are disposed in the lower apertures 72. The surfaces of the dog carrier sleeve defining the lower ends 74 of the lower windows are inclined inwardly and downwardly and are engageable by the similarly inclined lower end surfaces 75 of the dogs so that the lower ends of the dogs are cammed inwardly upon downward movement of the dogs relative to the dog carrier sleeve. The dogs are biased downwardly by a spring 76 disposed about the core 62 and in the dog carrier sleeve and whose opposite ends engage an annular internal shoulder 77 of the sleeve and a spring washer 78 resting on the upper ends of the dogs.

The dogs are provided at their lower ends with inwardly extending supporting members or hooks 79 which are adapted to engage the downwardly facing shoulder 45 of the latch head 46. The dogs also are provided intermediate their ends with a downwardly facing shoulder 80 which is adapted to engage an upwardly facing outwardly and downwardly beveled shoulder 81 provided by an enlargement or expander on the lower end of the core.

The manner of use and operation of the running and retrieving tool 60 is similar to that of the tool 27 already described. Briefly, when a well device 20 is to be lowered into a well flow conductor, the upper end of its latch 26 is inserted into the dog carrier sleeve and secured therein by shear pins 32 extending substantially tangentially across the lower open end of the dog carrier sleeve so as to be engageable by the shoulder 44 of the latch. The dogs 73 are in non-supporting positions since their lower hooks bear against the sides of the latch head.

When the well device 20 is seated in its nipple 25 and locked therein by the latch dog 49, upward jars are imparted to the running and retrieving tool so that the shear pin 64 is sheared, whereupon the spring 65 moves the core 62 upwardly relative to the dog carrier sleeve. Further upward jars then shear the shear pins 32 and free the running and retrieving tool from the latch. The running and retrieving tool is then raised from the latch and the dog spring 76 will then move the dogs 73 downwardly, the camming action between the shoulders 74 and 75 also moving the lower ends of the dogs inwardly during such downward movement. The various elements of the running tool are then in the positions shown in Figure 8.

The running and retrieving tool may then be lowered over the upper end of the latch of the next well device to be removed, the dogs sliding upwardly and outwardly in the dog carrier as the inwardly and upwardly inclined shoulders 83 on the lower ends of the hooks contact the tapered upper end of the latch head as the latch head enters and moves upwardly in the bore of the dog carrier sleeve. When the upper shoulder 45 of the latch head moves above the hooks 79, the dogs are moved downwardly by the dog spring 76 to the positions shown in Figure 7 wherein the hooks 79 are positioned beneath and are disposed to engage the downwardly facing shoulder 45 of the latch head.

Upward jars then shear the pin 55 of the latch to permit the latch dog 49 to move to the retracted position of Figure 9, whereupon the well device may be removed from the nipple by the running and retrieving tool.

If the latch dog cannot be released for any reason whatsoever, it becomes necessary to disengage the dog hooks 79 from the latch head in order to permit the running and retrieving tool to be removed. This is accomplished by imparting upward jars to the running tool to shear the pin 70. This allows the core 62 to move further upwardly relative to the dog carrier sleeve so that the shoulder 81 of the core engages the shoulders 80 of the dogs and moves the dogs upwardly until the beveled surface 73b at the upper ends of the bosses 73a engages the inner edge surface of the dog carrier sleeve at the upper end of the upper windows 71 therein, the camming or levering action resulting from the engagement of the shoulders 80 and 81 and the engagement of the beveled surface 73b with the edge of the window swings the lower ends of the dogs outwardly. As a result, the hooks 79 disengage and are moved from beneath the shoulder 45 and thus free the running tool from the latch.

It will now be apparent that both forms of the running and retrieving tool permit efficient economical removal and replacement of well devices by decreasing the number of trips which must be made by the running and retrieving tool to replace old well devices with new well devices.

It will also be noted that in both forms of the tool the shear pin securing the dog carrier sleeve to the core is more easily sheared than the pins securing the dog carrier sleeve to the latch. It will also be seen that the shear pin 55 of the latch is more easily sheared than the shear pin 70 of the running and retrieving tool 60.

It will also be noted that, in both forms of the running tool, when the dog carrier sleeve is held in its upper position by its shear pin the lower end of the core abuts the latch head 56 and insures that the hooks of the dogs 35 or 73, as the case may be, are held above the upper shoulder 45 of the latch head, whereby the hooks of the dogs cannot engage beneath the shoulder 45 of the latch head until it is desired to remove the well device.

The foregoing description of the invention is explanatory only, and changes in the details of the construction illustrated may be made by those skilled in the art, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent is:

1. A running and retrieving tool for well devices including: a member having means thereon for detachably securing said tool to a first well device; second means movably mounted on said member adapted to releasably engage a second well device; third means movable relative to said member and said second means from a first position wherein it is disposed to prevent engagement of said second means with said second well device to a second position permitting said second means to be engageable with said second well device; and fourth means initially releasably holding said third means in said first position, said third means being movable to said second position only after said first means has been detached from said first well device and said third means has been released by said fourth means.

2. A running and retrieving device for well devices including: a core; a dog carrier sleeve mounted on said core for longitudinal movement between an upper position and a lower position; means biasing said dog carrier sleeve toward said lower position; a first shearable means securing said dog carrier sleeve to said core in said upper position; a second shearable means on said sleeve adapted for detachably connecting said running tool to a well device, and a dog carried by said dog carrier sleeve engageable with a second well device after said second shearable means has been sheared to release said sleeve from said first well device and after first shearable means is sheared to permit said dog carrier sleeve to move to said lower position.

3. A running and retrieving tool for well devices including: a core; a dog carrier sleeve mounted on said core for longitudinal movement thereon between upper and lower positions; a first shearable means securing said sleeve on said core in said upper position; means biasing said sleeve toward said lower position; dogs carried by said sleeve for engaging a well device, and a second shearable means for detachably securing said sleeve to a well device, said core being disposed to engage the well device secured to said sleeve when said sleeve is in said upper position to prevent operative engagement of said dogs with the well device, said first shearable means being more easily sheared than said second shearable means.

4. A running and retrieving tool for well devices including: a core, supporting means slidable longitudinally on said core between an upper and a lower position thereon; means on said supporting means adapted to be detachably secured to a well device; second means movably mounted on said supporting means and engageable with a well device for supporting the same when said supporting means is in its lower position on said core; the lower end of said core being disposed to engage said well device to prevent said second means from supporting engagement with said well device when said supporting means is in its upper position on said core; and means initially releasably holding said supporting means in its upper position on said core, whereby said second means is prevented from supporting engagement with a well device, said means releasably holding said supporting means in its upper position on said core being releasable to permit said supporting means to move to its lower position on said core, whereby said second means is moved to a position with respect to the lower end of said core wherein said second means is engageable with a well device.

5. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopic over the upper end of a well device and securable thereto by a second shearable means for running said well device into a well; and a dog carried by said dog carrier sleeve engageable with the upper end of a well device when said

dog carrier sleeve is in said lower position for retrieving said well device from a well, the lower end of said core being disposed to prevent said dog from engaging said well device when said dog carrier sleeve is in its upper position on said core.

6. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopic over the upper end of a well device and securable thereto by a second shearable means for running said well device into a well; and a dog carried by said dog carrier sleeve engageable with the upper end of a well device when said dog carrier sleeve is in said lower position for retrieving said well device from a well; the lower end of said core being disposed with respect to said dog in a position to prevent said dog from engaging said well device when said dog carrier sleeve is in its upper position on said core and movable to a position permitting said dog to engage said well device when said sleeve is moved to said lower position; and means on said core for engaging said dog to disengage said dog from a well device upon relative movement between said core and said sleeve.

7. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopic over the upper end of a well device and securable thereto for running said well device into a well; and a dog carried by said dog carrier sleeve engageable with the upper end of a well device when said dog carrier sleeve is in said lower position for retrieving said well device from a well; the lower end of said core being disposed in a position to engage said well device to prevent said dog from engaging said well device when said dog carrier sleeve is in its upper position on said core and movable to a position permitting said dog to engage said well device after said shearable means has been sheared to permit said sleeve to be moved to a lower position on said core; and an expander on said core for moving said dog to expanded position to disengage said dog from said well device upon relative movement between said core and said sleeve.

8. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopic over the upper end of a well device and securable thereto for running said well device into a well; and a dog carried by said dog carrier sleeve engageable with the upper end of a well device when said dog carrier sleeve is in said lower position for retrieving said well device from a well, the lower end of said core being disposed in a position to engage said well device to prevent said dog from engaging said well device when said dog carrier sleeve is in its upper position on said core and movable to a position permitting said dog to engage said well device after said shearable means has been sheared to permit said sleeve to be moved to a lower position on said core; said dog being resilient and having means thereon for engaging said well device movable between inner engaging position and outer expanded disengaging position, said dog having an internal boss provided with a locking recess, said core having an expander provided with a locking flange receivable in said locking recess, said dog being

held in expanded disengaged position when said locking flange is in said locking recess.

9. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopable over the upper end of a well device and securable thereto by a second shearable means when said dog carrier sleeve is in said upper position for running said well device into a well; and a dog carried by said dog carrier sleeve; said dog having hook means thereon movable between inner engaging position and outer expanded disengaging position and disposed to be engageable with the upper end of a well device when said dog carrier sleeve is in said lower position for retrieving said well device from a well; the lower end of said core being disposed in a position to engage said well device to prevent said dog from engaging said well device when said dog carrier sleeve is in its upper position on said core and movable to a position permitting said dog to engage said well device after said shearable means has been sheared to permit said sleeve to be moved to a lower position on said core; means biasing said dog inwardly toward well device engaging position; and an expander on said core for moving said dog outwardly toward expanded position wherein said dog is disengaged from the well device when said sleeve is moved further downwardly from said lower position relative to said core; and a third shearable means connecting said core and said dog carrier sleeve and normally preventing such further downward movement of said sleeve from said lower position, said third shearable means having a greater shear strength than said first and second shearable means.

10. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopable over the upper end of a well device and securable thereto by a second shearable means when said dog carrier sleeve is in said upper position for running said well device into a well; and a dog carried by said dog carrier sleeve engageable with the upper end of a well device when said dog carrier sleeve is in said lower position for retrieving said well device from a well, the lower end of said core being disposed with respect to said dog in a position to prevent said dog from engaging said well device when said dog carrier sleeve is in its upper position on said core and movable to a position permitting said dog to engage said well device when said sleeve is moved to said lower position; said second shearable means having a greater shear strength than said first shearable means.

11. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopable over the upper end of a well device and securable thereto by a second shearable means when said dog carrier sleeve is in said upper position for running said well device into a well, said dog carrier sleeve having lateral windows, dogs movably disposed in said windows for lateral movement between inner well device engaging positions and outer expanded disengaging positions, said dogs having means thereon engageable with the upper end of a well device when said dog carrier sleeve is in said lower position.

12. A running and retrieving tool for well devices in-

cluding: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopable over the upper end of a well device and securable thereto by a second shearable means when said dog carrier sleeve is in said upper position for running said well device into a well, said dog carrier sleeve having lateral windows, dogs movably disposed in said windows for lateral movement between inner well device engaging positions and outer expanded disengaging positions, said dogs having means thereon engageable with the upper end of a well device when said dog carrier sleeve is in said lower position; and expander means on said core engageable with said dogs for moving said dogs to said expanded disengaging positions upon relative movement between said core and said sleeve.

13. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopable over the upper end of a well device and securable thereto for running said well device into a well, said dog carrier sleeve having lateral windows, dogs movably disposed in said windows for lateral movement between inner well device engaging positions and outer expanded disengaging positions, said dogs having means thereon engageable with the upper end of a well device when said dog carrier sleeve is in said lower position; the lower end of said core being disposed with respect to said dogs in a position to prevent said dogs from engaging said well device when said dog carrier sleeve is in its upper position on said core and movable to a position permitting said dogs to engage said well device when said sleeve is moved to said lower position; means biasing said dogs toward said inner positions; and expander means on said core engageable with said dogs for moving said dogs to said expanded positions upon relative movement of said core between said core and said sleeve.

14. A running and retrieving tool for a well device having latching means for locking said well devices in a well flow conductor, said tool including: a core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means connecting said dog carrier sleeve to said core securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopable over the upper end of said well device and securable thereto by a second shearable means when said sleeve is in said upper position, said core engaging said upper end of the well device to limit movement of said upper end into said sleeve; dogs carried by said sleeve and engageable with the upper end of said well device when said sleeve is in said lower position for retrieving a well device from the well, said dogs being positioned to be prevented from engaging said well device when said sleeve is in its upper position on said core by the engagement of said core with the upper end of said well device; said second shearable means having a greater shear strength than said first shearable means; and means for disengaging said dogs from the well device if said latching means of the well device prevents removal of said well device from the well flow conductor.

15. A running and retrieving tool for well devices including: a core; a supporting means slidable longitudinally on said core; means on said supporting means for initially detachably securing a well device to said supporting means; and second means on said supporting means engageable with said well device for supporting the same,

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said supporting means being initially restrained in a position on said core in which said core prevents engagement of said second means with said well device and being movable on said core to a position in which said second means is disposed to be engageable with said well device; said second means being movable to such position only after said well tool has been detached from said initial securing means.

16. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopable over the upper end of a well device and securable thereto for running said well device into a well; and a dog carried by said dog carrier sleeve engageable with the upper end of a well device when said dog carrier sleeve is in said lower position for retrieving said well device from a well; the lower end of said core being disposed in a position to engage said well device to prevent said dog from engaging said well device when said dog carrier sleeve is in its upper position on said core and movable to a position permitting said dog to engage said well device after said shearable means has been sheared to permit said sleeve to be moved to a lower position on said core; yieldable means on said core engageable with said carrier sleeve for initially limiting downward movement of said carrier sleeve relative to the core to said lower position, said yieldable means being releasable to permit said carrier sleeve to move further downwardly relative to said core; and an expander on said core engageable with said dog for moving said dog to expanded position to disengage said dog from a well device upon such further downward relative movement between said core and said sleeve.

17. A running and retrieving tool for well devices including: an elongate core; a dog carrier sleeve longitudinally slidable on said core between upper and lower positions on said core; a first shearable means securing said dog carrier sleeve in said upper position on said core; means biasing said dog carrier sleeve toward said lower position, said dog carrier sleeve being telescopable over the upper end of a well device and securable thereto for running said well device into a well, said dog carrier sleeve having lateral windows, dogs movably disposed in said windows for lateral movement between inner well device engaging positions and outer expanded releasing positions, said dogs having means thereon engageable

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with the upper end of a well device when said dog carrier sleeve is in said lower position; the lower end of said core being disposed with respect to said dogs in a position to prevent said dogs from engaging said well device when said dog carrier sleeve is in its upper position on said core and movable to a position permitting said dogs to engage said well device when said sleeve is moved to said lower position; means biasing said dogs toward said inner positions; yieldable means on said core engageable with said carrier sleeve for initially limiting downward movement of said carrier sleeve relative to the core to said lower position, said yieldable means being releasable to permit said carrier sleeve to move further downwardly relative to said core; and expander means on said core engageable with said dogs for moving said dogs to said expanded releasing positions upon such further downward relative movement of said core between said core and said sleeve.

18. A running and retrieving tool for well devices including: a core; a dog carrier sleeve mounted on said core for longitudinal movement between an upper position and a lower position; means biasing said carrier sleeve toward said lower position; a first shearable means securing said carrier sleeve to said core in said upper position; a second shearable means adapted to be used for connecting said running tool to a well device; a dog carried by said dog carrier sleeve having means thereon adapted to engage and support a well device and movable between inner engaging position and outer releasing position; said core being so disposed with respect to said supporting means of said dog when said sleeve is in its upper position on said core that said core prevents said supporting means from engaging a well device; said supporting means on said dog being disposed to be engageable with a second well device after said first shearable means is sheared to permit said dog carrier sleeve to move to said lower position on said core; said core having means engageable with said dog for moving said dog to releasing position; and means on said dog and said core co-engageable to hold said dog in such releasing position, said last-named means engaging when said sleeve is positioned intermediate said upper and said lower positions of said sleeve relative to said core.

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