

Aug. 15, 1967

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3,335,799

WELLHEAD ASSEMBLY WITH SEALABLE BYPASS BETWEEN
THE HANGER AND SEAT

Filed Oct. 7, 1964

5 Sheets-Sheet 1

FIG. 1.

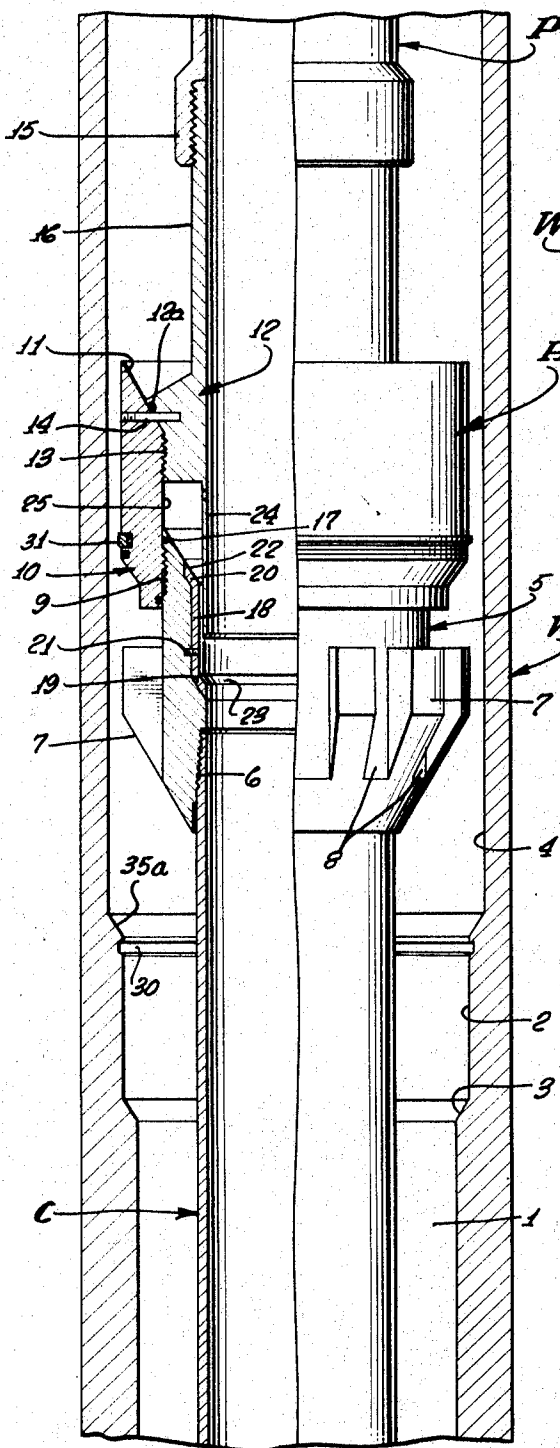
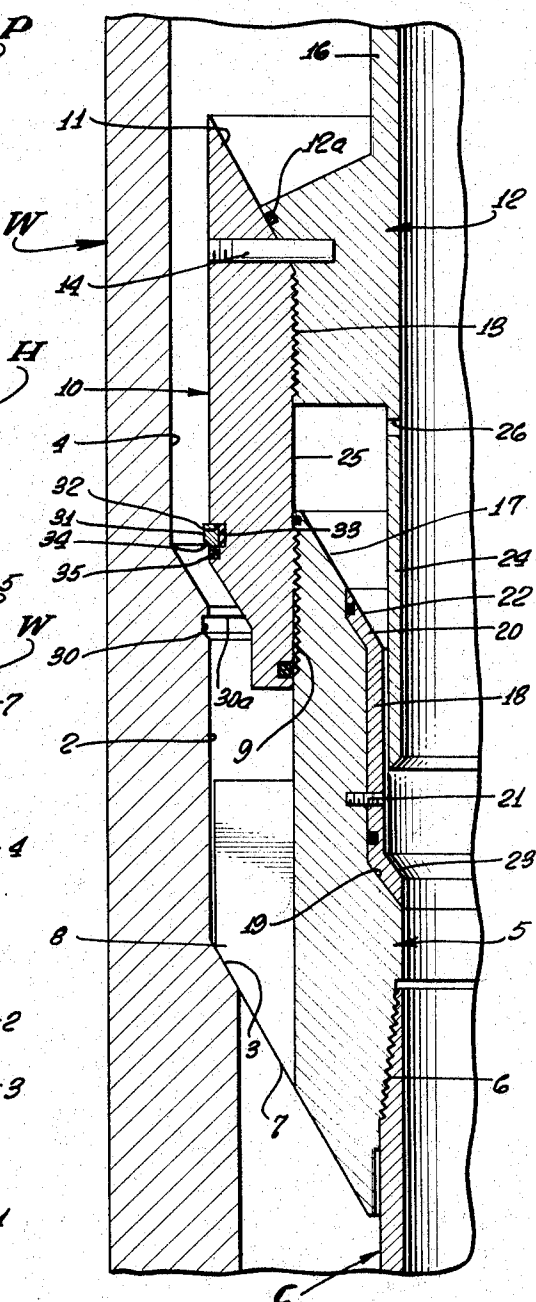


FIG. 2.



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FIG. 3.

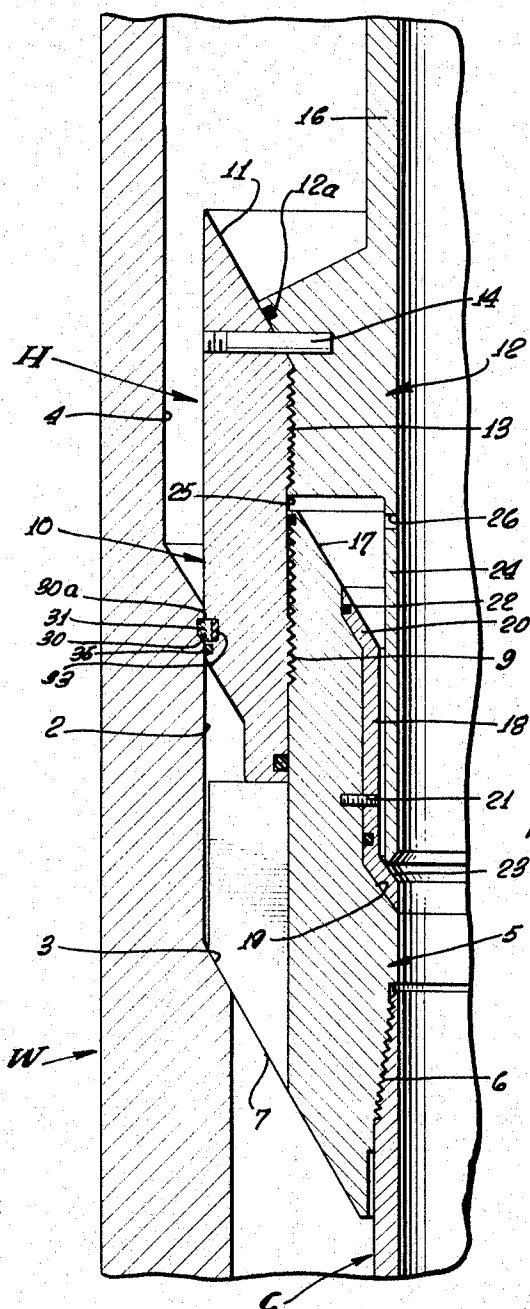
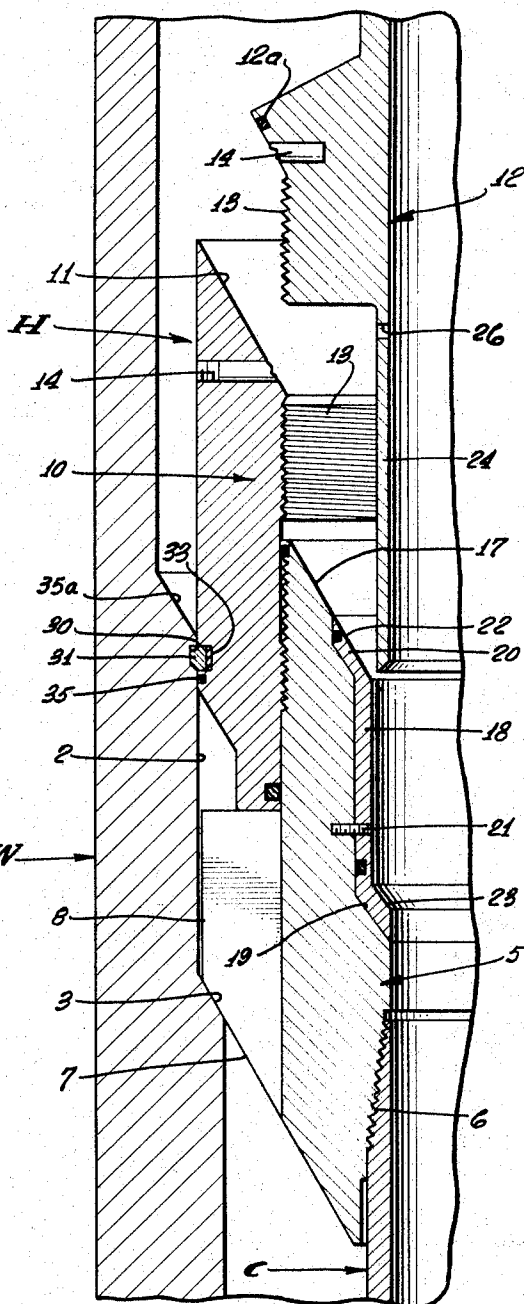


FIG. 4.



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FIG. 5.

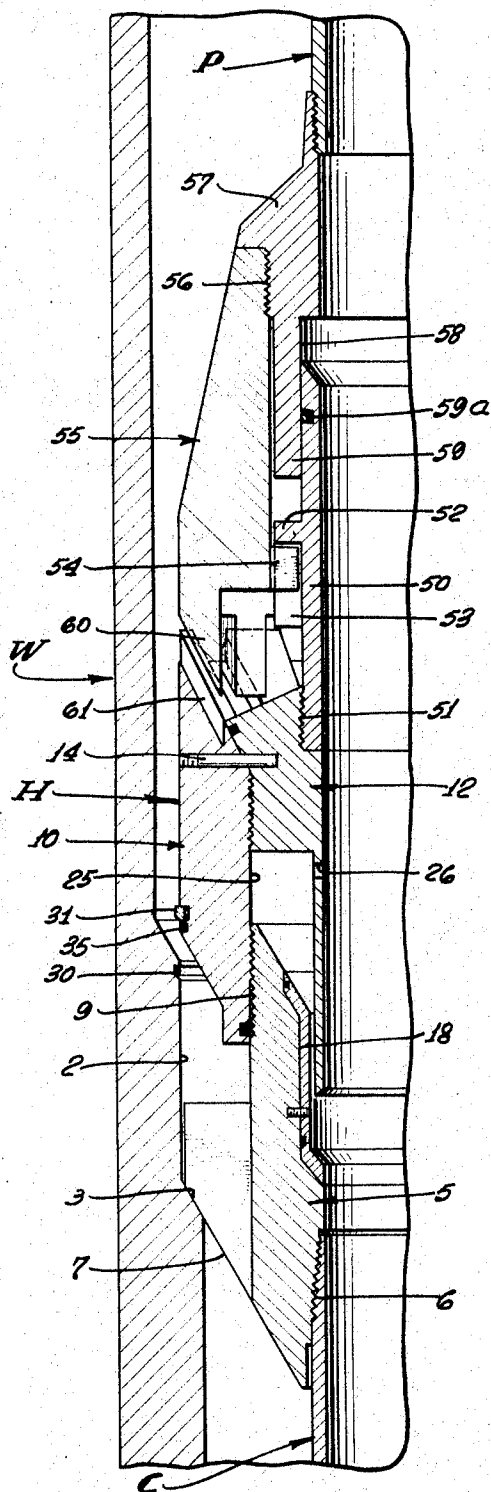
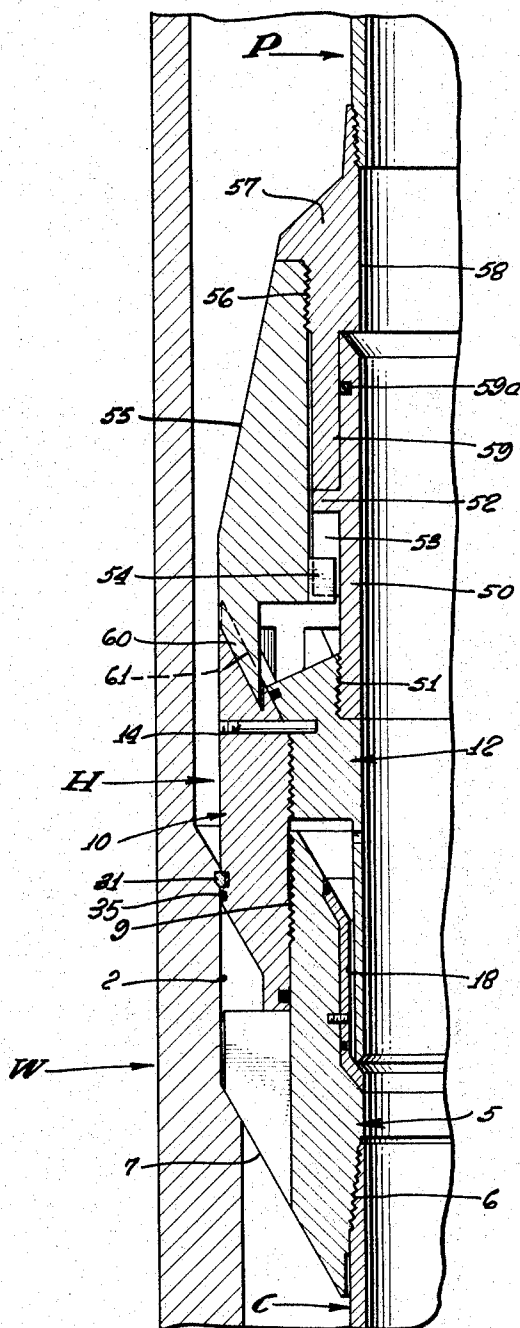


FIG. 6.



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FIG. 7.

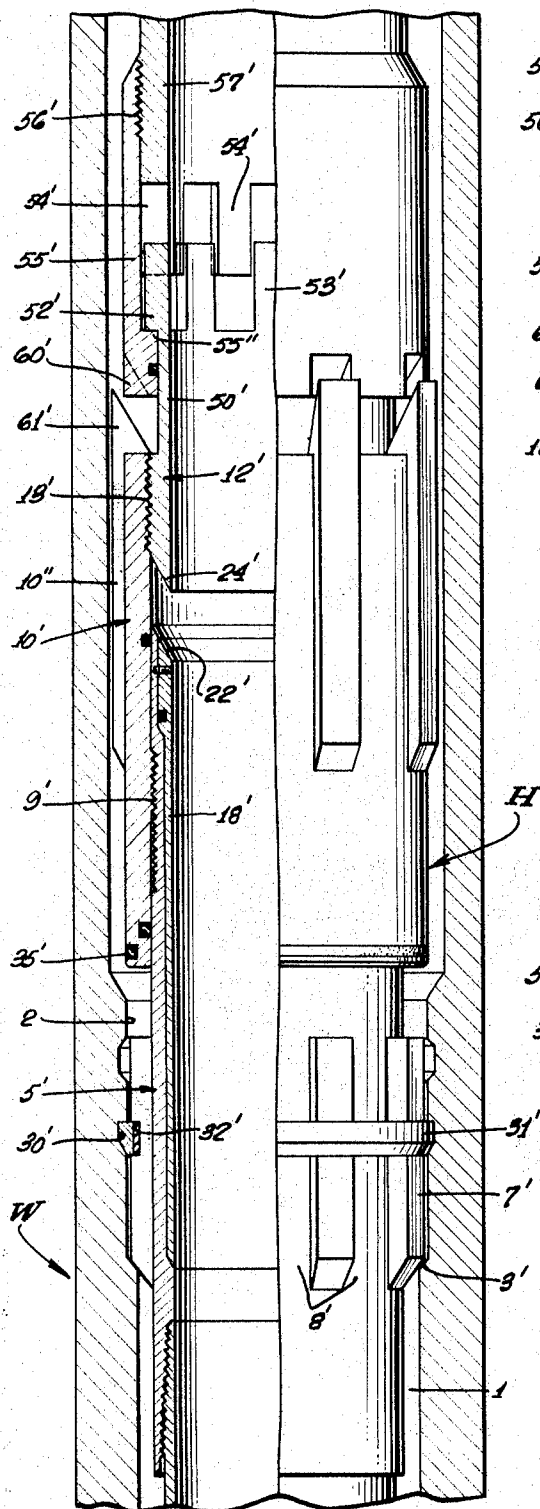
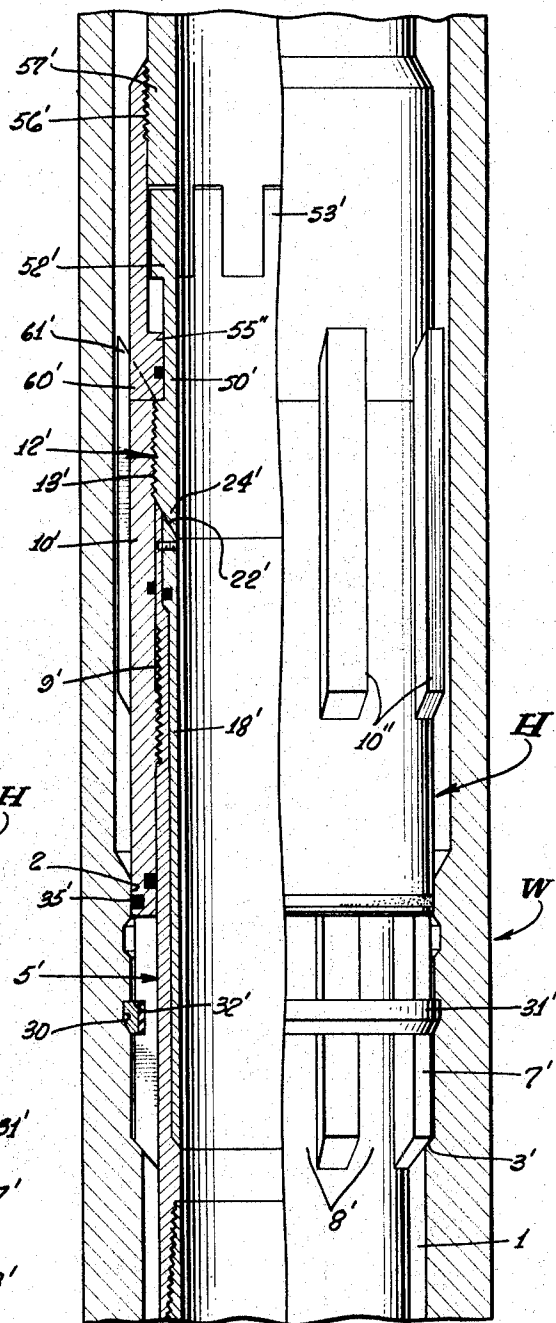


FIG. 8.



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FIG. 9.

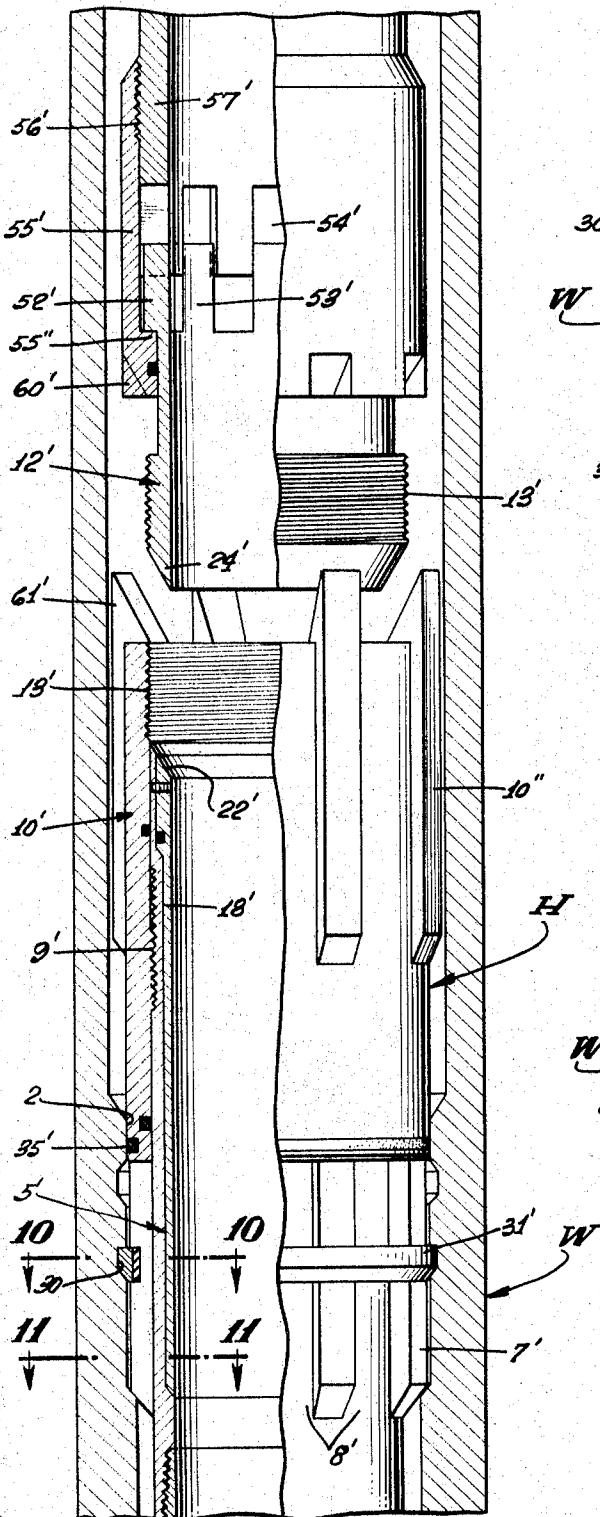


FIG. 10.

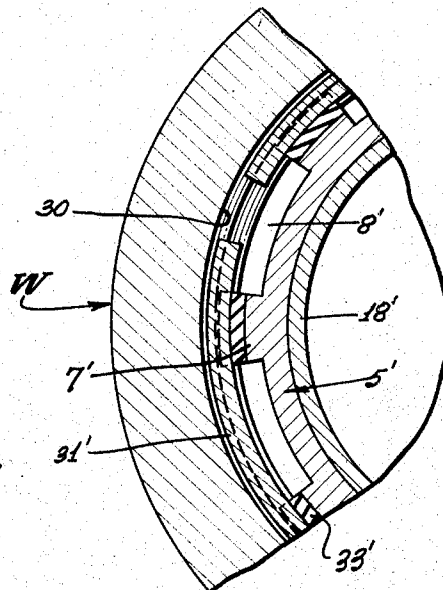
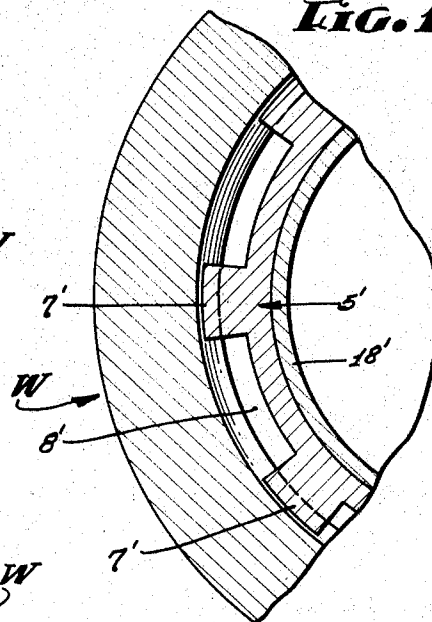


FIG. 11.



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WELLHEAD ASSEMBLY WITH SEALABLE BYPASS

BETWEEN THE HANGER AND SEAT

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Filed Oct. 7, 1964, Ser. No. 402,355

25 Claims. (Cl. 166—85)

The present invention relates to a well pipe hanger assembly, and more particularly to a well pipe hanger assembly which provides a bypass flow passage whereby a length of pipe may be suspended from a landing head or well head, and cement, or other fluids, may be displaced downwardly through the well pipe, and may return externally of the pipe, and may flow between the landing head and the hanger assembly, the latter being operable following such return of the cement or other fluid to shut off the bypass flow passage.

It is the present practice in the running, landing and cementing of casing strings in wells to lower a string of casing or well pipe having a hanger thereon into a landing head or well head body, and thereafter displace cement down the well pipe and upwardly through the annulus outside the well pipe past the hanger assembly, then making a seal between the casing hanger and the hanger body or well head. In some instances, it is the practice to also separately install a protective seat within the hanger to protect the same against damage during the course of subsequent operations within the well. In the case where the well head or landing assembly is located a substantial distance from the derrick and is practically inaccessible, as for example in the completion of wells beneath the ocean or other body of water, such operations are time-consuming and difficult.

The present invention provides a means for running into a well in a single trip of the running-in pipe, a pipe hanger which is operable to support the well pipe within a well head or landing head and to enable the flow of cement or other fluid between the head and the hanger assembly, the hanger being operable by the running-in string of pipe to effect a seal closing off the bypass passageway and being operable to release the running-in string of pipe.

More particularly, it is an object of the present invention to provide a well pipe hanger comprising a base section adapted to abut with an abutment within the landing or well head and having thereon a seal section movable from a first position at which the flow of fluid between the hanger and the well head will be permitted, to a second position at which such flow will be prevented, such movement of the seal section being effected by a driving means which is releasably connected to the seal section so as to be removed from the hanger along with the running-in string of pipe after the seal section has been moved to a sealing position.

A further object of the invention is to provide a pipe hanger in accordance with the next preceding objective, wherein the seal section is operable by the running-in string of pipe, for example, from a platform mounted on a floating vessel in the case of well completions under water, the device having means to enable relative longitudinal movement between the driving elements which effect movement of the seal section relative to the base section of the hanger assembly without imposing excessive axial loading on the hanger assembly, and, more particularly, without overloading the means employed to cause movement of the seal section on the base section.

Another object is to provide a hanger assembly as referred to above, having means for latching the hanger in place in the landing head. Such latching may be either accomplished upon landing of the base section of the

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hanger in the head or upon movement of the seal section into a sealing position.

Still another object of the invention is to provide a pipe hanger assembly in which a protector for the internal seat of the hanger is provided, and wherein the protector is itself protected as the device is run into the well and during the displacement of cement downwardly through the hanger and the pipe supported thereby, the seat protector subsequently being exposed when the running-in string of pipe is removed from the well bore.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of several forms in which it may be embodied. Such forms are shown in the drawings accompanying and forming part of the present specification. These forms will now be described in detail for the purpose of illustrating the general principles of the invention; but it is to be understood that such detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined by the appended claims.

Referring to the drawings:

FIGURE 1 is a view partly in longitudinal section and partly in elevation illustrating a well pipe hanger assembly and landing head incorporating the present invention, the hanger assembly being connected to a string of running-in pipe;

FIG. 2 is a fragmentary longitudinal sectional view on an enlarged scale illustrating the hanger assembly of FIG. 1 landed within the landing head;

FIG. 3 is a view corresponding to FIG. 2, but showing the hanger assembly latched in place and effecting a seal with the landing head;

FIG. 4 is a view corresponding to FIGS. 2 and 3, but illustrating the driving means removed from the hanger assembly preparatory to the removal of the driving means from the well bore;

FIG. 5 is a fragmentary view in longitudinal section showing a modified driving means, the hanger assembly being landed in the head and the bypass passage being open;

FIG. 6 is a view corresponding to FIG. 5, but showing the hanger assembly latched in the landing head and the bypass passage closed;

FIG. 7 is a view partly in longitudinal section and partly in elevation illustrating a further modification of the present invention, the hanger device being latched in place in the landing head and the bypass passage being open;

FIG. 8 is a view corresponding to FIG. 7, but showing the bypass passage closed;

FIG. 9 is a view corresponding to FIGS. 7 and 8, but showing the driving means removed preparatory to withdrawal from the well bore;

FIG. 10 is a fragmentary transverse sectional view through the latching means of FIG. 9 as taken on the line 10—10 of FIG. 9; and

FIG. 11 is a fragmentary transverse sectional view as taken on the line 11—11 of FIG. 9.

Referring first to FIGS. 1 through 4, there is illustrated a well head or landing head body generally denoted at W in which is to be landed a pipe hanger assembly generally denoted at H adapted to support therebeneath a length of well pipe or casing C and adapted to be run into the well head or landing head W on a tubular string of running-in drill pipe or tubing P.

Within the well head or landing head body is a longitudinal passage 1, in which is a seat 2 including an abutment shoulder 3. Above the seat 2 is an enlarged bore 4. The well head to the extent described above is more or less typical of well heads or landing heads for well pipe in that it is desired to land on the abutment 3 a hanger

from which is suspended the well casing C, it being further desired to displace cement downwardly through the casing and upwardly past the outside of the hanger into the enlarged bore 4 of the well head.

The hanger H of the present invention includes a base section 5 threadedly connected as at 6 to the depending length of well pipe or casing C. The base section 5 is composed of an elongated tubular elements having adjacent its lower end a suitable number of outwardly projecting ribs 7 adapted to fit within the seat 2 and to abut with the abutment flange 3 in the well head to limit downward movement of the pipe or casing string C. In addition, the ribs 7 provide therebetween a plurality of circumferentially spaced flow passages 8. At its upper end, the base section 5 is threaded as at 9 with a right-hand thread so as to receive the lower end of a tubular seal section 10.

At its upper end, the seal section 10 is provided with a conical seat 11 in which is disposed a driver head 12, there being a left-hand threaded connection 13 between the driver head and the seal section 11.

In the embodiment herein illustrated, frangible means in the form of a shear pin 14 are provided for interlocking the driver head and the seal section against relative rotation at the threaded connection 13. Preferably resilient seal means 12a is provided between the driver head 12 and the conical seat 11 of the seal section to preclude the entry of foreign matter into the threads 13.

The driver head 12 is connected to the string of running-in pipe P as by means of a typical joint 15, the driver head 12 being provided with an upwardly extended neck 16 for this purpose.

Base section 5 is preferably provided with a conical seat 17 at its upper end and a cylindrical wall 18 leading downwardly to a smaller diameter conical seat 19. Disposed in the cylindrical wall 18 and engaging with the seats 17 and 19 is a set protector 20 removably secured in place, as by a fastener 21, and having conical surfaces 22 and 23 thereon.

Depending from the lower extremity of the driver head 12 is a skirt 24 which extends into the seat protector 18 to shield the conical surface 22 from the effects of the pumping of abrasive fluids downwardly through the assembly, as is customary in the cementing of the well casing C within the well bore. Between the skirt 24 and the conical surfaces 17 and 22 of the seal section and seat protector, respectively, and the inner bore of the seal section, is an annular chamber 25 which is preferably filled with grease or other lubricant, there being a vent passage 26 leading through the driver skirt and communicating with the chamber 25 to allow egress of the grease upon operation of the driver head to move the seal section 10 downwardly relative to the base 5, as will be hereinafter described.

Within the well head or landing head body, and more particularly within the seat 2, the body is provided with an annular groove 30 providing a radial abutment shoulder 30a, and, on the seal section 10 of the hanger H, there is provided a split, inherently expansible ring 31 radially and circumferentially deformable inwardly in an annular groove 32 formed in the outer periphery of the seal section 10. Split ring 31 is preferably maintained in concentric relation to the seal section 10 by means of a body of sponge rubber 33 interposed in groove 32 within the inside of the split ring 31. The lower end of the ring 31 is beveled as at 34 to engage with the beveled surface 35a, within the well head W so as to be inwardly and circumferentially deformed as the seal section 10 is moved downwardly in the well head relative to the base section 5. Upon expansion of the split ring 31 into the groove 30 so as to engage the shoulder 30a, the ring and shoulder constitute cooperative means for latching the hanger assembly H within the well head or landing head W.

The seal section 10 is also provided with sealing means 35 adapted to cooperate with the cylindrical wall of the seat 2 upon downward movement of the seal section, for preventing the upward flow of fluids between the hanger

H and the well head W. In the embodiment now being described, it will be noted that the seal 35 is effective after the assembly has been latched in place by the latch ring 31.

In the operation of the embodiment shown in FIGS. 1 through 4, the hanger H is made up in the string of running-in pipe P with the well pipe or casing C and is lowered downwardly through the well bore, which may include, in certain off-shore wells, a length of marine conduit leading upwardly from the landing head W to the floating vessel or barge at the surface of the water. As the casing C and hanger H are lowered into the well head, the ribs 7 will abut with the abutment 3 within the well head W, limiting further downward movement of the assembly. At this time, the passages 8 will enable the upward flow of fluid between the hanger H and the well head W; and the seal section 10 is located, as seen in FIG. 2, in a position at which such fluid may pass upwardly between the seal section and the well head W. Thus, drilling fluid and cement, as is customary, may be circulated into and out of the well, passing downwardly through the well casing C, for example, and thence upwardly through the passage 1 and through the well head W externally of the hanger H.

Thereafter, the running-in string of pipe P may be rotated to the right, the frangible member 14 preventing unthreading of the left-hand thread connection 13 between the driver 12 and the seal section 10, with the result that the right-hand thread connection 9 between the seal section 10 and the base section 5 will cause the seal section 10 to move downwardly to the position shown in FIG. 3, wherein the latch ring 31 is latchingly engaged with the shoulder 30a in the groove 30 and the seal ring 35 is sealingly engaged within the seat 2.

With the seal section in this position, further right-hand rotation of the running-in string of pipe P will cause shearing of the pin 14 and the left-hand thread connection 13 will then be broken, so that, as shown in FIG. 4, the driver 12 will unthread upwardly and be removed from the seal section 10.

In addition, the protective skirt 24 which depends from the driver 12 will be removed from the seat protector 18 and the entire running-in assembly, including the pipe P and the driver 12, may be removed from the well, leaving the hanger assembly H latched in place and effecting a seal between the seal section and the well head body W, providing within the hanger a seat 22 for engagement by other well tools, which seat has not been damaged by the circulation of drilling fluid and cement as previously described.

Referring now to the embodiment shown in FIGS. 5 and 6, it will be noted that the hanger assembly is the same as that shown in FIGS. 1 through 4, insofar as the base section 5 and the relationship of the seal section 10 to the base section is concerned; but the driver means 12 has been modified to provide releasable clutch means. Releasable clutch means are provided which will enable the driving of the driver means by the running-in string of pipe P without imposing undue axial load on the right-hand thread connection 9 between the base section 5 and the seal section 10 of the hanger H, even though the running-in string may be alternately placed in tension and compression, as a marine vessel moves on the surface of the water. In addition, the releasable clutch means is operable to effect a positive drive of the seal section 10 relative to the base section 5 in the event that the frangible pin 14 should be prematurely broken or is omitted.

More particularly, the driver 12 of FIGS. 5 and 6 is provided with an upwardly extended inner clutch sleeve 50 threadedly connected as at 51 to the driver 12 by a right-hand thread and having externally thereof intermediate its ends an outwardly projecting annular flange 52. Disposed in circumferentially spaced relation about the clutch sleeve 50 and projecting longitudinally downwardly from the flange 52 is a series of ribs 53. Engaged between the ribs 53 are drive lugs 54 which project inwardly from an outer clutch sleeve or member 55, the latter being threadedly connected as at 56 to a coupling member 57

by a right hand thread which is made up in the running-in string of pipe P.

The outer clutch element 55 is slidable upon the inner clutch member 50 and is stabilized upon an axially extended wall 58 which, in the illustrative embodiment, is formed on a cylindrical extension 59 of the connector 57. Preferably seal means 59a may be employed to prevent the passage of foreign matter between the wall 58 and the clutch member 50. The drive lugs 54 and ribs 53 provide means for transmission of torque from the running-in string of pipe P to the driver 12 of the hanger assembly H; and, as will be noted in FIG. 6, downward movement of the outer clutch element 55 relative to the inner clutch element is limited by engagement of the stabilizer member 59 contacting the flange 52, so that the lugs 54 and ribs 53 are always in torque-transmitting coengagement.

With the assembly under tension, as shown in FIG. 5, torque may be transmitted to the seal section 10 to effect operation thereof as previously described through the frangible pin 14. However, should it be that the frangible pin 14 were prematurely broken, the outer clutch member 55 and the seal section 10 are provided with co-operative clutch means for effecting rotation of the seal section 10 relative to the base section 5 when the running-in string P is set down. Such clutch means includes a plurality of clutch fingers or elements 60 projecting downwardly from the lower extremity of the outer clutch element 55 for engagement in a like number of circumferentially spaced grooves 61 in the upper end of the seal section 10, the clutch fingers 60 on the clutch member 55 and the seal section 10 being coengageable as shown in FIG. 6, so as to effect a direct torque-transmission to the seal section 10 irrespective of the frangible pin 14 which, in FIG. 6, is illustrated as being intact, or which may be omitted, if desired.

Referring now to FIGS. 7 through 10, there is shown a further construction incorporating the present invention. In this embodiment, the base section of the hanger assembly H is designated at 5' and, as in the previous embodiment, the base section is provided with a plurality of circumferentially spaced ribs 7' providing flow passages 8' therebetween. At its upper extremity the base section 5' has a threaded connection as at 9' with the seal section 10'; this threaded connection, as in the previous embodiment, being of right hand. However, in this embodiment, the latch ring 31' is supported in notches 32' in the ribs 7'. This is to say that the latch ring 31' is carried by the base section 5', whereas in the previously described embodiments the latch ring is carried by the seal section, the distinction being that in the embodiment of FIGS. 7 through 10, the hanger will be latched in place when the ribs 7' abut with the conical seat or abutment flange 3' within the well head or landing head W.

As in the previous embodiments, however, there is a seal ring 35' carried at the lower extremity of the seal section 10' and engageable in the seating bore 2 of the well head W. Also, as in the previous embodiments, there is a seat protector 18' having a conical surface 22' at its upper extremity. The means for protecting the seat protector in the embodiment of FIGS. 7 through 10 includes a downwardly extended end section 24' on the driver 12', which, as shown in FIG. 8, is adapted to overlie the conical seat 22' of the seat protector 18'.

The driver 12' is connected by a left-hand thread connection 13' to the seal section 10'; but, in the present embodiment, the driver means includes cooperable clutch means for effecting the unitary drive of the driver 12' and the seal section 10' when the weight of the running-in string of pipe is applied to the hanger. When the running-in string of pipe is placed under tension, such unitized drive is broken so that the driver 12' may rotate independently of the seal section so that the left-hand thread connection 13' may be released to separate the driver from the hanger.

In the embodiment now being described, the seal sec-

tion 10' is provided with a plurality of outer longitudinally of outer longitudinally extended centralizing ribs 10'' having at their upper extremities clutch teeth 61' engageable by clutch teeth 60' at the lower extremity of an outer clutch member 55'. This outer clutch member is slidable upon a tubular upward extension 50' of the driver 12, the extension 50' having an upper end flange 52' with which an inwardly extended flange 55'' on the outer clutch member 55' will abut to limit movement of the clutch member 55' upwardly relative to the inner clutch member 50'. A connector 57' threadably connected as at 56' to the upper extremity of the outer clutch member 55' is provided with a plurality of downwardly extended drive lugs 54' which interdigitate with drive lugs 53' formed internally of the upward extension 50' of driver 12'. Thus, the outer and inner clutch members 55' and 50' are telescopically coengaged and constantly in torque-transmitting relationship through the fingers 53' and 54'.

In the use of the tool of FIGS. 7 through 10, the device is run into the well as shown in FIG. 7 until the latch ring 31' engages in the latch ring groove 30 in the well head W, as shown in FIG. 7, the latch ring being initially centralized relative to the base section 5 by means of foam rubber blocks 33' interposed between the inner periphery of the ring and the supporting ribs 7, as best seen in FIG. 10.

At this time, drilling fluid and cement may be circulated downwardly through the tool and will pass upwardly in the flow passages 8 between ribs 7' while the hanger assembly H is latched in position and with the seal section 10' in its upward position, so that such fluid and cement may pass upwardly between the inner wall of the well head W and the seal section 10'.

When circulation is completed, the running-in string is lowered to bring into coengagement the clutch lugs 60' and 61' on the outer clutch member 55' and the seal section 10', respectively; and the running-in string is turned to the right to cause downward movement of the seal section 10' via means of the right-hand thread connection 9' to the position shown in FIG. 8 at which the seal 35' is effective to prevent the flow of fluids upwardly between the hanger H and the well head W. Thereafter, the running-in string is elevated so that the inward flange 55'' of clutch member 55' will engage with the flange 52' on the inner clutch member 50', at which time the clutch lugs 60' and 61' will be disengaged. Further right-hand rotation will cause rotation of the driver 12' in a right-hand direction relative to the seal section 10', with the result that the left-hand thread connection 13' will be broken as shown in FIG. 9, so that the driver and the running-in string of pipe may be removed.

I claim:

1. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position in said head from a position at which fluid may flow between said head and said seal section, driver means for said seal section lowered toward the head together with said base by the tubular string, and means for releasably connecting said seal section and said driver means in driving relation to permit release of said driver means from said seal section, after said seal section has been shifted to sealing position, and withdrawal of said driver means from said seal section by the tubular string.

2. A pipe hanger as defined in claim 1, including a right-hand thread supporting said seal section on said base, said means releasably connecting said driver means to said seal section including a left hand thread.

3. A pipe hanger as defined in claim 1, including a right hand thread supporting said seal section on said base, said

means releasably connecting said driver means to said seal section including a left hand thread and means for causing relative rotation of said seal section and said base at said right hand thread to drive said seal section to sealing position prior to operation of said left hand thread.

4. A pipe hanger as defined in claim 1, including a right hand thread supporting said seal section on said base, said means releasably connecting said driver means to said seal section including a left hand thread and frangible means for causing relative rotation of said seal section and said base at said right hand thread to drive said seal section to sealing position prior to operation of said left hand thread.

5. A pipe hanger as defined in claim 1, including a right hand thread supporting said seal section on said base, said means releasably connecting said driver means to said seal section including a left hand thread and releasable clutch means for causing relative rotation of said seal section and said base at said right hand thread to drive said seal section to sealing position prior to operation of said left hand thread.

6. A pipe hanger as defined in claim 1, wherein said base has an internal surface forming an internal seat therein, and a seat protector in said latter seat.

7. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position in said head from a position at which fluid may flow between said head and said seal section, driver means for said seal section lowered toward the head together with said base by the tubular string, means for releasably connecting said seal section and said driver means in driving relation to permit release of said driver means from said seal section, after said seal section has been shifted to sealing position, and withdrawal of said driver means from said seal section by the tubular string, and means for latching said hanger on said seat including cooperative recess and laterally movable latch means on said hanger and said head.

8. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position in said head from a position at which fluid may flow between said head and said seal section, driver means for said seal section lowered toward the head together with said base by the tubular string, means for releasably connecting said seal section and said driver means in driving relation to permit release of said driver means from said seal section, after said seal section has been shifted to sealing position, and withdrawal of said driver means from said seal section by the tubular string, and means for latching said hanger on said seat including cooperative recess and laterally movable latch means on said seal section and said head.

9. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position in said head from a position at which fluid may flow between said head and said seal section, driver means for said seal section lowered toward the head together with said base by the tubular string, means for releasably connecting said seal section and said driver means in driving relation to permit release of said driver means from said

seal section, after said seal section has been shifted to sealing position, and withdrawal of said driver means from said seal section by the tubular string, and means for latching said hanger on said seat including cooperative recess and laterally movable latch means on said base and said head.

10. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position in said head from a position at which fluid may flow between said head and said seal section, a threaded connection between said seal section and said base for moving said seal section into said sealing position upon relative rotation of said seal section, driver means for said seal section lowered toward the head together with said base by the tubular string, and means for releasably connecting said seal section and said driver means in driving relation comprising a rotatable clutch member forming part of said driver means, and clutch means on said seal section engageable by said clutch member to be driven thereby to cause rotation of said threaded connection.

11. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position in said head from a position at which fluid may flow between said head and said seal section, a threaded connection between said seal section and said base for moving said seal section into said sealing position upon relative rotation of said seal section, driver means for said seal section, and means for releasably connecting said seal section and said driver means in driving relation, said driver means including a rotatable clutch member rotatable with said seal section, clutch means on said seal section engageable by said clutch member to be driven thereby to cause rotation of said threaded connection, and a second clutch member reciprocable and rotatable relative to the first-mentioned clutch member, said clutch members having coengageable drive elements for effecting a rotary drive connection therebetween upon relative longitudinal movement of said clutch members with respect to each other.

12. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base driving into a sealing position in said head from a position at which fluid may flow between said head and said seal section, a threaded connection between said seal section and said base for moving said seal section into said sealing position upon relative rotation of said seal section, driver means for said seal section, and means for releasably connecting said seal section and said driver means in driving relation, said driver means including a rotatable clutch member rotatable with said seal section, clutch means on said seal section engageable by said clutch member to be driven thereby to cause rotation of said threaded connection, and a second clutch member reciprocable relative to said first-mentioned clutch member, said clutch members having coengaged elements for effecting a rotary drive connection therebetween while permitting longitudinal movement thereof to effect engagement and disengagement of said first-mentioned clutch member and said clutch means.

13. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid

flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position closing said passage means from a position at which said passage means is open, driver means for said seal section lowered toward the head together with said base by the tubular string, and means for releasably connecting said seal section and said driver means in driving relation, a connection between said seal section and said base for causing movement of said seal section to said sealing position upon rotation of said seal section, and releasable means between said driver means and said seal section for effecting rotation of said seal section.

14. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position closing said passage means from a position at which said passage means is open, driver means for said seal section lowered toward the head together with said base by the tubular string, and means for releasably connecting said seal section and said driver means in driving relation, a connection between said seal section and said base for causing movement of said seal section to said sealing position upon rotation of said seal section, releasable means between said driver means and seal section for effecting rotation of said seal section, and latch means for latching said hanger in said head.

15. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position closing said passage means from a position at which said passage means is open, driver means for said seal section lowered toward the head together with said base by the tubular string, and means for releasably connecting said seal section and said driver means in driving relation, a connection between said seal section and said base for causing movement of said seal section to said sealing position upon rotation of said seal section, releasable clutch means between said driver means and said seal section for effecting rotation of said seal section, and latch means on said base and in said head for latching said hanger in said head.

16. A pipe hanger device comprising: a tubular head having a seat therein, a pipe hanger adapted to be lowered toward the tubular head on a tubular string and including a base movable in said head and having portions engageable with said seat, passage means for allowing fluid flow between said base and said seat, said hanger also including a seal section on said base drivable into a sealing position closing said passage means from a position at which said passage means is open, driver means for said seal section lowered toward the head together with said base by the tubular string, and means for releasably connecting said seal section and said driver means in driving relation, a connection between said seal section and said base for causing movement of said seal section to said sealing position upon rotation of said seal section, releasable clutch means between said driver means and said seal section for effecting rotation of said seal section, and latch means on said seal section and in said head for latching said hanger in said head upon movement of said seal section to said sealing position.

17. A hanger assembly for well pipe, comprising: an elongated tubular outer body having an internal abutment, a pipe hanger adapted to be lowered toward the outer body on a tubular string and having a base section movable longitudinally in said body into engagement with said abutment, said hanger having a seal section shift-

ably carried by said base section, said base section and said seal section having means providing a bypass flow passage between said hanger and said body, and further having sealing portions for closing said passage upon movement of said seal section on said base section, driver means for said seal section lowered with said seal section and the base section toward said body by the tubular string, and means for releasably connecting said seal section and said driver means in driving relation to permit release of said driver means from said seal section, after said seal section has been shifted to sealing position, and withdrawal of said driver means from said seal section by the tubular string.

18. A hanger assembly as defined in claim 17, including latch means for retaining said hanger in position on said abutment.

19. A hanger assembly as defined in claim 17, including a seat in said hanger, and means for protecting said seat.

20. A hanger assembly as defined in claim 17, wherein said means on said seal section for moving the same includes a member adapted to be connected to the tubular string, and means releasably connecting said member to said means on said seal section.

21. A pipe hanger assembly comprising: a support, a base section having an opening therethrough, abutment means externally of said base for landing said base on the support, said base section being lowered on a tubular string toward the support, passage means for allowing fluid flow between said base and support, a seal section, a thread of one hand connecting said seal section to said base section for movement of said seal section into sealing relation to said support to close said passage means upon rotation of said seal section relative to said base section in one direction, a driver member operatively connected to said base section to be lowered by the tubular string toward the support together with said base section, a thread of the opposite hand releasably connecting said driver member to said seal section, and releasable means for connecting said driver member to said seal section to cause rotation thereof as a unit to effect rotation of said seal section relative to said base section in said one direction.

22. A pipe hanger assembly as defined in claim 21, wherein said releasable means for connecting said driver member to said seal section comprises a frangible element.

23. A pipe hanger assembly as defined in claim 21, wherein said releasable means for connecting said driver member to said seal section comprises clutch elements on said seal section and rotatable clutch means on said driver member engageable with said clutch elements.

24. A pipe hanger assembly as defined in claim 21, wherein said releasable means for connecting said driver member to said seal section comprises clutch elements on said seal section and rotatable clutch means on said driver member engageable with said clutch elements, said rotatable clutch means including relatively longitudinally shiftable members, and longitudinally extending parts on said longitudinally shiftable members for effecting a rotary drive therebetween.

25. A pipe hanger assembly comprising: a support; a base section having an opening therethrough, abutment means externally of said base for landing said base on the support, said base section being lowered on a tubular string toward the support, passage means for allowing fluid flow between said base and support, a seal section, a thread of one hand connecting said seal section to said base section for movement of said seal section into sealing relation to said support to close said passage means upon rotation of said seal section relative to said base section in one direction, a driver member operatively connected to said base section to be lowered by the tubular string toward the support together with said base section, a thread of the opposite hand releasably connecting said driver member to said seal section, and releasable means

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for connecting said driver member to said seal section to cause rotation thereof as a unit to effect rotation of said seal section relative to said base section in said one direction, said base having a seat circumscribing said opening therethrough, and said driver member having a portion extending into protective overlapping relation to said seat.

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