July 31, 1956 W. W. FARRAR 2,756,827

RETRIEVABLE WELL PACKERS WITH OPPOSING SLIPS

Original Filed June 7, 1948 2 Sheets-Sheet 1

Fig. 1

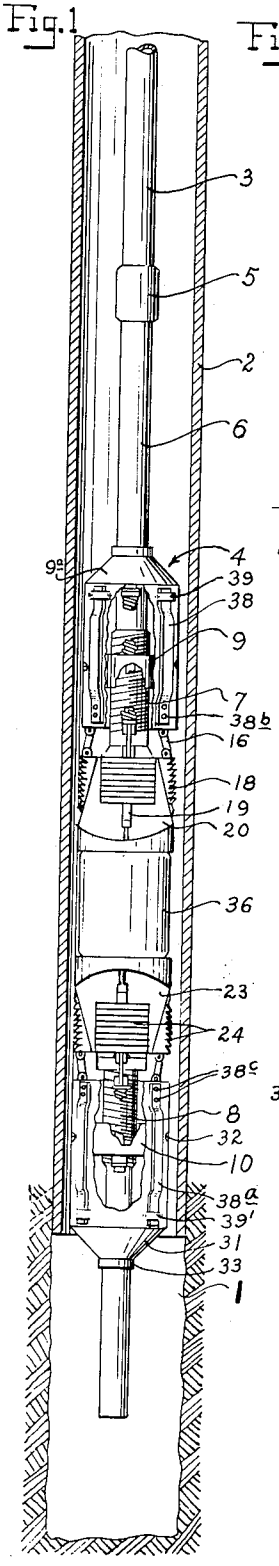


Fig. 2

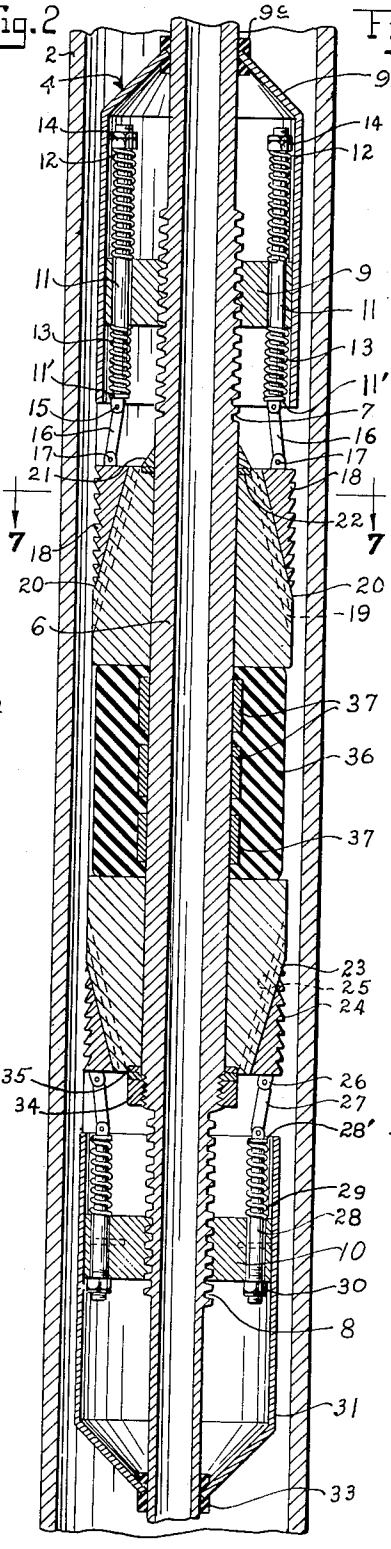
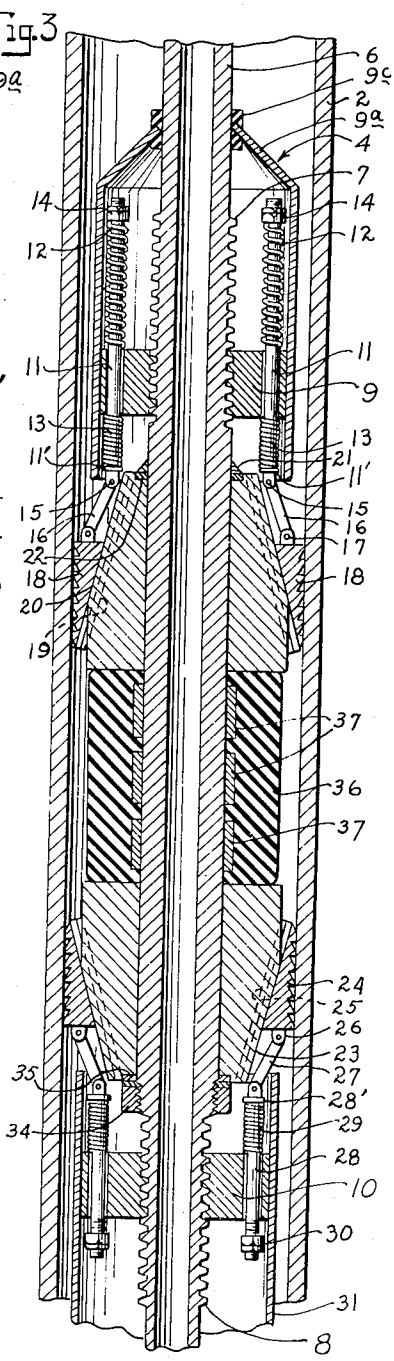


Fig. 3



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Fig. 4

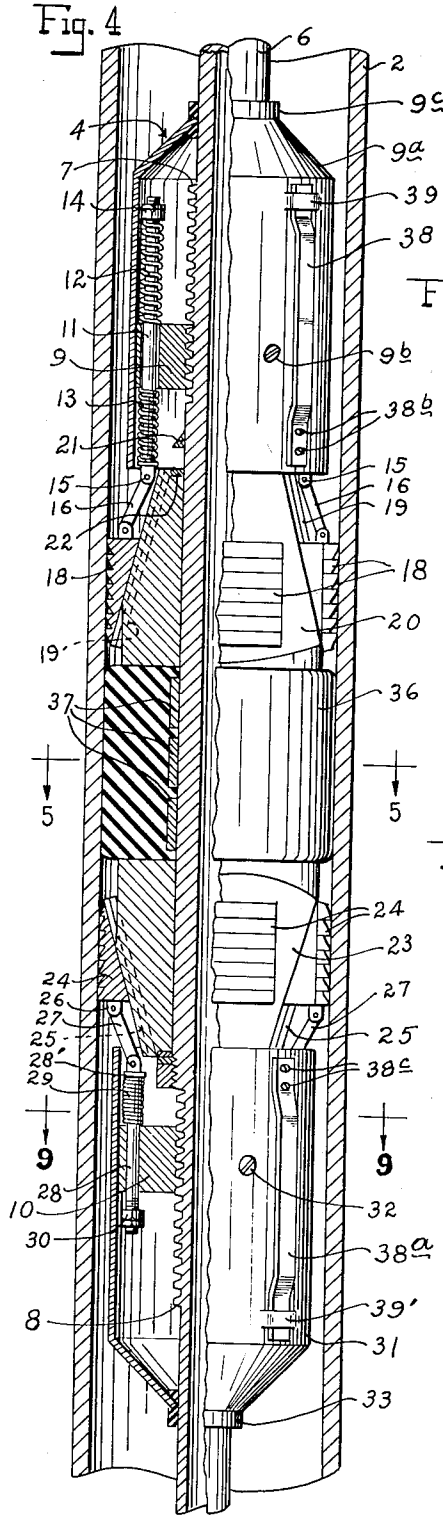


Fig. 5

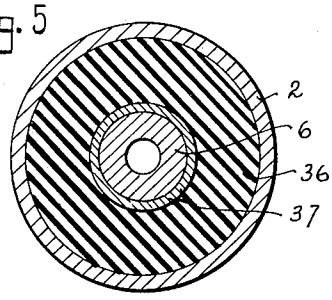


Fig. 6

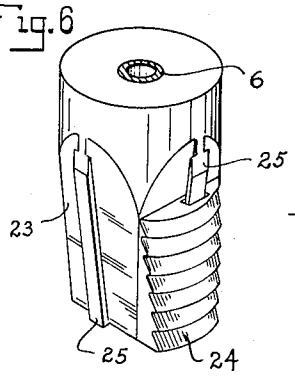


Fig. 7

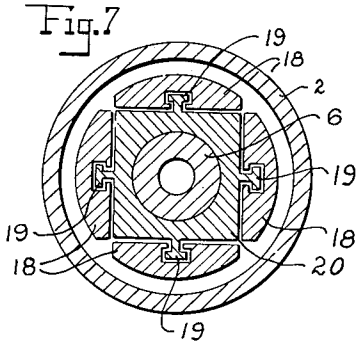


Fig. 8

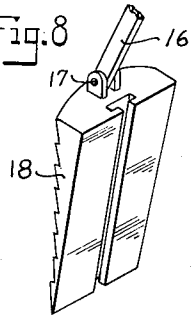
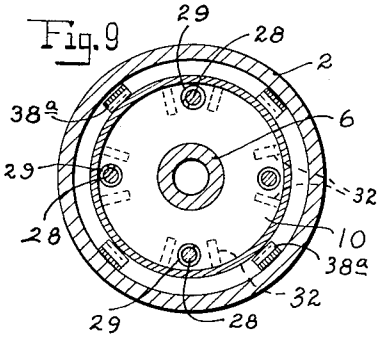


Fig. 9



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2,756,827

RETRIEVABLE WELL PACKERS WITH OPPOSING SLIPS

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Continuation of application Serial No. 31,440, June 7, 1948. This application September 10, 1952, Serial No. 308,891

12 Claims. (Cl. 166—134)

This invention relates to improvements in retrievable packers with opposing slips for deep wells, and more particularly to packers which may be set in the well casing, and which will not move in either direction when pressure is applied thereto.

This application is a continuation of application Ser. No. 31,440, filed June 7, 1948, for Retrievable Well Packers With Opposing Slips, now abandoned.

The present embodiment of the invention provides a packer which is adapted to be secured to the lower end of tubing or pipe, which may be run into the well to the desired depth and "set" so as to pack or seal off the casing at that particular point. This packer is provided with slips, which, when properly "set," will hold the packer against movement in either direction, when pressure is applied either from above or from below said packer.

Various packers have been suggested heretofore, but these, as a rule, were provided with slips which would hold them against movement in the direction from which fluid pressure was being exerted; however, if pressure was applied to the packer from the reverse direction from which the slips were arranged to hold, the packer would move within the casing, which would cause the slips to loosen their grip, and the packer to become useless.

The primary object of this invention is to provide a packer that will expand to seal the casing against the passage of fluid therethrough in either direction, and to retain pressure from either direction, once the packer is set in place.

Another object of this invention is to provide a packer that is easy to set and easy to retrieve, without the necessity of having to "drill up" the packer, should the operator be unable to unlock the packer from the well casing.

A still further object of this invention is to provide a packer that is simple in construction and easy to operate, and easy to remove from the well.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a longitudinal sectional view through the lower portion of a well, showing the packer in retracted position therein; and with parts broken away to show the details of construction;

Fig. 2 is a longitudinal sectional view through the packer with the slips shown in retracted position;

Fig. 3 is a view somewhat similar to Fig. 2, but showing the slips in engaged position but before the packer element is expanded;

Fig. 4 is a longitudinal sectional view through a portion of a well casing, showing the packer therein partly in elevation and partly in section, with the packer expanded, and with the slips shown as engaging the inner periphery of the well casing;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4, looking in the direction indicated by the arrows;

Fig. 6 is a perspective view of the wedge element for expanding the slips, and showing the slip in place on one face thereof;

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 2, looking in the direction indicated by the arrows;

Fig. 8 is a perspective view of a slip showing the manner of connection of the linkage therewith; and

Fig. 9 is a sectional view taken on the line 9—9 of Fig. 4, looking in the direction indicated by the arrows.

With more detailed reference to the drawing, the numeral 1 designates a well in which the casing 2 is positioned. A string of tubing 3 is positioned within the casing 2 and is adapted to suspend within the casing, a packer generally designated at 4, as shown in Fig. 1. The packer 4 is coupled to the tubing by means of a coupling 5. The stem 6 of the packer is adapted to pass therethrough and to have thereon right and left threads 7 and 8 respectively. Threaded collars 9 and 10 are threadably positioned on the packer stem 6, so that, upon turning the tubing or pipe 3, the threaded collars 9 and 10 will be caused to travel either toward each other or away from each other.

The threaded collar 9 has guide bars 11 which pass therethrough in axial alignment with tubular member 6, which guide bars 11 retain the collar 9 against rotary movement upon rotation of threaded tubular stem member 6. Compression springs 12 and 13 are positioned on either side of threaded collar 9 and are sleeved over the respective guide bars 11. A nut 14 is threadably positioned on each of the guide bars 11 so as to retain a spring 12 thereon. A boss 11' is formed on the lower end of each guide bar 11 to retain the respective springs 13 intermediate pivot point 15 and threaded collar 9. The nuts 14 threadably engage the bars 11 so as to provide a tensioning member for the springs 12 and 13. A shell 9*a*, which has a conical upper end, is telescoped over threaded collar 9 and is secured thereto by means of bolts 9*b* (Fig. 4), and rubber grommet 9*c* is positioned upon the upper end of shell 9*a* and in sliding relation with the stem 6, so as to protect the mechanism against damage while going into and coming out of the well.

The bars 11 have a pivot pin 15 on their lower ends which is adapted to inter-connect with linkage 16 and the lower end of the linkage 16 is adapted to pivotally connect at 17 with the slips 18.

The slips 18 are positioned on a track 19 and are inter-engaging therewith so as to direct the slips along the wedge face of the member 20, when it is desired to set or to disengage these slips from the well casing.

The stem 6 has an outstanding, circumferential boss positioned thereon and spaced immediately above the wedge-shaped member 20, and is in bearing relation with a thrust bearing 22, and which boss 21 retains the wedge member 20 against upward longitudinal movement, and yet will permit turning movement between thrust bearing 22 and circumferential boss 21.

A wedge member 23, similar to the wedge member 20, is spaced downward from the member 20 and has slips 24 positioned thereon in inter-engaging relation with track 25 for sliding movement thereon. Each of the slips 24 has a pair of lugs 26 thereon, each of which pairs of lugs is pivotally connected with one end of the links 27, the other end of each link 27 being pivotally connected with one of the guide bars 28.

The guide bars 28 have springs 29 sleeved thereover, each of which is in contact relation with a boss 28' on the upper end of each of the guide bars 28 and the upper face of threaded collar 10. A nut 30 threadably engages the lower end of each slidable guide bar 28, so as to provide tensioning members for the springs 29. A shell 31 is sleeved over threaded collar 10 and is secured thereto by means of screw bolts 32. The lower end of the shell 31 tapers inwardly to form a conical member and has grommet 33 which slides upon stem 6, when the slips 18 and 24 move, as will be more fully described hereinafter.

The member 23 is restrained against downward longitudinal movement by a nut 34 which threadably engages stem 6, immediately therebelow, but at the same time permitting upward sliding movement relative to the stem 6. A thrust bearing 35 is provided in the lower end of wedge member 23 so as to permit relative rotary movement upon the turning of the stem 6.

A packer element 36, which is of rubber or other suitable resilient material, is provided intermediate wedge members 20 and 23, and has flat ends for abutting relation with the adjacent flat ends of wedge members 20 and 23. The packer element 36 has spaced rings 37 therein, so as to minimize the friction with respect to the stem 6, yet sufficient rubber of the packer 36 is in contact relation with the stem 6 so as to provide an effective sealing between the packer 36 and the stem 6.

Resilient leaf springs 38 and 38*a* are positioned on shells 9*a* and 31, respectively, as will best be seen in Figs. 1 and 4, and one end of each leaf spring is secured to the respective shells, as by screw bolts or rivets, or the like. The other end of each leaf spring is adapted to pass through a loop 39 and a loop 39' which loops are formed by the expansion of the metal of the respective shells 9*a* and 31. These leaf springs are adapted to frictionally engage the inner diameter of the casing 2 so as to resist turning of shells 9*a* and 31, but the friction is not so great but that the packer will be permitted longitudinal movement so that it may be inserted into or removed from the well.

Operation

In order to "set" the packer in a well casing, the packer is lowered to the proper depth therein, and the pipe or tubing 3, to which the packer is coupled, is turned to the left, which will cause threaded collars 9 and 10 to move along threads 7 and 8, respectively, and since the collars 9 and 10 are in contact relation with spring 13 and 29, respectively, the springs will be urged toward each other, which, in turn, will cause the slips 18 and 24, respectively, to move toward each other and to move angularly outward on the respective tracks 19 and 25, until the slips are in contact relation with the inner surface of well casing 2, and upon continued movement of threaded collars 9 and 10, the springs 13 and 29 will be compressed, as shown in Fig. 3.

With the slips in position as shown in Fig. 3, the tubing 3 is lifted, and the nut 34, being in contact relation with the lower surface of the wedge member 23, will cause the wedge member 23 to move upward with the tubing 3, so as to compress the packer rubber 36, as shown in Fig. 4. Upon compression of the packer rubber 36, a sealing action between the casing and the stem 6 will be accorded. During the upward movement of wedge member 23, the threaded collar 10 will follow the stem 6, and the collar 10 will transmit an upward movement, through springs 29 and linkages 27, to the slips 24, to cause said slips to be moved into the holding position, as shown in Fig. 4.

During the upward movement of the stem 6, the slips 18 have engaged the casing 2 and prevented wedge member 20 from moving upward. In so doing, the tension on spring 13 has been lessened and the spring 12 partially compressed. With the packer in this position, pressure may be applied from either above or below the packer 36, and the packer will be restrained against longitudinal movement in either direction. With the packer set in this manner, oil may be produced through the tubing as by flowing, swabbing, or pumping, or the well may be treated with acid or other chemicals under pressure, or the casing 2 may be loaded with fluid under pressure to perform various operations, such as acidizing through perforations in the casing.

In order to remove the packer from the well after it has been used, the tubing 3 is lifted upward, which will release some pressure from the lower slips 24, and at the same time hold a strain on the tubing 3, which tubing 3 is turned to the right which will cause threaded collar 10 to move downward until this collar 10 strikes nuts 30, which will draw the slips 24 downward and inward away from contact relation with the casing 2, after which the tubing 3 and tubular stem 6 are lowered downward until annular boss 21 contacts thrust bearing 22. The movement of the tubular stem 6 has permitted wedge member 23 to travel downward to release the pressure from the packer 36, so as to allow the packer 36 to return to normal position, as shown in Figs. 1 to 3, inclusive.

Simultaneously with the movement of the threaded collar 10 downward on the left hand threads 8, while the tubular stem 6 is being turned, the threaded collar 9 will move upward on the right hand threads 7, to compress the springs 12, which springs are sleeved over the slide bars 11. After the tension has been released from the packer elements 36 by the lowering of the tubular element 6, a further continued lowering movement of the tubular stem 6 will move wedge member 20 downward slightly, which will permit the release of the teeth of the slip 18 from engagement with the inner walls of the casing 2, and upon release of these teeth from the walls of the casing, the springs 12, which are in bearing relation with nuts 14, will draw guide bars 11 upward and through the connection with the flexible elements 16, which is connected to the upper end of slip 18 by pivot member 17. The slips, thus released, will jump upward and inward along the wedge member 20 to give sufficient clearance to permit the removal of the packer from the well.

With the slips 18 and 24 in their retracted position and with the compression released from packer element 36, the tubing 3 and packer 4 may be removed from the well as desired.

While the invention has been described in one embodiment thereof, it is to be understood that changes may be made in the minor details of construction, without departing from the spirit of the invention as claimed.

Having thus described the invention, what is claimed is:

1. A retrievable packer for a well casing, comprising a hollow stem adapted to be positioned in said well casing for rotation therein and for longitudinal movement relative thereto, wedge members slidably mounted on said stem in opposed, spaced apart relation, a resilient, rubber-like packer element slidably mounted on said stem intermediate said wedge members and in abutting relation therewith, a set of slips slidably mounted on each of said wedge members, which slips are effectively engaged in opposite directions, means for moving said slips longitudinally relative to their respective wedging means, means connecting said slip moving means to said stem, said connecting means and thereby, said slips being moved toward each other by rotation of the stem in one direction and away from each other by rotation of the stem in the opposite direction, drag means attached to said slip moving means for maintaining the latter, and said slips, non-rotatable with respect to said well casing.

2. As in claim 1 wherein the means which moves the slips in longitudinal relation to said respective wedging means includes spring means positioned between said connecting means and said slips, and actuated by said connecting means to move said slips along the wedging means.

3. As in claim 1 wherein said connecting means includes a member rotatably mounted on said stem and guide rods slidably extending longitudinally therethrough, and said slip means are provided with a linkage connecting them to said aforesaid member by means of said guide rods and springs arranged between each end of the guide rods and said member.

4. As in claim 1 wherein abutments are fixedly secured

to said stem below the lowermost wedge member and above the uppermost wedge member respectively, whereby, after said slips have been set, an upward pull on said stem will cause the lower of said abutments to move into engagement with said complementary wedge member and move said wedge member upwardly with respect to its associated slip to compress said packer element, said upper wedge member being restrained from longitudinal movement by its associated slips.

5. In a packer for a well casing, a tubular member adapted to be positioned in said well casing for rotation therein and for longitudinal movement relative thereto, right and left hand external threads disposed on respective spaced portions of said tubular member, oppositely movable right and left hand internally threaded collars threadably engaging said right and left hand threads respectively of said threaded portions of said tubular member for movement of said collars toward each other upon rotation of said tubular member in one direction and away from each other upon rotation of said tubular member in the opposite direction, resilient means attachably secured to each of said collars to prevent normal relative rotation between said collars and said well casing, slip members mounted on and loosely attached to said collars for movement longitudinally of said tubular member, longitudinally spaced wedge members mounted for longitudinal sliding movement on said tubular member and disposed between and interengaging said slip members to move said slip members laterally to engage said casing as said slip members approach each other and away from said casing as said slip members recede from each other, longitudinally spaced stop means mounted on the outer surface of said tubular member to engage said wedge members for limiting the movement of said wedge members away from each other, and resilient packing means mounted on said tubular member between said wedge members, which resilient packing means is adapted to be expanded laterally upon compression by said wedge members into fluid tight engagement with said casing, when one of said wedge members is moved longitudinally toward the other of said wedge members by the longitudinal movement of said tubular member when one of said stop members on said tubular member engages its adjacent wedge member.

6. In a packer for a well casing, a tubular member adapted to be positioned in said well casing for rotation therein and for longitudinal movement relative thereto, right and left hand external threads disposed on respective spaced portions of said tubular member, oppositely movable right and left hand internally threaded collars engaging said right and left hand threads respectively of said threaded portions of said tubular member for movement of said collars toward each other upon rotation of said tubular member in one direction and away from each other upon rotation of said tubular member in the opposite direction, slip members mounted on and loosely attached to said collars for movement longitudinally of said tubular member, longitudinally spaced wedge members mounted for longitudinal sliding movement on said tubular member and disposed between and interengaging said slip members to move said slip members laterally to engage said casing as said slip members approach each other and away from said casing as said slip members recede from each other, longitudinally spaced stop means mounted on the outer surface of said tubular member to engage said wedge members for limiting the movement of said wedge members away from each other, resilient packing means mounted on said tubular member between said wedge members between said collars, which resilient packing means is adapted to be expanded laterally upon compression by said wedge members into fluid tight engagement with said casing when one of said wedge members is moved longitudinally toward the other of said wedge members by the longitudinal movement of said tubular member, when one of said stop members on said tubular member engages its adjacent wedge member, and means connected with said collars to engage said casing to restrain said collars against normal rotation in said casing upon rotation of said tubular member.

7. In a packer for a well casing, a tubular member adapted to be positioned in said well casing for rotation therein and for longitudinal movement relative thereto, right and left hand external threads on respective portions of said tubular member, oppositely movable right and left hand internally threaded collars threadably engaging said right and left hand threads respectively of said threaded portions of said tubular member for movement of said collars toward each other upon rotation of said tubular member in one direction and away from each other upon rotation of said tubular member in the opposite direction, slip members mounted on and loosely attached to said collars for movement longitudinally of said tubular member, resilient means interposed between each of said slip members and its adjacent collar, said slip members being longitudinally movable with respect to the respective collar to which said slip members are attached, spaced, longitudinally movable wedge members mounted on said tubular member between said collars and interengaging said slip members between said collars to move said slip members laterally to engage said casing as said collars approach each other and away from said casing as said collars recede from each other, resilient means interposed between each of said slip members and its adjacent collar for urging said slip members away from said collar, longitudinally spaced stop means mounted on said tubular member to engage said wedge members to limit the movement thereof away from each other, resilient packing means mounted on said tubular member between said wedge members, which resilient packing means is adapted to be compressed between said wedge members so as to expand said resilient packing means laterally into fluid tight engagement with said casing when one of said wedge members is moved longitudinally toward the other of said wedge members by longitudinal movement of said tubular member, when one of said stop members on said tubular member engages its adjacent wedge member, and means connected with said collars to engage said casing to restrain said collars against normal rotation in said casing upon rotation of said tubular member.

8. In a packer for a well casing, a tubular member adapted to be positioned in said well casing and for rotation therein and for longitudinal movement relative thereto, right and left hand external threads disposed on respective spaced portions of said tubular member, oppositely movable right and left hand internally threaded collars threadably engaging said right and left hand threads respectively of said threaded portions of said tubular member for movement of said collars toward each other upon rotation of said tubular member in one direction and away from each other upon rotation of said tubular member in the opposite direction, resilient means attachably secured to each of said collars to prevent normal relative rotation between said collars and said well casing, slip members mounted on and loosely attached to said collars for longitudinal movement on said tubular member, resilient means interposed between each of said slip members and its adjacent collar, said slip members being longitudinally movable by said second mentioned resilient means upon movement of said collars to which said slip members are attached, certain of said slip members attached to one of said collars being resiliently movable longitudinally in the opposite direction upon movement of the collar to which said slip members are movably attached, spaced, longitudinally movable wedge members mounted between said collars on said tubular member and disposed between and interengaging said slip members to move said slip members laterally to engage said casing as said slip members approach each other and away from said casing as said slip members recede from each other, longitudinally spaced stop means mounted on

the outer diameter of said tubular member to engage said wedge members to limit the movement of said wedge members away from each other, and resilient packing means mounted on said tubular member between said wedge members, which resilient packing means is adapted to be compressed by said wedge members into fluid tight engagement with said casing when one of said wedge members moves toward the other of said wedge members by longitudinal movement of said tubular member when one of said stop members engages its adjacent wedge member.

9. In a packer for a well casing, a tubular member adapted to be positioned in said well casing for rotation therein and for longitudinal movement relative thereto, right and left hand threads disposed externally on respective spaced portions of said tubular member, oppositely movable right and left hand internally threaded collars threadably engaging said right and left hand threads respectively of said threaded portions of said tubular member for movement of said collars toward each other upon rotation of said tubular member in one direction and away from each other upon rotation of said tubular member in the opposite direction, resilient means attachably secured to each of said collars to prevent normal relative rotation between said collars and said well casing, slip members mounted on and loosely attached to said collars for movement longitudinally of said tubular member, longitudinally spaced wedge members movably mounted between said collars on said tubular member and disposed between and interengaging with said slip members to move said slip members laterally toward said casing as said slip members approach each other and away from said casing as said slip members recede from each other, longitudinally spaced stop means mounted on the outer diameter of said tubular member to engage said wedge members for limiting the movement of said wedge members away from each other, resilient packing means slidably mounted on said tubular member between said wedge members, which resilient packing means is adapted to be compressed by said wedge members into fluid tight engagement with said casing, and spaced metal sleeves embedded in said packing means and surrounding said tubular member in slidable relation therewith so as to form a bearing relation with said tubular member.

10. In a packer for a well casing, a tubular member adapted to be positioned in said well casing for rotation therein and for longitudinal movement relative thereto, right and left hand external threads on respective spaced portions of said tubular member, oppositely movable right and left hand internally threaded collars threadably engaging said right and left hand threads respectively of said threaded portions of said tubular member for movement of said collars toward each other upon rotation of said tubular member in one direction and away from each other upon rotation of said tubular member in the opposite direction, resilient means attachably secured to each of said collars to prevent normal relative rotation between said collars and said casing, each of said collars having holes formed therethrough substantially parallel to the axis thereof, a guide bar positioned within each of said holes and slidable therein, a slip swingably mounted on an end of each of said guide bars, a resilient member telescoped over each of said guide bars and having one end thereof abutting with the respective collar in which the guide bar is mounted, an abutment formed on each of said guide bars a spaced distance from said collar so the opposite end of the resilient member will bear against said abutment, a second set of resilient members telescoped over said guide bars passing through one of said collars and abutting with the opposite side thereof, an abutment formed near the outer end of each of said last mentioned guide bars for each of said last mentioned resilient members to bear against so as to resiliently mount said last mentioned guide bars for movement in alternate, resiliently restrained, longitudinal directions, wedge members mounted on said tubular member between said collars and spaced apart longitudinally for coactively engaging said slip members to urge said slips laterally outward to engage with said casing by the movement of said collars toward each other and to move said slips laterally inward upon movement of said collars away from each other, longitudinally spaced stop means mounted on the outer diameter of said tubular member to engage said wedge members to limit movement thereof away from each other, and a resilient, rubber-like packer element disposed on said tubular member between said wedge members and adapted to expand laterally into sealing relation with said casing upon being compressed between said wedge members when they are moved toward each other, and to contract away from said casing for removal therefrom upon release of said slip members from said casing by the movement of said wedge members away from each other.

11. In a packer for a well casing, a tubular member adapted to be positioned in said well casing for rotation therein and for longitudinal movement relative thereto, right and left hand external threads disposed on respective spaced portions of said tubular member, oppositely movable right and left hand internally threaded collars threadably engaging said right and left hand threads respectively of said threaded portions of said tubular member for movement of said collars toward each other upon rotation of said tubular member in one direction and away from each other upon rotation of said tubular member in the opposite direction, resilient means attachably secured to each of said collars to prevent normal rotation between said collars and said casing, each of said collars having holes formed therethrough substantially parallel to the axis thereof, a guide bar positioned within each of said holes and slidable therein, each of said guide bars having a link pivotally mounted on one end thereof, a slip mounted on the other end of each of said links, a resilient member telescoped over each of said guide bars and having one end thereof abutting with the respective collar in which the guide bar is mounted, an abutment formed on each of said guide bars a spaced distance from said collar so the opposite end of said resilient member will bear against said abutment, a second set of resilient members telescoped over guide bars passing through one of said collars and abutting with the opposite side thereof, an abutment formed near the outer end of each of said last mentioned guide bars for each of said last mentioned resilient members to bear against so as to resiliently mount said last mentioned guide bars for movement in alternate, resiliently restrained, longitudinal directions, wedge members mounted on said tubular member between said collars and spaced apart longitudinally for co-actively engaging said slip members to urge said slip members laterally outward into engagement with said casing by the movement of said collars toward each other and to move said slip members inward upon movement of said collars away from each other, longitudinally spaced stop means mounted on the outer diameter of said tubular member to engage said wedge members to limit movement thereof away from each other, and a resilient, rubber-like packing element disposed on said tubular member between said wedge members and adapted to expand laterally into sealing relation with said casing upon being compressed by the relative movement of said wedge members toward each other, and to contract inward away from said casing for removal therefrom upon release of said slip members from said casing and the movement of said wedge members away from each other.

12. In a packer for a well casing, a tubular member adapted to be positioned in said well casing for rotation therein and for longitudinal movement relative thereto, right and left hand external threads disposed on respective spaced portions of said tubular member, oppositely movable right and left hand internally threaded collars threadably engaging said right and left hand threads re-

spectively of said threaded portions of said tubular member for movement of said collars toward each other upon rotation of said tubular member in one direction and away from each other upon rotation of said tubular member in the opposite direction, resilient means attachably secured to each of said collars to prevent normal relative rotation between said collars and said casing, each of said collars having holes formed therethrough substantially parallel to the axis thereof, a guide bar positioned within each of said holes and slidable therein, each of said guide bars having a link pivotally mounted on one end thereof, a slip mounted on the other end of each of said links, a resilient member telescoped over each of said guide bars and having one end thereof abutting with the respective collar in which the guide bar is mounted, an abutment formed on each of said guide bars a spaced distance from said collar so the opposite end of said resilient member will bear against said abutment, a second set of resilient members telescoped over guide bars passing through one of said collars and abutting with the opposite side thereof, an abutment formed near the outer end of each of said last mentioned guide bars for each of said last mentioned resilient members to bear against so as to resiliently mount said last mentioned guide bars for movement in alternate, resiliently restrained, longitudinal directions, wedge members mounted on said tubular member between said collars and spaced apart longitudinally for coactively engaging said slip members to move said slip members into engagement with said well casing as said slip members approach each other and away from said casing as said slip members recede from each other, longitudinally spaced stop means mounted on the outer diameter of said tubular member to engage said wedge members for limiting the movement of said wedge members away from each other, a rubber-like, resilient packer element having an axial hole formed therein mounted on said tubular member, metal sleeves embedded within said rubber-like, resilient packing element so as to have the axis of said sleeves coaxial with the axis of said hole formed in said packing element so said sleeves will form a sliding fit with said tubular member, said packing element being positioned intermediate said wedge members and adapted to be compressed by the longitudinal movement of said wedge members toward each other so as to cause said packing element to expand laterally to form a fluid tight joint with said casing and a fluid tight joint between the inner diameter of said packing element and the outer diameter of said tubular member, and said packing element being adapted to retract upon release of pressure by said wedge members to permit removal of said packing element from said casing.

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