Nov. 24, 1942. W. M. HAMON 2,302,856

RELEASABLE JOINT FOR ROTARY WELL STRINGS

Filed Aug. 10, 1940

Fig. 1.

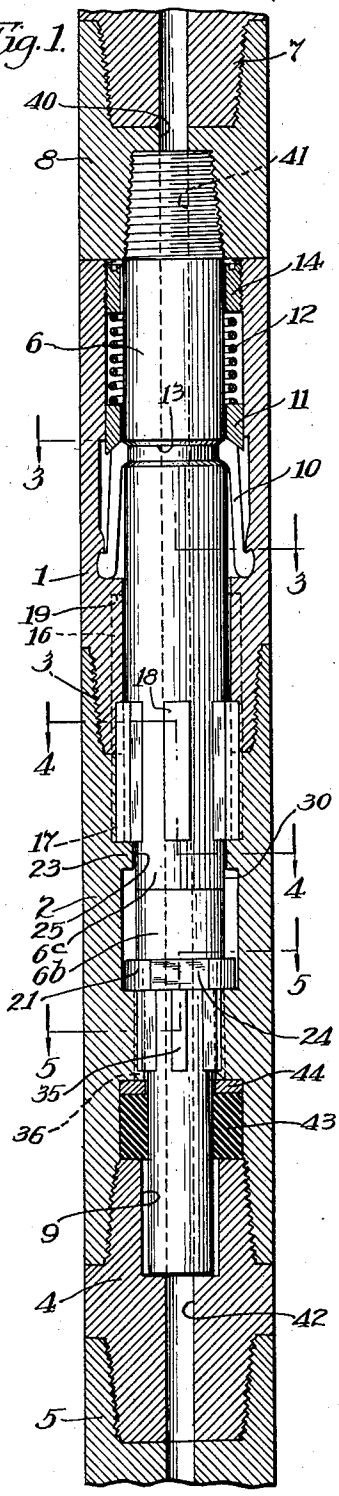


Fig. 2.

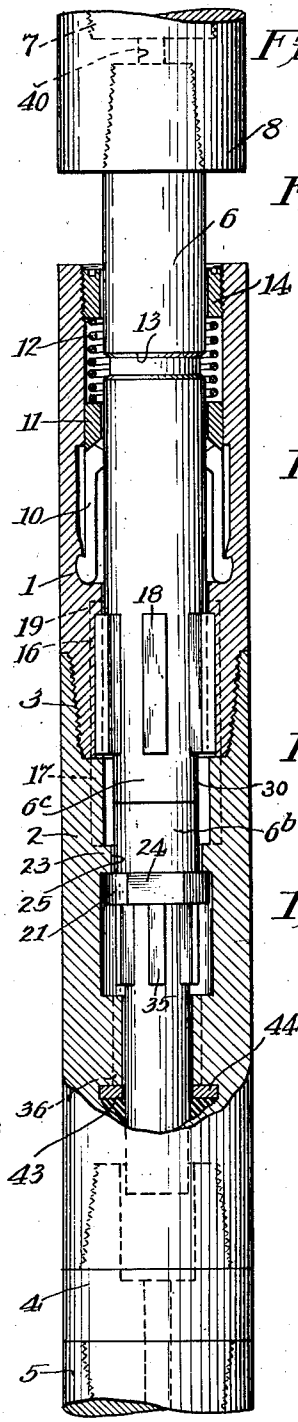


Fig. 3.

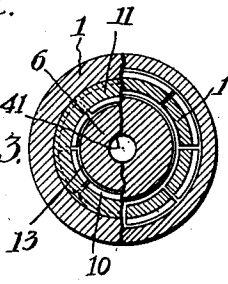


Fig. 4.

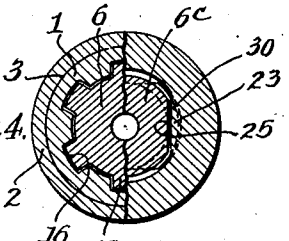


Fig. 5.

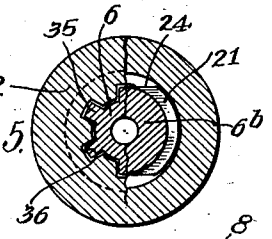
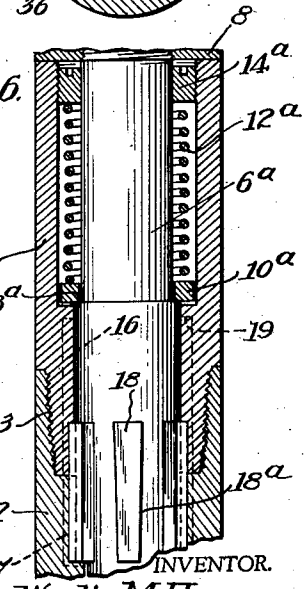


Fig. 6.



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RELEASABLE JOINT FOR ROTARY WELL STRINGS

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Application August 10, 1940, Serial No. 352,106

9 Claims. (Cl. 255—28)

This invention is a releasable joint for a rotary well string.

It is an object of the invention to provide a joint which is adapted for release by relative rotation of proximate lengths of the well string and which includes driving means normally engaged for positively fixing the proximate lengths of the well string against relative rotation, the driving means being adapted for disengagement at the will of the operator to permit relative rotation of the proximate lengths of the well string for releasing the joint.

It is a further object of the invention to provide a threaded joint which is normally locked against unscrewing by the engaged driving means, and which upon disengagement of the driving means (to permit relative rotation of the proximate lengths of the well string) is adapted for unscrewing by rotating the well string in the same direction as employed during drilling or other operative rotation of the string.

It is a still further object of the invention to provide a driving means which when engaged provides a sturdy and positive drive between proximate lengths of the well string, and which when disengaged maintains a driving connection between one of the proximate lengths of the well string and one of the cooperating elements of the threaded joint, for unscrewing the joint by relative rotation of the proximate lengths of the well string.

Further objects of the invention will be readily understood from the following description of the accompanying drawing, in which:

Fig. 1 is an axial section through the releasable joint, showing it in operative position between proximate lengths of a well string.

Fig. 2 is a similar view, showing the parts in position for relatively rotating the proximate lengths of the well string for releasing the joint.

Figs. 3, 4 and 5 are transverse sections on the lines 3—3, 4—4 and 5—5 respectively of Fig. 1.

Fig. 6 is a fragmentary view similar to Fig. 1, showing a modified construction.

The invention is applicable to any tool string adapted for rotation in a well and wherein it is desired to release and withdraw the upper portion of the string in the event of its lower portion becoming stuck in the well bore. The invention is particularly applicable and is therefore described with reference to a rotary drill string and its associated drill. The improved joint is preferably incorporated in the drill string immediately above the drill, whereby the proximate lengths of the well string which are connected by the joint respectively comprise the drill and its operating string which extends from the drill to the earth's surface.

During drilling operation, with the joint connecting the drill and the drill string, driving means incorporated in the joint provides a positive drive for rotating the drill with the drill string. The driving means thus relieves the joint of torsional strain and locks the joint against release. In the event of the drill becoming stuck the driving means is disengaged, thereby releasing the drill string for rotation relative to the stuck drill; and when the driving means is thus disengaged it maintains a driving connection between the drill string and one of the cooperating elements of the joint, whereby rotation of the drill string relative to the stuck drill disconnects the joint for release and withdrawal of the drill string.

The connection between the cooperating elements of the joint is preferably a threaded connection, and is threaded for unscrewing by rotating the drill string relative to the stuck drill in the same direction in which the drill string is rotated during drilling operation. In other words, if the connections between the lengths of the drill string (other than at the improved joint) have usual right-hand threads for normal right-hand drilling, the improved joint has left-hand threads. While drilling, this left-hand joint is locked against unscrewing by the driving means which prevents relative rotation at this threaded joint; and in the event of the drill becoming stuck and after disengaging the driving means, the drill string is again rotated in normal right-hand direction, thereby unscrewing the left-hand joint by the driving connection which is maintained between the drill string and one of the cooperating elements of this left-hand joint.

As an instance of this arrangement, the improved joint comprises joint-sections 1—2 having a threaded connection 3. The lower portion of the well string, which in the illustrated embodiment of the invention is the drill 5, is suspended from the joint-section 2 by a coupling 4. A mandrel 6 is adapted for telescopic reception in the connected joint-section 1—2, and is suspended by a coupling 8 from the upper portion of the well string, which in the illustrated embodiment of the invention is the drill string 7 extending to the earth's surface. The couplings 4 and 8, and the couplings (not shown) between lengths of the drill string, preferably have usual right-hand threads adapting the drill string for

normal right-hand drilling rotation; and the threaded-connection 3 is preferably oppositely threaded, i. e. it has a left-hand thread.

As shown at Fig. 1, when the drill string is ready for drilling, the mandrel 6 is telescoped in the connected joint-sections 1—2 so that the coupling 8 abuts the joint-section 1 and the lower end of the mandrel seats in a recess 9 in the coupling 4. The mandrel 6 is releasably held in this normal operative position.

For this purpose, and as shown in Fig. 1, locking dogs 10 are pivotally mounted in the bore of the joint-section 1; and an annulus 11 is yieldably longitudinally projected by a spring 12, so as to engage the dogs and swing the same into locking engagement with a recess 13 in the mandrel 6 when the mandrel is telescopically contracted relative to the connected joint 1—2.

A modification of this releasable holding means is shown at Fig. 6. In this instance, a collar 10*a* is adapted for sliding reception on the mandrel 6*a* and in the bore of the joint-section 1, and is yieldably tensioned by a spring 12*a* so as to seat on a shoulder 13*a* of the mandrel 6*a* when the mandrel is telescopically contracted relative to the connected joint 1—2.

The tension of the spring 12 or 12*a* is adjusted by a follower 14 or 14*a* so that as long as the drill is not stuck in the well bore the drill string may be withdrawn without yielding of the spring, thereby maintaining engagement at 10—13 or at 10*a*—13*a*, for preventing telescopic expansion of the mandrel relative to the connected joint 1—2. The drill string and its suspended drill are thus adapted for withdrawal as a unit. In the event of the drill becoming stuck in the well bore, strain exerted on the drill string causes the spring 12 to yield for longitudinal retraction of the annulus 11 so that the dogs 10 may swing clear of the recess 13, or causes the spring 12*a* to yield for upward displacement of the collar 10*a* and the shoulder 13*a* relative to the joint-section 1. The mandrel 6 or 6*a* is thus released for telescopic expansion relative to the connected joint 1—2, as shown at Fig. 2.

When the mandrel 6 or 6*a* is telescopically contracted in the connected joint 1—2, it provides a driving means fixing the joint-sections against relative rotation and against rotation relative to the mandrel, so that rotation of the mandrel by the drill string rotates the connected joint 1—2 and the suspended drill 5. As an instance, the bores of the joint-sections 1—2 are splined adjacent their threaded connection 3 as shown at 16—17, with the splines 16—17 adapted for longitudinal alinement when the joint-sections 1—2 are screwed together; and the mandrel 6 or 6*a* has cooperating splines 18, operatively engaging the splines 16—17 when the mandrel is telescopically contracted as shown at Fig. 1.

When the mandrel 6 or 6*a* is telescopically expanded relative to the connected joint 1—2, its longitudinal displacement is arrested when it reaches the position shown at Fig. 2, with the splines 18 clear of the splines 17 of the joint-section 2 but still operatively engaged with the splines 16 of the joint-section 1. The drill string and the suspended mandrel are thus free for rotation relative to the joint-section 2 (which is connected to the drill which has become stuck) while maintaining a rotary driving connection between the mandrel and the joint-section 1. By rotating the drill string, the joint-sections 1—2 are thus adapted for relative rotation for unscrewing their threaded connection 3.

As an instance for means for thus arresting telescopic expansion of the mandrel, abutment means 23 may project into the bore of the joint-section 2 below its splines 17, and a length of the mandrel 6 or 6*a* is of reduced diameter below its splines 18 as shown at 6*b*, with a collar 21 at the lower end of this reduced mandrel length. The collar 21 is adapted for rotation and longitudinal play in the bore of the joint-section 2 below its abutment means 23, and is adapted to longitudinally engage the abutment means for limiting telescopic expansion of the mandrel relative to the joint-section 2.

To permit assembly, the collar 21 is cut away at diametrically opposite flat surfaces 24 and the abutment means 23 are shoulders which project into the bore of the joint-section 2 and define diametrically opposite flat surfaces 25. The flat surfaces 24—25 are circumferentially positioned relative to the splines 18—17, as shown at Figs. 4 and 5. The drill 5 having been suspended from the joint-section 2 by the coupling 4, the mandrel 6 or 6*a* is inserted in the joint-section 2 with the mandrel turned so that the flat surfaces 24—25 are longitudinally alined. The collar 21 may thus be longitudinally projected through the bore which is defined by the abutment means 23, so as to longitudinally clear the abutment means when insertion of the mandrel is arrested by the splines 18 longitudinally abutting the upper end of the splines 17.

The joint-section 1 is then lowered over the upper end of the mandrel so as to operatively engage the splines 16—18 while the joint-section 1 is still disconnected from the joint-section 2; the dogs 10 being retracted and sliding on the mandrel 6 below its recess 13 when employing that form of the invention which is shown at Figs. 1 and 2, and the collar 10*a* sliding on the mandrel 6*a* until seated on its shoulder 13*a* when employing that modification of the invention which is shown at Fig. 6. The mandrel is then suspended from the drill string 7 by the coupling 8. The drill string and the mandrel, together with the joint-section 1, are then rotated relative to the joint-section 2 and the suspended drill, as permitted by the splines 18 being still longitudinally clear of operative engagement with the splines 17 and the collar 21 freely rotating in the bore of the joint-section 2 below its abutment means 23.

By this relative rotation the joint-sections 1—2 are screwed together at their threaded connection 3, with the joint-section 1 longitudinally displaced relative to the mandrel while this threaded connection is being made, as permitted by the retracted dogs 10 sliding along the mandrel 6 below its recess 13, or as permitted by yielding of the spring 12*a* for upward displacement the collar 10*a* in the bore of the joint-section 1. When the threaded connection between the joint-sections 1—2 has been made, the joint-sections will have been relatively turned so that the splines 16—17 are longitudinally alined; and the mandrel will thus have been turned relative to the joint-section 2 so that it may be projected an additional distance into this joint-section for operatively engaging the splines 17—18 and at the same time maintaining the splined engagement at 16—18. The position to which the mandrel will have been turned, also longitudinally alines the collar 21 with the abutment means 23, in spaced relation below said abutment means. The releasable joint is thus in operative position with its mandrel telescopically contracted rela-

tive to the connected joint as shown at Fig. 1, with the dogs 10 seating in the recess 13, or the collar 10a longitudinally projected by the spring 12a and seating on the shoulder 13a.

The drill being thus operatively suspended from the drill string, the latter may be lowered into a well bore for usual drilling. If the drill becomes stuck so that it is desired to release the connected joint 1—2, upward strain is exerted on the drill string, thereby causing the spring 12 or 12a to yield. The mandrel is thus telescopically expanded relative to the connected joint 1—2, as permitted by retraction of the dogs 10 and their disengagement from the recess 13, or as permitted by upward displacement of the collar 10a in the bore of the joint-section 1. This telescopic expansion of the mandrel is limited by the collar 21 longitudinally engaging the abutment means 23 as shown at Fig. 2. The splines 18 being then longitudinally clear of the splines 17 but still operatively engaged with the splines 16, the threaded connection 3 may be unscrewed by relatively rotating the joint-section 1—2 by rotating the drill string and its suspended mandrel.

When the joint-sections 1—2 have been thus disengaged, the mandrel is turned to position longitudinally alining the flat surfaces 24 with the flat surfaces 25, so that the collar 21 may be withdrawn through the bore which is defined by the abutment means 23. The drill string and the mandrel, together with the joint-section 1, may thus be withdrawn as a unit from the well bore, the joint-section 1 being supported on the mandrel 6 or 6a by a shoulder 19 at the upper end of the splines 16 resting upon the upper end of the splines 18. After withdrawal of the drill string, any desired fishing or washing procedure may be followed for recovering the stuck drill and the joint-section 2 which have been left in the well.

When the joint is in operative position as shown at Fig. 1, driving means in addition to the splined engagement 17—18 is preferably provided between the mandrel and the joint-section 2. As an instance, a mandrel length 6c may be provided between the splines 18 and the reduced mandrel length 6b; and this mandrel length 6c is cut away at diametrically opposite flat surfaces 30 which are adapted for reception between the flat surfaces 25 of the abutment means 23. The flat surfaces 24—30 are relatively circumferentially offset, preferably 90° as shown at Figs. 4 and 5.

When assembling, the mandrel is initially inserted in the joint-section 2 and the joint-section 1 is mounted on the mandrel as previously described, i. e. the collar 21 is projected through and longitudinally beyond the bore which is defined by the abutment means 23, with the splines 18 longitudinally abutting the upper end of the splines 17 and the threaded connection 3 disengaged. The mandrel length 6c is then in the bore which is defined by the splines 17, free for rotation in said bore. The drill string and the mandrel, together with the joint-section 1, are then rotated relative to the joint-section 2 as previously described, for screwing the joint-sections together at their threaded connection 3.

As above noted, when this threaded connection has been made the joint-section 1 and the mandrel will have been turned relative to the joint-section 2 so that the splines 16—17 are longitudinally alined and the collar 21 is longitudinally alined with the abutment means 23. The flat surfaces 30 of the mandrel length 6c will also have been turned so as to longitudinally aline with the flat surfaces 25. The mandrel is thus adapted for projecting its additional distance into the joint-section 2 as shown at Fig. 1, for operatively engaging the splines 17—18 and projecting the mandrel length 6c into the bore which is defined by the abutment means 23, with the flat surfaces 30 between and operatively engaging the flat surfaces 25 so as to provide additional driving connection between the mandrel and the joint-section 2.

When the mandrel is telescopically expanded relative to the connected joint 1—2, as limited by the collar 21 engaging the abutment means 23, the splines 18 are shifted longitudinally clear of the splines 17 as previously described, and the mandrel length 6c is withdrawn from the bore which is defined by the abutment means 23, for free rotation in the bore which is defined by the splines 17. The parts being then in the position shown at Fig. 2, the mandrel and the joint-section 1 may be rotated relative to the joint-section 2 as previously described, for unscrewing the joint-sections at their threaded connection 3.

As an instance of additional driving connection which may be provided between the mandrel and the joint-section 2, the mandrel may be splined below its collar 21 as shown at 35, with these splines adapted for longitudinal projection through the bore which is defined by the abutment means 23 and adapted to operatively engage cooperating splines 36 which are provided in the bore of the joint-section 2 in spaced relation below the abutment means 23. The splines 35—36 are circumferentially positioned relative to the flat surfaces 24—25, as shown at Figs. 4 and 5.

When assembling, initial insertion of the mandrel into the joint-section 2 until arrested by the splines 18 engaging the upper end of the splines 17, projects the collar 21 and the splines 35 through the bore which is defined by the abutment means 23, and into the bore of the joint-section 2 below the abutment means, with the splines 35 longitudinally clear of the splines 36. The collar 21 and the splines 35 are thus free for rotation in the bore of the joint-section 2, so that the mandrel and the joint-section 1 may be rotated relative to the joint-section 2 as previously described, for screwing the joint-sections together at their threaded connection 3.

As above noted, when this threaded connection has been made the mandrel and the joint-section 1 will have been turned relative to the joint-section 2 for projecting the mandrel its additional distance into the bore of the joint-section 2 so as to operatively engage the splines 17—18 and the flat surfaces 30—25. The splines 35 will also have been turned to position whereby this additional projection of the mandrel into the joint-section 2 operatively engages the splines 35—36 as shown at Fig. 1, thereby providing additional driving connection between the mandrel and the joint-section 2.

When the mandrel is telescopically expanded relative to the connected joint 1—2, the splines 18 are shifted longitudinally clear of the splines 17 and the mandrel length 6c is withdrawn from the bore which is defined by the abutment means 23, as previously described; and the splines 35 are shifted longitudinally clear of the splines 36 for free rotation in the bore of the joint-section 2 below the abutment means 23. The parts being thus in the position shown at Fig. 2, the

mandrel and the joint-section 1 may be rotated relative to the joint-section 2 as previously described, for unscrewing the joint-sections at their threaded connection 3.

When employing the holding means 10—13 (Figs. 1 and 2), the cooperating splines which constitute the driving means are preferably non-tapering splines, with telescopic contraction of the mandrel 6 into the connected joint 1—2 limited by the dogs 10 seating in the recess 13. When employing the holding means 10*a*—13*a* (Fig. 6), the splines 18 preferably have tapering sides as indicated at 18*a*, and the sides of the auxiliary splines 35 (which are not shown at Fig. 6) preferably have similar tapering sides. The cooperating splines in the joint-section 2 have corresponding tapering sides; and the parts are relatively arranged so that telescopic contraction of the mandrel 6*a* into the connected joint 1—2 is limited by wedging engagement of the cooperating tapering splines, thereby insuring snug operative engagement so as to eliminate back lash at the driving connection which is formed by the cooperating splines.

When the joint 1—2 is operatively connected as shown at Fig. 1, it preferably provides for circulation via the bore of the drill string. For this purpose, the coupling 8 is bored as shown at 40 and communicates with a bore 41 of the mandrel 6 or 6*a*; and the bore 41 communicates with a bore 42 of the coupling 4. Telescopic reception of the lower end of the mandrel in the coupling 4 is preferably packed off; and for this purpose packing 43 surrounds the lower end of the mandrel in the bore of the joint-section 2, with the packing longitudinally engaged by the upper end of the coupling 4 for longitudinally compressing the packing against an abutment annulus 44.

I claim:

1. In a releasable joint for a well string, joint-sections adapted for connection and release by relative rotation, a mandrel adapted for telescopic expansion or construction relative to the connected joint-sections, one of proximate lengths of the well string being connected to one of the joint-sections, the other of proximate lengths of the well string being connected to the mandrel, spring-urged means normally retaining the mandrel telescopically contracted relative to the connected joint-sections to yield for telescopic expansion of the mandrel responsive to longitudinal strain on said other of proximate lengths of the well string, and a rotary driving connection between the mandrel and the joint-sections, said driving connection fixing the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and said driving connection releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections.

2. In a releasable joint for a well string, joint-sections adapted for connection and release by relative rotation, a mandrel adapted for telescopic expansion or contraction relative to the connected joint-sections, one of proximate lengths of the well string being connected to one of the joint-sections, the other of proximate lengths of the well string being connected to the mandrel, means for releasably retaining the mandrel telescopically contracted relative to the connected joint-sections, a spline on the mandrel, and splines on the respective joint-sections longitudinally alined when the joint-sections are connected, the respective ends of the spline on the mandrel operatively engaging the longitudinally alined splines of the respective joint-sections when the mandrel is telescopically contracted relative to the connected joint-sections, and the spline on the mandrel being shifted longitudinally clear of the spline of said one of the joint-sections and remaining operatively engaged with the spline of the other joint-section when the mandrel is telescopically expanded relative to the connected joint-sections.

3. In a releasable joint for a well string, joint-sections having a threaded connection, a mandrel adapted for telescopic expansion or contraction relative to the connected joint-sections, one of proximate lengths of the well string having a threaded connection with one of the joint-sections, the other of proximate lengths of the well string having a threaded connection with the mandrel, the threaded connection between the joint-sections being threaded opposite to the other threaded connections of the well string, and a rotary driving connection between the mandrel and the joint-sections, said driving connection fixing the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and said driving connection releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections.

4. In a releasable joint for a well string, joint-sections adapted for connection and release by relative rotation, a mandrel adapted for telescopic expansion or contraction relative to the connected joint-sections, one of proximate lengths of the well string being connected to one of the joint-sections, the other of proximate lengths of the well string being connected to the mandrel, means for releasably retaining the mandrel telescopically contracted relative to the connected joint-sections, abutment means between the mandrel and said one of the joint-sections for limiting telescopic expansion of the mandrel relative to the connected joint-sections, and a rotary driving connection between the mandrel and the joint-sections, said driving connection fixing the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and said driving connection releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections.

5. In a releasable joint for a well string, joint-sections adapted for connection and release by relative rotation, a mandrel in the bore of the joint-sections adapted for telescopic expansion or contraction relative to the connected joint-sections, one of proximate lengths of the well string being connected to one of the joint-sections, the other of proximate lengths of the well string being connected to the mandrel, means for releasably retaining the mandrel telescopically contracted relative to the connected joint-sections, a rotary driving connection between the mandrel and the joint-sections, said driving connection fixing the joint-sections against rotation

relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and said driving connection releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections, abutment means in the bore of said one of the joint-sections, and a collar on the mandrel, the abutment means defining a non-circular bore and the collar being correspondingly non-circular for projection of the collar through the bore of and beyond the abutment means when the mandrel is telescopically contracted and for then longitudinally alining the collar with the abutment means by turning the mandrel to a second position, so that the collar is adapted for longitudinal engagement with the abutment means for limiting telescopic expansion of the mandrel relative to the connected joint-sections.

6. In a releasable joint for a well string, joint-sections adapted for connection and release by relative rotation, a mandrel adapted for telescopic expansion or contraction relative to the connected joint-sections, one of proximate lengths of the well string being connected to one of the joint-sections, the other of proximate lengths of the well string being connected to the mandrel, means for releasably retaining the mandrel telescopically contracted relative to the connected joint-sections, a rotary driving connection between the mandrel and the joint-sections, said driving connection fixing the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and said driving connection releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections, and a second rotary driving connection between the mandrel and said one of the joint-sections, said second driving connection fixing said one of the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and releasing the mandrel for rotation relative to said one of the joint-sections when the mandrel is telescopically expanded relative to the connected joint-sections.

7. In a releasable joint for a well string, joint-sections adapted for connection and release by relative rotation, a mandrel adapted for telescopic expansion or contraction relative to the connected joint-sections, one of proximate lengths of the well string being connected to one of the joint-sections, the other of proximate lengths of the well string being connected to the mandrel, means for releasably retaining the mandrel telescopically contracted relative to the connected joint-sections, abutment means between the mandrel and said one of the joint-sections for limiting telescopic expansion of the mandrel relative to the connected joint-sections, a rotary driving connection between the mandrel and the joint-sections, said driving connection fixing the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and said driving connection releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections, and a second rotary driving connection between the mandrel and said one of the joint-sections, said second driving connection fixing said one of the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections.

8. In a releasable joint for a well string, joint-sections adapted for connection and release by relative rotation, a mandrel adapted for telescopic expansion or contraction relative to the connected joint-sections, one of proximate lengths of the well string being connected to one of the joint-sections, the other of proximate lengths of the well string being connected to the mandrel, a spring-urged dog on the other of the joint-sections, said dog normally engaging the mandrel for retaining the mandrel telescopically contracted and adapted for yielding of its spring for releasing the dog responsive to longitudinal strain on said other of the proximate lengths of the well string, and a rotary driving connection between the mandrel and the joint-sections, said driving connection fixing the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and said driving connection releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections.

9. In a releasable joint for a well string, joint-sections adapted for connection and release by relative rotation, a mandrel adapted for telescopic expansion or contraction relative to the connected joint-sections, one of proximate lengths of the well string being connected to one of the joint-sections, the other of proximate lengths of the well string being connected to the mandrel, a spring urging telescopic contraction of the mandrel and adapted to yield for telescopic expansion of the mandrel responsive to longitudinal strain on said other of proximate lengths of the well string, and a rotary driving connection between the mandrel and the joint-sections, said driving connection providing a longitudinally wedging engagement and fixing the joint-sections against rotation relative to the mandrel when the latter is telescopically contracted relative to the connected joint-sections, and said driving connection releasing said wedging engagement and releasing the mandrel for rotation relative to said one of the joint-sections and maintaining the other joint-section fixed against rotation relative to the mandrel when the latter is telescopically expanded relative to the connected joint-sections.

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