

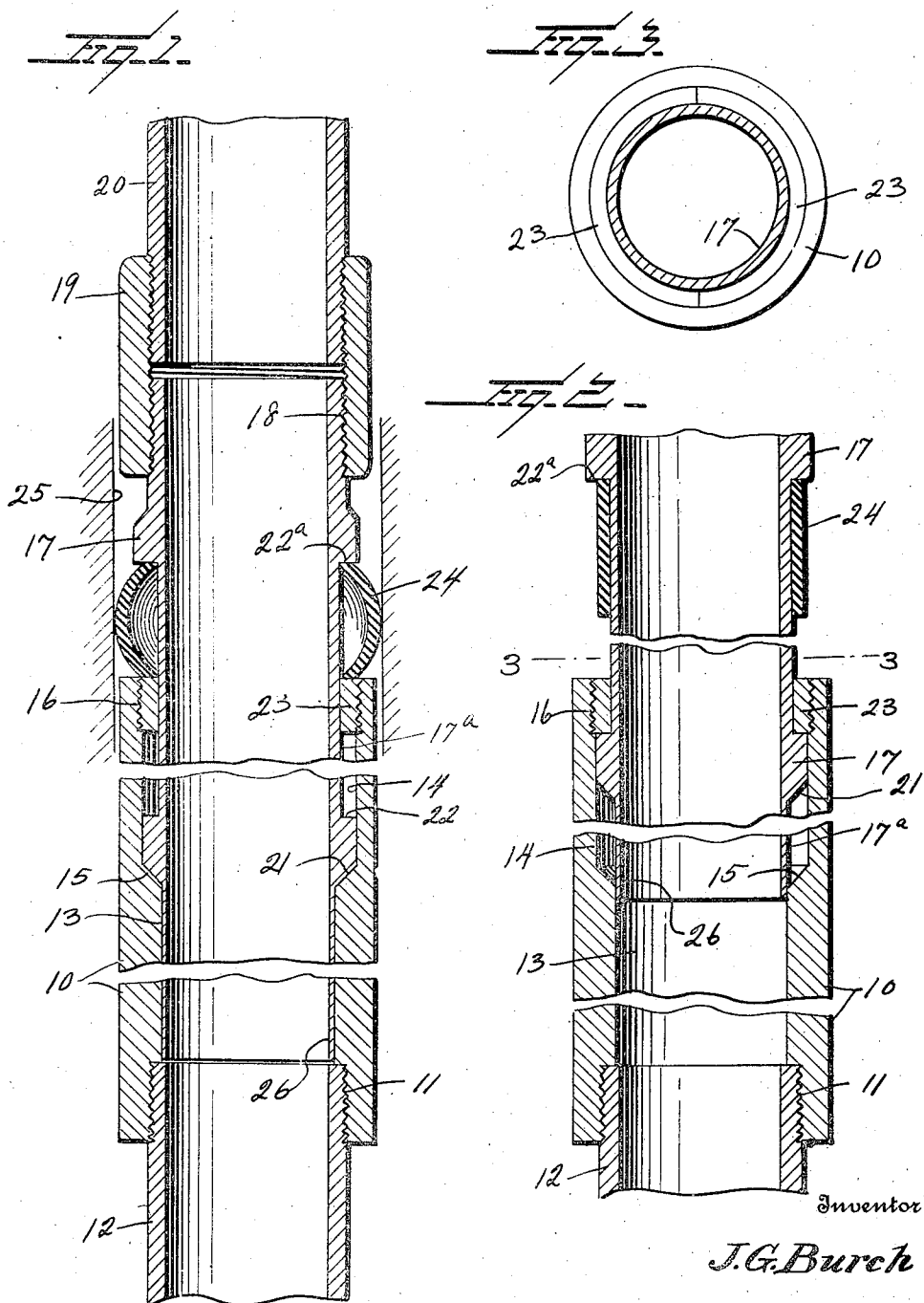
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JAR COUPLING FOR OIL WELL CASINGS

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JAR COUPLING FOR OIL-WELL CASINGS.

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To all whom it may concern:

Be it known that I, JULIUS GORDON BURCH, a citizen of the United States, residing at Bartlesville, in the county of Washington and State of Oklahoma, have invented certain new and useful Improvements in Jar Couplings for Oil-Well Casings, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to jar couplings for use in coupling sections of well casings.

An important object of the invention is to provide a device for connecting the lower length of a string or casing pipe to the remainder of the string so that the upper section of the string is movable through certain limits with relation to the lower section in order that the upper section of the pipe, which is usually readily movable, may be shifted independently of the lower section.

A further object is to provide in combination with such a movable coupling, a pair of opposed shoulders one of which is fixed in relation to the lower section of the casing, the other of the shoulders being fixed in relation to the upper section of the casing, so that when the upper section is shifted a predetermined distance these shoulders engage. By this engagement a jar may be applied to the lower section to loosen the same from accumulated debris at the bottom of the bore.

A further object of the invention is to provide a coupling of the character above set forth in which the continuity of the inner bore of the casing is not materially affected in order that an under reamer may be inserted within the casing and pass there-through without obstruction.

40 A further object of the invention is to provide a coupling of this character embodying a valve and valve seat shouldered construction preventing the entrance of water to the interior of the casing, and further embodying an expansible gasket member which when the coupling sections are in the position which will be assumed when the casing is standing in the well, engages the wall of the bore or supplemental casing in which the casing proper is disposed to prevent downward passage of water from points above the coupling.

Other objects and advantages of the invention will become apparent throughout the course of the following description.

In the accompanying drawings wherein

for the purpose of illustration is shown a preferred embodiment of my invention, and wherein like reference characters designate like parts throughout:

Figure 1 is a longitudinal sectional view taken through a well casing having the sections thereof connected by my coupling and showing the coupling in the lowered position;

Figure 2 is a similar section showing the coupling sections in the extended position, and

Figure 3 is a section on the line 3—3 of Figure 2.

Referring now more particularly to the drawings, the numeral 10 indicates an outer sleeve interiorly screw-threaded at its lower end for the reception of the screw-threaded upper end of the lower section 12 of a well casing. The inner bore of the sleeve 10 is of slightly greater diameter than the interior bore of the casing 12, as indicated at 13. At a point spaced from the lower end of the sleeve 10, the bore thereof is enlarged, as indicated at 14, this enlargement of the bore forming an annular shoulder 15, the purpose of which will presently appear. The upper end of the sleeve is interiorly screw-threaded, as indicated at 16.

The numeral 17 indicates an inner sleeve which is reduced and exteriorly screw-threaded at its upper extremity, as at 18, for coaction with the screw-threads of a pipe collar 19 whereby it may be connected to the lower end of the upper section 20 of the well casing.

The sleeve 17 is reduced, as indicated at 17^a, and is provided at its lower extremity with an enlargement having a ground face 21 forming a tight joint with the shoulder 15 formed upon the interior of the sleeve 10, the outer face of the enlargement having a sliding engagement with the interior of the sleeve 10 in the enlarged bore 14 thereof. The upper face of the enlargement forms a shoulder 22 which opposes a similar shoulder 22^a formed by the reduction of the sleeve 17.

The enlargement forming the face 21 and shoulder 22 is inserted within the bore 14 of the sleeve, and an exteriorly threaded split collar 23 assembled about the reduced portion 17^a of the sleeve 17 and engaged with the screw-threads of the upper end of the sleeve 10 forming an enlargement of the sleeve, the upper face of the split collar and the upper face of the sleeve 10 being prefer-

ably flush. About the reduced portion 17^a above the split collar is arranged a gasket 24 formed of a sleeve of rubber or similar material normally closely fitting the reduced portion 17^a of the sleeve 17. When the device is employed in the casing and the weight of the upper section of the casing released to bring the weight thereof to bear upon the inner sleeve, this sleeve moving downwardly within the outer sleeve causes the gasket 24 to be engaged between the shoulder 22^a and the upper surface of the split ring 23 and to be expanded so that it engages the wall 25 of the bore of the well, or of the supplemental casing which may be employed, effectually sealing the bore at this point to prevent downward passage of water and the like.

As is well known to those familiar with the art, the lower section of a well casing when left standing for a considerable period of time becomes very firmly imbedded in the bore by the falling particles of earth and a collection of moisture and is very difficult to move. This packing or imbedding does not usually extend above the lower section and consequently the upper sections of the pipe are very easily removed. In employing my invention, if it is found that the lower section is not readily moved when the shoulder 22 comes into engagement with the under face of the split collar, the upper section of pipe may be lowered and reciprocated so as to bring this shoulder 22 into stroke engagement with the split collar, exercising upon the lower section a hammering effect in an upward direction so that the same may be loosened from its bed. In order that the under reamers usually employed in the drilling of wells, and which embody expansible jaws, may not have the jaws thereof expand within the coupling and so limit the downward move of the under reamer, I provide upon the lower end of the inner sleeve 17 a depending skirt 26 slidably engaging the side walls of the lower portion of the outer sleeve 10. This skirt is of sufficient length to permit its bridging the distance between the lower end of the inner sleeve 17 and the upper end of the small bore 13 of the outer sleeve when the inner sleeve is in elevated position. The skirt 26 will be made of very thin material, about one-eighth inch, and will not therefore allow of sufficient expansion of the under reamer to prevent the downward movement of the under reamer.

From the foregoing it is believed to be obvious that I have constructed a jar coupling for use in connection with oil well casings which is particularly well adapted for the use for which it is intended because of the simplicity of the construction thereof and because of the fact that it assists in preventing the suction of débris about the

lower end of the casing and permits of exercising a hammering effect upon the lower section of the casing to remove the same when the lower section is found to be too firmly imbedded for removal by a straight pull.

It will furthermore be obvious that the construction as hereinbefore set forth is capable of some change in modification without materially departing from the spirit of my invention, and I accordingly do not limit myself to the specific structure hereinbefore set forth except as hereinafter claimed.

What I claim is:

1. A well casing jar coupling comprising a pair of telescoping sleeves each adapted for connection with a casing section, one of said sleeves embodying a pair of spaced shoulders, an enlargement formed on the other of said sleeves and freely operable intermediate said shoulders and engageable with either thereof and means carried by one of said sleeves and coacting with the other of said sleeves for maintaining continuity of the casing bore during relative movement of the sleeves.
2. A well casing jar coupling comprising a pair of telescoping sleeves provided with opposed shoulders, and means carried by one of the sleeves for preserving continuity of the bore during relative movement of the sleeves.
3. A well casing jar coupling comprising a pair of telescoping sleeves provided with opposed shoulders, and a skirt carried by one of said sleeves and coacting with the other sleeve to preserve continuity of the bore during relative reciprocation of the sleeve sections.
4. A well casing jar coupling comprising an outer sleeve adapted at one end for engagement with a casing section, the bore of said sleeve being enlarged at a point spaced from said end to provide a shoulder, an inner sleeve having an enlargement slidably engaging in the enlarged bore of the outer sleeve, and a collar secured to said outer sleeve and slidably engaging the periphery of the inner sleeve, the collar and shoulder of said outer sleeve being spaced apart a distance greater than the length of said enlargement, and a skirt carried by one of said sleeves and bridging the gap between the enlargement and shoulder when said enlargement is in engagement with said collar.
5. In a well casing jar coupling, an outer sleeve adapted at one end for engagement with a casing section, the bore of said sleeve being enlarged at a point spaced from said end to provide a shoulder, an inner sleeve adapted at one end for engagement with a casing and having an enlargement slidably engaging in the enlarged bore of the outer

sleeve, a collar secured to said outer sleeve and slidably engaging the periphery of the inner sleeve, the collar and shoulder of said outer sleeve being spaced apart a distance
5 greater than the length of said enlargement, and a skirt formed on said inner sleeve and slidably engaging the main bore of said outer sleeve, said skirt bridging the gap between said enlargement and said shoulder
10 when said enlargement is in engagement with said collar.

6. A well casing comprising upper and

lower sections, and a connection between the sections permitting limited relative shifting movement of the sections whereby said
15 upper section may be reciprocated to impart a jar to said lower section to free the same from collected matter in the bore of a well, said connection embodying means
20 preserving the continuity of the bore of the casing.

In testimony whereof I hereunto affix my signature.

JULIUS GORDON BURCH.