

May 1, 1951

J. W. BONNER
CEMENT RETAINER AND BRIDGING PLUG FOR A
WELL WALL AND A SETTING TOOL THEREFOR

2,551,240

Filed July 7, 1950

2 Sheets-Sheet 1

Fig. 1.

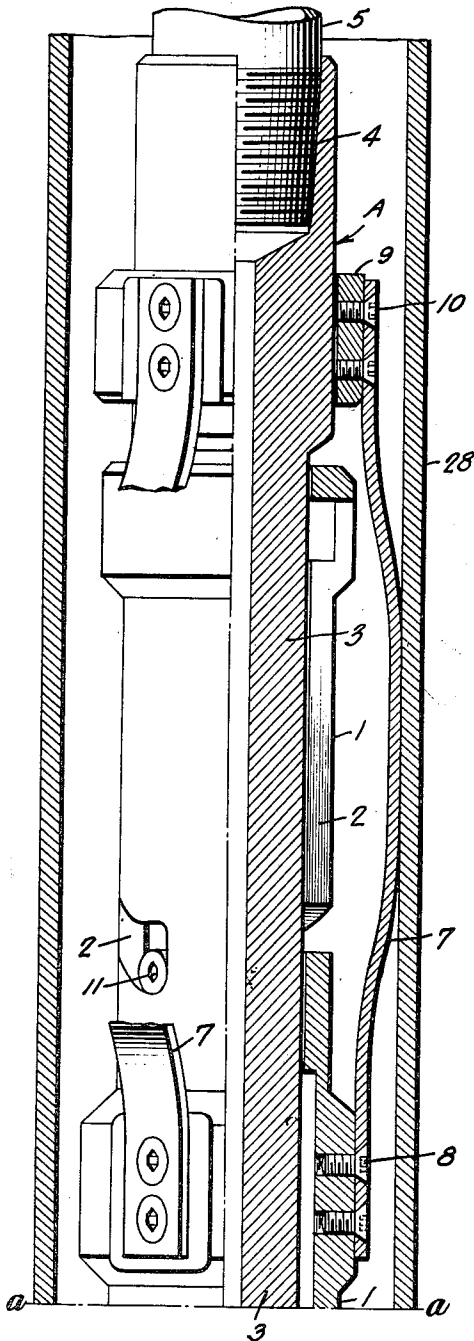
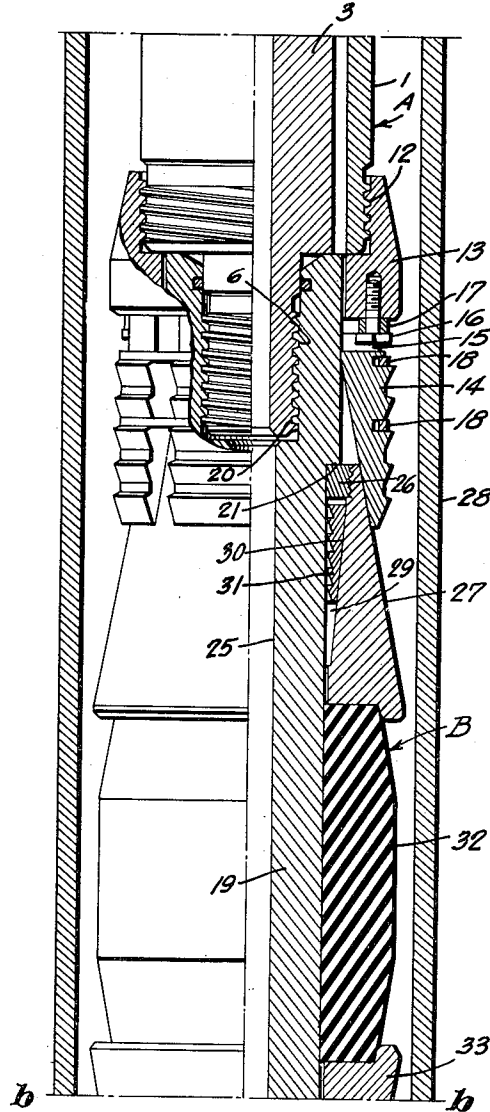


Fig. 1a.



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2 Sheets-Sheet 2

Fig. 1b.

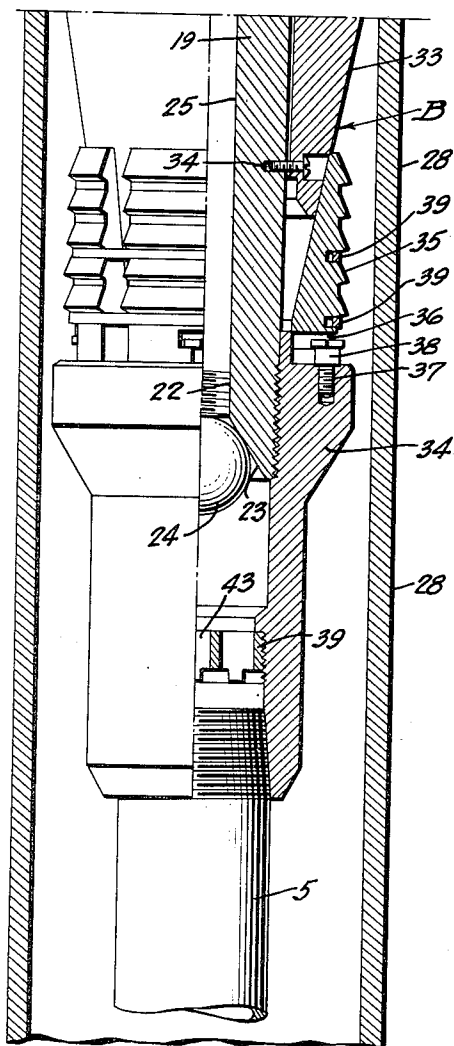


Fig. 2.

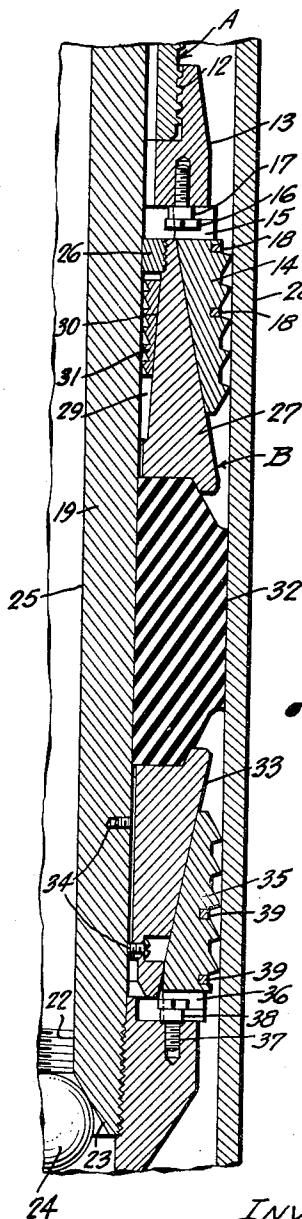


Fig. 3.

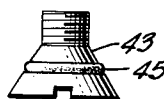
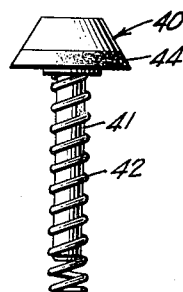


Fig. 4.



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CEMENT RETAINER AND BRIDGING PLUG
FOR A WELL WALL AND A SETTING
TOOL THEREFOR

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Application July 7, 1950, Serial No. 172,584

17 Claims. (Cl. 166—12)

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This invention relates to a cement retainer and bridging plug for a well wall such as a well casing or the like, and a setting tool therefor, and one of the objects of the invention is to provide such a device which is entirely mechanically operated and does not depend upon fluid pressure for its operation.

A further object of the invention is to provide a device of the aforementioned type in which the slips which anchor the bridging plug are prevented in a positive manner from setting until it is desired to actually set the device in the well.

A further object of the invention is to provide an upper slip arrangement (which prevents the bridging plug from moving upwardly in the well bore) which is a part of the setting tool until the bridging plug is completely set, at which time such upper slip arrangement becomes a part of the bridging plug itself.

Other and further objects of the invention will become apparent as the description proceeds, reference being made to the accompanying drawings forming a part of the present disclosure, wherein:

Figs. 1, 1a, and 1b are vertical sectional views, parts being shown in side elevation, illustrating a cement retainer and bridging plug and a setting tool therefor constructed in accordance with the teaching of my invention;

Fig. 2 is a fragmentary vertical section view through the bridging plug showing the same in set position and before the setting tool is separated therefrom; and

Figs. 3 and 4 are side elevational views of modified forms of valves which may be used in connection with the bridging plug.

Referring now in detail to the drawings wherein for purposes for illustrating my invention the preferred embodiment thereof is illustrated, there is shown a setting tool generally designated by the letter A and a cement retainer and bridging plug generally indicated by the letter B.

The setting tool A comprises a tubular housing 1 provided with preferably two J-slots for a purpose to be later described. Movably mounted within the housing 1 is a tubular mandrel 3 provided at its upper end with an internal thread 4 adapted to receive the threaded end of a drill pipe or tubing string 5. At its lower end the mandrel 3 is inwardly offset or reduced in diameter and provided with an external thread 6 which is directed oppositely to the thread 4. Generally, the thread 4 will be a right-hand thread and the thread 6 a left-hand thread.

Drag spring means 7 are secured to the hous-

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ing 2 at one of the ends thereof by means of screws 8, the opposite ends of the drag springs 7 being secured to a ring 9 by means of screws 10. The ring 9 loosely surrounds the mandrel 3 and is slidable thereon in order to permit expansion and contraction of the springs 7.

Pins 11 are secured to the mandrel 3 and such pins project into and ride in the J-slots 2 of the housing 1 to provide for limited movement of the mandrel 3 relative to the housing 2.

The lower end of the housing 1 is provided with an external thread 12 having the same direction as the thread 6 which in the present case is a left-hand thread.

A slip retainer ring 13 is threadably releasably secured to the thread 12 of the housing 1 and a plurality of upper wickered-slips 14 is radially slidably mounted on the ring 13. The slips 14 at their upper ends are provided with inverted T-slots 15 and headed or cap screws 16 ride in such slots to so mount the slips. The screws 16 are threaded into apertures in the ring 13 and preferably are spaced from such ring by means of shims 17. Resilient split ring members 18 normally urge the slips 14 into their inoperative or inner position.

The cement retainer and bridging plug comprises a tubular mandrel 19 having an internal left-hand thread 20 at its upper end for engagement with the threaded lower end 6 of the mandrel 3 which normally projects below the housing 1. The mandrel 19 is inwardly offset near its upper end to provide a shoulder 21 and is internally threaded adjacent its lower end as indicated at 22, and provided with a frusto-conical seat 23. A back pressure ball valve 24 may be utilized to close the passage 25 extending axially through the mandrel 19.

A ring member 26 surrounds the mandrel 19 adjacent and below the shoulder 21 and threadably connected to the ring member 26 is a circular wedge-shaped or frusto-conical body 27 which functions to actuate the upper slips 14 outwardly into engagement with the surrounding well casing or wall 28. The shoulder 21 thus limits the upward movement of the body 27 relative to the mandrel 19.

The frusto-conical member 27 is provided with a wedge-shaped recess 29 in which is mounted a wedge-shaped member 30 provided with inwardly directed wickers 31 to engage the wall of the mandrel 19 to prevent downward movement of the mandrel 19 relative to the body 27. This wedge-shaped body is essential when operating under high pressure conditions in order to pre-

vent the mandrel from being driven downwardly into the well.

A rubber or neoprene packer element 32 surrounds the mandrel 19 subjacent the body 27 and immediately below the packer 32 a lower circular wedge-shaped or frusto-conical member 33 is provided. The outer surface of the frusto-conical body 33 is inclined upwardly and inwardly whereas the frusto-conical body 33 is inclined oppositely thereto or downwardly and inwardly. A shear screw 34 connects the body 33 to the mandrel 19. It will be understood, of course, that the upper and lower frusto-conical bodies 27 and 33 as well as the packer element 32 may be moved on or relative to the mandrel 19.

The lower end of the mandrel 19 is externally threaded to receive a lower slip retainer ring and tail pipe cage 34. A plurality of lower wickered-slips 35 having T-shaped slots 36 are radially slidably mounted on the ring 34 by means of cap screws 37 and shims 38 in the manner described above in connection with the upper slips 14. Resilient split ring members 29 normally urge the slip 35 to their innermost or inoperative position.

The lower end of the tail pipe cage 34 is threaded to receive the lower portion of the tubing string or drill pipe 5 and an open framework 39 may be threaded into the lower end of the cage 34. The framework 39 functions as a retainer for the back pressure valve 24.

Instead of the back pressure ball valve 24 a back pressure valve 40 such as illustrated in Fig. 4 may be utilized. This valve has a valve stem 41 surrounded by a coil spring 42 and the stem 41 may be slidably mounted in one of the apertures 43 of the open framework 39 if desired.

Alternatively, a positive plug 43 such as illustrated in Fig. 3 may be threaded into the threads 22 of the mandrel 19 if desired.

As illustrated, the valve 40 may have a resilient sealing means 44 and the positive plug 43 may have a resilient sealing means 45.

In operation the setting tool A and bridging plug B are connected in the string of pipe as illustrated in Figs. 1, 1a and 1b and lowered into the well to any desired position. Since the ring 13 supporting the slips 14 is threadedly secured to the housing 1 of the setting tool, if any obstructions are engaged by the wickers of the slips when passing into or out of the well, such slips cannot be urged outwardly into contact with the well wall. Similarly the slip ring 34 due to its threaded engagement with the mandrel 19 will prevent the slips 35 from setting when such obstructions are encountered.

After the desired position is reached in the well bore the tubing string 5 is given about one quarter turn in a clockwise direction and an upward lift is applied. The drag springs 7 hold the housing 1 against movement during this rotation and upward lift and the mandrel 3 and the mandrel 19 threaded thereto are lifted upwardly. The first part of the upward movement of these mandrels is accompanied by an upward movement of the body 27, the packer 32, and the body 33 due to the shear screw 34 connecting the lower body 33 to the mandrel 19. Such first part of the upward movement of the mandrels causes the frusto-conical body 27 to force the slips 14 radially outwardly into engagement with the casing or wall 28. Further upward movement causes compression of the packer element 32 resulting ultimately in the shearing of the screw 34 subsequent to which the further upward movement

of the mandrels causes the lower slips 35 to be moved radially outwardly into engagement with the casing or wall 28.

The various elements of the bridging plug and setting tool then assume the relative positions as illustrated in Fig. 2. After the tool has thus been set the drill pipe or tubing string 5 is given several clockwise revolutions from the top of the well and this results in a disconnection of the slip retainer ring 13 from the housing 1 and a separation of the mandrel 3 from the mandrel 19 at the threads 6.

In order to remove the bridging plug from the well after the cementing operation is completed, it is necessary to mill or grind up the same and hence all parts of the device must be made of a drillable or millable material. Alternatively, if made with magnesium, the device may be destroyed by means of acid.

From the foregoing it will be obvious that I have provided a device which is not subject to premature accidental setting before reaching the desired point in the well casing or well wall, and this primarily for the reason that the upper slips are a part of the setting tool until the bridging plug is set, after which the upper slips become a part of the bridging plug itself. Furthermore, the device is operated entirely by positive mechanical action and is not dependent upon less reliable fluid pressure means to operate it.

Obvious modifications may occur to those skilled in the art and it is to be understood that it is my intention to cover all such modifications as come within the scope of the following claims:

I claim:

1. A cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing having J-slot means therein, drag spacing means secured to said housing and adapted to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having an internal thread adapted to receive a string of pipe, the lower end of said mandrel being inwardly offset and provided with an external thread, the lower end of said housing having an external thread, said external threads being directed oppositely to said internal thread, a ring member in threaded engagement with the external thread on said housing, upper slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall; said retainer and plug comprising a tubular mandrel threadedly connected at its upper end to the lower threaded end of said first mandrel and having an axially extending passage therethrough, valve means for closing the lower end of said passage, a packer surrounding said last recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said upper slips, means limiting the upward movement of said upper body relative to said last-recited mandrel and shear means connecting said lower body to said last-recited mandrel, lower slips secured to said last-recited mandrel for radially slidable movement outwardly into engagement with such surrounding well wall, said

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lower body actuating said lower slips, and a locking wedge between said upper body and said mandrel for preventing downward movement of said mandrel relative to said upper body.

2. A cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing having J-slot means therein, drag spring means secured to said housing and adapted to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having an internal thread adapted to receive a string of pipe, the lower end of said mandrel being provided with an external thread, the lower end of said housing having an external thread, said external threads being directed oppositely to said internal thread, a ring member in threaded engagement with the external thread on said housing, upper slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall; said retainer and plug comprising a tubular mandrel threadedly connected at its upper end to the lower threaded end of said first mandrel and having an axially extending passage therethrough, a packer surrounding said last recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said upper slips, means limiting the upward movement of said upper body relative to said last-recited mandrel, lower slips secured to said last-recited mandrel for radially slidable movement outwardly into engagement with such surrounding well wall, said lower body actuating said lower slips, and a locking wedge between said upper body and said mandrel for preventing downward movement of said mandrel relative to said upper body.

3. A cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing having J-slot means therein, drag spring means secured to said housing and adapted to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having an internal thread adapted to receive a string of pipe, the lower end of said mandrel being provided with an external thread, the lower end of said housing having an external thread, said external threads being directed oppositely to said internal thread, a ring member in threaded engagement with the external thread on said housing, upper slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall; said retainer and plug comprising a tubular mandrel threadedly connected at its upper end to the lower threaded end of said first mandrel and having an axially extending passage therethrough, a packer surrounding said last recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said upper slips, means limiting the upward movement of said upper body relative to said last-recited mandrel, and lower slips secured

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to said last-recited mandrel for radially slidable movement outwardly into engagement with such surrounding well wall, said lower body actuating said lower slips.

4. A cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing having J-slot means therein, drag means secured to said housing and resiliently urged to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel provided with a thread, the lower end of said housing having a thread, said last two threads being directed oppositely to said first thread, a ring member in threaded engagement with the thread on said housing, upper slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall; said retainer and plug comprising a tubular mandrel threadedly connected at its upper end to the lower threaded end of said first mandrel and having an axially extending passage therethrough, a packer surrounding said last recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said upper slips, means limiting the upward movement of said upper body relative to said last-recited mandrel and shear means connecting said lower body to said last-recited mandrel, lower slips secured to said last-recited mandrel for radially slidable movement outwardly into engagement with such surrounding well wall, said lower body actuating said lower slips, and a locking wedge between said upper body and said mandrel for preventing downward movement of said mandrel relative to said upper body.

5. A cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing having J-slot means therein, drag means secured to said housing and resiliently urged to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel being provided with a thread, the lower end of said housing having a thread, said last two threads being directed oppositely to said first thread, a ring member in threaded engagement with the thread on said housing, upper slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall; said retainer and plug comprising a tubular mandrel threadedly connected at its upper end to the lower threaded end of said first mandrel and having an axially extending passage therethrough, a packer surrounding said last recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said upper slips, means limiting the

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upward movement of said upper body relative to said last-recited mandrel and shear means connecting said lower body to said last recited mandrel, lower slips secured to said last-recited mandrel for radially slidable movement outwardly into engagement with such surrounding well wall, said lower body actuating said lower slips.

6. A cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing having J-slot means therein, drag means secured to said housing and resiliently urged to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel being provided with a thread, the lower end of said housing having a thread, said last two threads being directed oppositely to said first thread, a ring member in threaded engagement with the thread on said housing, upper slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall; said retainer and plug comprising a tubular mandrel threadedly connected at its upper end to the lower threaded end of said first mandrel and having an axially extending passage therethrough, a packer surrounding said last recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said upper slips, means limiting the upward movement of said upper body relative to said last-recited mandrel, and lower slips secured to said last-recited mandrel for radially slidable movement outwardly into engagement with such surrounding well wall, said lower body actuating said lower slips.

7. A cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing, drag means secured to said housing and resiliently urged to engage a surrounding well wall, a tubular mandrel movably mounted for axial movement within said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel being inwardly offset and provided with an external thread, the lower end of said housing having an external thread, said external threads being directed oppositely to said first thread, a ring member in threaded engagement with the external thread on said housing, upper slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall; said retainer and plug comprising a tubular mandrel threadedly connected at its upper end to the lower threaded end of said first mandrel and having an axially extending passage therethrough, valve means for closing the lower end of said passage, a packer surrounding said last recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said upper slips, means limiting the upward movement of said upper body relative to said last-recited mandrel and shear means connecting said lower body to said

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last-recited mandrel, lower slips secured to said last-recited mandrel for radially slidable movement outwardly into engagement with such surrounding well wall, said lower body actuating said lower slips, and a locking wedge between said upper body and said mandrel for preventing downward movement of said mandrel relative to said upper body.

8. A cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing, drag means secured to said housing and resiliently urged to engage a surrounding well wall, a tubular mandrel movably mounted for axial movement within said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel being provided with a thread, the lower end of said housing having a thread, said last two threads being directed oppositely to said first thread, a ring member in threaded engagement with the thread on said housing, upper slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall; said retainer and plug comprising a tubular mandrel threadedly connected at its upper end to the lower threaded end of said first mandrel and having an axially extending passage therethrough, a packer surrounding said last recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said upper slips, means limiting the upward movement of said upper body relative to said last-recited mandrel and shear means connecting said lower body to said last-recited mandrel, lower slips secured to said last-recited mandrel for radially slidable movement outwardly into engagement with such surrounding well wall, said lower body actuating said lower slips.

9. A setting tool for a cement retainer and bridging plug for a well wall comprising a tubular housing having J-slot means therein, drag spring means secured to said housing and adapted to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having an internal thread adapted to receive a string of pipe, the lower end of said mandrel being inwardly offset and provided with an external thread, the lower end of said housing having an external thread, said external threads being directed oppositely to said internal thread, a ring member in threaded engagement with the external thread on said housing, and slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall.

10. A setting tool for a cement retainer and bridging plug for a well wall comprising a tubular housing having J-slot means therein, drag spring means secured to said housing and adapted to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, and a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having internal threads adapted to receive a string of pipe, the lower end of said mandrel being inwardly offset and provided with an exter-

nal thread, said external threads being directed oppositely to said internal thread.

11. A setting tool for a cement retainer and bridging plug for a well wall comprising a tubular housing having J-slot means therein, drag means secured to said housing and resiliently urged to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, a pin on said mandrel riding in said J-slot whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel being provided with a thread, the lower end of said housing having a thread, said last two threads being directed oppositely to said first thread, a ring member in threaded engagement with the thread on said housing, and slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall.

12. A setting tool for a cement retainer and bridging plug for a well wall comprising a tubular housing, drag means secured to said housing and resiliently urged to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel being inwardly offset and provided with an external thread, the lower end of said housing having an external thread, said external threads being directed oppositely to said first thread, a ring member in threaded engagement with the external thread on said housing, and slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall.

13. A setting tool for a cement retainer and bridging plug for a well wall comprising a tubular housing, drag means secured to said housing and resiliently urged to engage a surrounding well wall, a tubular mandrel movably mounted within said housing, whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel being provided with a thread, the lower end of said housing having a thread, said last two threads being directed oppositely to said first thread, a ring member in threaded engagement with the external thread on said housing, and slips secured to said ring member for radially slidable movement outwardly into engagement with such surrounding well wall.

14. A setting tool for a cement retainer and bridging plug for a well wall comprising a tubular housing, drag means secured to said housing and resiliently urged to engage a surrounding well wall, and a tubular mandrel movably mounted within said housing whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel provided with a thread, the lower end of said housing having a thread, said last two threads being directed oppositely to said first thread.

15. The combination of a cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing, drag means secured to said housing and resiliently urged to engage a surrounding well wall, and a tubular mandrel movably mounted within said housing whereby said mandrel may be moved upwardly relative to said housing, the

upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel provided with a thread, a plurality of slips, means supporting said slips for radial movement outwardly into engagement with such surrounding well wall, means removably securing said slip supporting means to the lower end of said housing, said last thread being directed oppositely to said first thread; said cement retainer and bridging plug comprising a tubular mandrel threadedly connected at its upper end to said first mandrel and having an axially extending passage therethrough, a packer surrounding said last-recited mandrel and arranged to frictionally engage such surrounding well wall, upper and lower substantially frusto-conical bodies surrounding said last-recited mandrel above and below said packer respectively, said upper body actuating said plurality of slips, means limiting the upward movement of said upper body relative to said last-recited mandrel and shear means connecting said lower body to said last-recited mandrel, and slips secured to said last-recited mandrel for radial movement outwardly into engagement with such surrounding well wall, said lower body actuating said last-recited slips.

16. The combination of a cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing, drag means secured to said housing and resiliently urged to engage a surrounding well wall, and a tubular mandrel movably mounted within said housing whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel provided with a thread, a plurality of slips, means supporting said slips for radial movement outwardly into engagement with such surrounding well wall, means actuated by said mandrel releasably securing said slip supporting means to the lower end of said housing, said last thread being directed oppositely to said first thread, said cement retainer and bridging plug comprising a tubular mandrel threadedly connected at its upper end to said first mandrel and having an axially extending passage therethrough, a packer surrounding said last-recited mandrel and arranged to frictionally engage such surrounding well wall, a substantially frusto-conical body surrounding said last-recited mandrel above said packer, and means limiting the upward movement of said body relative to said last-recited mandrel, said body actuating said slips.

17. The combination of a cement retainer and bridging plug for a well wall and a setting tool therefor; said setting tool comprising a tubular housing, drag means secured to said housing and resiliently urged to engage a surrounding well wall, and a tubular mandrel movably mounted within said housing whereby said mandrel may be moved upwardly relative to said housing, the upper end of said mandrel having a thread adapted to receive a string of pipe, the lower end of said mandrel provided with a thread, a plurality of slips, means supporting said slips for radial movement outwardly into engagement with such surrounding well wall, means actuated by said mandrel releasably securing said slip supporting means to the lower end of said housing, said last thread being directed oppositely to said first thread, said cement retainer and bridging plug comprising a tubular mandrel threadedly connected at its upper end to said first mandrel

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and having an axially extending passage there-through, a substantially frusto-conical body surrounding said last-recited mandrel, and means limiting the movement of said body relative to said last-recited mandrel, said body actuating said slips.

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