

March 27, 1956

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2,739,653

WELL TOOL AND ANCHORING MEANS THEREFOR

Filed June 5, 1950

2 Sheets-Sheet 1

Fig. 1.

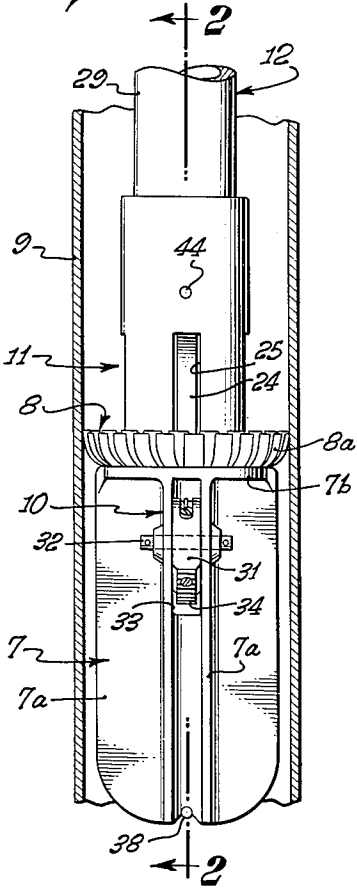


Fig. 2.

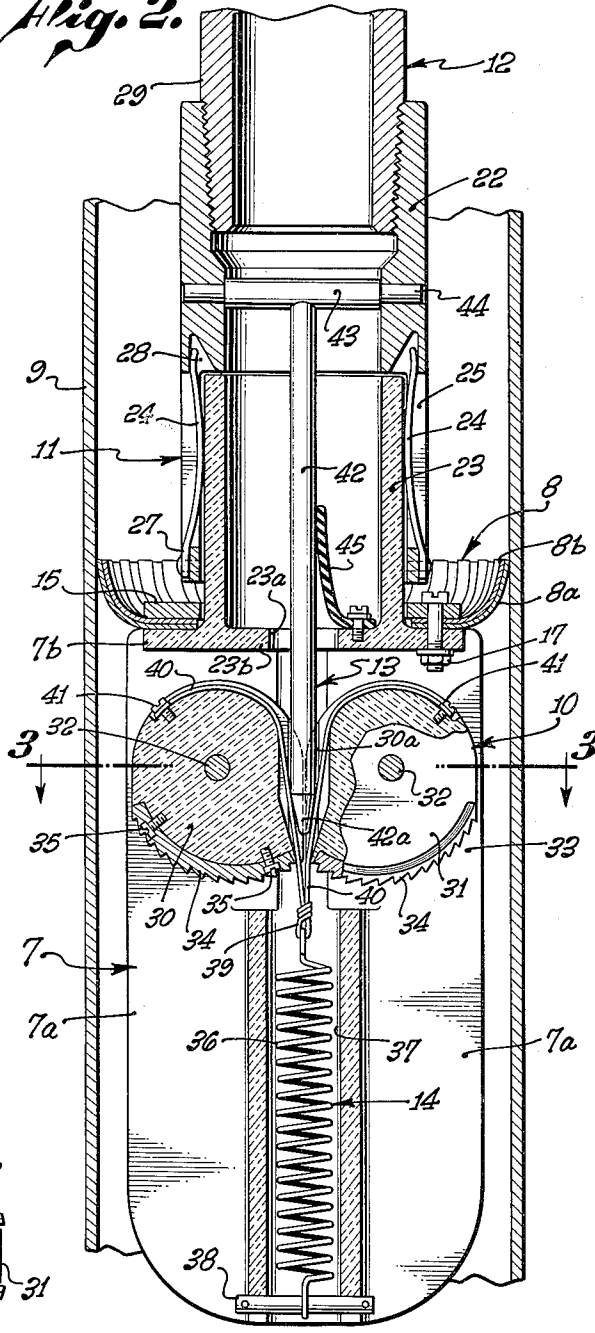
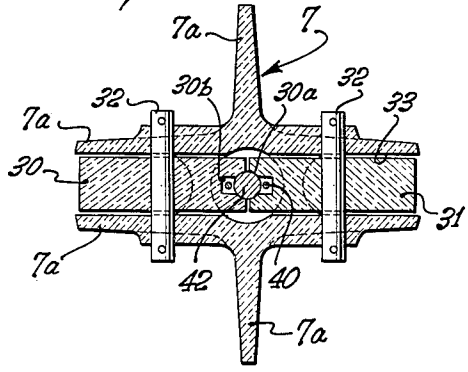


Fig. 3.



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2 Sheets-Sheet 2

Fig. 4.

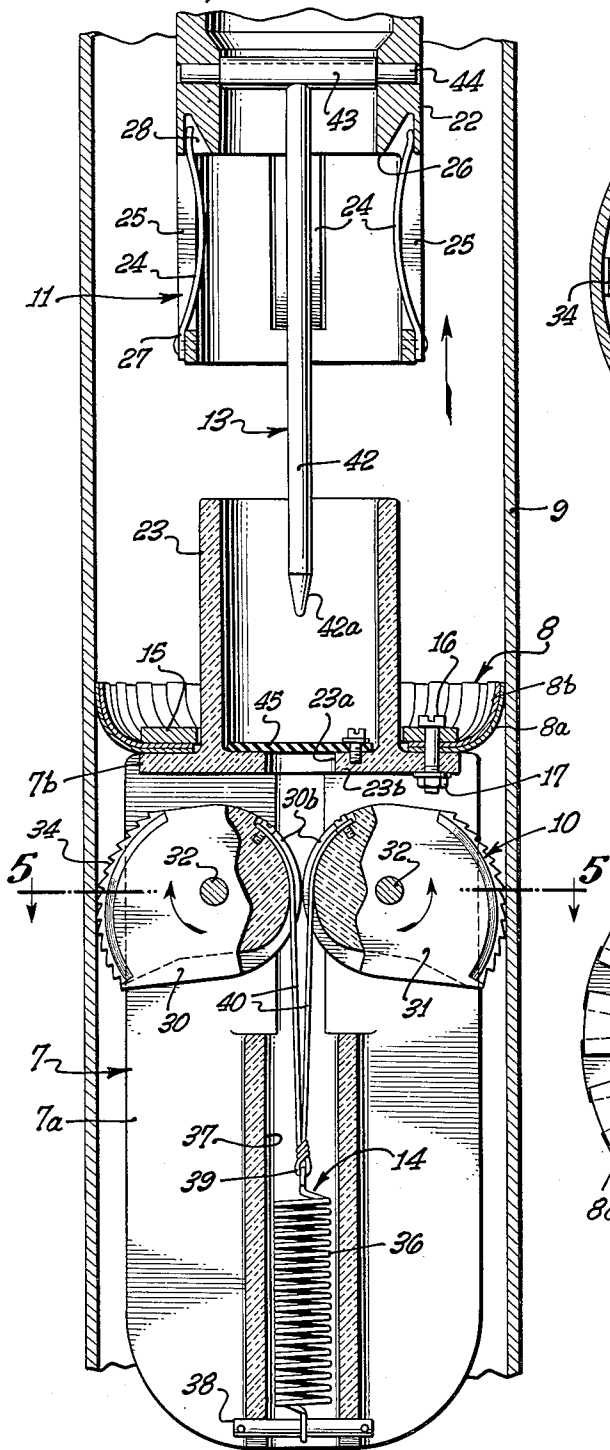


Fig. 5.

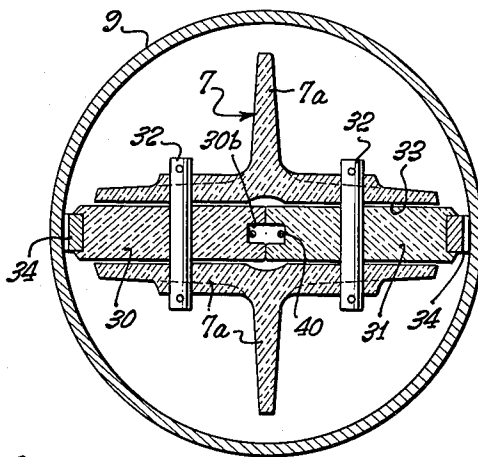
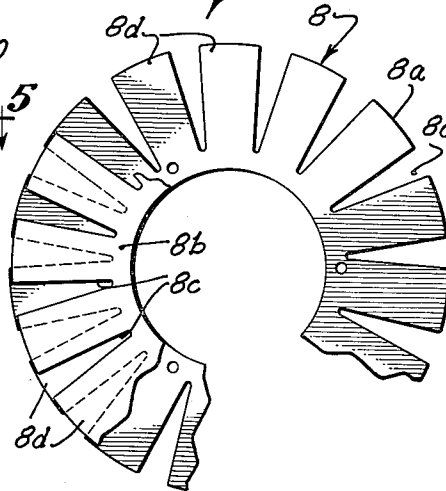


Fig. 6.



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WELL TOOL AND ANCHORING MEANS THEREFOR

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Application June 5, 1950, Serial No. 166,127

22 Claims. (Cl. 166—136)

This invention relates to well tools which are lowered into oil wells for effecting or permitting of operations or treatments for improving or otherwise controlling production of the wells, and to means for anchoring such tools, particularly bridge plugs and the like, at various locations in the well bores according to the operation or treatment desired.

It is an object of this invention to provide an improved tool of the character described, incorporating said anchoring means, for plugging a well at any location in the bore thereof.

It is a further object of this invention to provide an improved tool and anchoring means wherein the tool may be anchored at a desired location responsive to a lifting movement of the means by which the tool is positioned in the well.

It is also an object to provide an improved plug tool which may be released without the use of shear pins, explosive charges, or necessitating that the tool or the positioning means therefor be turned or rotated, and wherein an anchoring grip with the well casing as well as release of the tool from the positioning means, is effected responsive to a lifting movement of said positioning means.

It is another object of this invention to provide a tool such as described wherein the anchoring means is urged by a force applying means to grip the casing, and restrained while being positioned, and released so as to be self operative upon release of the tool from the means by which it is positioned in the well.

It is another object of this invention to provide an anchoring means for tools such as described, wherein opposing casing gripping members extend completely across the tool in abutting relation one to the other when gripping the casing, thereby providing a rigid and full cross sectional support, more effectively sustaining loads on the tool and the gripping members and maintaining the tool securely anchored to the casing.

It is an additional object of this invention to provide in a tool such as described a novel sealing cup of plastic material constructed and arranged to form an effective seal between the tool and casing and which in contradistinction to seals formed of rubber and the like, will not, when disintegrated, cause jamming or interference with pumps and moving parts of apparatus handling well fluids containing particles of rubber.

It is another object of this invention to provide a frangible well plug such as described in which the body thereof as well as the cup seal is formed of a frangible plastic material which is chemically inert to well fluids, and wherein the plug as a whole is free of rubber or material which might prove detrimental to pumps and valves handling well fluids, containing bits of rubber or like materials.

It is a further object of this invention to provide a well plug such as described which may be disintegrated by hammer blows as may be effected by dropping any wire line supported weight thereagainst, instead of requiring a drilling operation to remove the plug.

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It is a further object of the invention to provide a bridge plug of the character described which is adapted to be lowered into a well on a bailer containing cement slurry, or other well treating substances, and to be anchored in the desired position in the well bore and released from the bailer upon operation of the bailer to discharge the cement or other well treating substance.

This invention possesses many other advantages and has other objects which may be made more easily apparent from a consideration of one embodiment of the invention. For this purpose there is shown a form in the drawings accompanying and forming part of the present specification. This form will now be described in detail, illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined in the appended claims.

Referring to the drawings:

Figure 1 is a side elevational view of a tool embodying the present invention as it would appear while being lowered into a well casing;

Figure 2 is an enlarged vertical sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a cross sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a view corresponding to Figure 2, showing the tool released from the lowering means and anchored in the casing;

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 4; and

Figure 6 is a fragmentary plan view of the seal cup for forming a seal between the casing and the body of the tool.

One embodiment of the present invention as shown in the accompanying drawing, consists of a tool known as a bridge plug and which generally comprises a body 7, sealing means 8 fixed thereto for forming a seal between the body 7 and the well casing 9, anchoring means 10 carried by the body below the sealing means for gripping the casing and setting the plug, means 11 for releasably connecting the tool with means 12 for lowering the tool into the well and positioning it therein, and a restraining means 13 for restraining the anchoring means until relative movement is effected between the plug and the positioning means 12.

As here shown, the releasable means of connection 11 and the restraining means 13 are carried by the positioning means 12 and are arranged so that the release of the anchoring means takes place before release of the tool from the positioning means 12, upon the initial upward or lifting movement of the positioning means, a continuation of this movement releasing the tool.

A force applying means 14 carried by the tool body 7 constantly urges the anchoring means 10 toward anchoring contact with the well casing but the restraining means 13 prevents such movement until the initial lifting of the lowering means takes place. Thus, as the anchoring means is self operating upon release from the restraining means, any upward movement of the tool such as might invert or impair the sealing means is prevented during continued lifting of the positioning means as necessary to release the tool.

The body 7 is preferably formed of a suitable frangible plastic material and so constructed as compared to plugs or tools made of drillable or frangible metals, that the tool is easier to handle, more economical as to production, readily disintegrated by hammer blows without requiring a drilling operation to remove it, is subject to being detachably connected with means for positioning it in the well, through the use of a comparatively simple and easily operated means, and capable of withstanding

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the loads usually imposed on such tools. Thus, the body 7 instead of being of solid formation or having walls or portions of considerable thickness in cross section is longitudinally ribbed and deeply fluted, the ribs or fins 7a being of substantially equal radial extent.

The sealing means 8 comprises a pair of similar annular disks 8a and 8b preferably formed of a flexible and resilient plastic material. Each of these disks is formed with a series of radial slots or notches 8c forming radial tongues 8d. The disk 8b is laid upon the disk 8a so that the tongues of disk 8b overlies the notches or slots 8c of disk 8a and overlap the tongues on the latter. The two disks in this relative arrangement are removably fastened together and in place on a flange 7b on the body 7 by means of a clamping ring 15, bolts 16 and nuts 17. Thus, secured to the body 7 the disks 8a and 8b form a cup seal which, as shown in Figure 2, will yield upwardly and by-pass well fluid as the tool is lowered into the well casing but will be urged into sealing contact with the casing 9 responsive to pressure of well fluid or cement slurry located above the tool when the latter is stopped or anchored in the well.

The means 11 for releasably connecting the tool with the means 12 for positioning the tool in a well, as here shown, comprises a longitudinally slotted socket member 22 which is adapted to telescope a tubular extension 23 of the body 7, in such manner that bowed leaf springs 24 mounted in the slots 25 will frictionally grip the tubular extension. A shoulder 26 internally of the member 22 limits the movement of the extension 23 into the socket member. Each spring 24 is secured at one end, as at 27, to the member 22, and its other end is freely movable but retained in an annular groove 28 in the member 22, said groove opening into the slots 25.

The means for lowering the tool into the well and positioning it therein, may comprise a wire line, not shown, or any suitable means operable from the top of the well. The tubular member 29 here shown as screw threaded into the upper end of the socket member 22 is representative of the means 11 for positioning the tool and may be a section of tubing supported by a wire line or otherwise manipulated from the top of the well or may be considered as the lower end of a bailer such as used to deposit cement slurry or chemicals in a well and in any event is illustrative of a lowering and positioning means by which the tool hereof may be positioned in a well and detached from the socket member 22 responsive to lifting the latter from frictional telescopic engagement with the extension 23.

As here shown, the anchoring means 10 comprises a pair of similar eccentric casing gripping members 30 and 31 mounted to turn on pins 32 in a slot or opening 33, extending transversely through the body 7. The slot 33 is formed between two diametrically opposed ribs of the group of ribs 7a, the pins 32 being mounted in these ribs so that the gripping members are guided between the ribs in turning from a retracted position, lying within the slot 33 as shown in Figures 1, 2 and 3, into casing gripping position shown in Figure 4.

The gripping members 30 and 31 are arranged to be turned simultaneously to dispose arcuate and serrated gripping elements 34 thereon in gripping engagement with the casing, said elements being formed of a suitable hard metal and secured to the peripheries of eccentric portions of the members by means of suitable fastenings 35. The teeth on each of the gripping elements 34 extend in a curvilinear row and face downwardly as it is the purpose thereof to make these gripping members self-tightening in anchoring the plug against downward movement rather than upward movement. The gripping members 30 and 31 preferably are formed as here shown of frangible plastic material.

The force applying means 14 comprises a retractible spring 36 mounted in an axial bore 37 in the body 7, one end of the spring being fastened to a pin 38 at the

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lower end of the bore and the other end being connected with an eye 39 provided at the lower ends of a pair of flexible elements 40 which are fixed to the casing gripping members 30 and 31 by means of suitable fastenings 41.

With this arrangement, the spring 36 urges the members 30 and 31 to turn simultaneously and equally for disposing the gripping elements 34 thereon in contact with the well casing.

The means 13 for restraining the casing gripping members 30 and 31 as here shown comprises a pin or rod 42 having a tubular head 43 pivoted on a pin 44, mounted in the socket member 22, said pin having a tapered end portion 42a disposed to extend between the casing gripping members 30 and 31, as a wedge to prevent movement thereof out of retracted position as shown in Figure 2. A flap valve 45 preferably formed of a flexible and resilient plastic material is mounted in the extension 23 so as to close an opening 23a in a bottom wall 23b of the extension, said pin extending through said opening and holding the valve 45 open when in position to restrain the members 32, but releasing the valve when retracted, as shown in Figure 4. Thus, the valve 45 closes an axial bore which is formed through the body 7 by the tubular extension 23, the opening 23a, the transverse opening or slot 33 and the bore 37.

The opposed peripheral faces of the casing gripping members 30 and 31 are grooved as at 30a to accommodate the tapered end 42a of the pin 42 in a wedging contact with said members as shown in Figure 4, the inner portions or bottoms 30b of said grooves being of reduced width to accommodate the flexible elements 40 as shown in Figure 3.

With reference to Figure 2, it will be apparent that as the diameter of the plug body 7 is less than the inside diameter of the casing 9, while the sealing cup 8 is of greater diameter than the inside diameter of the casing but will yield upwardly, the tool may be lowered into the well casing without interference as the fluid will by-pass it while being lowered. On the lifting of the means 11, the pin 42 will be lifted clear of the casing gripping members 30 and 31, which are immediately moved by the spring 36 and the flexible elements 40 from retracted position shown in Figure 2, to gripping position shown in Figure 4. Continued upward movement of the socket member 22 will remove the latter from frictional holding contact with the extension 23 and thus release the plug and withdraw pin 42 which permits the flap valve 45 to close the opening 23a, thus completing the seal formed by the plug. The weight of any substance above the plug will tend to move the plug downward, and thus tighten the grip of the eccentric gripping members 30 and 31 and increase the sealing action of the cup seal 8. Thus the gripping members 30 and 31 are self actuating after initially contacting the casing. Forces tending to urge the plug downwardly cause the anchoring members to turn on their axes, so as to increase the anchoring action and positively lock the plug against downward movement.

When the gripping members 30 and 31 are in casing gripping position the opposed surfaces thereof abut each other, thereby providing a rigid and full cross sectional support for effectively sustaining loads on the gripping members and maintaining the tool securely anchored in place. The resistance offered by the well fluid above the seal cup 8 and the frictional contact thereof makes it possible to lift the socket member 22 to release the casing gripping members 30 and 31 and detach the plug.

Any object, not shown, adapted to be lowered into the well on a wire line and having appreciable weight may be employed for effecting hammer blows on the plug to disintegrate it when it is desired to unplug the well bore.

While the anchoring means is here shown as incorporated with a bridge plug, it should be noted that it may be employed with other types of tools which are

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adapted to be anchored at various locations in the bore of a well.

I claim:

1. In a well tool adapted to be lowered into a well casing and anchored therein, a body, means for releasably connecting the body with a means for lowering the tool into the well; a pair of eccentric casing gripping members mounted on the body for rotation between a retracted position and a position to grip the casing; a spring connected at one end with the body, flexible elements connected with the other end of the spring and to said gripping members for rotating said members into gripping contact with the casing under the force of said spring; and means forming a wedge between said gripping members to hold them in retracted position and releasing said gripping members upon release of the body from said means for lowering the body into the well.

2. In a well tool adapted to be lowered into a well casing and anchored therein, a body, means for releasably connecting the body with a means for lowering the tool into the well; a pair of eccentric casing gripping members mounted on the body for rotation between a retracted position and a position to grip the casing; a spring connected at one end with the body, flexible elements connected with the other end of the spring and to said gripping members for rotating said members into gripping contact with the casing under the force of said spring; a wedge member carried by said means for releasing the body, extending between and holding said gripping members against rotation into casing gripping position and being withdrawn from holding position upon release of the body.

3. In a well tool adapted to be lowered into a well and anchored therein, a body, sealing means mounted on the body for forming a seal between the wall of the well bore and the body, means releasably connected with the body at a point above the sealing means, with a means for lowering the tool into the well, operating to release said body on the lifting of said lowering means, anchoring members mounted on the body beneath said sealing means for rotation between a retracted position and a position for gripping the wall of the well bore and anchoring the tool thereto, a retractile spring mounted on the body beneath the anchoring members, flexible elements connected with said anchoring members and said spring for simultaneously rotating said anchoring members into said gripping position, said body having an opening therein, a restraining member carried by said releasing means and extending through said opening into contact with said anchoring members for restraining rotation thereof and being withdrawn from restraining contact with said anchoring member and from said opening on release of said body, and a valve on the body operating to close said opening when the said restraining member is withdrawn therefrom.

4. In a well tool adapted to be lowered into a well and anchored therein, a body, means on the body forming a seal between the wall of the well bore and said body to prevent downward flow of fluid past the seal, anchoring members mounted on the body below the seal for rotation between retracted position and a position in which said members grip the wall of the well bore, spring means urging said anchoring members into said gripping position, said body having an opening therein affording access to the anchoring members from a point above said sealing means, a restraining member mounted in said opening and contacting said anchoring members to hold them against rotation into position to grip the wall of the well bore, means for releasably connecting said body at a point above the seal with a means for lowering the tool into the well, being operable to release the tool responsive to lifting of the means for lowering the tool into the well, means connecting said restraining member with said releasing means for withdrawing the restraining member from the said anchoring members and from said opening

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upon the lifting of the means for lowering of said tool, and a valve closing said opening on withdrawal of said restraining member from said opening.

5. In a tool adapted to be lowered into a well and anchored therein, an elongated body having an axial bore extending therethrough, and an opening extending transversely thereof and intersecting said bore; means mounted on the body above said opening for forming a seal between the wall of the well bore and the body; eccentric anchoring members mounted in said transverse opening for rotation between a retracted position and a position for anchoring the body in the well; spring means in said bore, urging said anchoring members into anchoring position; a restraining member removably mounted in said bore for holding said anchoring members against movement into anchoring position; means for releasably connecting the upper end of said body with a means for positioning the tool in the well, operating to release the tool on lifting movement of said positioning means; means connecting said restraining member with said tool releasing means for withdrawal from said bore upon the lifting of said positioning means; and valve means operable to close the bore at a point above said transverse opening when said restraining means is withdrawn from the bore.

6. In a well tool adapted to be lowered into a well casing and anchored therein, a body, means for releasably connecting the body with a means for lowering the tool into the well; a pair of eccentric casing gripping members mounted on the body for rotation between a retracted position and a position to grip the casing; spring means for rotating said gripping members into contact with said casing, said gripping members having gripping surfaces formed to cause the gripping members to turn and increase the gripping action thereof responsive to forces directed downwardly on said body after said surfaces have contacted said casing, and means forming a wedge engageable with opposed surfaces of said gripping members to hold them in retracted position, operable to release the gripping members upon the release of the body from the means for lowering the body in the well.

7. In a well tool adapted to be lowered into a well casing and anchored therein, a body, means for releasably connecting the body with a means for lowering the tool into the well; a pair of eccentric casing gripping members mounted on the body for rotation between a retracted position and a position to grip the casing; spring means for urging said gripping members into contact with said casing, and means extending downwardly between and holding said gripping members in retracted position and moving upwardly and releasing said gripping members responsive to release of said body.

8. In a well tool adapted to be lowered into a well casing and anchored therein, a body, means for releasably connecting the body with a means for lowering the tool into the well; a pair of eccentric casing gripping members mounted on the body for rotation between a retracted position and a position to grip the casing; spring means for urging said gripping members into contact with said casing, means extending downwardly between and holding said gripping members in retracted position and moving upwardly and releasing said gripping members responsive to release of said body, and valve means on said body above said gripping members held in open position by said holding means for said gripping members and closing responsive to upward movement of said holding means.

9. In a well tool adapted to be lowered into a well casing and anchored therein, a body, means for releasably connecting the body with a means for lowering the tool into the well; a pair of eccentric casing gripping members mounted on the body for rotation between a retracted position and a position to grip the casing; spring means for urging said gripping members into contact with said casing, means extending downwardly between and holding said gripping members in retracted position and mov-

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ing upwardly and releasing said gripping members responsive to release of said body, and means on said body controlling the flow of fluid therethrough, including a valve on the body above said gripping members, held in open position by said holding means for said gripping members and closing when said holding means for said gripping members is moved upwardly past the valve after releasing said gripping member.

10. In a well plug adapted to be anchored in a well casing: a plug body; a tubular member fixed to said body; a tubular member mounted in slidable telescopic relation with the first named tubular member for separation therefrom; means for connecting the second named tubular member with means for positioning the plug in said casing, means of said body engageable with the well casing and adapted to support cement deposited thereon, said second named tubular member being separable from the first named tubular member responsive to the upward movement of said positioning means; means on one of said tubular members engaging the other of said tubular members to yieldably resist separation thereof; casing gripping members on said body; means for urging said gripping members into casing gripping positions; means operatively connected with one of said tubular members for holding said gripping members out of casing gripping position; said last named means releasing said gripping members upon separation of said tubular members; said body having a passage extending therethrough, and a valve on said body movable to open and close said passage, said last named means holding said valve in position opening said passage when said gripping members are retracted, and releasing said valve for closing said passage when said tubular members are separated.

11. In a well plug adapted to be anchored in a well casing: a plug body; a tubular member on said body; a tubular member mounted in slidable telescopic relation with the first named tubular member for separation therefrom; means for connecting the second named tubular member with means for positioning the plug in said casing, packing means on said body engageable with the casing and adapted to support cement deposited thereon, said second named tubular member being separable from the first named tubular member responsive to movement of said positioning means in a direction away from said body; means on one of said tubular members engaging the other of said tubular members to yieldably resist separation thereof; casing gripping members on said body; means for urging said gripping members into casing gripping position; and means operatively connected with said second named tubular member for holding said gripping members out of casing gripping position; said last named means releasing said gripping members upon separation of said tubular members.

12. In a well plug adapted to be positioned in a well casing: a plug body; a tubular member on said body; a tubular member mounted in slidable telescopic relation with the first named tubular member for separation therefrom; means for connecting the second named tubular member with means for positioning the plug in the casing, packing means on said body engageable with the casing, said second named tubular member being separable from the first named tubular member responsive to upward movement of said positioning means; means on one of said tubular members engaging the other of said tubular members to resist separation thereof; said last named means yielding and permitting separation of said tubular members responsive to said upward movement of said positioning means, means on said body operable for gripping the casing to anchor the plug in the casing responsive to separation of said tubular members; and means connected with one of said tubular members for restraining operation of said gripping means while said tubular members are telescopically connected.

13. In a well plug adapted to be positioned in a well casing: a plug body; a tubular member on said body; a

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tubular member mounted in slidable telescopic relation with the first named tubular member for separation therefrom; means for connecting the second named tubular member with means for positioning the plug in the casing, packing means on said body engageable with the casing, said second named tubular member being separable from the first named tubular member responsive to movement of said positioning means; means on one of said tubular members engaging the other of said tubular members to resist separation thereof; said last named means yielding and permitting separation of said tubular members responsive to said movement of said positioning means; said body and tubular members providing a passage therethrough; a valve for closing said passage; means operatively connected with said second named tubular member engaging said valve and holding it in open position when said tubular members are telescopically connected; said last named means moving to release said valve for closing said passage upon separation of said tubular members anchoring means on said body operable for anchoring the body to the casing responsive to separation of said tubular members; said valve-engaging means engaging said anchoring means and restraining operation of said anchoring means while said tubular members are telescopically related.

14. In a well plug adapted to be anchored in a well casing: a body; means on said body adapted to be releasably connected with means for positioning the body in the casing; gripping members mounted on said body for movement between a retracted position and a casing gripping position; means for urging said gripping members into engagement with said casing; a packer on said body above said members engageable with the casing, said body having a passage extending therethrough; valve means for controlling said passage; and means adapted for connection with said positioning means operable for holding said gripping members in retracted position and said valve means in open position; said last named means being operable to release said gripping members and said valve means upon release of said body from said positioning means.

15. A well tool adapted to be released from means for lowering it in a well casing and to be anchored to the casing, including: a body having means thereon cooperable with the lowering means to releasably connect the body thereto; a pair of casing gripping members mounted on said body for movement from a retracted position to casing gripping position; said gripping members having opposed peripheral portions disposed to abut one another when said gripping members are in casing gripping position; packing means on said body above said gripping members for engaging the casing; restraining means cooperable with said gripping members to releasably hold said gripping members in said retracted position; said restraining means releasing said gripping members upon release of said body from said lowering means; and means on said body for urging said gripping members into casing gripping position upon release of said restraining means.

16. A well tool adapted to be released from means for lowering it in a well casing and to be anchored to the casing, including: a body having means thereon cooperable with the lowering means to releasably connect the body thereto; a pair of casing gripping members pivotally mounted on said body for movement from a retracted position to casing gripping position; said gripping members having opposed peripheral portions disposed to abut one another in a plane extending transversely of said body through the pivots of said gripping members when said gripping members are in casing gripping position; packing means on said body above said gripping members for engaging the casing; restraining means cooperable with said gripping members to releasably hold said gripping member in said retracted position; said restraining means releasing said gripping members upon release of said body

from said lowering means; and means on said body for urging said gripping members into casing gripping position upon release of said restraining means.

17. A well tool adapted to be released from means for lowering it in a well casing and to be anchored to the casing, including: a body having means thereon cooperable with the lowering means to releasably connect the body thereto; a pair of casing gripping members pivotally mounted on said body for movement from a retracted position to casing gripping position; said gripping members having opposed peripheral portions disposed to abut one another in a plane extending transversely of said body through the pivots of said gripping members when said gripping members are in casing gripping position; packing means on said body above said gripping members for engaging the casing; restraining means cooperable with said gripping members to releasably hold said gripping member in said retracted position; said restraining means releasing said gripping members upon release of said body from said lowering means; and means on said body for urging said gripping members into casing gripping position upon release of said restraining means; each of said gripping members having a casing gripping surface curved eccentrically about the axis of the gripping member.

18. A well tool adapted to be released from means for lowering it in a well casing and to be anchored to the casing, including: a body having means thereon cooperable with the lowering means to releasably connect the body thereto; a pair of casing gripping members pivotally mounted on said body for movement from a retracted position to casing gripping position; said gripping members having opposed peripheral portions disposed to abut one another in a plane extending transversely of said body through the pivots of said gripping members when said gripping members are in casing gripping position; packing means on said body above said gripping members for engaging the casing; restraining means cooperable with said gripping members to releasably hold said gripping members in said retracted position; said restraining means releasing said gripping members upon release of said body from said lowering means; and means on said body for urging said gripping members into casing gripping position upon release thereof; said gripping members having casing gripping surfaces which cause the gripping members to turn about their axes and increase the gripping action thereof responsive to forces directed downwardly on said body after the gripping members have contacted the casing.

19. In a well tool adapted to be anchored in a well casing: a body; a pair of casing gripping members mounted on said body for movement from a retracted position into casing gripping position; means cooperable with said gripping members for releasably holding said members in retracted position; and means for urging said gripping members into casing gripping position upon release of said holding means; said gripping members having marginal portions for gripping the casing and for abutting one

another, respectively; said abutting portions abutting one another and being opposite said gripping portions when the latter grip the casing.

20. In a well tool adapted to be anchored in a well casing: a body; a pair of casing gripping members pivotally mounted on said body for movement from a retracted position into casing gripping position; means cooperable with said gripping members for releasably holding said members in retracted position; and means for urging said gripping members into casing gripping position upon release of said holding means; said gripping members having marginal portions for gripping the casing and for abutting one another, respectively; said abutting portions abutting one another and being opposite said gripping portions when the latter grip the casing; said gripping surfaces being curved eccentrically about the axes of the gripping members.

21. In a well plug adapted to be anchored in a well casing: a body having means for releasable connection with means for positioning the body in the casing; gripping members pivotally mounted on said body for movement between a retracted position and a casing gripping position; means for resiliently urging said gripping members into engagement with said casing; packing means on said body engageable with the casing; and means connectable with and withdrawable by said positioning means for releasably holding said gripping members in retracted position when said body is connected to said positioning means; said holding means releasing said gripping members upon release of said body from said positioning means.

22. In a well plug adapted to be anchored in a well casing: a body having means adapted for releasable connection with means for positioning the body in the casing whereby said body will be released responsive to axial movement of the positioning means in one direction relative to said body; means on said body engageable with said casing to resist movement of said body in said direction; gripping members pivotally mounted on said body for movement between a retracted position and a casing gripping position; means for resiliently urging said gripping members into engagement with said casing; and means cooperable with said positioning means so as to be positioned and withdrawn thereby for releasably holding said gripping members in retracted position; said last named means releasing said gripping members upon release of said body.

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