C. E. SITZMAN.

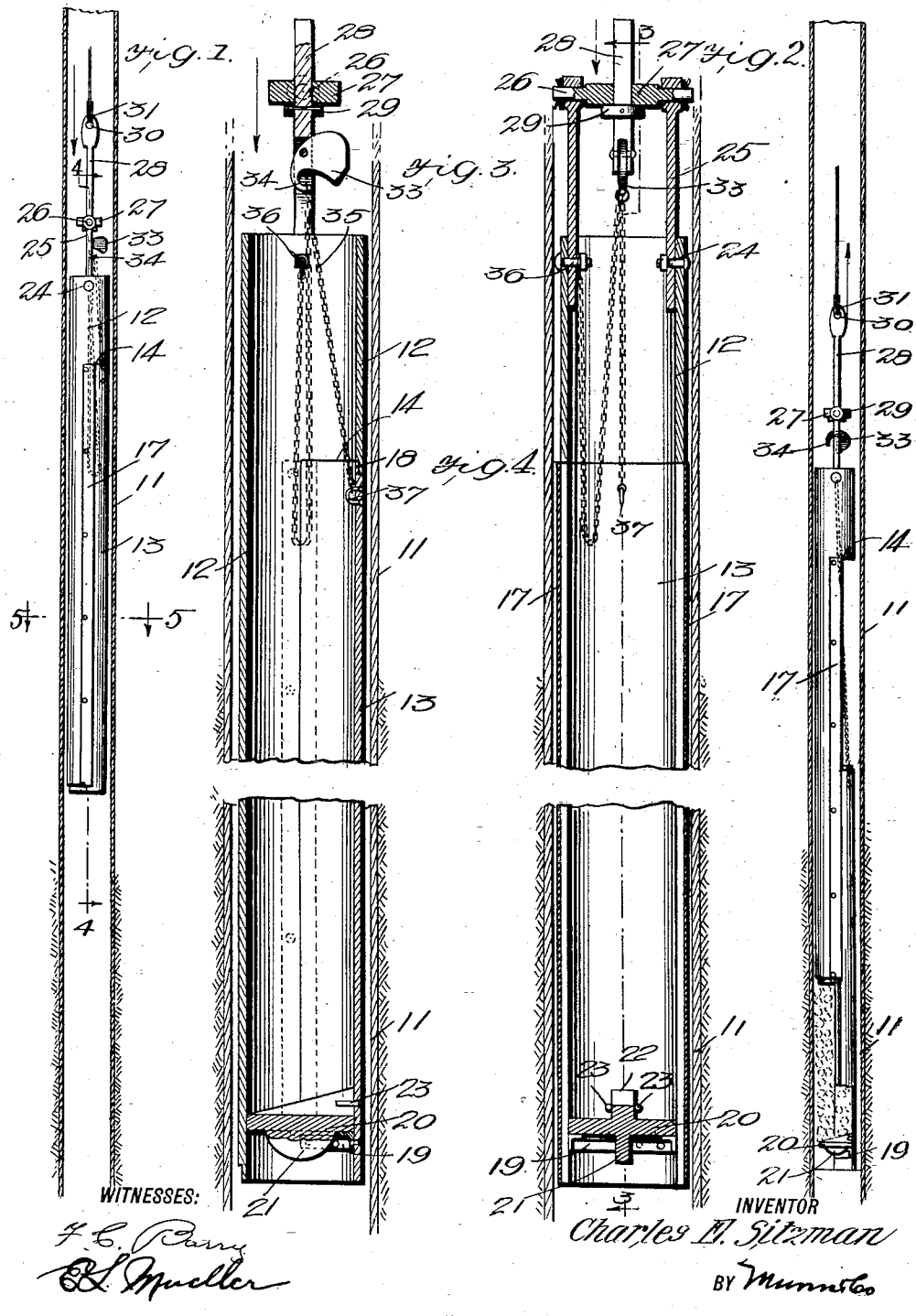
APPARATUS FOR PLUGGING WELLS.

APPLICATION FILED DEC. 30, 1915.

1,190,024.

Patented July 4, 1916.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 5.

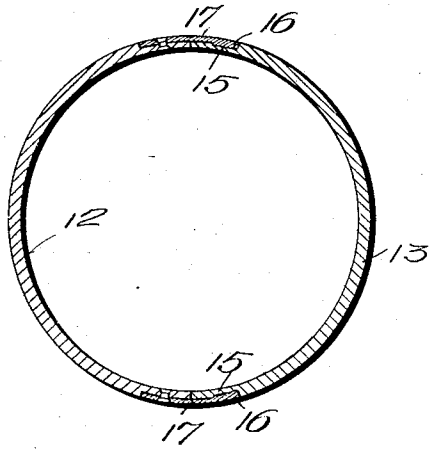


Fig. 9.

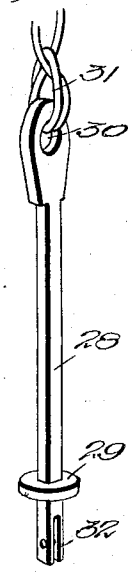


Fig. 6.

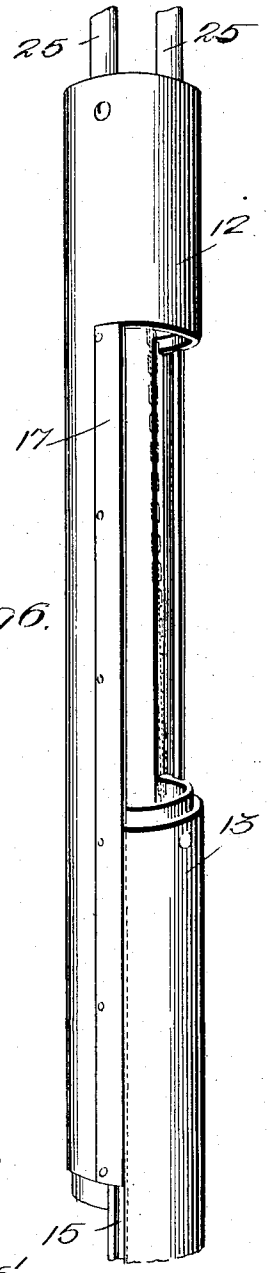


Fig. 7.

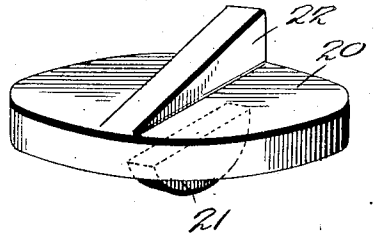




Fig. 8.

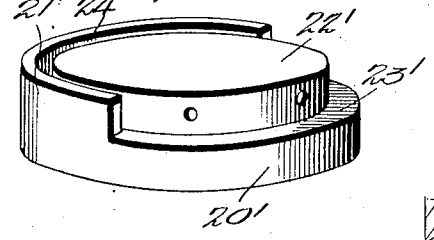
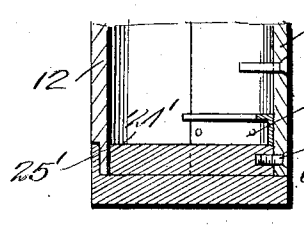


Fig. 10.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PLUGGING WELLS.

1,190,024. Specification of Letters Patent. Patented July 4, 1916.

Application filed December 30, 1915. Serial No. 69,368.

To all whom it may concern:

Be it known that I, CHARLES EDWARD SITZMAN, a citizen of the United States, and a resident of Taft, in the county of Kern and State of California, have invented an Improvement in Apparatus for Plugging Wells, of which the following is a specification.

This invention is an improvement in the art of well construction and has particular reference to apparatus employed for plugging oil wells at the bottom thereof.

Several causes, as for instance, water and sand entering a well casing render it necessary to plug the bottom of the well in order to stop such ingress. One method now commonly employed is to drop, by hand, into the top of the casing the material used, such as, stone, brick, lathe cuttings, lead wool, bundles of old rope and concrete. Owing to the nature of this material it often becomes clogged in the well casing before reaching the bottom thereof, which necessitates the use of suitable tools to loosen the material.

The present invention is designed to overcome the above difficulties by providing a material container made in sections, one of which is movable relative to the other whereby to permit the contents thereof to drop out after the container has been lowered to the bottom of the well casing, thus eliminating the possibility of the material jamming in or clogging the same.

Another object of the invention is the provision of novel means for retaining the sections of the container in normally closed position and for moving one of the sections relative to the other to open the same, said means consisting of a flexible element secured at its ends to said sections and detachably engaged, intermediate its ends, by a latch device mounted in a supporting member. This latter member supports the container as the same is being lowered into a well casing and is movable relative thereto when the container is resting at the bottom of said casing whereby to actuate said latch device to release said flexible element so that one of the sections of the container may be adjusted to permit the contents thereof to fall out and clog the bottom of said casing.

A further object of the invention is the provision of an apparatus of this character which is simple in construction, easy to manufacture, and effective in carrying out the purpose for which it is designed.

The inventive idea involved is capable of receiving a variety of mechanical expressions, some of which, for the purpose of illustrating the invention, are shown in the accompanying drawings, in which—

Figure 1 is a sectional view of a well casing showing the container in closed position as the same is being lowered thereinto. Fig. 2 is a similar view showing the container in open position to permit the material to be deposited in the bottom of the casing. Fig. 3 is a section on the line 3—3 of Fig. 4. Fig. 4 is an enlarged section on the line 4—4 of Fig. 1. Fig. 5 is an enlarged transverse section on the line 5—5 of Fig. 1. Fig. 6 is an enlarged fragmentary perspective view of the container showing the same in open position. Fig. 7 is a perspective view of one embodiment of a bottom for the container. Fig. 8 is a similar view of another embodiment of bottom for the container. Fig. 9 is a perspective view of certain details of the invention. Fig. 10 is a sectional view showing the manner of securing the bottom, illustrated in Fig. 8, in position.

Referring more particularly to the drawings, the numeral 11 indicates a casing usually employed in oil wells.

The construction illustrated in the drawings is now believed to be a preferred embodiment of the invention in which the container comprises complementary sections 12 and 13 which form a cylindrical body portion. For the greater portion of the length of the section 12 the same is cut away as indicated at 14 so that said portion will be of substantially semi-circular formation. The entire length of the section 13 is semi-circular in cross section and is provided adjacent its edges with longitudinally extending guide grooves 15 which receive enlarged edges 16 of the guide plates 17 which are secured to the longitudinal edges of the section 12. This construction will admit of relative longitudinal movement between the sections of the container and in order to afford a tight joint at the meeting ends of said sections the same are rabbeted as indicated at 18. Adjacent the bottom of the section 13 the same is provided with a flanged retaining or bottom supporting member 19

of substantially semi-circular formation and when the container is in closed position the member 19 is adapted to support thereon a detachable bottom 20 clearly illustrated in Fig. 7 of the drawing. The bottom in this illustration is preferably made of inexpensive cast iron since the same is left, together with the other material, in the bottom of the well casing when the container is opened. The under surface of the bottom 20 is provided with a depending lug 21 which may be grasped in order to place said bottom in position and the upper surface thereof is provided with an inclined rib 22 which engages between oppositely disposed pins 23 extending from the wall of the section 13.

The embodiment shown in Fig. 8 is permanently attached to the section 13 and is preferably used when concrete is employed to plug the bottom of the well casing. This bottom 20′ is provided partially around its upper edge with a flange 21′ and upon its upper surface with a reduced portion 22′ to provide a shoulder or rest 23′ engaged by the lower end of the section 13 as shown in Fig. 10. The flange 21′ and portion 22′ also provide a groove 24′ for receiving therein the reduced end 25′ of the section 12. The bottom 20′ is secured in position by means of suitable fasteners 26′.

The upper end of the section 12 has secured to the interior thereof, by means of bolts 24, the oppositely disposed vertically arranged arms 25 having their upper ends enlarged to provide bearings for the extensions 26 of the cross head 27 whereby the latter is rotatably mounted. The cross head is provided with a central opening for receiving therein a supporting member 28 having a collar 29 adjacent its lower end adapted to contact the lower surface of the cross head whereby the entire container is supported. The upper end of the supporting member 28 is provided with an eye 30 for receiving one end of a sand line, chain or rope 31 which is employed for the purpose of lowering and raising the container in the well casing. The lower end of the member 28 has a bifurcation 32 in which is eccentrically mounted a weighted latch member 33 having a hook portion 34. A flexible element 35, such as a chain, has one end secured at 36 to the section 12 of the container and the other end secured to the section 13 at 37. When the sections of the container are in closed position the hook portion 34 of the latch member 33 engages the flexible element 35 intermediate its ends so as to support said sections in closed position, as best shown in Figs. 3 and 4. As long as the weight of the container is exerted upon the supporting member 28 the collar 29 will engage the cross head 27 and the strain upon the latch member 33 will retain the same in the position shown in Figs. 3 and 4. However, when the container has been lowered to the bottom of the well and rests thereon the force sufficient to retain the latch member 33 in its latching position will be decreased and by slightly moving the supporting member 28 downwardly and relative to the sections of the container the weighted end of the latch member 33 will cause the hook portion thereof to be detached from the chain and permit the latter to fall into the container. By then lifting the supporting member 28 the section 12 of the container may be hoisted until the element 35 is straightened, as shown in Figs. 2 and 6, thus limiting the upward movement of said section. As the section 12 moves upwardly the same is disengaged from the bottom 20, when the latter is employed, and permits the same together with the rest of the material in the container to drop to the bottom of the well casing and thus plug the same. As previously stated, when concrete is employed for plugging the well a detachable bottom need not be used and that shown in Fig. 8 is secured in position instead.

What is claimed is:

1. An apparatus for plugging wells comprising relatively movable complementary sections portions of which are semi-circular and interlock to form a cylindrical material container, and means for moving one of the sections relative to the other to empty the contents thereof.

2. An apparatus for plugging wells comprising relatively movable complementary sections portions of which are semi-circular and interlock to form a cylindrical material container, means for moving one of the sections relative to the other to empty the contents thereof, and a latch device carried by the last-named means for releasably retaining said sections closed.

3. An apparatus for plugging wells comprising relatively movable complementary sections portions of which are semi-circular and interlock to form a cylindrical material container, means for moving one of the sections relative to the other to empty the contents thereof, and a connection between said sections for limiting said relative movement.

4. An apparatus for plugging wells comprising a container including sections having relative movement, means for moving one of the sections relative to the other to empty the contents thereof, a connection secured to each section for limiting said relative movement, and releasable means for actuating said connection to retain said sections closed.

5. An appaaratus for plugging wells comprising a container including relatively movable sections, means for maintaining said sections in closed position and released, by contact of one of the sections with the bottom of a well, to permit relative movement of said sections, and means for raising

the other section after the last-named means is released whereby the contents of the container is discharged.

6. An apparatus for plugging wells comprising a container including sections having relative movement, means for moving one of the sections relative to the other to empty the contents thereof, and a flexible element connecting said sections for limiting the relative movement thereof.

7. An apparatus for plugging wells comprising complementary sections having relative movement and forming a cylindrical material container, means for moving one of the sections relative to the other to empty the contents thereof, and a flexible element connecting said sections for limiting the relative movement thereof.

8. An apparatus for plugging wells comprising a container including sections having relative movement, means for moving one of the sections relative to the other to empty the contents thereof, a flexible element connecting said sections, and a latch device releasably engaging said element for retaining said sections in closed position.

9. An apparatus for plugging wells comprising a container including sections having relative movement, means for moving one of the sections relative to the other to empty the contents thereof, a flexible element connecting said sections for limiting the relative movement thereof to open position, and a latch releasably engaging said flexible element for retaining said sections in closed position.

10. An apparatus for plugging wells comprising a container including relatively movable sections, and a bottom for the container which is detached therefrom when said sections are moved relatively.

11. An apparatus for plugging wells comprising a container including sections having relative movement, means movable relative to said sections for adjusting one of them relative to the other to empty the contents thereof, and a latch device for releasably retaining said sections in closed position and actuated by the relative movement between the first-named means and said sections to release the latter whereby the same may be moved to open position.

12. An apparatus for plugging wells comprising a container including relatively movable sections, a bottom for the container which is detached therefrom when said sections are moved relatively, and a flange member for supporting said bottom while the sections are closed.

13. An apparatus for plugging wells comprising a material container including substantially semi-circular sections movable relative to each other, means for adjusting one of said sections whereby to empty the contents of said container, and means for limiting the relative movement of said sections.

14. An apparatus for plugging wells comprising a material container including substantially semi-circular sections movable relative to each other, means for adjusting one of said sections whereby to empty the contents of said container, and guiding means carried by one of the sections and engaging the other.

15. An apparatus for plugging wells comprising relatively movable substantially semi-circular sections, a latch device for releasably retaining said sections in closed position, and means for adjusting one of said sections relative to the other when said latch device is released.

16. An apparatus for plugging wells comprising relatively movable substantially semi-circular sections, a latch device for releasably retaining said sections in closed position, means for adjusting one of said sections relative to the other when said latch device is released, and means movable relative to one of said sections for releasing said latch means and for adjusting one of the sections relative to the other whereby to empty the contents of said sections.

17. An apparatus for plugging wells comprising a container including sections having relative movement, means for moving one of the sections relative to the other to empty the contents thereof, and a bottom for the container adapted to detach itself therefrom when the same is opened to empty the contents.

18. An apparatus for plugging wells comprising a container consisting of complementary sections having relative movement, a flexible element connecting said sections, vertically arranged arms carried by one of said sections, a cross head mounted in said arms, a supporting member movable relative to said cross head, and a latch eccentrically connected to said supporting member for releasably engaging said flexible element to retain the sections in closed position, said latch being detached from said flexible element when said supporting member is moved relative to said cross head.

19. An apparatus for plugging wells comprising a container consisting of complementary sections having relative movement, a flexible element connecting said sections, vertically arranged arms carried by one of said sections, a cross head mounted in said arms, a supporting member movable relative to said cross head, a latch eccentrically connected to said supporting member for releasably engaging said flexible element to retain the sections in closed position, said latch being detached from said flexible element when said supporting member is moved relative to said cross head, and a bottom for the container.

20. An apparatus for plugging wells comprising a container consisting of complementary sections having relative movement, a flexible element connecting said sections, vertically arranged arms carried by one of said sections, a cross head mounted in said arms, a supporting member movable relative to said cross head, a latch eccentrically connected to said supporting member for releasably engaging said flexible element to retain the sections in closed position, said latch being detached from said flexible element when said supporting member is moved relative to said cross head, and a bottom for the container adapted to detach itself therefrom when the sections are moved to opened position.

21. An apparatus for plugging wells comprising a container having a discharge opening, releasable means for closing said opening, and supporting means for said container movable relative thereto for releasing the first named means to permit the contents of the container to discharge through said opening.

22. An apparatus for plugging wells comprising a container including relatively movable sections, a bottom supporting member carried in one of said sections, oppositely disposed pins also carried by the last-named section, and a bottom for the container resting on said supporting member and having a rib projecting between said pins when the sections of the container are closed, said bottom being detached from its supports when the sections of the container are relatively adjusted to open or discharging position.

CHARLES EDWARD SITZMAN.

Witnesses:
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D. N. JONES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."