March 25, 1924. 1,488,211

A. L. LOEFFLER

OIL WELL CONTROLLING VALVE ATTACHMENT

Filed Jan. 24, 1923 2 Sheets-Sheet 1

Fig. 1

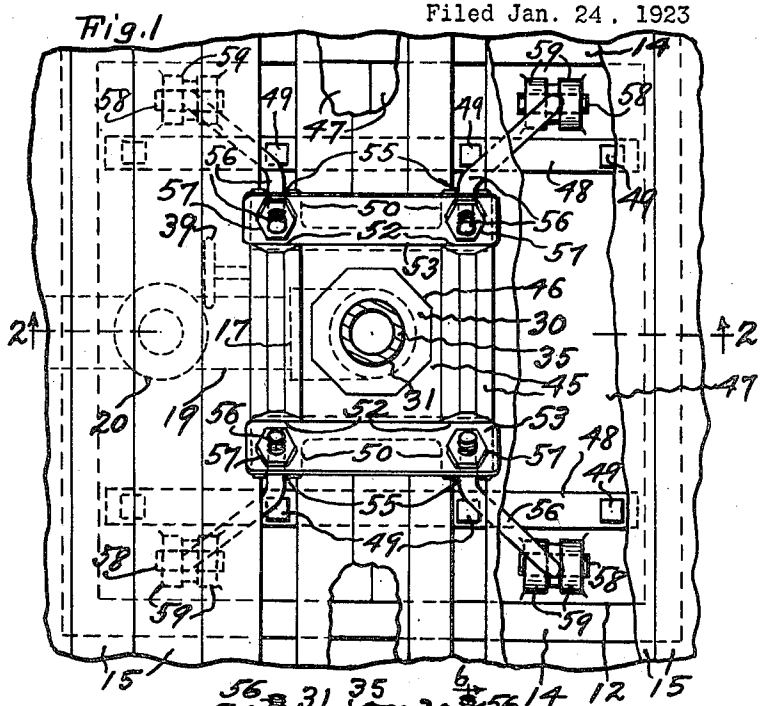


Fig. 4

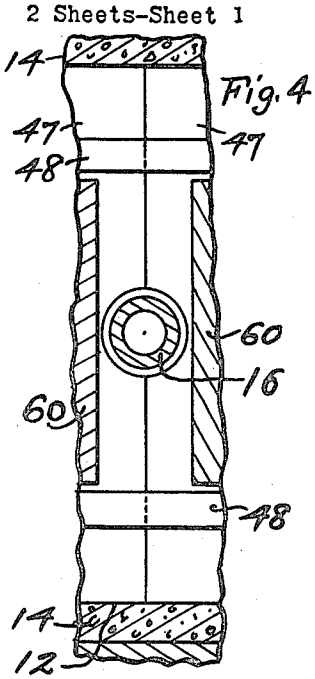


Fig. 2

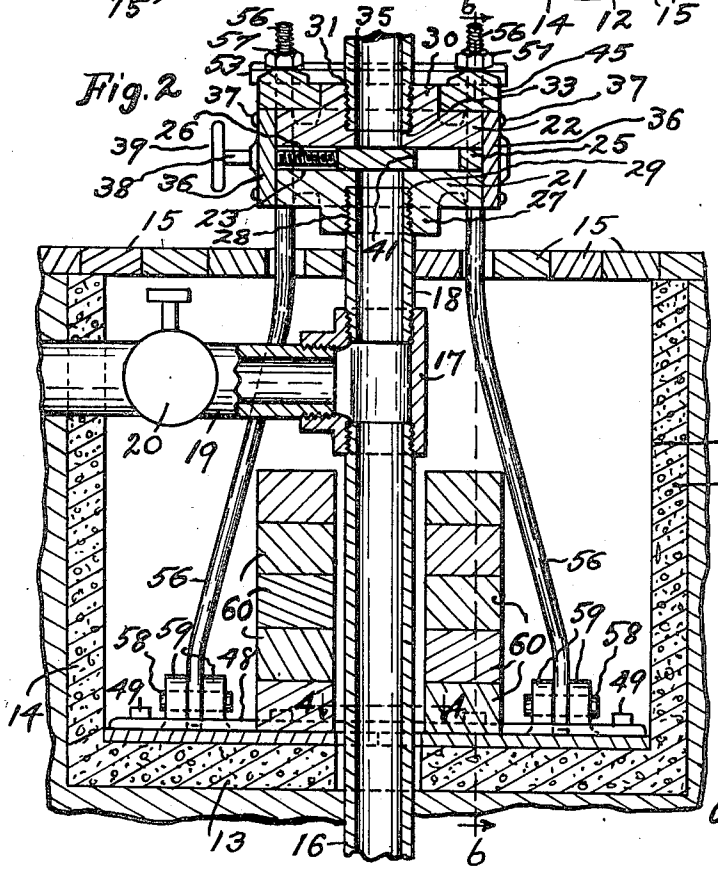


Fig. 3

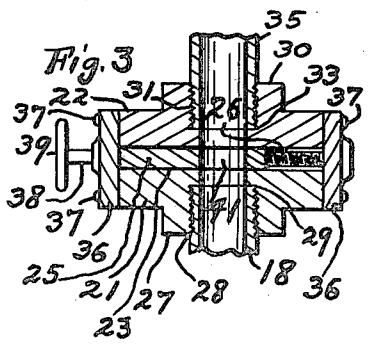
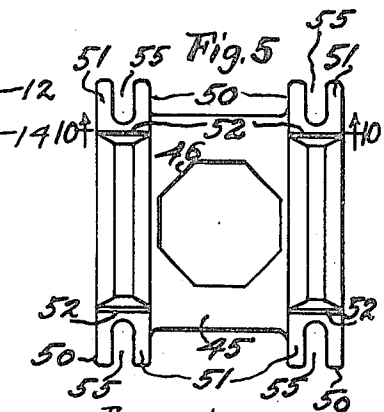


Fig. 5



Inventor:
Andrew L. Loeffler

By [signature]
his Attorney.

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OIL WELL CONTROLLING VALVE ATTACHMENT

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Fig. 6

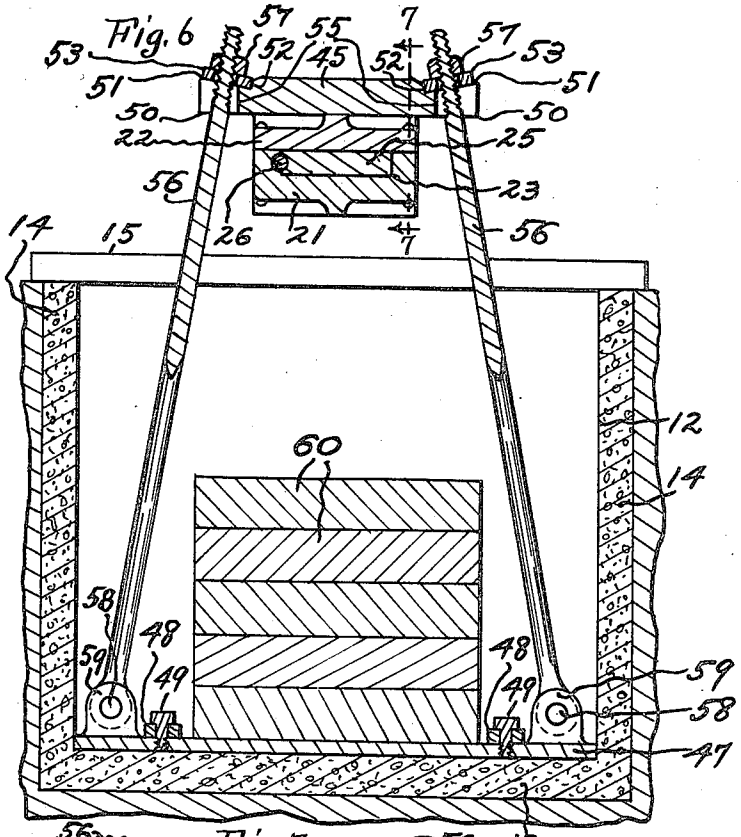


Fig. 7

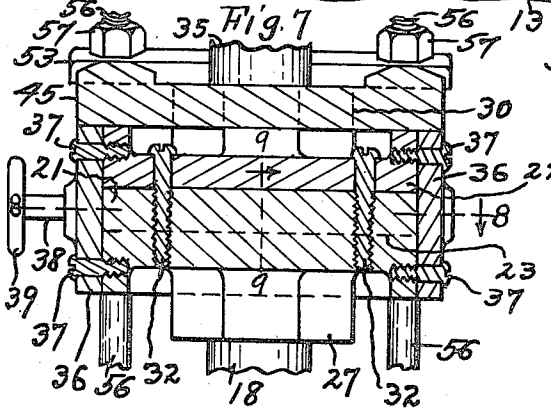


Fig. 8

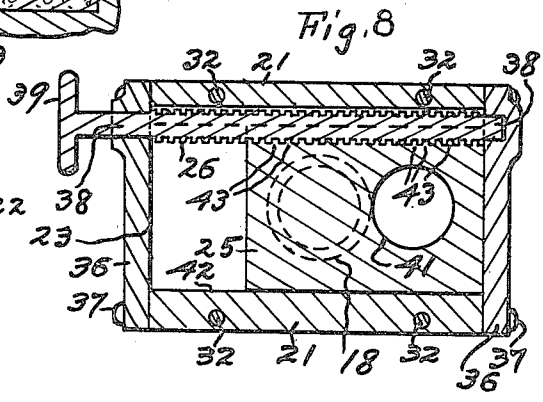


Fig. 9

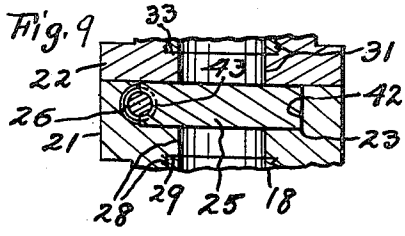
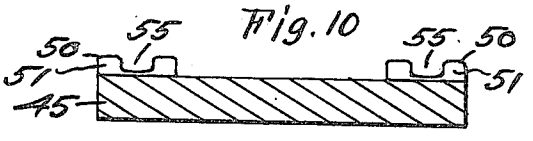


Fig. 10



Inventor:
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By
his Attorney.

Patented Mar. 25, 1924. 1,488,211

UNITED STATES PATENT OFFICE.

ANDREW L. LOEFFLER, OF CLEVELAND, OHIO.

OIL-WELL-CONTROLLING VALVE ATTACHMENT.

Application filed January 24, 1923. Serial No. 614,574.

To all whom it may concern:

Be it known that I, ANDREW L. LOEFFLER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Oil-Well-Controlling Valve Attachment, of which the following is a specification.

This invention relates to improvements in an oil-well-controlling valve-attachment adapted to be applied to the upper end of the well-casing.

One object of this invention is to facilitate the assemblage of the component parts of my improved oil-well-controlling valve-attachment and to render said valve-attachment simple and durable in construction and convenient.

Another object is to prevent accidental displacement of said valve-attachment and more especially to provide highly practical and reliable means whereby the valve-casing of said attachment is efficiently held, independent of the well-casing, against upward displacement.

With these objects in view, and to attain any other object hereinafter appearing, this invention consists in certain features of construction, and combinations and relative arrangements of parts, hereinafter described in this specification, pointed out in the claims, and illustrated in the accompanying drawings.

In said drawings, Figure 1 is a top plan showing my improved oil-well-controlling means and the pit into which the hereinbefore mentioned well-casing extends. Fig. 2 is a sectional view taken along the line 2—2 in Fig. 1 and shows the valve of the hereinbefore mentioned valve-casing. Fig. 3 is a sectional view showing a portion of Fig. 2, except that Fig. 3 illustrates said valve in its open position whereas Fig. 2 shows said valve in its closed position. Fig. 4 is a horizontal section taken along the line 4—4 in Fig. 2. Fig. 5 is a top plan of a cap-plate hereinafter described. Fig. 6 is a vertical section taken along the line 6—6 in Fig. 2. Fig. 7 is a vertical section taken along the line 7—7 in Fig. 6, looking inwardly. Fig. 8 is a horizontal section taken along the line 8—8 in Fig. 7. Fig. 9 is a vertical section taken along the line 9—9 in Fig. 7. Fig. 10 is a vertical section taken along the line 10—10 in Fig. 5. Figs. 7, 8, 9 and 10 are drawn on a larger scale than Figs. 1, 2, 3, 4 and 5, and portions are broken away in the drawings to reduce their size and to more clearly show the construction.

Referring to Figs. 1, 2 and 6 of said drawings, 12 indicates a pit formed in the earth at the ground-level and having a bottom 13 and upright walls 14 of concrete. The pit 12 is shown largely closed, at its upper end, preferably by substantially parallel planks 15 which extend across the pit and are removably mounted on the upper ends of walls 14 of the pit.

16 (see Figs. 2 and 4) indicates a substantially vertical tubular section of the well-casing, and said section is arranged centrally of and extends upwardly into the pit 12 and is spaced at its upper extremity far enough downwardly from the upper extremity of the pit to permit the location, within the upper end of the pit, of a T 17 which connects said section 16 with a substantially vertical short pipe 18 arrar above and in line vertically with the section 16 and extending above the pit. The T 17 is also employed in placing a laterally extending pipe 19 in communication with the casing-section 16, and said pipe 19 is employed in conducting oil laterally of the upper end of the well-casing, when desired, to any desired place and provided with a valve 20 for controlling communication through said pipe.

At the upper end of the pipe 18 and above the pit 12 is a valve-casing which comprises a substantially horizontal bottom section 21 and also comprises a substantially horizontal top section 22 arranged over and resting on and covering the bottom section 21, and one of said sections, preferably the bottom section 21, (see Figs. 2, 6, 8 and 9) is provided at the top with a recess 23 arranged to form a substantially horizontal guideway engaged by a substantially horizontal flat gate or valve 25 and has the dimensions required to accommodate the location of a rotatable screw having a threaded portion 26 employed in

actuating said valve. It will be observed, therefore, that said guideway is formed interiorly of said valve-casing at the opposing faces of the sections 21 and 22.

The bottom section 21 of said valve-casing (see Figs. 2 and 7) is provided centrally of its bottom with an externally polygonal or angular downwardly projecting member 27, and said section 21 has a hole 28 formed centrally of said member 27 and extending vertically to the recess 23 in said section from the bottom of said section and forming the fluid-inlet of the valve-casing. The upper end portion of the hole 28 is diametrically smaller than the remainder of the hole so as to form a downwardly facing shoulder 29 at the lower end of said upper end portion of the hole. The valve-casing-section 21 is threaded, at said hole and below said shoulder, onto the upper end portion of the pipe 18 and is therefore removably attached to said pipe, and said pipe abuts, at its upper end, against said shoulder, as shown in Figs. 2, 3 and 9.

The top section 22 of said valve-casing (see Figs. 1 and 2) is provided centrally of its top with an upwardly projecting member 30 externally polygonal or angular in plan, as shown in Fig. 1, and said section has a hole 31 formed centrally of said member 30 and extending vertically through said section and forming the fluid-outlet of the valve-casing and arranged in line vertically with the hole 28 in the bottom valve-casing-section 21. The sections 21 and 22 are removably secured together by screws 32, as shown in Figs. 7 and 9. The lower end portion of the hole 31 is diametrically smaller than the remainder of the hole so as to form an upwardly facing shoulder 33 at the upper end of said lower end portion of the hole, and a vertical pipe 35 is threaded at said hole into the section 22 and employed in conducting oil to a reservoir (not shown) or other desired place. The pipe 35 abuts at its lower end against the shoulder 33, as shown in Figs. 2, 3 and 9.

Said valve-casing (see Figs. 2, 7 and 8) also comprises two plates 36 overlapping opposite end faces respectively of each of the sections 21 and 22 and removably secured to said sections by screws 37 and forming opposite end walls respectively of the hereinbefore mentioned guideway, and the threaded portion 26 of the hereinbefore mentioned valve-actuating screw extends from the inner side of one of said walls to the inner side of the other of said walls. At each end of said guideway said valve-actuating screw has a plain end portion 38 which is diametrically smaller than the threaded portion 26 of said screw and has bearing in the adjacent end wall of said guideway. The threaded portion 26 of the valve-actuating screw, being diametrically larger than the plain end portions 38 of said screw, obviously prevents endwise movement of said screw during rotation of the screw, and one of said plain portions of said screw extends outside of the valve-casing and is provided at its outer end with a hand-wheel 39 for rotating the screw.

The valve 25 is movable endwise of the aforesaid guideway and has a port 41 extending vertically through the valve, and the relative arrangement of the parts is such that said port is out of communication with the fluid-inlet 28 and fluid-outlet 31 in the valve-casing, as shown in Figs. 2, 8 and 9, and consequently out of communication with the pipes 18 and 35, or that said port is in line vertically and communicates with said fluid-outlet and fluid-inlet and participates in establishing communication between said pipes as shown in Fig. 3, according as the valve has been actuated into the one or the other of its extreme positions. The side wall 42 of the aforesaid guideway (see Figs. 8 and 9) overlaps the adjacent side edge of the valve, and the threaded portion 26 of said screw is arranged at and longitudinally of the opposite side edge of said valve and is parallel with the path of the valve. The valve 25 is provided, at its last-mentioned side edge, with segmental screw-threads 43 meshing with or operatively engaging the threaded portion 26 of the valve-actuating screw, so that said valve is slid endwise of the guideway from its closed position shown in Figs. 2, 8 and 9 into its open position shown in Fig. 3, or vice versa, according as said screw is rotated in the one or the other direction.

A cap-plate 45 (see Figs. 2 and 7) is arranged over and mounted on the aforesaid valve-casing and extends around and conforms to the member 30 of the top section 22 of said valve-casing and therefore has a central polygonal or angular hole 46 which is occupied by said member 30, so that said member 30 prevents displacement of the cap-plate 45 circumferentially of said member 30 and horizontally in any direction.

The cap-plate 45 forms a member of means whereby the aforesaid valve-casing is reliably held, independent of the well-casing, against upward displacement, and said means (see Figs. 1, 2, 4 and 6) also comprise two substantially horizontal and corresponding metal plates 47 lying on the bottom of the pit 12 at opposite sides respectively of the well-casing and tied together by metal bars 48 secured by bolts or screws 49 to said plates.

The cap-plate 45 (see Figs. 1, 5, 6 and 10) is provided, adjacent each side of two opposite sides of said valve-casing, with two seat-forming portions 50 which are spaced longitudinally of the top edge of said side of the valve-casing. Said portions 50 pro-

ject laterally and outwardly in the direction in which said side of the valve-casing faces and have their top surfaces 51 sloping upwardly in said direction, and the cap-plate 45 is provided, at and above the lower end of each of said surfaces, with a shoulder 52 facing in said direction. On said portions 50 (see Figs. 1 and 6) lies a bar 53 which abuts against the adjacent shoulders 52.

Each seat-forming portion 50 of the cap-plate 45 (see Figs. 1, 5, 6 and 10) has a slot 55 formed centrally between the side edges of said portion 50 and extending endwise of said portion and open at its outer end at the upper extremity of the sloping surface 51 of said portion 50 to permit movement, out of said slot, of an upright rod 56 extending upwardly through and above said slot and loosely through and above the adjacent bar 53 the top of which is overlapped by a nut 57 threaded above said bar onto said rod so that said bar is held, independently of the well-casing and connected valve-casing, against upward displacement. By this construction it will be observed that the cap-plate 45 is removably but adequately secured in place in relation to the adjacent valve-casing, and said cap-plate, and consequently said valve-casing, are reliably held, independent of the well-casing, against upward displacement.

Each bar 53 extends over and across the slots 55 in the adjacent portions 50 of the cap-plate 45 and rests on said portions 50 at both sides of said slots, and obviously the slope of the top surfaces 51 of said portions 50 upwardly in the direction of the outer and open ends of said slots prevents accidental displacement of said bar on said surfaces in said direction, and preferably the rod 56 extending through one of said slots is pivotally connected, at its lower end, to one of the plates 47, and the rod 56 extending through the other of said slots is pivotally connected to the other of said plates. The pivotal connection between each rod 56 and the adjacent plate 47 is shown as comprising a substantially horizontal pivotal pin 58 extending through or into ears 59 formed on said plate, and said rod is arranged as required to permit it to be swung out of and into the slot 55 engaged thereby. Obviously a withdrawal of the nuts 57 and bars 53 renders the rods 56 free to be swung out of the slots 55.

On the plates 47 (see Figs. 2, 4 and 6) are preferably piled heavy weights 60 which serve to retain said plates in place on the bottom of the pit 12.

What I claim is—

1. In an oil-well-controlling valve-attachment, the combination, with a well-casing, a valve-casing arranged above and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, and a valve arranged to control communication between said fluid-inlet and said fluid-outlet, the aforesaid valve-casing being provided at the top thereof with an upwardly projecting member which is angular in plan, and the aforesaid fluid-outlet being formed centrally of said projecting member, of a cap-plate embracing and conforming to said projecting member and mounted on the valve-casing, and means, independent of the well-casing, for preventing upward displacement of said cap-plate.

2. In an oil-well-controlling valve-attachment, the combination, with a well-casing, a valve-casing arranged above and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, a valve arranged to control communication between said inlet and said outlet, and a cap-plate mounted on the valve-casing and having seat-forming portions which project laterally of and outwardly in relation to the valve-casing and have slots extending to outer edges of and vertically through said portions, of rigid members mounted on said seat-forming portions and crossing said slots, upright rods extending upwardly through said slots and loosely through and above said slot-crossing members, and nuts threaded onto said rods above said slot-crossing members, said rods being pivoted at their lower ends and supported independently of the well-casing and connected valve-casing and arranged to be swung out of said slots upon the withdrawal of the nuts and slot-crossing members.

3. In an oil-well-controlling valve-attachment, the combination, with a well-casing, a valve-casing arranged above and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, a valve arranged to control communication between said inlet and said outlet, and a cap-plate mounted on the valve-casing and having seat-forming portions which project laterally of and outwardly in relation to the valve-casing and have slots extending to outer edges of and vertically through said portions, of rigid members mounted on said seat-forming portions and crossing said slots, upright rods extending upwardly through said slots and through and above said slot-crossing members, and means on said rods for preventing displacement of said slot-crossing members upwardly from the cap-plate, said rods being pivoted at their lower ends and supported independently of the well-casing and connected valve-casing and arranged to be swung out of the slots upon the withdrawal of the slot-crossing members.

4. In an oil-well-controlling valve-attach-

ment, the combination, with a well-casing, a valve-casing arranged above and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, and a valve arranged to control communication between said inlet and said outlet, of a cap-plate mounted on the valve-casing and provided adjacent each side of two opposite sides of the valve-casing with two seat-forming portions which are spaced longitudinally of the top edge of said side of the valve-casing, a bar mounted on said portions of the cap-plate, and means independent of the well-casing for preventing upward displacement of said cap-plate, said cap-plate being held against circumferential displacement.

5. In an oil-well-controlling valve-attachment, the combination, with a well-casing, a valve-casing arranged above and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, and a valve arranged to control communication between said inlet and said outlet, of a cap-plate mounted on the valve-casing and provided, adjacent each side of two opposite sides of the valve-casing, with two seat-forming portions which are spaced longitudinally of the top edge of said side of the valve-casing and project laterally and outwardly, said cap-plate being provided, at and above the inner ends of the top surfaces of said seat-forming portions, with shoulders facing in the direction in which said side of the valve-casing faces, and a bar mounted on said portions of the cap-plate and abutting against said shoulders and held, independently of the well-casing, against upward displacement.

6. In an oil-well-controlling valve-attachment, the combination, with a well-casing, a valve-casing arranged above and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, and a valve arranged to control communication between said inlet and said outlet, of a cap-plate mounted on the valve-casing and provided, adjacent each side of two opposite sides of the valve-casing, with two seat-forming portions which are spaced longitudinally of the top edge of said side of the valve-casing and have their top surfaces sloping upwardly in the direction in which said side of the valve-casing faces, and a bar mounted on said surfaces and held, independently of the well-casing, against upward displacement.

7. In an oil-well-controlling valve-attachment, the combination, with a well-casing, a valve-casing arranged above and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, and a valve arranged to control communication between said inlet and said outlet, of a cap-plate mounted on the valve-casing and provided, adjacent each side of two opposite sides of the valve-casing, with two seat-forming portions which are spaced longitudinally of the top edge of said side of the valve-casing and project laterally and outwardly and have their top surfaces sloping upwardly in the direction in which said side of the valve-casing faces, said cap-plate being provided, at and above the lower ends of said surfaces, with shoulders facing in said direction, and a bar mounted on said surfaces and held, independently of the well-casing, against upward displacement.

8. In an oil-well-controlling valve-attachment, the combination, with a well-casing, a valve-casing above and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, a valve controlling communication between said inlet and said outlet, and a cap-plate mounted on the valve-casing and provided, adjacent each side of two opposite sides of the valve-casing, with seat-forming portions which are spaced longitudinally of the top edge of said side of the valve-casing and project laterally and outwardly in the direction in which said side of the valve-casing faces and have slots extending vertically through and endwise of said portions and open at their outer ends, of a bar mounted on said slotted portions of the cap-plate and extending over the slots, rods extending upwardly through said slots and through said bar, members connected to said rods and arranged to prevent upward displacement of said bar, and weighted plates at the lower ends of the rods, said rods being pivotally connected to said plates and arranged to be swung out of the slots upon the withdrawal of said bar.

9. In an oil-well-controlling valve-attachment, the combination, with a valve-casing which comprises two superposed sections secured together and has an interior guideway at the opposing faces of said sections, the upper of said sections having the fluid-outlet of the valve-casing and the lower of said sections having a fluid-inlet for receiving oil or fluid from a well-casing, of a flat ported valve which is in communication or out of communication with said inlet and outlet according as the valve is in the one or the other of its extreme positions, and a rotatable screw employed in actuating the valve and held against endwise movement and having a threaded portion extending endwise of said guideway, said screw being arranged at one side edge of the valve and having two plain portions at opposite ends respectively of and diametrically smaller than its threaded portion, said plain portions having bearing in the valve-casing, and the valve having segmental threads operatively engaging the threaded portion

of said screw and having its opposite side edge overlapped by the adjacent side wall of the aforesaid slideway.

10. In an oil-well-controlling valve-attachment, the combination, with a valve-casing which has a substantially horizontal interior guideway having end walls and also has a fluid-outlet and a fluid-inlet formed at and centrally of the top and bottom respectively of said guideway, of a flat ported valve engaging said guideway and having a port which is in communication or out of communication with said inlet and said outlet according as the valve is in the one or the other of its extreme positions, and a rotatable screw which is employed in actuating the valve and has a threaded portion arranged at and longitudinally of one side edge of the valve and has two plain portions at opposite ends respectively of and diametrically smaller than said threaded portion, said valve having its opposite side edge overlapped by the adjacent side wall of the aforesaid guideway and having segmental threads meshing with said threaded portion of said screw, the aforesaid plain portions of said screw having bearing in the aforesaid end walls of the guideway, and the threaded portion of said screw extending from the one to the other of said end walls.

11. The combination, with a pit, a well-casing extending upwardly into and centrally of said pit, a valve-casing arranged above and centrally in relation to said pit and connected to the well-casing and having a fluid-outlet and a fluid-inlet which is in communication with the well-casing, and a valve arranged to control communication between said inlet and said outlet, of two weighted plates arranged at opposite sides respectively of the well-casing and tied together and lying on the bottom of the aforesaid pit, rods attached to said plates and extending above the pit, a cap-plate mounted on the aforesaid valve-casing, rigid members seated on said cap-plate and surrounding the aforesaid rods, and members borne by said rods and overlapping the tops of said rod-surrounding members.

In testimony whereof, I sign the foregoing specification, this 10th day of January, 1923.

ANDREW L. LOEFFLER.