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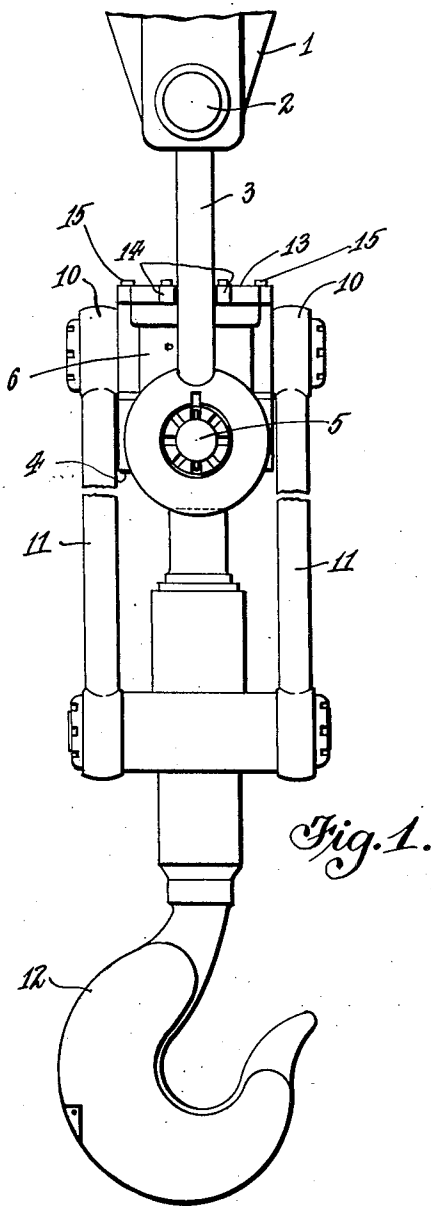
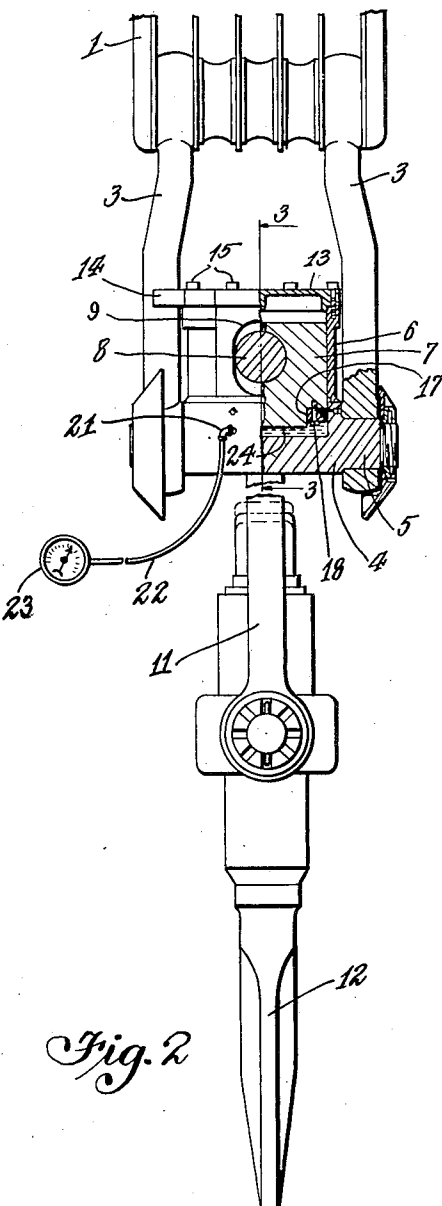
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1,997,864

HYDRAULIC WEIGHT INDICATOR

Filed May 22, 1931

2 Sheets-Sheet 1



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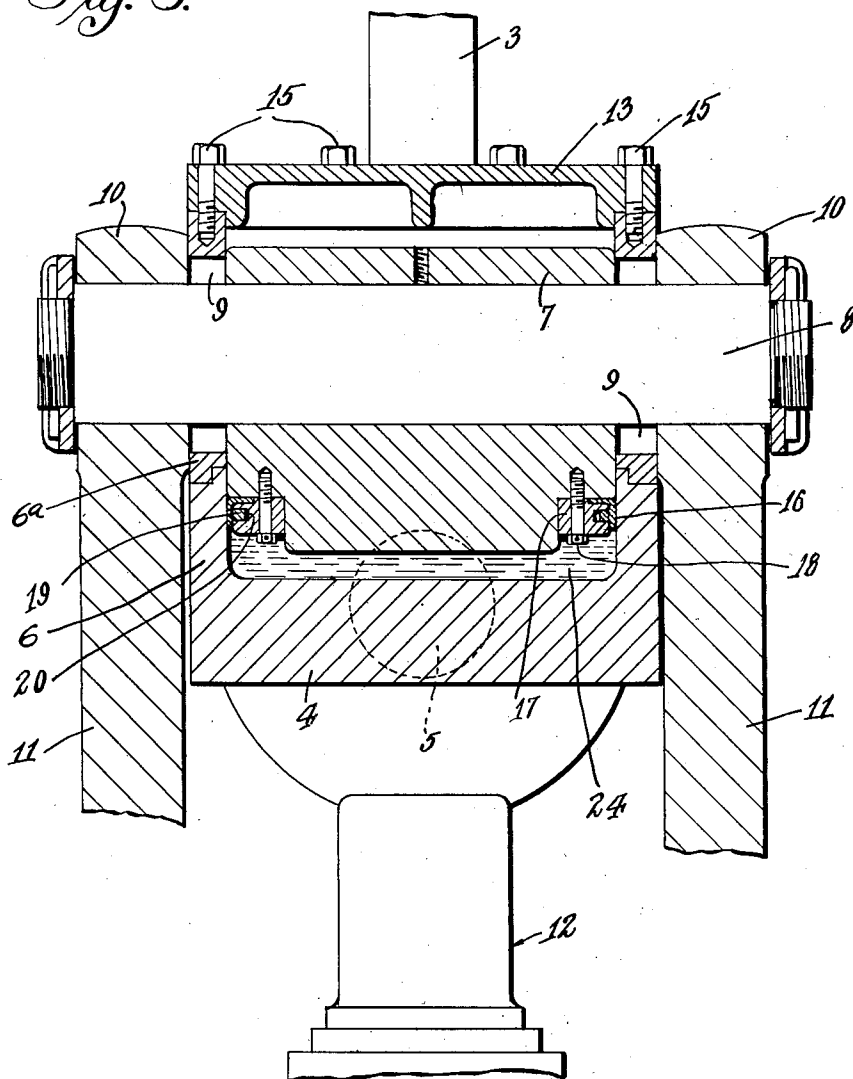
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Fig. 3.



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UNITED STATES PATENT OFFICE

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HYDRAULIC WEIGHT INDICATOR

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Application May 22, 1931, Serial No. 539,235

4 Claims. (Cl. 265—47)

This invention relates to hydraulic weight indicators for use in connection with the apparatus employed in carrying out the rotary process of drilling oil wells.

5 It is an object of this invention to provide a hydraulic weight indicating device for indicating the weight imposed upon the drill utilized in drilling a well, which indicating device is constructed as an integral portion of the suspending mechanism utilized in suspending the drill stem in the derrick.

10 Another object of this invention is to provide a hydraulic weight indicating device including a cylinder supported in a traveling block having a piston mounted therein which is secured to the bails of the suspending hook and which piston is supported on a fluid so that the weight imposed upon the traveling block may be indicated from the pressure developed in such fluid.

15 Other objects and advantages of this invention it is believed will be apparent from the following detailed description of a preferred embodiment thereof as illustrated in the accompanying drawings.

20 In the drawings:

25 Figure 1 is a side elevation of a combined traveling block and hook structure including a hydraulic weight indicating means embodying my invention.

30 Figure 2 is an edge elevation partly in section thereof.

Figure 3 is an enlarged fragmental sectional view of the hydraulic weight indicating device embodying my invention.

35 In the preferred embodiment of my invention illustrated in the accompanying drawings, 1 indicates a traveling block over which the cable is trained from the crown block of an oil well derrick. The traveling block 1 is provided with a transversely extending supporting end 2 upon which block bails 3 are pivotally mounted. The lower end of the block bails 3 are connected together by means of a cross head 4 which is pivotally mounted by trunnions 5 in the lower eyes of the bails 3.

40 Formed integral with the cross head 4 is a cylinder 6 within which a plunger or piston 7 is mounted. Positioned in the cylinder 6 below the plunger 7 is a volume of fluid 24 such, for example, as oil upon which the plunger 7 is supported. The plunger 7 is positioned within the cylinder 6 to move vertically. The plunger 7 is provided with a transversely extending pin 8 which extends through elongated slot 9 formed through the wall of the cylinder extension 6^a.

The outer ends of the pin 8 pass through eyes 10 of the hook bails 11 to pivotally support the hook 12. The hook 12 may be of any suitable or desirable construction and is herein diagrammatically illustrated as a rotary spring hook.

5 In order to prevent tipping of the cylinder 6 and to provide a cap for the cylinder extension 6^a, a cap 13 is provided which is formed with stops 14 which extend on opposite sides of one of the bails 3 to prevent rotation of the cylinder extension 6^a or the cross head 4 on the trunnions 5 thereof. The cap 13 is secured to the upper end of the cylinder extension 6^a by means of cap bolts 15 which are threaded to the cylinder extension 6^a to pass through the cap 13.

15 The plunger 7 is provided with a sealing ring herein illustrated as comprising a flexible packing ring 16 held in position by means of a retaining ring 17 secured to the lower face of the plunger 7 by means of a plurality of cap bolts 18 spaced around the ring 17 and threaded to the plunger 7. A split ring 19 is carried in an annular groove 20 formed in the ring 17 in position to expand outwardly to force the packing ring 16 against the wall of the cylinder 6.

25 In order to register the pressure imparted to the fluid 24 within the cylinder 6, a port is formed through the wall of the cylinder 6 and is connected by means of a fitting 21 with a flexible hose 22 leading to a gauge 23. The gauge 23 may be positioned in any suitable or desirable position within the derrick at a place where it may be readily observed by the operator of the drilling mechanism.

30 Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. In a hydraulic weight indicating device, 40 the combination of a pivotally mounted cross-head, a cylinder supported by the cross-head and having a pair of diametrically opposed elongated slots, a plunger mounted within the cylinder, a cap for the cylinder, the cap being provided with means for restricting the pivotal movement of the cross-head, a pin passed transversely through the plunger and extending through the elongated slots formed in the cylinder, and suspension bails mounted on the opposed ends of 50 the pin.

2. In a hydraulic weight indicating device, the combination of a pivotally mounted cross-head, a cylinder supported by the cross-head and having a pair of elongated slots, a plunger 55

mounted within the cylinder, a cap for the cylinder, the cap being provided with means for restricting the pivotal movement of the cross-head, a pin passed transversely through the plunger and extending through the elongated slots formed in the cylinder, suspension bails mounted on the opposed ends of the pin, and a port formed through the cylinder in communication with a volume of fluid confined in the cylinder to which a weight registering means is adapted to be coupled.

3. In a hydraulic weight indicating device, the combination of a pivotally mounted cross-head, a cylinder supported by the cross-head and having a pair of diametrically opposed elongated slots, a plunger mounted within the cylinder, a cap for the cylinder, means for restricting the pivotal movement of the cross-head, a pin passed transversely through the plunger and extending

through the elongated slots formed in the cylinder, and a suspension ball mounted on the opposed ends of the pin.

4. In a hydraulic weight indicating device, the combination of a pivotally mounted cross-head, a cylinder supported by the cross-head and having a pair of elongated slots, a plunger mounted within the cylinder, a cap for the cylinder, means for restricting the pivotal movement of the cross-head relative to the cylinder, a pin passed transversely through the plunger and extending through the elongated slots formed in the cylinder, suspension bails formed on the opposite ends of the pin, and a port formed through the cylinder in communication with a volume of fluid confined in the cylinder to which a weight registering means is adapted to be coupled.

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