Aug. 7, 1928. 1,680,068

F. W. SADLER

FLEXIBLE DRILL NIPPLE AND OIL SAVER

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Fig. 1.

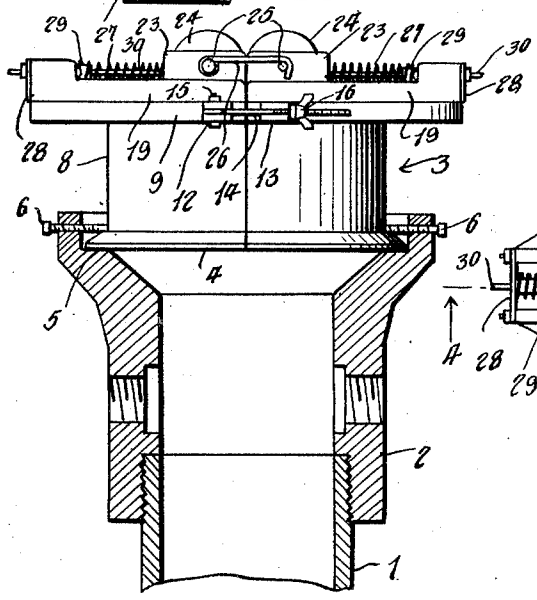


Fig. 2.

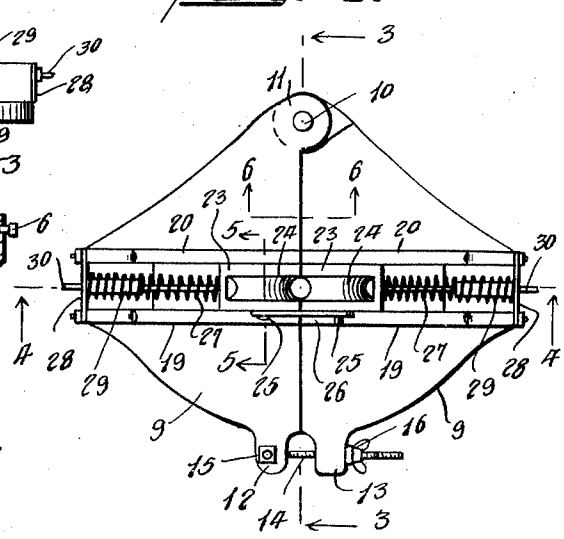


Fig. 6.

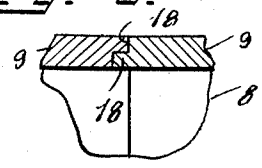


Fig. 3.

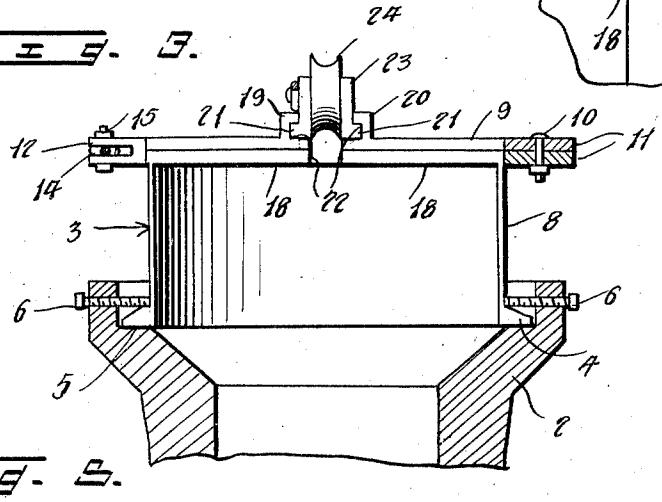
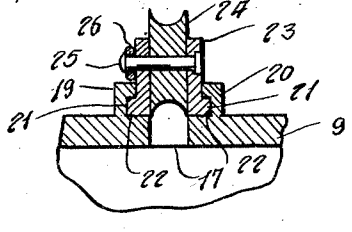


Fig. 5.



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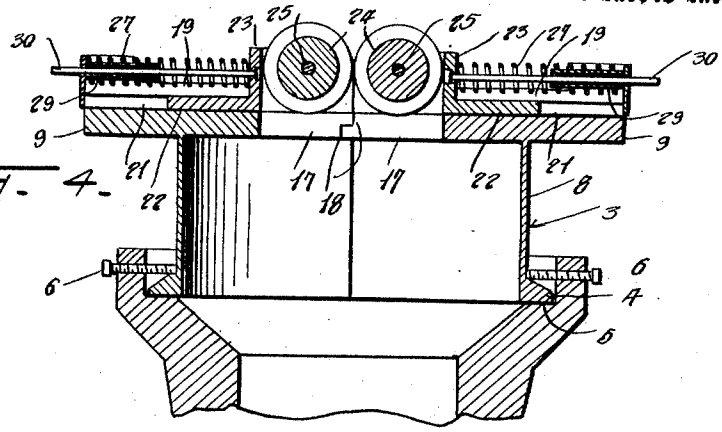
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FLEXIBLE DRILL NIPPLE AND OIL SAVER

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FIG. 4.



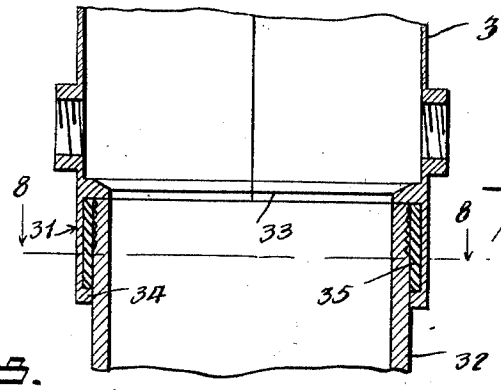
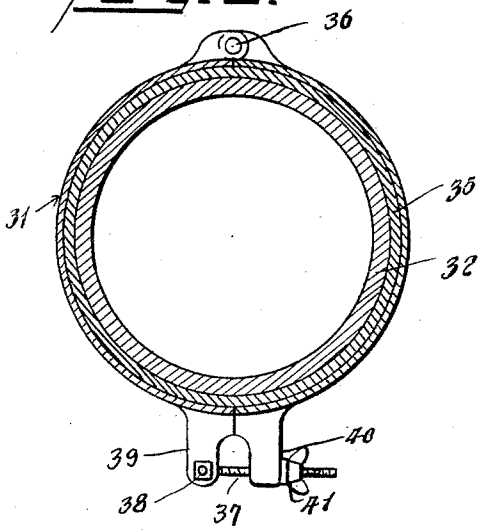


FIG. 7.

FIG. 8.



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Patented Aug. 7, 1928. 1,680,068

UNITED STATES PATENT OFFICE.

FREDERICK W. SADLER, OF OKLAHOMA CITY, OKLAHOMA.

FLEXIBLE DRILL NIPPLE AND OIL SAVER.

Application filed March 30, 1927. Serial No. 179,622.

This invention relates to improvements in oil well drilling apparatus and more particularly to improvements in the drilling nipples of such apparatus.

The invention has for one of its objects to provide a drilling nipple which may be readily secured to a casing head or directly to a casing, which will prevent backlash of and subject the cable to comparatively little wear, which in itself will be subjected to comparatively little wear, and which will reduce to the minimum the leakage of oil or gas from the well.

The foregoing and other objects are attained by the construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, wherein:

Figure 1 is a view partly in vertical section and partly in elevation illustrating the application of the drilling nipple to a casing head,

Figure 2 is a top plan view of the drilling nipple,

Figure 3 is a sectional view taken on the vertical plane indicated by the line 3—3 of Figure 2,

Figure 4 is a sectional view taken on the vertical plane indicated by the line 4—4 of Figure 2,

Figure 5 is a sectional view taken on the vertical plane indicated by the line 5—5 of Figure 2,

Figure 6 is a similar view taken on the vertical plane indicated by the line 6—6 of Figure 2,

Figure 7 is a sectional view taken on a plane extending vertically and centrally through the lower portion of a modified form of the nipple and the upper portion of the casing, and

Figure 8 is a horizontal sectional view taken on the plane indicated by the line 8—8 of Figure 7.

Corresponding and like parts are referred to in the following description, and designated in the several views of the accompanying drawings, by similar reference characters.

In the drawings, 1 designates the casing, 2 the casing head and 3 the drilling nipple.

The drilling nipple 3 is provided at its lower end with an outer flange 4 which rests upon the shoulder 5 of the casing head 2, and is secured to the casing head by set screws 6 carried by the casing head and engaging the flange.

The drilling nipple 3 comprises a cylindrical body 8 and a substantially elliptical top plate 9. The flange 4 is carried by the lower end of the body 8, and the plate 9 projects laterally beyond the body. The body 8 and plate 9 are of sectional formation, and the sections thereof are similar. The body and plate sections are connected by a pivot 10 which engages the overlapped portions 11 of the plate sections and is located laterally beyond the body in alinement with the meeting edges of the body and plate sections. The sections of the plate 9 are provided opposite the pivot 10 with an apertured lug 12 and a slotted lug 13. A bolt 14 is pivoted as at 15 to the lug 12, and is removably positioned in and extends through the slot of the lug 13. A nut 16 is engaged with the bolt 14 and contacts with the lug 13, and serves in conjunction with the bolt to secure the sections of the body 8 and plate 9 in closed relation. The sections of the plate 9 have registering recesses 17 which provide an elongated opening for the reception of the cable, and those portions of the contiguous edges of these sections located laterally beyond the recesses, are provided with overlapping and contacting ribs 18. Parallel guides 19 and 20 extend upwardly from each section of the plate 9, and are arranged at right angles to the meeting edges thereof and of the sections of the body 8. The guides 19 and 20 are provided in their opposing faces with grooves 21 which receive ribs 22 extending laterally from slides or carriers 23. Grooved rollers 24 are rotatably supported in the slides 23 by axles 25, and the grooves of the rollers are of such depth as to provide between the rollers and opening slightly larger diametrically than the cable. The slides 23 are connected, with their inner ends and the edges of the rollers 24 in contact, by a hook 26 which is pivoted to one of the axles 25 and detachably engaged with the other. Compression springs 27 are positioned between the slides 23 and plates 28 secured to

the outer ends of the guides 19 and 20. Guide sleeves 29 for the springs 27 are secured to the plates 28, and guide pins 30 for the springs are secured to the slides 23 and pass through the springs, plates 28 and sleeves.

To permit the drilling nipple 3 to be connected directly to the casing, the base attachment shown in Figures 7 and 8 is provided. The base attachment 31 embraces the upper end of the casing 32 and is supported thereon by a flange 33. The flange 33 extends inwardly from the base attachment 31 and rests upon the upper end of the casing 32. Below the flange 33, the base attachment 31 is provided with an inner flange 34 which is of less breadth than the flange 33 and contacts with the outer side of the casing 32. A packing ring 35 is positioned between the flanges 33 and 34 and establishes an oil and gas tight connection between the base attachment 31 and casing 32. The base attachment 31 is used in place of the casing head 2, and like said head is provided with diagonally opposite openings. It is of sectional formation, and the sections thereof constitute downward extensions of the sections of the drilling nipple 3. The lower ends of the base attachment sections are connected by a pivot 36 which is in alinement with the pivot 10. A bolt 37 pivoted as at 38 to a lug 39 carried by one of the base attachment sections and detachably engaged with a slotted lug 40 carried by the other, and nut 41 mounted on the bolt 37 and contacting with the lug 40, function in conjunction with the bolt 14 to hold this form of the drilling nipple closed. The rollers 24 are yieldingly held at the axial center of the drilling nipple 3 by the springs 27, and the cable passes between the rollers and through the opening provided by the recesses 17.

As the sections of the plate 9 are provided at their meeting ends with overlapping and contacting ribs 18, as the slides 23 have a tight fit in the guides 19 and 20 and embody bottom members, as the rollers 24 contact with and meet at opposite sides of the cable, the slides, rollers and cable closing the opening 17, comparatively little oil and gas can escape through the drilling nipple. The drilling nipple is flexible and an oil saver, and may be readily applied and removed after first disengaging the bolt 14 from the lug 13 and the hook 26 from one of the axles 25.

What is claimed is:—

1. A drilling nipple comprising pivotally connected sections, means securing the sections in closed relation, a slide carried by each section, rollers journaled in the slides, means detachably connecting the slides, and springs bearing against the slides.

2. A drilling nipple comprising pivotally connected sections, means securing the sections in closed relation, a slide carried by each section, rollers journaled in the slides, a hook pivotally connected to one slide and detachably engaged with the other, and springs bearing against the slides.

3. A drilling nipple comprising pivotally connected sections provided at their lower ends with flanges. means securing the sections in closed relation, a slide carried by each section, rollers journaled in the slides, means detachably connecting the slides, and springs bearing against the slides.

4. A drilling nipple comprising body sections, plate sections secured to the body sections, means associated with the plate sections to pivotally connect and secure them and the body sections in closed relation, a slide carried by each plate section, rollers journaled in the slides, means detachably connecting the slides, and springs bearing against the slides.

5. A drilling nipple comprising pivotally connected body and plate sections. means securing the sections in closed relation, the plate sections being provided with recesses to provide a cable receiving opening, and provided at opposite sides of the opening with overlapping and contacting ribs, a slide carried by each plate section, rollers journaled in the slides, means detachably connecting the slides, and springs bearing against the slides.

6. A drilling nipple comprising pivotally connected body and plate sections, means securing the sections in closed relation, pairs of grooved guides carried by the plate sections, slides having ribs fitting in the grooves of the guides, rollers journaled in the slides, means detachably connecting the slides, and springs bearing against the slides.

7. A drilling nipple comprising pivotally connected body and plate sections, said sections having notches to provide a cable receiving opening and with overlapping and contacting ribs at opposite sides of the opening, means securing the sections in closed relation, pairs of guides carried by the plate sections and provided with grooves, slides provided with ribs fitting in the grooves of the guides and closed at their lower sides, rollers journaled in the slides, means detachably connecting the slides, and springs bearing against the slides.

8. A drilling nipple having guides, slides mounted in the guides, rollers journaled in the slides, means detachably connecting the slides, springs bearing against the guides and slides, guide sleeves for the springs carried by the guides, and guide pins carried by the slides and passing through the springs and sleeves.

9. A drilling nipple having a top plate provided with a cable receiving opening, slides mounted on the plate for movement in opposite directions from the center of the

plate, and means for yieldingly maintaining the slides at the center of the plate.

10. A drilling nipple having a top plate provided with a cable receiving opening, slides mounted on the plate, rollers carried by the slides at opposite sides of the cable and contacting with the cable, means connecting the slides to the plate for movement in opposite directions from the center of the plate, and means for yieldingly retaining the slides and rollers at the center of the plate.

In testimony whereof I affix my signature.

FREDERICK W. SADLER.