J. BURNS.

TEMPER SCREW.

APPLICATION FILED JAN. 9, 1919.

1,394,710. Patented Oct. 25, 1921.

Fig. 2.

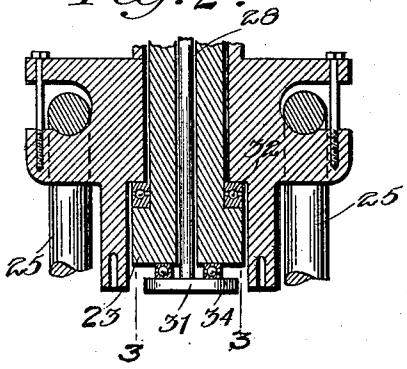


Fig. 1.

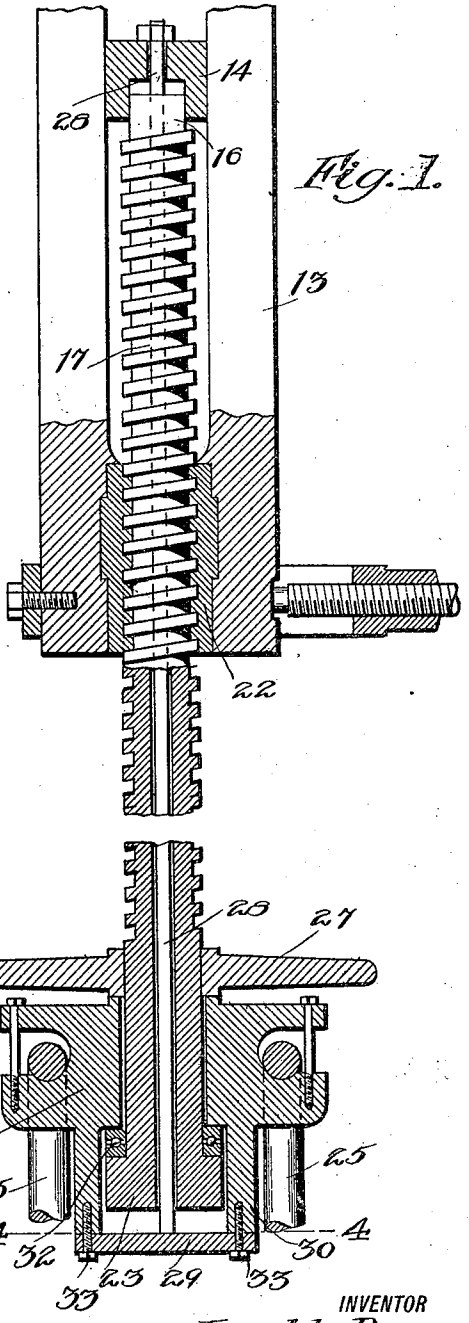


Fig. 3.

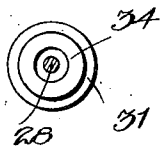
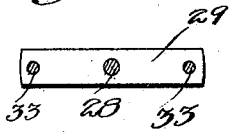


Fig. 4.



WITNESSES

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TEMPER-SCREW.

1,394,710. Specification of Letters Patent. Patented Oct. 25, 1921.

Application filed January 9, 1919. Serial No. 270,322.

To all whom it may concern:

Be it known that I, JOSEPH BURNS, a citizen of the United States, and a resident of Okmulgee, in the county of Okmulgee and State of Oklahoma, have made certain new and useful Improvements in Temper-Screws, of which the following is a specification.

My present invention relates generally to temper screws employed in apparatus for drilling deep wells, its purpose being to lengthen the stroke of the tool step by step as the drilling operation proceeds, so that the bit will be certain to strike the bottom of the hole on each down stroke.

More particularly my present invention relates to certain improvements in the details of construction of the temper screw described and claimed in my Patent No. 1,181,734 dated May 2, 1916, my object being to provide a more effective and more simple support or connection adjacent the lower end of the temper screw.

In the accompanying drawing illustrating my present improvements;

Figure 1 is an enlarged view partly broken away and in section, of the temper screw;

Fig. 2 is an enlarged view of the lower portion of the temper screw illustrating a slightly modified form;

Fig. 3 is a detail horizontal section taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a similar view taken substantially on line 4—4 of Fig. 1.

Referring now to these figures, and as in my patent above referred to, the reins 13 form a slideway for the cross bar 14 which, through the usual connections shown for instance in my above mentioned patent, exerts a constant upward pull on the temper screw 17, which is threaded through a split nut 22 at the lower ends of the reins 13, whereby the entire screw will be automatically raised when the grip of the split nut 22 is relaxed after the screw has been fully lowered in the operation of drilling. In this way the operation may be repeated without delay.

At its lower end the temper screw 17 has an enlarged head 23 which provides a seat for the swivel bar 24, from which the links 25 are suspended to sustain the cable clamp 26. Above the swivel bar 24 the temper screw has the usual hand bar 27 by which the screw is manipulated, that is, rotated within the split nut 22.

From Fig. 1 in particular it will be noted that the temper screw 17 is tubular throughout its length, and that a rod 28 extends through the axial opening of the temper screw, the upper end of which has a squared portion 16 engaging the squared bore of the cross bar 14, and the lower end of which is in accordance with my present improvements provided with an enlarged head 29 below the enlarged head 23 of the temper screw and either in the nature of a cross piece extending for the full diameter of the depending flange 30 of the swivel bar 24, as seen in Figs. 1 and 4, or of the circular from of a diameter less than that of the lower head 23 of the temper screw as seen at 31 in Figs. 2 and 3.

In the usual construction of the temper screw, an anti-friction bearing 32 as seen clearly in Figs. 1 and 2 is disposed between the enlarged head 23 of the temper screw and the swivel bar 24, so that the lower portion of temper screw may turn freely within the swivel bar 24, as it is rotated by the hand bar 27 in spite of the fact that it bears the weight of the swivel bar. As the rod 28 does not turn, however, it is ordinarily sufficient that it be provided with an integral cross piece 29 secured by bolts or screws 33 to the swivel bar 24, as in Figs. 1 and 4.

Where, however, as in more or less rare instances, it is necessary for the swivel bar 24 to rotate, it is of course necessary that the integral head at the lower end of the rod 28 be in the form of a disk 31, as in Figs. 2 and 3, between which in this instance and the lower surface of the lower enlarged head 23 of temper screw 17, is disposed an anti-friction bearing 34.

The improved connections at the lower end of the rod 28 thus obviously simplify to a material extent the connections of my patent above referred to, while the above described engagement of the cross bar 14 by virtue of its extensions 15 with the reins 13, avoids all danger of friction between the same and the upper end of the feed

screw 17, and avoids loss of power as well as undue wear.

I claim:

In an arrangement of the character described, a tubular temper screw, a swivel bar with which the lower end of the temper screw has a rotatable connection, and a rod extending through the temper screw and below the lower end thereof and having an integral cross piece at its lower extremity, said cross piece being secured to the swivel bar.

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Witnesses:
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