No. 610,239. Patented Sept. 6, 1898.

P. H. MACK.

TEMPER SCREW FOR OIL OR ARTESIAN WELL DRILLING TOOLS.

(Application filed Dec. 10, 1897.)

(No Model.)

Fig 1

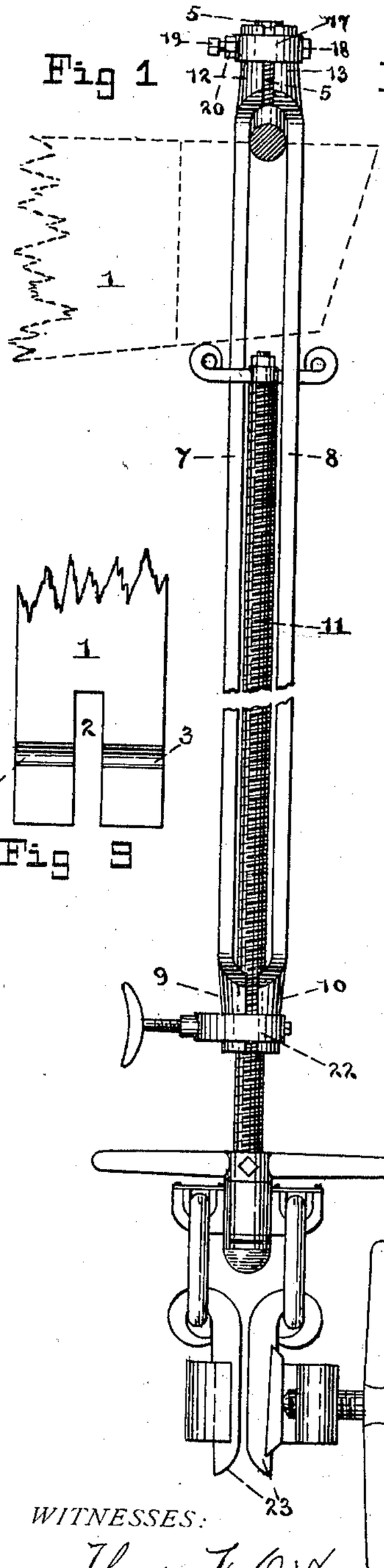

Fig 2

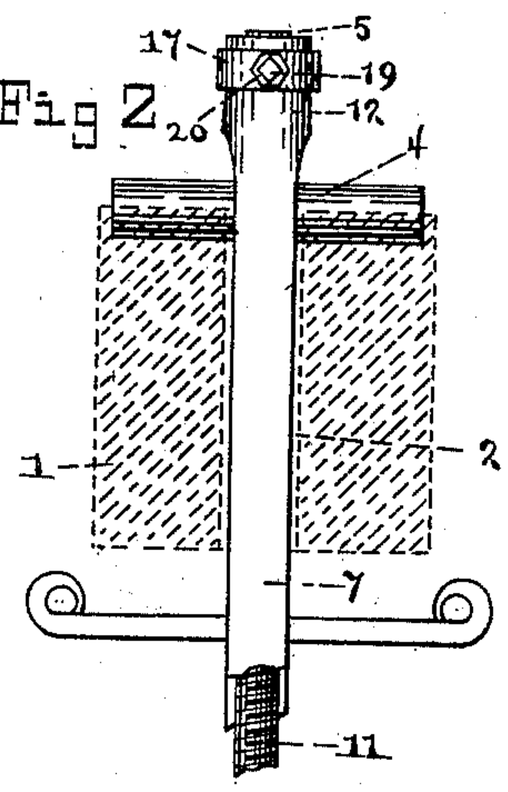

Fig 3

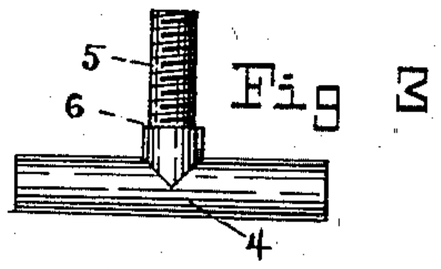

Fig 4

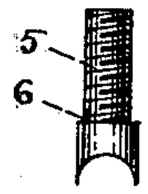

Fig 6

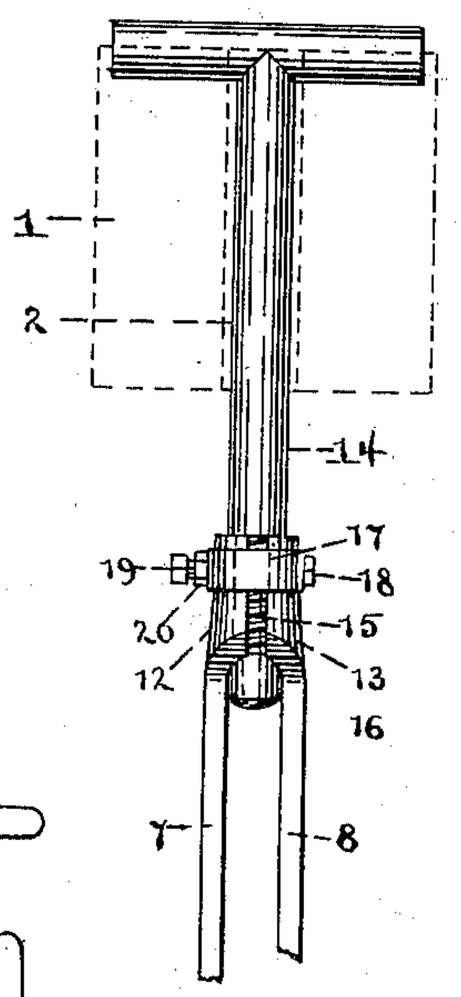

Fig 5

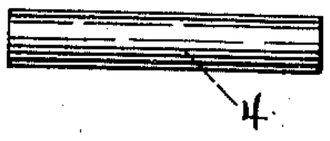

Fig 7

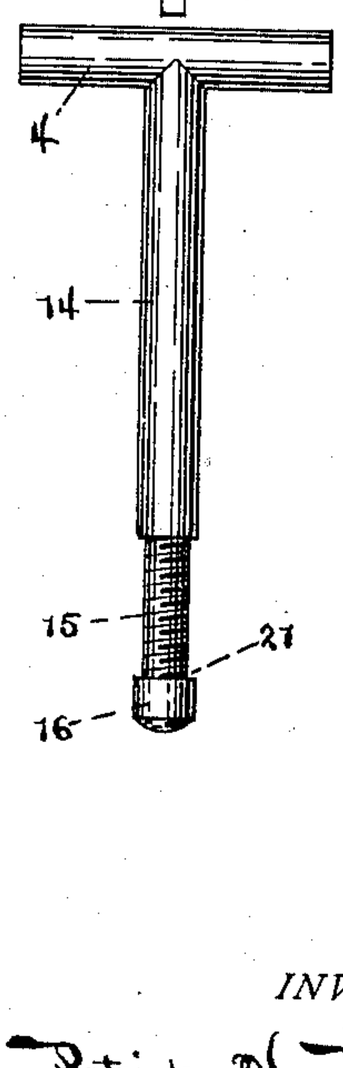

Fig 8

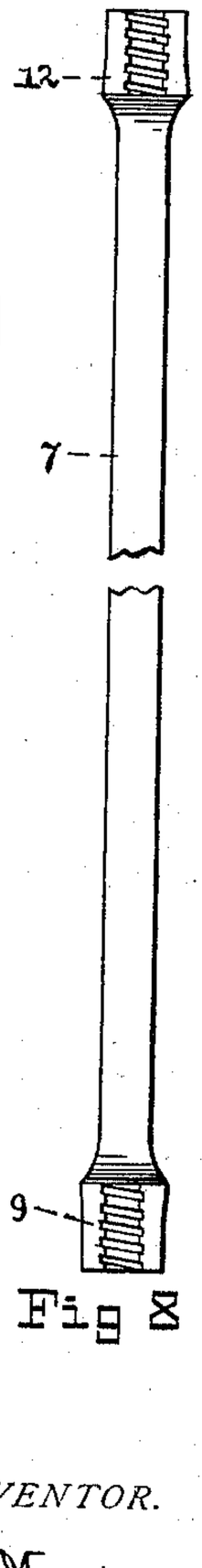

Fig 9

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PATRICK H. MACK, OF BRADFORD, PENNSYLVANIA.

TEMPER-SCREW FOR OIL OR ARTESIAN WELL DRILLING TOOLS.

SPECIFICATION forming part of Letters Patent No. 610,239, dated September 6, 1898.

Application filed December 10, 1897. Serial No. 661,464. (No model.)

To all whom it may concern:

Be it known that I, PATRICK H. MACK, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented a new and useful Improvement in Temper-Screws for Oil or Artesian Well Drilling Tools, of which the following is a specification.

The object of my invention is to provide a temper-screw that will be more convenient and much more durable than the ones now in general use. I accomplish this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a view of my temper-screw suspended from the end of a walking-beam. Fig. 2 represents a view of the upper end of the temper-screw at right angles to that of Fig. 1. Fig. 3 represents a view of the inverted T used with the temper-screw illustrated in Figs. 1 and 2, the shank and cross-bar being integral. Figs. 4 and 5 represent another method of constructing the inverted T, the shank and cross-bar being individual pieces. Fig. 6 is another form of the temper-screw T and shows the upper portion of the reins of the temper-screw connected to it. Fig. 7 is the temper-screw T as shown in Fig. 6. Fig. 8 represents an inside view of one of the reins of my temper-screw. The other rein is similar in construction. Fig. 9 represents a top view of the derrick end of the walking-beam.

Similar numerals refer to similar parts throughout the several views.

Numeral 1 represents the end of the walking-beam on which the temper-screw is suspended.

2 is the slot in the walking-beam in which the temper-screw swings.

3 is a groove which holds the cross-bar 4 of the temper-screw T.

In Figs. 1, 2, and 3 an inverted T is shown, consisting of the cross-bar 4 and the screw-threaded shank 5, provided with the shoulder 6.

7 and 8 are the reins of the temper-screw. They are provided at their lower ends with the one-half of a screw-threaded nut 9 and 10, respectively, in order to engage with the main screw 11, and at their upper ends with the one-half of a screw-threaded nut 12 and 13, respectively, in order to engage with the screw-threads of the temper-screw T.

In Figs. 6 and 7 another form of the temper-screw T is shown. It consists of the cross-bar 4 and the shank 14, integral therewith, which is provided with the screw-threads 15 and the head 16. In suspending a temper-screw with this T connection the cross-bar 4 is placed in the groove 3 of the end of the walking-beam 1, and the shank extends down through the slot 2 to such a distance as to allow the connection of the temper-screw reins 7 and 8 to swing clear of the walking-beam, as illustrated in Fig. 6.

The screw-threaded half-nuts 12 and 13 are duplicates of the screw-threaded half-nuts 9 and 10. The screw-thread of the main screw 11 and the screw-thread of the temper-screw T are the duplicate of each other. The half-nuts 12 and 13 are provided with the yoke 17, which is shown secured to the half-nut 13 by the bolt 18. The yoke 17 is provided with the set-screw 19 and the lock-nut 20. The reins are connected to the temper-screw T by closing the half-nuts 12 and 13, so that the screw-threads thereof will engage with the screw-threads of the shank of the temper-screw T, the lower end of screw-threads of the half-nuts coming in conjunction with the shoulder 6, if the inverted temper-screw T is used, or with the shoulder 21, formed by the head 16, if the upright temper-screw T (illustrated in Figs. 6 and 7 is used.)

The advantage derived by the use of the temper-screw provided with my improvement as described above is as follows: The half-nuts are four and one-half inches long, while the main screw is from four to five feet in length, which gives it from ten to thirteen times the wearing-surface. It will therefore outwear several sets of half-nuts. The frequent turning of the main screw which sustains the drilling-tools and cable causes the screw-threads of the half-nuts engaged with it to wear away, so that in time they lose their friction-grip on the main screw. When this occurs with the temper-screw now in use, it has to be sent to a machine-shop and be provided with a new set of half-nuts; but with the use of my improvement the driller can at once transfer the yoke 22 to the half-nuts 12 and 13 and the yoke 17 to the half-nuts 9 and

10. The reins are then reversed, the half-nuts 10 and 12 are connected to the main screw, and the half-nuts 9 and 10 are secured to the temper-screw T, thus giving to the main screw a new set of half-nuts, and thereby doubling the durability of the temper-screw, besides saving the time that would be lost and the expense that would be incurred in sending the temper-screw to a machine-shop for new half-nuts.

The benefit derived in the use of a temper-screw provided with inverted temper-screw T, particularly the sectional one, as shown by Figs. 4 and 5, is as follows: In drilling, after the main screw is run out without stopping the engine, the bull-rope is thrown on the bull-wheels and the slack of the cable is wound upon the bull-wheel shaft. The instant the cable becomes taut the driller disconnects the clamps 23 from the cable, which continues to wind upon the bull-wheel shaft. It occasionally occurs that the driller is not quick enough to make the disconnection, and the result is that the temper-screw now in general use will be either bent out of shape or broken. With the use of my improvement as shown in Figs. 1 and 2 the reins would be pushed up through the slot 2 of the walking-beam 1, giving the driller time to either disconnect the temper-screw from the cable or stop the engine before any damage to the temper-screw can be done.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a temper-screw for oil and Artesian well drilling tools, the combination with the reins consisting of two bars provided at each of their ends with a screw-threaded half-nut, of the yoke 22, and its set-screw, the yoke 17, and its set-screw, and the screw-threaded temper-screw T provided with a shoulder at the base of the screw-thread, substantially as shown and described.

2. A temper-screw frame, consisting of two reins, each rein provided at its upper and lower end with a half-nut, the half-nuts being provided with internal screw-threads all of the same dimensions, and each set of half-nuts being provided with a yoke and set-screw substantially as shown and for the purpose herein described.

PATRICK H. MACK.

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