J. SMALL.

Temper-Screw and Cable-Clamp for Drilling Oil-Wells.

No. 206 751. Patented Aug. 6, 1878.

Fig. 1

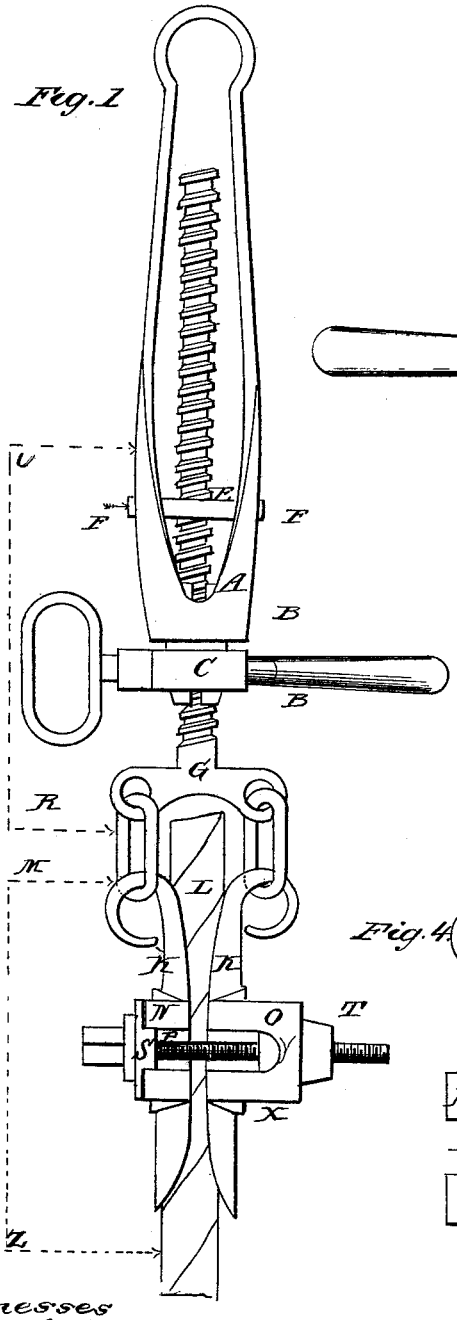


Fig. 2.

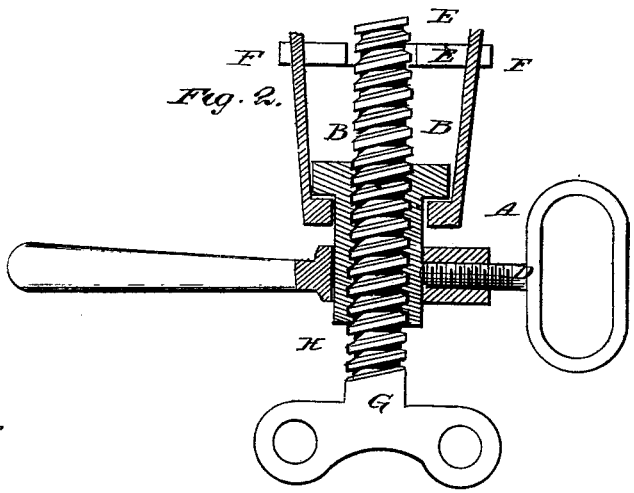


Fig. 3.

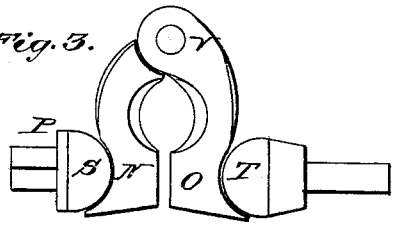
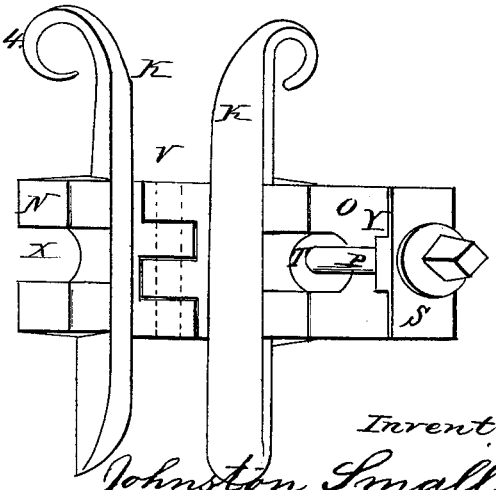


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHNSTON SMALL, OF BRIDGEWATER, (ROCHESTER P. O.,) PENNSYLVANIA.

IMPROVEMENT IN TEMPER-SCREWS AND CABLE-CLAMPS FOR DRILLING OIL-WELLS.

Specification forming part of Letters Patent No. **206,751**, dated August 6, 1878; application filed April 24, 1878.

To all whom it may concern:

Be it known that I, JOHNSTON SMALL, of Bridgewater, (Rochester P. O.,) in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Temper-Screws and Cable-Clamps for Drilling Artesian, Gas, and Oil Wells, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

In the figures the same letters refer to the same parts.

Figure 1 is a side elevation of the machine. Fig. 2 is a vertical section taken from U to R, showing temper-screw, swivel-nut, and clamping mechanism. Fig. 3 is a detached top view of cable-clamps. Fig. 4 is a vertical view of cable-clamps, taken from M to Z, showing them thrown open and the manner of receiving the cable.

In the temper-screws and clamps heretofore employed for drilling purposes the swivel is either attached directly to the upper end of frame A A, or the swivel is attached to the temper-screw G at its lower end.

This invention differs materially from the above plans, and has for its object making a temper-screw durable and accessible, and to obviate in the construction the difficulty attending the use of the ordinary swivel, which has hitherto been employed in giving a rotary motion to the drill-cable. As the resistance to its motion is variable, the bearings of the swivel become worn and rendered useless, and in consequence require replacing by new parts, incurring an unnecessary cost and delay; and, also, to provide an improved and substantial clamp for holding the drill-cable. This is accomplished by providing the frame A A with a novel swivel and operating and clamping mechanism at its lower end, so that the screw may be turned with the cable and drill without turning the frame, and at the same time, if desired, allow the screw to be advanced (or retracted, if necessary) as the nature of the work may require without in any way interfering with the turning of the drill-cable.

In the accompanying drawing, A A is a frame, with two standards terminating at the top in a loop, which is attached in the usual way to the walking-beam. This frame is provided at its lower end with a circular opening to admit the passage of swivel-nut B B. The temper-screw G works through and within this nut. The temper-screw G has a special thread, the under side being square and the upper side beveled, the object of which will hereinafter be described. The swivel-nut B B is divided into halves, having conical sides and flange, with female thread corresponding to that of temper-screw G. This nut performs duty, while resting on its bearing and being clamped to temper-screw, as a swivel for the cable-clamps. When unlocked, it enables the operator to run out the temper-screw, and allows it at the same time to act as a swivel.

For the purpose of readjusting the temper-screw the locking-bar C is dropped from swivel-nut B B, when the temper-screw G may be pushed up its full length. The bevel part of threads in nut and screw enables the parts to freely pass each other, thus, with a single operation, doing what would otherwise require more time and labor.

The nut B B is provided with dowels or similar devices to cause them to remain parallel at all times. C is a turning or clamping bar, with clamping or locking screw D, the use of which is to lock or clamp the swivel-nut B B to the temper-screw G while turning the drill-cable, or to unlock it from the temper-screw, if necessary to pay out or take up the cable, or to release the swivel-nut entirely when desired to return the temper-screw. E is an open disk, through which the temper-screw G freely passes, and is intended to prevent the upward progress of swivel-nut B B while readjusting the screw G. The disk is secured to the frame A A by screw-bolts F F or otherwise, so as to be readily removed should it be found necessary to take out the swivel-nut.

If found necessary, a brass ring may be inserted between the swivel and its bearing, to reduce the friction, or the nut itself may be entirely constructed of brass or any other metal that will answer the purpose.

The cable-clamp is suspended from the temper-screw, as shown in Fig. 1, in the usual way. It consists of two jaws, K K, firmly secured to the projections N O, which may be cast or forged and riveted to the jaws. The projections N O are pivoted or hinged at V.

A screw-bolt, P, passes through a horizontal elongated slot, X, having a rolling washer at S and a rolling nut at T. The projection O is prolonged, so as to bridge over the slot at Y, which retains the bolt in place, (the object of which will be apparent,) and having a free lateral movement.

A few turns of the bolt P enables the operator to open the cable-clamp speedily and close it when required with certainty, embracing the cable firmly.

The principal features in this device are the novel swivel-nut through which traverses the temper-screw with its peculiar thread, which, in combination with the clamping and turning mechanism, operates the temper-screw either in or out, and enables the driller to vary the length of the cable at pleasure, rapidly and conveniently, and the improved cable-clamp, with its slot and bolt, rolling nut, and rolling washer, which enables the jaws to accommodate any variation in size of cable, compressing the jaws firmly, and effectually holding therein the cable.

I am aware that the split swivel-nut and a clamp have been used with a temper-screw having ordinary screw-threads. I do not, therefore, broadly claim the split-nut and clamp with the temper-screw; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the frame A A, with the removable disk E and set-screws F F, of the temper-screw G, having the square and beveled threads H, swivel-nut B B, constructed in two parts, and the locking-bar C, having the set-screw D, substantially as and for the purposes set forth.

2. The cable-clamping jaws K K, having the projections N and O, provided with the horizontal elongated slot X and bulge Y, in combination with the rolling washer S, rolling nut T, and bolt P, substantially as and for the purpose set forth.

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