B. MINKLER.

COMBINED CASING AND TUBING TONGS AND HOLDER.

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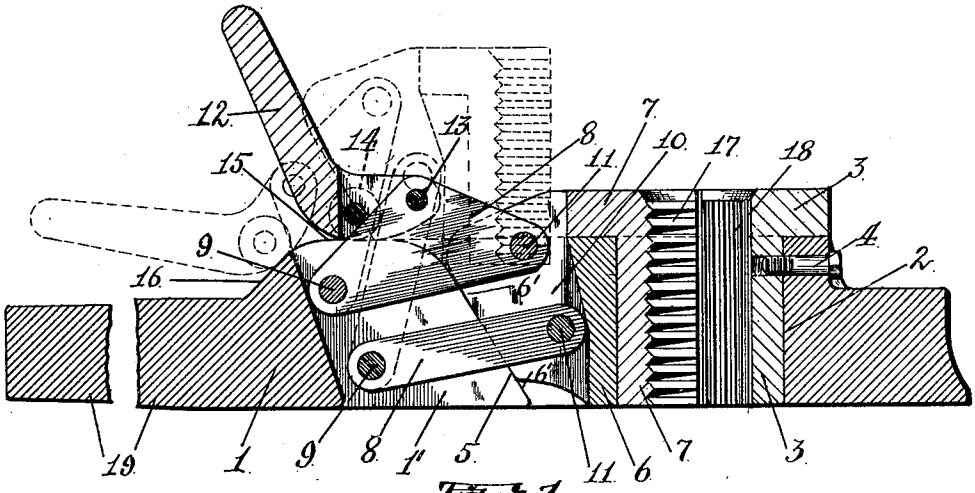


Fig. 1.

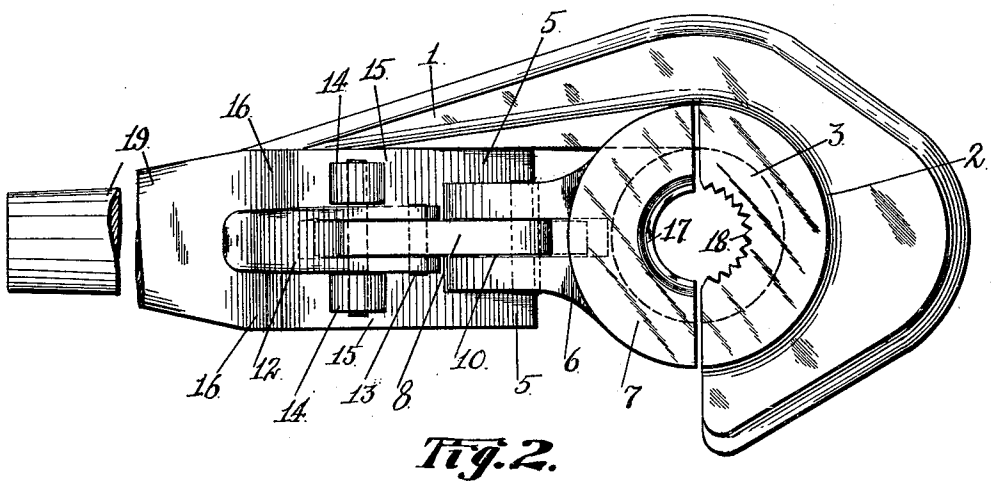


Fig. 2.

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COMBINED CASING AND TUBING TONGS AND HOLDER.

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To all whom it may concern:

Be it known that I, BRUCE MINKLER, a citizen of the United States, residing at Maricopa, in the county of Kern and State of California, have invented certain new and useful Improvements in Combined Casing and Tubing Tongs and Holders, of which the following is a specification.

My invention relates, in general, to apparatus and implements used in the art of well-boring or drilling, and, particularly, to that class of tools and devices which in their use are applied to the casing or to the tubing to secure certain necessary results in their installation or in their dismemberment.

To make clear the object of my invention and its use, it may be best to state that the well-casing consists of a number of sections of pipe which form the metallic lining of the well-hole. These sections are successively screwed together by couplings, as the well deepens, and form what is called the casing "string." The "tubing" is likewise a "string" of pipe sections coupled together, said tubing being suspended within the casing and forming the housing for the sucker or pump rods and also the channel through which the well-contents are discharged. In both cases, as the "string" of previously coupled sections is lowered into the well, a fresh section is coupled to the upper end of the string, and this operation requires the employment of well-known tools and devices. These are usually a pair of "elevators" the upper one supporting the fresh pipe section by bearing up under its collar on top and lifting said section to vertical alinement with the "string," and the lower one bearing up under the uppermost collar of the "string," and supporting said string; and two tongs, the lower one, called the "back-up" tongs, being applied to the "string" to lock it against rotation, while the upper one, applied to the fresh section, screws said section into the uppermost collar of the string.

My invention which, from its function, may properly be termed a combined casing and tubing tongs and holder, is intended to take the place and to do the work of the lower "elevator" and the "back-up" tongs. When operating on the "casing," it rests upon the well-mouth blocks, and when operating on the "tubing" it rests upon the "casing-head." Its function is the dual one of supporting the casing string or the tubing string, as the case may be, and locking it against rotation, while the fresh section is being screwed home, and this it does so effectually that not only is the fresh section screwed home tight in the collar of the "string," but also the collar itself is tightly set up on said string, which is a desirable result, and one not usually reached by the usual tools.

My invention, therefore, consists in the novel combined casing and tubing tongs and holder which I shall now fully describe by reference to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of the combined casing and tubing tongs and holder. Fig. 2 is a plan of the same.

1 is a stock or body sufficiently extensive and flat bottomed to give it stable support. The forward end of the stock is formed or provided with the fixed jaw 2, having a side entrance. The jaw is best provided with a bushing 3 detachable therefrom, for the substitution of another bushing of different size, in order to adapt the device for different diameters of casing or tubing. The bushing 3 is held by a screw 4. The stock or body 1 opposite the functional face of the fixed jaw is formed with an inclined-plane abutment 5, which slopes downwardly in the direction of the jaw.

6 is the swinging jaw. This may also be provided with a detachable bushing 7, adapting the jaw for the fitting of different size of bushings as may be required.

The back of the swinging jaw 6 is inclined at 6′ to correspond with the incline of the abutment 5. The jaw 6 is carried by a pair of parallel links 8, the rear ends of which play in a slot 1′ of the stock and are pivoted therein at 9. The forward ends of the links play in a slot 10 in the back of the jaw and are pivoted therein at 11. A handle 12 is pivoted at 13 to the upper one of the links 8, and said handle has a rolling fulcrum on the stock formed by the rollers 14, playing on the level fulcrum surfaces 15 of the stock and down behind the inclined surfaces 16 of said stock. When the jaw 6 is open, as shown by the dotted lines in Fig. 1, the handle 12 is depressed and its rollers

14, bearing behind the inclined fulcrum surfaces 16 of the stock, serve to hold the parts in this position. But when the handle 12 is lifted, the rollers 14 travel up the surfaces 16 and then upon the level surfaces 15, and the jaw 6 descends by gravity to its working position in which its inclined back 6' finds a bearing on the inclined abutment 5 of the pipe, as clearly shown in Fig. 1.

In order to insure the grip of the jaws upon the casing or tubing with the effect of both holding the latter from lineal movement, due to its weight, and to lock it against rotation under the strain of screwing the additional or fresh section to the "string," it is best to provide the functional faces of the jaws with gripping or biting teeth those on one jaw being in one direction and those on the other in the other direction. For example, I have shown horizontal gripping teeth 17 in the swinging jaw, or more correctly in its bushing, and I have shown vertical gripping teeth 18 in the fixed jaw or rather in its bushing.

A handle 19 of sufficient length is fitted to the stock 1, to enable the device to be securely held, as, for example, by tying it, so that it will resist the rotary strain of the operation.

To close the device on its work, the operator has merely to kick the handle 12 of the swinging jaw up, whereupon said jaw will swing forward and down to its place on the abutment and because of the latter its clamping effect increases in proportion to the weight imposed upon the jaws. To open the device, the handle is depressed and the jaw 6 will be swung upward and will free the casing or tubing.

If one of the pivot pins or the carrying links of the swinging jaw should break, the jaw would slide down the inclined abutment and so prevent dropping the tubing or casing, so there is no danger of this under any circumstances.

The use of my device saves time of putting on an elevator, and avoids the danger of kinking the pipe under the collar and weakening the thread. It also saves taking the elevator off the hook, and, in fact, said elevator may be permanently fastened to the tubing or casing hook, thus eliminating the danger of the elevator becoming accidentally unhooked and dropped from the derrick, while in the act of setting the tubing in the derrick in 40, 60 or 80 foot sections, which is customary when pulling the tubing, to replace the pumps, or on account of defective pipe. Further, by the use of my device, the elevator is always in position and easy to attach to the pipe. This avoids the danger of kinking and breaking elevators while engaging the hook with the links.

I claim:—

1. A combined casing and tubing tongs and holder comprising a stock having a fixed jaw at its forward end, said stock having an inclined-plane abutment opposing and sloping downwardly toward the face of said jaw; a swinging jaw adapted to move to and from the fixed jaw, said swinging jaw having an inclined back corresponding to and adapted to coact with the inclined-plane abutment of the stock when the two jaws are in operative relation; and a pair of parallel links pivotally connecting the swinging jaw to the stock; said links lying one above the other; and a handle pivotally connected with the upper link, to lift the swinging jaw; and means on the stock coacting with the handle to hold said jaw in lifted position.

2. A combined casing and tubing tongs and holder comprising a stock having a fixed jaw at its forward end, said stock having an inclined-plane abutment opposing and sloping downwardly toward the face of said jaw; a swinging jaw adapted to move to and from the fixed jaw, said swinging jaw having an inclined back corresponding to and adapted to coact with the inclined-plane abutment of the stock when the two jaws are in operative relation, a pair of parallel links pivotally connecting the swinging jaw to the stock; and a handle pivotally connected with one of said links, said handle having a running fulcrum on the top of the stock.

3. A combined casing and tubing tongs and holder comprising a stock having a fixed jaw at its forward end, said stock having an inclined-plane abutment opposing and sloping downwardly toward the face of said jaw, and said stock having also on its upper surface back of the abutment, level fulcrum surfaces terminating in downwardly inclined fulcrum surfaces; a swinging jaw adapted to move to and from the fixed jaw, said swinging jaw having an inclined back corresponding to and adapted to coact with the inclined-plane abutment of the stock when the two jaws are in operative relation; a pair of parallel links pivotally connecting the swinging jaw to the stock; a handle pivotally connected with one of said links; and rollers carried by the handle and adapted to travel upon and coact with the fulcrum surfaces of the stock.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BRUCE MINKLER.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."