Sept. 4, 1928. 1,683,107

C. SEVERNS ET AL

OIL SAVER

Filed Dec. 28, 1927

Fig. 1.

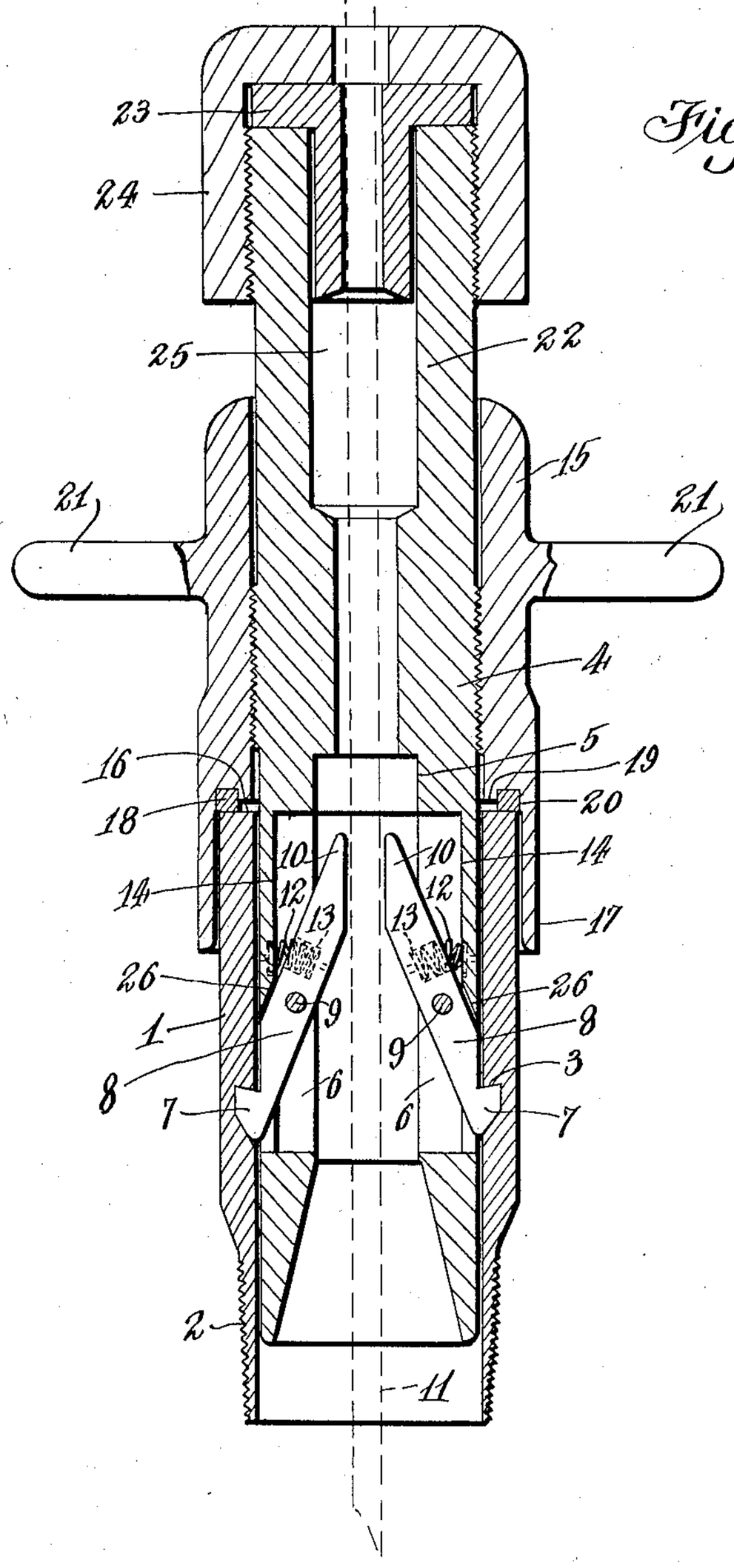
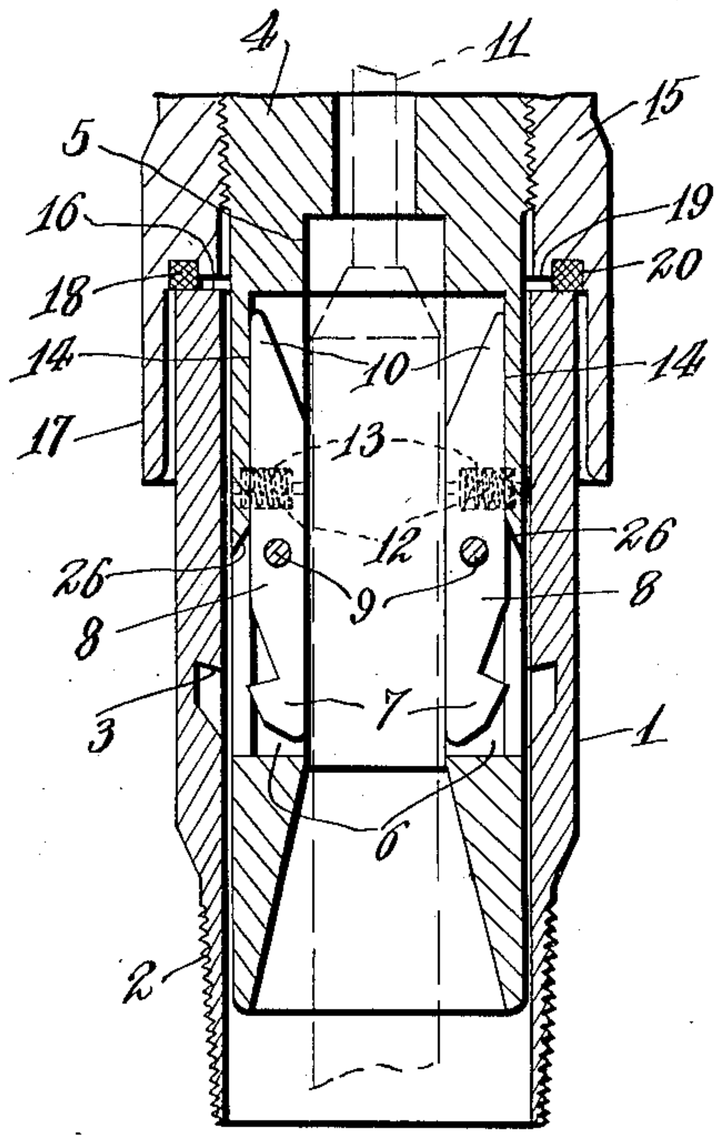


Fig. 2.



Inventors
Clayton Severns
John N. Sticks
By Lyon & Lyon
Attorney

Patented Sept. 4, 1928. 1,683,107

UNITED STATES PATENT OFFICE.

CLAYTON SEVERNS AND JOHN N. HICKS, OF LOS ANGELES, CALIFORNIA.

OIL SAVER.

Application filed December 28, 1927. Serial No. 243,076.

This invention relates to oil saving devices such as used at the upper end of well tubing or casing for saving oil when the cable of a bailer or swab is being run out through the mouth of the well. These devices are usually constructed with spring pressed triggers which hold the device on the end of the casing and when these triggers are struck by the cable-socket, they release themselves and permit the oil saver to detach itself from the casing. One of the difficulties with these devices is that they are not properly packed and usually a considerable amount of oil wiped off of the cable runs out of the oil saver between the cap and the casing. Furthermore, as usually constructed, the triggers or latches that hold the oil saver on the casing occupy a considerable amount of space and do not give sufficient clearance for the cable and cable-socket. The general object of this invention is to provide an oil saver of simple construction in which the triggers are capable of substantially withdrawing into the wall of the plug or body of the oil saver which carries them; also to provide improved means for packing the joint between the cap and the sleeve of the oil saver on the end face of the sleeve and in such a way that the triggers will resist the upward pull of the plug when the cap is screwed down onto the sleeve.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient oil saver.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawings:

Figure 1 is a vertical section through an oil saver embodying our invention, portions of the handles of the cap being shown in elevation; in this view the cable is indicated in dotted lines and the triggers are shown in their normal position. Figure 2 is a view similar to Figure 1, but showing only the lower portion of the oil saver; this view shows the triggers withdrawn into their slots in the body of the oil saver.

In practicing the invention, we provide a sleeve 1 the lower end of which is provided with means such as threads 2 for securing it to the upper end of a well tubing or casing. The interior of this sleeve is provided with an annular shoulder 3 which is preferably slightly inclined, that is to say, slightly conical, for a purpose which will appear hereinafter.

The oil saver has a body 4 of tubular form having a relatively large bore 5 at its lower end. The wall of this body or plug 4 at its lower end is provided with slots 6. The upper portions of these slots are not completely cut through the wall of the plug but the lower ends of the slots are cut through so as to permit the catches 7 of triggers 8 to engage the shoulder 3. These triggers are pivotally mounted on cross pins 9 in their corresponding slots. Each trigger is in the form of a straight bar having a tapered tail 10 which normally projects into the bore 5 of the plug 4 so as to lie close to the cable 11 and in a position to be struck by the cable-socket when it arrives at the oil saver.

We provide spring means for holding the triggers normally in the position in which they are shown in Figure 1. This spring means preferably consists of two coil springs 12 each of which is received in a round socket 13 formed in the outer side of the tail of each trigger. The outer ends of these springs thrust against the bottom of the groove 14 which forms the upper end of the slot 6; in other words, the outer ends of these springs thrust against the wall of the plug 4.

The upper portion of the plug 4 has a thread connection with a cap 15 which seats on the upper end face 16 of the sleeve, being provided with a tubular apron 17 which extends down over the upper portion of the sleeve; a packing ring 18 is clamped between a shoulder 19 on the lower end of the cap and the end face 16, said packing ring being received in an annular groove 20 formed in the shoulder.

The cap is provided with a plurality of radial arms or handles 21 which facilitate its being rotated in screwing it onto the thread of the plug.

The upper end of the plug is formed into a stuffing box 22 having a gland 23 and a cap nut 24 through which the cable extends upwardly. In practice, the stuffing box chamber 25 would be filled with soft packing, operating to wipe off the oil so that it will run back into the well.

The operation of the device is illustrated

in Figure 2, showing that when the cable-socket passes up between the triggers, it will engage their tails and swing them outwardly. When this occurs, the catches 7 of the triggers become released from the sleeve, which thereby detaches the oil saver from the tubing.

The pins 9 pass transversely through the slots 6 and this enables the triggers to withdraw into the slots in the manner indicated in Figure 2.

The detaching of the catches 7 from the annular shoulder 3 is facilitated by inclining the shoulder as indicated. By inclining the shoulder it will be evident that the shoulder does not interfere with the swinging of the catch away from it, but at the same time, the inclination of this shoulder prevents the triggers from disengaging themselves by the upward pull exerted upon the plug when the cap 15 is screwed down onto the upper end of the sleeve.

The triggers 8 are preferably in the form of straight steel bars which are relatively wide so as to enable the sockets 13 to be formed in them to carry the springs 12. Near the pivots 9, we provide an inclined stop face 26 to act as stops for the triggers when the body of the oil saver has been pulled out of the sleeve. These stop faces limit the swinging movement of the triggers and prevent the springs 12 from getting out of position in their sockets.

What we claim is:—

1. In an oil saving device to cooperate with a cable and socket, the combination of a sleeve having means for attaching the same to the upper end of a well tubing or casing, a cap having a bore, seated on the upper end face of the sleeve, a packing ring clamped between the cap and the said end face, a plug threaded to the cap carrying a stuffing box at its upper end and having slots in its wall at its lower end, said sleeve having a circumferential shoulder on its inner face, a trigger pivotally mounted in each slot and having a tail normally projecting into said bore so as to be engaged by the cable-socket, and spring means associated with the triggers for normally holding the triggers in engagement with the said shoulder, said triggers cooperating with said cap to hold the plug in the sleeve when the cap is screwed down on the packing ring, and operating to withdraw substantially into their corresponding slots when their tails are struck by the cable-socket.

2. In an oil saving device to cooperate with a cable and socket, the combination of a sleeve having means for attaching the same to the upper end of a well tubing or casing, a cap having a bore, seated on the upper end face of the sleeve, a packing ring clamped between the cap and the said end face, a plug threaded to the cap carrying a stuffing box at its upper end and having slots in its wall at its lower end, said sleeve having a circumferential shoulder on its inner face, a trigger pivotally mounted in each slot and having a tail normally projecting into said bore so as to be engaged by the cable-socket, each trigger having a spring socket on the outer side of its tail, a coil spring mounted in each socket and thrusting at its outer end against the wall of the plug for holding the triggers in engagement with the said shoulder, said triggers cooperating with said cap to hold the plug in the sleeve when the cap is screwed down on the packing ring.

3. In an oil saving device to cooperate with a cable and socket, the combination of a sleeve having means for attaching the same to the upper end of a well tubing or casing, a cap having a bore, seated on the upper end face of the sleeve, a packing ring clamped between the cap and the said end face, a plug threaded to the cap carrying a stuffing box at its upper end and having slots in its wall at its lower end, said sleeve having a circumferential shoulder on its inner face, a trigger pivotally mounted in each slot and having a tail normally projecting into said bore so as to be engaged by the cable-socket, each trigger having a spring socket on the outer side of its tail, a coil spring mounted in each socket and thrusting at its outer end against the wall of the plug for holding the triggers in engagement with the said shoulder, said trigger cooperating with said cap to hold the plug in the sleeve when the cap is screwed down on the packing-ring.

4. In an oil saving device to cooperate with a cable and socket, the combination of a sleeve having means for attaching the same to the upper end of a well tubing or casing, a cap having a bore, seated on the upper end face of the sleeve, a packing-ring clamped between the cap and the said end face, a plug threaded to the cap carrying a stuffing box at its upper end and having slots in its wall at its lower end, said sleeve having a circumferential shoulder on its inner face, a trigger in the form of a substantially straight bar pivotally mounted in each slot and having a tail normally projecting into said bore so as to be engaged by the cable-socket, said triggers being capable of substantially withdrawing into said slots when their tails are struck, and having spring sockets in the outer sides of their tails, a coil spring carried in each socket and thrusting at its outer end against the wall of the plug, and normally holding the triggers in engagement with the said shoulder, said triggers cooperating with said cap to hold the plug in the sleeve when the cap is screwed down on the packing.

Signed at Los Angeles, California this 22 day of Dec. 1927.

CLAYTON SEVERNS.
JOHN N. HICKS.