Dec. 23, 1924. 1,520,374

O. A. THOMPSON

SUPPORT AND RELEASE FOR WELL TUBING ELEVATORS

Filed Feb. 4, 1924

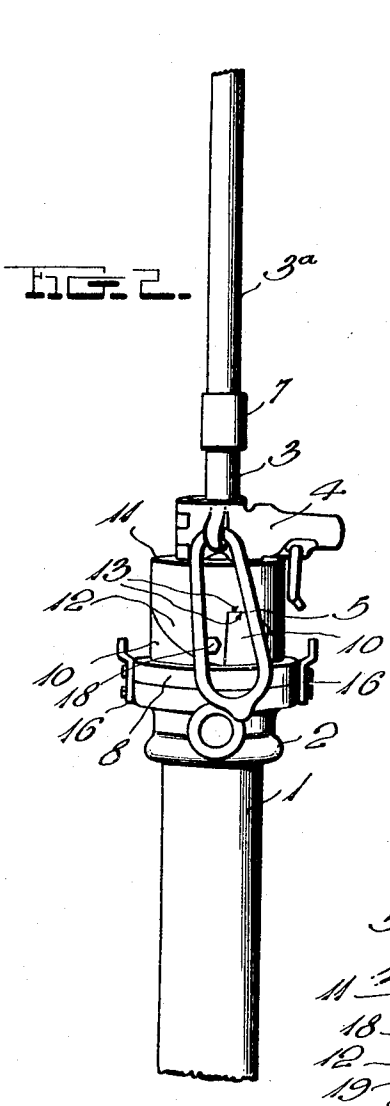


FIG. 2.

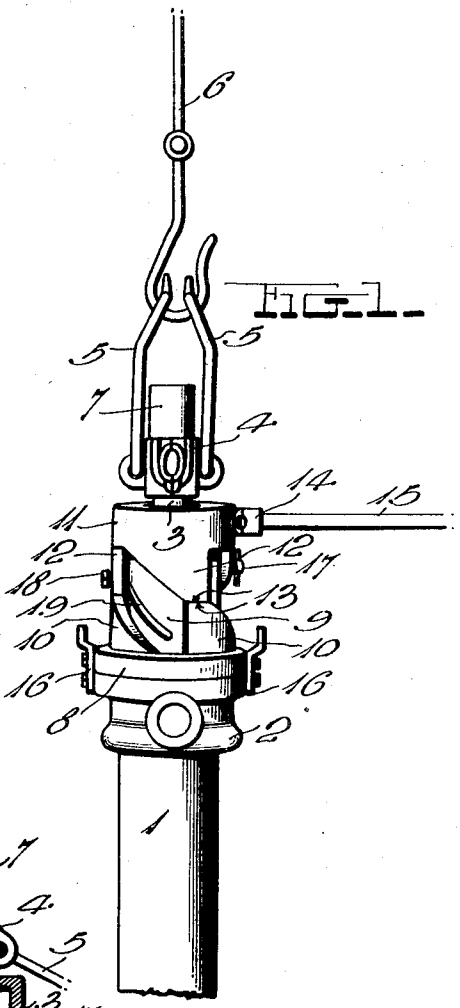


FIG. 1.

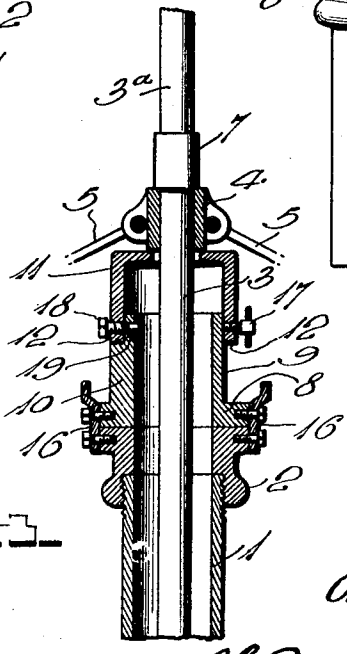


FIG. 3.

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Patented Dec. 23, 1924. 1,520,374

UNITED STATES PATENT OFFICE.

OWEN ALONZO THOMPSON, OF INDEPENDENCE, KANSAS.

SUPPORT AND RELEASE FOR WELL-TUBING ELEVATORS.

Application filed February 4, 1924. Serial No. 690,559.

To all whom it may concern:

Be it known that I, OWEN ALONZO THOMPSON, a citizen of the United States, residing at Independence, in the county of Montgomery and State of Kansas, have invented certain new and useful Improvements in a Support and Release for Well-Tubing Elevators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

When lowering tubing into a well casing, it is customary to equip each added tubing section with what is commonly known as an elevator, to which is attached a derrick cable by means of which the tubing string is lowered until the elevator strikes the casing, and the tubing string is thus held against further descent. Then, the cable is disconnected from the elevator and connected with the elevator of another tube section, which section is raised and connected with the last lowered section. It is then customary to operate the derrick by hand or animal power to raise the entire string of tubing so that the elevator resting on the casing can be removed and the tubing further lowered.

It is the object of my invention to provide novel means to engage and support the elevator of any tube section while another tubing section is being added to the string, provision being made whereby such means may be easily released while the string is supported by the derrick cable and brake, thus disengaging said means from the elevator and permitting the latter to be easily removed without the necessity of raising the string of tubing.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing.

Figure 1 is a perspective view showing my invention in position to engage the elevator by means of which a tubing section is being lowered into a well casing.

Figure 2 is a perspective view showing the position of the device when the elevator is released from the tubing to be removed therefrom.

Figure 3 is a vertical sectional view, illustrating the construction of the invention and the manner in which it limits the downward movement of the elevator.

In the drawing above briefly described, the numeral 1 designates a well casing having the usual casing head 2, through which a tubing section 3 is being lowered into said casing, by means of an elevator 4 having the usual links 5 for connection with a derrick cable 6. In the downward path of the elevator 4 which engages the usual coupling 7 on the upper end of the tubing section 3, I dispose my invention, one embodiment of which is described below.

I have illustrated a base ring 8 adapted to rest upon the casing head 2, in the present disclosure, said ring being provided with an upstanding sleeve 9 having circumferentially spaced, pitched cams 10 around its lower portion. An elevator-supporting ring 11 is provided above the base ring 8 and said ring 11 is provided with a plurality of downwardly extending, circumferentially spaced cams 12 which engage the cams 10, the two sets of cams being shown as provided with flat ends 13 to abut each other when the device is set in the position shown in Fig. 1, with the supporting ring 11 at its highest point. I have shown the ring 11 provided with a socket 14 with which a lever 15 is engaged for turning said ring and its cams with respect to the base ring 8 which is connected by suitable means 16 with the casing head, and it will thus be seen that said ring 11 may be raised or lowered as occasion may require.

To hold the ring 11 in its normally raised position I prefer to provide a set-screw 17 threaded through one of the cams 12 to contact with the sleeve 9 and for the purpose of limiting the relative turning of the two rings, I have shown a stop-screw 18 threaded through one of the cams 12 and having its inner end slidably received in a limiting groove 19 in the sleeve 9.

When using the form of construction disclosed, it is mounted in place upon the casing head 2, before the first section of tubing is lowered. Then, this section is allowed to descend through the device into the casing 1 until the elevator 4 comes in contact with the ring 11, which is then in the raised position shown in Fig. 1. As soon as this takes place, the invention will support the tubing section which has just been lowered and the cable 6 may be used

to elevate another tubing section, such as that indicated at 3a, which section is threaded into the coupling 7. Then, while the tubing sections are supported by the derrick cable, the lever 15 is operated to cause the cams 12 to descend on the cams 10, thereby lowering the ring 11 out of engagement with the elevator 4 and permitting the latter to be quickly and easily removed, without the necessity of moving the string of tubing in any manner whatsoever. Removal of the elevator having been effected, the tubing may be lowered until the next elevator comes in contact with the ring 11, which has of course been returned to its raised position.

It will be seen from the foregoing that a simple construction has been provided for obtaining much better results than those obtained by the common methods of lowering tubing strings into wells, and while excellent results have been obtained from such construction and it is therefore preferably followed, I wish it clearly understood that within the scope of the invention as claimed, numerous changes may be made.

I claim:

1. A supporting and releasing device for a well tubing elevator, comprising a vertically movable supporting member adapted when in a raised position to support the usual elevator of a lowered tubing section while another tubing section is being connected with the lowered section, said support being adapted for downward movement while the connected tubing sections are supported by the usual derrick, whereby to release the elevator and permit easy removal thereof.

2. A supporting and releasing device for a well tubing elevator, comprising a supporting member for the usual elevator of a tubing section, said member being adapted for use above a well casing into which the tubing section is lowered, and releasable supporting means for said supportng member adapted to be released when another tubing section has been connected to the lowered section.

3. A supporting and releasing device for a well tubing elevator comprising a base member adapted to be stationarily supported, an elevator supporting member, and means acting on said supporting member and reacting on said base member for normally holding the former in a raised position and for permitting lowering thereof, said supporting member when raised being adapted to support the usual elevator of a lowered tubing section while another tubing section is being connected with the lowered section, said supporting member being then adapted to be lowered while the connected sections are derrick-supported, whereby to release the elevator and permit easy detachment thereof.

4. A structure as specified in claim 3; said means for normally holding said supporting member in raised position comprising a lever-operated cam.

5. A supporting and releasing device for a well tubing elevator comprising a base ring adapted to be stationarily supported and to surround a tubing section, a supporting ring for the usual elevator of the tubing section when lowered, the two rings being relatively rotatable about a vertical axis, and cam means for effecting upward or downward movement of said supporting ring when the two rings are relatively rotated.

6. A supporting and releasing device for a well tubing elevator comprising a base ring adapted to be stationarily mounted and to surround a tubing section, said ring having an upstanding sleeve and circumferentially spaced pitched cams around the same, a supporting ring for the usual elevator of the tubing section when lowered, said supporting ring having cams surrounding said sleeve and contacting with the aforesaid cams, and means whereby the two rings may be relatively rotated about a vertical axis to effect upward or downward movement of said supporting ring.

7. A supporting and releasing device for a well tubing elevator comprising a supporting member for the usual elevator of a tubing section, said member being adapted for use above a well casing into which the tubing section is lowered, and releasable supporting means for said supporting member adapted to rest on the upper end of the well casing and adapted to be released when another tubing section has been connected to the lowered section.

8. The combination with a well casing, a tube section therein, and the usual elevator by means of which said tube section is lowered; of releasable stop means in the downward path of said elevator adapted to support the latter and the tube section while another tube section is being added, said stop means being then adapted to be released to permit easy detachment of said elevator.

9. The combination with a well casing, a tube section therein, and the usual elevator by means of which said tube section is lowered; of releasable stop means supported by said casing in the downward path of said elevator and adapted to support the latter and the tube section while another tube section is being added, said stop means being then adapted to be released to permit easy detachment of said elevator.

In testimony whereof I have hereunto affixed my signature.

OWEN ALONZO THOMPSON.