

(No Model.)

W. A. GROVE.
BIT TRUCK.

No. 472,538.

Patented Apr. 12, 1892.

Fig. 1.

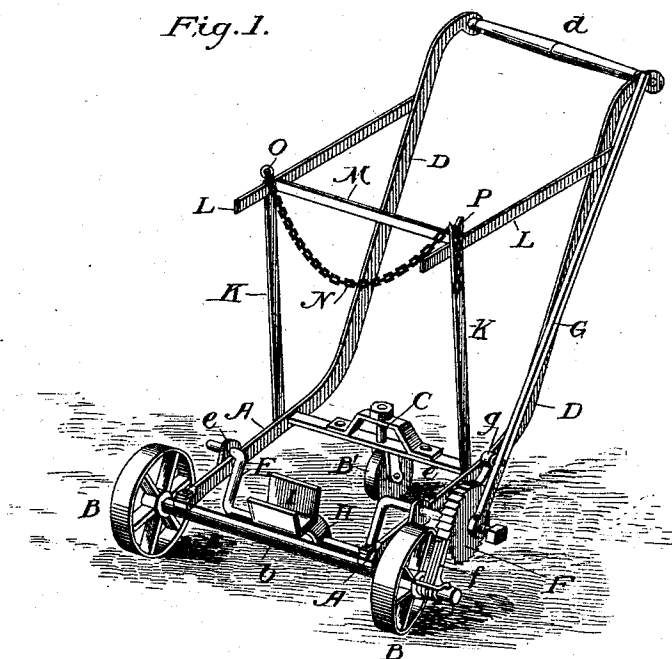


Fig. 2.

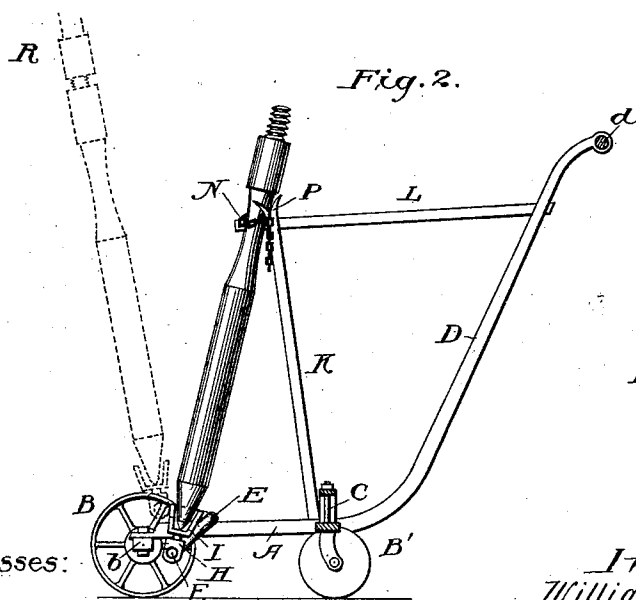
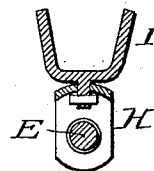


Fig. 3.



Witnesses:

E. Given

A. B. Howland.

Inventor:
William A. Grove,

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UNITED STATES PATENT OFFICE.

WILLIAM A. GROVE, OF TIONESTA, PENNSYLVANIA.

BIT-TRUCK.

SPECIFICATION forming part of Letters Patent No. 472,538, dated April 12, 1892.

Application filed December 7, 1891. Serial No. 414,349. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. GROVE, a citizen of the United States, residing at Tionesta, in the county of Forest and State of Pennsylvania, have invented a new and useful Bit Conveyer and Elevator, of which the following is a specification.

My invention relates to machinery for drilling oil or Artesian wells. The drilling-tools, or "string of tools," as they are called, comprise, first, at the bottom, the bit or drill proper, next the stem, then the jars, and, lastly, the rope-socket, to which is attached the rope or drilling-cable. These parts are all connected by screw-joints, and together weigh two thousand pounds and upward. Obviously the bit must be frequently sharpened, and for this purpose must be removed from the stem. The tools are drawn from the well and swung to one side of the derrick and there held suspended by the cable while the other necessary operations are going on. The bit is then removed, taken to the forge, (generally at one side of the derrick,) sharpened, tempered, and returned to the stem. There are generally two bits, one being sharpened while the other is in use. As these bits are heavy, weighing from one hundred and fifty to five hundred pounds, it requires the labor of two men to carry the bit and insert it in the stem, and even then it is heavy work.

The object of my invention is to provide a truck or carriage on which the bit may be placed and held in an upright position while being conveyed to and from the forge and tempering-tub, and also upon the truck to have an elevator by which the bit may be lowered or raised, so as to be easily disconnected from or connected with the stem, thus requiring but little manual labor. This I accomplish by the device illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the truck; Fig. 2, a sectional view through the center, showing the bit as being conveyed and also in dotted lines as being adjusted to the stem; and Fig. 3, an enlarged section of the bit-shoe, showing its connection with the crank.

In the several views the same letters are used to indicate the same or similar parts.

A represents the frame of the truck mounted upon the three wheels B B and B'. The

two wheels B B revolve on the axle *b*, which is fast to the frame. The rear wheel B' is a pivot-wheel attached to the spindle C.

D D are the arms, being extensions of the sides of the frame A, curved upward to a convenient height and connected at the top by the hand-piece *d*.

Near the front of the frame, resting upon it and confined by the gudgeons *e e*, is placed the crank-shaft E, bent to form the crank between the side pieces of the frame A. At one end of this shaft where it extends beyond the frame A is firmly attached the ratchet-wheel F, controlling the revolutions of the shaft, and outside the wheel the lever G is placed loosely upon the shaft, the lever having the pawl *g* acting against the ratchet-wheel, and by means of which lever and pawl the shaft E is revolved. Elsewhere, preferably on the end of the axle *b*, are two or more pawls *f f* to catch the ratchet-wheel F as it is revolved and hold it while the lever G is moved backward. These pawls are of differing length, catching the wheel at different points, thus limiting the lost motion.

Upon the crank E is placed the loose collar H, through which the crank passes loosely, and pivoted to this collar is the bit-shoe I. This being pivoted to the collar revolves freely horizontally, and the collar being loose upon the axle revolves vertically. These two motions allows the bit-shoe a free motion in every direction.

Upon the frame A and supported from the arms D D are placed the struts K K L L and cross-piece M for supporting the upper end of the bit nearly vertical when the point is placed in the shoe I. A chain N is attached to the eyebolt O on one side and may be hooked in the fork P on the other.

The operation is as follows: The bit being taken from the forge or tempering-tub and conveyed to and inserted in the stem, the edge of the bit is placed in the bit-shoe I, (the crank being depressed,) the top leaned against the brace M and secured by passing the chain N around it, securing the loose end of the chain in the fork P. It is now in the position shown by the full lines in Fig. 2, and is trundled to the point under the stem R. The chain is then loosened, the bit brought upright or inclined to correspond with the inclination of

the stem, the bit raised by the working of the lever G, turning the crank-shaft E, thus bringing the pin on the bit into the female screw on the stem, as shown by the dotted lines in Fig. 2, and while the pressure on the lever G continues to lift the bit the bit is revolved horizontally, engaging the threads of the screw, the swivel motion of the bit-shoe I allowing this to be done. As soon as the screw-threads are engaged the weight is taken from the bit-shoe and the truck removed. In taking the bit from the stem this operation is reversed, the truck being run under the bit and the bit-shoe brought up to receive the weight, the pawls *ff* are thrown back, and the backward motion of the lever G lowers the bit as it is unscrewed from the stem. For convenience and compactness the arms D D are nearly upright, and also for convenience of moving in any direction, the wheel B' being a caster-wheel, the truck can be trundled in any direction without lifting the wheels from the floor.

I have described and shown the lever G as playing loosely on the shaft of the ratchet-wheel F. This is preferably done; but any other connection or any other ordinary method of securing the revolution of the wheel or crank, or a system of gear-wheels connecting with a pinion on the crank-shaft, may be used without varying the principle of my invention.

I claim as my invention—

1. In a bit-truck, as a device for elevating and lowering the bit, the crank-shaft E, with the loose collar H upon the crank, and bit-shoe I, attached to the collar by a swivel-joint, substantially as shown and described.

2. In a bit-truck, the crank-shaft E, with ratchet-wheel F attached to one end thereof, in combination with the lever G and pawl *g*, substantially as shown and described.

3. In a bit truck and elevator, the crank-shaft E, with ratchet-wheel F attached to one end thereof, the lever G, with pawl *g*, the pawls *ff*, the loose collar H upon the crank, and bit-shoe I, attached to the collar by a swivel-joint, all mounted on a truck-frame, substantially as shown and described.

4. In a bit truck and elevator, the frame consisting of the struts K K L L, cross-strut M, and chain O for holding the upper end of the bit vertical, or nearly so, substantially as shown and described.

5. The bit-shoe I, attached to the crank E by a swivel-joint and loose collar H, substantially as shown and described.

6. In a bit-truck, the device of an elevator attached to and mounted upon the truck for elevating or depressing the bit as required, substantially as shown.

7. A bit truck and elevator consisting of the frame A, mounted upon three wheels, the rear wheel being pivoted as a caster, the arms D D, the crank-shaft E, with ratchet-wheel F attached to one end thereof, lever G, pawls *g* and *ff*, mounted on said frame, struts K K, L L, and M, and chain O, all operating in combination, substantially as shown and described, and for the purposes herein set forth.

WILLIAM A. GROVE.

Witnesses:

E. GIVEN,
DAVID WEED.