

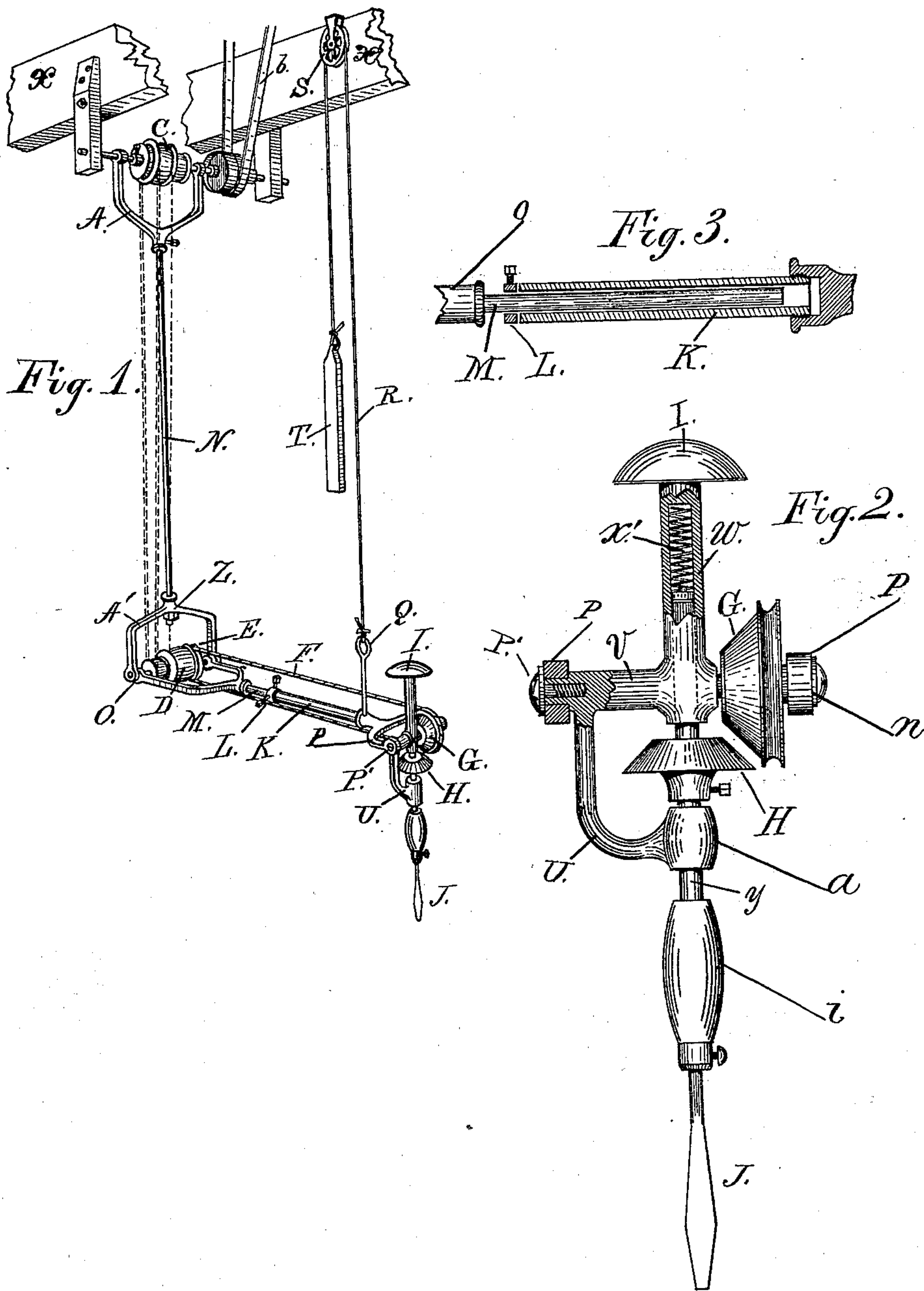
(No Model.)

M. C. HENLEY.

SCREW DRIVER.

No. 285,484.

Patented Sept. 25, 1883.



Witnesses,  
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# UNITED STATES PATENT OFFICE.

MICAJAH C. HENLEY, OF RICHMOND, INDIANA.

## SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 285,484, dated September 25, 1883.

Application filed June 30, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, MICAJAH C. HENLEY, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Screw-Drivers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an arrangement of mechanism for driving screws which is operated by steam or other motive power, and which is guided and controlled in the using by the hand of the operator.

My invention consists in the employment of a swinging pulley-frame, connected with a hinged arm which carries the stock of the screw-driver, upon which is a friction-pulley, which is brought in contact with another friction-pulley by a pressure upon the head of the stock of the driver, and motion communicated by means of a belt operating the latter pulley.

In the drawings, Figure 1 is a perspective view of the swinging pulley-frame and the manner of attaching the same to the building, and shows the swinging or hinged arm, the stock of the screw-driver and the friction-pulleys for operating it, the belts and pulleys for giving motion to the same, and the counter-balance. Fig. 2 is a plan view of the screw-driver with its stock and connections. Fig. 3 is a vertical section of the hinged arm and sleeve which carries the screw-driver.

In Fig. 1, X X represent the joists or frame of a building, to which a pulley-frame is secured by hangers.

b represents a driving-belt, which operates a pulley on a shaft having its bearings in the hangers.

A is a stirrup-frame hung upon the driving-shaft loosely.

N is a perpendicular shaft, the upper end of which is secured to the lower end of the stirrup A by a set-screw, and which is connected at its lower end to a stirrup-frame, A', as shown at z. Between the jaws of the stirrup-frame A a pulley, C, is fixed upon the driving-shaft and revolves with it. The stirrup-frame A' is provided with a shaft fitted into the ends of the jaws, which are provided with

eyes, which serve as journal-boxes for the shaft, and upon this shaft is fixed a pulley, E.

A stirrup-frame, O, is placed within the jaws of the similar frame, A', and hinged upon the same shaft, and is placed at right angles to the frame A'. To the stirrup-frame O is attached a shaft, M, which is surrounded by a sleeve, K, to the end of which is attached a stirrup-frame, P. The stirrup-frame P embraces within its jaws a swinging frame, V, having a curved arm, U, terminating in a hub bored to receive the shaft y, which carries the driver J.

The upper portion of the swinging frame V is composed of a tubular shaft, W, which is surmounted by the cap or hand piece I, and in the hollow portion of which is placed a spiral spring, X', occupying the upper end of the space.

J, Fig. 2, is the screw-driver, secured within a socket, i, at the lower end of a vertical shaft, y. The hub a, in which the curved arm U terminates, receives and forms a bearing for the vertical shaft y between the socket i and the horizontal friction-pulley H, the latter being secured to the shaft y by a set-screw, so as to revolve with it.

P' is a pivot-screw tapped into the end of the horizontal arm of the swinging frame V at its connection with the end of the jaw of the stirrup-frame P, and forms the pivotal bearing upon which the swinging frame V has its vibrations. On the opposite side of the frame V a pivot-screw, n, passing through the eye of the end of the jaw of the frame P, is tapped into the shaft W, forming a pivotal bearing for the same, and which, in connection with the screw P', completes the axis upon which the swinging frame V oscillates. The pivot-screw n is made to serve as an axle for a vertical friction-pulley, G, which is constructed with a groove on its outer periphery to receive a round belt.

The vertical shaft y is permitted a reciprocating motion within the shaft W, so that a pressure on the cap I will incline the swinging frame V and its attachments downward, and the bit of the screw-driver, being held by the head of the screw, operated upon the pulley G, is brought in contact with the pulley



H, and the shaft *y* is made to revolve, and with it the screw-driver, thus sending home the object-screw. When the pressure on the cap I is removed, the reaction of the coiled spring X' raises the swinging frame V and its attachments, and the shaft and screw-driver are at rest.

The arm M is permitted a vertical motion at its outer end by the hinged stirrup-frame O, and is suspended at its outer end by a counterbalance-weight, T, connected by a cord, R, running over a pulley, S, attached to the framing X. The arm M is provided with a sleeve, K, in which it is allowed a longitudinal motion, and is held in place by a collar, L, and its set-screws. The collar L is so constructed as to allow a rotary motion of the sleeve K and the stirrup-frame P and its connections, as may be seen in Fig. 3.

The operation of my improved screw-driver is substantially as follows: The driving-belt *b* puts the pulley C in motion, which, by means of a suitable belt, gives motion to the pulley D, which in turn gives motion by means of the belt F to the friction-pulley G, which, when carried down by the frame V, comes in contact with the friction-pulley H and puts in motion the vertical shaft *y* and the driver J. The vertical shaft N is allowed, at its lower end, an oscillating motion by means of the hinged stirrup-frame A, and the outer end of the arm M is allowed a vertical motion by means of the hinged stirrup-frame O, and the swinging frame V is permitted a lateral oscillating motion by the rotary action of the sleeve K and the stirrup-frame P on the arm M.

By the means just described the operator is enabled to direct the bit of the screw-driver to the head of the screw to be driven, as the same may be located at different points. Increased pressure upon the cap I gives a stronger hold to the driver upon the head of screw, at the same time giving the friction-pulleys G and H greater traction, by which more force is communicated to the driver.

Having thus fully described my said improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for driving screws, the swinging frame V, composed of the shaft W, the arm U, and the hub *a*, combined with and attached to the stirrup-frame P, the shaft *y*, friction-pulleys G and H, socket *i*, and driver J, all substantially in the manner and for the purpose set forth.

2. In an apparatus for driving screws, the shaft or arm M, sleeve K, collar L, and stirrup-frame P, combined with the swinging frame V, the shaft *y*, the friction-pulleys G and H, socket I, and screw-driver J, all substantially as and for the purposes herein set forth.

In testimony whereof I affix my signature in presence of two witnesses.

MICAJAH C. HENLEY.

Witnesses:

WILLIAM E. BELL,  
W. T. DENNIS.