

(No Model.)

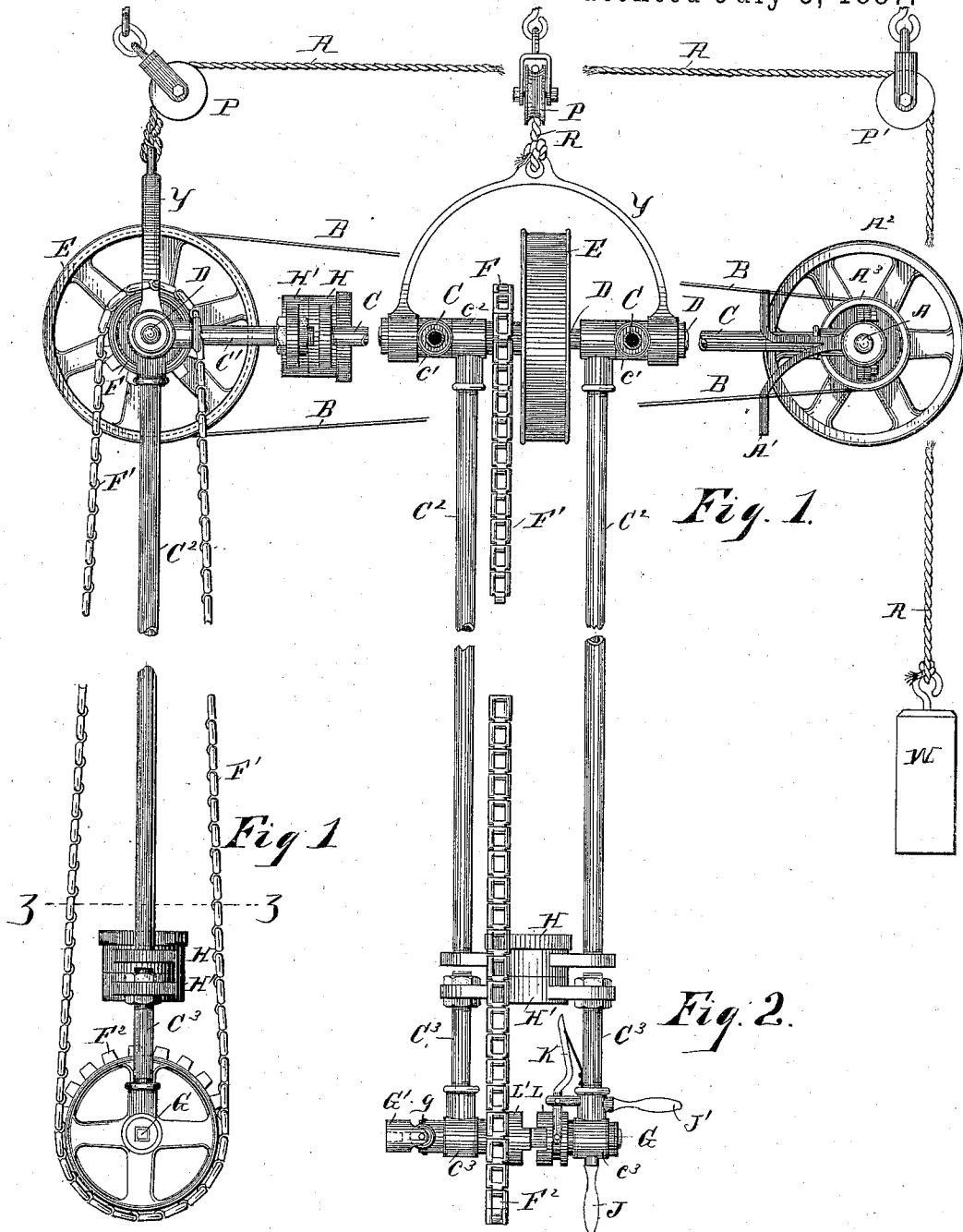
2 Sheets—Sheet 1.

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UNIVERSAL DRILLING AND TAPPING MACHINE.

No. 365,983.

Patented July 5, 1887.



Witnesses:
Wm. Jones,
R. N. Porter.

Inventor.
M. Geary
For Hallock & Hallock
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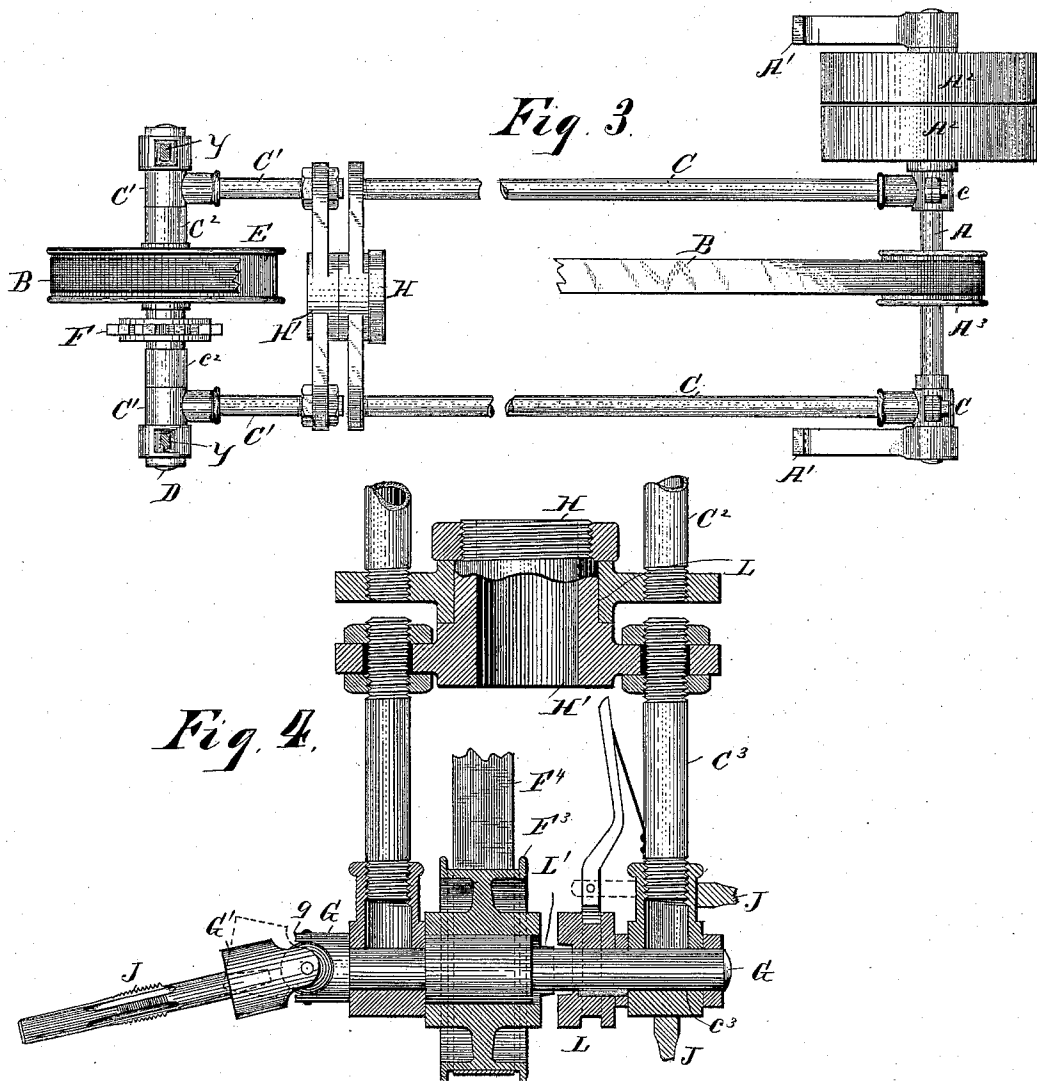
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UNITED STATES PATENT OFFICE.

MICHAEL GEARY, OF OIL CITY, PENNSYLVANIA.

UNIVERSAL DRILLING AND TAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,983, dated July 5, 1887.

Application filed March 18, 1887. Serial No. 231,393. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL GEARY, a citizen of the United States, residing at Oil City, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Universal Drilling and Tapping Machines; and I do hereby 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.

My invention relates to universal drilling and tapping machines, for use in machine-shops, &c., to drill and tap objects which cannot be made accessible to the ordinary drilling and tapping machines by reason of their form, weight, or bulk; and it consists in certain improvements in the construction of the same, as will be hereinafter described, and pointed out in the claims.

My device is illustrated in the accompanying drawings as follows:

Figure 1 is a side elevation of my device. Fig. 2 is a front elevation. Fig. 3 is a top or plan view. Fig. 4 is a vertical longitudinal section on an enlarged scale on the line x of parts below the line $z z$ in Fig. 1, with the sprocket-wheel F^2 changed to a belt-pulley, F^3 , as a modification in construction.

It will be observed that Fig. 1 is divided into two parts, one of which is on the right and the other on the left of Sheet 1, and Fig. 2 is inserted in the break in Fig. 1. This is done to bring the same parts in each figure into the same horizontal plane and make the illustration clear.

A is a counter-shaft mounted in hangers A' , which will be secured to proper frame-work overhead.

$A^2 A^2$ are ordinary tight and loose belt-pulleys mounted on the shaft A, and A^3 is a third belt-pulley mounted on the same shaft.

C C H is a rectangular frame, which is provided with boxes $c c$, which engage the shaft A on each side of the pulley A^3 . Of the parts forming the frame, C C are preferably pieces of iron tubing, and H is a cast-iron swivel-plate. A similar frame, composed of the parts C' , C' , and H' , is swiveled to the plate H, and carries a shaft, D, in boxes $c' c'$. This shaft is mounted in a yoke, Y, which is connected with a cord,

R, which runs over pulleys P P', and attaches to a counterbalance-weight, W. On the shaft D is a pulley, E, and a belt, B, runs over it from the pulley A^3 on the shaft A. A third frame, $C^2 C^2 H$, which is like the frame C C H, is mounted on the shaft D by boxes $c^2 c^2$, and a fourth frame, $C^3 C^3 H'$, which is like the frame $C' C' H'$, is swiveled to the said frame $C^2 C^2 H$ in the same manner that the frames C C H and $C' C' H'$ are swiveled together. This last frame, $C^3 C^3 H'$, has mounted in its boxes $c^3 c^3$ a shaft, G. There is a sprocket-wheel, F, on the shaft D, and a sprocket-wheel, F^2 , on the shaft G, and a sprocket-chain, F' , passes over the said sprocket-wheels. A common belt-pulley and belt can be used in place of the sprocket-wheels and chain, if desired. This is partly shown in Fig. 4 by the pulley F^3 and the belt F^4 . A bit-stock, G' , is connected with the shaft G by a universal joint, g . The pulley F^3 or sprocket F^2 is loose on the shaft G, and a clutch device, L L', which is operated by a grip-lever, K, is employed to put the shaft G in or out of gear with the pulley F^3 or sprocket F^2 .

The frame $C^3 C^3 H'$ is provided with handles J J' for manipulating the machine.

Fig. 4 shows clearly how the plates H and H' are swiveled together. The construction of these parts is common and needs no description. It will be seen that the horizontal part of the frame-work, which is composed of the frames C C H and $C' C' H'$, can be swung up and down on the joint formed by the boxes $c c$ on the shaft A, and the two frames can be moved upon each other at the joint H H', so that the pendent part—namely, the frames $C^2 C^2 H$ and $C^3 C^3 H'$ —can be swung in a plane which cuts the shaft D longitudinally, and that said pendent part can also swing in a plane which cuts the shaft D at right angles by swinging on the boxes $c^2 c^2$, and that the frame $C^3 C^3 H'$ can be turned on the frame $C^2 C^2 H$, so that the shaft G may be set at any desired angle to the shaft D.

What I claim as new is—

1. In a universal drilling and tapping machine, the combination of the counter-shaft A, the swinging frame C C H, journaled on said shaft, the frame $C' C' H'$, swiveled to the last-named frame and carrying the shaft D, the

frame C² C² H, pivoted to said shaft D, the frame C³ C³ H', swiveled to said frame C² C² H and carrying the shaft G, and gearing, substantially as shown, for driving the shaft G from the shaft A.

2. In a universal drilling and tapping machine, the combination of the counter-shaft A, the frame C C H, journaled on said shaft, the frame C' C' H', swiveled to said last-named frame and carrying the shaft D, the hanger-yoke Y, supporting said shaft D, the cord R, pulleys P P', and weight W, for supporting said yoke, the frame C² C² H, journaled on said shaft D, the frame C³ C³ H', swiveled on said frame C² C² H and carrying the shaft G, and gearing, substantially as shown, for driving the shafts D and G from the shaft A.

3. In a universal drilling and tapping ma-

chine, the combination of the shaft A, the frame C C H, journaled on said shaft, the frame C' C' H', swiveled to said last-named frame and carrying the shaft D, the yoke Y, rope R, pulleys P P', and weight W, for supporting said frames, the frame C² C² H, journaled on said shaft D, the frame C³ C³ H', swiveled on said frame C² C² H and carrying the shaft G, the gearing A³ B E F F', for driving the wheel F² from the shaft A, and the clutch L L' and clutch operating lever K, for engaging said shaft G with said wheel F².

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

MICHAEL GEARY.

Witnesses:

ROBT. H. PORTER,
F. B. WHIPPLE.