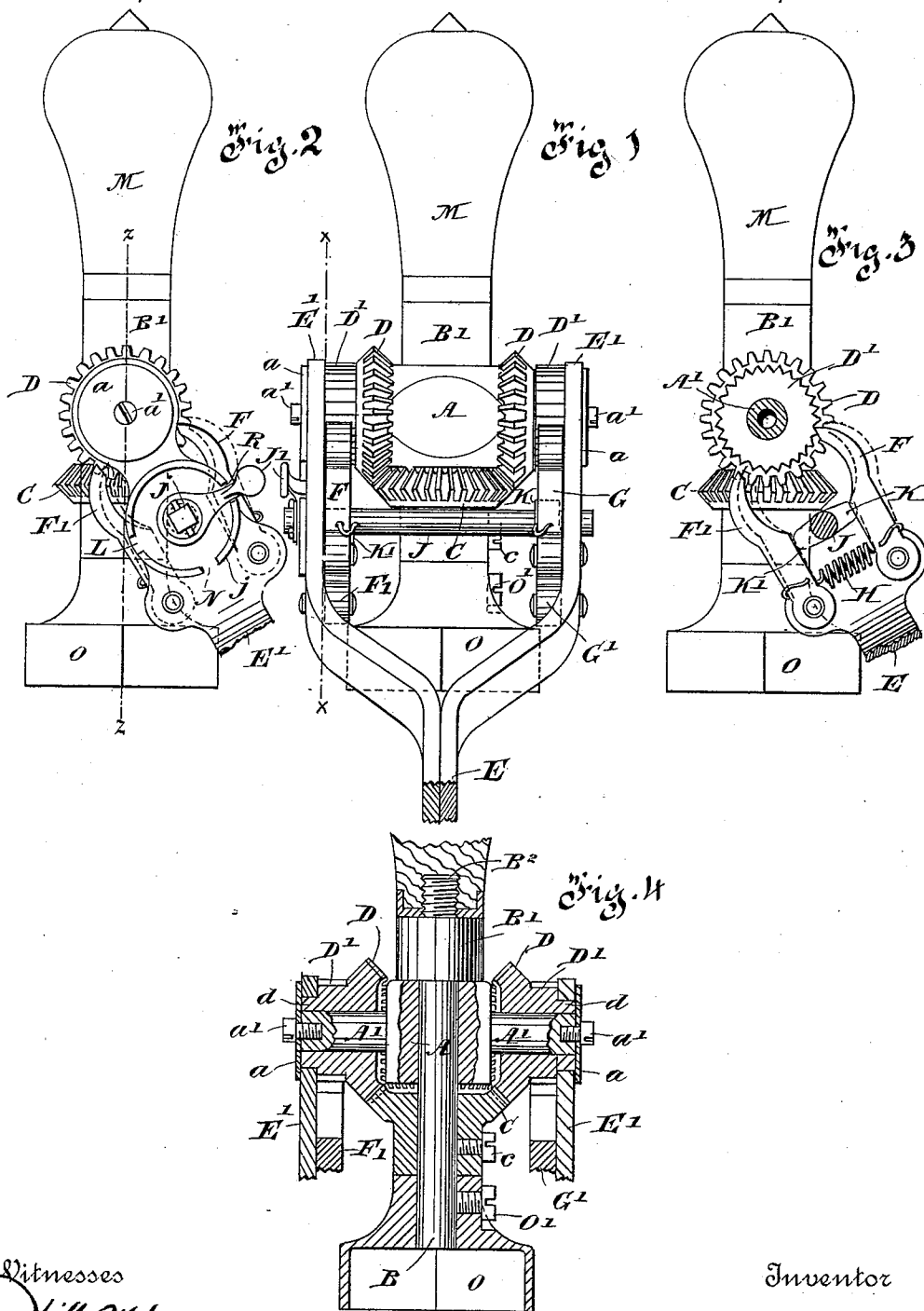


(No Model.)

P. LORD.
HAND DEVICE FOR IMPARTING ROTARY MOTION.

No. 463,371.

Patented Nov. 17, 1891.



Witnesses

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HAND DEVICE FOR IMPARTING ROTARY MOTION.

SPECIFICATION forming part of Letters Patent No. 468,371, dated November 17, 1891.

Application filed August 7, 1891. Serial No. 402,006. (No model.)

To all whom it may concern:

Be it known that I, PETER LORD, of the city of Montreal, in the district of Montreal and Province of Quebec, Dominion of Canada, have invented a certain new and useful Improved Hand Device for Imparting Rotary Motion; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to means for imparting rotary motion by hand to screw-jacks, drills, capstans, &c., or for unscrewing and screwing bolts and nuts.

The device resembles a double-action ratchet-drill, in that it has a vertical and transverse shaft, three bevel-gears, and ratchet and pawl mechanism; but its construction embraces changes and additions which carry it beyond the limited sphere or usefulness of the ratchet-drill, the principal feature being an arrangement whereby a reversal of motion can be secured. Another feature is the centralizing or balancing of the operating parts, so that all liability to wobble is done away with, while an integral central vertical axis, which specially adapts the device for use in connection with lifting-jacks, forms a third feature. For full comprehension, however, of the invention reference must be had to the annexed drawings, forming part of this specification, in which like symbols indicate corresponding parts, and wherein—

Figure 1 is a front elevation of the device with operating-lever partly broken away; Fig. 2, a side view of same; Fig. 3, a vertical sectional elevation on line *x x*, Fig. 1; and Fig. 4, a vertical sectional elevation on line *z z*, Fig. 2.

A is a central square block or hub pierced vertically to receive the vertical shaft or spindle B, provided with a collar B' and screwed boss B² on its upper end.

A' A' are spindle-arms projecting from the sides of the hub A, and with it constituting the transverse shaft.

On the spindle B below the hub A is set a bevel-gear C, held in place by set-screw *c*, and on the arms A' A' are mounted loosely the integral bevel and ratchet or spur gears, the respective parts being lettered D D and D' D'.

E is the operating-lever situated centrally

of the axis of the device and terminating at one end in fork-arms E' E', which are perforated to fit over projecting bosses *d d* on the ends of the spur-gears D' D', the several parts on the arms A' A' being held in place by washers *a a* and screws *a' a'*, as shown in Fig. 4. Each of the fork-arms E' E' carries a pair of pawls adapted to engage the spur-gears D' D', the left-hand pair being lettered F F' and the right-hand pair G G'. The pawls are impelled inwardly toward the gears D' D' by retractile spiral springs H, connecting each pair, and a shaft J, extending between and through the two arms E' E' and having a crank-handle J' on one end, carries cams K K' on opposite sides, so that when such crank-handle J' is turned a half-circle one way or another, right or left, as the case may be, one pawl of each pair will, by said cams bearing against them, be thrown out of mesh with said spur-gears on opposite sides thereof, so that the remaining two will be left in contact to rotate the gears in opposite directions to impart the required rotation in one direction of the bevel-gear C and shaft or spindle B. The crank-handle J' is made flexible enough to accommodate itself to the elevated rim, and registering notches or depressions L N R in it on the face of one of the fork-arms, and when the crank-handle is located in the notch N, all the pawls will engage with the spur-gears, by which arrangement the device can be effectually locked.

In the present case I have shown the device fitted with parts for use in unscrewing and screwing nuts or bolts, such parts consisting of a convenient handle M, screwed onto the boss B² at the upper end of the vertical shaft or spindle B, and a square hollow cap O, secured on the lower end of such spindle by set-screw O' and adapted to fit over the nut or head of the bolt to be moved.

As will readily be seen, both handle and cap can easily be replaced by different forms of interchangeable heads containing sockets for various tools, and in the case of using the device in connection with lifting-jacks, a plain bearing-block would take the place of the handle M and a cap similar to O, but made to fit the head of the jack, be substituted for it.

What I claim is as follows:

1. In a device for imparting rotary motion, the combination, with a vertical working spindle, a bearing-block and two horizontal spindle-arms in the same line, bevel-gears and ratchets or spur-wheels on said horizontal spindle-arms, a bevel-gear on said vertical spindle, and an operating-lever having two fork-arms pivotally connected with said horizontal spindle-arms, of a pair of pawls pivoted on each of said operating-lever's fork-arms and adapted to engage with said ratchets, and means for impelling them both into and of throwing one pawl of each pair out of such engagement with said ratchets on opposite sides thereof, for the purpose set forth.

2. In a device for imparting rotary motion, the combination of a central hub having horizontally-projecting spindle-arms and a central vertical perforation, a vertical continuous or integral working spindle passing through said hub bearing in said perforation and provided with interchangeable heads, bevel-gears, and ratchet or spur gears on said spindle-arms, and a bevel-gear on said vertical spindle, and an operating-lever and pawls carried by it for engaging said ratchets, as set forth.

3. In a device for imparting rotary motion, the combination of a central perforated bearing-block having two horizontal spindle-arms on opposite sides, a vertical working spindle passing through said perforated bearing-block, a bevel-gear on said vertical spindle, bevel-gears and ratchet or spur gears on said spindle-arms, an operating-lever the axis of which coincides with the axis of said working spindle, and having two fork-arms pivotally connected with said spindle-arms, and pawls carried by said fork-arms and adapted to engage said spur-gears, as set forth.

4. In a device for imparting rotary motion, the combination, with a central perforated bearing-block having two horizontal spin-

dle-arms on opposite sides, a vertical working spindle passing through said perforated bearing-block, a bevel-gear set rigidly on said working spindle, integral bevel-gears and ratchet or spur gears mounted loosely on said spindle-arms, an operating-lever having two fork-arms pivotally connected with said spindle-arms, and pawls carried by said fork-arms and adapted to engage said spur-gears, as set forth.

5. In a device for imparting rotary motion, the combination, with a vertical working spindle, a bearing-block with horizontal spindle-arms, bevel and ratchet or spur gearings, and an operating-lever, of a pair of pawls carried by said lever, and means for impelling them both into and a rotary cam-shaft for throwing either of said pawls out of engagement with the ratchet part of said gearing, for the purpose set forth.

6. In a device for imparting rotary motion, the combination, with a vertical working spindle, a bearing-block with horizontal spindle-arms in the same line, integral bevel-and-spur gearing mounted loosely on said horizontal spindle-arms, a bevel-gear on said vertical spindle, and an operating-lever having two fork-arms pivotally connected with said horizontal spindle-arms, of a pair of pawls pivoted on each of said operating-lever's fork-arms and adapted to engage with said ratchets, means for impelling said pawls into such engagement, and a rotary shaft carrying lugs or projections on opposite sides adapted to bear against and throw one pawl of each pair of same out of such engagement with said ratchets on opposite sides thereof, for the purpose set forth.

Montreal, July 24, 1891.

PETER LORD.

In presence of—

R. L. CADWELL,
OWEN N. EVANS.