J. MOTHERAL.

Derrick for Hoisting, Grubbing, &c.

No. 227,442. Patented May 11, 1880.

Fig. 1.

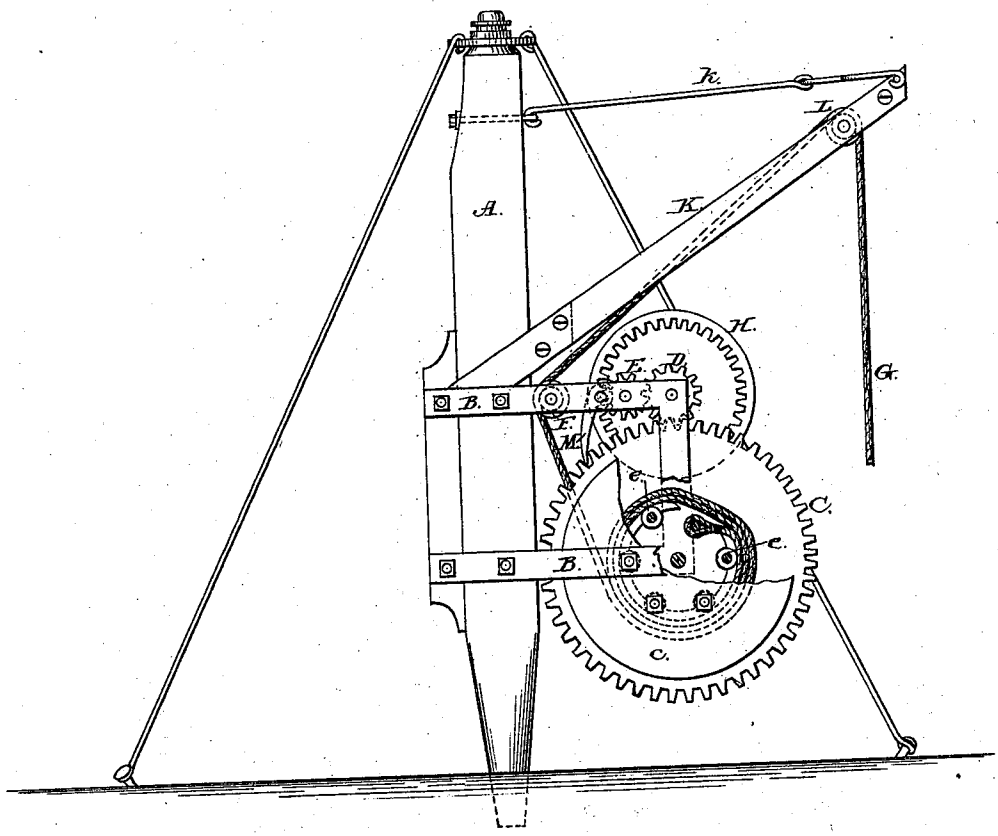


Fig. 3.

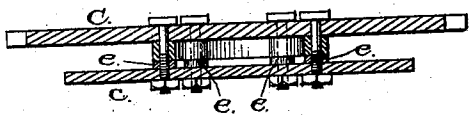
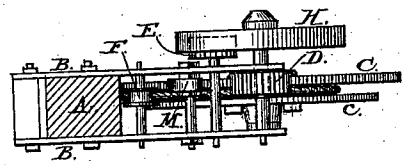


Fig. 2.



WITNESSES.

John A. Lee.

D. P. Lowl

John Motheral
INVENTOR by

Geo. A. Sawyer.
ATTORNEY

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN MOTHERAL, OF NORTH McGREGOR, IOWA.

DERRICK FOR HOISTING, GRUBBING, &c.

SPECIFICATION forming part of Letters Patent No. 227,442, dated May 11, 1880.

Application filed October 16, 1879.

To all whom it may concern:

Be it known that I, JOHN MOTHERAL, of North McGregor, in the county of Clayton and State of Iowa, have invented certain new and useful Improvements in Derricks for Hoisting, Grubbing, &c.; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention has for its object the furnishing of a cheap, efficient, light, and portable machine to serve the various purposes of a derrick for lifting heavy weights, or for grubbing or stump-pulling on a farm; and I accomplish these objects in the manner hereinafter more fully described.

In the drawings, Figure 1 represents a side elevation of my improved derrick, and Fig. 2 a top view. Fig. 3 is an enlarged horizontal section of rope-bearing wheel C, with disk *c*, showing the connecting-bolts and washers.

Similar letters of reference represent similar parts.

The standard A, made of squared timber, has a conico-cylindric foot, which may be placed directly into a hole in the ground, or may be stepped on a block. At its top there is a thimble with a flange pierced with three or four holes, to which suitable guy-ropes, wires, or chains are attached. The lower ends of the guy-rods are provided with rings, which may be conveniently fastened to stakes driven into the ground at suitable points. The standard is thus braced to resist the strain either of lifting or pulling, and is free to turn in a horizontal direction to any desired point.

B B is a metal frame of two parts, one on either side of the standard A, to which it is secured by strong bolts passing through its two parts, and journaled to each are shafts carrying the wheels and pinions C D E H and the roller F.

The large toothed wheel C has a hub, within which the inner end of the rope G is fastened, and a disk, *c*, is bolted to it, the bolts passing through the wheel and the disk, which bolts are provided with rubber washers *e*, in order that the disk *c* may be adjusted with reference to the wheel C so that the rope G, wound around the hub between them, may ride coil upon coil and not jam, and as the rope wears with use the disk may be slightly tightened to preserve the proper adjustment. This arrangement also admits of slight variations in the size of the rope used to suit the work required of the machine.

A pinion-wheel, D, having a squared end for a hand-crank on one end of its shaft, engages with the toothed wheel C, and on the other end of its shaft, outside the frame B, bears a second wheel, H, having inside cogs. The pinion-wheel E, having also a squared end for a hand-crank, engages with the second wheel, H.

The two hand-cranks admit of two rates of speed being imparted to the rope-bearing wheel C: first, a quick motion through the pinion D, and, second, a slower but more powerful motion through the pinion E operating upon wheel H, and thence upon wheel C, and either motion is almost instantaneously available by simply shifting the crank from one shaft to the other. The advantages of this arrangement are obvious. In taking in the slack of a long rope, hoisting an empty bucket, or pulling small grubs, where speed but not great power is necessary, the first pinion is used. In lifting heavy weights or pulling large grubs, the second pinion gives greater power, though at the expense of some speed.

An arm, K, is fitted to the standard above the frame B, and braced at the top by an iron rod, *k*.

When this device is used as a derrick the rope passes behind the roller F, up to the end of the arm, and down over another roller, L, or through a pulley, as may be convenient.

A pawl, M, engaging the teeth of the rope-bearing wheel C, prevents reverse motion, except when it may be desired.

In use the standard is erected perpendicularly. The guy-ropes are fastened securely, and the device is ready for any purpose to which it may be applied. When used as a grubber only the arm may be detached and laid aside.

Among the advantages of this device may be mentioned the following: the two speeds; the compact arrangement of the parts, enabling

the device to be set up close to a wall or side of a building and turned out of the way flat against the wall when not in use; its light weight in comparison to the power developed, enabling two men, one at each end of the standard, to bear it on their shoulders for any reasonable distance.

This device is an improvement on the one secured to me by Letters Patent of December 4, 1877, No. 197,790.

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

The combination of the rope-bearing toothed wheel C, the pinion D, provided with the gear-wheel H, and the pinion E, the shafts of said pinions D and E extending through the supporting-frame and adapted to receive a hand-crank, thereby admitting of two rates of speed and two powers being applied to the rope-bearing wheel C, substantially as herein described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN MOTHERAL.

Witnesses:
GEO. A. SAWYER,
H. J. ENNIS.