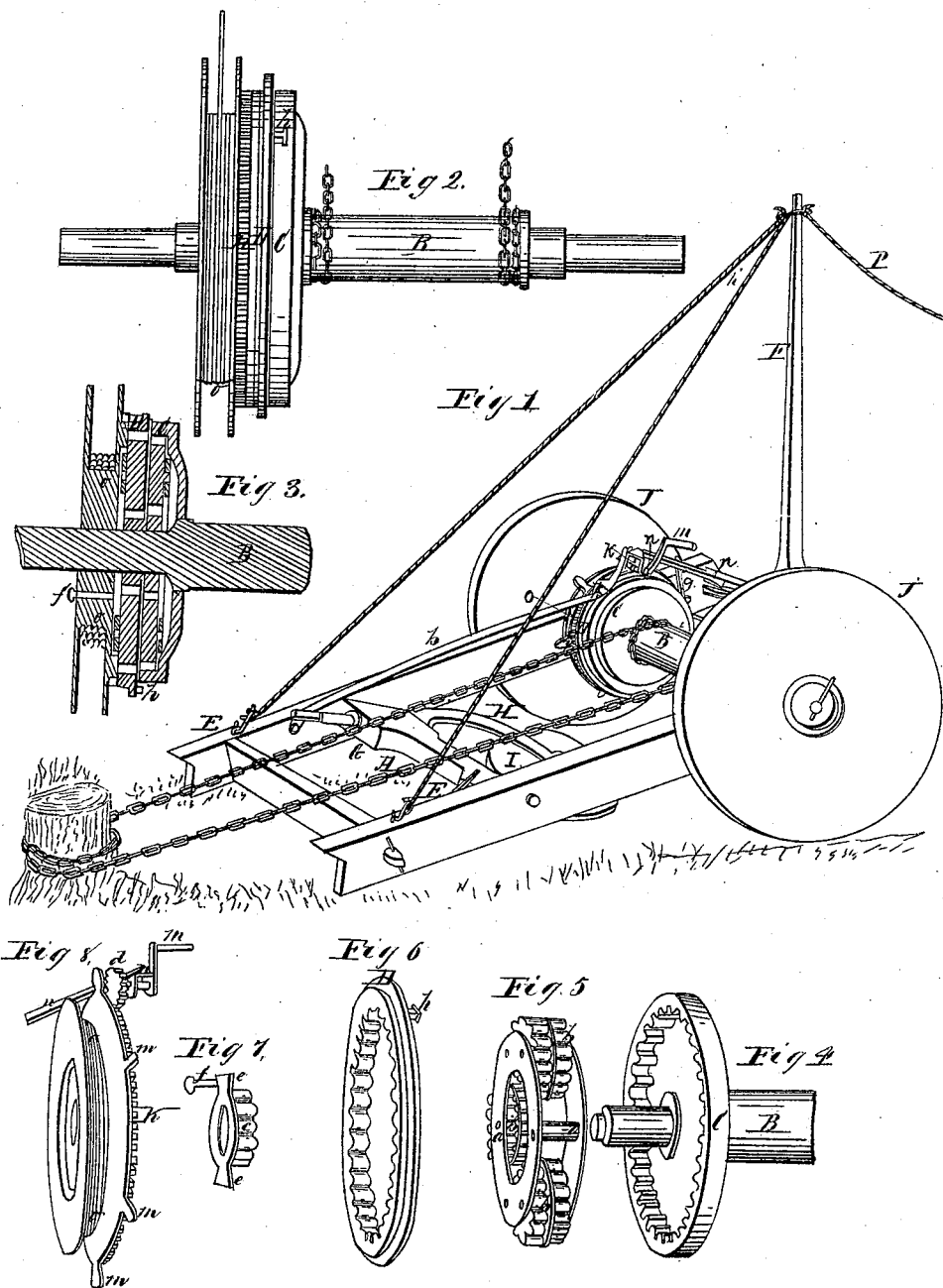


*M. C. Mix,*  
*Stump Elevator.*

*N<sup>o</sup> 1537.*

*Patented Mar 31, 1840.*



# UNITED STATES PATENT OFFICE.

MILES C. MIX, OF DANBY, NEW YORK.

## MACHINE FOR REMOVING STUMPS AND OTHER HEAVY BODIES.

Specification of Letters Patent No. 1,537, dated March 31, 1840.

*To all whom it may concern:*

Be it known that I, MILES C. MIX, of Danby, in the county of Tompkins and State of New York, have invented an Improved Machine for Removing Heavy Bodies, such as Houses, Rocks, the Uprooting of Stumps, &c., which I denominate a "Converge Differential-Power Machine;" and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawing Figure 1 represents a perspective view of the machine attached to a stump to be removed; A, being a strong chain, which is to be wound around the main shaft B, made of iron, and revolving in suitable boxes in the side timbers of the frame E, E, of the machine.

The principal improvement consists in the mode in which I construct the gearing by which the machine is to be operated, and which will be presently described.

C, is a wheel or case which is made fast to the shaft B, and contains a part of the gearing, having teeth pointing, or converging inwardly on the interior of its periphery.

D, is a wheel which also makes a part of the gearing, having like C, teeth converging or pointing inwardly, and which has also, one or more projecting teeth, or pins *h*, on its side to admit of its being held firmly, and prevented from turning by the rod *b*, attached to the frame at one end and furnished with a hook or notch at the other, which when it catches upon one of the teeth or pins *h*, prevents the wheel D, from revolving, as shown distinctly in the drawing.

F, is a tongue, by which the machine is to be drawn from place to place, and which when in use, is employed to prevent the tilting up of the forward end of the machine. The ropes *h'*, *h'*, attached to the tongue and to the frame, hold it vertically when the machine is hauling, or drawing against a stump, or other resisting body, and the rope *p*, is carried forward, and anchored, or made fast to any immovable body, which of course holds down the forward end of the carriage; its hind end resting upon the ground, and being in such shape as shall cause it to sink into, and take firm hold of, the ground.

When the machine is to be removed, I raise its hind end so as to run upon a truck wheel I, embraced between straps H, proceeding from a revolving shaft G, which

runs through a cross timber turning upon gudgeons in the frame; this truck wheel operating like that of a common caster, only being larger.

The main bearing wheels J, J, are on the same shaft with the gearing apparatus, it being extended out so as to constitute their axles, and upon which they turn freely.

Fig. 2, shows the main shaft, with the exterior of the gearing apparatus. Fig. 3, a section through the gearing apparatus, and Figs. 4, 5, 6, 7, and 8, this apparatus in detail. The same letters of reference are used as in Fig. 1, wherever the same parts are shown.

In Fig. 4, the interior teeth are seen on the large wheel C; of these, in the working machine, there are thirty-seven.

Fig. 5, is a frame, *a*, *a*, containing the pinions *b*, *b*, *b*, running between the circles of the frame. Each of these pinions is represented as double with a plate between them, but they operate each as one long pinion, the plate serving merely to keep them the better in place, as one end of each pinion gears into the teeth within the wheel C, and the other half in the teeth within the wheel D, Fig. 6. On the interior of this latter wheel, there are, in the working machine, thirty-six teeth. The difference in the size of the two ends of the pinions *b*, *b*; or of the wheels C, and D, to accommodate the gearing to this difference of one tooth will be but trifling. The frame *a*, is placed within the wheel C, which embraces one half of the pinion *b*, *b*; and the wheel D is then passed over the other half, which reach through it so as to be flush with its face.

Fig. 7 is a pinion *e*, which passes over the end of the shaft B, and gears into that end of the pinions *b*, *b*, which are within the wheel D. This pinion has projections *e*, *e*, upon its face, with which a pin *f*, may be brought into contact, and cause it to pass around, operating, by its sliding as an engaging and disengaging bolt.

In Fig. 8, *o*, *o*, is a pulley or drum, around which a rope is coiled, which may be used when a rapid motion is wanted, and upon which also, are the handles *m*, *m*, for the purpose of turning it by hand. On the inner face of this drum is the light wheel K, which is toothed, to receive the action of a pinion as in Figs. 1 and 8, by which the power of the first mover is to be conveyed to the machine. The bolt *f*, passes through

the body of this drum as shown in the section, Fig. 3, so as to engage the drum and light wheel with the pinion *c*, Fig. 7, or to disengage it at pleasure. The winch in Fig. 5 1, is upon a shaft of a pinion *d*, Fig. 8, which gears into the light wheel K. This pinion and shaft are affixed to a frame which may be turned back, so as to throw the pinion out of gear, which frame is marked *n*, in 10 Fig. 1, and is seen in part in Fig. 8; *g*, Fig. 1, is a hook, or other fastening by which it may be held in place when in gear.

The manner of operating with this machine and the great power which it possesses, 15 will now be obvious. When the chain is passed around a stump, or affixed to any other object which is to be removed, and which requires the exertion of great power to produce that effect, the back end of the 20 frame of the machine is allowed to rest upon the ground, either against any fixed obstacle, or to anchor itself therein, which its power and strength will enable it to do, the hook upon the bar *b*, is made to take 25 hold of the pin, or tooth *h*, on the wheel D, which being loose would otherwise revolve; the pinion *k*, is then turned by the winch in, or otherwise, which gives motion to the wheel K, and the drum, *o*, causing the bolt 30 *f*, to turn the pinion *c*; this causes the pinions *b*, *b*, to roll around within D, as they

would also within C, were the teeth within these two wheels equal in number, but this not being the case, the wheel C, and the shaft B, will be turned with a slow motion, re- 35 sulting from, and equal to, the difference in the number of their teeth, and, of course, with proportionately increased power. The number of teeth in the two wheels C and D 40 may be varied in any proportion which may be deemed most eligible, the number which I have named being arbitrary, but such as I have essayed, and found to answer well in practice. The number of pinions *b*, *b*, 45 may also vary.

What I claim as my invention is—

The particular manner of obtaining the power by the construction, and arrangement of the gearing as herein set forth; that is to say, the mode of operating by two 50 or more sets of double pinions on two differential wheels, through the intermedium, and by means of an apparatus combined and connected substantially as herein set forth, for the purpose of removing stumps, or other 55 articles, requiring great power, and to which such a machine is adapted.

MILES C. MIX.

Witnesses:

ORIN D. MIX.

LOUIS BEERS.