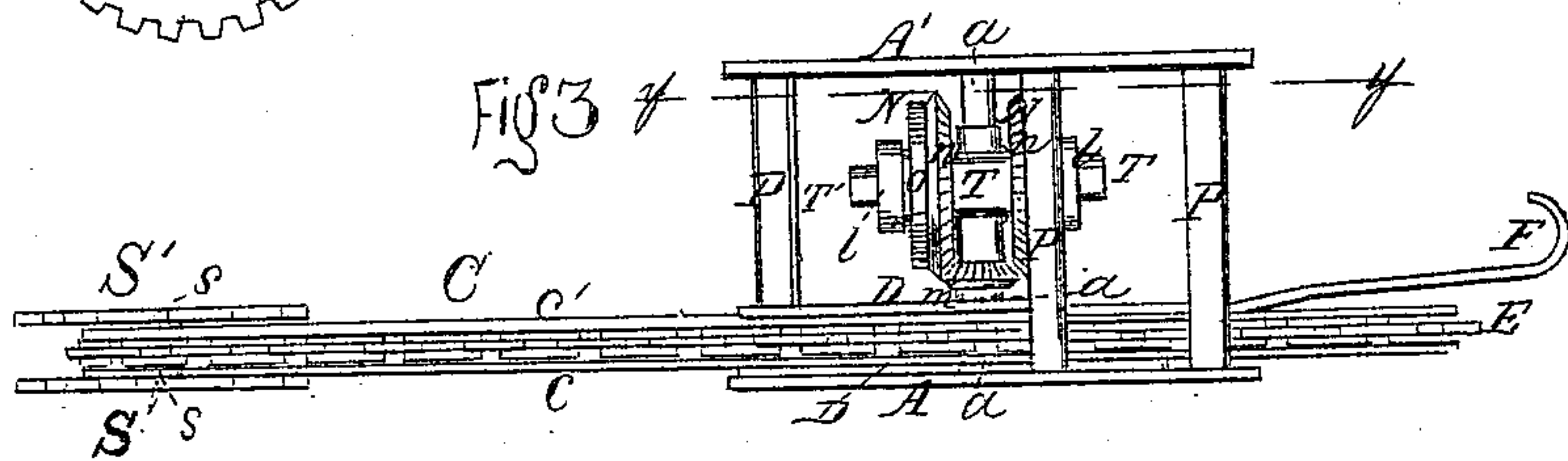
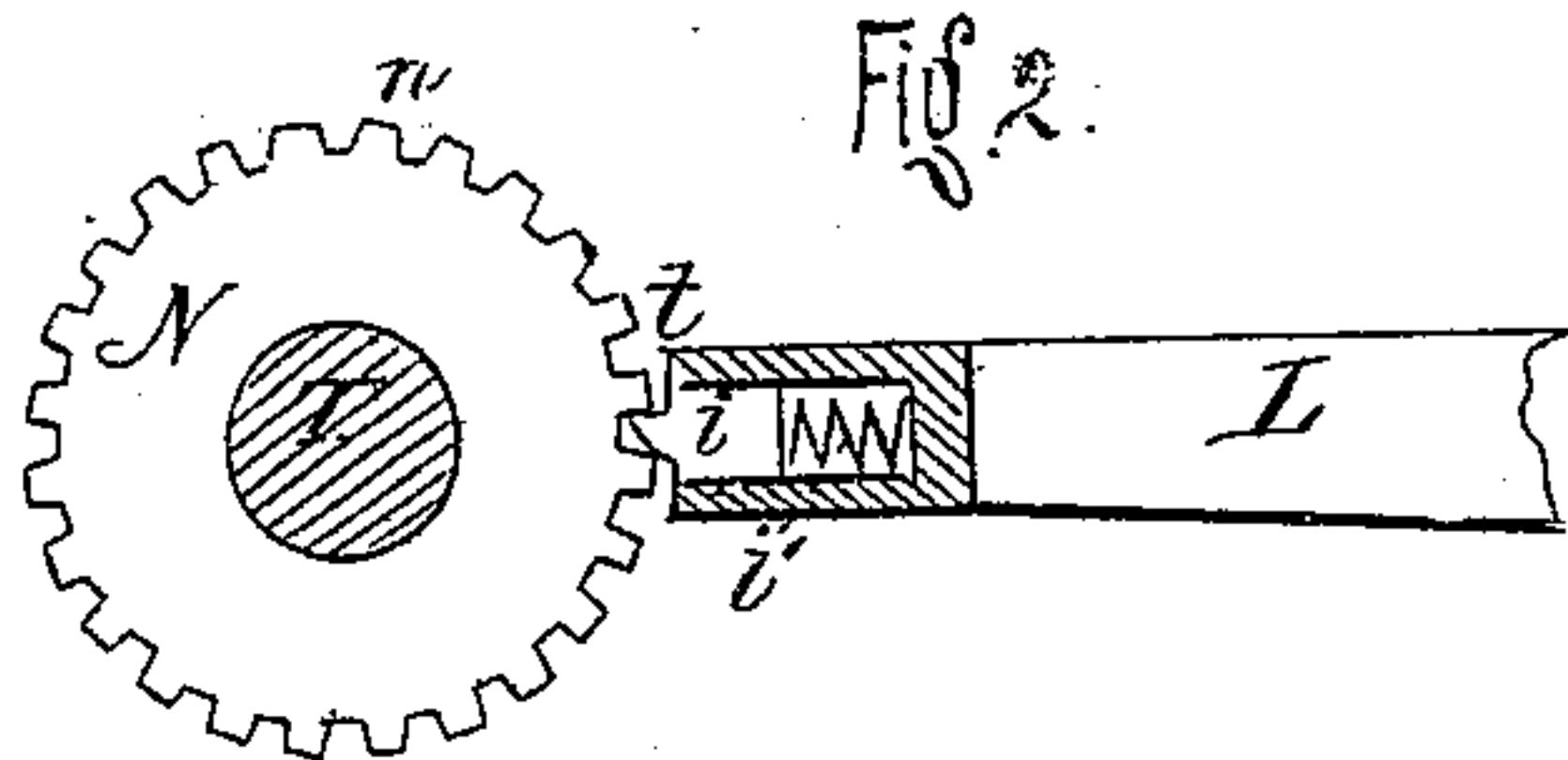
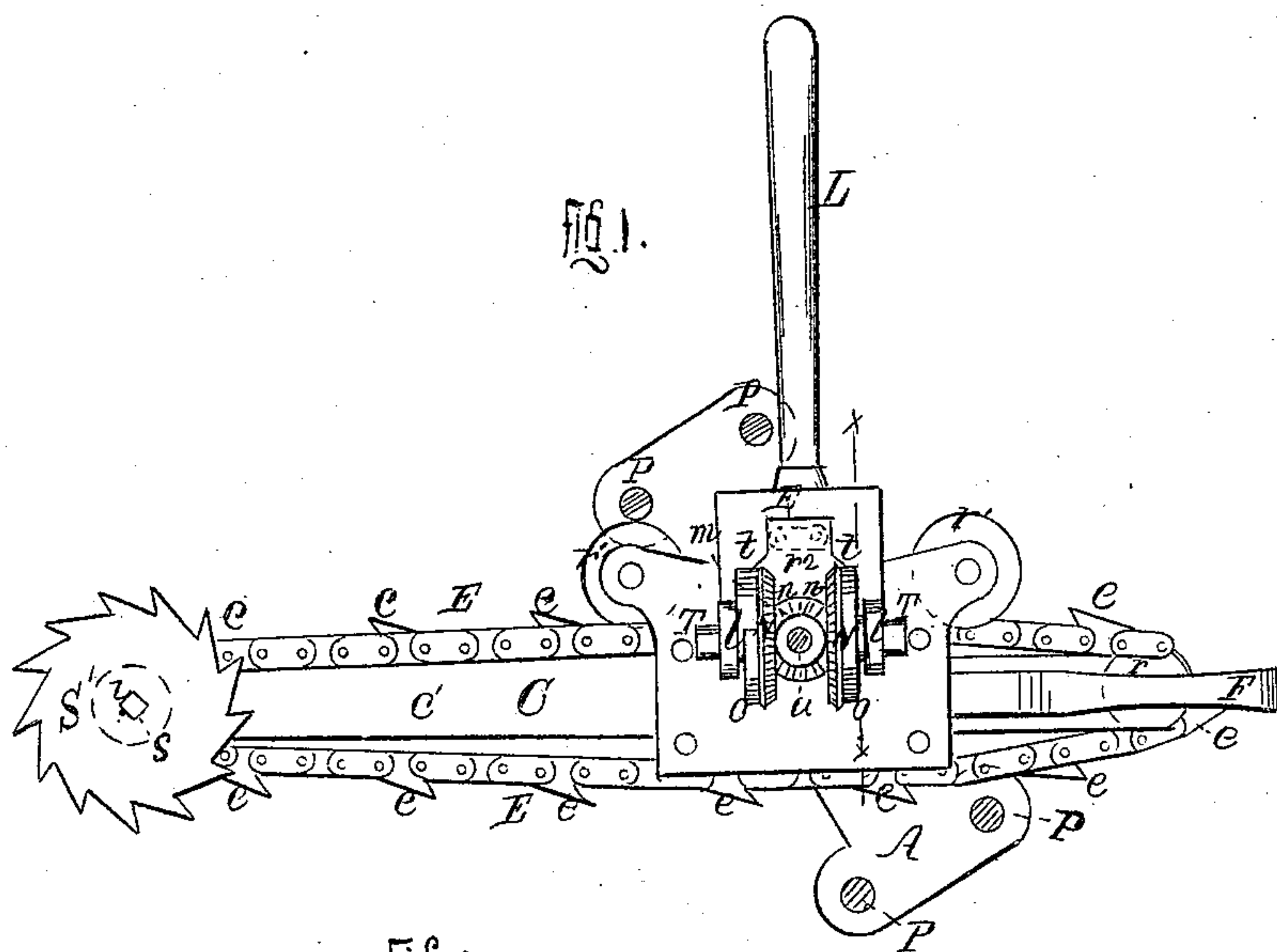


D. Morris,
Mining Mach.

No 92,871.

Patented Jul. 20. 1869.



Witnesses:

B. A. Pettit
J. A. Kennard

Inventor:

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Attorneys.

UNITED STATES PATENT OFFICE.

DAVID MORRIS, OF BARTLETT, ASSIGNOR TO HIMSELF, AND AARON P. DEWEES, OF PENNSVILLE, OHIO.

IMPROVED MINING-MACHINE.

Specification forming part of Letters Patent No. 92,871, dated July 20, 1869.

To all whom it may concern:

Be it known that I, DAVID MORRIS, of Bartlett, in the county of Washington and State of Ohio, have invented a new and Improved Mining-Machine; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a horizontal section through line *y y* of Fig. 3. Fig. 2 is a detached sectional view of the ratchet-wheel and spring-pawl. Fig. 3 is a side view.

The object of this invention is to produce a new and improved instrument for cutting out coal in the mines, which will operate more easily and conveniently and with greater effect than any heretofore in use.

To this end the machine consists in a frame supporting a pivoted horizontal arm of considerable length, which carries at its forward end two horizontal circular saws, parallel to each other and upon the same shaft, rotated by an endless chain passing between them, the chain being provided with teeth which clears the coal from the saws and assists them in their work, and the whole being actuated by a lever and a peculiar arrangement of ratchet-gear wheels.

In the drawings, A is the bed-plate, and A' the top plate of the frame, the two being connected by upright standards P P.

C is the arm, consisting of two plates, *c c'*, connected together by bolts and supporting-rollers *r r* for the endless chain, the arm being pivoted to plate A at *a*, at which point it is re-enforced on its upper and under side by a wide strong plate, D, attached to it and swinging on the pivot *a* with it. At one end the arm C is provided with a handle, F, by which it can be rocked and moved on its pivot, so as to bring the saws to any position required. The saws S S are supported at the other end upon a shaft, *s*. Between the saws, and firmly attached to the shaft *s*, is one of the rollers *r*, upon which the chain runs, so that the latter thereby rotates both saws in the same direction and with the same speed.

E is the chain, constructed in the well-known manner of single and double links, as shown

by Figs. 1 and 3, and provided with sharp cutting-teeth *e e*, which pass between the saws, moving in the same direction with them and assisting them to cut out the coal, the main function of the teeth, however, being to remove the coal sawed out by the saws S S', and prevent it from wedging in between them and impeding their operation. The chain, thus constructed and operating, is actuated by a large roller, *r*², between the two plates D D, firmly fixed to the stout pivot-shaft *a*, the chain passing between the large roller and two smaller ones, *r' r'*, which keep it closely in contact with the large one, in the manner shown in Fig. 1.

The several parts being thus constructed, it is evident that if the large vertical shaft *a* can be rotated properly, the machine will become an effective instrument for the purpose indicated. To accomplish this, I fix a small bevel-pinion, *m*, to the shaft near its lower end. I then construct a spindle, T, enlarging it at the middle and cutting a circular hole transversely through it at that point. This spindle I slip upon the shaft *a*, allowing it to rest upon the hub of pinion *m* or upon a washer between it and said hub. I place a collar or washer, *v*, around the shaft above the spindle and resting upon the latter, and fasten it there by means of a pin or other suitable device.

Having thus constructed the spindle, I arrange upon it two equal bevel-gear wheels, N N', one on each side of the shaft *a*, and both gearing with pinion *m* by means of their cogs *n n*. Each of these wheels is also provided with a set of ordinary cogs or ratchet-teeth, *o o*, as seen in the drawings. In connection with these parts I arrange a bifurcated lever, L, pivoted upon the spindle T at its forked ends *l l*, and working vertically. This lever is provided with shoulder *t t*, which may come nearly against the face of each cog-rim *n n*, and within a chamber in such shoulders is a beveled pawl, *i*, which, actuated by a spring, *i'*, operates against the cog-rim, and prevents it from rotating except in one direction.

This completes the construction of the machine. Its operation is as follows: By forcing the lever L down one of the pawls *i i* engages with its wheel N and rotates it, the other sliding over the cogs on its wheel N' without rotating it. Upon raising the lever the opera-

tion is reversed, the wheel N' being forced around, and the wheel N not being moved by the lever; but if either of said wheels moves around, the shaft *a* is rotated in one direction or the other, and when they are moved alternately in opposite directions the shaft is rotated continuously in the same direction.

The operation of the lever being, as above described, to rotate the wheels N N' alternately in opposite directions, the result is that by its use the shaft *a* and the chain and saws are moved in one direction, and that direction is such as to give effective operation to the saws and the cutting-teeth of the chain.

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

1. In a machine for the purpose indicated, having a pivoted arm, C, carrying two saws at its forward end, the endless chain E, provided with the teeth *e e*, and operating as and for the purpose described.

2. The arrangement of lever L, pawls *i i*, wheels N N, each having a cog-rim, O, and bevel-cog rim *n*, pinion *m*, shaft *a*, and spindle T, when used for the purpose of rotating an endless chain, E, in a machine constructed and operating as above described.

DAVID MORRIS.

Witnesses:

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