

S. BURTON.
STUMP PULLER.
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997,901.

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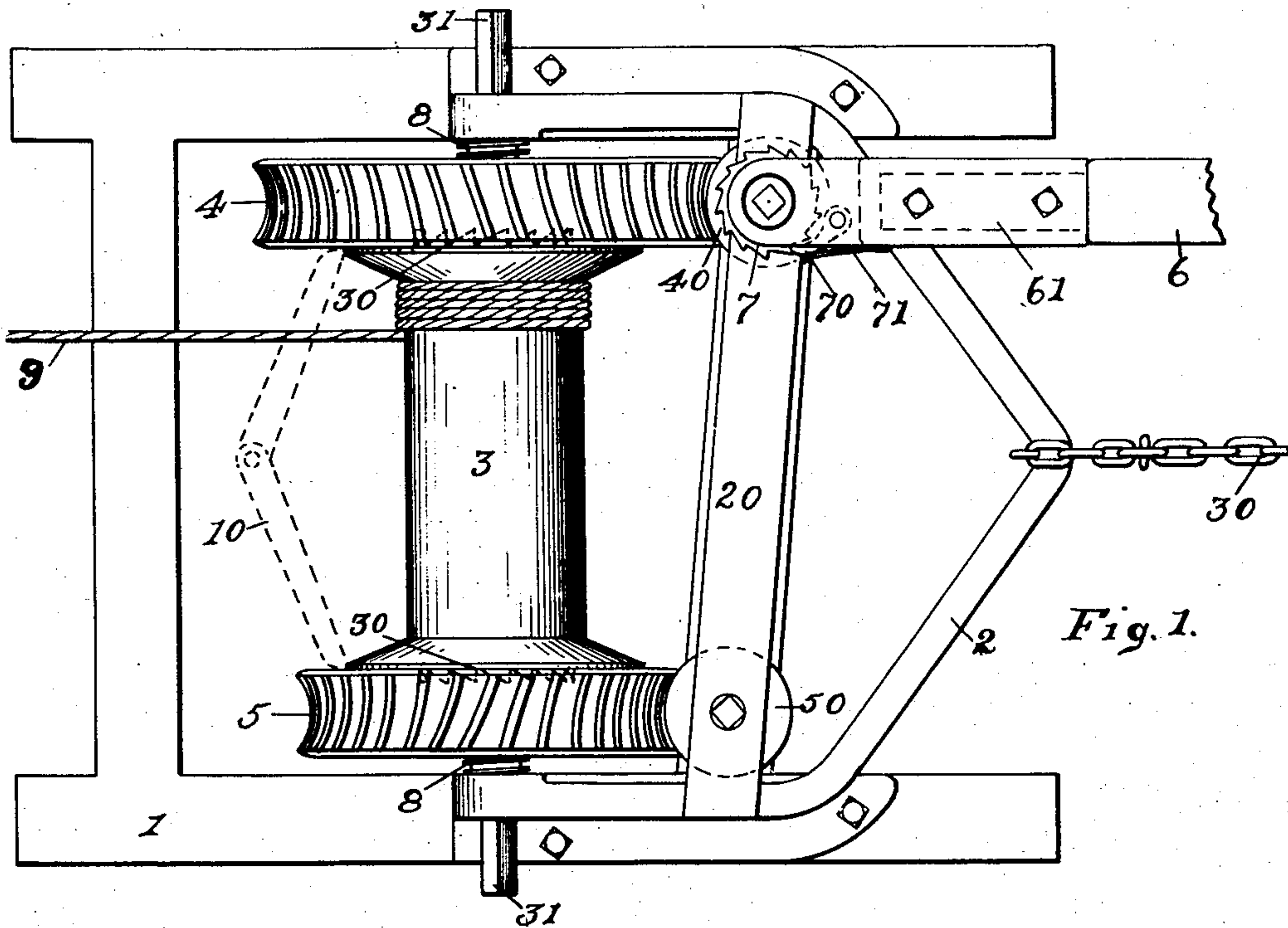


Fig. 1.

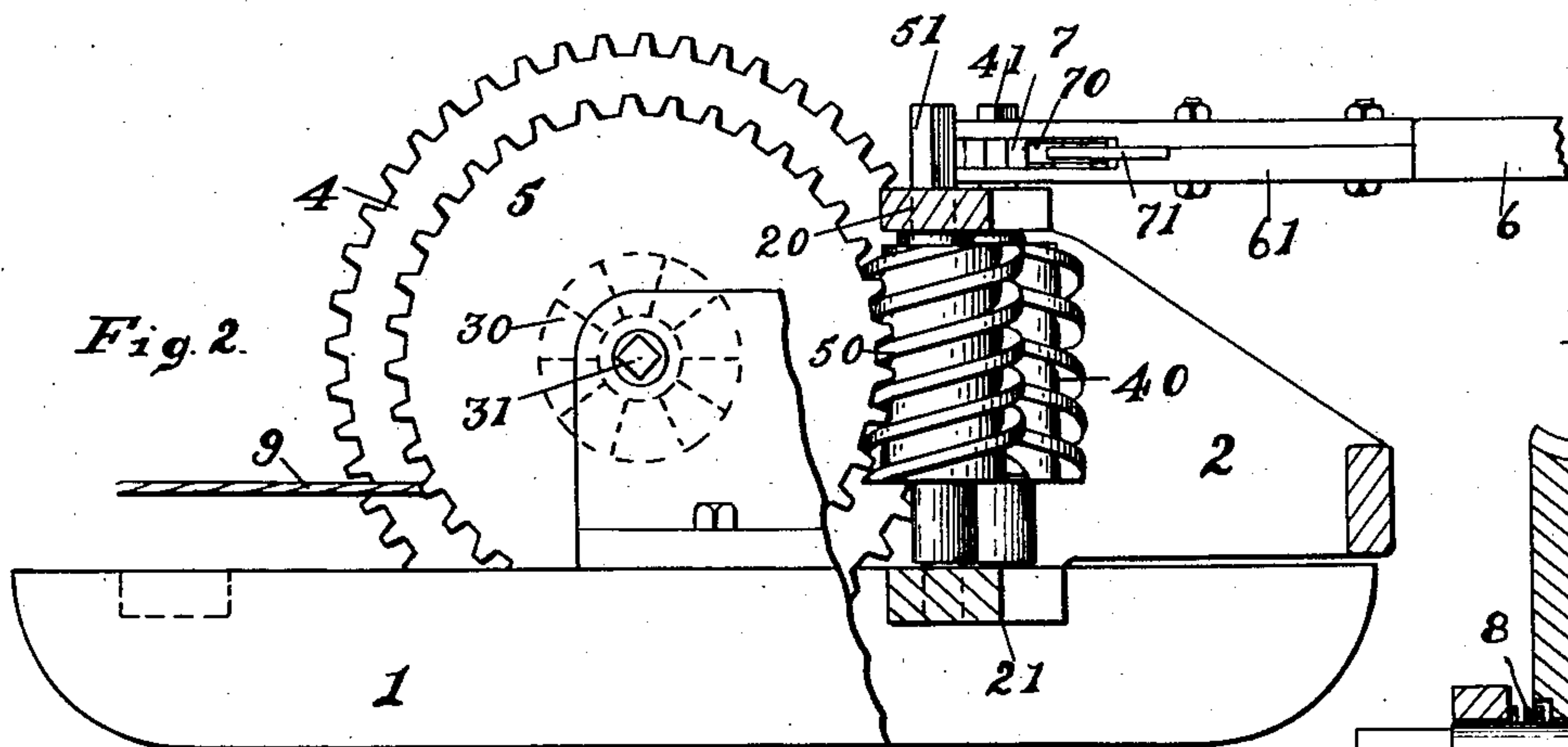


Fig. 2.

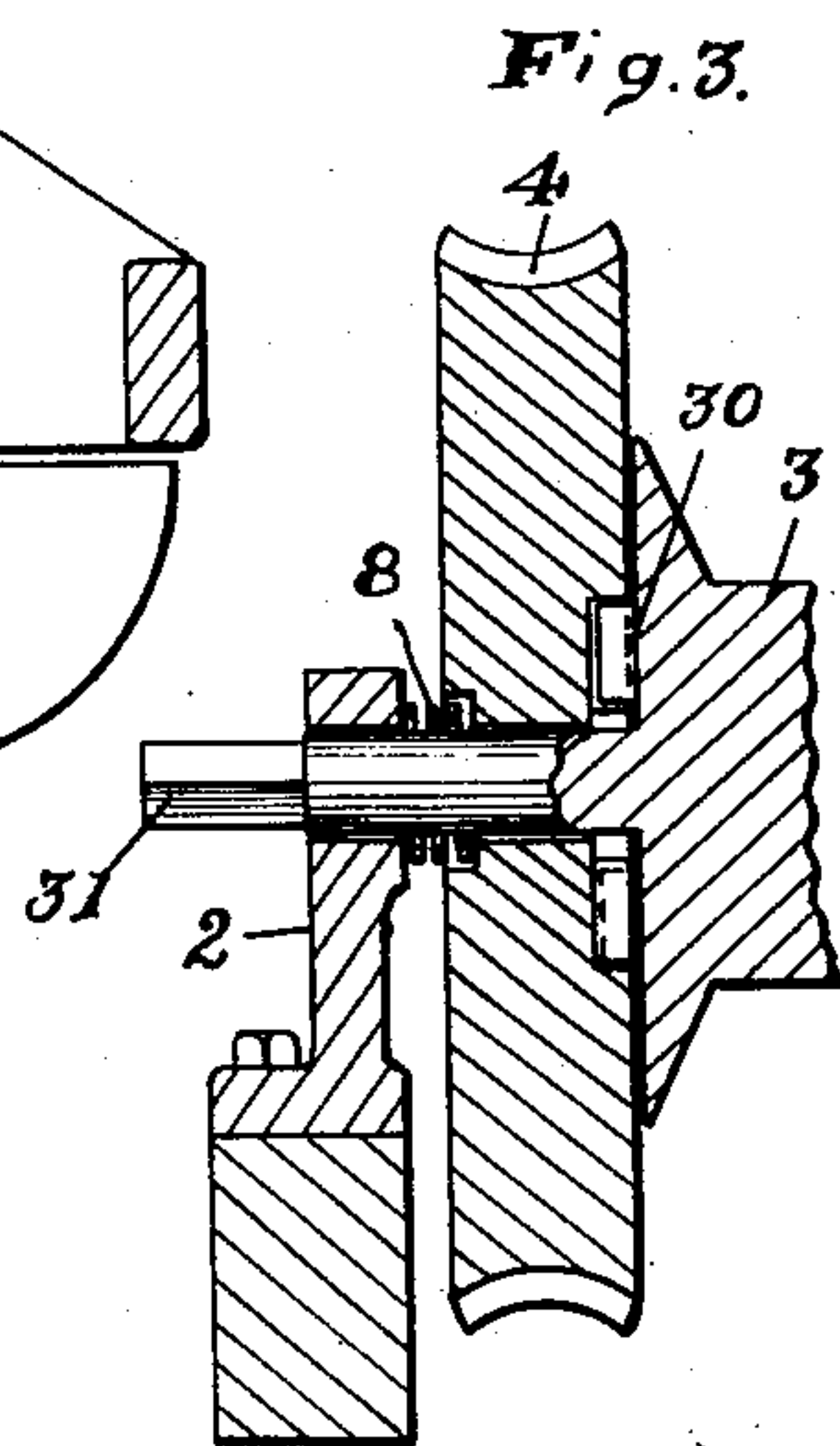


Fig. 3.

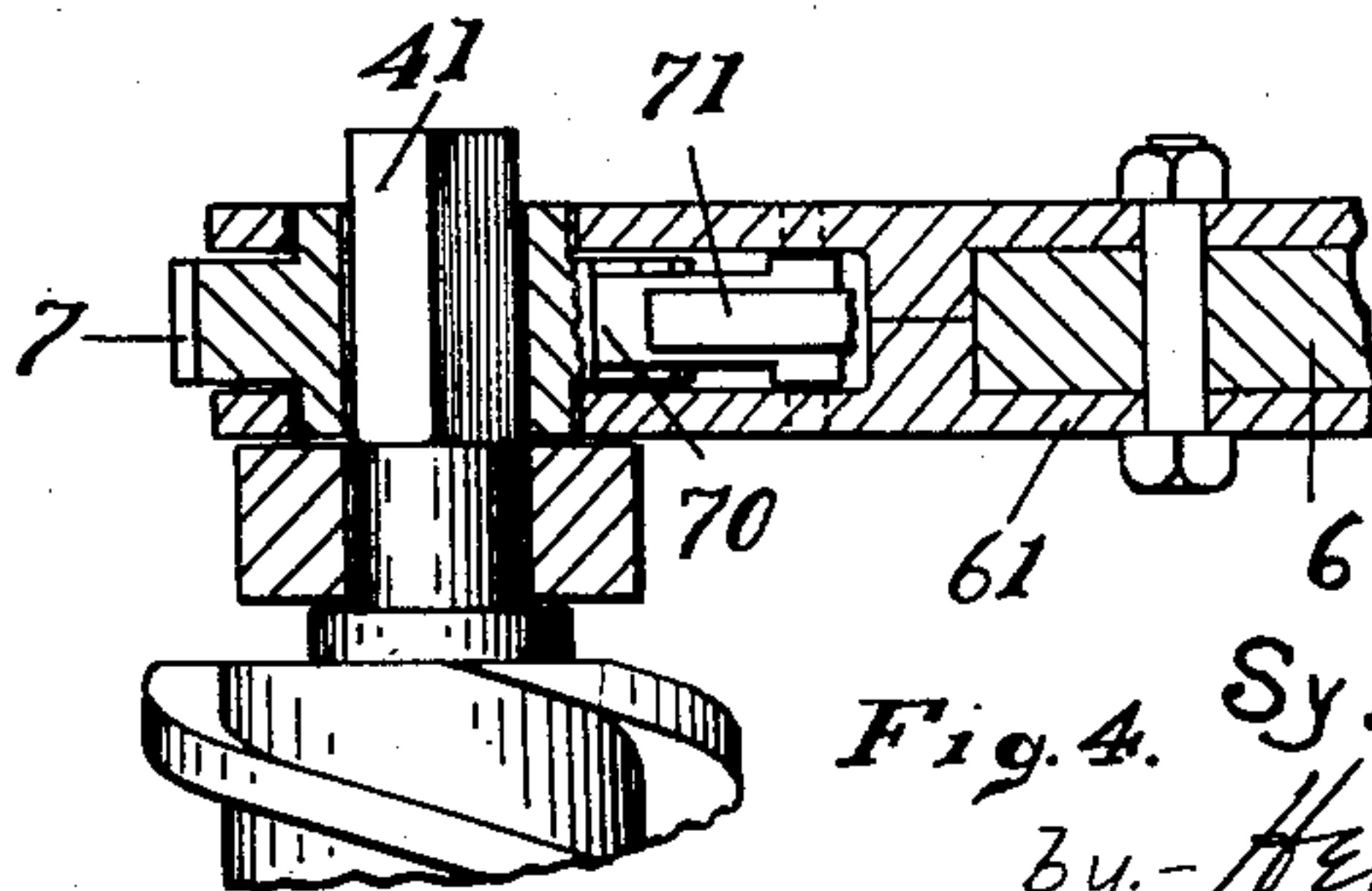


Fig. 4.

Witnesses
Alex C. ...
Gordon E. Mac Millan

Inventor
Sylvester Burton.
By - Henry R. Reynolds
his Attorney

UNITED STATES PATENT OFFICE.

SYLVESTER BURTON, OF WATERMAN, WASHINGTON.

STUMP-PULLER.

997,901.

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To all whom it may concern:

Be it known that I, SYLVESTER BURTON, a citizen of the United States, and resident of Waterman, in the county of Kitsap and State of Washington, have invented certain new and useful Improvements in Stump-Pullers, of which the following is a specification.

My invention relates to stump pullers, and comprises certain new and useful improvements therein which will be hereinafter described and particularly pointed out in the claims terminating this specification.

The object of my invention is to improve and simplify such devices, and more particularly to produce a type of stump puller which is adapted for hand use and which shall have a certain range of power and speed of operation, which changes may be availed of quickly so as to rapidly take up the pulling rope to take in slack or when the pull is light, and the high power be used when the pull is heavy.

In the drawings accompanying this specification I have shown my invention embodied in the form which is now preferred by me, which form will now be described.

Figure 1 is a plan view of my invention in its preferred form. Fig. 2 is a side elevation, a portion of the frame being broken away to better show the construction of the working parts. Fig. 3 is a longitudinal section through one end of the drum, its bearing and the worm gear. Fig. 4 is a longitudinal section through the ratchet wheel and the operating lever, showing the method of applying power to the machine.

In stump pullers of the windlass type, that is, those using a drum upon which a rope or cable is wound, one of the chief objections to those now in use is the fact that they are generally unprovided with any means whereby the speed of operation and power may be varied so as to best adapt them to the individual pulls. Usually the speed of operation is constant whether the necessity is only for taking up slack or for making a heavy pull. As a consequence much time is lost upon the lighter pulls which could be saved if they possessed means whereby slack might be taken up quickly and whereby the speed of operation and the pull exerted might be varied in accordance with the necessity in each particular case. In the present invention it has been sought to secure these desirable results and in a

machine of such small size and portability that it may be readily moved about and operated by hand power, thereby adapting it to the use of the man who has but little use for such machines and also keeping the first cost down to a reasonable figure.

The drum 3 is journaled between the ends of a yoke 2, to the rear end of which is attached the anchor chain or cable, 90, the yoke being supported on a light sled-like frame 1, whereby the whole may be readily dragged about from place to place. At each end of the drum, mounted upon the same axis and so as to turn freely and independently of the drum when this is desired, are worm wheels 4 and 5, the two being of different diameter or pitch, or otherwise designed so that they will produce a different power or turning effect upon the drum. As shown the gear 4 is larger than the gear 5, as a consequence of which difference power applied to the drum through this gear will turn the drum more slowly, but with greater turning effect than the same power applied through the gear 5. In this way a change in speed and power is secured. The gears 4 and 5 are each provided with clutch or ratchet teeth which are opposed to and adapted to engage with similar teeth upon the ends of the drum. These teeth 30 are shown, mainly by dotted lines, in Figs. 1 and 2, and by full lines in Fig. 3. Being inclined in one direction the drum may be turned in one direction by one gear without the other gear being turned thereby. Normally the gears 4 and 5 are held against the ends of the drum by springs 8 with sufficient force to cause engagement of the teeth sufficient to turn the drum by the gear which is being used for this purpose, while at the other end the teeth will slide upon each other without offering an appreciable resistance. The worms 40 and 50 each engages its respective gear, and they are mounted to turn in bearings carried by or supported from the yoke 2. As shown they are journaled in bars 20 and 21 secured respectively at the top and bottom of the yoke. The upper ends of the worm journals extend above their bearings and terminate in projecting sections 41 and 51, which are non-circular, so that a crank or like device may be placed thereon to turn them. As shown these projecting ends are square in section.

A ratchet wheel 7, having a square hole adapted to fit closely upon either of these

shaft ends 41 or 51, is journaled between ears forming extensions of a socket member 61, which receives the end of a lever 6, through which the power is applied. This socket member carries a pawl 70 which is held in engagement upon the ratchet wheel 7 by a spring 71. The ratchet wheel 7 is adapted to fit upon either of the square ends 41 or 51, and also upon the square ends of the drum shaft, 31. The lever may therefore be applied at will to any of these shafts by simply lifting it off of one and placing it upon the other. Also, if for any reason, the drum should stick and it be necessary to apply power thereto to turn it or one of the worm gears backward, this may be done by reversing the position of the ratchet wheel thereon. Turning the wheel over reverses its direction of action upon the shaft. Whenever it is desired to turn the drum backward, as to run out the rope 9, this may be done by spreading the gears 4 and 5 sufficiently to disengage them from the teeth upon the drum. One method of doing this is indicated by the dotted toggle 10 shown in Fig. 1. By placing such a device between the gears and forcing its center inward until the two parts come into alinement, the gears will be separated and the drum be free to turn.

If desired an ordinary crank may be provided for application to the ends 31 for turning the drum to take up slack. The lever 6 is capable of being placed upon these same ends if desired. When this lever is upon the ends 41 and 51 it is not intended that the sweep be entirely about the circle, but be a reciprocating motion through such an arc as is convenient. Should it be desired to operate the lever throughout the entire circle, this may be done by offsetting the lever and its attachment to the worm shafts so that the lever will swing over the other shaft end and the wheels 4 and 5. If desired two levers like 6 may be provided, both to be used simultaneously, each upon its respective shaft by different men.

The construction of machine herein shown provides one having large power, with a possibility of change in power to suit conditions, an ability to take up slack quickly and to run out rope freely. It is also compact, may be readily moved about, operated by hand and is capable of great power. Its first cost is also within reach of the man of small means and it may be operated with such means as he is likely to have at his command.

What I claim as my invention and desire to patent is:

1. In a stump puller, in combination, a drum, a drum shaft, two worm gears mounted to turn freely upon said shaft, one at each end of the drum, said gears differing in size, a worm engaging each gear, ratchet mechanisms carried by said gears and the drum to rotatively connect them and controlled in engagement by axial movement of the gears, springs acting to normally hold said gears in engagement with the drum, a lever carrying a rotative member disengageably engageable with either worm to turn it, and a ratchet device carried by the lever and engaging said rotative member to turn it.

2. In a stump puller, in combination, a drum, a drum shaft, a frame in which said drum and shaft are mounted to turn, a worm gear loosely mounted upon the drum shaft between the drum and the frame at each end of the drum, clutch devices carried by drum and gears for rotative engagement, springs acting to normally hold said gears in rotative engagement with the drum, means for holding the gears away from the drum and out of engagement therewith when desired, a worm meshing with each gear, said worms and the gears having their shafts projecting with their ends of a non-circular section, a lever having a ratchet wheel journaled thereon and having a hole adapted to fit over said shaft ends, and a ratchet device carried by said lever and adapted to engage said ratchet wheel to turn it.

3. In a stump puller, in combination, a drum, a worm gear mounted upon a common axis with the drum at each end thereof, ratchet teeth upon said gears and drum adapted to connect them to turn the drum, springs acting upon the gears to normally hold them in engagement with the drum, means for holding said gears out of engagement with the drum when desired, worms engaging said gears to turn them, and a lever adapted to be engaged with either worm to turn it.

In testimony whereof I have hereunto affixed my signature at Seattle, Washington, this 28th day of March, 1910, in the presence of the subscribing witnesses.

SYLVESTER BURTON.

Witnesses:

H. L. REYNOLDS,
E. BRYAN.