

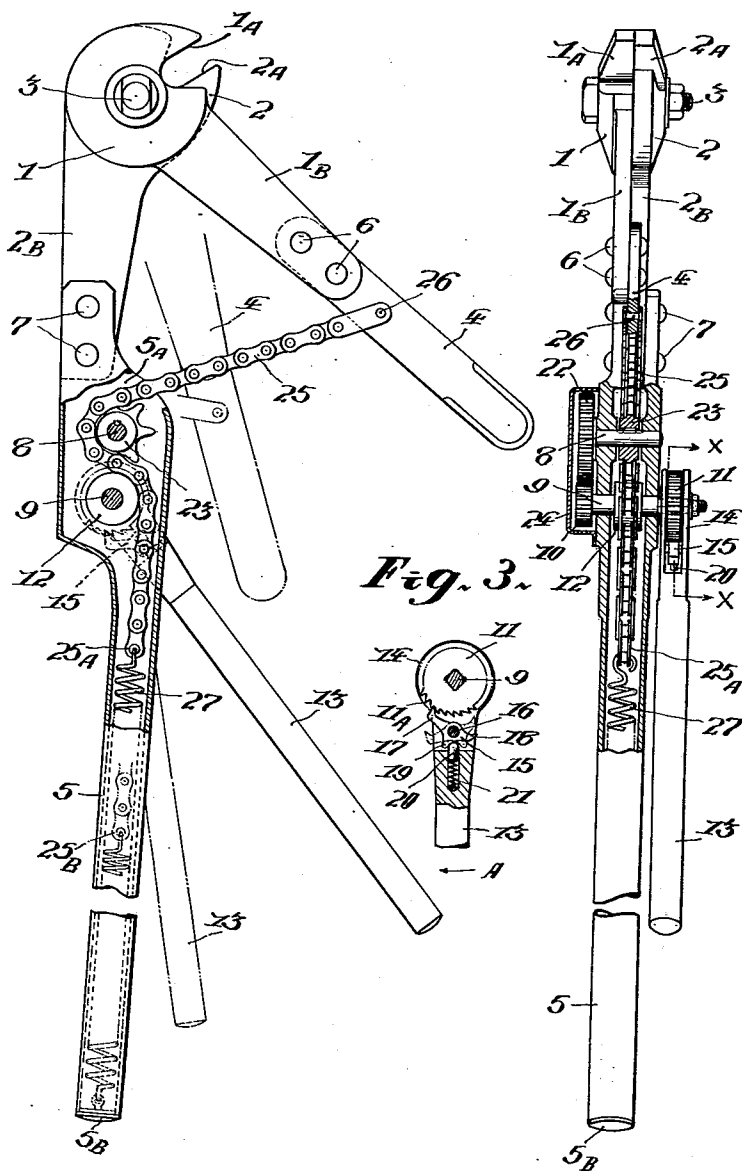
July 25, 1961

KAZUNOSUKE NAITO
PORTABLE MACHINE FOR SHEARING STEEL RODS, WIRE
ROPES, AND THE LIKE
Filed Dec. 15, 1959

2,993,275

Fig. 1.

Fig. 2.



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PORTABLE MACHINE FOR SHEARING STEEL RODS, WIRE ROPES, AND THE LIKE

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Filed Dec. 15, 1959, Ser. No. 859,811

Claims priority, application Japan Dec. 29, 1958

2 Claims. (Cl. 30—250)

This invention relates to a simple portable machine for shearing steel rods, wire ropes, and the like. More particularly the invention relates to a portable machine for shearing steel rods, wire ropes, and the like which is constituted as follows: A pair of disk-shaped cutters each of which has a U-shaped cutter in the periphery thereof are pivoted together. In a long arm extending from one of the aforesaid cutters, two round shafts are provided in parallel as to be freely rotatable. A gear and a ratchet wheel with a pawl in engagement therewith are secured to one of the aforesaid round shafts, which is further provided with a reciprocatingly rotatable hand lever and a freely mounted guide drum. To the other of these shafts, there are fixed a gear in engagement with the above-mentioned gear and a sprocket wheel. A chain, which one end has been secured to a short hand lever extending from the other of the aforesaid pair of disk-shaped cutters, is after engagement with the aforesaid sprocket wheel guided by the aforesaid guide drum and then coupled at its other end with one end of a coiled spring whose other end is secured to the other end of the long arm.

An object of this invention is to provide a portable machine for shearing steel rods, wire ropes, and the like which makes possible to shear easily by means of human power the foregoing articles.

Another object of the invention is to provide a portable machine for shearing steel rods, wire ropes, and the like which operation can be performed with simplicity and ease.

A still another object of the invention is to provide a portable machine for shearing steel rods, wire ropes, and the like which construction not only is very simple but also by virtue of its unique construction can be made durable as well as compact in its over-all size. Further objects and advantages of my invention will appear from the detailed description.

FIGURE 1 is a side view with a partial section of a portable machine embodying my invention and the chain lines show its movement.

FIGURE 2 is a plan view with a partial section of the portable machine of FIGURE 1.

FIGURE 3 is a view taken along line X—X of FIGURE 2 showing a section as seen in the direction of the arrow.

The following is an explanation of the drawings: The disk-shaped cutter 1 has in its periphery a U-shaped groove 1A whose one edge only constitutes the cutting blade. The disk-shaped cutter 2 is similarly provided with a U-shaped groove 2A in its periphery, and these two disk-shaped cutters 1 and 2 are superposed with the central parts thereof pivoted with a shaft 3. From arms 1B and 2B of the disk-shaped cutters 1 and 2 extend respectively in one body therewith a short hand lever 4 and a long hand lever 5, being secured thereto with rivets 6 and 7, respectively. The long hand lever 5 is constituted as a hollow body, and in its forward part the round shafts 8 and 9 are pivotally supported as to be freely rotatable. At both ends of the round shaft 9 at the outer sides of the long hand lever 5 there are fixed respectively a gear 10 and a ratchet wheel 11. There is also freely mounted within the interior of the long hand lever 5 a guide drum 12. And further, to the round shaft 9 there is freely mounted a reciprocating hand lever 13 with a fork 14 at its tip encompassing the aforesaid

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ratchet wheel 11. As shown in detail in FIGURE 3, a rocking piece 15 is pivoted with a pin 16. One end of this rocking piece 15 is formed into a pawl 17 which engages teeth 11A of the ratchet wheel 11, while the other end forms a simple protrusion, and in the middle, a projection 19 is provided. A sliding stop 20 provided in a small hole in the end part of the reciprocating hand lever 13 is urged by means of a spring 21 against either the left or right shoulder located to the sides of the projection 19. To the aforesaid round shaft 8 at its one end there is fixed to the outer side of the long lever 5 a gear 22 which engages with aforesaid gear 10, and in the interior of the long hand lever 5 a sprocket wheel 23 is fixed. 10 is the cover which encloses the gears 10 and 22. A chain 25 coupled to the aforesaid short hand lever 4 with a pin 26 enters the interior of lever 5 through a small opening 5A and then, as shown in FIGURE 1, engages with a sprocket wheel 23, and after being guided by a guide drum 12, is coupled at its other end 25A with one end of a coiled spring 27 whose other end is secured to an end plate 5B of the long hand lever 5.

The method of using the portable machine for shearing steel rods, wire ropes, and the like of this invention is as follows: The machine is first made to assume the position as shown in FIGURE 1, the wire rope and the like to be sheared is then placed in the U-shaped grooves 1A and 2A, and the reciprocating hand lever 13 is manually actuated with a back-and-forth motion. When this is done, as the lever 13 moves in the direction of the arrow—since the pawl 17 is in engagement with one of the teeth 11A, the ratchet wheel 11 is rotated a little, and when the lever 13 moves in the opposite direction, the ratchet wheel 11 is not rotated since the pawl 17 slides over the teeth 11A. Thus the ratchet wheel 11 is made to rotate intermittently in one direction. This rotation is then transmitted to the round shaft 8 through the gears 10 and 22 and rotates the sprocket wheel 23. Thus the short hand lever 4 is pulled by means of the chain 25 toward the position indicated by the chain line, whereby the wire rope and the like is sheared. In this instance, the end 25A of the chain 25 being pulled by the coiled spring 27 moves to the position 25B. In order to return the short hand lever 4 to its original position, first, the rocking piece 15 is manipulated to the position as indicated by the chain line in FIGURE 3. When this is done, the pawl 17 disengages with teeth 11A and the simple protrusion 18 rides the top of the teeth 11A, and thus since the ratchet wheel 11 attains the state where it is freely rotatable, the short hand lever 4 can be easily pulled back to its original position.

Thus the machine of this invention has the advantages of not only being of very simple construction but also its manipulation is easy and simple. Moreover, since its long hand lever 5 has been constituted as a hollow body, wherein have been enclosed the sprocket wheel 23, the guide drum 12, and the coiled spring 27, and to the outside thereof have been disposed the gears 10 and 22, the ratchet wheel 11, and the reciprocating hand lever 13, it possesses the advantage that it can be constructed sturdily as well as compact in its over-all size.

Having fully described a preferred embodiment of this invention, it will be obvious that the same may be varied in detail without departing from the spirit of the invention as set forth in the appended claims.

What is claimed:

1. A portable machine for shearing steel rods, wire ropes and the like, which comprises a pair of disk-shaped cutters pivotally connected together, each of said cutters having a U-shaped curve in the periphery thereof, an elongated hand lever attached to and extending from one of said disk-shaped cutters, a pair of parallel shafts

journaled in said hand lever, a gear and ratchet fixed to one of said shafts, a guide drum and a reciprocating hand lever rotatably mounted on said last shaft, said reciprocating hand lever carrying a pawl attached to engage said ratchet, a sprocket wheel and a gear carried by the other of said shafts, said last gear being in engagement with said first mentioned gear, a short lever attached to the other of said disk-shaped cutters, a chain secured at one end of said short lever and extending into said elongated hand lever around said drum and in engagement with said sprocket and a spring secured to the other end of said chain and anchored to said elongated lever, said chain being adapted to apply a shearing force to said short lever

in response to repeated actuations of said reciprocating hand lever.

2. A portable machine for shearing steel rods, wire ropes, and the like according to claim 1, wherein said elongated hand lever is a hollow body and said sprocket, guide drum and spring are enclosed therein and said gears, ratchet and reciprocating hand lever are mounted outside thereof.

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