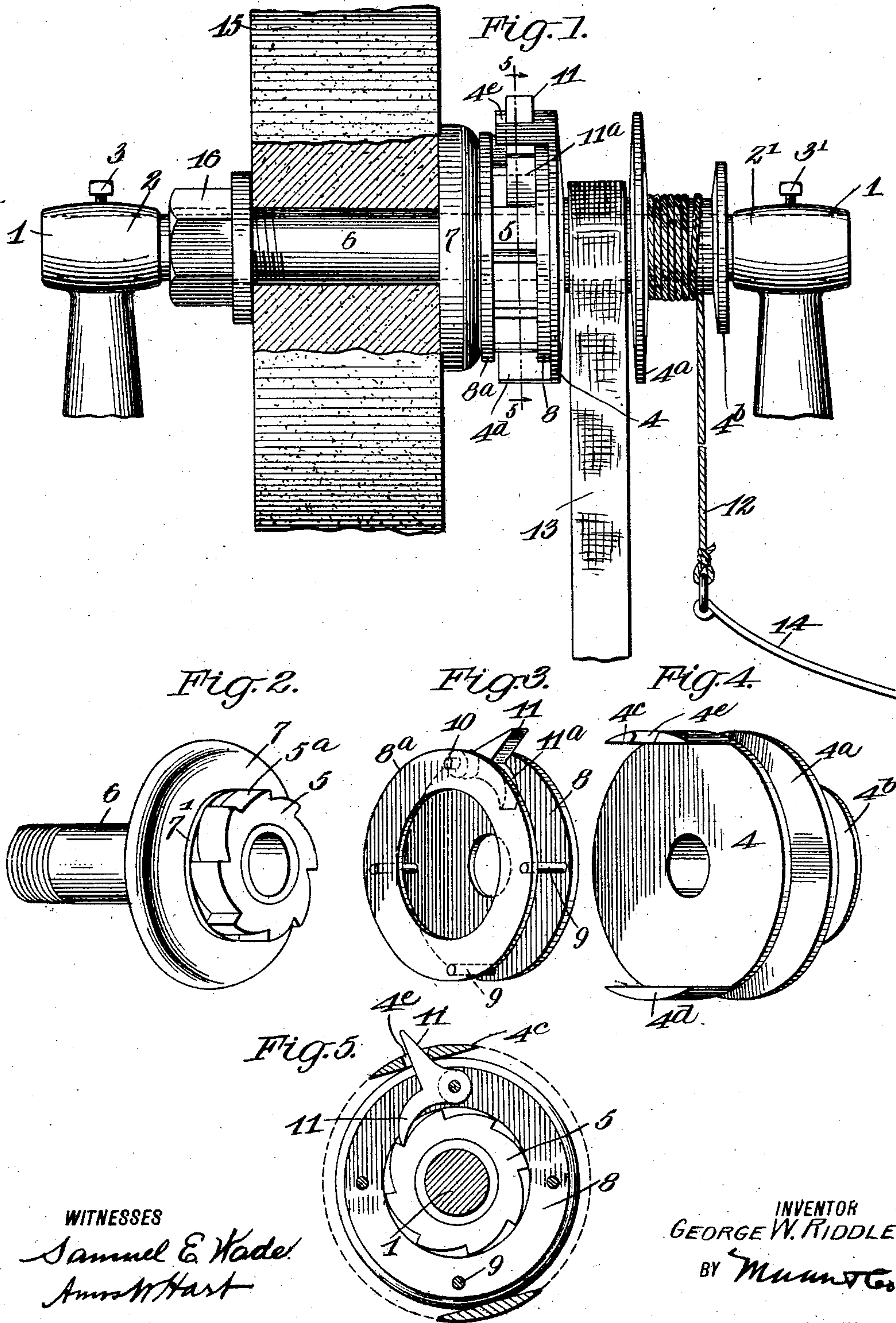


G. W. RIDDLE.  
 RATCHET FOR GRINDING MACHINES AND FOOT POWER APPARATUS.  
 APPLICATION FILED MAR. 25, 1909.

973,974.

Patented Oct. 25, 1910.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

GEORGE W. RIDDLE, OF ST. JOSEPH, MISSOURI.

RATCHET FOR GRINDING-MACHINES AND FOOT-POWER APPARATUS.

973,974.

Specification of Letters Patent.

Patented Oct. 25, 1910.

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*To all whom it may concern:*

Be it known that I, GEORGE W. RIDDLE, a citizen of the United States, residing at St. Joseph, in the county of Buchanan, State of Missouri, have invented certain new and useful Improvements in Ratchets for Grinding-Machines and Foot-Power Apparatuses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to make and use the same.

This invention relates to devices for converting the treadle motion of foot power machines into continuous rotary motion, and it consists in the constructions, combinations and arrangements herein described and claimed.

The invention is particularly applicable to grinding machines and other foot power apparatus in which a continuous rotary motion is desired for a short space of time, although it may be applied to other devices as well.

An object of my invention is as stated above to produce a continuous rotary motion from a reciprocatory motion by a treadle or other foot power apparatus.

A further object of my invention is to provide a simple means which can be readily assembled and which is simple in construction and comparatively economical to manufacture.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a side view, certain parts being shown in section; Fig. 2 is a perspective view of the sleeve and ratchet; Fig. 3 is a perspective view of the ratchet casing and the pivoted pawl; Fig. 4 is a perspective view of the reel; and Fig. 5 is a section through the ratchet and reel along the line 5—5 of Fig. 1.

In carrying out my invention I provide a main shaft 1 which is supported at its ends in the uprights 2 and 2' and is firmly secured to the latter by means of the set-screws 3 and 3'. On one end of the shaft next to the support 2', I place a reel 4. This reel is of the form shown in Fig. 4, and consists of two sections 4<sup>a</sup> and 4<sup>b</sup>. On one side of the reel there are laterally projecting extensions 4<sup>c</sup> and 4<sup>d</sup>, the former has a slot 4<sup>e</sup> for a purpose hereinafter explained.

The ratchet 5 is shown in Fig. 2, being secured on the end of a threaded sleeve 6 which bears a collar 7. The ratchet sleeve and collar are firmly fastened together. An integral bearing surface 7' is formed on one side of the collar next to the ratchet.

The pawl casing is shown in Fig. 3 and it consists of the cylindrical rings 8 and 8' held together by the pins 9 and bearing the pivoted pawl 10 which is provided with two teeth 11 and 11<sup>a</sup>.

A cord 12 is wound about the portion 4<sup>b</sup> of the reel, while a strap 13 is adapted to be wound about the portion 4<sup>a</sup>. The one end of the cord 12 is secured to a spring 14 which may be of any suitable shape but is illustrated in the drawing as consisting of a flat piece of metal. To the lower end of the strap is attached a foot treadle for driving the device. The grinding tool 15 is held between the collar 7 and a nut 16 which is screwed on to the threaded end of the sleeve 6.

From the foregoing description of the various parts of the device the operation thereof may be readily understood. In assembling the apparatus, the ring 8 of the pawl casing is slipped over the bearing surface 7' between the ratchet and the collar 7. The reel is placed on the shaft and the upper tooth 11 of the pawl is allowed to project through the openings 4<sup>e</sup> of the extension 4<sup>c</sup>. The strap 13 is wound up so that when the treadle (not shown) is in its highest position, it may be unwound by a continued pressure on the treadle. As it unwinds it turns the reel. The part 4<sup>c</sup> is pressed against the tooth 11 thereby throwing the tooth 11<sup>a</sup> into contact with the teeth 5<sup>a</sup> of the ratchet 5, thus turning the ratchet together with the grinding tool 15. In the meantime the cord 12 is being wound up on the reel against the tension of the spring 14 so that as soon as the pressure of the treadle is relieved the spring 14 draws the cord 12 downwardly and rotates the reel in an opposite direction. On the reverse movement the part 4<sup>c</sup> presses on the opposite side of the tooth 11 thereby raising the tooth 11<sup>a</sup> out of contact with the teeth of the ratchet and permitting the free movement of the reel in the reverse direction. In the meantime the momentum required by the rapidly revolving grinding tool carries it forward. Now as the treadle is again depressed the tooth 11<sup>a</sup> is forced into contact with the ratchet and power is again



supplied to the grinding wheel 15. Thus by a series of alternate reciprocatory movements the grinding wheel is kept rotating continuously.

5 I claim:

1. A ratchet for foot power machines comprising a stationary shaft, a reel rotatably mounted on said shaft having two portions arranged to bear flexible operating  
10 members and having lateral extensions on one side thereof, one of said extensions being provided with a slot, a sleeve mounted on said shaft having an integral ratchet secured thereto, a pawl casing on said shaft  
15 and having an opening in one side to receive said ratchet, a pawl pivoted in said pawl casing, said pawl having a part arranged to project through the slot in the extended portion of the reel, and another part adapted to  
20 engage the teeth of the ratchet wheel, and means for holding the ratchet-bearing sleeve in position on said shaft.

2. A ratchet for foot power machines comprising a stationary shaft, a reel rotatably mounted on said shaft having two portions arranged to bear flexible operating

members, and having lateral extensions on one side thereof, each of said extensions being provided with a slot, a sleeve on said shaft having an integral ratchet secured  
30 thereto at one end, a bearing member adjacent the ratchet, and a collar adjacent the bearing member, said sleeve being threaded at the opposite end, a pawl casing comprising a pair of circular plates, one of said  
35 plates having an opening arranged to fit over said stationary shaft and the other of said plates having an opening arranged to receive the ratchet wheel and the adjacent bearing member, pins connecting said plates,  
40 pawls mounted upon certain of said pins arranged to engage said ratchet wheel, and a nut disposed on the threaded portion of said sleeve and arranged to clamp a member against said collar. 45

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. RIDDLE.

Witnesses:

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MAURICE STERN.