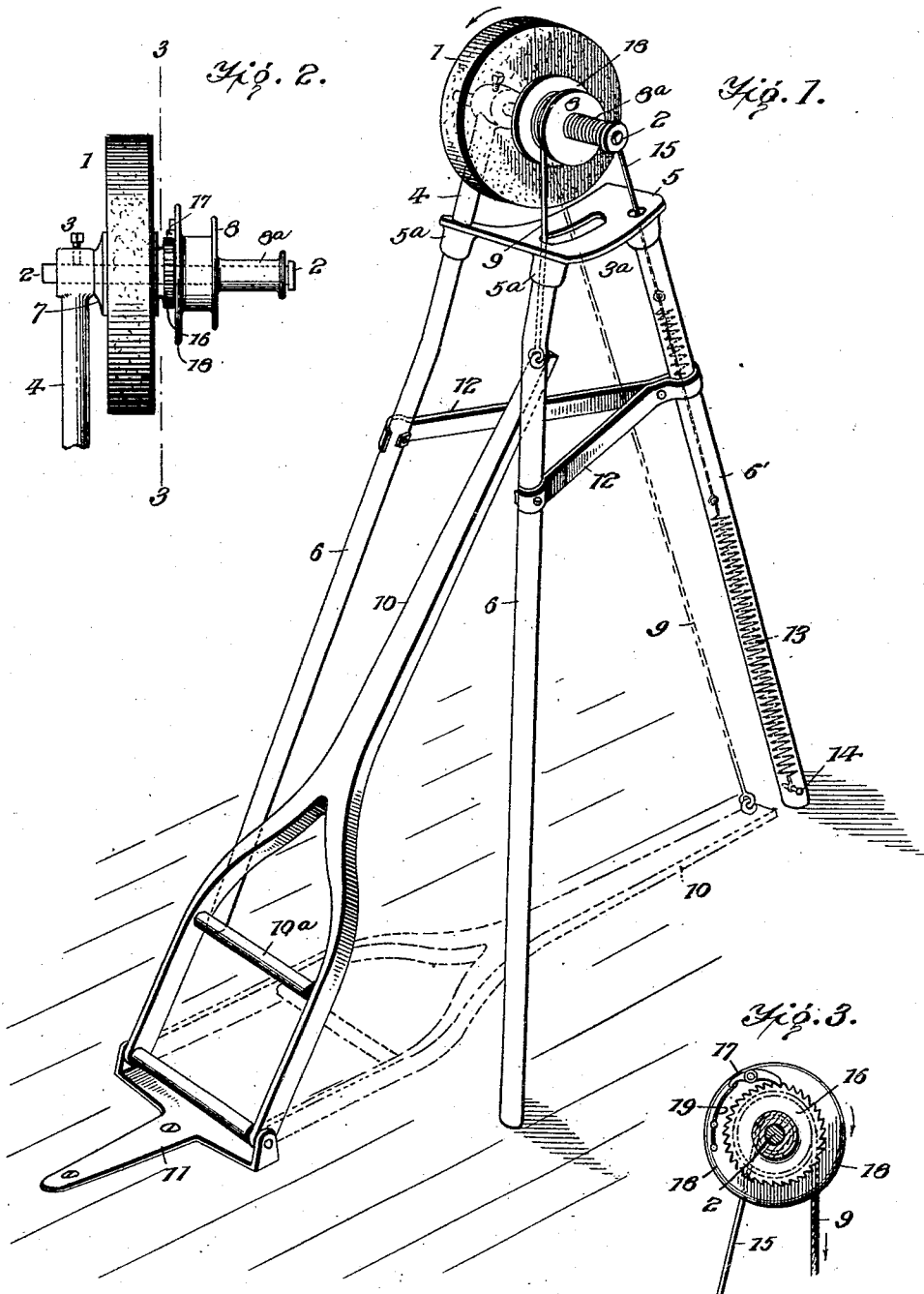


G. W. RIDDLE.
TOOL GRINDING APPARATUS.
APPLICATION FILED MAR. 17, 1908.

935,406.

Patented Sept. 28, 1909.



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GEORGE W. RIDDLE, OF BRECKENRIDGE, MISSOURI.

TOOL-GRINDING APPARATUS.

935,406.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed March 17, 1908. Serial No. 421,622.

To all whom it may concern:

Be it known that I, GEORGE W. RIDDLE, a citizen of the United States, and a resident of Breckenridge, in the county of Caldwell and State of Missouri, have invented an Improved Tool-Grinding Apparatus, of which the following is a specification.

The object of my invention is to provide an easily portable tool-grinding apparatus whose frame is composed of a minimum number of parts and distinguished by strength and rigidity.

A leading feature of the invention is the arrangement of the three hollow legs composing the frame in such convergent relation to the shaft of the grinder proper that one serves as a support for the said shaft and another as a guide and protector for a retracting spring connected with the shaft.

The invention is illustrated in the accompanying drawing, in which—

Figure 1 is a perspective view of the same. Fig. 2 is an edge view of the grinding wheel and the oscillating pulley, and ratchet-and-pawl mechanism for connecting it with the wheel. Fig. 3 is a transverse section on the line 3—3 of Fig. 2.

A grinding wheel 1 is mounted loose on a horizontal axle 2, one end of which is clamped by a screw 3 in a post 4 which forms an alined extension of one of the three hollow legs of the frame. Two of these legs, 6, are arranged at the front, and one, 6', in the rear, the three being thus in the relation of the points of a triangle to each other. A curved plate 5 rigidly connects the upper portions of the three legs, 6, 6, 6', said plate being provided with pendent sockets 5^a into which the legs are fitted. The curvature of the plate adapts it to be placed nearer the grinder 1 than would be practicable if the plate were straight and horizontal. It is apparent that this manner of securing the axle adapts it to be readily detached from the post 4, when required for the purpose of shipping the machine, or for truing the wheels, or other purposes.

A collar 7 is secured to the wheel 1, and abuts the face of the wheel which is adjacent to the post 4. On the other side of the wheel, there is mounted on the axle 2, a differential pulley 8 to whose larger flanged portion a cord or strap 9 is attached, the other end of the latter being secured to the free end of the pedal or foot lever 10, whose broad lower end is hinged to a bracket se-

cured to the floor. The lever 10 is arranged, and adapted to oscillate, in a vertical plane between the two legs 6, 6, and a brace 12 connects the upper portion of the legs as shown. The leg 6' is hollow and a retracting spring 13 is arranged therein, its lower end being secured on a pin 14. A rope or cord 15 is attached to the upper end of the spring and is attached to and wound on the reduced portion 8^a of the differential pulley. It will be observed in Fig. 1, that the treadle rope or strap 9 is wound in the opposite direction to the spring rope or strap 15. Between the differential pulley 8 and the grinding wheel 1 is arranged a pawl-and-ratchet mechanism by which the pulley is intermittently locked with the wheel. The ratchet 16—see Fig. 3—is fast to the side of the wheel 1, and therefore rotates with it. The pole 17 is, on the other hand, pivoted to the inner rim or flange 18 of the pulley 8, and it is held normally engaged with the ratchet by means of the spring 19.

From the foregoing description it will now be apparent that, by placing a foot on the round 10^a of the treadle, the latter may be depressed as indicated by dotted lines—see Fig. 1—and thereby the pulley 8 will be rotated in the direction of the arrow shown in Fig. 1. The pawl 17 being at the same time engaged with ratchet 16, and the latter being fast with the wheel 1, it is obvious the latter will be rotated also in the direction of the arrow, or in the same direction with the pulley. In this operation it will be further apparent, that the strap or rope connected with the retracting spring 13 will be wound on the smaller or reduced portion of the pulley 8. In other words, as the treadle strap or rope 9 unwinds from the pulley, the spring strap or rope 15 is wound thereon, but, of course, not to the same degree, owing to the difference in diameter between the respective portions of the pulley. When pressure on the treadle is relieved by raising the foot, the power of the spring 13 suffices to rotate the pulley 8 backward to its original position, and in so doing the treadle strap or rope 9 is wound again on the pulley and the treadle raised to the original position indicated by dotted lines in Fig. 1. In this same retracting operation it is obvious that the pawl 17 will ride free over the teeth of the ratchet 16; and, when the retracting movement is ended, the pawl will again lock or engage with the ratchet, as

shown in Fig. 3. Thus, by successive depressions of the treadle or foot lever 10, a continuous rotation in one direction is imparted to the grinding wheel.

5 It will be seen that the three legs 6, 6, 6', constituting the tripod or supporting frame, are arranged convergently with reference to the axle of the grinder 1, so that while the extension of one serves as the sole support
10 of the grinder, another, 6', serves as a receptacle, protector, and guide for the spiral retracting spring 13 and the cord that connects it with the grinder. The spring is,
15 therefore, adapted to expand and contract with the least possible friction with the leg in which it is arranged.

What I claim is:

1. The improved portable frame for a
20 tool-grinder comprising converging legs, a curved slotted plate rigidly connecting their upper portions, one of said legs being extended above the slotted plate, and an axle

supported horizontally thereon and serving in practice for attachment of a rotary tool, another leg of the frame being constructed
25 hollow and arranged with its axis intersecting the axle, for the purpose specified.

2. The improved tool-grinding apparatus comprising a frame one of whose portions is extended upward, a horizontal axle support-
30 ed in such extension, and adapted for support of a rotary tool, a differential pulley mounted loose on the axle, ratchet-and-pawl mechanism which operatively connect it
35 with the rotary tool, cords applied to the differential portions of the pulley and winding thereon in opposite direction, a treadle and spiral spring connected with the respective cords, as shown and described.

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Witnesses:

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