

S. T. MOORE.
GRINDING APPARATUS.
APPLICATION FILED JAN. 5, 1910.

961,633.

Patented June 14, 1910.

2 SHEETS—SHEET 1.

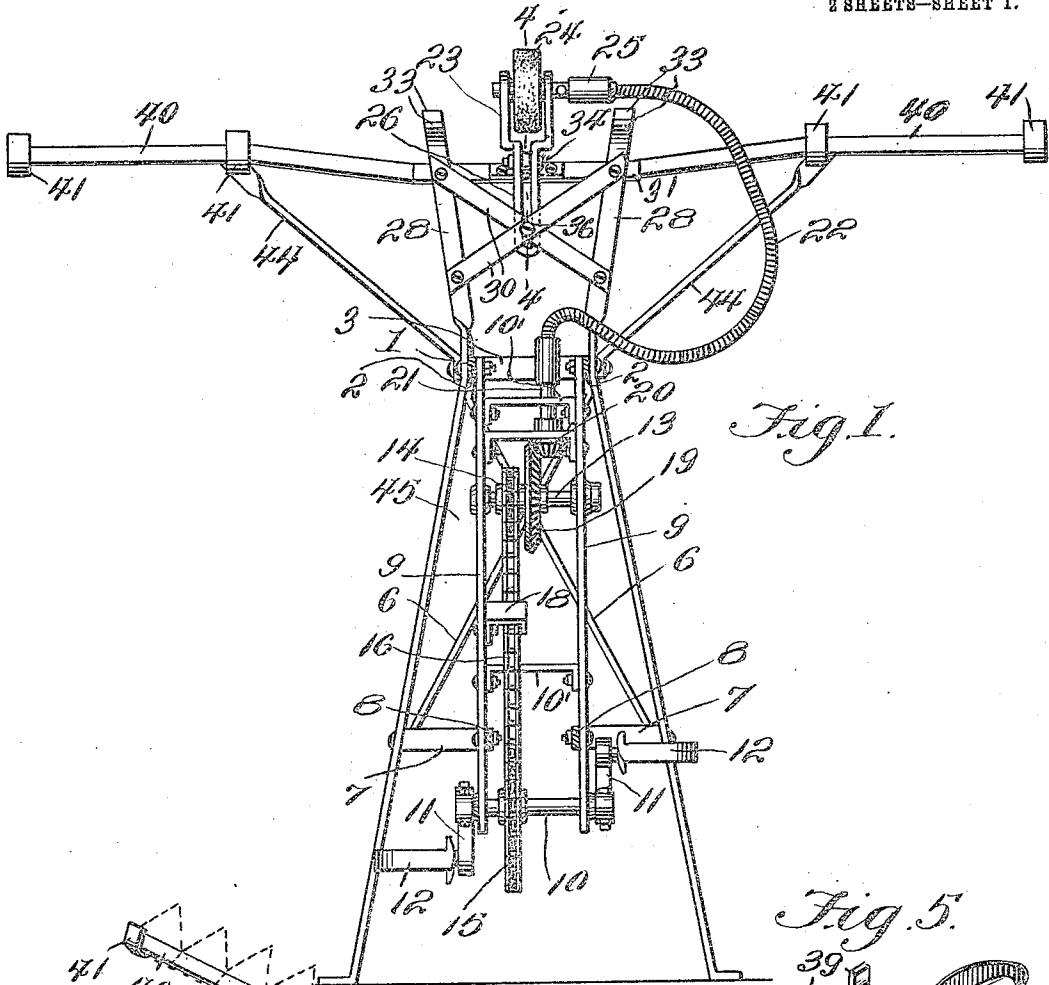


Fig. 1.

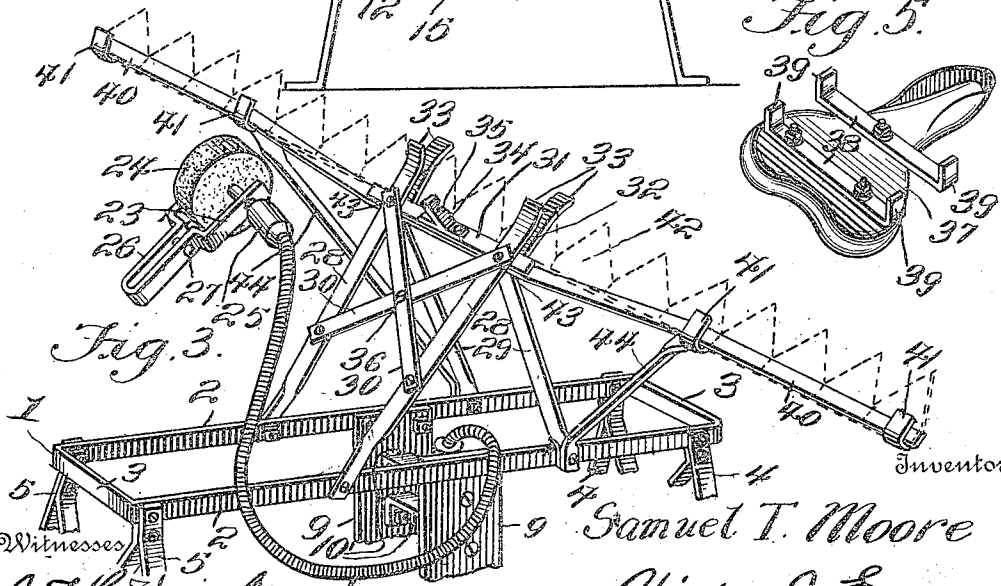
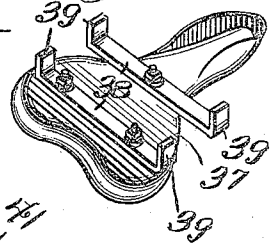


Fig. 3.

Fig. 5.



Witnesses

J. T. Wright
C. C. Hines.

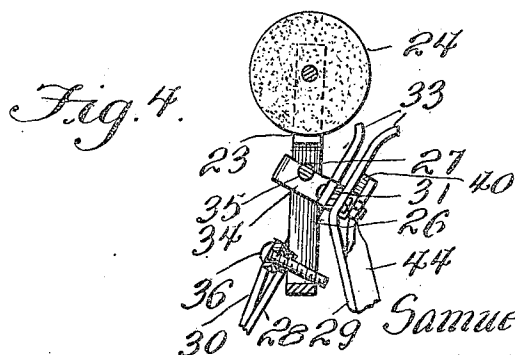
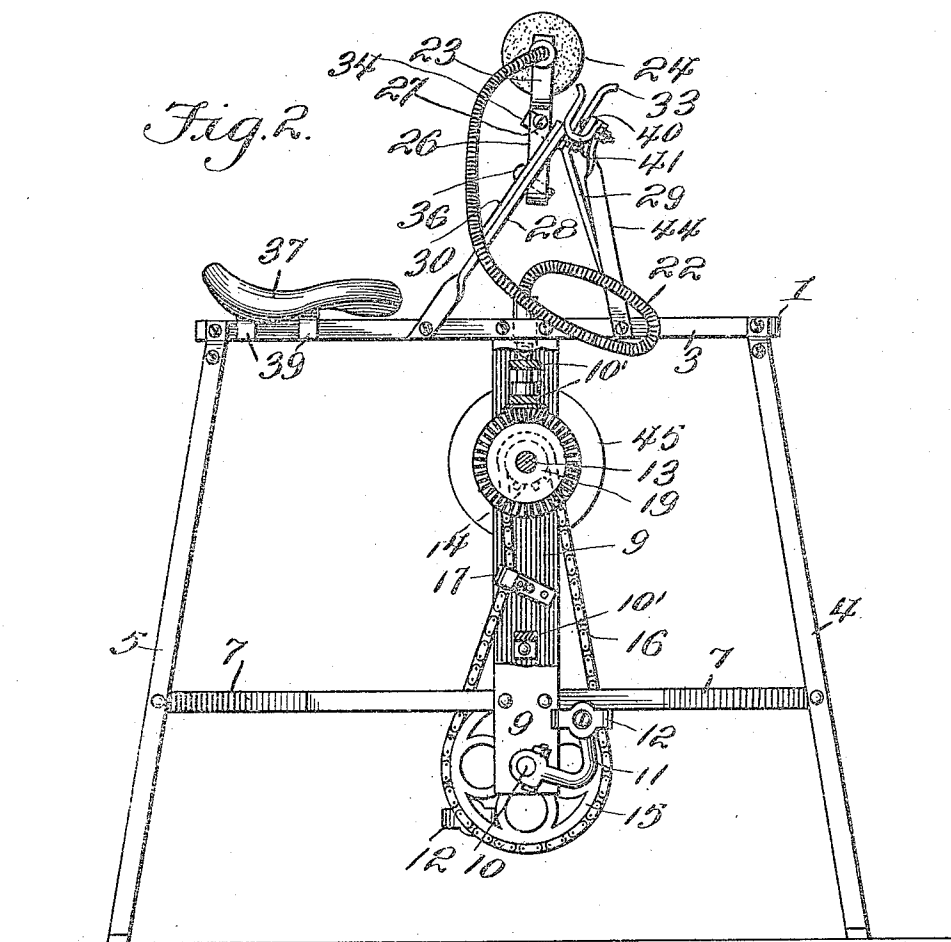
Samuel T. Moore
By Victor J. Evans,
Attorney

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Witnesses

J. T. Wright
C. C. Hines

Inventor

Samuel T. Moore

Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

SAMUEL T. MOORE, OF LIMA, MONTANA.

GRINDING APPARATUS.

961,633.

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To all whom it may concern:

Be it known that I, SAMUEL T. MOORE, a citizen of the United States, residing at Lima, in the county of Beaverhead and State of Montana, have invented new and useful Improvements in Grinding Apparatus, of which the following is a specification.

This invention relates to a grinding apparatus for sharpening edged tools, sickle bars, etc., the object of the invention being to provide a simple, reliable and efficient apparatus of this character, by which the operation of grinding may be conveniently performed, and which may be driven by foot propelled gearing or other power.

The invention consists of the features of construction, combination and arrangement of parts hereinafter more fully described and claimed, reference being had to the accompanying drawings, in which:

Figure 1 is a rear elevation of a grinding apparatus embodying my invention. Fig. 2 is a side elevation, partly in vertical section. Fig. 3 is a perspective view of the upper portion of the frame and the bracket, showing the device as used for sharpening a cutter bar or sickle. Fig. 4 is a detail section on the line 4—4 of Fig. 1. Fig. 5 is a bottom perspective view of the saddle or seat.

Referring to the drawings, the numeral 1 designates a supporting frame embodying an upper oblong rectangular portion comprising side bars 2 and end bars 3. This upper frame portion is carried by front and rear sets of supporting legs 4 and 5, respectively, the legs of each set being connected and reinforced by cross braces 6, while the legs 4 and 5 at each side of the frame are connected by a longitudinal brace bar 7. The legs 4 and 5 are inclined outwardly to form firm and stable supports, and the braces 7 are offset in an inward direction centrally to provide closely arranged parallel portions 8 spaced approximately the same distance as the bars 2 and arranged substantially in the vertical plane thereof. The frame structure proper is completed by central vertical standards or plates 9 which are secured to the bars 2 and portions 8 of the bars 7 and extend below the latter, said standards being united by cross pieces or braces 10.

Journalled in the depending lower ends of the standards 9 is a transverse drive shaft 10 provided at its ends with cranks 11 carrying pedals 12 which may be of the ordinary construction employed in bicycles,

whereby the shaft may be driven. Journalled on the standards above the drive shaft is a countershaft 13 carrying a sprocket wheel 14 connected with a drive sprocket 15 on the shaft 10 by a sprocket chain 16, one stretch of which passes through a suitable guide 18 adjustably mounted on one of the standards 9, by which any slack in the chain may be taken up. On the shaft 13 is a beveled gear 19 meshing with a beveled pinion 20 on the lower end of a vertical transmission shaft 21 journalled in the upper cross braces 10. To the upper end of this transmission shaft is connected one end of a flexible shaft 22, the opposite end of which is journalled in the arms of a forked support 23 and carries a grinding roller 24 of emery or other suitable material. The casing of the flexible shaft 22 is provided adjacent the support 23 with a grip 25, by which the shaft and wheel carrying support may be manipulated. The support 23 preferably consists of a single piece of strip metal bent to provide a fork in which the flexible shaft is journalled as described and a looped shank 26 extending from the base of the fork, the sides of the shank being connected adjacent the fork by a cross bolt, pin or coupling member 27.

The upper rectangular portion of the frame formed by the bars 2 and 3 supports a bracket or tool holder comprising a pair of upwardly and forwardly inclined bars 28, and a corresponding pair of upwardly and rearwardly inclined bars 29, both of which pairs of bars are secured at their lower ends to the frame bars 2. The rear bars 28 are coupled and reinforced by crossed braces 30, and both sets of bars 28 and 29 are secured at a point near their lower extremities to a cross bar 31 forming a central tool rest or support. Above said bar 31 the ends of the companion bars of the sets 28 and 29 are arranged in parallel relation to provide spaced receiving jaws 32, whose extremities are bent laterally in opposite directions to form flaring entrances to said jaws, to facilitate the application and removal of a tool to and from the spaces between the jaws. An arm 34 extends rearwardly at an upward inclination from the bar 31 at an intermediate point between the pairs of jaws and is formed with a notch 35 to receive the coupling member 27 on the support 23, by which the grinding wheel may be hung between the jaws. In this op-

eration the bight portion of the looped shank 26 of the wheel support is adapted to be engaged with the projecting end of a bolt or coupling member 36 uniting the braces 30 at their crossing point, the construction being such that the grinding wheel support may be connected with and disconnected from said coupling members by tilting it at a prescribed angle, and such that when said support is applied it will be held firmly and securely in position.

A saddle or seat 37 is provided upon the rear portion of the frame to enable the operator to sit astride the same and drive the pedals 12, by which motion will be communicated through the gearing to drive the grinding roll 24 in an obvious manner. This saddle or seat is preferably provided with cross strips 38 to rest upon the upper edges of the bars 2 and having downwardly bent ends 39 to engage the outer sides of said bars, by which the saddle will be held from lateral displacement. It will be obvious from the foregoing description that when the grinding wheel is supported in the manner described it will be arranged at a convenient point in advance of the operator to enable edged tools of different kinds to be readily, quickly and conveniently sharpened.

Where the tool to be sharpened is of any considerable length it may be arranged in the holders formed by the jaws 32 and the support 23 detached from the coupling members, so that the operator by grasping the handles 25 and 26 may directly apply the grinding wheel to the edges of the tool, in which manner knives and cutter bars which are comparatively short in length may be expeditiously sharpened. In order to provide for the sharpening of comparatively long longitudinal cutters, such as the sickle bars of harvesters I provide extension arms 40 projecting beyond the extremities of the bar 31 in opposite directions beyond opposite sides of the machine, which extension bars are formed with U-shaped or hooked supporting members 41 to receive and support the sickle bar 42, shown in dotted lines in Fig. 3, beyond the jaws. In this operation it will be seen that the center of the sickle bar rests upon the main supporting bar 31 and extends through the spaces between the jaws 33, the inner ends of the arms 40 being offset inwardly to the desired degree to bring the lower portions of the members 41 into alinement with the upper edge of the bar 31, so that the sickle 42 may be firmly supported throughout its length. The inner ends of the arms 40 are preferably united to the parts 28, 29, 30 and 31 by bolts 43 extending through their adjacent portions, but they may be united in any other desired manner. Braces 44 extend from the frame bars 2 and are connected with the extension arms at a point interme-

diate their length, to adapt them to effectually withstand the weight of the sickle bar. In sharpening the sickle bar, it will be understood that the operator successively applies the grinding wheel to the edges of the teeth of said bar, by which the teeth may be quickly and conveniently sharpened.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of my improved sharpening apparatus will be readily understood, and it will be seen that a simple, efficient and convenient type of device of this character is provided, by which edged tools and cutters of various kinds may be sharpened. By the provision of a drive gearing of the construction disclosed, the grinding roll may be rotated while the operator is comfortably seated and the hands of the operator will be left free to manipulate the roll in sharpening sickle bars and other heavy or lengthy tools or cutters. If desired a band wheel or pulley 45 may be mounted upon one end of the shaft 13 to enable the gearing to be driven from any other suitable source of power, or to enable power to be transmitted from said gearing for driving other devices.

I claim:

1. In a grinding apparatus, a bracket, a notched member upon the bracket, a coupling pin upon the bracket below and in rear of said notched member, a carrier provided with coupling elements to respectively detachably engage said notched member and coupling pin, whereby said carrier may be coupled to and uncoupled therefrom by a tilting action, a grinding roll supported by said carrier, and means for driving said roll.

2. In a grinding apparatus a bracket, a notched member upon the bracket, a coupling pin upon the bracket below and in rear of said notched member, a forked carrier provided with a coupling pin to engage the notched member and a looped portion to engage the coupling pin on the bracket, a grinding roll supported by said carrier, and means for driving said roll.

3. A grinding apparatus comprising a frame, a bracket upon the frame provided with spaced holders, a supporting element detachably connected with the frame between said holders, a grinding roll carried by said supporting element, a flexible shaft carried by said roll, and means for driving said shaft.

4. A grinding apparatus comprising a frame, a bracket upon the frame carrying spaced holders, extension arms projecting laterally from the bracket and provided with cooperating holders, a supporting member adapted for detachable connection with the bracket between the first-named holders, a flexible shaft connected with the supporting member, a grinding roll driven by said

shaft, and gearing on the frame for driving the shaft.

5 5. A grinding apparatus comprising a frame, a bracket carried by the frame and including an upper bar, a notched supporting member carried by said bar, a coupling pin on the bracket below and in rear of said bar, a supporting element having a looped shank adapted to engage said coupling pin
10 and a coupling element adapted to engage said notched supporting member, a grinding

roll journaled on said supporting element, a flexible shaft for driving said roll, and gearing on the frame for driving the flexible shaft.

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

SAMUEL T. MOORE.

Witnesses:

CHAS. BROTHERS,
SAMUEL H. NESBITT.