

No. 647,981.

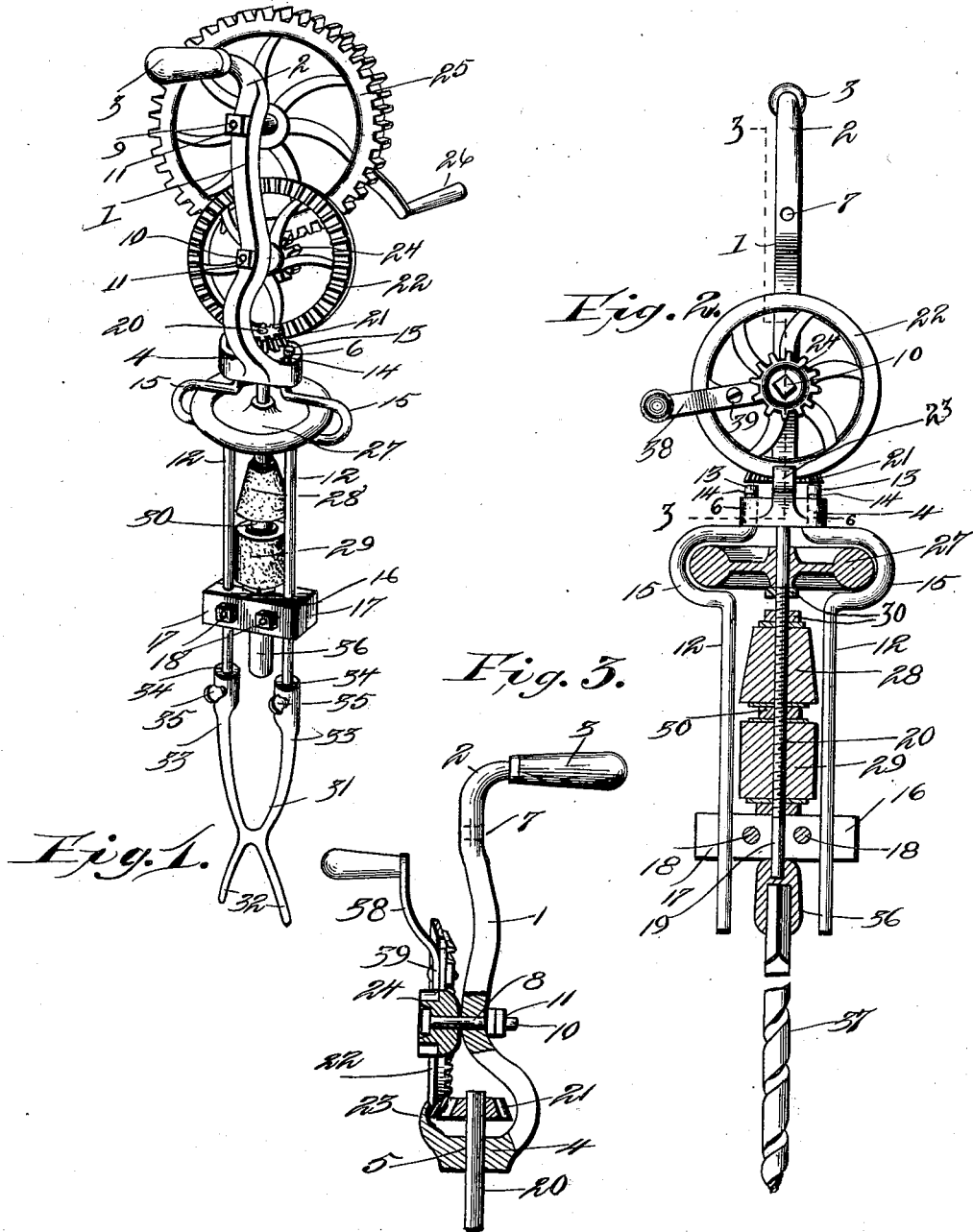
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H. McMACKIN.

COMBINED GRINDING AND DRILLING MACHINE.

(Application filed July 25, 1899.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

HENRY McMACKIN, OF SAYBROOK, ILLINOIS.

## COMBINED GRINDING AND DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 647,981, dated April 24, 1900.

Application filed July 25, 1899. Serial No. 725,102. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY McMACKIN, a citizen of the United States, residing at Saybrook, in the county of McLean and State of Illinois, have invented a new and useful Combined Grinding and Drilling Machine, of which the following is a specification.

This invention relates to a combined grinding and drilling machine, and has for its object to provide a new and useful machine of this character having means whereby the same may be readily converted from a grinding or sharpening to a drilling machine, and vice versa.

To this end the invention primarily contemplates a combination-machine having abrading elements arranged in a relation whereby the same are adapted for grinding cut-away disks, sickle-knives, or other tools or implements, and also having a chuck suitable for receiving a drill-bit to adapt the machine for hand-drilling.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The preferred embodiment of the combination-machine is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the machine with the parts associated to adapt the same for use as a grinding or sharpening machine. Fig. 2 is a side view, partly in section, of the machine with the detachable foot removed and the parts arranged to adapt the machine for hand-drilling. Fig. 3 is a detail sectional view on the line 3 3 of Fig. 2.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

The frame-stock 1 of the machine preferably consists of a single metal bar, which may be sinuously curved to provide clearance for the parts supported thereby, as plainly shown in the drawings, and said frame-stock is provided at its upper or outer end with a laterally-deflected handle-support 2, on which is fitted a grip or handle 3. At its opposite or inner end the frame-stock 1 is provided with

an integral laterally-offset bearing-head 4, projected from the side of the stock opposite the handle-support 2 and provided therein with a central bearing-opening 5 and with a pair of sockets 6, located, respectively, at opposite sides of the plane of said opening. In addition to the features described the frame-stock is further provided intermediate the ends thereof with a pair of spaced bolt-openings 7 and 8, which respectively receive the outer and inner spindle-bolts 9 and 10, which are detachably held to the frame-stock by means of the fastening-nuts 11, whereby the said bolts may be readily removed and replaced when desired.

There is associated with the frame-stock 1 as a part of the machine-framework a pair of parallel frame side bars or arms 12, which constitute a lower frame member and have their inner upper ends constructed to form terminal studs 13, fitting in the sockets 6 of the bearing-head 4 and held therein by means of the detachable fastening-keys 14, passed laterally through openings in the extremities of said studs and engaging at one side of said bearing-head. Contiguous to their detachable connection with the bearing-head 4 the frame side bars or arms 12 are provided with laterally-offset clearance-bends 15, which provide a working space for the hand or balance wheel, hereinafter referred to, and adjustably and detachably mounted on the side bars or arms 12 and at a point intermediate their ends is a two-part bearing-clamp 16. This clamp consists of duplicate jaws or members 17, arranged, respectively, at opposite sides of the bars or arms 12 and clamped thereon by means of the clamp-bolts 18. Centrally between its ends the said bearing-clamp is provided with a bearing 19, alined with the bearing-opening 5 to form a terminal support for the rotary operating-spindle 20, which is arranged between and parallel to the bars or arms 12 and has the inner or upper end portion thereof journaled in the said bearing-opening 5.

The rotary operating-spindle 20 has fitted to the inner end thereof, at one side of the bearing-head 4, the beveled gear-pinion 21, which meshes with a beveled gear-wheel 22, mounted on the inner spindle-bolt 10, and to

provide for maintaining the operative relation between the said beveled gear-wheel 22 and the pinion 21 the bearing-head 4 is preferably provided at one end thereof with an up-  
 5 standing guard or retaining-arm 23, which overlaps the peripheral edge of the wheel 22. The said beveled gear-wheel 22 is provided at one side thereof with a pinion 24, with which meshes a driving spur-wheel 25, mounted upon  
 10 the outer spindle-bolt 9 and provided with an operating crank or handle 26. It will be observed that the spur-wheel 25 and the pinion 24 provide means for multiplying the speed of rotation of the operating-spindle 20.

15 The operating-spindle 20 has mounted thereon adjacent to its inner or upper end a hand or balance wheel 27, working within the space provided by the clearance-bends 15 of the side bars or arms 12, and between said  
 20 wheel 27 and the bearing-clamp 16 the spindle also has mounted thereon one or more abrading elements, of which two (designated, respectively, by the numbers 28 and 29) are shown in the drawings. The abrading ele-  
 25 ment 28 is preferably of a trunco-conical construction, while the other element 29 is of a cylindrical formation, whereby the two abrading elements may be respectively utilized for grinding or sharpening different kinds of im-  
 30 plements or tools. The said abrading elements, as well as the hand or balance wheel 27, are held in proper position upon the spindle by means of the adjustable collars or nuts 30, which engage a threaded portion of the  
 35 spindle.

In using the machine solely as a grinder or sharpener for cut-away disks, sickle-blades, or other tools there is employed in connection with the framework or frame a detachable  
 40 foot 31. This foot is preferably of a double forked construction, and is provided with a pair of downwardly-divergent rests 32 and a pair of upwardly-divergent attaching-arms 33, having sockets 34 in their extremities,  
 45 which detachably receive the lower or outer ends of the frame side bars or arms 12 and are held thereon by means of the set-screws 35. When the foot 31 is fastened to the lower ends of the frame bars or arms 12, it forms a sub-  
 50 stantial continuation of the frame and affords a rest which engages with the ground or any surface upon which the tool or machine to be sharpened is supported.

When the foot 31 is attached to the frame, the machine is principally designed for grind-  
 55 ing or sharpening purposes; but the removal of said foot exposes and renders accessible for use the drill-chuck 36, which is fitted to the outer or lower end of the operating-spindle  
 60 beyond the outer side of the bearing-clamp 16. The said drill-chuck 36 may be of any approved construction and is designed to have fitted therein a drill bit or point 37. In using the machine for drilling purposes it is  
 65 preferable to operate the rotary spindle by applying motion directly to the beveled gear-

wheel 22, and to secure this result the combination-machine is supplied with an extra crank-handle 38, which may be conveniently fastened to the outer side of the wheel 22 by  
 70 means of a bolt 39 or equivalent fastening device. When the extra crank-handle 38 is attached to the wheel 22, the upper spindle-bolt 9 and the spur-wheel 26 are removed, thereby fully exposing the laterally-offset grip or  
 75 handle 3, so as to adapt the same to perform the function of a pressure or breast head to hold the drill bit or point to the work under pressure.

From the foregoing it is thought that the  
 80 construction, operation, and many advantages of the herein-described combination-machine will be readily apparent to those skilled in the art without further description, and it will be understood that various changes in the form,  
 85 proportion, size, and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the class described, the combination with the frame, of a rotary oper-  
 95 ating-spindle journaled in the frame and carrying an abrading element and a drill-chuck, and a detachable rest-foot for the frame, substantially as described.

2. In a machine of the class described, the  
 100 combination with the frame having side bars, of a rotary spindle journaled in the frame, and carrying an abrading element and a drill-chuck, and a rest-foot detachably fitted to the terminals of the side bars, substantially  
 105 as described.

3. In a machine of the class described, the combination with the frame having side bars, of an operating-spindle journaled in the frame  
 110 between the side bars and carrying an abrading element and a drill-chuck, and a detachable rest-foot provided with a pair of downwardly-divergent rests, and a pair of upwardly-divergent attaching-arms terminating in sockets for the reception of said side bars,  
 115 substantially as described.

4. In a combination grinding and drilling machine, the combination with the frame, of a rotary spindle journaled in the frame and carrying an abrading element and a drill-  
 120 chuck, operating mechanism supported by the frame and geared with the spindle, and a supporting-foot detachably connected with one end of the frame, substantially as described.

5. In a combination grinding and drilling  
 125 machine, a stock carrying a pair of side bars, of a rotary operating-spindle journaled in the stock and arranged between said side bars, said spindle carrying an abrading element and a drill-chuck, operating mechanism sup-  
 130 ported by the stock and geared with the spindle, and a detachable foot having arms ter-

minating in sockets for the reception of the extremities of said side bars, substantially as set forth.

5 6. In a machine of the class described, the combination with the frame, of a single rotary operating-spindle journaled in the frame and carrying both an abrading element and a drill-chuck, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HENRY McMACKIN.

Witnesses:

P. D. CUNNINGHAM,  
S. G. LEWIS.