A. HANSEN.

DISK SHARPENING AND POLISHING MACHINE.

APPLICATION FILED JAN. 16, 1922.

1,436,166.

Patented Nov. 21, 1922.

2 SHEETS—SHEET 1.

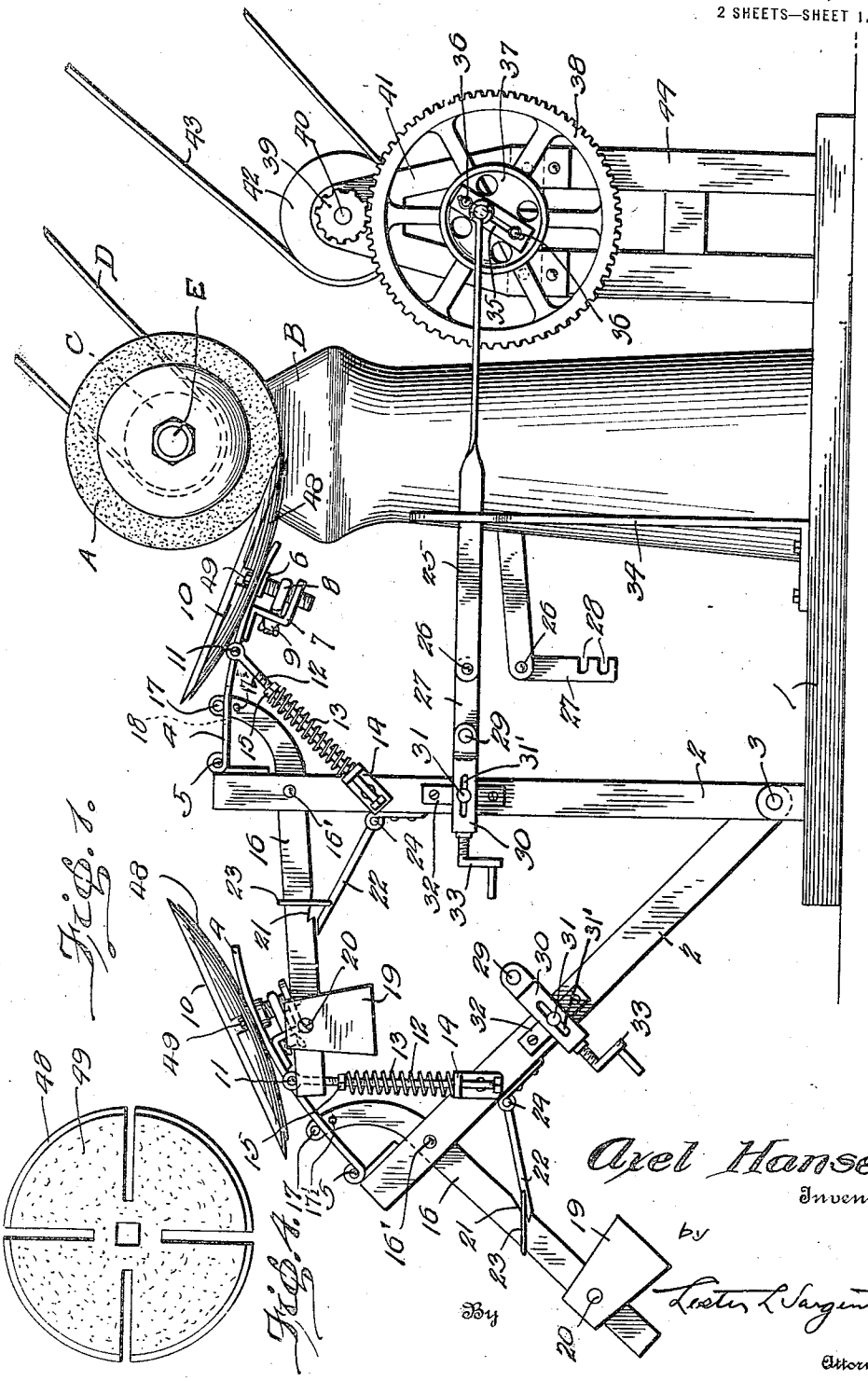


Fig. 1.

Fig. 2.

Axel Hansen

Inventor

by

Lester L. Sargent.

Attorney

By

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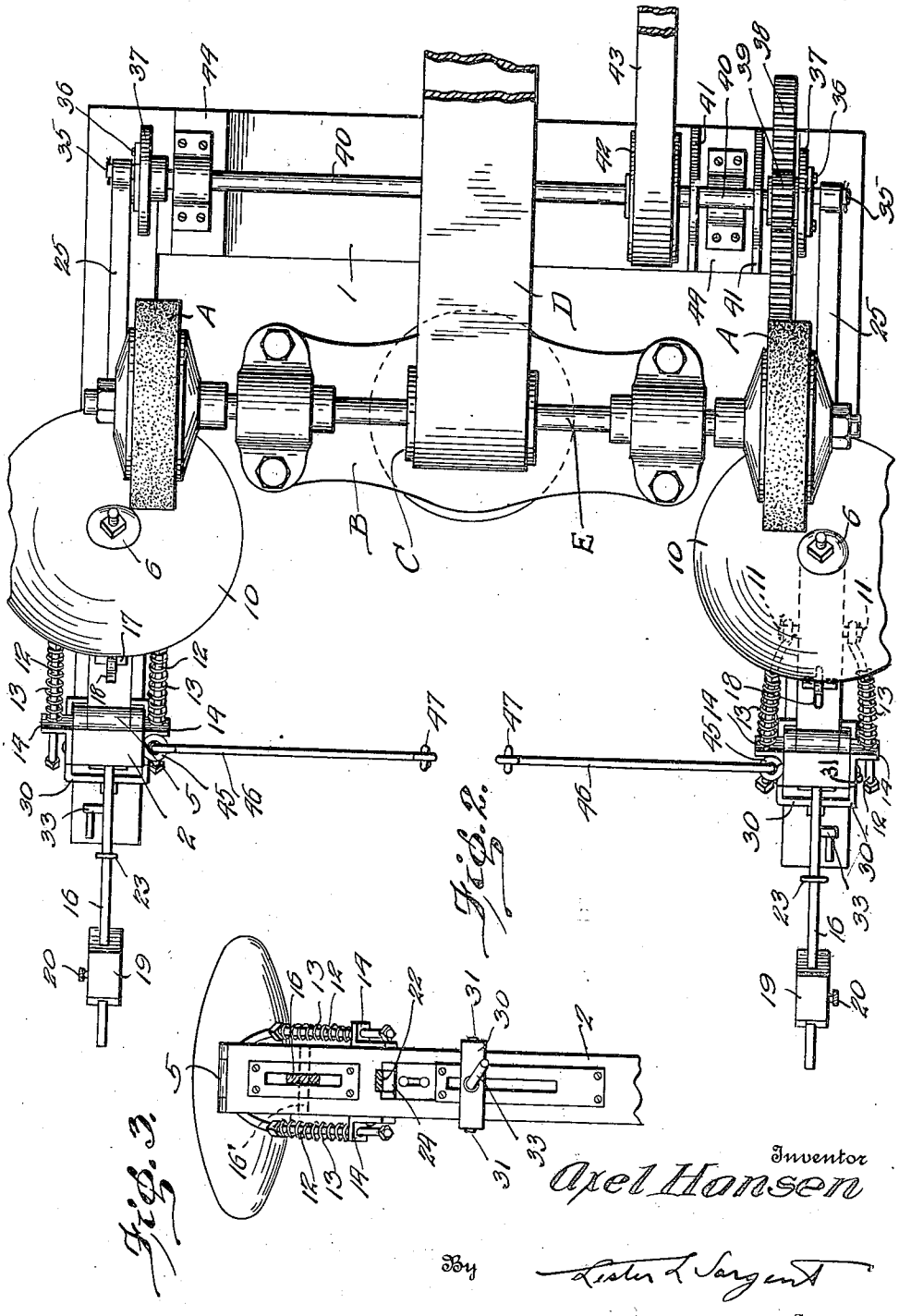


Fig. 3.

Fig. 2.

Inventor

Axel Hansen

By Lester L. Sargent

Attorney

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UNITED STATES PATENT OFFICE.

AXEL HANSEN, OF MADELIA, MINNESOTA.

DISK SHARPENING AND POLISHING MACHINE.

Application filed January 16, 1922. Serial No. 529,597.

To all whom it may concern:

Be it known that I, AXEL HANSEN, a citizen of the United States, residing at Madelia, in the county of Watonwan and State of Minnesota, have invented a new and useful Disk Sharpening and Polishing Machine, of which the following is a specification.

The object of my invention is to provide an improved machine for sharpening and polishing disks; to provide the novel device and combinations of devices hereinafter described.

It is further my object to provide an improved machine which is a disk sharpener and polisher and which can be so adjusted as to sharpen the edge of the disk and polish or buff the inner surface of the disk in one operation; or to polish the surface of the disk only; or to sharpen only, as desired.

It is further my object to provide a machine which is simple in mechanical construction, durable, relatively inexpensive and easily operated. I attain these and other objects of my invention by the mechanism illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of the invention showing two disk sharpening machines one of which is in position for grinding the disk and the other of which is in disconnected position with the machine tilted back in position to permit of convenient removal and replacement of the disk that is to be ground;

Fig. 2 is a top plan of two disk operating mechanisms both in position for polishing or grinding the disks;

Fig. 3 is an end elevation of one of the disk holding mechanisms; and

Fig. 4 is a plan view of the disk muffler which I prefer to employ.

Like characters of reference indicate like parts in each of the several views.

Referring to the accompanying drawings, B indicates a conventional pedestal on which is mounted the shaft E carrying the drive pulley C and also carrying conventional emery and polishing wheels. Drive pulley C is driven by a belt D.

Referring to Fig. 1, I provide a suitable base 1 on which is mounted a disk holding and operating mechanism swingably mounted on the base by a suitable hinge or pivot 3. A disk holder 4 is pivotally attached to the upper end of upright 2 and at the other end of the disk holder a suitable hub 6, preferably having ball bearings, is provided on which the disk 10 to be ground is attached as shown in Fig. 2. I may provide a suitable bracket 7 and clamping ring 8, secured in place by wing nut 9, for supporting the ball bearing hub member 6 on the end of the disk holder 4, as shown in Fig. 1. I provide a tension rod 12 secured by trunnions 11 to disk holder 4 and having its other end slidably engaged in bracket or support member 14. I also provide a compression spring 13 one end of which bears against the bracket 14 and the other end of which bears against the nut 15 adjustably mounted on the threaded portion of tension rod 12 as shown in Fig. 1 for resiliently holding the disk to operative engagement with the emery wheel while it is being ground and polished. I further provide a weighted lever 16 mounted by means of pivot 16′ on upright 2 and provided with cross arm or other suitable member 17 for engaging the disk holder 4. I provide a suitable pin 17½ to act as a stop or support for the disk holder 4. The other end of weighted lever 16 carries an adjustable weight 19 secured in the desired place by a suitable set screw 20. I further provide a dog or latch 22 pivotally mounted by any suitable hinge 24 to the upright 2 and having its upper end releasably engagable in suitable notch 21 in weighted lever 16 as shown in Fig. 1. The upper end of latch 22 is suspended from the weighted lever by a suitably slidable link or support 23.

In order that the device may be adjusted for use either to sharpen the disks only or to polish the disks only and for both sharpening and polishing simultaneously, I provide means for regulating the position of and for oscillating the upright 2 and consequently the disk holder 4. My preferred means for accomplishing this object, as shown in the drawings, consists of plates 32 attached to upright 2 and carrying guide pins 31 that engage in longitudinal slots 31′ in the bracket 30 in which is mounted the threaded shaft or crank 33 which functions as a stroke adjuster. The adjustable bracket 30 is provided with a pin 29 with which one of the slots 28 of a link or pitman extension 27 is engaged. Link 27 is mounted

by means of pivot 26 on the end of pitman 25 which extends through the pitman guide or support 34 and has its other end adjustably attached to the adjustable wrist pin plate or stroke adjuster 35 which is adjustably secured by suitable bolts 36 on the pitman wheel 37 which in turn is mounted on the gear wheel 38 that drives the pitman and thus oscillates upright 2 and disk holder 4 to vary the point of contact of the disk with the emery wheel A. Gear wheel 38 meshes with a pinion 39 mounted on shaft 40, on which shaft the drive pulley 42 also is mounted and driven by the driving belt 43 as shown in the drawings. I provide a suitable support 44 on which the driving mechanism above described is mounted in the manner illustrated in the drawings.

As illustrated in the drawings I prefer to provide a pedestal B preferably of T-form whereby an emery wheel may be mounted on each end of the shaft E and driven by a single belt pulley at the center so that two disk polishing machines may be simultaneously operated; and when such arrangement is provided I also provide a jack 44 as shown in Fig. 2 arranged to drive two pitmen one connected with each of the disk holding mechanisms for simultaneously oscillating said mechanisms. It is, however, within the contemplation of my invention to build a machine in single form for operation on one disk at a time.

Referring to Fig. 4, showing disk muffler 48, this member is a disk of sheet steel provided with a suitable canvas padding 49, the device being designed to deaden the noise made by the disk grinding machine in sharpening and polishing disks, the muffler being bolted on the disk that is to be ground or polished.

Referring to Fig. 2, I provide screw eyes 45 attached to uprights 2, and to which suitably braced rods 46 are secured, said brace rods being fastened to the floor by screw eyes 47, whereby to suitably brace uprights 2 without interfering with their oscillatory movement.

In operating the invention, the uprights 2 are moved to a rearward slanting position to permit of applying the disk 10 conveniently to the hub 6. When the disk 10 and muffler 48 have been secured on the machine the upright is then moved to an upright position, in which position the edge of the disk will engage with the emery wheel A for sharpening the disk. If the disk is to be polished, the extension 27 of pitman 25 is engaged with pin 29 of bracket 30, and the desired adjustment is secured by turning crank 33 which engages upright 2. Upright 2 is oscillated by pitman 25 which is driven by gears 38 and 39, the latter being mounted on the driving shaft 40, as shown in Fig. 2. The disk 10 which is resiliently held to the surface of the emery wheel A is moved to and fro under the grinding wheel and the polishing is thus quickly performed. An adjustment of nut 15 on threaded rod 12 will regulate the degree of spring tension used in holding the disk against the grinding wheel A, and regulation or adjustment to a further extent may be obtained by moving the weight 19 on arm 16, as the reverse end of the arm by means of pins 17 and 17½ engages the pivoted disk holder 4.

I claim—

1. In a disk sharpening and polishing machine, the combination of resilient disk holding means, a support on which said means is mounted, adjustable weight means, operatively connected with the disk holder, and means releasably holding the disk on the disk holding means.

2. In a machine of the class described, the combination of a pivotally mounted support, a disk holding device carried by said support, resilient means in connection with said disk holding device for resiliently supporting the disk in contact with a grinding wheel, and means for adjusting the disk holder, said means including a weighted arm.

3. In a machine of the class described, the combination of a pivotally mounted support, a disk holding device carried by said support, resilient means in connection with said disk holding device for resiliently supporting the disk in contact with a grinding wheel, weight controlled adjusting means in operative connection with the disk holding device, and means operatively connected with the pivoted support for imparting an oscillating movement to same and to the disk holding device carried thereby.

4. In a machine of the class described, the combination of a plurality of spaced pivotally mounted supports, disk holding devices carried by each of said supports, means for resiliently supporting the disks in the desired relation to the grinding wheels used in sharpening or polishing them, tension adjusting means in connection with the disk holders, means connected with each of the pivotally mounted supports for imparting reciprocatory movement to same, and means for simultaneously operating the last named means.

5. In a machine of the class described, the combination of a pivotally mounted support, a disk holding arm pivotally mounted on said support, spring means for resiliently supporting said arm and the disk carried thereby, adjustable weight means adjustably supporting said disk holding arm to hold the disk in engagement with the grinding wheel which operates on it, a pitman having an extension releasably engageable with the support for reciprocating same, and power driven means for driving the pitman.

6. In combination with the apparatus described in claim 5, adjustable means for adjusting the position of the support relative to the pitman.

7. In combination with the apparatus described in claim 5, adjustable means for adjusting the position of the support relative to the pitman, said means including a bracket engaging the support, a crank member mounted in the bracket, and means for releasably engaging the bracket with the pitman extension.

AXEL HANSEN.