

E. E. COMBS.
HARROW DISK SHARPENER.
APPLICATION FILED FEB. 20, 1911.

1,003,340.

Patented Sept. 12, 1911.

Fig. 1.

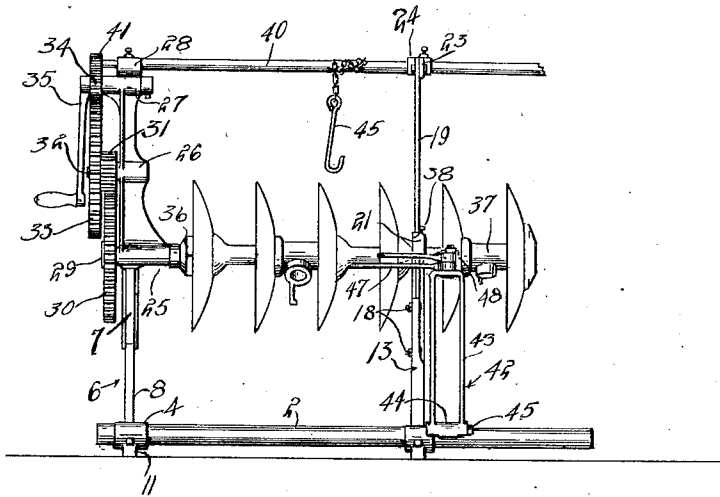


Fig. 2.

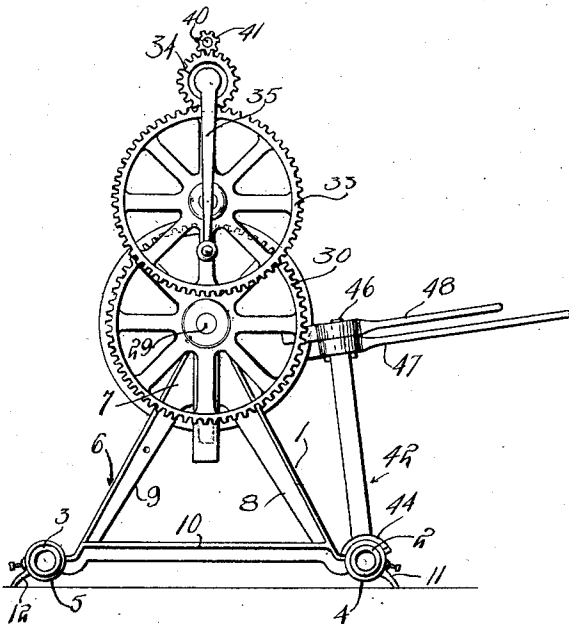
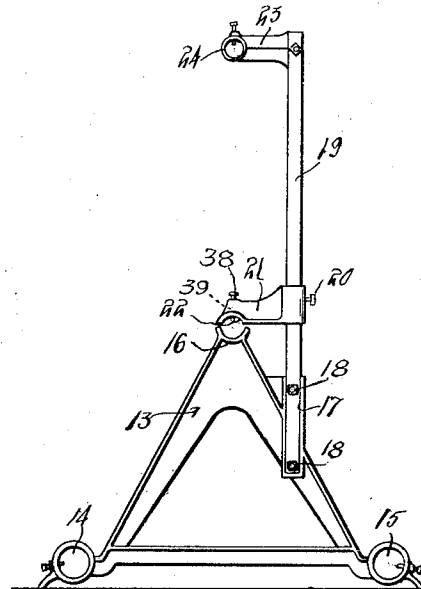


Fig. 3.



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HARROW-DISK SHARPENER.

1,003,340.

Specification of Letters Patent.

Patented Sept. 12, 1911.

Application filed February 20, 1911. Serial No. 609,718.

To all whom it may concern:

Be it known that I, ELMER E. COMBS, a citizen of the United States, residing at Evansville, in the county of Rock, State of Wisconsin, have invented certain new and useful Improvements in Harrow-Disk Sharpeners; 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 which it appertains to make and use the same.

My invention relates to improvements in harrow disk sharpeners and my object is to improve the construction and increase the efficiency and utility of devices of this character.

A further object of the invention is to provide a form of disk sharpener frame which will be adjustable in order to adapt the same to use with single or gang disks of varying sizes.

A still further object is to provide a frame in which may be carried a windlass adapted to elevate the disk or gang into its bearings. And a still further object is to provide a form of disk sharpener which will, besides doing all the work capable of being performed by similar devices, sharpen the disks while still upon their shafts and attached to the harrow.

It will also be understood that a primary purpose which governs to some extent every other consideration is to provide the simplest and least expensive construction possible, consistent with efficiency and durability.

With these and other objects in view the invention consists primarily in a substantially horizontal frame, a head stock carried thereby, slidable upon and adapted to be clamped to the bed or frame, a spindle mounted for rotation in the head-stock, driving means for the spindle, a tail-stock of the steady-rest type slidable upon and adapted to be clamped to the bed or frame, a split bearing carried by the tail-stock, and a windlass carried in bearings in said head-stock and tail stock.

The invention further consists in a certain construction, combination and arrange-

ment of parts and details as is hereinafter more fully described, specifically pointed out in the appended claims and illustrated in the accompanying drawings which show a preferred embodiment of the invention.

Referring to these drawings which are attached to and form a part of this application, Figure 1 is a front elevation of the machine as a whole and showing a gang of disks in position to be operated upon. Fig. 2 is an elevation of the head-stock end of the machine. Fig. 3 is an elevation of the tail stock end of the same.

Referring more specifically to these views in which similar reference numerals designate corresponding parts throughout, 1 indicates in general the frame or bed of the machine which as shown comprises a front longitudinal member 2 of tubular form and a rear longitudinal member 3 of similar form and diameter.

Referring to Fig. 2 of the drawings it will be seen that the bed members 2 and 3 are introduced through cylindrical apertures 4 and 5 formed in the lower angles of the triangular head stock casting which will as a whole be designated by 6. This casting comprises a vertical standard 7 bifurcated at its lower end to form the diverging forks 8 and 9 which are connected by a transverse member 10. Feet 11 and 12 are formed integrally with the front and rear angles respectively. The tail-stock, which will as a whole be designated by 13, comprises a lower triangular portion similar to that of the head-stock and provided with like apertures 14 and 15 to receive the frame tubes 2 and 3 respectively. At the upper point of the triangular tail-stock casting is formed a half-bearing 16. An offset portion of the casting 13 is provided with a vertical channel 17 in which is secured by bolts 18 or the like a vertical standard 19 which is preferably of bar steel. Slidable upon this standard and adapted to be clamped thereto by means of a set screw 20 is a laterally extending arm 21 in the end of which is formed a half-bearing 22 alining vertically with the half-bearing 16 of the lower cast-

ing. To the upper end of the standard 19 is secured a second laterally extending arm 23 which carries a cylindrical bearing 24.

Returning to the head stock 6 it will be seen that this member is provided with a spindle bearing 25 longitudinally alined with the half-bearing 16 of the tail stock. The upwardly extending portion of the head stock carries an intermediate shaft bearing 26, a drive shaft bearing 27, and a windlass bearing 28, all of which as shown, lie in a common vertical plane. A spindle 29 carried in the spindle bearing 25 is provided at its outward end with a spur gear 30 which meshes with a pinion 31 carried on the intermediate shaft 32. Secured to the pinion is an intermediate gear 33 which meshes with the drive pinion 34, this latter is shown as being operated by the hand crank 35 but it will be understood that a belt wheel, a motor or any other power applying means suitable for the purpose may be employed.

The inner end of the spindle is provided with a chuck conventionally represented at 36 and as shown in Fig. 1, this chuck is adapted to grip the end of a harrow disk shaft, and in order to adapt the machine for various types of harrow disks a set of these chucks may be provided in varying sizes. The outwardly extending portion of the harrow disk shaft, here designated as 37, is supported in the bearing of the tail-stock, and it will be seen that by means of the set screw 20 the upper half of the tail-stock bearing may be vertically adjusted to accommodate a wide range of harrow disk shafts and further adjustment is provided by threading an adjusting bolt 38 into a tapped aperture 39 in the upper portion of the bearing member 22.

Mounted for rotation in the bearings 24 and 28 is the shaft of a windlass drum 40 and although in the present instance the shaft itself serves as a drum it is obvious that a spirally grooved or other drum casting of any preferred type may be substituted. That portion of the windlass shaft which extends beyond the head-stock bearing 28 carries a splined pinion 41 and it will be seen that this pinion may be slid longitudinally into or out of engagement with the drive pinion 34. A tool standard 42, which as shown comprises a substantially rectangular frame 43 the lower end of which is provided with a shoe 44 of arcuate section having a second shoe 45 similar in section to the first slidably secured in its lower face and forming a bearing surface, said second shoe being equal in thickness to the sleeves of the supporting feet of the tail stock, whereby the upper shoe may be slipped over to bear upon said sleeve when sharpening disks near the tail stock. The upper end of the frame 43 is provided with the upwardly extending vertical pin 46, and the members

47 and 48 of the sharpening tool are pivoted thereon being held in place by their own weight. It will be seen that this means of mounting the sharpening tool upon its frame permits of the ready reversal of the tool by raising its parts 47 and 48 and replacing them in their reversed position.

In the operation of the device the harrow disk or disk gang which is to be sharpened is longitudinally alined along the frame members, one or more grab-hooks 45 are engaged with the shaft and hoisting chains secured to said hooks are wound upon the windlass. The splined gear 41 is then slid into engagement with the driving pinion 34 and by applying power to the machine in the usual manner the harrow disk or disk gang may be elevated to the height of the spindle. One end of the disk shaft is then secured in the chuck 36 and the tail-stock is positioned adjacent the outwardly extending end of the disk or gang shaft, the two half-bearings being then clamped about the same as shown in Fig. 1. The hooks may then be released, the hoisting chains wound to elevate the same into an out-of-the-way position and the splined pinion 41 is slid out of engagement with the drive pinion 34. The power being then applied, the harrow disk shaft is caused to rotate as in the usual manner and by means of the tool 47-48 the disk or disks may be operated upon.

It will be seen from the above description that I have provided a harrow disk lathe or sharpening machine which operates upon the disks without removing the same from their shafts, which is adaptable for gang disks having various lengths of shafts and which carries a windlass for elevating heavy disks or gangs and supporting the same while they are secured in the machine. It will further be seen that the construction adopted for accomplishing these results is of simple form and largely made up of standard machine elements, containing few parts and these so arranged and combined as to be readily accessible for replacement or repair. It will further be seen that my construction enables me to sharpen the disks while still attached to the harrow.

What I claim is:—

1. In a harrow disk sharpener, the combination of a bed, a head-stock slidably mounted on said bed, means for securing said head-stock in adjusted position, a spindle mounted in a bearing in said head-stock and parallel with said bed, means for applying power to said spindle, a chuck carried by the inwardly extending portion of said spindle and adapted to grip a harrow disk shaft, a tail stock slidably mounted on said bed and provided at its upper end with a half bearing, a vertical standard secured to said tail stock, a laterally extending arm slidably mounted upon said standard and provided with a

half bearing adapted to co-act with the half bearing of the tail stock, and means for securing said arm in adjusted position.

2. In a harrow disk sharpener, the combination of a bed, a head-stock and tail-stock adjustably mounted thereon, a tool carrier also slidably mounted upon said bed, said carrier having a lower shoe and an upper shoe slidable upon said lower shoe, said shoes being so arranged that the tool carrier

may be supported partially by the bed and partially by the tail stock or wholly by the bed.

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

ELMER E. COMBS.

Witnesses:

E. H. PHILLIPS,

WILLVA R. PHILLIPS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."