No. 797,565. PATENTED AUG. 22, 1905.

A. E. DURNER.

HARROW DISK SHARPENER.

APPLICATION FILED SEPT. 6, 1904.

Fig. 2.

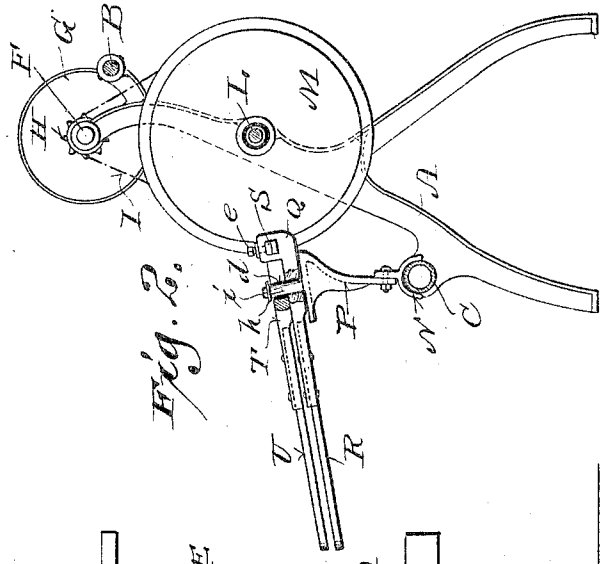


Fig. 4.

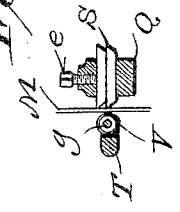


Fig. 1.

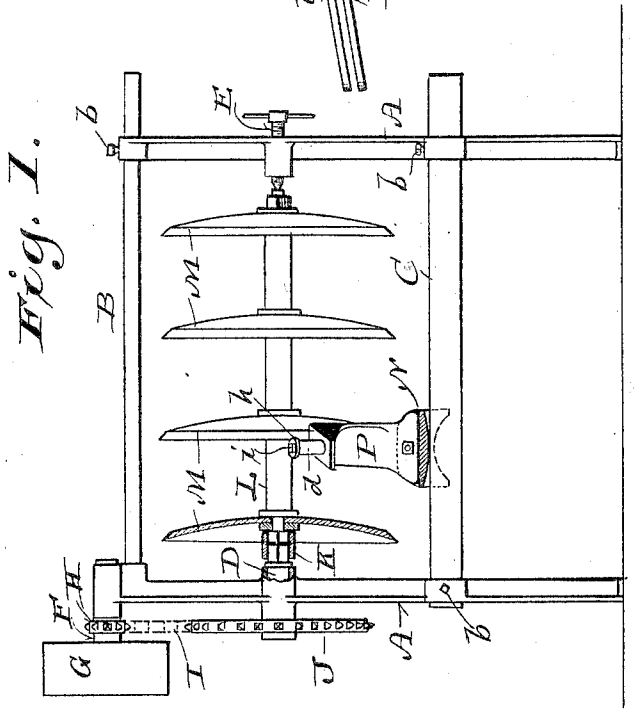
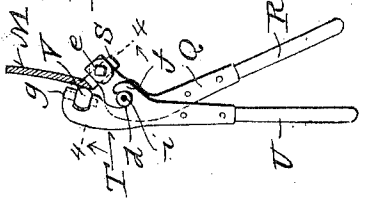


Fig. 3.



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AUGUSTUS E. DURNER, OF EVANSVILLE, WISCONSIN.

HARROW-DISK SHARPENER.

No. 797,565. Specification of Letters Patent. Patented Aug. 22, 1905.

Application filed September 6, 1904. Serial No. 223,390.

To all whom it may concern:

Be it known that I, AUGUSTUS E. DURNER, a citizen of the United States, and a resident of Evansville, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Harrow-Disk Sharpeners; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in certain peculiarities of construction and combination of parts hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed, the object of said invention being to provide simple, economical, and efficient machines for rapid even sharpening of harrow-disks without removal of the same from their shaft, said machines being an improved type of the one set forth in my Patent No. 708,802, of September 9, 1902.

Figure 1 of the drawings represents a partly-sectional front elevation of a portion of one of my improved harrow-disk sharpeners having a disk-carrying shaft chucked therein; Fig. 2, a transverse sectional view of the machine; Fig. 3, a plan view of the cutting mechanism of the machine shown in conjunction with a fragment of a disk, and Fig. 4 a horizontal sectional view indicated by lines 4 4 in Fig. 3.

Referring by letter to the drawings, A indicates each of a pair of preferably cast-iron standards in adjustable sliding connection with upper and lower beams B C to therewith constitute the frame of my improved machine, set-screws *b* being employed to hold the standards in adjusted position on the beams. The beams are preferably tubular, gas-pipe being a suitable material for the same, and the lower front beam C serves as a support and guide for a tool-carrier, hereinafter more particularly described. One of the frame-standards is provided with a bearing for a live-spindle D, and a tail-screw E is adjustable in the other standard opposite said spindle. The live-spindle standard is also provided with a bearing for a drive-spindle F, to which a belt-pulley G is connected; but any suitable mechanical equivalent may be substituted for the belt-pulley. Fast on the drive-spindle is a sprocket-wheel H, connected by a link belt I with a similar wheel J, fast on the live-spindle D; but any suitable gearing may be employed for communicating motion from one to the other of said spindles. The inner end of the live-spindle is made angular, and a coupling or chuck K slipped thereon engages a nut *c*, that is commonly on an end of a shaft L, upon which a series of harrow-disks M are arranged, the other end of the shaft being engaged by the point of the tail-screw E aforesaid. It may be found convenient and desirable to provide each machine with a set of interchangeable chucks designed to fit various sizes of shaft-nuts.

The tool-carrier of the machine is herein shown as comprising a foot N, that straddles the lower beam C of the frame, and a post P, bolted at its lower end to the foot. The post is provided with an inclined head having a pivot-stud *d* extending upward therefrom. The carrier-foot is semicircular in transverse section to have rotary adjustment on the frame-beam C, and said foot is also longitudinally convex in opposition to said beam to provide for rocking motion thereon lengthwise of the same.

Loose on the pivot-stud *d* of the carrier is a cutter-head casting Q, bolted to a handle R to therewith constitute a lever, and the working end of said casting is offset at a suitable angle. Engaging an aperture in the cutter-head casting to extend therefrom in opposite directions are knives S, both ends of each knife being cutting edges. These knives are held in place, one upon another, by means of a set-screw *e*, engaging an upwardly-extending projection of the casting Q aforesaid.

Surmounting the cutter-head casting and having an open hook portion *f*, engaged by the pivot-stud *d* of the aforesaid carrier, is a casting T, bolted to a handle U to therewith constitute a lever. Crossing a recess in the inner edge of the casting T is an arbor *g*, and an antifriction-roller V is loose on the arbor. A washer *h* is held on the upper end of the pivot-stud *d* by a set-screw *i* over the hook portion of the casting end of the roller-carrying lever, and said washer prevents upward movement of said lever. The roller-carrying lever is detachable and reversible with respect to the pivot-stud *d*, so that the roller V may be positioned to oppose either side of a harrow-disk caught between it and the knives of the cutter-head, the two levers on the same pivot and their connections constituting tongs, one jaw of which is a cutter and the other a pressure device.

The handles R U of the tongs are spread apart by the operator to grasp a harrow-disk between the knives S and roller V, there having been a rotary adjustment of the aforesaid

carrier on its support in proportion to the diameter of said disk. The carrier is adjustable longitudinally of its support to shift the tongs from one disk to another on the shaft that is chucked and rotated in the machine, and provision being had for rock of the carrier longitudinally of its support compensation is had for wabbling of a harrow-disk between the knives and antifriction-roller of the tongs should said disk or its shaft be bent. The knives of the tongs are set to cut one after another, and the harrow-disks are beveled on either side as far back from the edge as may be desirable when operated upon by said tongs.

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

1. In a harrow-disk sharpener having a frame comprising standards, a beam supported by the standards, and means for clutching and rotating a shaft carrying harrow-disks between said standards; the combination of a carrier having sliding and rotary adjustable engagement with said beam as well as convex opposition to the same longitudinally thereof, and disk-cutting mechanism mounted on the carrier.

2. In a harrow-disk sharpener having a frame comprising standards, a beam supported by the standards, and means for clutching and rotating a shaft carrying harrow-disks between said standards; the combination of a carrier having sliding engagement with said beam, and disk gripping and cutting tongs, one member of which has permanent connection with a pivot on the carrier, the other member being in detachable reversible connection with said pivot.

3. In a harrow-disk sharpener having a frame comprising standards, a beam supported by the standards, and means for clutching and rotating a shaft carrying harrow-disks between said standards; the combination of a carrier having sliding and rotary adjustable engagement with said beam as well as convex opposition to the same longitudinally thereof, disk gripping and cutting tongs one member of which has permanent connection with a pivot on the carrier, the other member being in hook connection with the pivot, and a stop arranged on said pivot to prevent upward movement of the hooked member of the tongs.

4. In a harrow-disk sharpener having a frame comprising standards, a beam supported by the standards, and means for clutching and rotating a shaft carrying harrow-disks between said standards; the combination of a carrier inclined at its upper end and having sliding and rotary adjustable engagement with said beam as well as convex opposition to the same longitudinally thereof, a stud on the inclined end of the carrier, and disk gripping and cutting tongs for which said stud constitutes the pivot.

In testimony that I claim the foregoing I have hereunto set my hand, at Evansville, in the county of Rock and State of Wisconsin, in the presence of two witnesses.

AUGUSTUS E. DURNER.

Witnesses:

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E. M. STEBBINS.