

No. 764,543.

PATENTED JULY 12, 1904.

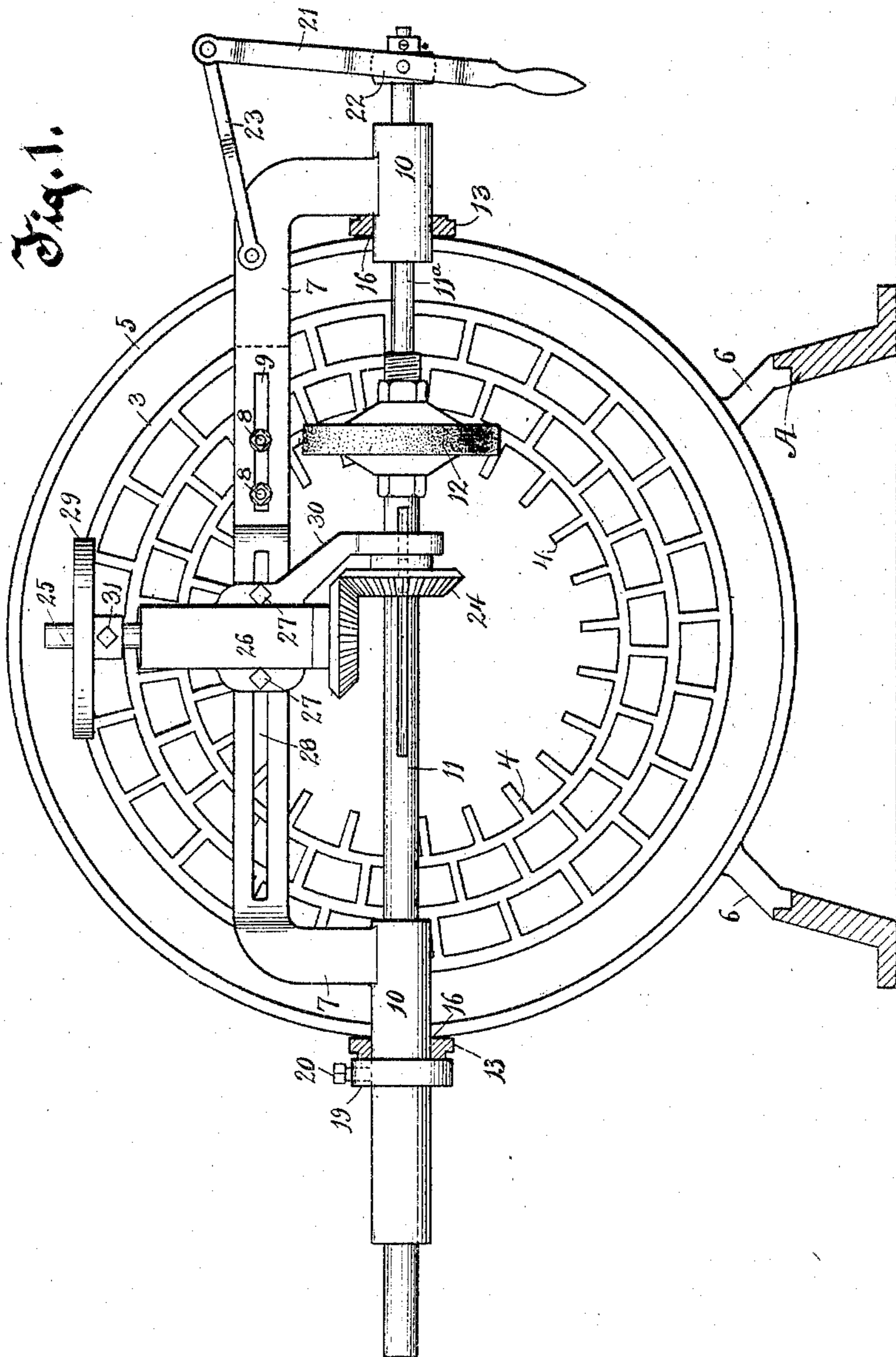
E. P. ALSTED.

PORTABLE APPARATUS FOR SHARPENING THE GRINDING DISKS OF
ATTRITION MILLS.

APPLICATION FILED OCT. 26, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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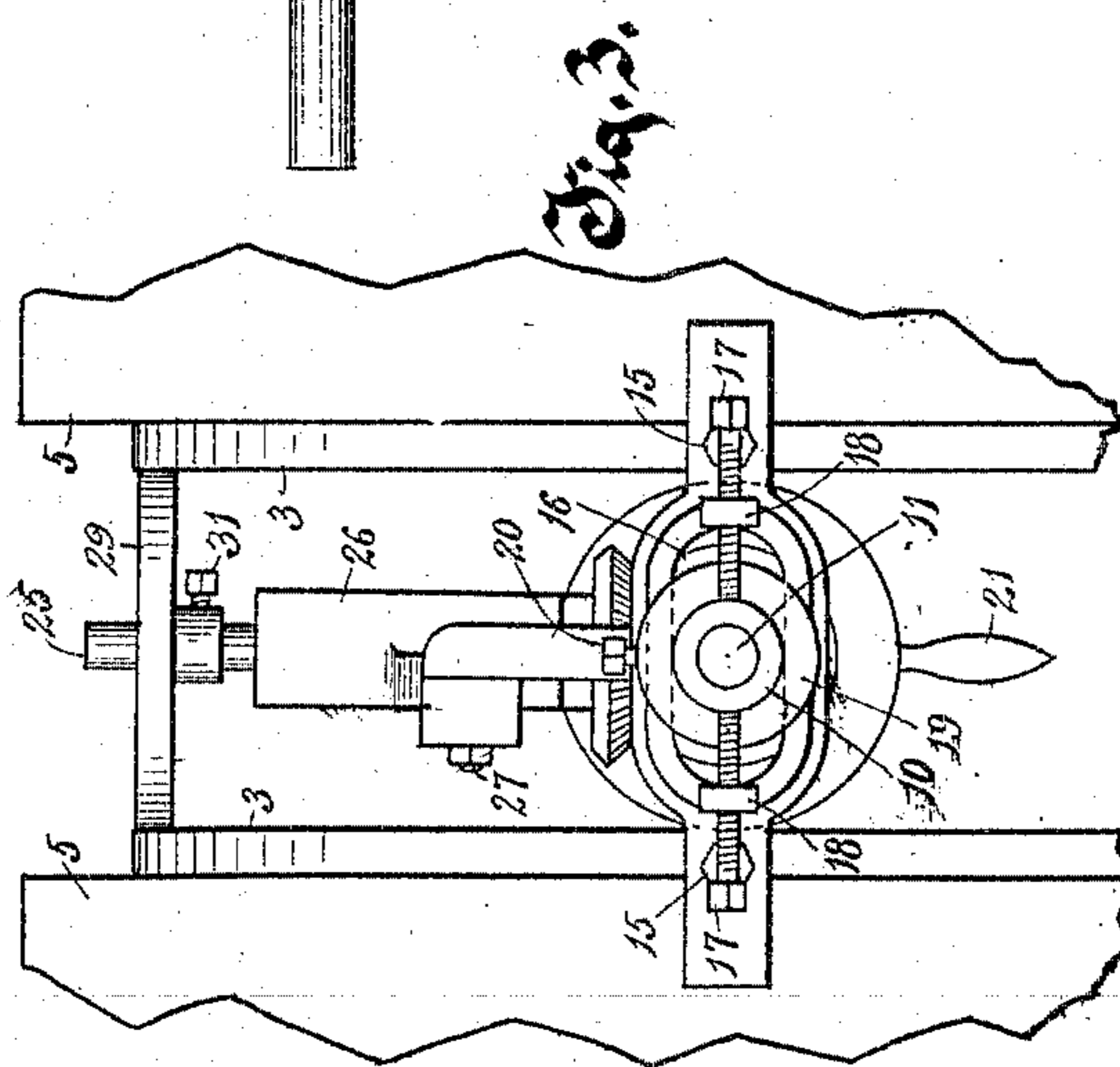
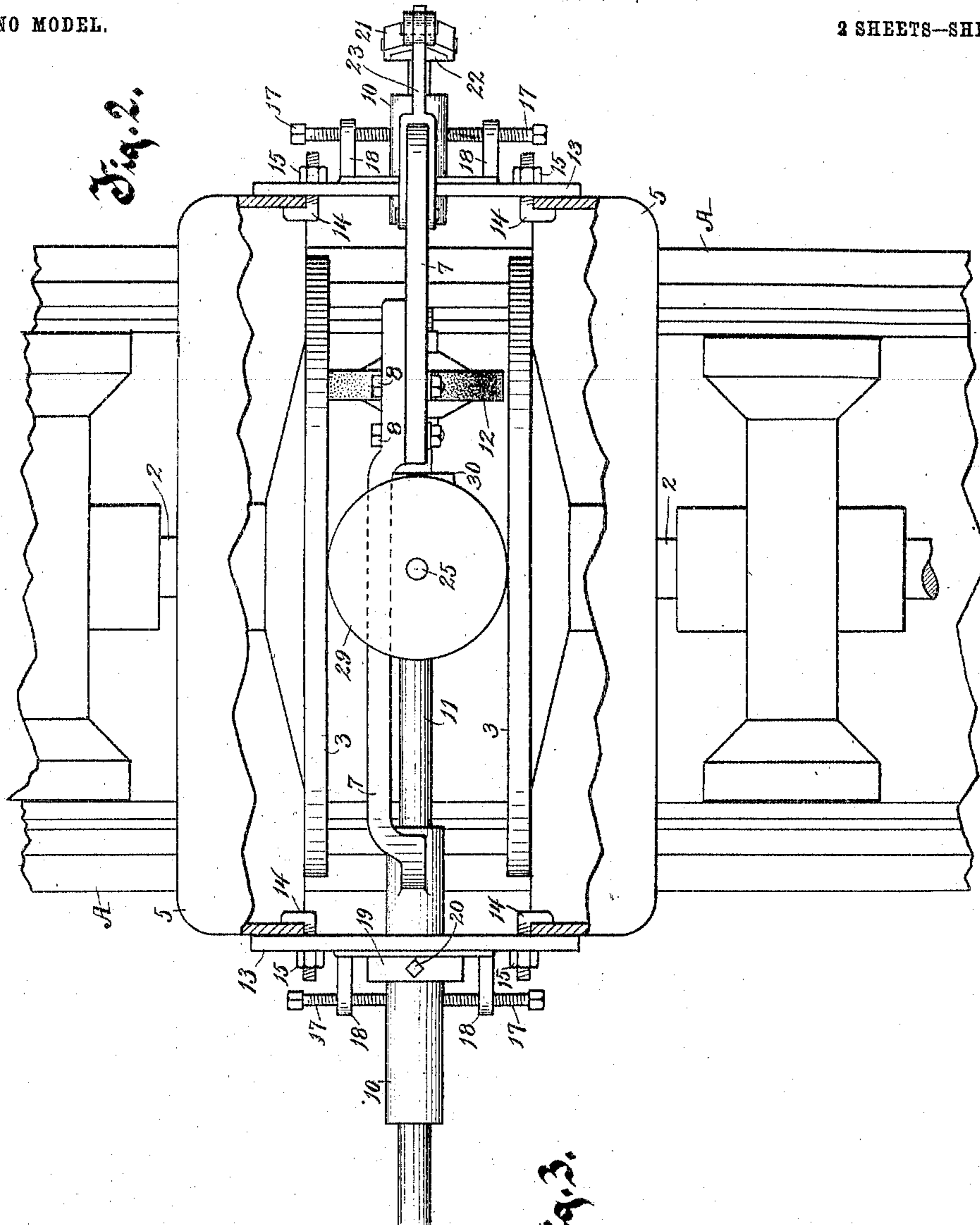
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UNITED STATES PATENT OFFICE.

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PORTABLE APPARATUS FOR SHARPENING THE GRINDING-DISKS OF ATTRITION-MILLS.

SPECIFICATION forming part of Letters Patent No. 764,543, dated July 12, 1904.

Application filed October 26, 1903. Serial No. 178,504. (No model.)

To all whom it may concern:

Be it known that I, EDWARD P. ALSTED, residing at Truesdell, in the county of Kenosha and State of Wisconsin, have invented a new and useful Improvement in Portable Apparatus for Sharpening the Grinding-Disks of Attrition-Mills, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to improvements in portable apparatus for sharpening the grinding-disks of attrition-mills, the mills being of a form in which the grinding-disks are separable from each other to such extent as is necessary to permit the getting at the opposing faces of the disks for sharpening or repairing them.

The object of the present invention is to provide an improved apparatus in which novel means are employed for securing the apparatus temporarily to the case or frame of the disks and in which novel means are employed for supporting and adjusting the means for transmitting motion from the disks to the abrading or sharpening wheel and other novel features of minor importance relating to the chief novel constructions.

In the drawings, Figure 1 is an elevation of my improved apparatus in connection with a grinding-disk of the mill, the apparatus being in position for sharpening the disk, the frame and the means for connecting the apparatus to the case being in section. Fig. 2 is a top plan view of grinding-disks of an attrition-mill separated from each other with my improved apparatus in position for abrading or sharpening one of the disks, parts of the case being broken away for convenience of illustration; and Fig. 3 is a detail of the construction, showing especially a side view of the means for securing my improved apparatus to the case members of the mill.

In the drawings, A represents a frame of proper size and form for supporting the operative mechanism. Arbors 2 have their bearings in suitable boxes therefor on the frame, and grinding-disks 3 3 are mounted on the arbors, being revoluble therewith and

when in use so disposed as to be close to each other face to face. These disks are each fixed on an arbor, one of which is adjustable endwise, so that these disks may be separated from each other in the manner shown in Fig. 2, thereby giving the opportunity to sharpen or repair them. These disks are provided with grinding ribs or knives 4 4, projecting from the face of the disk and having their front or grinding edges in a common flat plane. A case in two members 5 5 is provided for inclosing the disks. The members of this case are each mounted on the frame conveniently by means of legs 6 6, that are footed on ways therefor on the frame, so as to be adapted to be slid toward and from each other, so that the cases or one member of them can be moved parallel with the shaft 2 to separate the cases from each other a distance corresponding with the separation of the disks.

In my improved apparatus for sharpening the grinding-disks there is a frame which includes a yoke formed of two members 7 7, connected together medially by bolts 8 through one of the members and through a longitudinal slot 9 in the other member, whereby the members of the yoke are so secured to each other that the legs of the yoke may be separated from each other or brought nearer together, thereby adapting the frame for being readily secured to disk-cases of larger or smaller size. The legs of the yoke are provided with laterally-elongated extremities 10 10, through which the shaft 11 extends and in which the shaft has its bearings. This shaft 11 is provided with an abrading or sharpening wheel 12, advisably of emery, which wheel is secured detachably on the shaft by screw-threaded nuts turning on the shaft against the sides of the hub of the wheel. The wheel is advisably secured on a larger member of the shaft near the end thereof, and a contracted member 11^a of the shaft is inserted in and secured to that end of the larger member, forming the complete shaft. For attaching this yoke and the therein-mounted shaft to the case members 5 two bars 13 13 are employed, these bars being pro-

vided with headed bolts 14, which bolts are arranged to engage the rims of the case members 5 5 on the inside and by turning down the nuts 15 on the bolts to clamp the bars 13 to the rims of the case members detachably. These bars are each provided medially with an elongated slot 16, through which the extremities 10 of the yoke extend, and set-screws 17, mounted in and turning through lugs 18, fixed on the bars, bear at their inner ends opposite each other on the sides of the extremities 10 and are adapted to adjust the yoke to a desired position in the supporting-bars 13, so as especially to shift the sharpening-wheel 12 to contact with either one or the other of the grinding-disks 3 when the apparatus is to be put to use for sharpening the disks and in the manner shown in the drawings. That leg of the yoke which is at the right in Figs. 1 and 2 bears against the bar 13, and at the other end of the yoke a collar 19, fitted loosely on the foot 10, is provided, which has a holding-screw 20, whereby the collar can be adjusted to bear against the adjacent bar 13, the apparatus being thereby adapted to be secured to a case member of somewhat larger or smaller diameter.

For shifting the shaft 11 endwise, so as to put the sharpening-wheel 12 in position to sharpen or abrade the entire surface of the knives on the face of the grinding-disk 3, a shifting lever-handle 21, straddling and pivoted to a collar 22, revolubly loose on the shaft member 11^a, is connected by an anchor-link 23 to the yoke member 7. The link is pivoted to the lever and to the yoke.

For rotating the shaft 11 it is provided with a beveled pinion 24, splined on the shaft, and this pinion meshes with a pinion on an ancillary shaft 25, mounted in a bearing-block 26, adjustable on the yoke by means of bolts 27 through the bearing-block and through a slot 28 in a yoke member 7, the shaft 25 being provided with a friction-wheel 29, adapted to be contacted by both of the disks 3 held up to it and take motion from one or both disks. The yoke member 7, having the slot 8, is offset laterally in that part of it in which the slot exists and on which part the bearing-block 26 is mounted, whereby the ancillary shaft 25, having its bearing in the block 26, is located in a plane radial to the axis of the shaft 11. The construction is such that the friction-wheel 29, while it bears against both of the grinding-disks 3, may be rotated by one of them only, which one at that time is alone being driven, and being in contact with both of them and being driven by one disk will transmit its motion to the other disk. This occurs when by the shifting of the disks apart the belt connection to the shiftable disk is placed out of service.

An arm 30, rigid on the block 26, extends to and passes around the shaft 11 at the rear

of the hub of the pinion 24 and holds it to engagement with the pinion on shaft 25. The friction-wheel 29 is adjustable on the shaft 25, being held releasably in place by a set-screw 31, turning through the hub of the wheel against the shaft. The friction-wheel 29 is of somewhat greater diameter than the abrading-wheel 12.

What I claim as my invention is—

1. An apparatus for sharpening the disk of an attrition-mill, comprising a yoke, means near the extremities of the yoke for securing the yoke at the respective ends thereof to the two separated parts of the case of a mill, a shaft mounted in the legs of the yoke and provided with an abrading-wheel, a pinion on the shaft, an ancillary shaft mounted on the yoke at an angle to the abrading-wheel shaft and geared to the pinion of that shaft, the abrading-wheel the pinion and the ancillary shaft being between the legs of the yoke in which the shaft is mounted, and a friction-wheel on the ancillary shaft adapted to contact with a grinding-disk and be rotated thereby.

2. An apparatus for sharpening the disk of an attrition-mill, comprising a yoke, means on the extremities of the yoke for securing the yoke at both ends to the separated case of a mill, a shaft mounted and adjustable endwise in the legs of the yoke and provided with an abrading-wheel, between its bearings in the legs of the yoke, a pinion splined on the shaft, a bearing-block mounted adjustably on the yoke, an ancillary shaft mounted revolubly in said block and geared to said pinion on said shaft, the pinion the bearing-block and the ancillary shaft being adjustable together along on the yoke and the shaft and a friction-wheel on the ancillary shaft adapted to contact with a grinding-disk and to be rotated thereby.

3. In an apparatus for sharpening a disk of an attrition-mill, a yoke comprising two members secured to each other adjustably whereby the legs of the yoke can be adjusted toward and from each other, means for securing the yoke releasably to a support, a shaft mounted in the legs of the yoke, a block mounted adjustably on the yoke, an ancillary shaft revoluble in said block, and a friction-wheel on the ancillary shaft.

4. In an apparatus for sharpening a disk of an attrition-mill, a shaft carrying an abrading-wheel, a yoke or frame having bearings for the shaft, bars provided with slots through which said bearings extend, means for adjusting the shaft-bearings in the slots, and means for securing the bars releasably to members of a case of the attrition-disks.

5. In an apparatus for sharpening a disk of an attrition-mill, a shaft carrying an abrading-wheel, a yoke or frame having bearings for the shaft, bars provided with slots through which said bearings extend, set-screws turn-

ing through parts on the bars against said bearings adapted to adjust said shaft laterally, and bolts with heads for securing the bars releasably to members of a case for the attrition-

5 disks.
6. In an apparatus for sharpening a disk of an attrition-mill, a yoke comprising two members secured to each other adjustable endwise, elongated laterally-extending terminal portions of said yoke provided with shaft-bearings, a shaft having its bearings in said terminal portions of said yoke, a sharpening-wheel tight on said shaft, means for supporting said yoke adjustably and releasably on the mem-
10 bers of a case for the grinding-disks, a pinion splined on said shaft, an ancillary shaft mounted adjustably on said yoke, and geared to said pinion, and a friction-wheel on said ancillary shaft.

20 7. In combination in apparatus for sharpening a disk of an attrition-mill, a yoke, a shaft mounted in the yoke and provided with an abrading-wheel, an ancillary shaft mounted on said yoke and geared to the abrading-wheel

shaft, and a friction-wheel on the ancillary 25 shaft the friction-wheel being of larger size than said abrading-wheel.

8. In apparatus for sharpening the separable and independently-rotatable disks of a grinding-mill, a shaft, a sharpening-wheel 30 thereon adapted when the disks are separated to be placed between the disks and in contact with one or the other of them to abrade it, and a frictional wheel connected rotatively to the shaft of the sharpening-wheel and adapted to 35 contact with both the grinding-disks and to transmit rotation from one disk to the other disk and to the sharpening-wheel and to rotate the sharpening-wheel in reverse direction to the rotation of the grinding-disk with which 40 it is in contact.

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

EDWARD P. ALSTED.

Witnesses:

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