

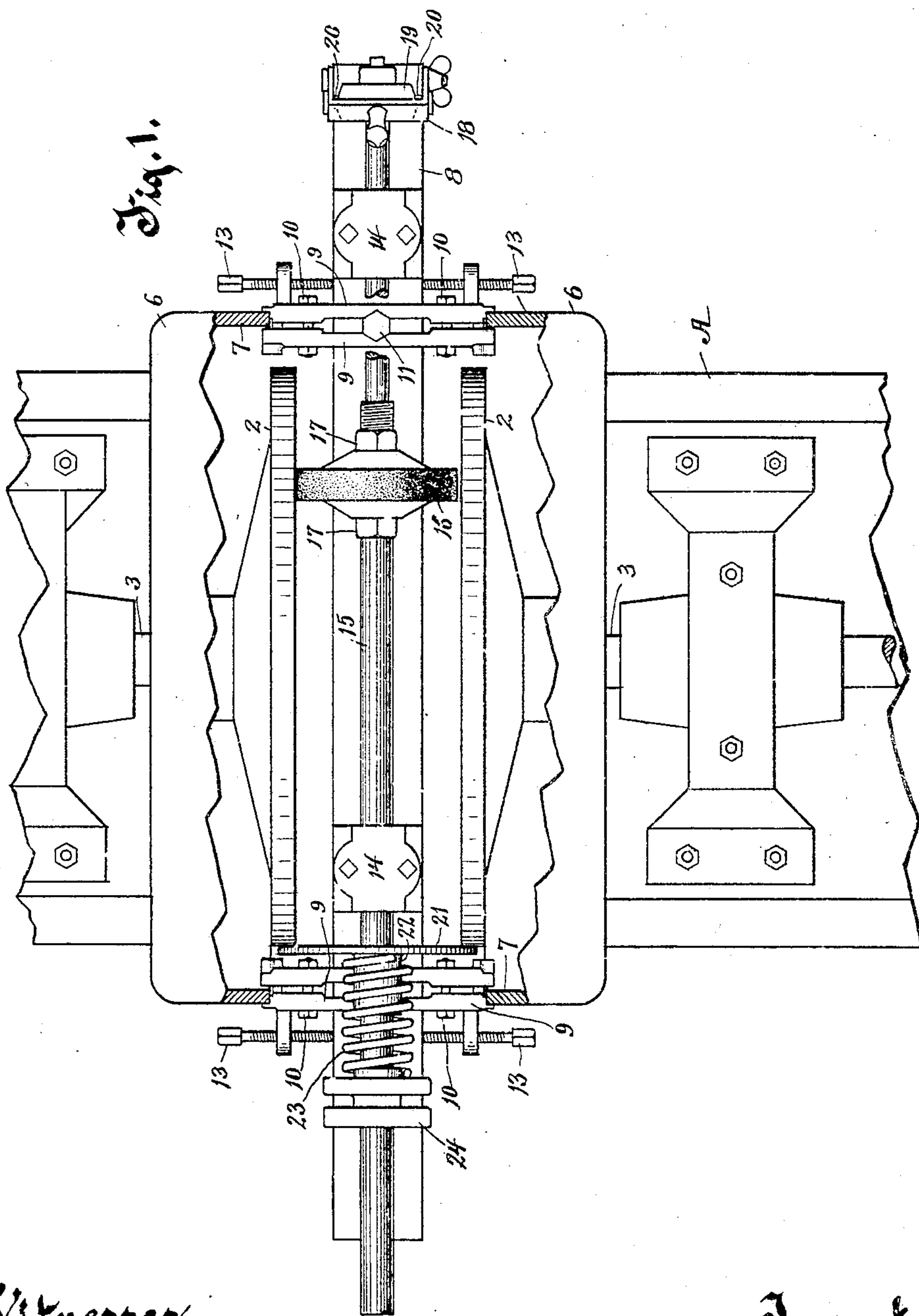
No. 778,563.

PATENTED DEC. 27, 1904.

E. P. ALSTED.
PORTABLE APPARATUS FOR SHARPENING THE GRINDING DISKS
OF ATTRITION MILLS.

APPLICATION FILED SEPT. 30, 1903.

3 SHEETS—SHEET 1.



Witnesses.

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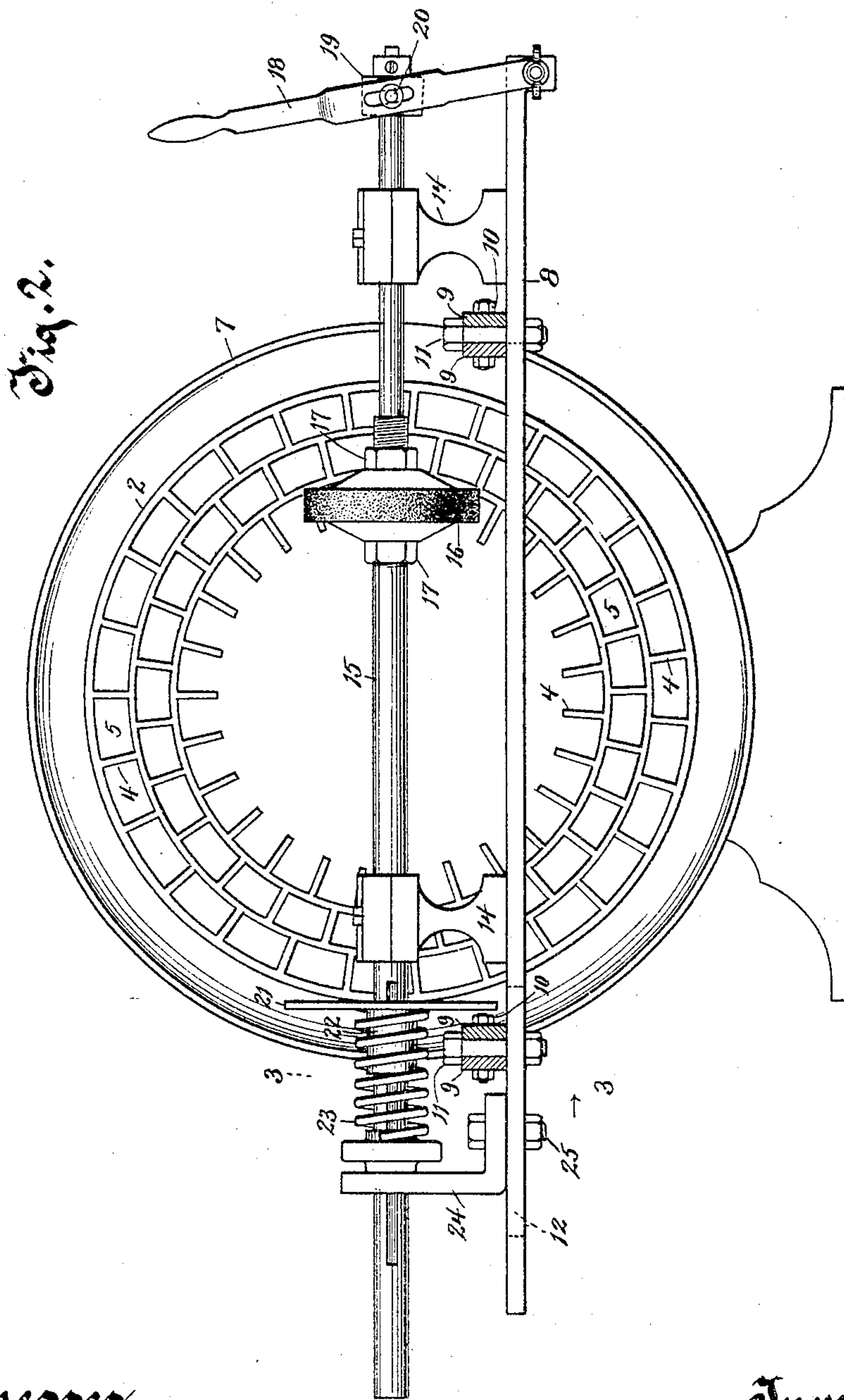
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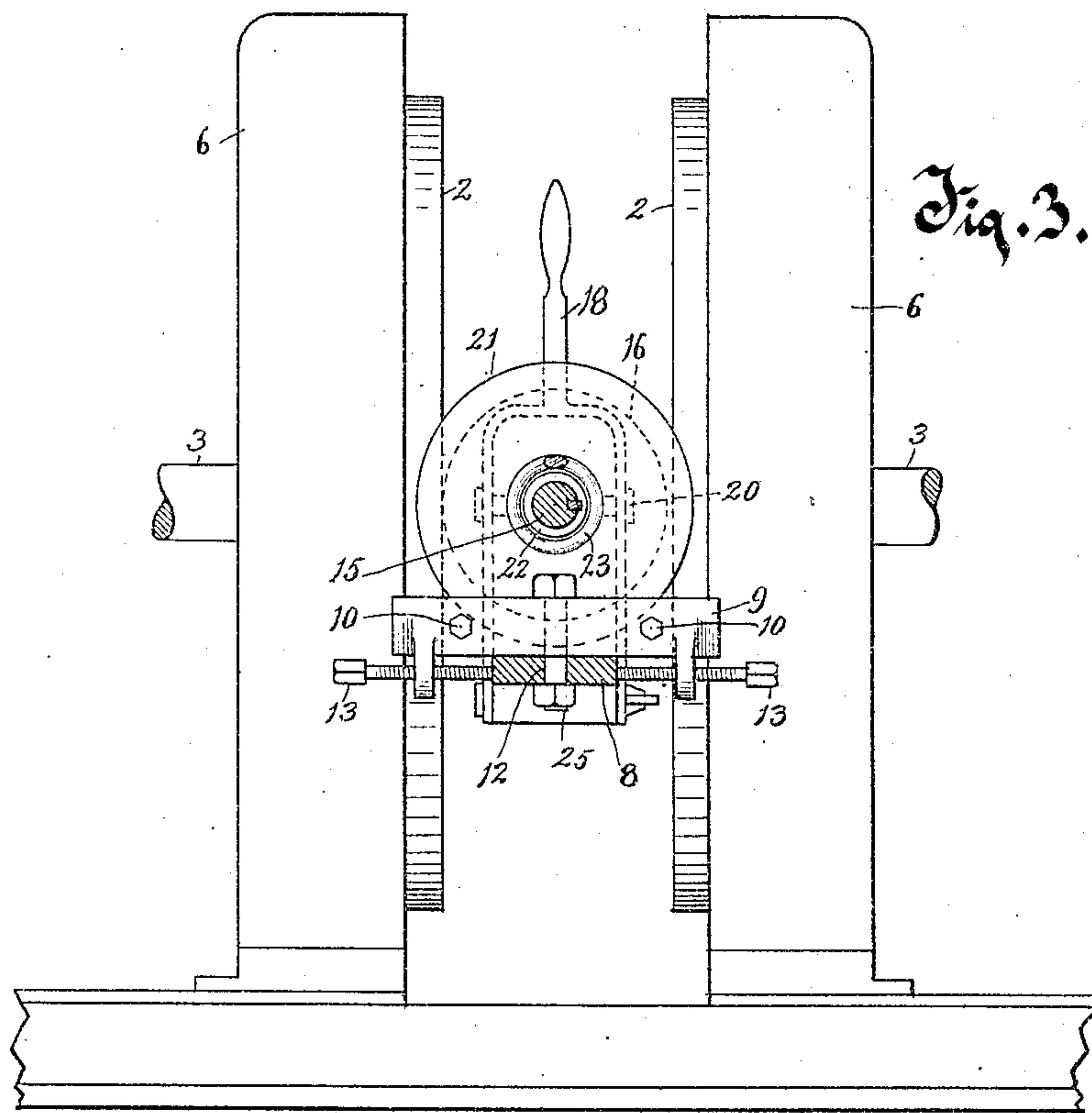
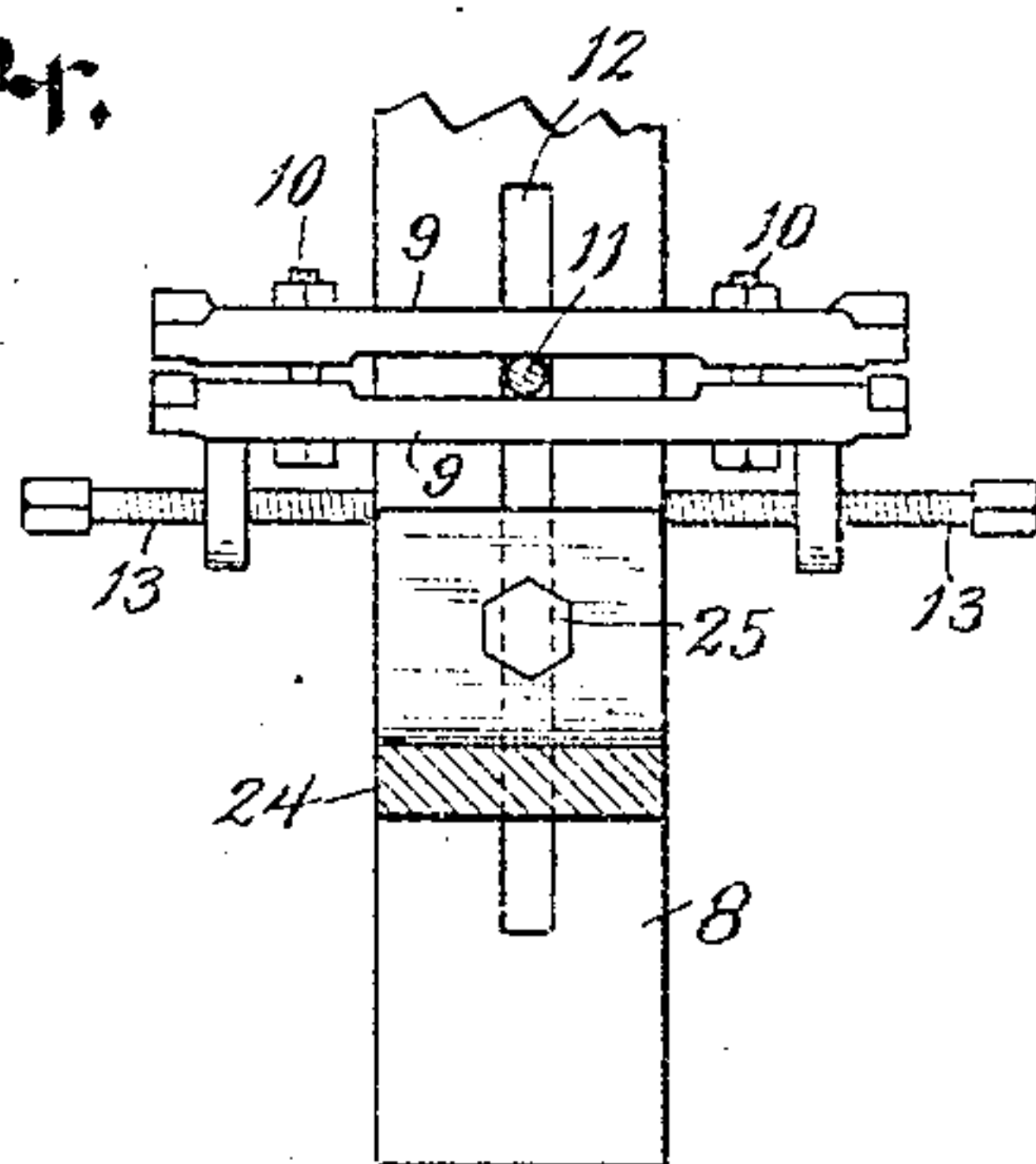


Fig. 5.



Fig. 4.



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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. 778,563, dated December 27, 1904.

Application filed September 30, 1903. Serial No. 175,114.

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 of a form in which the grinding-disks are separable from each other to a limited extent to provide for readily getting at the opposing faces of the disks for cleaning, 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, also novel means for rotating the shaft of the abrading or sharpening wheel, and in connection therewith means for rotating one of the grinding-disks while being sharpened by operative connection through the apparatus to the other then-revolving disk, and other minor novel features incidental or related to these chief novel features.

In the drawings, Figure 1 is a top plan view of the improved apparatus shown in connection with the disks of an attrition-mill and the frame thereof, illustrating the manner of the use of the apparatus, parts being broken away and parts being shown in section to permit of the illustration of interior construction or features otherwise covered by parts that would be in the foreground. Fig. 2 is a side view of my improved apparatus in connection with the inner or grinding face of a disk of the attrition-mill, the devices for clamping the apparatus to the case being in section. Fig. 3 is a vertical section on line 3 3 of Fig. 2 looking toward the right. Fig. 4 shows in detail the clamping devices for connecting parts of the apparatus together, and Fig. 5 is a detail of the clamping devices.

In the drawings, A represents a frame of suitable size, form, and proportions for carrying the disks of an attrition-mill and the

means for rotating them. The attrition or grinding disks 2 2 are made of metal and each is tight on an arbor 3, mounted in the frame in such manner that the disks may be separated from each other for the purpose of cleaning, sharpening, or repairing to a certain extent by sliding the arbors endwise in their bearings. Normally the faces of these metal disks come together and are adapted to grind the grain or material coming between them, the faces of the disks being provided with knives or edges 4, produced thereon conveniently by forming these raised knives or edges of the material of which the disks are made by leaving depressions or pockets 5 in the face of the disks adjacent to these knives or edges. This method of forming the disks is in common use. These disks when in use are rotated in opposite directions by belts (not shown) or any convenient means. The knives on the disks have their faces or edges in a common plane, so as on the two disks to come into close contact with each other, and if they become worn, nicked, or irregular on their faces they require to be ground to a common plane, and thereby properly sharpened for work. The disks are inclosed by a case 6, conveniently made in two parts adapted to fit against each other in a vertical plane substantially in the plane of the meeting of the faces of the disks and so as to be separable from each other by being withdrawn from each other either with the separating of the disks or otherwise. As the disks are in circular form, the rims 7 of the cases are advisedly of circular form, so as to inclose the disks at a little distance therefrom.

For mounting and supporting the operative parts of the improved apparatus for sharpening the grinding-disks a base-bar 8 is employed, which is of a width adapting it to be placed readily between the grinding-disks 2 2 when they are separated from each other and of such length as to extend between and somewhat beyond these disks and the rims 7. This base-bar is provided with two sets of clamping devices, each set consisting of the clamping members 9 9, secured to each other and so as to be adjustable toward and from each other by bolts 10 10, and medially be-

tween the bolts 10 10 a tie-bolt 11 is employed, which passes loosely through the clamping device between the two clamping members, which are advisably each cut away somewhat therefor, forming an elongated slot-like aperture between the two clamping members, and also through the base-bar 8 in an elongated slot 12 therefor. The clamping members 9 9 are disposed transversely of the bar 8 and are adapted to be moved endwise and transversely of the bar 8 on loosening the nut on the tie-bolt 11 and may also be moved along on the base-bar 8 longitudinally thereof by moving the bolt 11 in the slot 12. The adjustment of the clamping device laterally may be accomplished and maintained by means of adjusting-screws 13 13, turning by their threads through lugs therefor on one of the clamping members 9 against the lateral edges of the base-bar 8. The ends of the clamping members 9 are formed to receive between them the edge of the rim 7 of the case and to fit thereon, being adapted to be held rigidly thereto by turning down the nuts on the bolts 10. As the rims 7 of the cases are preferably in annular form, the inner surfaces of the clamping members 9 9 at their ends are curved, as shown in Fig. 5, to fit on the margins of the rims 7.

Standards 14 are fixed on the base-bar 8, and in these standards the shaft 15 is mounted and rotates. An abrading-wheel 16 is made tight on the shaft 15 conveniently by means of clamping-nuts 17, the apparatus being adapted for being provided with wheels of this character that are made interchangeable or that can be replaced when one has become worn. These abrading-wheels are the immediate means for grinding, and thereby sharpening, the knives or edges of the pockets on the face of the grinding-disks. The shaft 15, with the abrading-wheels 16 thereon, is shiftable endwise in its bearings to desired position, a shifting-lever 18 being provided, which is furcate at one end, its legs straddling the shaft and being pivoted at their extremities on the base-bar 8. A block 19 rides in an annular groove on the shaft 15 and is provided with laterally-projecting trunnions 20, that project into slots in the legs of the furcate lever 18.

For transmitting rotary motion to the shaft 15 and the abrading-wheel 16 a friction-disk 21, having a suitably-bored hub 22, is splined on the shaft 15, the friction-disk being adapted to bear against and thereby transmit the motion of the disks 2 to the shaft 15. The friction-disk 21 is held up to its work yieldingly by a spring 23, coiled about the hub of the disk and bearing at its other end against a boss therefor on the arm 24, mounted adjustably on the base-bar 8 by means of a bolt 25 through the foot of the arm and through the slot 12 in the base-bar.

When in use, the apparatus is placed between the grinding-disks 2 2 in the manner

shown in Fig. 1, the grinding-disks being separated so that the abrading-wheel contacts with only one of the disks, but at the same time so that the friction-disk 21 will bear on the perimeters of both of the grinding-disks. As the grinding-disks rotate in opposite directions at the same rate of speed, the shaft 15 and the abrading-wheel will be so rotated as to grind the faces of the knives evenly and truly in a common plane. By shifting the apparatus laterally the grinding-wheel can be placed in contact with the other grinding-disk, so as to sharpen the knives or edges on that disk. Also as in some of these machines the belting for transmitting motion to the grinding-disks is so disposed that on separating the disks in the manner shown in Fig. 1 one or the other of the disks will have the belt so shifted as to be out of work. The improved apparatus is so constructed and arranged that motion can be transmitted from that disk that is revolving, through the friction-disk 21, to the other grinding-disk 2, so as to rotate it while being ground or sharpened by the abrading-wheel.

What I claim as my invention is—

1. In an apparatus for sharpening the opposite, separable and independently-rotating disks of a grinding-mill, a base-bar, an operating-wheel mounted on the base-bar between the grinding-disks, means for bringing it into contact with either adjacent grinding-disk, means for driving the operating-wheel from one of the grinding-disks, and clamping members in sets on the base-bar adapted to engage a member of a case of the grinding-mill and to be supported thereby.

2. In an apparatus for sharpening the opposite separable and independently-rotated disks of a grinding-mill, a base-bar, a shaft mounted on the base-bar and provided with an operating-wheel disposable between and at a right angle to the grinding-disks, two sets of clamping devices on which the base-bar is mounted adjustable laterally, said sets of clamping devices each including two clamping members formed to fit onto and seize a member of a case about the grinding-disks and thereby to support the shaft and the operating-wheel between the grinding-disks, and means for clamping the clamping members to such case.

3. An apparatus for sharpening the separated parallel grinding-disks of a mill, comprising a base-bar adapted to be attached temporarily to a fixed support in connection with the grinding-disks, a shaft provided with an abrading-disk mounted on the base-bar and adapted thereby to be placed between and parallel with the grinding-disks, a friction-disk splined on the shaft adapted to contact with the peripheries of the two grinding-disks, and means for holding the friction-disk slidable on its shaft yieldingly up to its work.

4. An apparatus for sharpening the grind-

ing-disks of a mill, comprising a base-bar, a shaft mounted revolubly and adjustably end-wise on the base-bar, an abrading-disk tight on the shaft, a friction-disk splined on the shaft, a spring behind the friction-disk, and an arm adjustable on the base-bar holding the spring up to its work.

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10 5. An apparatus for sharpening the separable and independently-rotating disks of a grinding-mill, including a shaft mounted on a support adapted to be attached temporarily to the frame of the mill between the grinding-disks, an operating-disk tight on the shaft adapted to contact with a grinding-disk, a

friction-disk splined on the shaft and of greater diameter than the operating-disk and disposed to bear frictionally against the peripheries of both the grinding-disks and to transmit motion from one grinding-disk to the other grinding-disk, and means for holding the friction-disk up to its work. 15 20

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

EDWARD P. ALSTED.

Witnesses:

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