No. 862,724. PATENTED AUG. 6, 1907.

R. V. FIELDS.

DISK GRINDER.

APPLICATION FILED MAY 29, 1906.

2 SHEETS—SHEET 1.

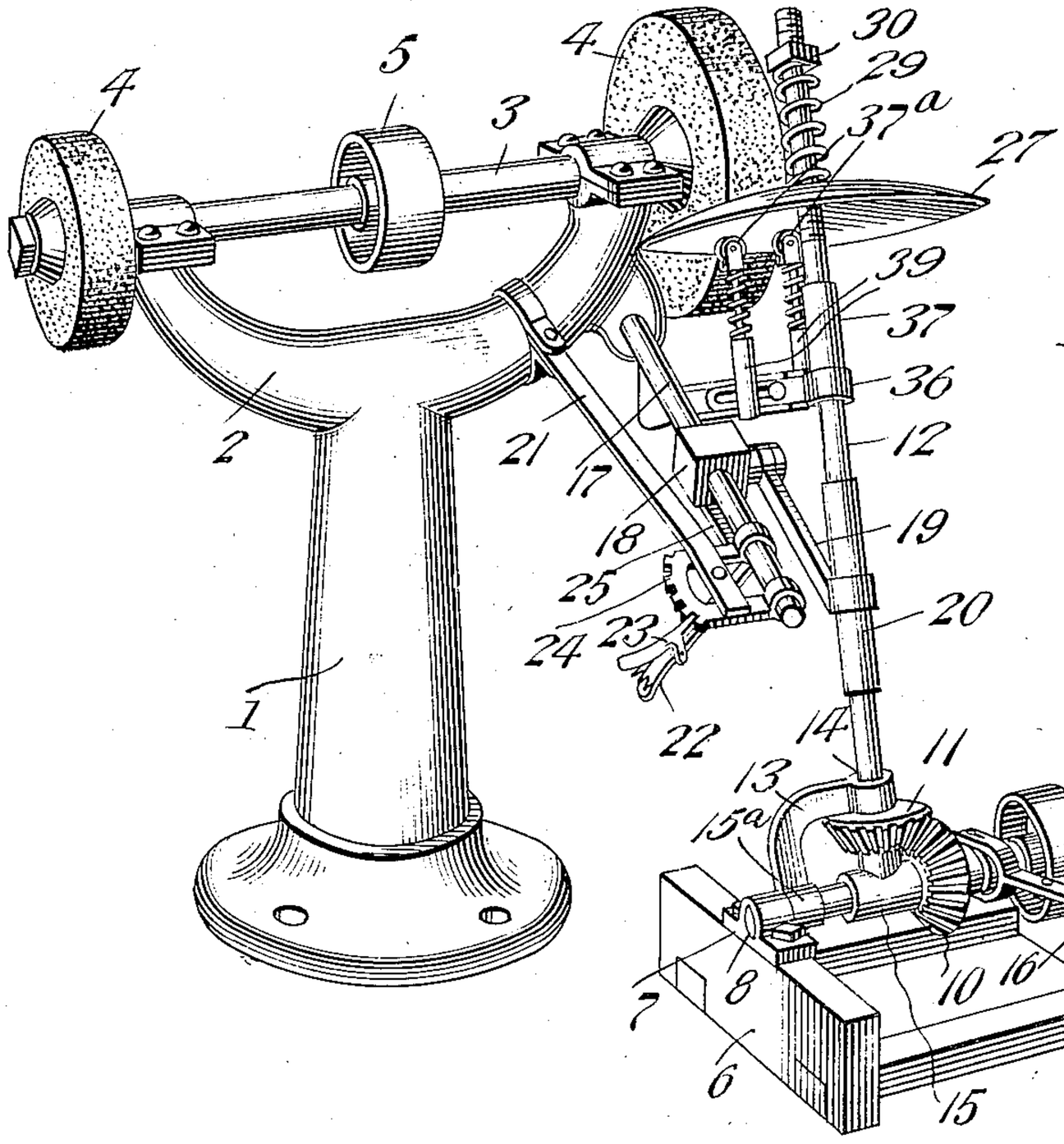

Fig. 1

Fig. 4.

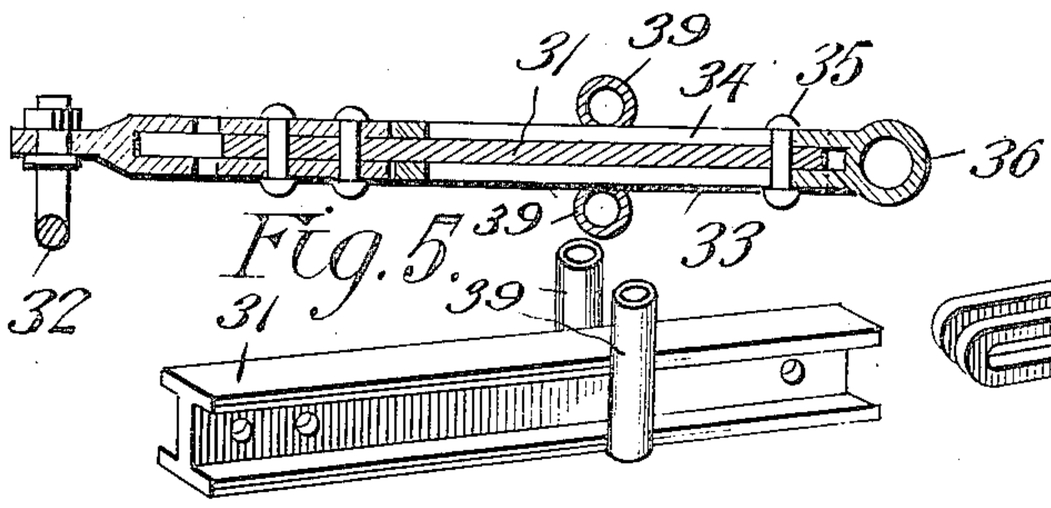

Fig. 5.

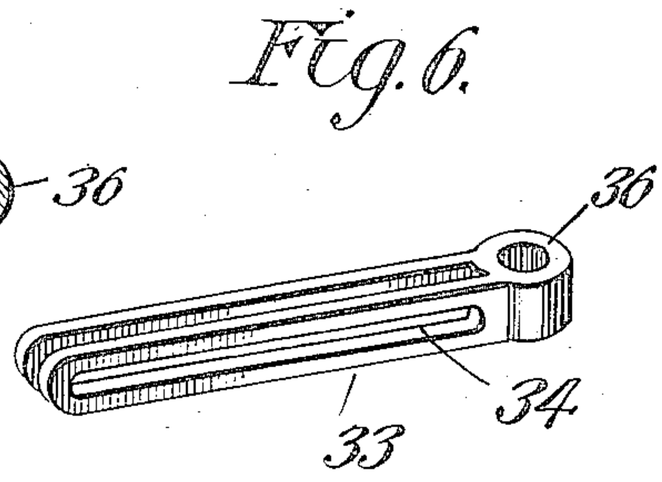

Fig. 6.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

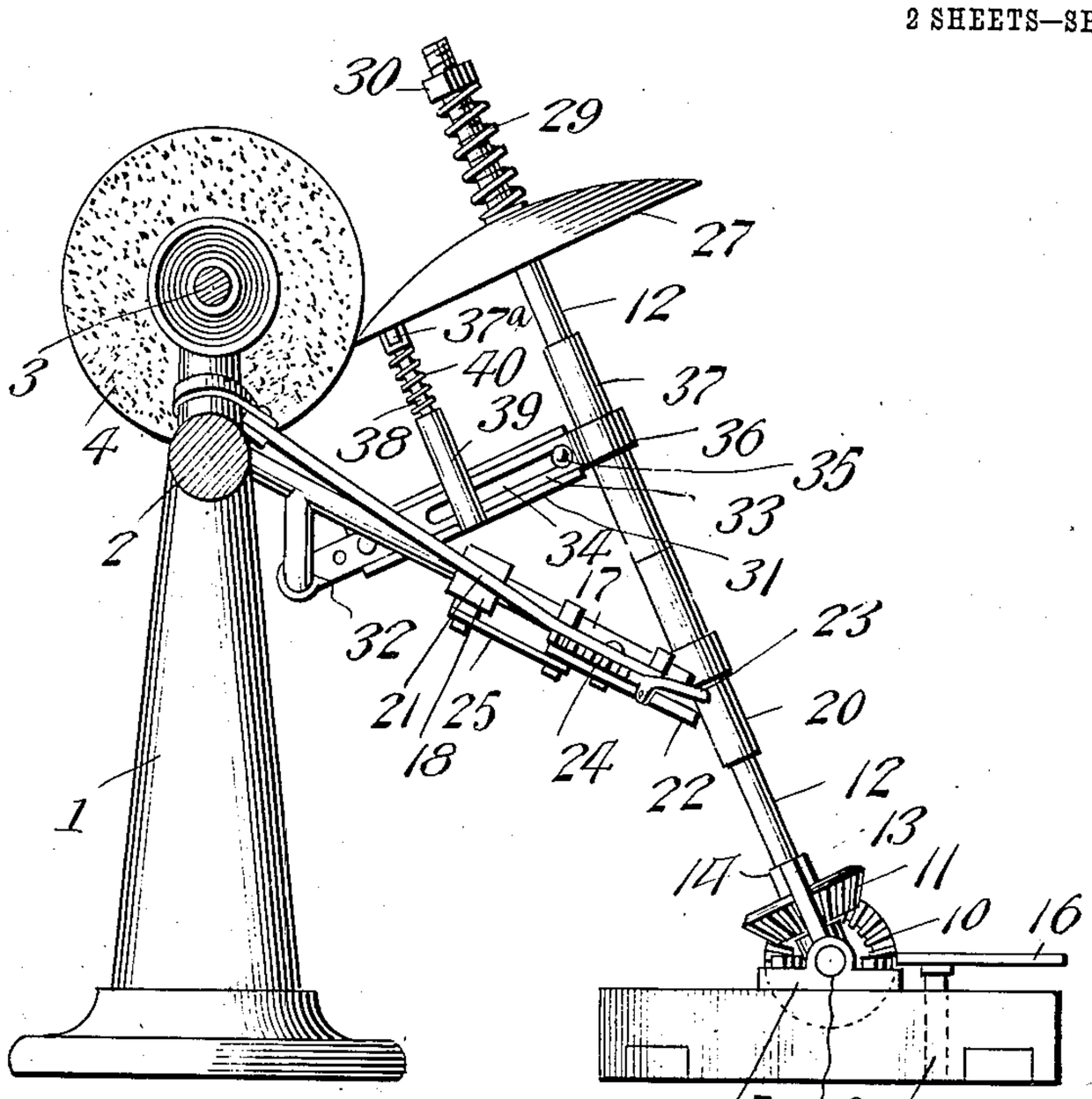
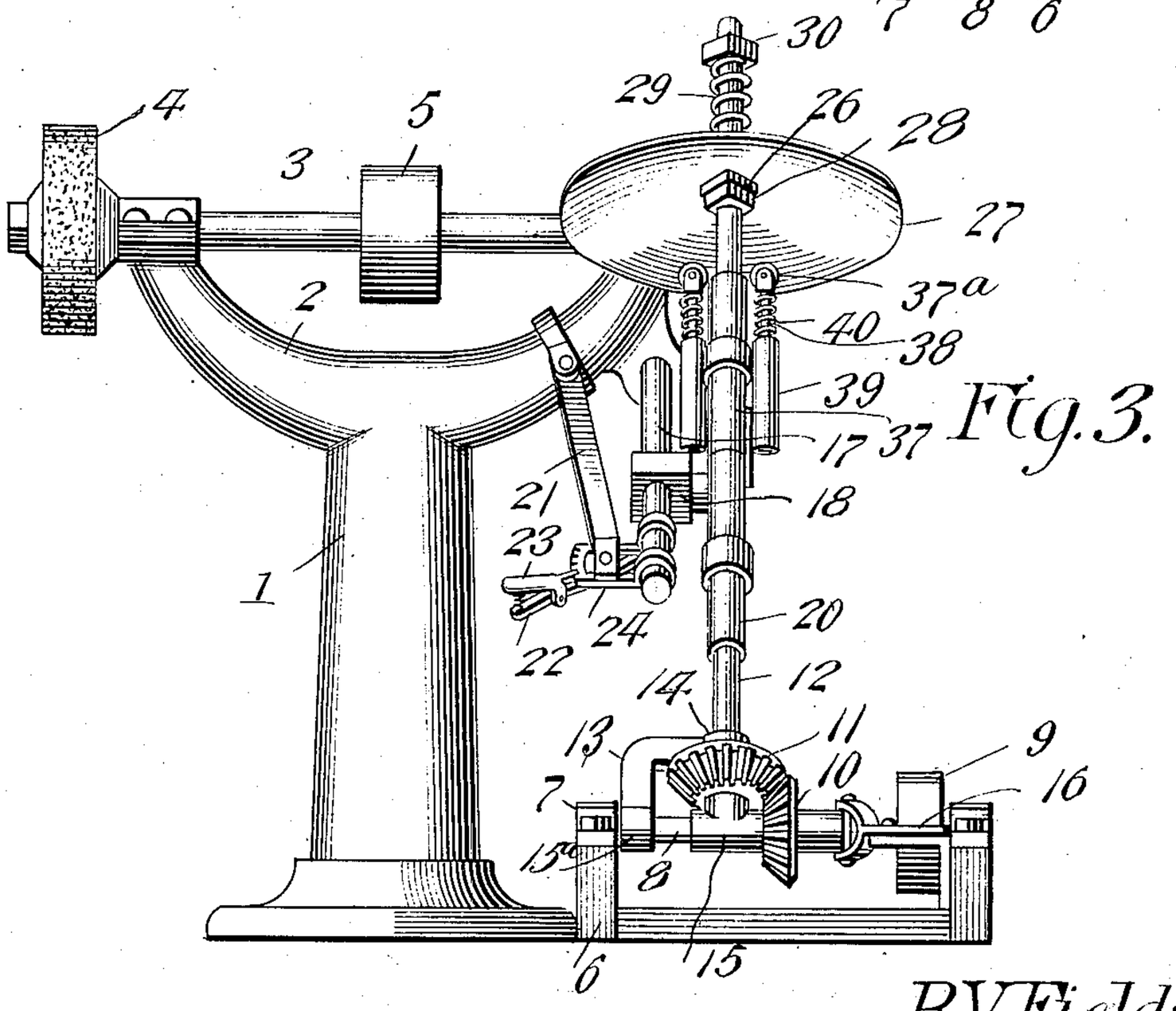


Fig. 3.



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UNITED STATES PATENT OFFICE.

ROBERT V. FIELDS, OF DOUGLASS, KANSAS.

DISK-GRINDER.

No. 862,724. Specification of Letters Patent. Patented Aug. 6, 1907.

Application filed May 29, 1906. Serial No. 319,403.

To all whom it may concern:

Be it known that I, ROBERT V. FIELDS, a citizen of the United States, residing at Douglass, in the county of Butler and State of Kansas, have invented new and useful Improvements in Disk-Grinders, of which the following is a specification.

This invention relates to grinding machines, the object of the invention being to provide a machine especially adapted for grinding disks such as are used on harrows, plows and the like, the machine embodying means whereby disks may be rapidly ground and put in condition for use, the disk being revolved at any desired speed so as to feed the edge thereof to the grinding wheel of the machine, which grinding wheel is rotated at a high rate of speed.

A further object of the invention is to provide means whereby the disk-carrying arbor or shaft may be adjusted relatively to the arbor of the grinding wheel, thereby adapting the machine to disks of different sizes.

Another object of the invention is to provide means for supporting the disk adjacent to the periphery thereof, whereby the edge of the disk is held in grinding contact with the grinding wheel and allowance is automatically made for disks whose edges or peripheries are out of true.

The machine also embodies means whereby the shaft which carries the grinding disk may be thrown out of operation without the necessity of stopping the arbor of the grinding wheel.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a disk-grinding machine embodying this invention. Fig. 2 is a side elevation of the same partly in section. Fig. 3 is an elevation of the machine. Fig. 4 is a longitudinal sectional view of the extensible brace for the disk-carrying shaft. Fig. 5 is a perspective view of the stationary member of said extensible brace. Fig. 6 is a similar view of the movable section of the brace.

Referring to the drawings, 1 designates a stand having its upper end forked as shown at 2 and provided with bearings for the arbor 3, on which the grinding disk or disks 4 are mounted, said arbor also being provided with a band wheel 5 adapted to receive a belt from any suitable source of power and whereby the arbor of the grinding wheel or wheels may be driven at any desired rate of speed, the grinding machine thus far described being of the ordinary conventional type.

In carrying out the present invention, I employ a supporting base 6 provided with bearings 7 for a shaft 8 which is provided with a band wheel 9 adapted to receive a driving belt from any source of power, and if desired, the same source of power as that from which the band wheel 5, above referred to, is driven. The shaft 8 has mounted thereon a bevel gear wheel 10 which is movable into and out of engagement with a corresponding bevel gear wheel 11 on the disk-carrying shaft 12, the wheel 11 being held in place by a yoke 13 having a collar 14 which embraces the shaft 12 outside of the wheel 11, and another collar 15ª which embraces the shaft 8, as best shown in Fig. 1. The inner or lower end of the shaft 12 is mounted in a bearing carried by a T-shaped sleeve 15 mounted on the shaft 8, as shown, and the wheel 10 is adapted to be moved into and out of engagement with the wheel 11 by means of a shipping lever 16 fulcrumed on the base frame 6 and having a forked engagement with the hub of said wheel 10, as clearly shown in Fig. 1. In this way, the shaft 12 may be thrown into and out of operation by simply shifting the lever 16 in the proper direction.

The construction just hereinabove described enables the shaft 12 to be swung toward and away from the grinding wheel upon the shaft 8 as a center for the purpose of moving the disk into and out of contact with the grinding wheel. In order to provide for thus adjusting or moving the shaft 12, the stand 1 is provided with a projecting guide 17 upon which is mounted a runner or slide 18 connected by means of a link 19 to a sleeve 20 which embraces the shaft 12.

Mounted on a bracket arm 21 connected rigidly with the stand 1 is a shifting lever 22 provided with a thumb latch 23 which engages a rack segment 24 carried by the arm 21. A link 25 is pivotally interposed between the lever 22 and the slide or runner 18, so that by swinging the lever 22, the slide 18 may be moved lengthwise of the arm 17, and through the medium of the connecting link 19, the shaft 12 is swung on the shaft 8 as a center so as to carry the free end of said shaft 12 toward and away from the grinding wheel 4.

Adjustably mounted by means of a threaded connection on the shaft 12 is a step 26 in the form of a nut having a reduced and squared shoulder portion of the same size as the squared central opening in the ordinary disk 27 used on plows, cultivators and the like. The step 26 is shown in the form of a nut, and when properly adjusted on the shaft 12 to set the disk 27 in proper relation to the grinding wheel, the adjustment of said step or nut may be fixed and maintained by means of a jam-nut 28. The disk is held in place by means of a coiled spring 29 which is slipped over the upper end of a shaft 12 and retained in place by means of a nut 30. This enables a disk to be readily placed on the shaft 12 and removed therefrom and when seated on the step 26, the disk is caused to revolve with the shaft 12, as the latter is driven by the mechanism hereinabove described.

In order to brace the shaft 12 at a point remote from

its point of connection with the shaft 8, I employ a longitudinally extensible or telescopic brace which is illustrated in detail in Figs. 4, 5 and 6, said brace comprising an inner stationary member 31 shown in the form of an eye beam which is connected at one end to a bracket-arm 32 shown as forming an extension of the guide 17. The outer or sliding member of the brace which is shown in Fig. 6, comprises the parallel portions 33 which embrace the web portion of the channel iron member 31 so as to slide back and forth on the member 31, the parallel portions 33 being longitudinally slotted, as shown at 34, to receive a bolt or rivet 35 which passes also through the member 31, holding the two members together but permitting a relative longitudinal sliding movement of the same.

The projecting end portion of the member 33 is provided with a collar 36 which embraces the shaft 12 as shown in Fig. 1, and if desired, said collar 36 may be extended in the form of an elongated sleeve 37 to give a longer bearing on the shaft 12 for the purpose of steadying the latter close up to the step on which the disk is mounted.

In order to support the disk adjacent to its periphery and near the grinding point, I provide one or more supporting guide rollers 37ª, each of which is journaled on the upper end of a stem 38 slidingly mounted in a socket 39 carried by the stationary member 31 of the extensible telescopic brace. Each of the rollers 37ª is held in contact with the concaved side of the disk by means of a coiled spring 40 which encircles the stem 38. Two of such rollers 37ª are preferably employed to sustain the peripheral portion of the disk in operative contact with the grinding wheel.

The grinding wheel 4 is ordinarily driven at a very high rate of speed, while the shaft 12 which carries the disk is rotated at a comparatively slow rate of speed, say two hundred revolutions per minute, and in this way the periphery of the disk is fed across the periphery of the grinding wheel and the edge of the disk quickly ground true. The supporting guide rollers 37ª are particularly useful when the machine is operating on disks which have been bent out of true, it being necessary in each case to provide a special support for the untrue edge of the disk, as it moves in contact with the grinding wheel.

In operation, the shaft 12 is rocked in a direction away from the grinding wheel by means of the lever 22. A disk is then placed on the shaft in engagement with the step thereof and the spring 29 and nut 30 applied. The lever 16 is then moved to throw the shaft driving mechanism into operation and afterwards the lever 22 is adjusted to move the shaft 12 toward the grinding wheel 4, thus moving the disk into grinding engagement with said wheel. As soon as the disk is properly ground, the shaft 12 is moved away from the grinding wheel by means of the lever 22 and then the shaft 12 is stopped by shifting the lever 16 in the proper direction. The disk is then removed from the shaft in readiness for another disk.

I claim:

1. A disk grinding machine embodying a stand, a rotary arbor thereon, a grinding wheel on said arbor, a disk carrying shaft, means for driving said shaft, permitting one end of said shaft to move toward and away from the grinding wheel, an extensible brace interposed between the stand and said disk carrying shaft, and a lever and rack mounted on an arm extending from the stand for holding said brace in adjusted position, substantially as described.

2. A disk grinding machine embodying a stand, a rotary arbor thereon, a grinding wheel on said arbor, a disk carrying shaft, means for driving said shaft and permitting one end of the shaft to be moved toward and away from the grinding wheel during its operation, means for holding a disk on said shaft, means for shifting said shaft toward and away from the grinding wheel, and spring mounted rollers disposed under the disk at opposite sides of said shaft, for yieldingly sustaining the edge of the disk in operative contact with the grinding wheel, said rollers being each mounted on a stem, and said stems being slidingly mounted in sockets carried by a stationary member of an extensible telescopic brace.

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

ROBERT V. FIELDS.

Witnesses:
WILLIAM W. CLARK,
OLIVE M. WARRENDER.