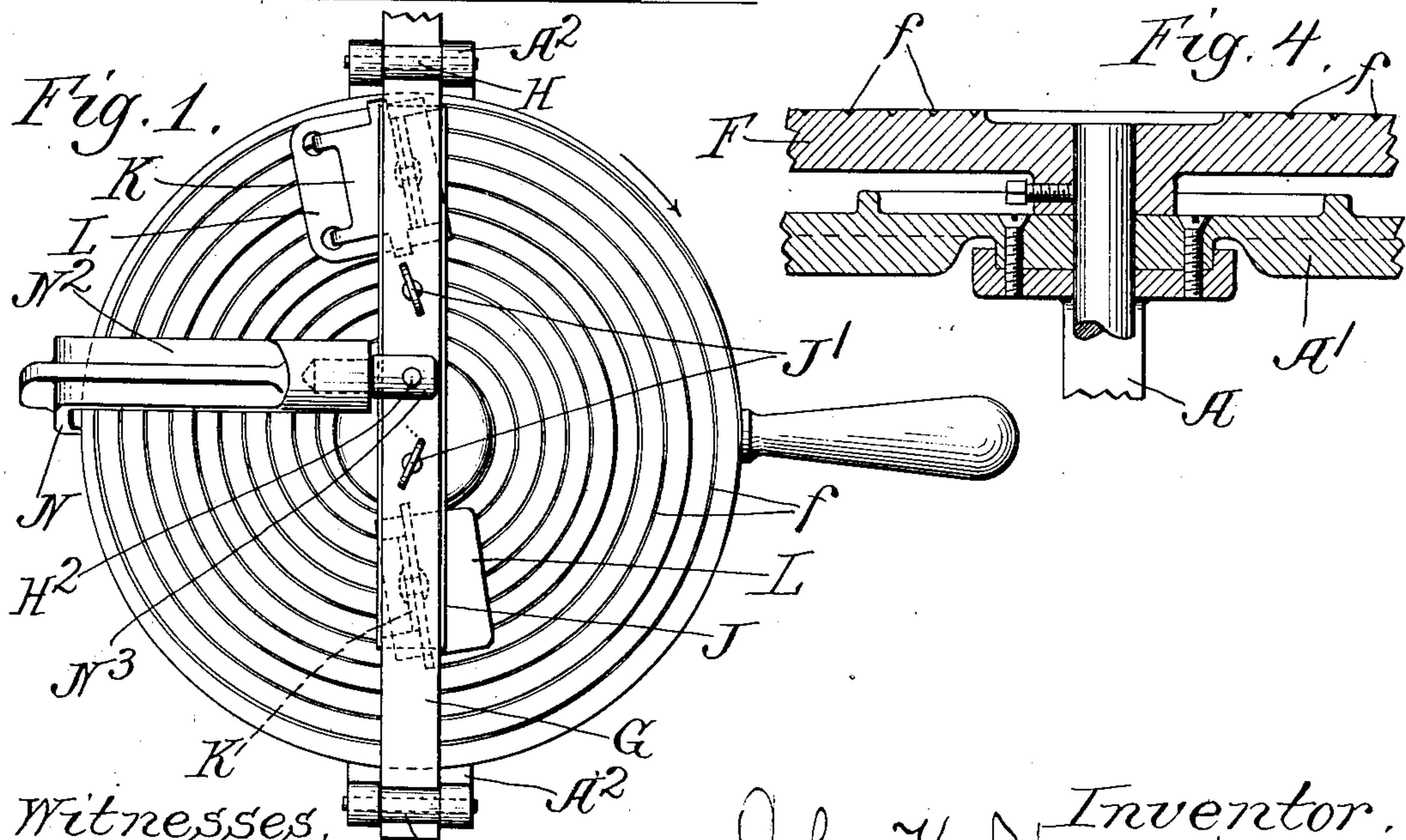
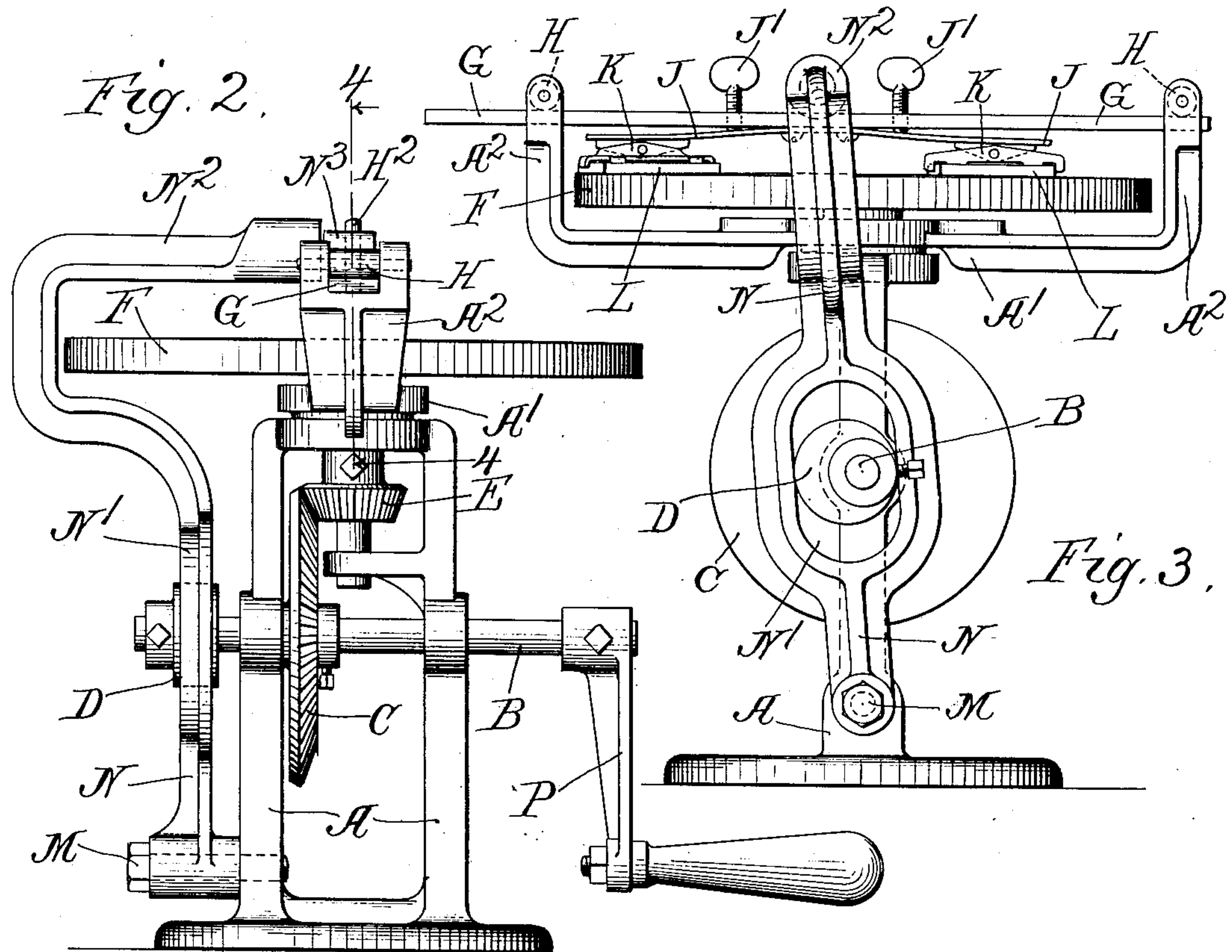


No. 783,086.

PATENTED FEB. 21, 1905.

J. K. STEWART.
GRINDING MACHINE.
APPLICATION FILED APR. 7, 1904.



Witnesses,
Edward T. Wray. H
Fred G. Fischer

John H. Stewart *Inventor.*
by *Burton & Burton*
his Attys.

UNITED STATES PATENT OFFICE.

JOHN KERWIN STEWART, OF CHICAGO, ILLINOIS.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No 783,086, dated February 21, 1905.

Application filed April 7, 1904. Serial No. 202,016.

To all whom it may concern:

Be it known that I, JOHN KERWIN STEWART, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Grinding-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention is an improvement in machines for surface grinding or polishing metal parts, such as knives or blocks or disks requiring to be dressed, ground, or polished upon a surface which is required to be true to a given form, whether perfectly plain or spherically concave or convex. Its purpose is to provide an improved means for holding the work automatically and accurately to the grinding-surface and for moving it thereon so as to distribute the wear over the grinding-surface.

It consists of the features of construction set out in the claims.

In the drawings, Figure 1 is a plan view of my machine. Fig. 2 is a side elevation. Fig. 3 is a rear elevation. Fig. 4 is a detail section of the cross-head and circular grinding-plate at the line 4 4 on Fig. 1.

In my improved machine a standard A has journaled in it a horizontal shaft B, which carries a beveled gear C and an eccentric D. The beveled gear meshes with the beveled pinion E on the vertical shaft of the circular grinding-plate F, which is also journaled in the standard, being mounted on the upper end of its shaft above the cross-head A', with which the standard is provided at the top and which has lugs A² A² projecting up from its opposite ends at diametrically opposite sides of the circular grinding-plate F. A slide G extends across the machine above the grinding-plate and is guided at its ends in the lugs A² under antifriction-rollers H H, journaled in the lugs to receive the upward pressure of the slide. To the under side of the slide there is secured a spring-bar J, which is made fast to the slide at the middle of the length of the slide and also of the spring-bar and tends to lie flat up against the under side of the slide. Screws J' J' are set through the slide at a

little distance each side of the point at which the spring-bar is fastened to the slide for forcing the spring-bar down at either end toward the upper surface of the grinding-plate. The spring-bar carries near its ends any suitable holder K for the work to be ground, such holder being pivoted to the spring-bar, so that the work held by it can accommodate itself to the surface of the grinding-plate when it is yieldingly pressed thereonto by setting the screw J' down through the slide-bar against the spring-bar.

The particular form of clip shown is one suitable for holding a knife L of a shearing-tool. This is selected merely for the purpose of illustrating the use of the machine, and the form as to its adaptation to engage the knife is not a distinctive feature of the invention.

At the lower part of the frame A there is fulcrumed for rocking on the stud M an up-standing lever N, which has an oblong slot N', in which the eccentric D operates to rock said lever back and forth as the shaft rotates. The lever extends upward from the slide, being deflected outward to pass the margin of the grinding-plate, above which it has the arm N² projecting inward and at its inner end provided with means for engaging the slide G, said engagement being effected by means of a stud H² projecting up from the slide and passing through a swiveled terminal N³, which is set into the end of the horizontal arm N² of the lever N and is free to turn therein about a horizontal axis.

The shaft B is provided with any suitable means for rotating it, and for light work it may be rotated by hand by means of a crank P.

The upper surface of the grinding-plate F is adapted to carry grinding material, such as a paste made of flour of emery and oil, and to more perfectly adapt it to that use it has the fine spiral groove f for assisting in holding and distributing the grinding-paste.

The knife or other article to be ground being properly attached to the clip provided for holding it, and the spring-bar J being adjusted by means of a screw J' to press the knife with suitable degree of pressure upon the grinding-plate, the rotation of the shaft B rotating the plate also causes the rock'ng

lever N to reciprocate the slide H for carrying the work readily in and out over the grinding-plate, the range of movement being sufficient to bring the whole available grinding-surface of the plate into action to substantially equal extent.

It will be seen that this machine is not limited to grinding or polishing flat surfaces, but that the grinding-plate may be spherically convex or concave and that the slide-bar G, having corresponding curvature, will carry the work in a suitably-curved path and cause it to be ground hollow or convex, according to the formation of the grinding-plate. In the drawings I have shown a plate slightly convex for the purpose of grinding the knife slightly hollow. For such slight curvature as is here illustrated it is probably not necessary to curve the slide, because the spring-bar J will yield sufficiently to accommodate such slight curvature without materially varying the pressure at the different parts of the path of the work in and out over the grinding-plate.

I claim—

1. A grinding-machine comprising a rotary grinding-plate; a slide extending across the plate facing its grinding-surface, having means for holding the work against said surface; a rocking lever fulcrumed about an axis at right angles to the axis of rotation of the plate and having an arm extending into engagement with the slide; means for rocking the lever and means at the engagement of the lever and slide for accommodating the rocking movement of the lever to the reciprocating movement of the slide.

2. A grinding-machine comprising a rotary grinding-plate; a shaft at right angles to the axis of rotation of the plate; intermeshing beveled gears connecting with the shaft and plate for communicating rotation from the former to the latter; a shaft fulcrumed for rocking at the opposite side of the shaft from that at which the plate is situated, extending past said shaft and past the margin of the plate and provided with an arm overhanging the

latter; means on the shaft engaging the lever for rocking it as the shaft rotates, and means connected with said overhanging arm for carrying the work.

3. A grinding-machine comprising a rotary grinding-plate; a spindle for mounting and journaling the same; a shaft at right angles to such spindle; a standard in which the shaft and spindle are journaled; intermeshing gears on the shaft and spindle for communicating rotation from the former to the latter; a lever mounted on the standard for rocking about a fulcrum parallel to the shaft, said lever extending past the shaft and past the margin of the rotary grinding-plate and having an arm projecting opposite the grinding-face of the latter; an eccentric cam on the shaft engaging the lever for rocking it as the shaft rotates, the standard having a cross-head between the shaft and the plate, said cross-head having lugs extending past the margin of the plate at opposite sides thereof; a slide mounted in said lugs at the opposite side of the plate from the cross-head; means on the slide for holding the work and for yieldingly pressing it toward the plate, and operating connections between the arm of the lever and the slide for reciprocating the latter as the lever rocks.

4. A grinding-machine comprising a rotary grinding-plate; a standard at the top of which said plate is journaled for rotation about its axis; a work-holder extending across the face of the plate above the same, said work-holder being, at its extremity beyond the margin of the plate, supported by the standard, and means mounted on the standard below the plate for reciprocating the work-holder and revolving the plate.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 24th day of March, 1904.

JOHN KERWIN STEWART.

In presence of—

LEANDER H. LA CHANCE,
J. H. BIEHN.