(No Model.)

C. H. NORTON.

MICROMETRIC ADJUSTMENT FOR GRINDING MACHINES.

No. 590,850. Patented Sept. 28, 1897.

Fig. 1.

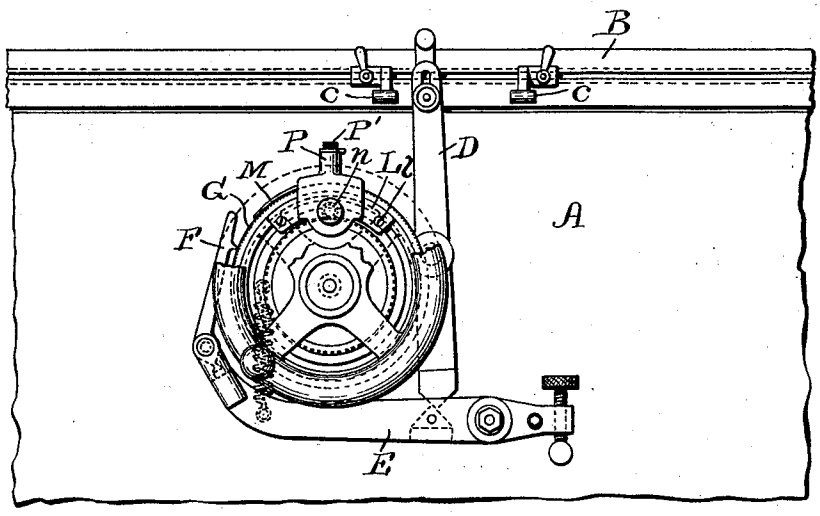


Fig. 2.

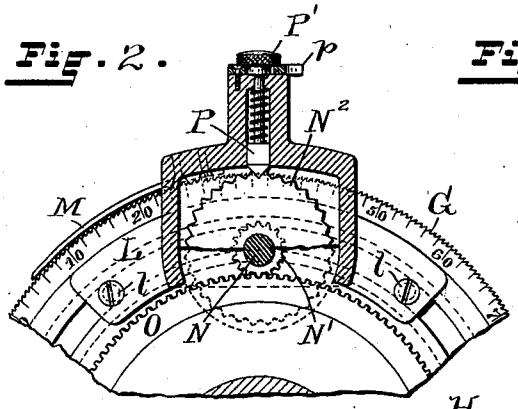


Fig. 4.

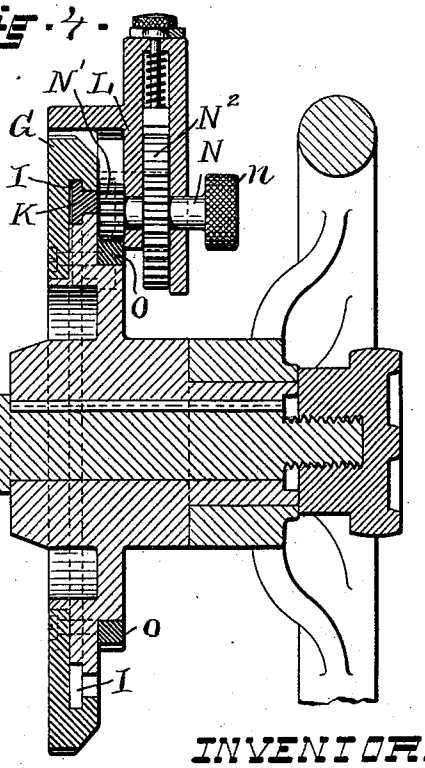
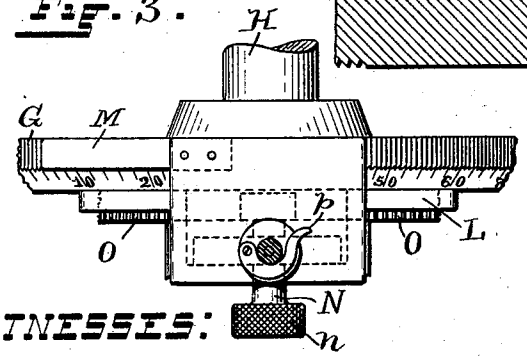


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES H. NORTON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE BROWN & SHARPE MANUFACTURING COMPANY, OF SAME PLACE.

MICROMETRIC ADJUSTMENT FOR GRINDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 590,850, dated September 28, 1897.

Application filed May 6, 1897. Serial No. 635,369. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. NORTON, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Micrometric Adjustments for Grinding-Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improvement in the cross-feed mechanism of grinding-machines; and it consists in the peculiar and novel construction of the slide or shield by which the operation of the pawl whereby the cross-feed is actuated is controlled, as will be more fully set forth hereinafter.

In a grinding-machine where articles are ground or finished with micrometric precision to standard size the adjustment of the grinder or tool requires the experience of an expert, good light, and a trained eyesight. In the practical use of grinding-machines the expeditious adjustment increases the amount of the work performed by a machine, while the smallest error is liable to spoil the work.

The object of this invention is to facilitate the adjustment and to depend on the sense of touch rather than the sense of sight, so that the operative may change the adjustment of the machine to any desired micrometric fraction of an inch without stopping to examine or watch the micrometric scale.

Figure 1 is a side view of part of a grinding-machine, showing the end of the cross-feed and the pawl-and-ratchet arrangement by which the cross-feed is automatically operated through the reciprocation of the bed-plate. Fig. 2 is a side view of part of the ratchet-tooth micrometric disk, showing the slide or shield and the adjustable carriage partly in section. Fig. 3 is a top view of the slide and carriage. Fig. 4 is a vertical section through the axial line of the screw-spindle, showing the micrometric disk provided with peripheral ratchet-teeth and secured to the screw-spindle and the adjustable carriage provided with the slide or shield.

Similar letters of reference indicate corresponding parts in all the figures.

In the drawings, A indicates the frame of the machine; B, the reciprocating bed-plate; C C, stops adjustably secured to the bed-plate; D, the lever operated by the stops C C; E, the arm operated by the end of the lever D; F, the pawl connected with the arm E; G, the disk, provided with the ratchet-teeth on its periphery, with which the pawl F engages.

The disk is secured to and turns with the screw-spindle H and is usually provided at its edge with a graduated scale, as shown in Figs. 2 and 3.

The disk G has the annular undercut or T-shaped groove I, in which the T-shaped curved slide K is supported. To this slide K the carriage L is secured by the bolts *l l*. The carriage L supports the slide or shield M, which extends over and is in close sliding contact with the peripheral ratchet-teeth of the disk G and serves to limit the operation of the pawl F on the ratchet-teeth of the disk. The carriage L supports the spindle N, on which are secured the pinion N′, the ratchet-wheel N^2, and the milled head *n*. The pinion N′ engages with the gear O, secured to or forming part of the disk G, and the ratchet-gear N^2 engages with the spring-pressed pawl P, provided at its upper end with the head P′.

The operation of the micrometric cross-feed on grinding-machines is well understood by those versed in the art. The scale on the edge of the disk G divides the pitch of the screw on the spindle H into micrometric fractions. The carriage L and shield M are adjusted by sliding them on the disk. In doing this the spring-pressed pawl may be raised off from the ratchet-gear N^2 by inserting the latch *p* under the head P′. When the slide M is set with reference to the pawl F to correspond with the blank to be ground, the spindle N is turned and the ratchet-wheel N^2 raises the spring-pressed pawl P once for each predetermined fractional distance that the carriage is moved.

In the drawings the fractional distance corresponding with each tooth of the gear N^2 is equal to one-fourth of a one-thousandth of an inch, so that each one-fourth of a thousandth can be readily counted by the operative and the final adjustment made without reference to the graduated scale on the disk G. In practice it has been found that this method

of adjustment so facilitates the operation of the machine that the production is greatly increased.

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

1. In the micrometric feed of a grinding or similar machine, the combination with the disk secured to the screw-spindle and having a gear and peripheral ratchet-teeth, of a carriage provided with a slide extending over the ratchet-teeth, a spindle journaled in the carriage, a pinion on the spindle engaging with the gear on the disk, a ratchet-gear, a spring-pressed pawl engaging with the ratchet-gear, and a milled head on the spindle; whereby the carriage and slide may be moved on the disk and the spring-pressed pawl raised at predetermined intervals, as described.

2. In a micrometer-feed, the combination with the screw-spindle H, the disk G having peripheral ratchet-teeth, an annular gear, and an annular groove provided with the T-shaped slide K, of the carriage L secured to the T-shaped slide K, the spindle N journaled in the carriage, the pinion N′, the ratchet-gear N^2 and the milled head *n* on the spindle, and the spring-pressed pawl P; whereby on moving the carriage a predetermined distance the spring-pressed pawl is raised and lowered, as described.

In witness whereof I have hereunto set my hand.

CHARLES H. NORTON.

Witnesses:
JOSEPH A. MILLER, Jr.,
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