

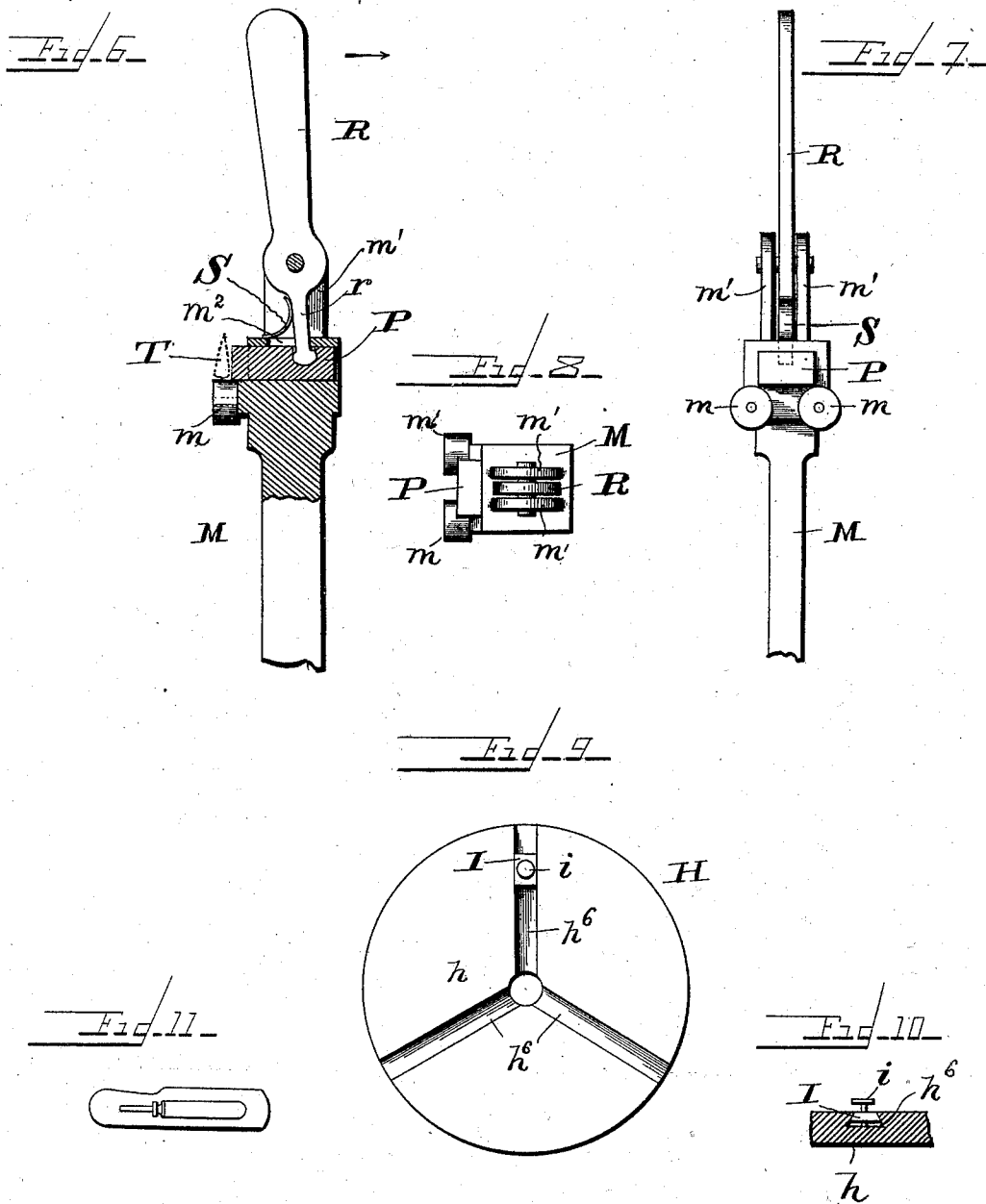
(No Model.)

2 Sheets—Sheet 2.

T. SHAW.
GRINDING MACHINE.

No. 505,178.

Patented Sept. 19, 1893.



WITNESSES:

E. A. Tauberschmidt,
J. H. Kuigebury.

Thomas Shaw INVENTOR

BY *Whitaker & Provost* ATTORNEYS.

UNITED STATES PATENT OFFICE.

THOMAS SHAW, OF NEWARK, NEW JERSEY.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 505,178, dated September 19, 1893.

Application filed July 22, 1891. Serial No. 400,361. (No model.)

To all whom it may concern:

Be it known that I, THOMAS SHAW, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Grinding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in grinding machines and consists in the novel features of construction and combination of parts hereinafter fully described.

In the accompanying drawings I have shown one form in which I have contemplated embodying my invention and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 is an elevation of my improved grinding machine. Fig. 2 is a sectional view of the holder for the emery ring or cylinder. Fig. 3 is a similar view showing the emery ring in position in the holder and illustrating the adjusting devices for said ring. Fig. 4 is a section of a modification of the emery ring holder. Fig. 5 is a view of another form of emery ring holder. Fig. 6 is a sectional view of the holder for the article to be ground. Fig. 7 is a front view of the same. Fig. 8 is a top view of said holder. Fig. 9 is a rear view of one of the emery ring holders. Fig. 10 is a detail sectional view of part of the same. Fig. 11 represents a device for holding knife blades in position to be ground by the emery ring.

In the said drawings A is the bed plate of my machine to which are secured the vertically disposed pillars B, C, D and E, each of which is provided at its upper extremity with a journal box or bearing *b, c, d, e* respectively. A longitudinally extending shaft F is mounted in said journal bearings and provided with a band pulley G or other means for imparting rotary motion thereto.

Upon the shaft F are secured the emery ring holders H, H, which are constructed to receive and hold rings or cylinders of emery so that the same shall be revolved with the shaft, and I provide means for adjusting said

emery rings or cylinders with respect to their holders so that they may be fed forward as the wearing edge or grinding edge becomes worn.

The construction of the emery ring holder and means for adjusting the emery ring is clearly shown in Figs. 2 and 3. The holder H consists of a circular disk *h* provided with a peripheral flange *h'*, and a central sleeve or collar *h²* which engages the shaft F and is secured to revolve therewith by any preferred means, such as a set screw *h³* as shown. The peripheral flange *h'* of the holder is provided with a series of screw holes to receive the securing screws 4 which extend through said holes and engage the emery ring H' when in operative engagement with said holder. The disk *h* is provided with adjusting screws *h⁴* which pass through said disk and engage the rear face of the emery ring. By turning up these adjusting screws the emery ring can be adjusted with respect to said holder so that it may project therefrom the desired distance as indicated in Fig. 3. The screws 4 will then be tightened upon the emery ring and secure it rigidly in its adjusted position. The emery ring normally extends but a short distance beyond the holder H and when its wearing surface becomes worn away the screws 4 may be loosened and the emery ring adjusted to compensate for such wear and again secured in its adjusted position.

It is obvious that other means may be provided for advancing the emery ring to compensate for the wear of its grinding surface.

In Fig. 4 I have shown a modified form of emery ring holder H³ in which for the set screws *h⁴* is substituted the follower *h⁵* which is threaded and screwed on the central collar *h²* of the ring holder. This follower may be screwed upon the collar *h²* so as to force the emery ring out of the ring holder and expose an additional part of the emery ring.

In Fig. 5, I have shown still another form of holder H⁴ in which the peripheral flange *h'* is divided into a series of yielding fingers *h^x* having their outer extremities beveled as shown and provided with screw threads. The emery ring is placed in engagement with said fingers and adjusted so as to expose the de-

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sired amount and a contracting ring H^2 is screwed upon said yielding fingers forcing them to grip the emery ring and hold it rigidly in its adjusted position. When the emery ring has been placed in engagement with the holder, adjusted and secured to revolve with said holder, it may be found that by reason of variations in the density of said emery ring some portions thereof may be heavier than other portions causing the holder and ring to revolve unevenly. In order to accurately balance the wheel or holder and secure smooth and even running, I provide detachable weights which may be placed in engagement with the holder and adjusted to such positions as to compensate for any inequalities in the formation of the emery ring. To this end I provide the rear face of the disk h of the holder with a dove-tailed groove or grooves as shown in the drawings, see particularly Figs. 9 and 10. I prefer to provide said disk with a series of grooves extending radially from the center as shown in Fig. 9, and I provide a number of detachable weights I of the same width as the grooves h^6 , the said weights being provided with setscrews i . One or more of these weights I , may be inserted at the peripheral ends of the grooves and adjusted to the required distance from the center and there secured by means of the set screws i as indicated in Fig. 10 so as to compensate for the inequalities in the emery ring. By the use of these detachable weights when necessary the smooth and even running of the emery ring can be insured.

I also provide devices for holding the article to be ground in position adjacent to the emery ring and for advancing the said article against the grinding surface of the ring. These grinding rests or holders consist each of a pillar M extending upwardly from the base plate A and having its upper end adjacent to the grinding surface of the emery ring or cylinder and in substantially the horizontal plane of the center of revolution, of said ring as shown in the drawings. The pillars M are preferably detachably secured to the base plate A in order that they may be removed if necessary to facilitate the substitution of a new emery ring for one that has become worn or to render the operation of adjusting said ring with respect to said holder more convenient. The pillars B and E which support journal bearings for the shaft F are also removable from the base plate A to facilitate the removal of the holders H from said shaft. The upper extremities of pillars M are each provided with a pair of supporting rolls m having their journals in the same horizontal plane and each of said pillars is also provided with a slide P capable of moving transversely of said pillar in suitable guides toward and from the grinding surface of the emery ring.

In the drawings, I have shown the head of

the pillar M provided with a rectangular recess or aperture in which the slide P is mounted and the lower edge of slide P will be in substantially the same plane as the upper surfaces as the supporting rolls m . I also provide means for moving the said slide P which consists in this instance of a pivoted lever R mounted in ears m' extending upwardly from the top of pillar M , the said lever R having an operative portion r extending through a slot m^2 in the upper end of the pillar M and engaging a recess in the slide P as clearly shown in Figs. 1, 6 and 7. A spring S engages the operative arm r of lever R and holds said lever in such position normally that the slide P will be in its most retracted position in respect to the emery ring. It will be seen that if a knife or other article be placed upon the supporting rolls m in engagement with the slide P , by moving the lever R in the direction indicated by the arrow in Fig. 6, the knife or other article, indicated in dotted lines at T , see Fig. 6, will be pressed into engagement with the grinding surface of the emery ring with greater or less pressure according to the force exerted upon the lever R . The holder H and emery ring will preferably be revolved toward the operator and the friction upon the emery ring of the article being ground will tend to hold the article down firmly upon the supporting rolls of the grinding rest.

The operation of my improved grinding machine is as follows: The emery ring being adjusted in the holder H the article to be ground is placed upon the supporting rolls and the lever R is operated in such a manner that the slide P will push or press the article into engagement with the emery ring and hold it while being ground. The article will be reciprocated toward and from the operator upon the supporting rolls m and by this means the entire surface may be evenly, accurately and effectively ground. When an article composed of very thin material is to be ground, I have found it desirable and advantageous to employ a thick metallic holder or backing for such article as indicated in Fig. 11, but as this holder forms the subject matter of another application filed by me July 22, 1891, Serial No. 400,362, it will not be herein particularly described or claimed.

The revoluble holder for the emery ring herein shown and described forms the subject matter of another application filed by me on the 21st day of March, 1892, and given Serial No. 425,790, and will not be specifically claimed herein.

What I claim, and desire to secure by Letters Patent, is—

1. In a grinding machine the combination with the grinding device, of a grinding rest provided with friction rolls for engaging and supporting the article to be ground, and the slide for moving the article to be ground upon

said rolls longitudinally of their axes, substantially as described.

2. In a grinding machine the combination
5 with the grinding device, of a grinding rest
provided with supporting rolls for supporting
the article to be ground, the slide, the pivoted
lever having an operative portion engaging
said slide and a retracting spring for said le-

ver and slide, the main body of said slide
being above the plane of the upper surfaces 10
of said supporting rolls, substantially as de-
scribed.

THOS. SHAW.

Witnesses:

CHARLES E. FOSTER,
JAMES H. SHAW.