(No Model.)

W. H. RANKIN.

CARD GRINDING MECHANISM.

No. 301,922. Patented July 15, 1884.

Fig. 1.

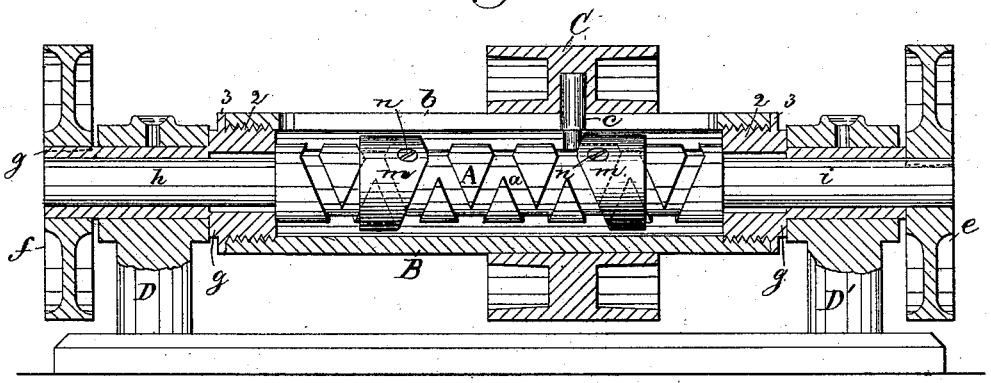

Fig. 2.

Witnesses.
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CARD-GRINDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 301,922, dated July 15, 1884.

Application filed April 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. RANKIN, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Card-Grinding Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is an improvement on that class of grinding mechanism containing a grinding-wheel provided with a pin extended into a slotted sleeve, and engaging the thread of a shaft having a double screw-thread for sharpening card-cylinders and doffers, the said sleeve and screw being each rotated positively and independently, the screw effecting the longitudinal movement of the wheel on the slotted sleeve.

In this class of machine as heretofore constructed the sleeve surrounding the screw and carrying the grinding-wheel has had at one end a disk-like head having a central opening for the passage of one of the journals of the screw, and the same head has taken its bearing directly upon the said journal, but, owing to the independent rotations of both screw and sleeve, the said head, which forms the bearing for that end of the sleeve, soon wears the journal of the screw, and in a short time renders the screw useless. Besides, as soon as the journal becomes partially worn, the sleeve carrying the grinding-wheel begins to "chuck" or vibrate at the worn end of said screw, thereby rendering unsteady the movement of the grinding-wheel, and making it difficult to properly sharpen the article being ground—a card-cylinder or other device. As the screw having the double thread—*i. e.*, the right and left thread—is a very expensive portion of the grinding mechanism, and so, by reason of the wear at a particular part of one journal of the screw, (which wear soon renders the latter useless at a time when the balance of said screw and other portions of the mechanism show but little wear,) it is highly desirable to provide against such wear of the journal of the screw, and thereby avoid the "chucking" or vibration of the sleeve and the expense of a new screw.

The object of my invention is to overcome the evils referred to, and to provide an effective working and simple grinding mechanism, in which the wear to which it is subjected will be general, and will not be more appreciable at any particular point, whereby the life of the machine, as a whole, is greatly lengthened.

The nature of my invention is fully set forth in the following description, and is particularly pointed out in the claims.

Figure 1 of the drawings represents in longitudinal vertical section a grinding mechanism containing my improvements, it being adapted, among other things, to grind a card-cylinder. Fig. 2 shows one of the stopping-shoulders removed from the screw.

The screw A, provided with the double threads *a*, has journals *h i*, one at each end. The surrounding sleeve B is slotted at *b*, to receive the pin *c* of the grinding-wheel C, which pin *c*, entering the threads *a*, insures for the grinding-wheel a reciprocating end or lateral movement.

The letter of reference *e* represents the screw-driving pulley, and *f* the sleeve-driving pulley. In the present instance the ends of the sleeve have internal screw-threads, to receive screw-threaded heads 2 of the hollow sleeve-journals *g*, the annular shoulders 3 thereon limiting the movement of the heads into said sleeve. The central hole in each head 2 is of greater diameter than the journals *i* and *h* of the screw A, so that the said journals do not take bearing in the said heads, but are supported by the sleeve-journals *g*, having their bearings in the supports or standards D D′, one of said journals *g* terminating at the outer end of one of the standards, as at D′, while the other journal extends beyond the other standard, D, and receives the sleeve-driving pulley *f*, as clearly shown. The journals *h i* of the screw A have bearings in the hollow sleeve-journals *g*. The screw-journal *i* extends beyond its bearings and receives the pulley *e*, through which rotary motion is imparted to the screw. By this construction of parts it will be seen that not only is the screw provided with extended bearings, whereby the wear will be extremely slow and gradual, but that the sleeve, also, is provided with broad ample bearings, by which steadiness and regularity of motion are attained and continued through long use of the machine.

In some classes of work it is desirable to

limit the lateral reciprocations of the grinding-wheel upon the sleeve B, and to do this effectually I have provided the screw with stopping devices *m*—shown as collars removably attached thereto by screws *n*, the inner ends of the said collars being beveled or inclined to correspond substantially with the pitch of the screw, the object of the said stopping devices being to form a stop or abutment in the channel of the said screw, in which the pin *c* travels, so as to arrest the said pin sooner or later and quickly direct it into the return portion of the said groove. The nearer the said stopping devices are to each other, the shorter the traverse of the grinding-wheel.

I claim—

1. The grinding-wheel provided with a pin, the slotted sleeve provided with hollow journals and bearings therefor, combined with the double-threaded screw having journals entered into the said hollow sleeve-journals, stopping devices detachably connected with the double-threaded screw to arrest the pin of the grinding-wheel at any desired portion of the length of the screw and divert it and said grinding-wheel in the opposite direction on the sleeve, and with means for rotating the screw and sleeve, substantially as set forth.

2. The grinding-wheel provided with a pin, the slotted sleeve, and sleeve-journals having heads provided with openings of greater diameter than the screw-journals extended through them, combined with the screw provided with journals supported in the sleeve-journals, and with bearings for the sleeve-journals, and means for rotating the sleeve and screw, substantially as set forth.

3. The grinding-wheel provided with a pin, the slotted sleeve, sleeve-journals having heads provided with openings of greater diameter than the screw-journals extended through them, combined with the screw provided with removable stopping devices, substantially as described, to arrest the said pin and control the extent of lateral movement or reciprocation of the grinding-wheel, and with means to rotate the said sleeve, substantially as set forth.

4. The double-threaded screw, the surrounding slotted sleeve, wheel C, and pin *c*, combined with detachable stopping devices to arrest the pin *c* at any desired portion of the length of the screw and divert it and the wheel C in the opposite direction on the sleeve, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. H. RANKIN.

Witnesses:
G. W. GREGORY,
JOS. P. LIVERMORE.