

UNITED STATES PATENT OFFICE.

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SHARPENER OR DRESSER FOR MILL-RUNNERS.

SPECIFICATION forming part of Letters Patent No. 712,909, dated November 4, 1902.

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To all whom it may concern:

Be it known that I, LEVI DAVID COLLEY, a citizen of the United States, residing at Muncy, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Sharpeners or Dressers for Mill-Runners; 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.

This invention relates to means for dressing or sharpening the faces of the runners of attrition or grinding mills; and it consists, substantially, in the improvements hereinafter more particularly described, and pointed out in the claims.

The primary object of the invention is to provide a portable device or means adapted to be inserted between the faces of the runners of grinding-mills whereby such faces may be properly dressed or prepared without removing the runners for that purpose and also without suspending the grinding operations of the mill for any longer period of time than is absolutely required for effecting such dressing.

A further object is to provide a device or means for the purpose described which may be operated against or upon the faces of the runners or grinding-stones of mills with the least possible exertion or expenditure of labor on the part of the operator.

A still further object of the invention is to provide a device or means of this kind which is easily handled and quickly and readily applied to its operative position between the runners or stones and again removed therefrom and also to provide an exceedingly cheap and simple device or means whereby the faces of such runners or stones may be dressed or prepared for the grinding operations in the most accurate and effective manner.

The above and additional objects I attain by means substantially such as are illustrated in the accompanying drawings, in which—

Figure 1 is a view in perspective of an ordinary attrition or grinding mill having my improved sharpening device or means ap-

plied thereto. Fig. 2 is a sectional top plan view of the two runners or grinding stones or disks and representing more clearly the manner in which my improved device or means is inserted and operated between the faces of such runners for the purpose of effecting the dressing or sharpening thereof. Fig. 3 is a side view of my improved sharpening device or means, and Fig. 4 is a longitudinal sectional view thereof to better indicate the construction.

Before proceeding with a more detailed description it may be stated that my improved sharpening device or means is applicable alike to the runners or grinding stones or disks of either the vertical or horizontal type of attrition or grinding mills, and said device or means comprises but few elements, principal among which are the dresser or sharpener proper and the means for operating the same back and forth over the faces of the runners from center to periphery thereof. The said device or means is preferably first inserted between the faces of the runners after properly moving one or both of the latter outwardly and subsequently adjusting the same by which to enable the device or means to be temporarily fastened in place, whereupon the said dresser or sharpener is manipulated simultaneously with the rotation of either one or both of the said runners. I preferably employ a dresser or sharpener proper which is capable of a reciprocating rubbing action over the faces of the runners; but in some instances I may employ a stationary dresser or sharpener and depend alone upon the motion of the runners for effecting the dressing or sharpening operation. My improved device or means is also applicable to attrition or grinding mills in which either one or both of the runners are movable or rotatable, and the dresser or sharpener proper *per se* consists, preferably, of an emery block or tool, although it is evident that other forms of blocks or tools may be employed. Preferably, also, my improved device or means is constructed to effect the dressing or sharpening of the faces of both runners simultaneously, although it is evident, of course, that the same can be

adapted to dress but one of the faces at a time, if so desired. The faces of the runners may be formed by the opposing surfaces of the runners themselves, or they may be constituted or formed of suitable plates or disks 5 fastened to or mounted upon runner-heads, which are mounted in a shell or casing therefor, and to which heads the necessary rotary motion is imparted for effecting the grinding 10 of the substances or materials operated upon. In effecting the dressing or sharpening of the faces of the runners or disks the dresser or sharpener proper of my improved device or means may be reciprocated or moved back 15 and forth across such faces, and at points of the faces where an increased amount of dressing or sharpening is necessary the said dresser or sharpener may be held stationary for any desired length of time, or, as above 20 stated, the dresser or sharpener may be a constant relatively stationary element in some instances. My improved device or means is also applicable alike to attrition or grinding mills in which either one or both of the runners or runner-heads are adjustable toward 25 and away from each other, and, in fact, the same is applicable to most any of the ordinary forms of grinding-mills at present in use.

Specific reference being had to the accompanying drawings, A represents as a whole 30 an ordinary form of attrition or grinding mill, preferably, though not essentially, of the type or form in which the runners or grinding stones or disks are arranged to operate or rotate in a vertical plane. This said 35 mill will only be described in part sufficient for an understanding of the working or operation of my improved device in connection therewith, since it is unnecessary to enter into 40 a detailed explanation thereof.

B represents the base of the mill, having an opening C therein, and D D' represent frames or bed-plates upon which are mounted 45 the shells or casings E E', respectively, in which latter are housed the runners or stones between the faces of which the grinding of materials or substances is effected. The said "faces" may be constituted by the inner surfaces of the runners themselves; but as here- 50 in shown they are each constructed of plates or disks a, having radially-ribbed or other suitably-formed abrading or grinding surfaces b, each plate or disk being secured in any suitable manner to a block or runner-head F. As herein shown, each of said "run- 55 ners" is provided with means for rotating the same; but in some instances but one of them may be so provided, and also, as herein shown, the said frame or bed-plate D is adjustable 60 lengthwise of the base A, by which to enable the runners to be separated for the insertion between them of my improved sharpening device or means G, presently to be specifically described. As shown in Fig. 1, the said de- 65 vice or means G is in the position it occupies when operated to effect the dressing or grinding of the faces of the runners, and it will be

understood that after the completion of such operation the shell E and its contained runner are again moved up into proper position 70 with respect to the shell or casing E' and its runner. Each of said shells or casings is formed or provided at suitable diametric points with perforated lugs or ears c for the reception of fastening-bolts (not shown) for 75 securing the said shells together. If desired, the frame or base-plate D', together with its shell or casing E', may also be adjustable in like manner. The said shells or casings are of course stationary, while the runners or 80 runner-heads are rotatable, either one or both, as already explained.

My improved device or means for dressing or sharpening the faces of the runners comprises, essentially, a suitable frame or plate 85 M, substantially of the form shown in Figs. 3 and 4, said frame having a longitudinal opening or slot N therein the longer sides or edges d d of which constitute guides for a longitudinally-reciprocatory traveler M', which 90 is operated by any suitable means and preferably by hand. Said traveler may be of any preferred form or material, as may also the frame or plate M, and preferably the traveler is formed with a body portion e, fitting be- 95 tween said edges d d of the slot N and having side pieces f f overlapping the sides of frame or plate M, one or both of said side pieces being removable or detachable and secured to the body portion by means of 100 bolts g or other suitable fastenings, as shown. The said body portion e of the said traveler M' is provided centrally with a longitudinal screw-threaded opening h, in which works the threaded portion of a rotatable screw rod or 105 shaft N', the said rod turning loosely in an opening i in the end piece K of the frame M and having thereon a nut or shoulder l for preventing endwise movement thereof. The said rod is provided at its lower end with an 110 operating hand-wheel m, having crank n, and it is evident that by turning the rod first in one direction and then in the other the said traveler will be caused to move back and forth between the guides therefor. Each of 115 the outer faces of the traveler or side pieces f f thereof is formed or provided with a block o, of emery or other abrading or grinding material, by the rubbing action of which the dressing or sharpening of the faces of the 120 runners is effected. Said blocks may be inserted and held in place in any suitable way, so as to be removed and replaced by others when finally worn or rendered unfit for further use. The said frame M is preferably tapered or of decreased width at its insertible 125 portion, as shown at s, and in order to secure the entire device in operative position between the runners of the mill suitable blocks u are employed at or near one end of the 130 frame, on one side thereof, while a similar block v is employed at or near the other end of said frame. Thus, as shown in Figs. 1 and 2, my improved dressing or sharpening device

is arranged or held in position between the faces of the runners by means of a bolt or pin *x*, passing through one of the perforated lugs or ears *c* on shell *E'* and entering one of the said blocks *u*, another bolt or pin *y* being passed in like manner through another one of the said lugs or ears *c* and entering the block *v* at the other end of the frame, and, if desired, a similar bolt may be used for the remaining block *u* also. Said attaching-blocks *u* and *v* also serve as distance-pieces for centralizing the entire device between the runners to enable the desired action to be obtained in the sharpening or dressing operation, and it may be here stated that the outer surfaces or faces of the emery or equivalent blocks *o o* should preferably project beyond the outer surfaces of the said attaching-blocks, so as to effectually operate upon the runner-faces. My improved dressing device or means being secured in place in the manner shown and described, the hand-wheel *m* is operated or turned in one direction or the other by means of crank *n*, whereupon the screw rod or shaft *N'* is correspondingly operated and the traveler or dresser proper is also caused to move in an obvious manner. By proper manipulation of said screw rod or shaft the said traveler or dresser proper may be manipulated or moved back and forth, and whenever desired the traveler may be allowed to remain stationary. During the time the device is being operated or manipulated either one or both of the runners are also rotated, preferably at full speed, and the effectiveness of the operation will be apparent.

It will be understood that I am not limited to the particular construction and arrangement of the devices or means herein shown for operating the dresser or sharpener proper, nor to the particular construction of the supporting-frame and guide therefor, nor to the specific embodiment of devices or means for securing or attaching the structure in place between the faces of the runners or grinding-stones of the mill, since all of these may be altered in immaterial degree and still be within the scope of my invention. It will be further understood that my improved dressing or sharpening device is equally applicable to that type of grinding-mills in which the faces of the runners or stones are arranged to operate either in a horizontal plane or in a plane at any angle intermediate a vertical and a horizontal.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A device or means for the purpose herein described, comprising a frame or plate provided with a sharpening or dressing tool, and means at or near each end of said frame for securing the device rigidly in place between the runners of an attrition-mill, and hand-operated means for moving said tool forward and back between the grinding-surfaces of said runners, substantially as described.

2. A device or means for the purpose herein described, comprising a frame or plate provided with a sharpening or dressing tool, and means for securing the frame between the runners of an attrition-mill, said means consisting of spacing-blocks and bolts, and hand-operated means for moving said tool forward and back between the grinding-surfaces of said runners, substantially as described.

3. A device or means for the purpose herein described, comprising a frame or plate provided with a dressing tool or implement adapted to be moved upon the frame, means for moving said tool back and forth longitudinally of said frame and holding it in different positions, and means at or near each end of the frame for securing the device rigidly in place between the runners of an attrition-mill, substantially as described.

4. A device or means for the purpose herein described, comprising a frame or plate provided with a dressing tool or implement, adjustable longitudinally thereof, means for imparting a reciprocatory motion to said tool and for holding it in a fixed position between confronting grinding-surfaces, and means at or near the ends of the frame for securing the device rigidly in place between the runners of an attrition-mill, substantially as described.

5. A device or means for the purpose herein described, comprising a frame or plate provided with a movable dressing tool or implement, a hand-operated device having a traveling connection with said tool for reciprocating the latter along the frame, and means at or near the ends of the frame for securing the device rigidly in place between the runners of an attrition-mill, substantially as described.

6. A device for dressing or sharpening millstones, comprising a frame or plate of length equal to or exceeding the diameter of the stones to be dressed, said plate having a longitudinal slot or opening therein, a movable dressing-tool working in said opening, a hand-operated device having a traveling connection with said tool for reciprocating the latter at will, or holding it in a fixed position between confronting moving grinding-surfaces, and means at or near each end of the frame for securing the device rigidly in place between a pair of millstones, substantially as described.

7. A device or means for dressing or sharpening millstones, comprising a frame or plate of length equal to or exceeding the diameter of the stones to be dressed, said plate having a longitudinal slot or opening therein, a movable dressing-tool guided in said slot and having a threaded opening, a screw rod or shaft working in said opening and supported in a bearing formed at one end of said slot, hand-operated means for rotating said screw-rod and thereby reciprocating said tool, and means at or near each end of the frame for securing the device rigidly in place between a pair of millstones, substantially as specified.

8. A device or means for the purpose herein

described, comprising a frame or plate having a longitudinal slot therein and means for securing the same in a fixed position between the grinding-surfaces of a pair of millstones, 5 a traveler guided in said slot and provided at opposite sides with removable or detachable emery blocks or tools, and hand-controlled means for operating said traveler to impart forward-and-backward movement thereto, as 10 set forth.

9. A device or means for the purpose herein described, comprising a frame or plate adapted for attachment between the runners of an attrition-mill and having a longitudinal slot 15 therein, a traveler guided in said slot having a threaded opening and provided at opposite sides with removable or detachable emery blocks or tools, and a hand-operated screw rod or shaft working in said opening for reciprocating the traveler, as set forth. 20

10. A sharpener or dresser for millstones comprising an oblong frame or plate having a longitudinal slot or opening therein and means for securing the same between confronting grinding-surfaces, said frame or plate 25 having a reciprocating tool working in said slot, and means for reciprocating said tool while said frame remains fixed between said grinding-surfaces; substantially as described.

30 11. The combination in an attrition or grinding mill comprising rotatable runners each provided with a grinding-face, of inclosing shells for said runners each having lugs or ears, a frame or plate provided at or near

each end with blocks or projections, and 35 means for fastening said blocks to said lugs or ears detachably, said frame being provided with a dressing tool or implement adapted to be moved across the faces of the runners, as and for the purpose set forth. 40

12. The combination with an attrition or grinding mill comprising vertically-rotatable runners each provided with a grinding-face, and an inclosing shell for each runner, of a reciprocatory dressing tool or device having 45 means for centralizing the same between said runners, and means entering portions of said shells for detachably supporting said device in place, substantially as described.

13. The combination with an attrition or 50 grinding mill comprising vertically-rotatable runners each provided with a grinding-face, of a frame and a dressing tool or implement supported thereby, blocks for centralizing the frame between said runners, bolts passing 55 through the blocks and entering the shells of the runners for supporting the entire contrivance between the runners, and a hand-operated device for reciprocating said tool or implement across said grinding-faces, substan- 60 tially as described.

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

LEVI DAVID COLLEY.

Witnesses:

E. CLYDE BROBST,
FRED M. SPROUT.