J. L. SARGENT.

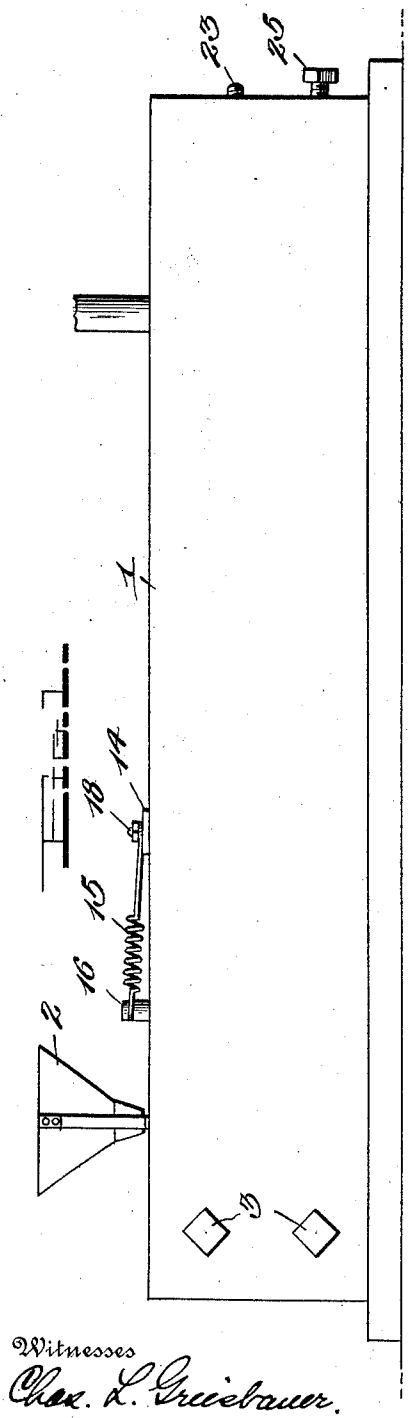
CRUSHER OR GRINDER.

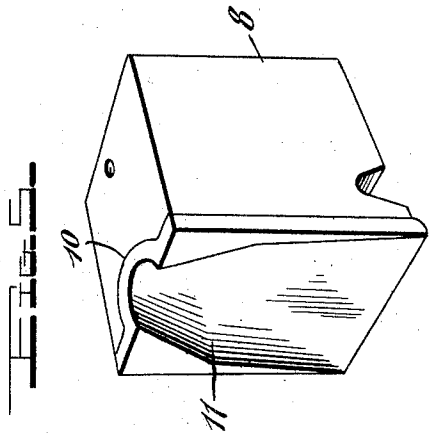
APPLICATION FILED MAR. 2, 1912.

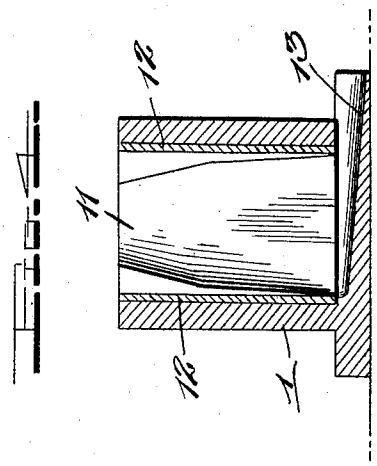
1,044,255.

Patented Nov. 12, 1912.

2 SHEETS—SHEET 1.







Witnesses

Chas. L. Griebauer.

A. B. Norton.

Inventor

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By Watson E. Coleman

Attorney

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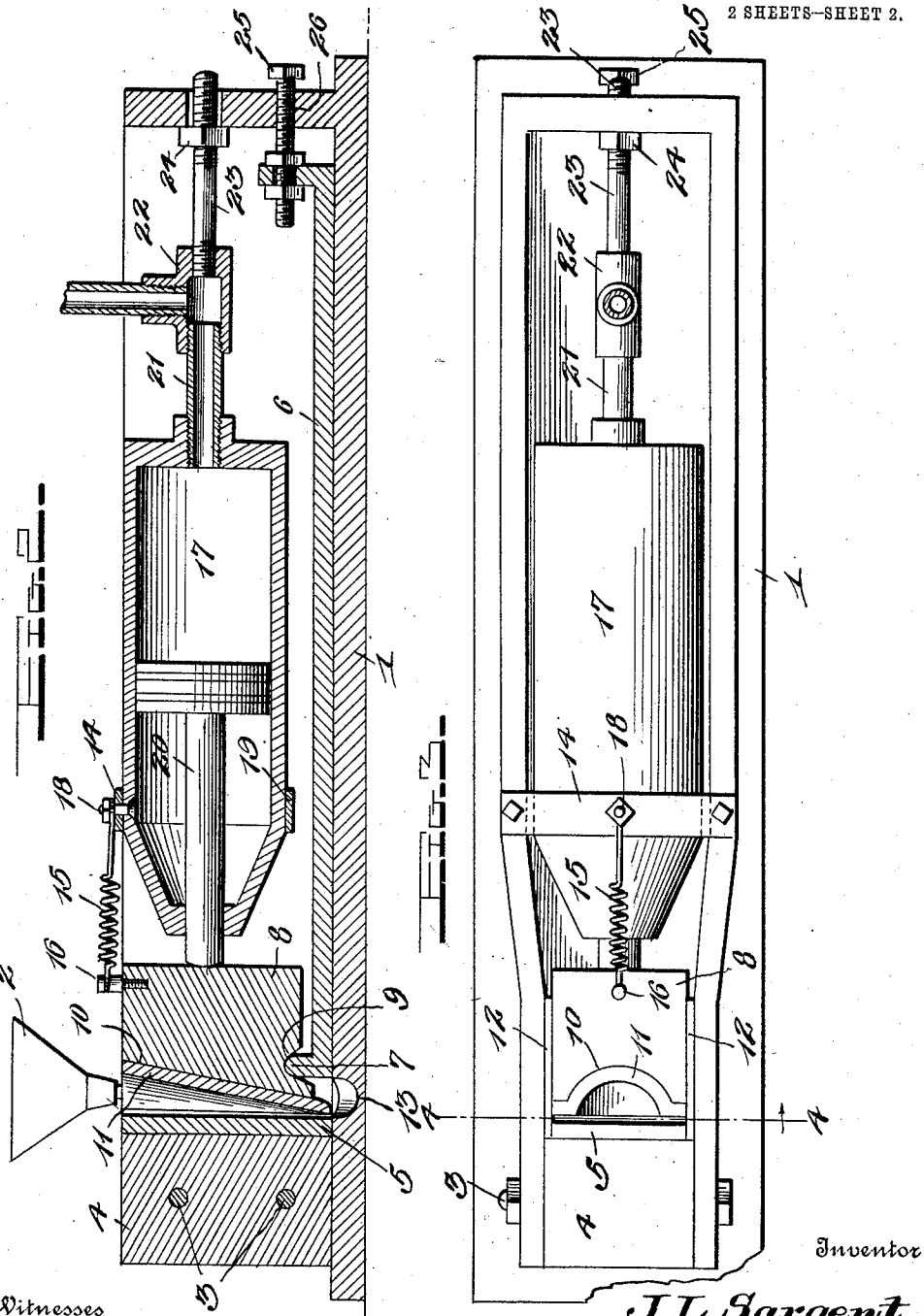

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UNITED STATES PATENT OFFICE.

JOHN L. SARGENT, OF INDIANOLA, NEBRASKA.

CRUSHER OR GRINDER.

1,044,255. Specification of Letters Patent. Patented Nov. 12, 1912.

Application filed March 2, 1912. Serial No. 681,098.

To all whom it may concern:

Be it known that I, JOHN L. SARGENT, a citizen of the United States, residing at Indianola, in the county of Redwillow and State of Nebraska, have invented certain new and useful Improvements in Crushers or Grinders, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to new and useful improvements in crushers and grinders, and my object is to provide a device of this character which is portable and which is adapted to perform the same functions as a stamping mill in places where such mills are found to be too expensive to install.

A further object of the invention resides in providing an improved means for grinding the products, and a still further object resides in providing an oscillating grinding block which is so designed as to thoroughly crush all products disposed between the same and the stationary grinding block.

Still another object of the invention resides in providing means for adjusting the fulcrum point of the oscillating grinding block with respect to the stationary block, and a further object resides in the provision of adjustable means for engagement with the oscillating grinding block for the operation of the same.

A still further object of the invention resides in providing a device which is extremely simple in construction, comparatively inexpensive to manufacture and one which will be very efficient and useful in operation.

With these and other objects in view, the invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings forming a part of this application, Figure 1 is a side elevation of the device; Fig. 2 is a vertical longitudinal section therethrough; Fig. 3 is a top plan view of the same. Fig. 4 is a transverse section through the device as seen on line 4—4 of Fig. 3; and Fig. 5 is a perspective view of the oscillating grinding block removed.

In carrying out my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views, and in which 1 indicates a main frame supported in the usual or any suitable manner above which is mounted a hopper 2 into which various products adapted to be crushed are disposed. This main frame is of elongated type and secured in one end thereof by means of the bolts 3 is a stationary grinding block 4, the effective face of which has removably secured thereto a metallic face plate 5 and adjustably mounted on the base of the frame 1 is an elongated plate 6, the one end of which has the upwardly extending flange 7 formed thereon, the purpose of which will be hereinafter and more particularly described.

An additional grinding block 8 is provided, the bottom face of which has a substantially semi-circular groove 9 formed therein, which receives the upwardly extending flange portion 7 of the plate 6, said latter flange forming a substantial fulcrum point upon which said grinding block 8 may oscillate. This block 8 is disposed in the frame 1 adjacent the effective face of the grinding block 4 so that a slight space remains therebetween into which products from the hopper 2 may be disposed and the effective face of the oscillating grinding block 8 is grooved as shown at 10, the groove therein flaring outwardly and tapering toward the lower edge of the block so as to form a substantial flat face at that point. An additional metallic face plate 11 is removably secured to the effective grooved face of the block 8, said plate 11 being designed coincident to the outline of the front face of said block, and in order to prevent undue wear on the side faces of the frame and block 8, the wear plates 12 are mounted on the inner faces of the side walls of said frame.

By so oscillatingly mounting the block 8 upon the flange or fulcrum point 7, it will be seen that the upper portion of the block will have a backward and forward movement, while the lower portion thereof will have an upward and downward movement upon the oscillation of the same, thereby giving a thorough grinding motion to the block. The up and down motion to the lower portion of the block 8 increases the grinding capacity, at the same time increasing the discharge of the products after being ground, which discharge may be made to a conveyer or the like (not shown) through the medium of the chute 13 formed in the base of the frame 1.

A cross bar 14 secured to the upper edges of the sides of the frame 1, a slight distance in the rear of the block 8 has secured thereto, one end of a coil spring 15, the opposite end of said spring being engaged with a stem or stud 16 carried in the upper face of said block 8, whereby said block 8 may be normally held in its ineffective position. Any preferred means for intermittently forcing said block 8 to its effective position may be provided, but I have shown a particular means which comprises an air hammer 17, which is suspended from the central portion of said cross bar 4 by means of a bolt 18 which engages a ring or band 19 encircling the forward portion of said hammer. This bolt 18 which extends through the cross bar has its free end engaged by a nut, whereby the hammer proper may be adjusted vertically of the main frame, and the forward end of the hammer has slidably mounted therein a tappet 20 which is adapted to contact with the upper central portion of the rear face of said grinding block 8. Extending into the rear end of the hammer 17, is a pipe 21, the outer end of which is engaged with a union 22, said union in turn connecting with an additional pipe which extends to any source of power, and a bolt 23 has one end thereof also engaged with said union 22, the opposite end of which extends through an opening in the rear wall of the main frame 1. A nut 24 is engaged with the bolt 23 and is adapted to contact with the inner face of the rear wall of said main frame to limit the movement of said hammer with respect to the main frame, which will at the same time permit the adjustment of said hammer longitudinally of said frame. Thus as air or any other means of power is introduced in the hammer proper 17, the tappet 20 will be forced forwardly to correspondingly force the grinding block 8 toward the grinding block 4, thereby crushing and grinding the products therebetween and upon the release of the force upon the tappet 20, the spring 15 will withdraw the block 8 in its position, simultaneously drawing the tappet 20 to its initial position.

The bolt 18 from which the hammer 17 is suspended, is, as stated, adjustably mounted in the cross bar 14, thereby permitting the forward or effective end of the hammer 17 to be adjusted vertically to act upon the grinding block 8 accordingly and, as stated, said hammer is adjustable longitudinally of the frame in view of the adjustability of the plate 6 carrying the fulcrum point for the grinding block 8. This adjustability of the block 8 is accomplished by providing a bolt 25 which is in engagement with the rear end of the plate 6 and extends through a threaded opening 26 in the rear wall of the frame 1. The head of the bolt 25 which projects beyond the rear wall permits of ready operation of the bolt whereby it will be seen that the plate may be adjusted longitudinally of the frame and correspondingly dispose the fulcrum point 7 nearer to or farther from the stationary block 4.

In practice, products, either ore or grain, are placed in the hopper 2 and allowed to pass to the space between the grinding blocks 4 and 8, which space is increased or decreased, accordingly, as the operator sees fit through the medium of the adjusting bolt 25. The means of power is then set in operation which will supply intermittent force to the tappet 20, thereby giving an intermittent oscillation to the block 8, it being understood that the spring 15 causes the return of said block to its initial position after being forced forwardly. The backward and forward movement of the upper portion of the block 8 and the up and down movement given to the lower portion thereof through the particular fulcruming of the same will thoroughly crush and grind the products disposed between the two blocks. It has been stated that the hammer is adjustable vertically, but this adjustment is quite slight in view of the fact that the main idea of the invention is to strike the grinding block at the upper central portion thereof so that the blows act as a lever in crushing all products below the plane of the hammer and through this particular construction, it will be seen that a great saving of power is had over the ordinary lever construction which strikes in the center of the block and has no fulcrum point. As the products are ground the same pass to the chute 13 from where they may be conveyed to any desired place whatsoever.

This device may be either used for crushing ore or grain, it being understood that, of course, certain changes will be necessary as regards the grinding blocks in the use of this device for the two different purposes, and it will also be understood that while I have particularly shown an air hammer, that any desired form or intermittent power means may be provided for oscillating the grinding blocks.

From the foregoing it will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention and while I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described this invention, what is claimed is:—

1. In a crushing machine, a movable jaw comprising a body, the effective face of

which is grooved vertically, said groove flaring outwardly and tapering toward the lower end thereof to form a substantial flat face at that point.

2. In a machine of the class described, a movable crushing jaw comprising a body, the effective face of which is provided with a vertical groove, said groove flaring outwardly and tapering toward its lower end to form a substantial flat face on the body at that point, said body being also provided with a transverse channel in the bottom thereof adapted to receive a fulcrum point.

3. In a crushing machine, a frame, a stationary jaw mounted therewithin, a movable jaw, the effective face of which is grooved vertically, said groove flaring outwardly and tapering toward its lower end to form a substantial flat face at that point, means to oscillatingly mount said movable jaw in the frame, and means for the actuation of said movable jaw within the frame.

4. In a crushing machine, a suitable frame, a stationary jaw mounted therewithin, a plate adjustably mounted in the base of said frame, a movable jaw provided with a channel in the bottom thereof to receive an extension of said plate therein, said movable jaw having the effective face thereof grooved vertically, said groove flared and tapered outwardly toward its lower end to form a substantial flat face for the body at that point, and means to oscillate said movable jaw on its fulcrum point.

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

JOHN L. SARGENT.

Witnesses:
J. C. PUCKETT,
W. A. REYNOLDS.

Correction in Letters Patent No. 1,044,255.

It is hereby certified that Letters Patent No. 1,044,255, granted November 12, 1912, upon the application of John L. Sargent, of Indianola, Nebraska, for an improvement in "Crushers or Grinders," were erroneously issued to the inventor, said Sargent, whereas said Letters Patent should have been issued to *Rankin Quartz Mill Company, of Indianola, Nebraska, a corporation of South Dakota*, as assignee, said corporation being sole owner of said invention; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of December, A. D., 1912.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.