

A. J. McCONE & C. LIPE.
 SAMPLE GRINDER.
 APPLICATION FILED AUG. 24, 1910.

984,583.

Patented Feb. 21, 1911.

2 SHEETS-SHEET 1.

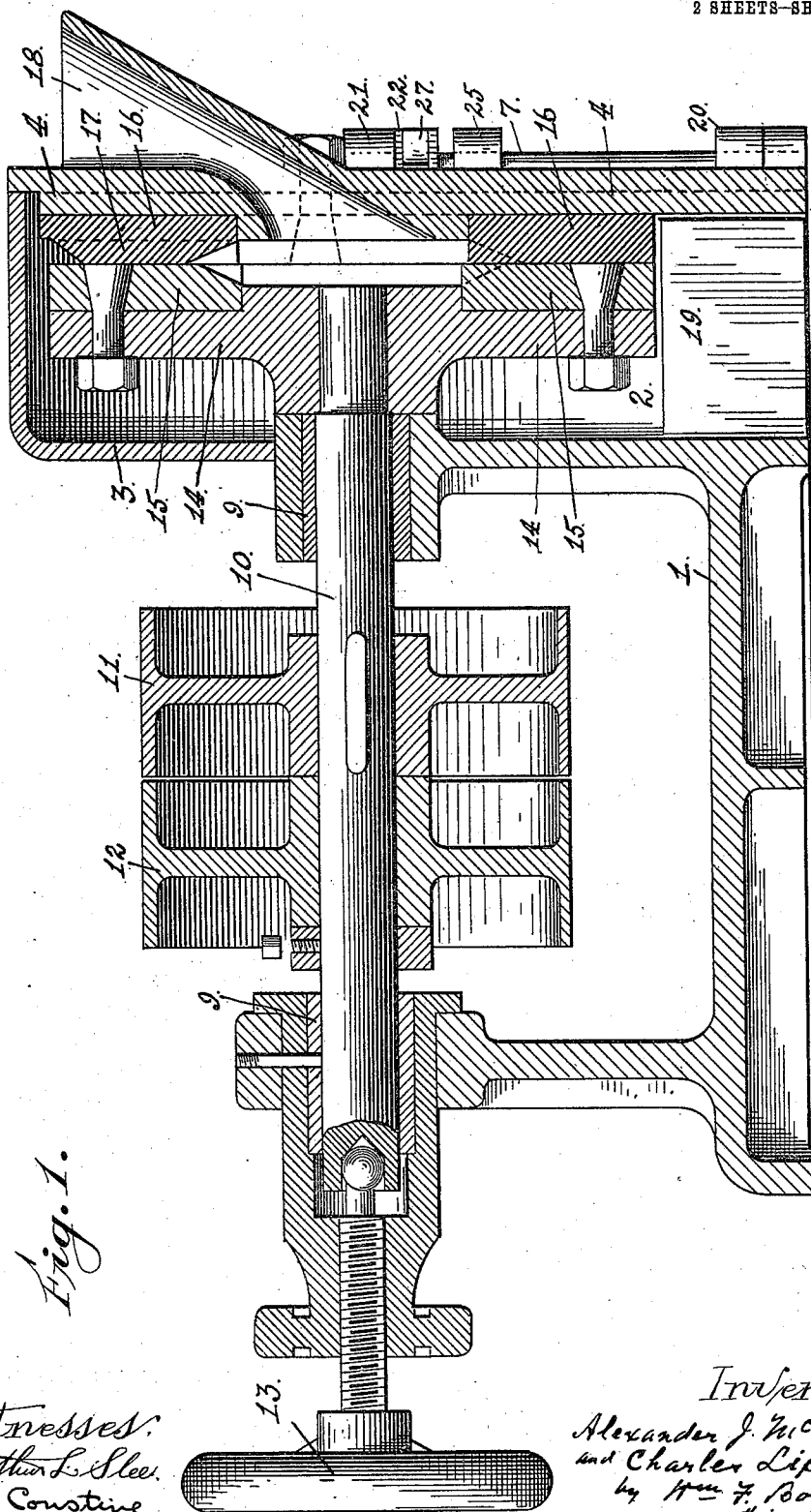


Fig. 1.

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Inventors.
 Alexander J. McCone
 and Charles Lipe
 by H. F. Booth
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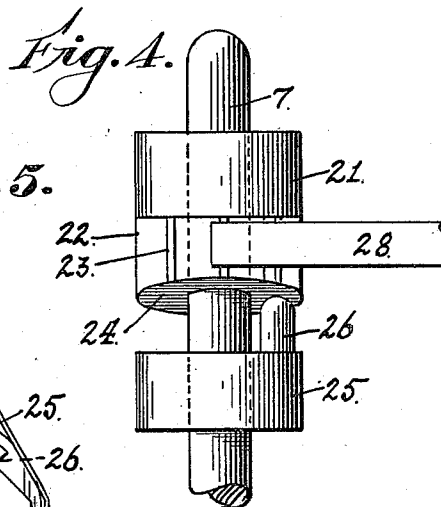
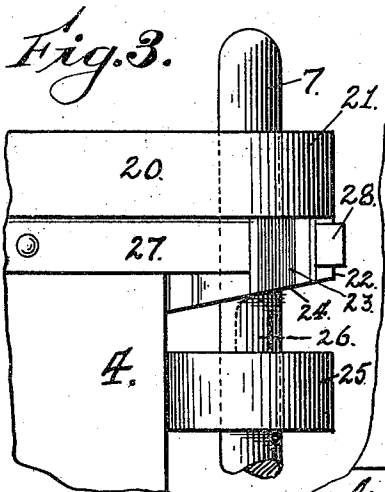
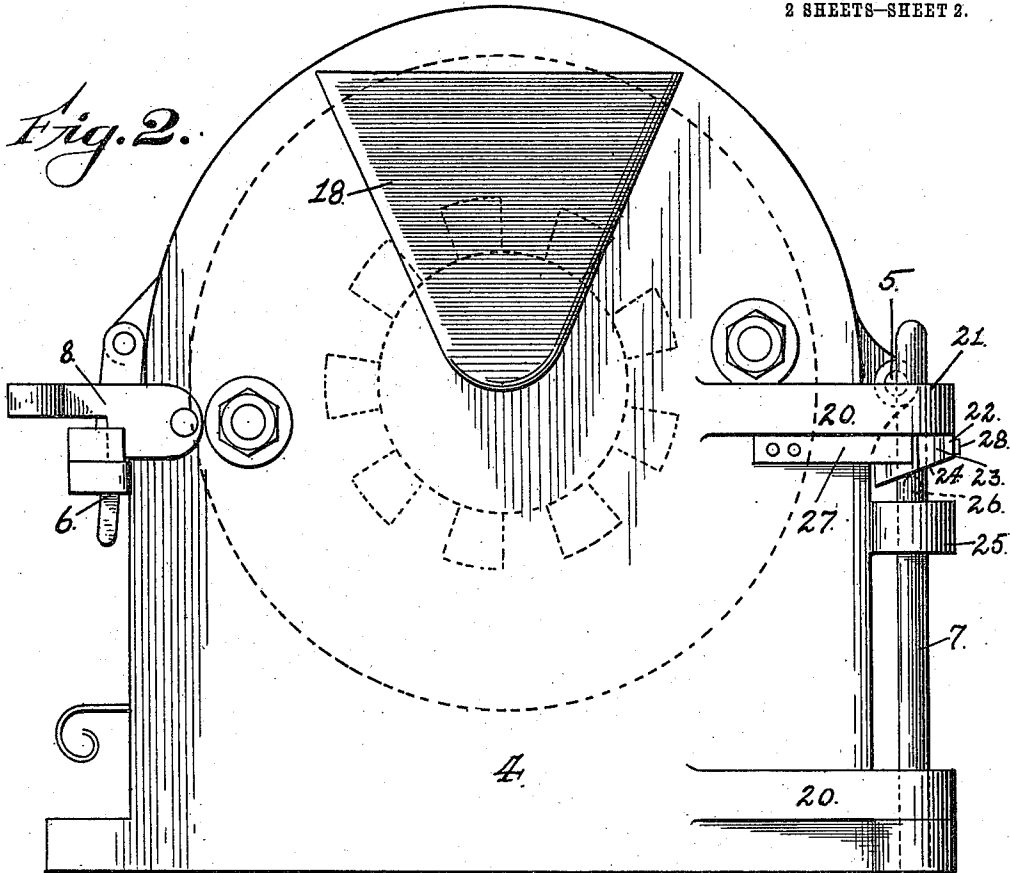
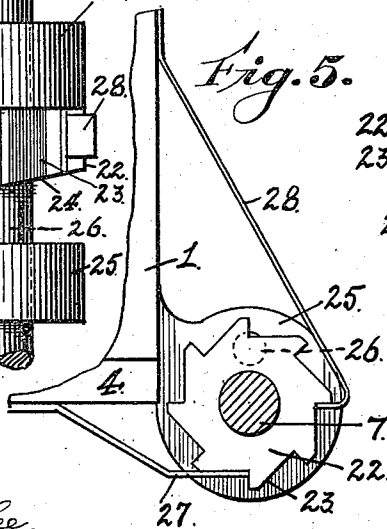


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALEXANDER J. McCONE AND CHARLES LIPE, OF RENO, NEVADA, ASSIGNORS TO
NEVADA ENGINEERING WORKS, OF RENO, NEVADA, A CORPORATION OF NEVADA.

SAMPLE-GRINDER.

984,583.

Specification of Letters Patent.

Patented Feb. 21, 1911.

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To all whom it may concern:

Be it known that we, ALEXANDER J. McCONE and CHARLES LIPE, citizens of the United States, residing at Reno, in the county of Washoe and State of Nevada, have invented certain new and useful Improvements in Sample-Grinders, of which the following is a specification.

Our invention relates to the class of grinders, more especially intended for grinding samples.

Our invention, generally stated, consists in opposing grinding instrumentalities, a swinging member carrying one of said instrumentalities adapted by the movement of said member to have its functionally operative face carried to and from the face of the opposing instrumentality, and means, dependent upon the swinging of said member, to vary the position of the grinding faces of said instrumentalities relatively to each other.

Our invention also consists in the novel construction and arrangement of the adjusting means for said swinging member.

The object of our invention is to prevent the scoring and cutting of the opposing grinding surfaces, due to a fixed relation, and to obtain a more uniform wear of said faces, by means of varying their relation.

Referring to the accompanying drawings—Figure 1 is a vertical, longitudinal section of our sample-grinder. Fig. 2 is an end elevation of the same. Fig. 3 is a fragmentary view, enlarged, of the adjustable hinge connection of the door of the grinding-chamber. Fig. 4 is a view of Fig. 3 at right angles. Fig. 5 is a plan, partly in section, of the same.

1 is a frame, one end of which is fashioned to form the back and sides of the lower part of the grinding chamber 2.

3 is a cover which forms the back, the top and the sides of the upper part of said chamber 2, and 4 is a door which forms the front of the chamber. The cover 3, as seen in Fig. 2, is horizontally hinged at 5, to one side of the frame and is latched at 6 to the other side, so that said cover may be thrown upward and over to one side, moving through an arc in a vertical plane, in order to expose the grinding chamber from the top.

The door 4, at one side is vertically hinged to the frame upon the pintle 7, and is

latched at 8 at the other side, so that said door may be thrown open, turning through an arc in a horizontal plane, to expose the entire front of the grinding chamber. In bearings 9 of the frame, as shown in Fig. 1, is mounted the driving shaft 10 with fast and loose pulleys 11 and 12 and adjusting screw 13. The shaft 10 carries, within the chamber 2, one of the grinding instrumentalities. This is here shown as a plate 14 which is provided with shoes 15. To the inner face of the door 4 is secured the other grinding instrumentality. This is here shown as a plate 16 provided with shoes 17. The door also carries the feed chute 18. The material is fed through this chute, when the door is closed, and is ground between the faces of the shoes 15 and 17 and drops down into a receptacle 19 in the bottom of the chamber 2.

Experience has demonstrated that a sample-grinder of the nature we have thus far described, while generally quite efficient has a serious disadvantage, in that the grinding faces of the shoes become scored or corrugated or cut with an undue uniformity and to an ever increasing degree as to depth, due to the fact that the same surfaces are always presented to each other. It is not practical to remedy this by merely adjusting either grinding instrumentality itself on the part which carries it, for such a provision would complicate the construction and would for its use be dependent upon the realization by the operator of the necessity for adjustment at any given time, and his purpose and will to so make the adjustment. Inattention, forgetfulness and other drawbacks of personal care are too many to warrant reliance being placed upon such a remedy, and the consequence would be that the adjustment would not be made, and the scoring and cutting of the grinding faces would continue and increase, to the end that the material would pass through imperfectly ground.

We have conceived the idea of making the adjustment of one of the grinding surfaces to effect a change of position relatively to the other, in a measure automatic, by making it depend upon an operation, such as the opening of the door, which is a necessary and usual part of the manipulation of the machine. We, therefore, provide for

this change of position upon and by reason of the opening of the door, so that after each use of the machine, the door being opened will by this act effect a changed relation of the grinding instrumentality which it carries, to the other grinding instrumentality, when the door is again closed. This result is attained by causing the door itself, in the act of opening to be moved vertically upon its own hinge to successively different positions and to be there supported. One means for effecting this we here show and shall now describe. The hinge hangers 20 of the door are free to move vertically upon the pintle 7. Rotatably and slidably mounted upon the pintle under the knuckle 21 of the upper hinge hanger is a lifting cam 22 having a ratchet periphery 23, and an inclined plane lower face 24. Extending from the frame 1 is a lug 25 in which is a stud or pin 26 upon which the lower inclined face 24 of the cam 22 rides and is supported. Secured to the outer face of the door is an actuating pawl 27 which engages the ratchet periphery of the cam 22 in such manner that the door in opening will cause the pawl 27 to turn the cam 22 one notch. The cam in thus turning will ride on the stud or pin 26, and by reason of the inclined plane face of said cam will effect the vertical movement of the door on its pintle and thereby change the relation of the face of the grinding instrumentality which the door carries to the face of the rotating grinding instrumentality. A retaining pawl 28 holds the cam in rotative position. Thus it will be seen that after using the machine, the door being opened, will thereby be adjusted vertically; and when closed again its grinding instrumentality will be in a new position with relation to the opposing grinding instrumentality, with the general result of a more uniform wear of the grinding surfaces, which is the object to be effected.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is—

1. In a grinder, the combination of opposing grinding instrumentalities between the faces of which the material is reduced; a swinging member carrying one of said instrumentalities and means, dependent upon the swinging of said member, to vary the functionally operative position of its grinding instrumentality with relation to the opposing grinding instrumentality.

2. In a grinder, the combination of a rotatable grinding instrumentality; an opposing non-rotatable grinding instrumentality; a swinging member carrying the non-rotatable grinding instrumentality and adapted by its movement to bring the faces of the two instrumentalities into functionally operative position and to separate them; and means, dependent upon the swinging of said mem-

ber, to vary the functionally operative position of the grinding faces of said instrumentalities relatively to each other.

3. A grinder consisting of framing forming a grinding chamber; a door hinged to said framing and forming one wall thereof; a grinding instrumentality within said chamber; an opposing grinding instrumentality carried by the door and adapted by the movement of said door to have its grinding face carried to and from its functionally operative position with relation to the grinding face of the other instrumentality; and means, dependent upon the swinging of said door, to vary the grinding faces of said instrumentalities relatively to each other, when in functionally operative position.

4. A grinder consisting of framing forming a grinding chamber; a door forming one wall of said chamber; a slidable hinge connection between the door and framing; a grinding instrumentality within the chamber; an opposing grinding instrumentality carried by the door and adapted by the swinging movement of said door to have its grinding face carried to and from its functionally operative position with relation to the grinding face of the other instrumentality; and means, dependent upon the swinging of said door to slide it on its hinge connection and thereby vary the grinding faces of said instrumentalities relatively to each other.

5. A grinder consisting of framing forming a grinding chamber; a door forming one wall of said chamber; a slidable hinge connection between the door and framing; a rotatable shaft projecting into said chamber; a grinding instrumentality carried by said shaft; an opposing grinding instrumentality carried by the door and adapted by the swinging movement of said door to have its grinding face carried to and from its functionally operative position with relation to the grinding face of the other instrumentality; and means, dependent upon the swinging of said door to slide it on its hinge connection and thereby vary the grinding faces of said instrumentalities relatively to each other.

6. A grinder consisting of framing forming a grinding chamber; door forming one wall of said chamber; a slidable hinge connection between the door and framing; a grinding instrumentality within the chamber; an opposing grinding instrumentality carried by the door and adapted by the swinging movement of said door to have its grinding face carried to and from its functionally operative position with relation to the grinding face of the other instrumentality; and means, dependent upon the swinging of said door to slide it on its hinge connection and thereby vary the grinding

faces of said instrumentalities relatively to each other, said means comprising a rotatable ratchet cam in the hinge connection adapted to slide the door thereon, and a pawl on the door disposed to operate the ratchet cam as the door swings.

7. A grinder consisting of framing forming a grinding chamber; a door forming one wall of said chamber; a slidable hinge connection between the door and framing; a grinding instrumentality within the chamber; an opposing grinding instrumentality carried by the door and adapted by the swinging movement of said door to have its grinding face carried to and from its functionally operative position with relation to the grinding face of the other instrumentality; and means, dependent upon the swinging of said door to slide it on its hinge connection and thereby vary the grinding faces of said instrumentalities relatively to each other, said means comprising a rotatable ratchet cam in the hinge connection, a fixed bearing against which said cam impinges, whereby it slides the door on its

hinge connection and a pawl on the door disposed to operate the ratchet cam as the door swings.

8. In a grinder of the described type, and in combination with the door of the grinding chamber carrying one of the grinding instrumentalities, the means for adjusting said door for the purpose described, comprising a pintle, door-hangers hinged and slidable on said pintle, a ratchet cam turnable and slidable on the pintle and bearing against one of the door hangers, a fixed pin upon which said cam bears to slide it on said pintle, and a pawl on the door adapted to engage and turn the ratchet cam as the door swings.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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CHARLES LIPE.

Witnesses:

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ROLAND F. ROY.