(No Model.) 2 Sheets—Sheet 1.

L. C. SPRINGER.

PULVERIZING MACHINE.

No. 262,327. Patented Aug. 8, 1882.

Fig. 1.

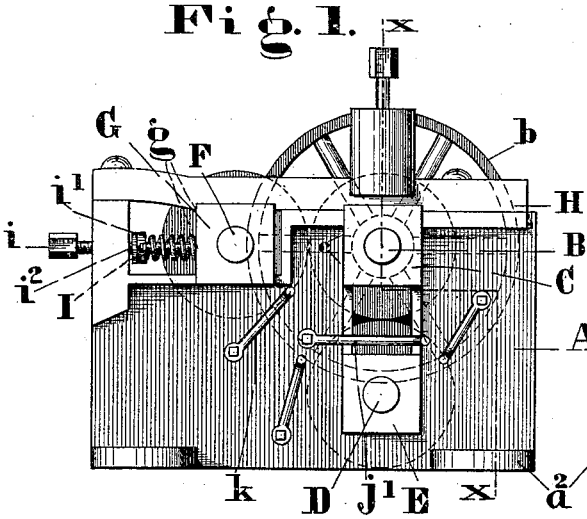


Fig. 2.

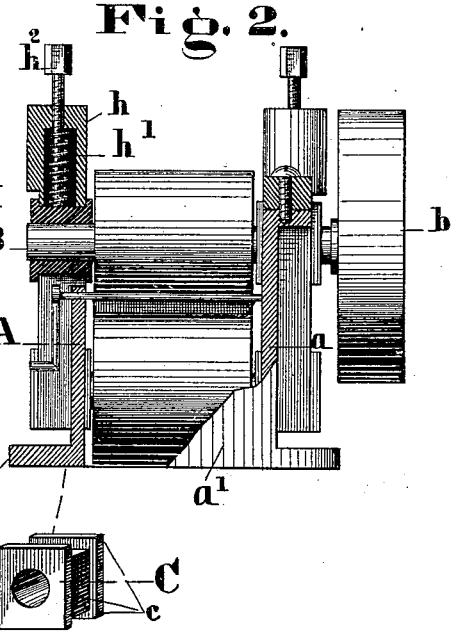


Fig. 3

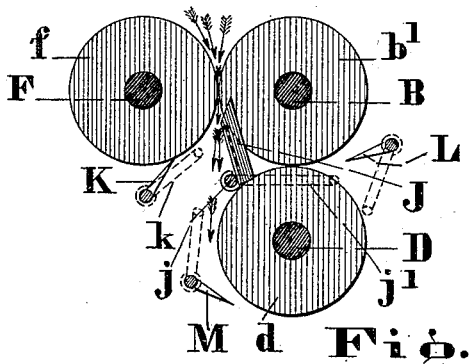


Fig. 4.

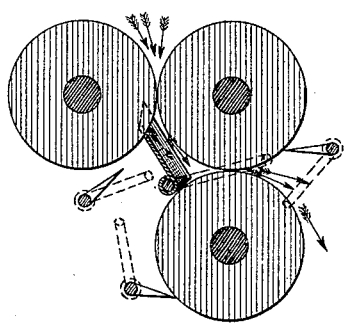
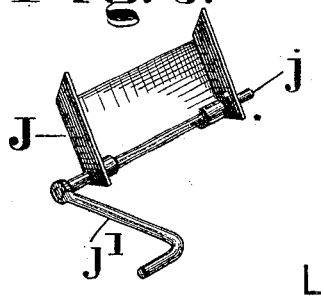


Fig. 5.



WITNESSES:
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(No Model.) 2 Sheets—Sheet 2.

L. C. SPRINGER.

PULVERIZING MACHINE.

No. 262,327. Patented Aug. 8, 1882.

Fig. 6.

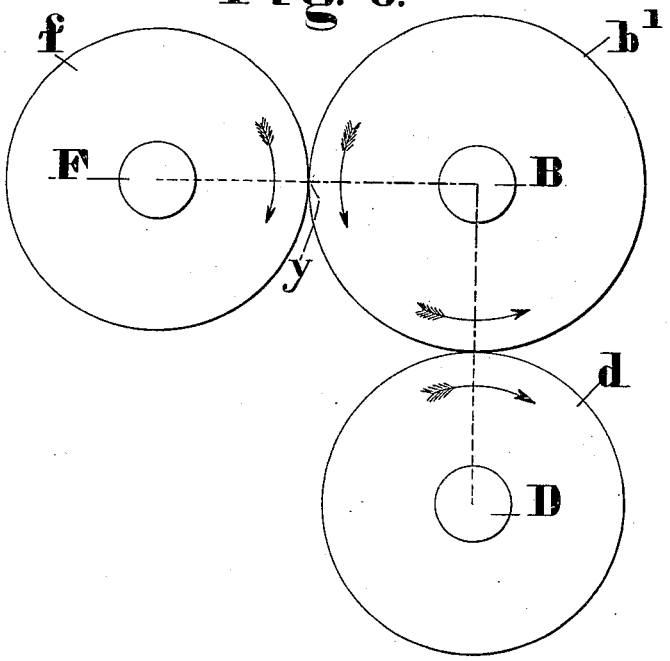


Fig. 7.

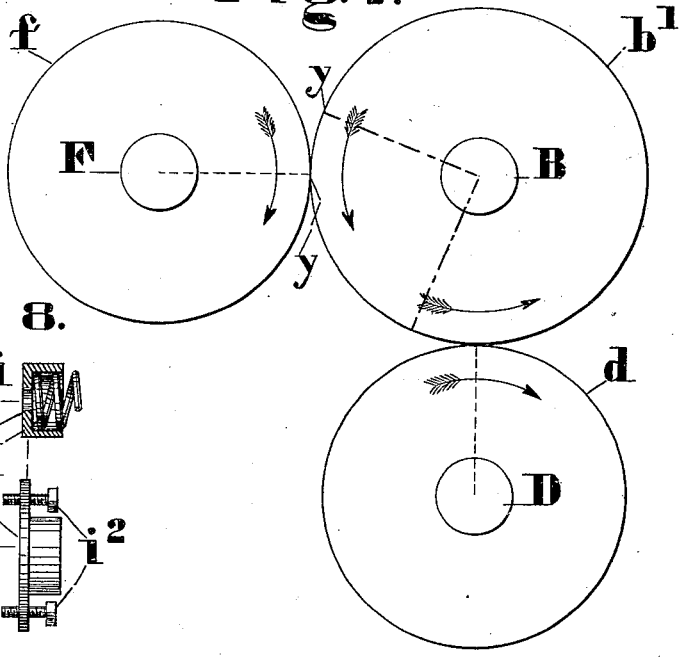
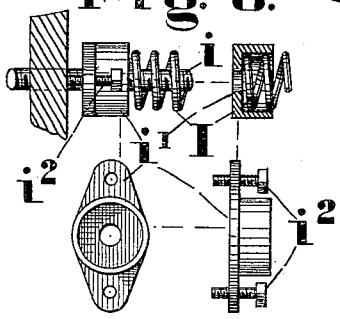


Fig. 8.



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T. S. West
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INVENTOR:
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UNITED STATES PATENT OFFICE.

LEWIS C. SPRINGER, OF WILMINGTON, DELAWARE, ASSIGNOR OF ONE-HALF TO V. C. WALKER AND R. T. ELLIOTT, BOTH OF SAME PLACE.

PULVERIZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 262,327, dated August 8, 1882.

Application filed April 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, LEWIS C. SPRINGER, of Wilmington, county of New Castle, and State of Delaware, have invented new and useful Improvements in Pulverizing-Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention consists mainly in the combination, with three rolls specially arranged, of an adjustable directing or guiding plate, by means of which the material under treatment, after having been passed through one pair of rolls, may, if desired, be caused to pass again through the rolls before it leaves the machine, as will be fully described hereinafter.

In the drawings, Figure 1 represents a side view of my improved machine; Fig. 2, a section of the same on the line *x x*, Fig. 1; Fig. 3, a transverse sectional view of the rolls with the directing-plate in one position; Fig. 4, a similar view with the directing-plate in the other position; Fig. 5, a perspective view of the directing-plate detached; Figs. 6 and 7, views illustrating the difference in the diameter between the roll *b'* and the rolls *f* and *d*, and Fig. 8 detail views of the mechanism for adjusting the pressure of the rolls.

To enable others skilled in the art to make my improved machine and properly use the same, I will proceed to describe fully its construction and manner of operation.

A *a* represent the side plates of the machine, and *a'* one of the end plates.

a^2 a^2 represent base-flanges, by means of which the machine is permanently secured to any proper foundation.

B represents the main shaft, which is provided at one end with the pulley *b* for receiving motion from any proper source of power, and near its center with the hard-metal roll *b'*, Fig. 3, as shown.

C C represent boxes held in vertical recesses in the side plates of the machine, by means of which the journals of the main shaft are properly supported.

c c represent flanges on the boxes, by means of which they are held against lateral movement without interference with their freedom of movement in a vertical direction.

D also represents a shaft having the hard-metal roll *d*, Fig. 3, as shown.

E E represent boxes held in the same recesses of the side plates as are the boxes D D, but below the same, as shown, by means of which the journals of shaft D are properly supported.

F also represents a shaft having the hard-metal roll *f*, Fig. 3, as shown.

G G represent boxes held in horizontal recesses in the side plates of the machine, by means of which the journals of the shaft F are properly supported.

g g represent flanges on the boxes, by means of which they are held against movement in a lateral direction without interference with their freedom of movement in a horizontal direction.

The diameter of the roll *b'*, it will be observed in Figs. 6 and 7, exceeds the diameter of the rolls *f* and *d*, and consequently it does not revolve in unison with them.

H H represent bars located on the top edges of the side plates, which are adapted to hold the boxes properly in place, as shown.

h h represent cylindrical cases rising from the bars H over the journal-boxes C C; and *h'* *h'* are coiled springs located therein. h^2 h^2 represent set-screws extending through the tops of the cases, as shown.

I represents a coiled spring upon each side of the machine, which is located between the journal-box G and the wall of the recess, and *i* a set-screw extending through the end of the casing and through the springs I, as shown, by means of which the extreme movement of the journal-box is determined.

i', Fig. 8, represents a cap-plate having adjusting-screws i^2, by means of which the amount of pressure exerted by the springs may be determined.

J, Fig. 5, represents a directing-plate having the shaft *j*, by means of which it is properly supported on the side walls of case, and *j'* the crank-handle, by means of which the shaft and attached directing-plate are actuated when desired. This directing-plate is so located relatively to the rolls *b'* and *f* that it

may occupy either the position shown in Fig. 3 or that shown in Fig. 4.

K represents a scraper adapted to clean the roller *f*. *k* represents the crank-arm by means of which the scraper is thrown into and out of action, as may be desired.

L and M represent similar scrapers applied to the other rolls.

The operation is substantially as follows; The directing-plate having been set in the position shown in Fig. 3, it will result, when the machine is in operation, that the material delivered to it will pass through between the rolls *b' f*, and then leave the machine. When, however, the directing-plate is set in the position shown in Fig. 4, the material, after passing through between the rollers *b' f*, is guided through between the rollers *b' d* before it leaves the machine, so that it is subjected to a double grinding action.

By means of this construction the material under treatment may be subjected either to a single or double grinding action, as may be desired.

The rollers, in consequence of the loose journal-boxes and the springs, are capable of yielding when occasion requires that they should do so.

By making the diameter of the roll *b'* exceed the diameter of the other rolls it follows that a different point of contact occurs at each revolution, this being illustrated in Figs. 6 and 7, the dotted line *y*, Fig. 6, representing the contact-point at one revolution and the same line *y*, Fig. 7, the position of that point at the next revolution.

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

1. In combination with three rolls arranged as described, a movable directing-plate, as described, the construction being such that the material under treatment may be subjected to a single or double grinding action, according to the position of the plate.

2. In combination with the rolls *b'*, *f*, and *d*, the movable directing-plate J, as described.

3. The mill described, having the rolls *b' d f*, the intermediate roll, *b'*, having the greater diameter, the adjustable journal-boxes, and the movable directing-plate, combined and arranged as and for the purpose described.

This specification signed and witnessed this 14th day of April, 1882.

LEWIS C. SPRINGER.

Witnesses:
R. T. ELLIOTT,
V. C. WALKER.