2 Sheets—Sheet 1.

A. R. GUILDER.

GRANULATING MACHINE.

No. 176,176. Patented April 18, 1876.

Fig 1

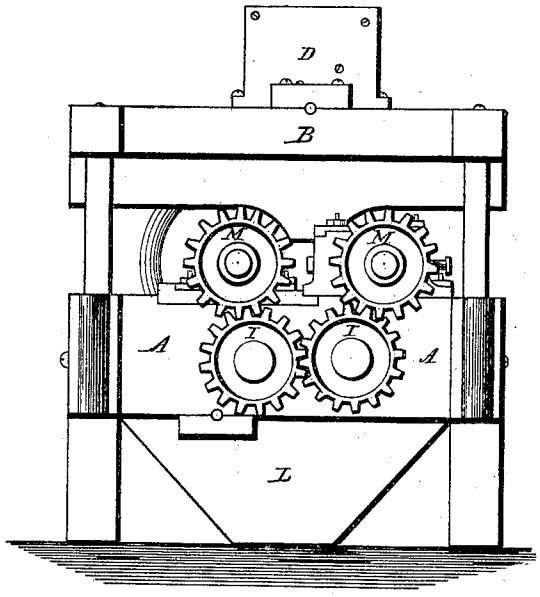
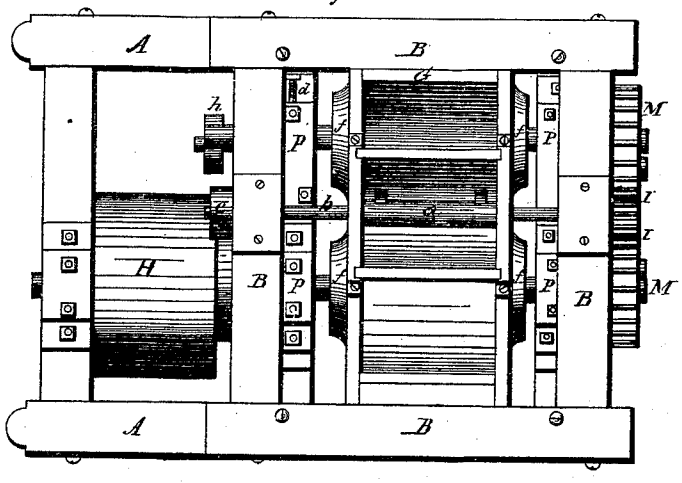


Fig 2



WITNESSES.

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A. R. Guilder
per F. A. Lehmann
Atty.

2 Sheets—Sheet 2.

A. R. GUILDER.

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Fig 3.

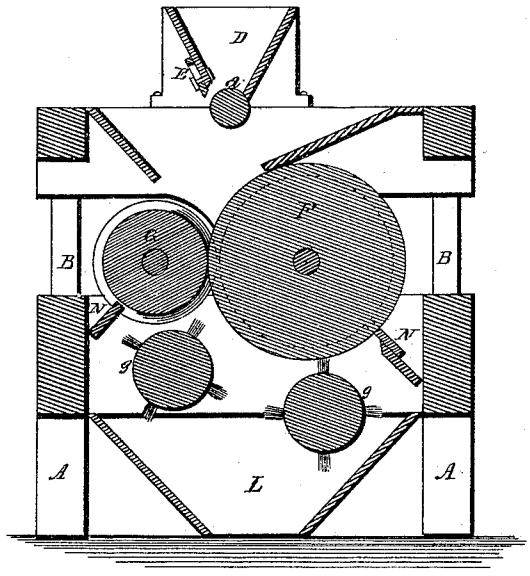


Fig 4.

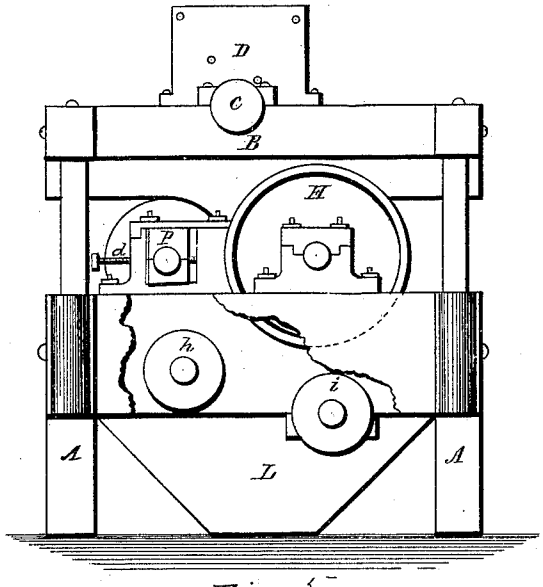
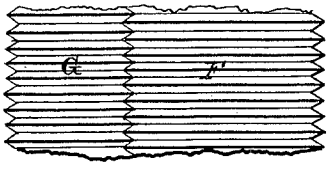


Fig. 5



WITNESSES.

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A. R. Guilder

per F. A. Lehmann Atty.

UNITED STATES PATENT OFFICE.

ABSALOM R. GUILDER, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN GRANULATING-MACHINES.

Specification forming part of Letters Patent No. **176,176**, dated April 18, 1876; application filed May 31, 1875.

To all whom it may concern:

Be it known I, ABSALOM R. GUILDER, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Granulating-Machines; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in granulating-machines; and it consists in employing two rollers of unequal diameter, and that revolve with unequal velocity when in motion, the said rollers being made of granite or other hard mineral substance, with surfaces prepared for the object in view. Between these rollers the material to be granulated is dropped, and by the motion of the rollers, half pushing and half crushing, is reduced to grains of the desired size, as will be more fully described hereafter.

The accompanying drawings represent my invention. A represents the frame for the heavy rollers, and B a frame for the support of the hopper D, at the bottom of which hopper is a feed-roller, *a*, upon the shaft *b*, to be operated by a band over the pulley *c*. At the side of the hopper is a slide, E, for adjusting the quantity of material to feed the large rollers, immediately under the feed-roller *a*. The large rollers F and G are journaled in boxes P, on cross-pieces of the frame A, the shaft of the larger one, F, extending to the end of the frame, and having a driving-drum, H, upon the part between the outer end of the shaft and the roller. The boxes P are provided with rubber springs to allow the rollers to yield in case a hard substance be contained in the material being granulated.

The roller G may be approached to or removed from the roller F by means of the set-screws *d* in the journal-boxes of the former, to graduate the size of the grains.

The surfaces of the rollers F G are composed of plates of granite or other mineral or metal of suitable thickness, and formed into alternate V-shaped diametrical ridges and depressions, the ridges on one roller revolving in the depressions of the other. Or the rollers may be made solid, of blocks of granite, or of any other mineral or metal of the form heretofore described, the one of greater diameter than the other with equal gearing, or both of the same diameter with unequal gearing, so as to produce unequal velcity in their revolution.

Upon the ends of the shafts, passing through the rollers F and G, are cog-wheels M, which gear with the two wheels I, the said wheels I being geared together, so that when the drum H upon the shaft of the roller F be set in motion, the rollers F and G turn in opposite directions. The velocity of the rollers being unequal, it follows that the greater velocity of the one exerts a pushing or drawing, combined with a crushing, power upon the material between the inward revolving rollers, which causes the grain to be fractured without mashing it, and to reduce the granulated particles to the same size, according to the distance between the rollers. The plates composing the rollers, or the rollers, if solid, are confined to their position by iron flanges *f* upon their shafts, between the journal-boxes and the rollers.

Under each roller, and inclosed by the box L, is a revolving brush, *g'*, driven by band over the pulleys *h i* on one end of their shaft.

Between the insides of the frame A and the rollers F G are the scrapers N, the said scrapers fitting closely to the surface of the rollers, and being made of leather, rubber, or any other suitable material, scrape and clean the surface of the revolving rollers, the scrapings being dropped in the box L.

This machine is not only intended to be used for the granulation of wheat or other grain, but is adaptable to all kinds of substances to be granulated, such as sugar, salt, &c.

Having thus described my invention, I claim—

In a granulating-machine, the combination of two rollers of unequal size, the ridges of which mesh with each other, and one of which revolves with greater velocity than the other, so as to produce a combined pushing and crushing motion, substantially as described.

In testimony that I claim the foregoing, I have hereunto set my hand this 27th day of May, 1875.

ABSALOM R. GUILDER.

Witnesses:

H. O. HAMLIN,

Z. E. BROWN.