

J. & R. REID.  
GRAIN-CRUSHER.

No. 190,250.

Patented May 1, 1877.

Fig: 1.

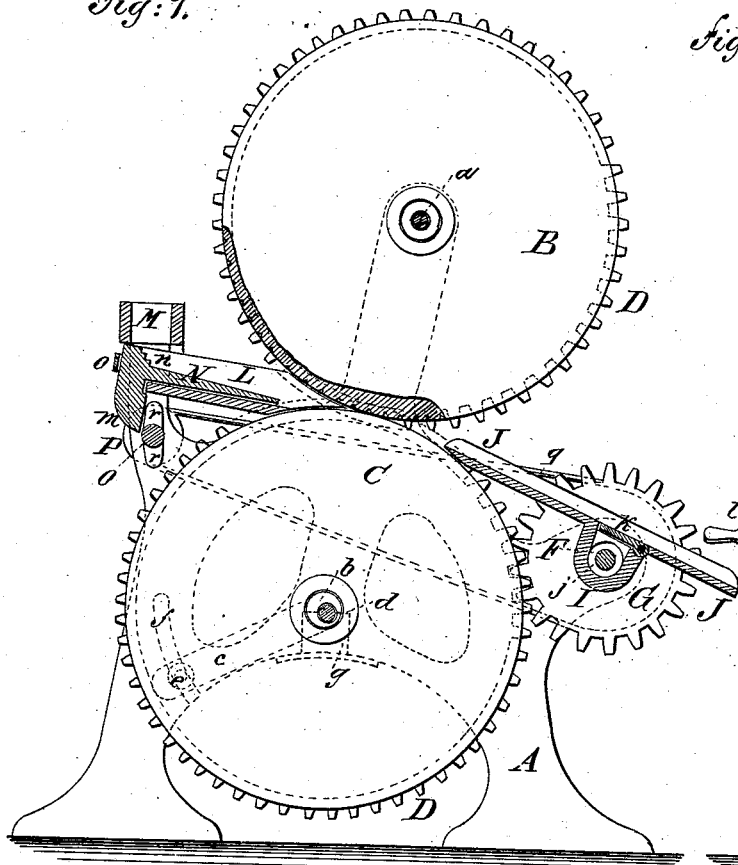


Fig: 2.

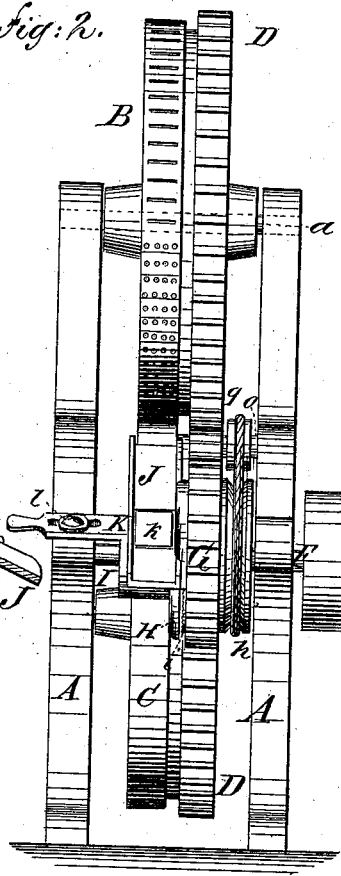


Fig: 3.

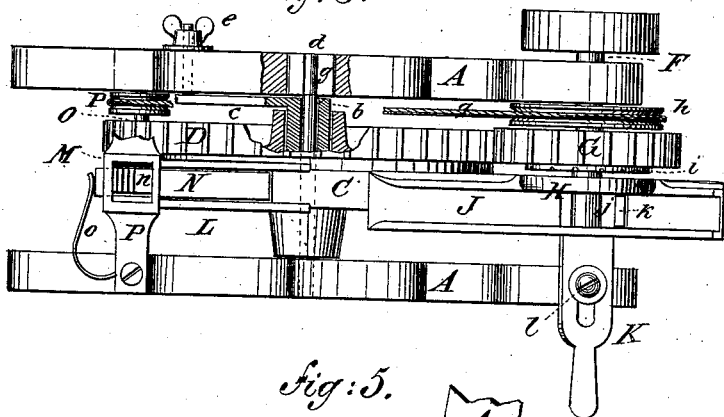


Fig: 4.

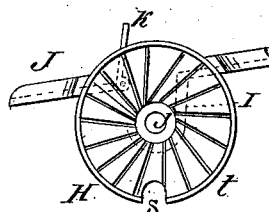
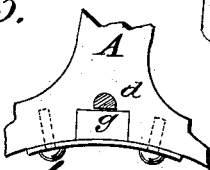


Fig: 5.



WITNESSES:

*Chas. Nida*  
*J. A. Scarborough*

INVENTORS

*Jos. Reid*  
*Rob. Reid*

BY

*Munnell*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE

JOSEPH REID AND ROBERT REID, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN GRAIN-CRUSHERS.

Specification forming part of Letters Patent No. **190,250**, dated May 1, 1877; application filed November 11, 1876.

*To all whom it may concern:*

Be it known that we, JOSEPH REID and ROBERT REID, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Grain-Crusher, of which the following is a specification:

Figure 1 is a side elevation, having a portion of the frame removed. Fig. 2 is a front elevation. Fig. 3 is a plan view, having portions broken away to show the arrangement of the parts more clearly. Fig. 4 is a detail view of a part of the pulverizing apparatus. Fig. 5 is a detail view of a spring that supports the shaft of one of the crushing-rolls.

Similar letters of reference indicate corresponding parts.

The object of the invention is to provide a compact, inexpensive, and efficient machine for crushing and pulverizing grain.

In the drawing, A is the frame of the machine, and B C are crushing-rolls supported by suitable journals in the said frame, and geared together by the spur-wheels D D attached to the rolls, so that the periphery or crushing-surfaces of the two rolls move together at an equal speed, thus crushing the grain that passes between them with a small expenditure of power.

The surface of the upper roll is provided with transverse grooves, or with shallow holes or indentations. The hub of the roll B is elongated, and revolves on a fixed shaft, *a*, and the hub of the roll C is elongated, and revolves on an adjustable eccentric, *b*, that is provided with the lever *c*, and is capable of turning on a shaft, *d*, so as to adjust the distance between the faces of the crushing-rolls.

The lever *c* is provided with a binding-screw, *e*, that passes through an arc-shaped slot, *f*, in the leg of the frame A, and is capable of binding the lever *c*, so as to retain the eccentric *b* in any desired position.

The shaft *d* is mounted on springs *g*, Fig. 5, of rubber or other suitable material, to permit the yielding of the roll C in case a piece of hard or unyielding substance passes between the rolls.

F is the driving-shaft of the machine, upon which is placed the driving-pinion G, which meshes into the wheel C, and also the grooved

pulley *h*, which drives the vibrator-shaft. The face *i* of the pinion G is grooved and serrated something like the face of a millstone.

H is a grooved and serrated plate provided with a rim, *t*, Fig. 4, that encircles the part *i*, and having a notch, *s*, in its lower edge for the escape of the pulverized grain.

A boss, I, is formed on the said plate, to which the chute J and the slotted bar K are attached. The said boss is fitted to the shaft F and chambered out, forming a passage, *j*, from the chute J to the serrated surface of the plate H. This passage is closed by a door or valve, *k*, hinged in the bed of the chute at the lower side of the opening of the passage.

The upper end of the chute J rests upon the roll C, near the point of contact between the upper and lower rolls, and is chamfered or brought to an edge to facilitate the removal of the crushed grain from the roll.

The slotted bar K extends over the side of the frame A, to which it is clamped by a screw, *l*, that passes through its slot into the said frame.

L is a chute connected with the grain-hopper M, and provided with a double bottom. N, the upper rear portion of which is provided with a tappet, *m*, which projects downward, and a notched lug, *n*, that projects upward, and forms a part of the back of the mouth of the hopper M. A spring, *o*, is attached to the cross-bar *p*, that supports the hopper, and rests against the end of the movable part of the chute.

O is a shaft at the rear of the machine, to which the cams *r r* are attached, which are capable of engaging the tappet *m*.

P is a grooved pulley, keyed on the shaft O, and driven by a belt, *q*, that runs from the pulley *h* on the main shaft. Grain to be crushed is delivered to the hopper M, and the machine being in motion it is caused by the vibratory motion of the part N to flow rapidly down the chute L to the rolls B C, by which it is crushed and delivered to the chute J, through which it passes to a suitable receptacle.

If it is required to pulverize the grain after it is crushed by the rolls, the door K is thrown up, when the grain passes through the opening *j* into the space between the grinding-

surface *i*, carried by the pinion *G* and the stationary plate *H*, where it is reduced to meal or coarse flour, and delivered through the opening *s*.

The advantages claimed for our machine are that the grain may be rapidly crushed with little expenditure of power, and it may be reduced to meal or coarse flour at one operation, if desired.

We do not confine ourselves to the exact construction herein set forth, as it is obvious that various changes may be made without departing from our invention. For example, the lower as well as the upper roll may be roughened, or both may, in some cases, be used entirely plain, and eccentric and spring-bearing may be applied to the upper roll instead of the lower one.

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

1. The combination of shaft *F*, pinion *G*, and plate *H*, with the chambered boss *I*, and valved chute *J*, the plate *H* being provided with notch *s* and rim *t*, as set forth.

2. The combination, with chute *L*, of hopper *M*, having double bottom *N*, with notched lug *n*, spring *o*, and bar *p*, for the purpose specified.

JOSEPH REID.  
ROBERT REID.

Witnesses:

CHARLES H. WILLIAMS,  
JOHN SCHMITT.