

*Patented Jun. 18, 1850.*



# UNITED STATES PATENT OFFICE.

J. R. STAFFORD, OF CLEVELAND, OHIO.

## MILL FOR GRINDING.

Specification of Letters Patent No. 7,447, dated June 18, 1850.

*To all whom it may concern:*

Be it known that I, J. R. STAFFORD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and  
5 Improved Machine for First Crushing Grains, Seeds, &c., and then Minutely Separating and Tearing Asunder the Particles Thereof; and I do hereby declare the following to be a full and exact description of  
10 the said machine, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation, and Fig. 2 a vertical transverse section.

Similar letters indicate like parts in all the figures.

The nature of my invention consists in combining a pair of crushing rollers or a series of pairs of crushing rollers acting in  
20 conjunction with each other, with a disintegrator composed of a rapidly revolving cylinder or fanner working in a suitable concave or casing, in such a manner that grain or seeds conducted between the said  
25 rollers, will be thoroughly crushed and broken thereby, and then will pass into the disintegrator and be minutely disintegrated or pulverized during its passage through the same.

I place the respective parts of my machine in a strong frame constructed in any well-known or usual manner.

A, is the hopper at the top of the machine for the reception of the grain or seeds  
35 to be operated upon; B, B, and C, C, are crushing rollers, which work in conjunction with each other, rotating in opposite directions, and which mash and crush the grains or seeds as they fall from the hopper and  
40 pass between the same. The upper pair of rollers B, B, are placed at such a distance from each other as to permit the kernels of grain to be drawn freely between them and be partially broken; the rollers C, C, are  
45 placed quite near to each other, for the purpose of thoroughly and effectually completing the crushing and breaking operation commenced upon the grain or seeds by the upper rollers. The distance of the respective  
50 pairs of crushing rollers B, B, and C, C, from each other, is regulated by the set screws *d, d*. If it should be found neces-

sary in practice, I shall make use of more than two sets of crushing rollers, arranged the one below the other, and make the distance between each pair of rollers gradually  
55 diminish from the uppermost to the lower pair. Or, with some kinds of grain or seeds, I may make use of but one pair of crushing rollers in combination with the disintegrator. 60

E, E, are plates for removing the crushed and broken parts of the grain or seeds from the rollers B, B, and conducting the same  
65 between the rollers C, C; *e, e*, are adjustable plates secured to the inner sides of the upper edges of the plates E, by means of slots therein and the set screws *f, f*, in such a manner that the upper edges of the plates  
70 *e, e*, can be so adjusted as to bear against the peripheries of the rollers. The plates E', E', and *e', e'*, are arranged in the same manner as the plates E, E, and *e, e*, above described, and serve to remove the crushed  
75 and broken parts of the grain or seeds from the rollers C, C, and conduct the same into the disintegrator. The disintegrator is composed of the cylinder G, which is armed with radiating spikes or projections, and  
80 included in a corrugated concave or casing H, substantially as represented in Fig. 2. I, is a spout at the bottom of the casing H, for the discharge of the disintegrated parts of the grain or seeds.

The disintegrating cylinder G, may be  
85 placed in either a horizontal, vertical, or inclined position; and its periphery may be armed with radiating spikes or wings, or may have a corrugated surface; and the  
90 concave or casing H, may have either a surface armed with spikes, or a corrugated surface. In place of the cylinder G, I may sometimes make use of a fanner composed of a shaft with arms and wings. The concave or casing H, may for some purposes be  
95 composed of screen wire, in whole or in part, for the purpose of allowing the finer and pulverized particles of the grain or seeds to pass through the meshes thereof.

The shaft of the disintegrator, and the  
100 crushing rollers, may be connected together and driven through the medium of either bands or cogged gearing.

The above described machine may be used

for preparing grains for grinding between mill stones or other friction surfaces, if deemed expedient.

What I claim as my invention and desire  
5 to secure by Letters Patent, is—

The combination of crushing rollers with  
a disintegrating apparatus, arranged and

operating substantially in the manner and  
for the purpose as herein set forth.

J. R. STAFFORD.

Witnesses:

Z. C. ROBBINS,  
R. W. FENWICK.