

No. 879,262.

PATENTED FEB. 18, 1908.

H. B. HEBERT.  
REDUCTION MILL.  
APPLICATION FILED MAY 6, 1907.

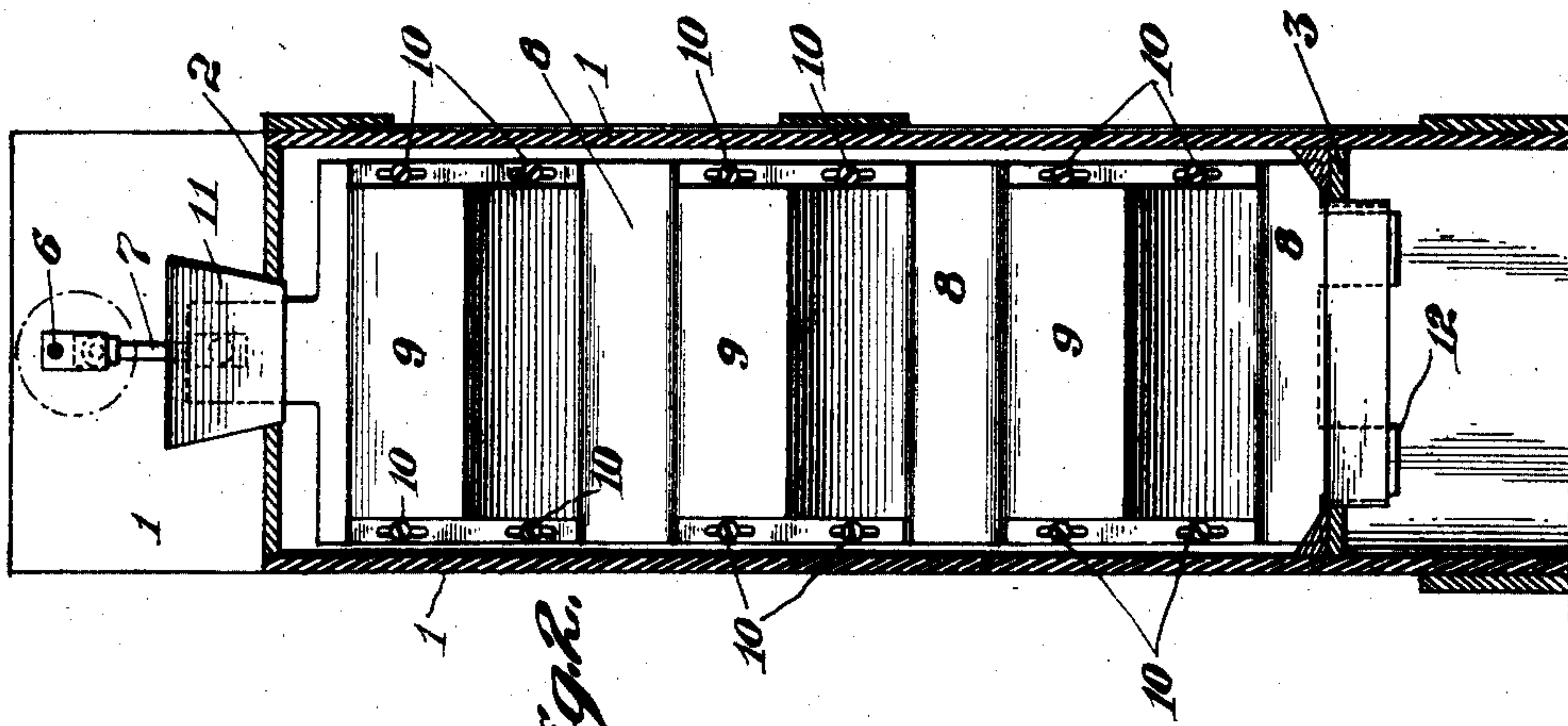


Fig. 2.

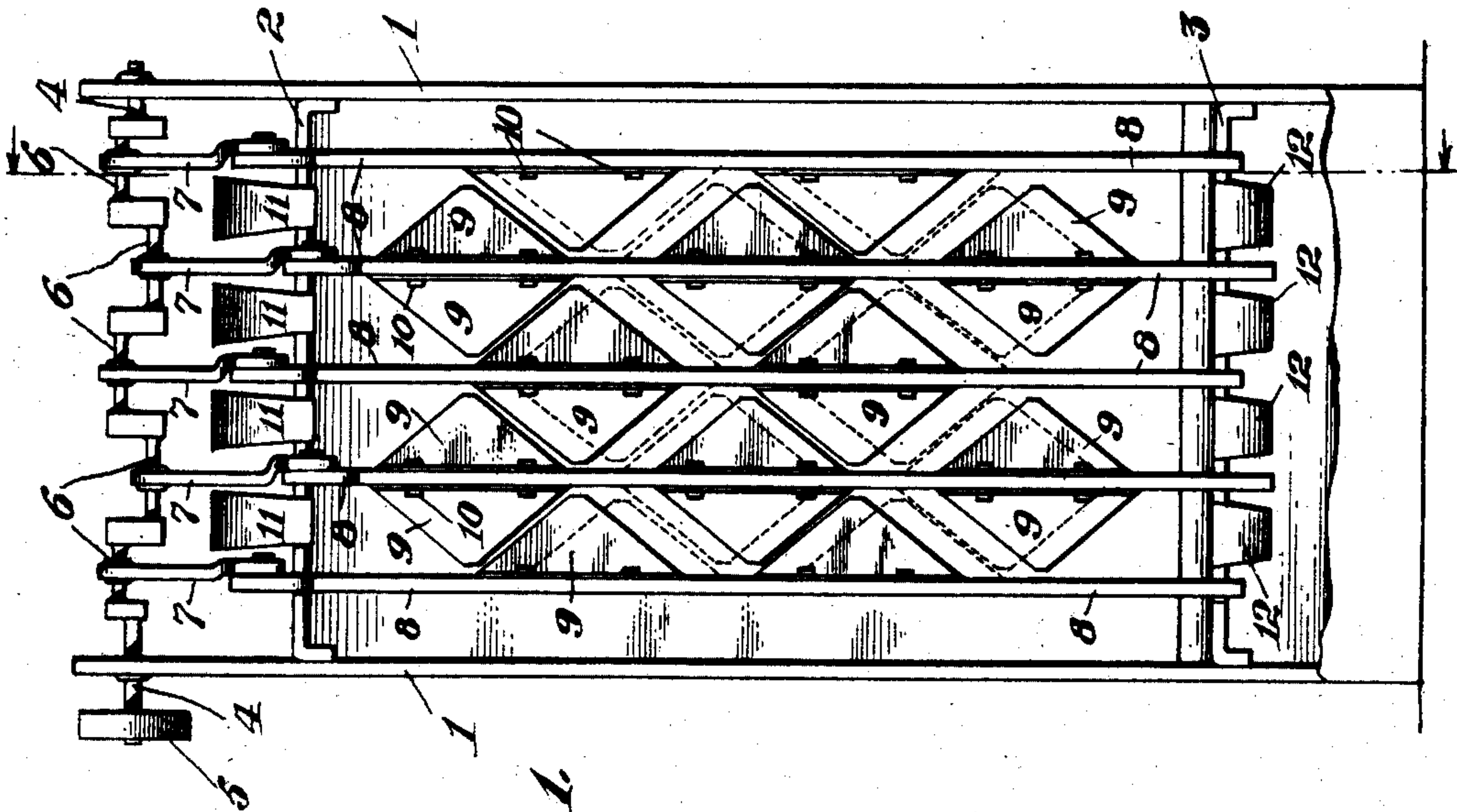


Fig. 1.

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# UNITED STATES PATENT OFFICE.

HENRY B. HEBERT, OF NEW YORK, N. Y.

## REDUCTION-MILL.

No. 879,262.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed May 6, 1907. Serial No. 372,262.

*To all whom it may concern:*

Be it known that I, HENRY B. HEBERT, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Reduction-Mills, of which the following is a specification, accompanied by drawings.

My invention relates to reduction mills, such as are adapted for breaking, cracking or crushing kernels, like wheat, corn and the like.

The improved crusher herein described is particularly intended for the treatment of grains and seeds, but is not necessarily limited to treatment of such materials, and I do not intend to limit myself to the treatment of any particular class of materials or even to the treatment of organic materials only. I will, however, describe my invention with particular reference to the crushing and reduction of grain.

In the crushing or grinding of wheat, particularly in the making of what is known as flour, it is exceedingly desirable to break the berry thoroughly and uniformly in the reduction of the same, the apparatus herein described being adapted to crush and grind the grain.

My invention consists in the novel construction and arrangement of crushing and grinding means, as hereinafter described and particularly pointed out in the claims.

The objects of my invention are to improve apparatus for crushing or breaking grain and the like; to combine with the breaking action a grinding action suitable for producing the character of product desired, to reduce to a minimum the power required for the operation of the apparatus, and to make the apparatus simple, compact and reliable.

I will now proceed to describe my invention with reference to the accompanying drawings, in which one form of reduction mill embodying my invention is illustrated.

In said drawings, Figure 1 shows a side view of the mill, with one side removed, and Fig. 2 shows a central vertical section of the mill.

In said drawings 1 designates the frame of the mill; 2 and 3 transverse partitions therein; 4 a crank shaft arranged to be driven by means of a suitable driving wheel 5 and having a plurality of crank pins 6 spaced at suitable angular intervals, and 7 a corresponding

plurality of pitmen connected to and arranged to move up and down sliding carriers 8 upon which are mounted crusher-heads 9 by means of the adjusting screws 10. The faces of these crusher-heads or hammers are inclined beyond the angle of repose of the material treated, so that said material will not hang on the surfaces, and said faces are also oblique to the direction of motion of the carriers. Adjacent crank pins 6 are 180° apart, more or less, so that adjacent carriers 8 move always in opposite directions, corresponding inclined faces of crusher-heads 9 of adjacent carriers alternately approaching and receding from each other.

The faces of any two crusher-heads never quite come together, the distance separating them when they are in closest proximity corresponding to the size to which the material treated is to be reduced by said faces. Since it is of course desirable to reduce the material in a series of operations, the distance between the crusher faces when in closest proximity gradually decreased from the top to the bottom of the machine. There may be as many of these crusher-heads on each carrier 8 as desired, so that the crushing and grinding may be performed in as many stages as desired. There may, of course, be as many carriers with crusher-heads thereon as desired.

Between the pitmen 7 are chutes 11 for discharging the material to be treated into the crushing chamber between carriers 8, there being one such chute between each two carriers 8.

As will be readily understood, when the mill is in operation the carriers 8 are reciprocating up and down, alternate carriers moving in opposite directions, and the crusher-heads 9 of adjacent carriers are alternately approaching and receding from each other. The grain or other material treated descending from the chutes 11 falls upon the inclined surfaces of the uppermost of the crusher-heads 9, and sliding down such surfaces into the space between the adjacent faces of the crusher-heads and thence descends to the bottom; since the crusher-heads are continually approaching and receding from each other, the grain is continually being reduced between the inclined surfaces, which, since they are inclined to the direction of motion of the heads, produce a grinding action upon the grain as well as a breaking or crushing action. This combined grinding and break-



ing or crushing action is very effective in reducing grain to the desired result.

In the partition 3 I provide chutes 12 leading therefrom for the discharge of the 5 reduced material.

While the invention has been described with particular reference to the details of construction, it should be understood that it is not to be limited thereto, as many and 10 various changes, alterations and substitutions may be made therein and still fall within its scope and principle; but

What I do claim, and desire to secure by Letters Patent, is:—

15 1. A reduction mill comprising a plurality of vertically reciprocable carriers, crusher heads provided with inclined crusher faces secured to said carriers, said crusher heads being arranged one above the other and adja- 20 cent crusher heads being arranged on adjacent carriers to form a zigzag conduit from

top to bottom of mill and means for reciprocating adjacent carriers in opposite directions.

2. A reduction mill comprising a plurality 25 of vertically reciprocable carriers, a series of crusher heads having inclined crusher faces alternately secured to adjacent carriers one above the other, the crusher faces of adjacent crusher heads being parallel, and the dis- 30 tance between said adjacent crusher faces decreasing from the top to bottom of mill and means for reciprocating adjacent carriers in opposite directions.

In testimony whereof I have signed this 35 specification in the presence of two subscribing witnesses.

HENRY B. HEBERT.

Witnesses:

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E. VAN ZANDT.