

(No Model.)

A. C. NAGEL, R. H. KAEMP, & A. W. F. G. LINNENBRÜGGE.

PROCESS OF REDUCING GRAIN.

No. 310,709.

Patented Jan. 13, 1885.

Fig. 1.

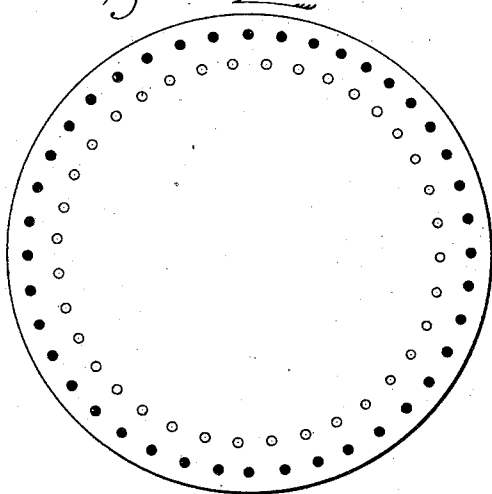


Fig. 2.

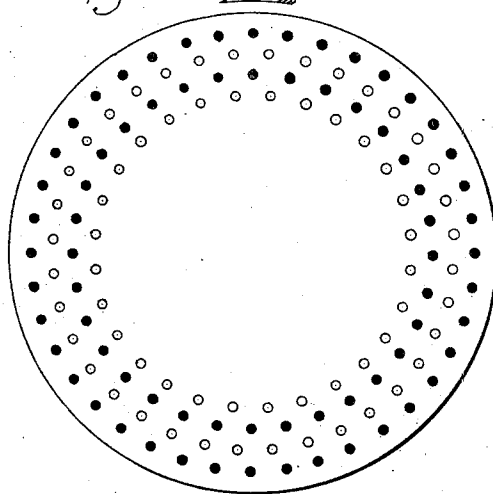


Fig. 3.

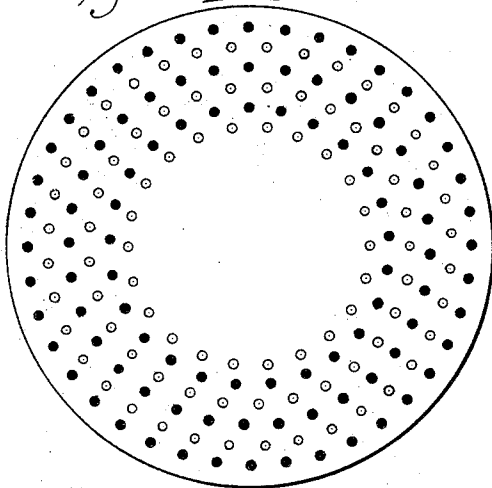
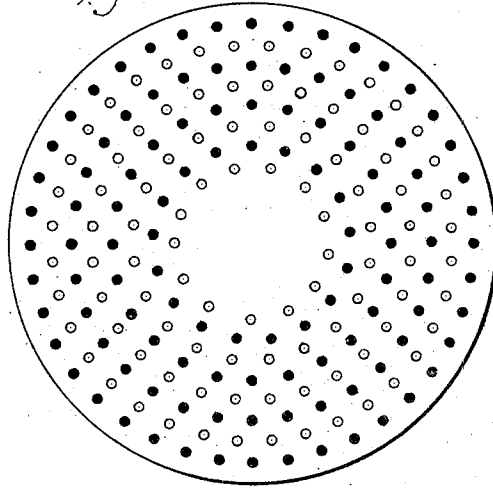


Fig. 4.



Attest:

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PROCESS OF REDUCING GRAIN.

SPECIFICATION forming part of Letters Patent No. 310,709, dated January 13, 1885.

Application filed March 8, 1884. (No model.)

To all whom it may concern:

Be it known that we, AUGUST CHRISTIAN NAGEL, REINHOLD HERMANN KAEMP, and ADOLF W. F. G. LINNENBRÜGGE, all of the city of Hamburg, in the Empire of Germany, have invented certain new and useful Improvements in the Process of Reducing Grain, of which the following is a full, clear, and exact description.

10 This invention relates to the production of flour from cereals, especially from wheat, by the so-called "high-grinding" or "gradual-reduction" process; and its object consists in an improved method of carrying out the com-
15 minuting operations, of the said process by means of disintegrating-machines such as are described in the United States Patent specification No. 228,669, or of other machines of the same kind.
20 Whenever granular substances—as, for instance, grain or middlings—are exposed to the action of the beating-pins of a disintegrator, it is of material importance for the efficiency of operation of the machine that the number of
25 blows imparted by the pins to every grain, as well as the power with which the pins act on the same, be in due proportion to the size of the grains, as well as the power with which the pins act on the same be in due proportion to
30 the size of the grains, small pieces requiring more blows, or such as have greater power, than when the pieces to be broken are of larger size. For this reason we make use for the
35 gradual reduction of grain of two or more disintegrators having on their co-operating disks a varying number of rows of pins or beaters, or operating in addition thereto at different relative speeds of the beaters, and we employ the
40 said disintegrators in such order that each following machine through which the material to be comminuted is passed has on its co-operating disks a greater number of rows of pins, so as to impart to every grain an increased number of blows, or that the number of rows
45 of pins and also the relative speed of the co-operating rows is greater, in order to bring about an increase in the number as well as in the power of the blows.

The four figures on the annexed sheet of

drawings illustrate the increasing number of rows of pins on the disks of four disintegrators to be employed in succession, the pins on one disk being shown by open circles and the pins carried by the other disk by filled circles. Figure 1 thus indicates one row of pins belonging to each disk; Fig. 2, two rows; Fig. 3, three rows, and Fig. 4 four rows. The arrows in each figure indicate the relative speed of the disks, two arrows indicating a higher speed than one, three a higher speed than two, and four a higher speed than three.

The disintegrators themselves, being known machines, do not require to be described. Any machines of this kind, whether having but one pair of co-operating systems of pins or whether provided with two pairs, may be used for the purpose; besides, the relative speed of the systems of pins working together may be attained by causing the disks, with the pins, to revolve in opposite directions, or by maintaining one disk stationary while the other one revolves, or by driving both in the same direction, but at different speeds. It may also be mentioned that the pins may be cylindrical, prismatical, conical, or other suitable shape. These variations in arrangement are, however, also known, and therefore neither require further description nor an illustration.

Though four reductions, as supposed in the foregoing, have been found practically to be advantageous in most cases, the method can just as well be applied to or carried out by a smaller or even a greater number of reductions, and therefore the process is not to be confined to four reductions or to the number of rows of pins limited, as shown in the drawings.

It may further be stated that in exceptional cases it may be desirable to use the same number of rows of pins and the same relative speed in repeated reductions. Moreover, this process may be advantageously adopted where the first breaks are accomplished by rolls or other gradual-reduction machine, the subsequent breaks—two, three, or more—thus alone involving this process.

As this invention has nothing to do with the bolting and purifying of the products of the different reductions, or with the further reduc-

tion of the middlings into flour, which may be done in any known suitable manner, it is needless to enter upon that branch of milling.

We claim as our invention—

5 1. The process of reducing grain, consisting in subjecting the same in consecutive stages to the action of two or more disintegrating-machines, the number of rows of pins or beat-
10 than in the preceding one, substantially as described.

2. The process of reducing grain, consisting in subjecting the same in consecutive stages to the action of two or more disintegrating-

machines, the number of rows of pins or beat- 15
ers and also the relative speed of the co-operating rows in each succeeding machine being greater than in the preceding one, substantially as hereinbefore specified.

In testimony whereof we have hereunto set 20
our hands in the presence of two subscribing witnesses.

AUGUST CHRISTIAN NAGEL.

REINHOLD HERMANN KAEMP.

ADOLF WILHELM FRANZ GEORG LINNENBRÜGGE.

Witnesses:

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