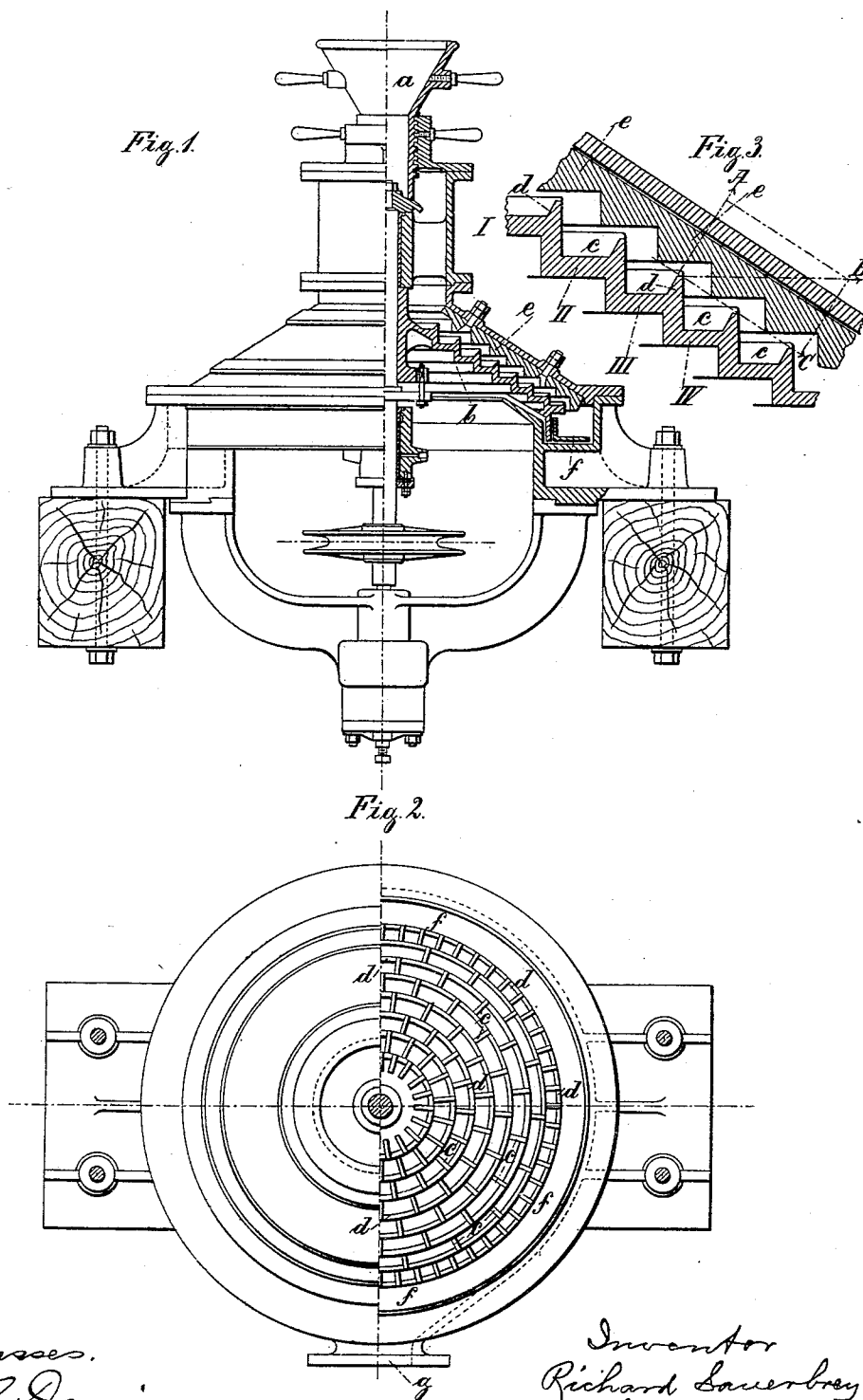


(No Model.)

R. SAUERBREY.
CENTRIFUGAL CRUSHING MILL.

No. 569,238.

Patented Oct. 13, 1896.



Witnesses.
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UNITED STATES PATENT OFFICE.

RICHARD SAUERBREY, OF STASSFURT, GERMANY.

CENTRIFUGAL CRUSHING-MILL.

SPECIFICATION forming part of Letters Patent No. 569,238, dated October 13, 1896.

Application filed May 6, 1896. Serial No. 590,475. (No model.) Patented in Germany February 6, 1891, No. 58,630; in Austria-Hungary April 29, 1892, No. 53,929 and No. 90,583, and in England January 26, 1895, No. 1,892.

To all whom it may concern:

Be it known that I, RICHARD SAUERBREY, a citizen of the German Empire, residing at Stassfurt, in the Kingdom of Prussia, in said
5 Empire, have invented certain new and useful Improvements in Centrifugal Crushing-Mills, (for which I have obtained patents in Germany, dated February 6, 1891, No. 58,630; in Austria-Hungary, dated April 29, 1892, No.
10 53,929 and No. 90,583, and in England, dated January 26, 1895, No. 1,892;) 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
15 appertains to make and use the same.

In the accompanying drawings, Figure 1 represents a side elevation, one-half in vertical central section, of a crushing-mill embodying my invention. Fig. 2 represents a plan view
20 of the same, all parts above the conoidal body and also one-half of the latter being removed; and Fig. 3 represents a detail sectional view, on an enlarged scale, of a part of the conoidal grinding devices.

25 The centrifugal crushing-mill of this present invention is remarkable for the concentration of the effective or working parts upon the smallest possible compass. The material to be reduced is not subjected to a grinding or triturating action, but is turned into flour or dust only by the effect of blows caused by centrifugal force. There are quite a number
30 of similar mills known, but this present machine shows peculiarities of its own which exert important and favorable influences upon the process of reducing. In the first place the step-like arrangement of the rotating body or cone, and correspondingly the stationary bell or mantle, offers the advantage
40 that as the material fed is being beaten smaller and smaller it is being subjected to the increasing centrifugal force. The turn-table plates I II III IV being provided with ribs, a ventilating effect is being attained, and by
45 fitting elevated rings around the periphery of these plates the effect of the blows is still increased.

As appears from the accompanying drawings, the principal improvement in this machine consists in the arrangement of a rotating body *b* of step-like circular plates I II III

IV, &c., provided with raised edges *d* and ribs *c*. The ribs *c*, when body *b* is rotating, cause a strong current of air, since they act like the wings of a fan. This draft carries the
55 material fed through adjustable hopper *a* downward in the direction of arrow C, Fig. 3. During its passage it is thrown back upon the rotating plates from or by the corresponding parts of the mantle, where by the centrifugal force it is driven again toward edge *d*.
60 Here it overcomes the friction between the material to be ground and the plates, and is now thrown onward in the direction of arrow A. The result of the two components A
65 and C is the actual direction of arrow B. Thus the action goes on until the material finally gets to ring *f*, attached to *b*, and consequently rotating with *b*, whence, with the assistance of the existing current of air and
70 a striker, (not shown in the drawings,) it is passed out of the machine at outlet *g*, Fig. 2. Thus the material with this machine is not ground in the usual way nor knocked about
75 by pins, but by its living force, *vis viva*, it is being thrown against the mantle and thus broken up. The current of air produced by the rotation of the body *b* serves at the same time for cooling the material, which otherwise doubtless would get hot in consequence
80 of the transformation of *vis viva* into heat caused by the sudden destruction of the former.

The continually-decreasing dead-weight of the individual particles of the material is being balanced by the lower steps increasing in size and the consequently greater centrifugal force, so that the momentum of the *vis viva* approximately remains the same. The ribs *c* will also help to reduce the material, since
90 during its descent it will continually receive blows as it knocks against these ribs.

The main purpose of ribs *c* is the creation of a current of air, while the reduction by the catching and the knocking about and the
95 collisions of the material by and with these ribs is only a secondary consideration.

The ring-like edges D hold the material back until finally the centrifugal force overcomes the resistance, when the material is
100 thrown off with so much greater force. Besides this edge gives to the material a pecu-

liar direction, so that it cannot be carried off immediately by the strong current of air.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed,
5 I declare that what I claim is—

In a centrifugal crushing-mill, the combination of a hollow conoidal mantle having inner grinding surfaces *e* with a series of rotating
10 troughs arranged to throw the material centrifugally against said grinding-surfaces;

said troughs having within them ribs *c* for creating a current of air substantially as set forth.

In testimony whereof I have hereunto
signed my name in the presence of two sub-
scribing witnesses.

RICHARD SAUERBREY.

Witnesses:

CARL H. S. SCHULTZ,
CLARENCE B. SCHULTZ.