

(No Model.)

H. PROPFE & G. ZARNIKO.
CENTRIFUGAL ROLLER MILL.

No. 581,082.

Patented Apr. 20, 1897.

Fig. I.

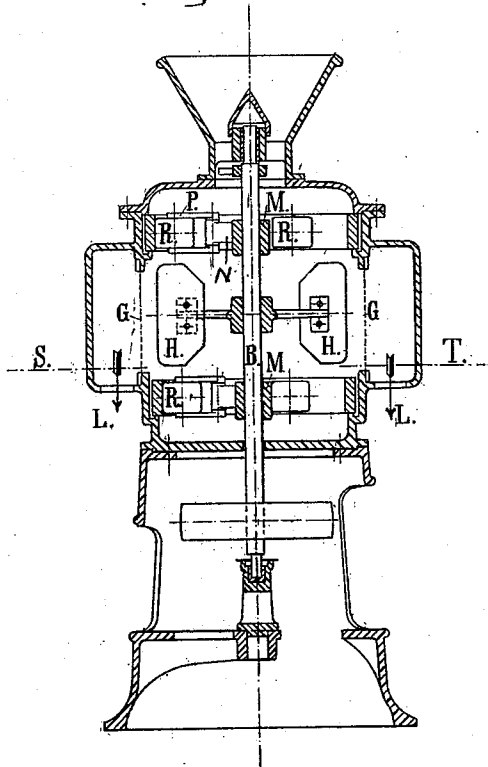


Fig. IV.

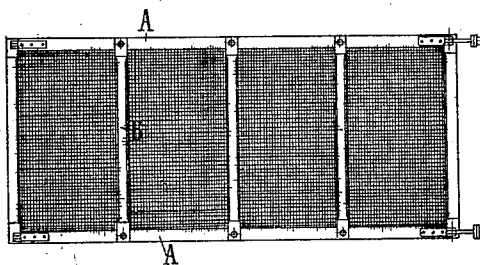


Fig. II.

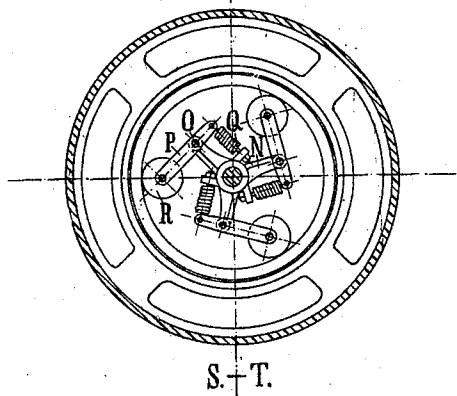
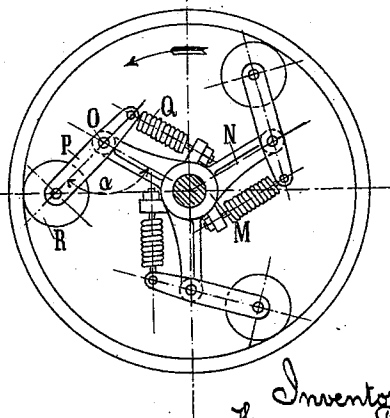
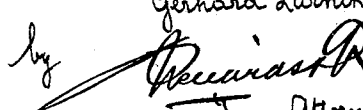


Fig. III.



Witnesses
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UNITED STATES PATENT OFFICE.

HERMANN PROPFE AND GERHARD ZARNIKO, OF HILDESHEIM, GERMANY.

CENTRIFUGAL ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 581,082, dated April 20, 1897.

Application filed February 4, 1896. Serial No. 577,969. (No model.) Patented in Germany June 30, 1894, No. 81,629; in Austria December 20, 1895, No. 45/5,013, and in Hungary December 26, 1895, No. 4,990.

To all whom it may concern:

Be it known that we, HERMANN PROPFE and GERHARD ZARNIKO, subjects of the German Emperor, residing at Hildesheim, Germany, have invented a certain new and useful Improvement in Centrifugal Roller-Mills, (for which we have obtained patents in Austria, ILV, 5,013, bearing date December 20, 1895; in Hungary, No. 4,990, bearing date December 26, 1895, and partly in Germany, No. 81,629, bearing date June 30, 1894,) of which the following is a specification.

This invention has for its object improvements in centrifugal roller-mills, and is shown in the accompanying drawings, in which—

Figure 1 is a vertical section of the machine; Fig. 2, a horizontal section; Fig. 3, a view of a special arrangement of the rollers; Fig. 4, an elevation showing the method employed for stretching the flexible sieve.

One or more naves or bosses M, provided with arms N, are mounted on a vertical shaft B. These arms at their outer ends are each formed with a hole to receive a pin or hinge-bolt O. Levers P are mounted to pivot or oscillate on said hinge-bolts, and these levers each carry at one end revoluble rollers R and at the other end are subjected to the pull of a springs Q, which is carried by and pulls toward the nave. The grinding action of the rollers is such that on the whole system being rotated in a suitable direction the rollers are pressed against the mill-casing by centrifugal force assisted by the action of the springs and disintegrate the material to be ground, which lies between the grinding-surfaces.

The rollers R may be adjusted by means of the spring Q to a given pressure against the mill-casing and yet be free without other manipulation to run over large lumps of the material to be ground which may lie between the grinding-surfaces.

If the rollers be caused to rotate in such a way that, as seen in Fig. 2, they run in a direction contrary to that of the hands of a clock, a very considerable advantage may be obtained by a small alteration. It is in fact only necessary to make the angle inclosed by the arm N and the lever P greater than a right angle (see Fig. 3) to establish a knee-lever action, which very considerably increases the

disintegrating effect when the roller encounters an obstruction. If α be the above-named angle and P be the power or force which comes into action at the hinge-point O in the direction of the tangent to the track or circuit, the power conveyed to the roller is
$$\frac{P}{\cos. (\alpha - 90^\circ)}$$

If α equal 90° , therefore, as shown in Fig. 2, equals P; if α equal 127° , for instance, equals 1.25 P; if α equal 135° , about equals 1.43 P, &c.

As shown in Fig. 1, two grinding systems are employed, one above the other, with a fan H mounted to rotate between them, so as to drive the air and with it the finely-ground material out through a sieve lining or frame G.

The letter L indicates the way in which the finely-ground product leaves the machine.

Material which is not rendered fine enough by the first grinding falls into the lower grinding apparatus and is there again ground.

In order to securely attach the sieve-lining G in such a manner that it may be tightly stretched vertically and at the same time may be quickly removed and replaced, we provide a construction which is illustrated in detail in Fig. 4. This consists of a frame composed of bars A, of wood, steel, or similar material, which are of sufficient flexibility to permit their being bent around the casing of the machine. These bars are connected with each other at suitable intervals by vertical bars B. The gauze is stretched over this frame when it is in a flat position, as shown in Fig. 4, whereby it may be much more evenly and tightly stretched, and the frame is then bent around the casing and secured in place in any suitable manner.

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

1. A centrifugal roller-mill comprising the casing, the vertical spindle having laterally-extending arms, and the horizontally-disposed levers having their intermediate portions pivoted to said arms, rollers carried upon the outer ends of said arms, and springs connecting the inner ends with the spindle, substantially as described.

2. In combination with the casing having the upper and lower grinding-surfaces and an open space between, the central vertical

- spindle, the upper and lower arms carried by
said spindle, the two sets of horizontal levers
pivoted to said arms and carrying rollers on
their outer ends, springs acting against the
5 inner ends of the arms to force the rollers
outward, the netting or sieve covering the
open space of the casing, and the fan carried
by the spindle in line with said sieve, sub-
stantially as described.
- 10 3. A centrifugal roller-mill comprising the
casing, the vertical spindle having laterally-
extending arms, and the horizontally-dis-
posed levers pivoted to said arms and carry-
- ing rollers at their outer ends, said levers
being arranged at an obtuse angle to the 15
arms whereby the rotation of the shaft pro-
duces a toggle or knee action on said levers
and forces the rollers outwardly, substan-
tially as described.
- In witness whereof we have hereunto set 20
our hands in presence of two witnesses.
- HERMANN PROPFE.
GERHARD ZARNIKO.
- Witnesses:
CARL ARNDT,
H. KLENCKER.