(No Model.)

S. SCHWARZENBERGER.

GRINDING MILL.

No. 526,203. Patented Sept. 18, 1894.

Fig.1.

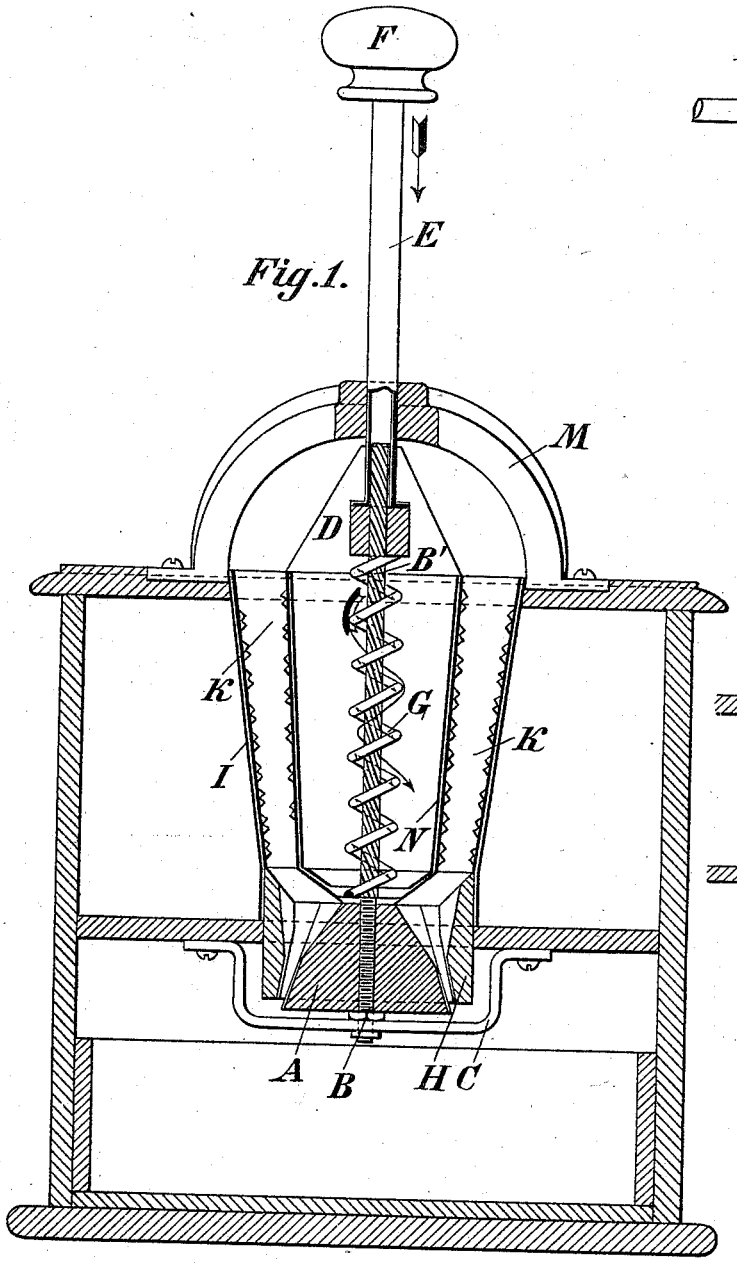
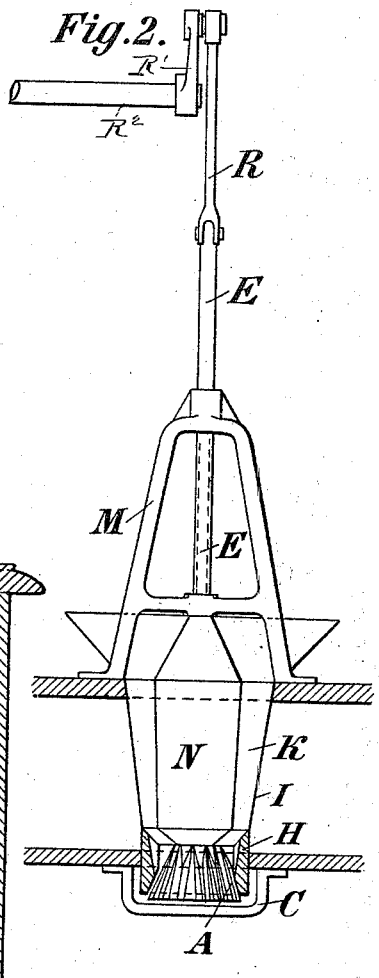


Fig.2.



WITNESSES

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UNITED STATES PATENT OFFICE.

SIDDI SCHWARZENBERGER, OF ZITTAU, GERMANY.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 526,203, dated September 18, 1894.

Application filed November 1, 1893. Serial No. 489,774. (No model.)

To all whom it may concern:

Be it known that I, SIDDI SCHWARZENBERGER, of Zittau, in the Kingdom of Saxony and German Empire, have invented new and useful Improvements in Grinding-Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to grinding mills chiefly of the smaller type, such for example as are used domestically for grinding coffee, pepper and such like substances. Heretofore the usual mode of driving such mills has been by means of a crank on the vertical shaft of the grinding cone or by means of a crank on a horizontal shaft in combination with a pair of bevel wheels. These modes present certain inconveniences in use and furthermore the comminution of the material to be ground which is poured into the grinding hopper takes up too much time.

The object of the present improvement is to remedy the inconveniences hitherto experienced in domestic grinding mills and so supply a pressing want.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a cross section of a hand operated coffee-mill provided with the improvements. Fig. 2 is a cross-section, partly in elevation, of a similar grinding apparatus for power driving.

The grinding cone A is arranged in the stationary surrounding envelope or grinding stone H and fixed to the spindle B which is rotatably mounted in the bent shoe piece C and provided at its upper part with a quick screw thread B′ similarly to the driving spindle of an Archimedean drill.

D is a nut embracing the screwthreaded portion B′ of the spindle B and it is fixed to the tube E which is furnished at its upper end with the operating knob F. It is capable of vertical reciprocating motion and is guided in the stirrup piece M. If vertical pressure is exerted on knob F the nut D causes the spindle B and with it the grinding cone A to rotate in the direction of the arrow. A spiral spring G is applied to the spindle B and after compression by the descent of the nut D it returns the said nut and tube E automatically, thereby causing the spindle B and the grinding cone A to rotate in the opposite direction.

The knob F will be of suitable size to enable the operator to hold it and the tube E and nut D against rotation during vertical movement.

Further according to my invention, in grinding mills with a rotary cone and envelope I fix a funnel-shaped hopper N to the grinding cone A so as to rotate with same and it is provided on its outer side with a suitably roughened surface or coating and to the stationary envelope H or grinding stone I fix a similar funnel I which is furnished on its inner side with a roughened surface or lining.

The material to be ground is fed into the space K between the two funnels N and I, and undergoes in this space a preparatory grinding by reason of the said rotation of the inner funnel. The roughened surfaces of the two funnels are or may be also provided with left-handed and right-handed cuts or grooves in order that the preparatory grinding of the material to be comminuted may take place both during the right-handed and the left-handed rotations of the funnel N. A mill of this kind may also be readily arranged for power driving.

Fig. 2 shows by way of example an arrangement of this kind in which the tube E together with its nut is connected by the connecting rod R to the crank R′ upon a rotary shaft R^2 which therefore transmits rotary motion to the grinding apparatus.

The improvements hereinbefore described may be applied to all grinding or comminuting machines which act on the principle of the coffee mill illustrated.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A grinding mill comprising in its construction a casing having the stirrup M, the screw threaded shaft B mounted to resist vertical movement and having a grinding cone at its lower end, the tube E mounted to slide vertically in the stirrup M and adapted to receive and guide the upper end of the shaft B, the nut D at the lower end of the tube, the stationary grinding envelope surrounding the cone, and means for reciprocating the tube, substantially as described.

2. A grinding mill comprising in its con-

struction a casing having the stirrup M, the screw threaded shaft B mounted to resist vertical movement and having a grinding cone at its lower end, the tube E mounted to slide vertically in the stirrup M and adapted to receive and guide the upper end of the shaft B, the nut D at the lower end of the tube, the stationary grinding envelope surrounding the cone, the rotary funnel N above the cone and having a roughened outer surface, the stationary funnel I above the grinding envelope and having a roughened inner surface, and means for reciprocating the tube and nut, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

SIDDI SCHWARZENBERGER.

Witnesses:

PAUL FISCHER,

JOHN SALOWSKI.