F. RUDELOFF.

ORE-MILLS FOR WET-GRINDING.

No. 194,468. Patented Aug. 21, 1877.

Fig. 2.

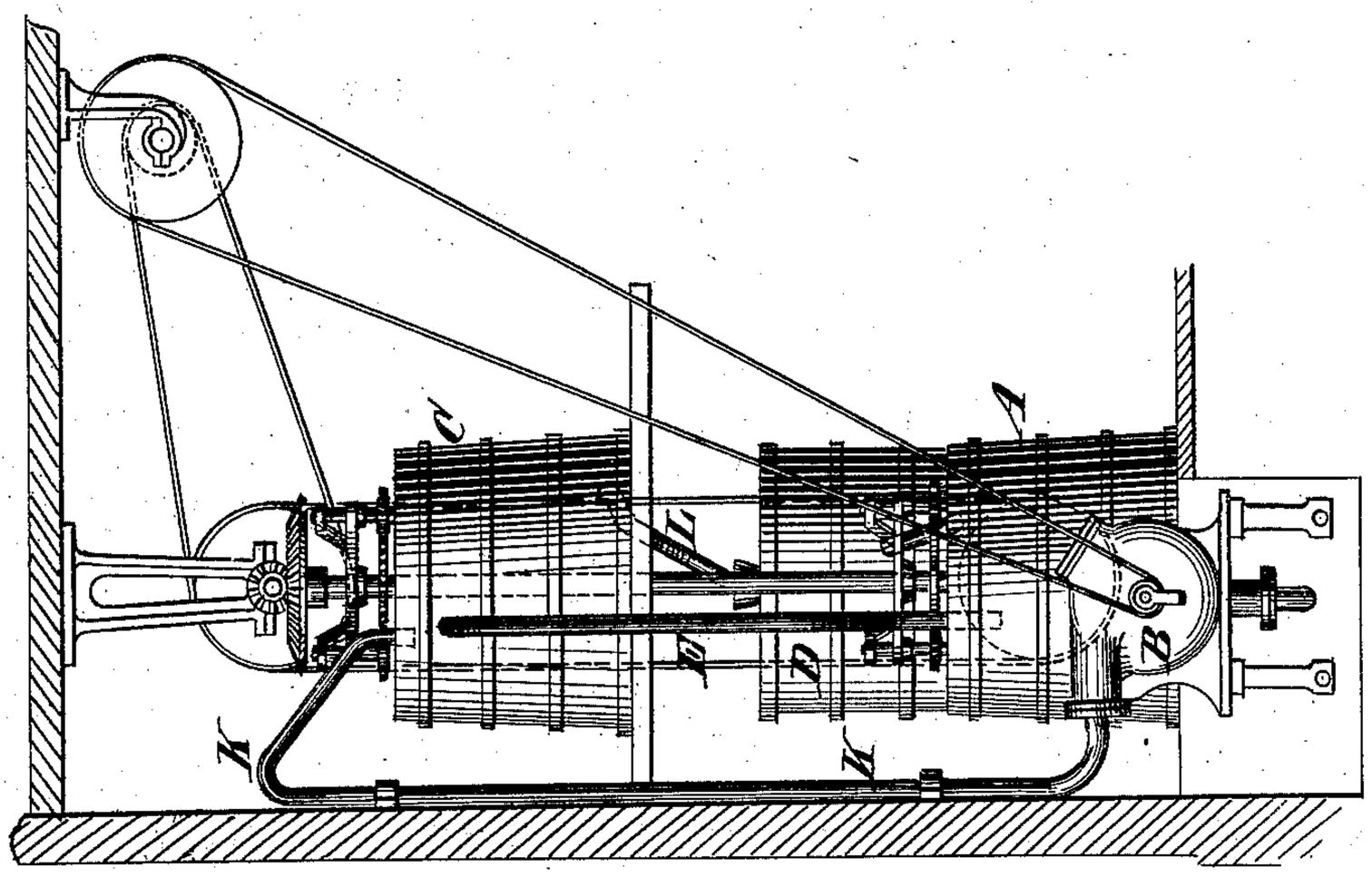
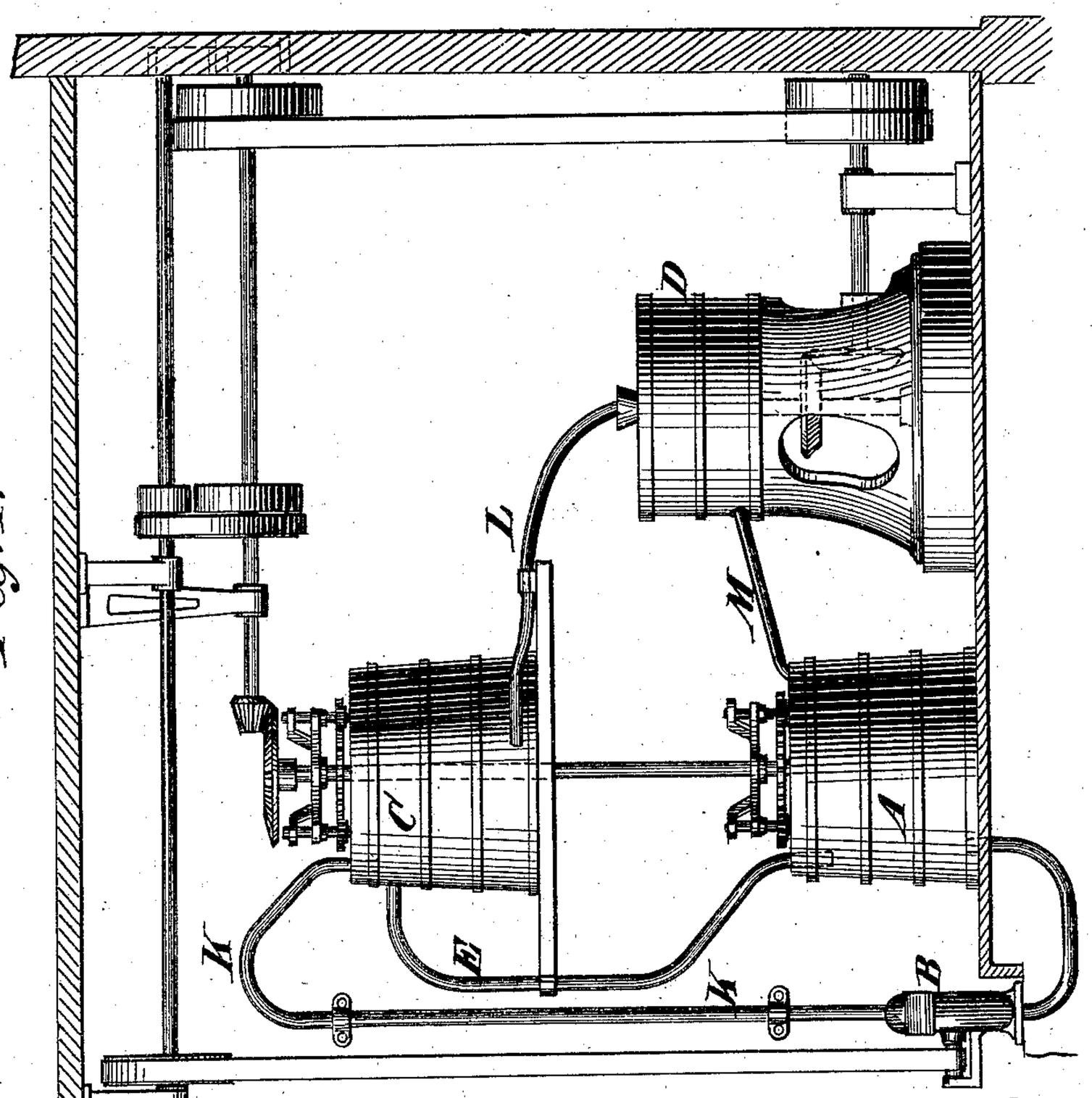


Fig. 1.



Witnesses.
John Becker.
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Inventor
Franz Rudeloff
by his Attorneys
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UNITED STATES PATENT OFFICE.

FRANZ RUDELOFF, OF BUCHAU, PRUSSIA.

IMPROVEMENT IN ORE-MILLS FOR WET-GRINDING.

Specification forming part of Letters Patent No. **194,468**, dated August 21, 1877; application filed May 25, 1877.

To all whom it may concern:

Be it known that I, FRANZ RUDELOFF, of Buchau, Prussia, in the Empire of Germany, have invented an Improved Apparatus for the Wet-Grinding of Minerals and other materials; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification.

My invention has for its object the supply of an apparatus for the wet-grinding of materials used in forming the body of porcelain-ware, and in the glazing of the same, such as quartz, flint, spar, &c., or hard minerals employed in other arts, and by which I am enabled to secure all the advantages of both dry and humid grinding without the inconveniences hitherto inseparable from these systems.

The invention consists in the combination, with a mill for wet-grinding, of a stirring apparatus placed below the said mill, a stirring apparatus placed above the said mill, a circulating-pump of any kind, or a pulsometer, and circulating-pipes, forming, with the said mill, pump or pulsometer, and stirring apparatus, a continuous circulating-passage for circulating the mixed material to be ground through the mill, as hereinafter described.

Figure 1 in the drawing is a front view, and Fig. 2 is a side view, of the entire apparatus constructed in accordance with my invention.

The material or materials to be ground, having, when necessary, been subjected to a preliminary crushing in a pool-work, or in any other suitable way, is placed in the lower "stirring-coop" A, which previously has been filled three-fourths full, or thereabout, with water.

From this coop the material, mixed with water, is, by means of a centrifugal or any other suitable kind of pump or pulsometer, B, raised through the pipe K to the upper stirring-coop C, whence it falls through an inclined tube, L, onto the bed-stone of the mill D, where it is ground, and whence it falls through a pipe, M, into the stirring-coop A, whence it again circulates, as before, through the pump B, pipe K, stirring-coop C, pipe L, mill D, and pipe M, back to the stirring-coop A, and so on till the material has been reduced to the requisite fineness.

The continuous stirring of the mass, and the vertical or inclined position of the pipes uniting the upper stirring-coop with the mill and the lower stirring-coop with the pump, cause the larger and heavier particles to descend the quicker, and consequently arrive at the bed-stone of the mill in advance of the smaller and lighter ones.

Each stirring-coop is large enough to contain the whole quantity of material required to be treated in a single batch, in order to provide for any derangement of the apparatus that might require the temporary suspension of the operation and the retention of the material in a single coop during the stoppage.

In order to prevent the whole quantity of water wanted for the regular and proper working of the pump from needlessly passing through the mill, an overflow-pipe, E, extends from the upper coop C downward, and discharges into the lower coop A, leading back about half the quantity of water raised by the pump to said upper coop C.

Suitable cocks are provided for opening or closing any or all of the pipes.

When the mass is reduced to a sufficiently fine powder the same is transferred by any suitable means to a receptacle, where the ground material settles, and sets into a friable mass at the bottom, when the overlying water is drawn off by means of a siphon.

In consequence of being kept constantly cool by the circulating water, the mill may be made to run at much higher speed than is permitted in dry-grinding; and as principally the larger particles are brought to the stones in advance of the smaller, the process is much more effective than methods hitherto employed, whether of dry or humid grinding.

The cost of the apparatus is moderate, it is easily managed, and the necessary stoppages and delays in working are much less than with processes and apparatus hitherto employed.

Any suitable gearing or mill-work may be employed to drive the pump and the mill.

Minerals not previously crushed, but which are naturally sufficiently granular to be circulated through the apparatus, may be ground in it to any desired fineness.

I claim—

The combination, with the mill D, of the

stirring apparatus A, placed below the said mill, the stirring apparatus C, placed above the said mill, the circulating-pump B, and circulating-pipes, forming, with the said mill, pump, and stirring apparatus, a continuous circulating-passage for circulating the mixed material to be ground through the mill, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of February, 1877.

FRANZ RUDELOFF.

Witnesses:
HUGO THEODOR DOBINS,
CARL BEHRENDS.