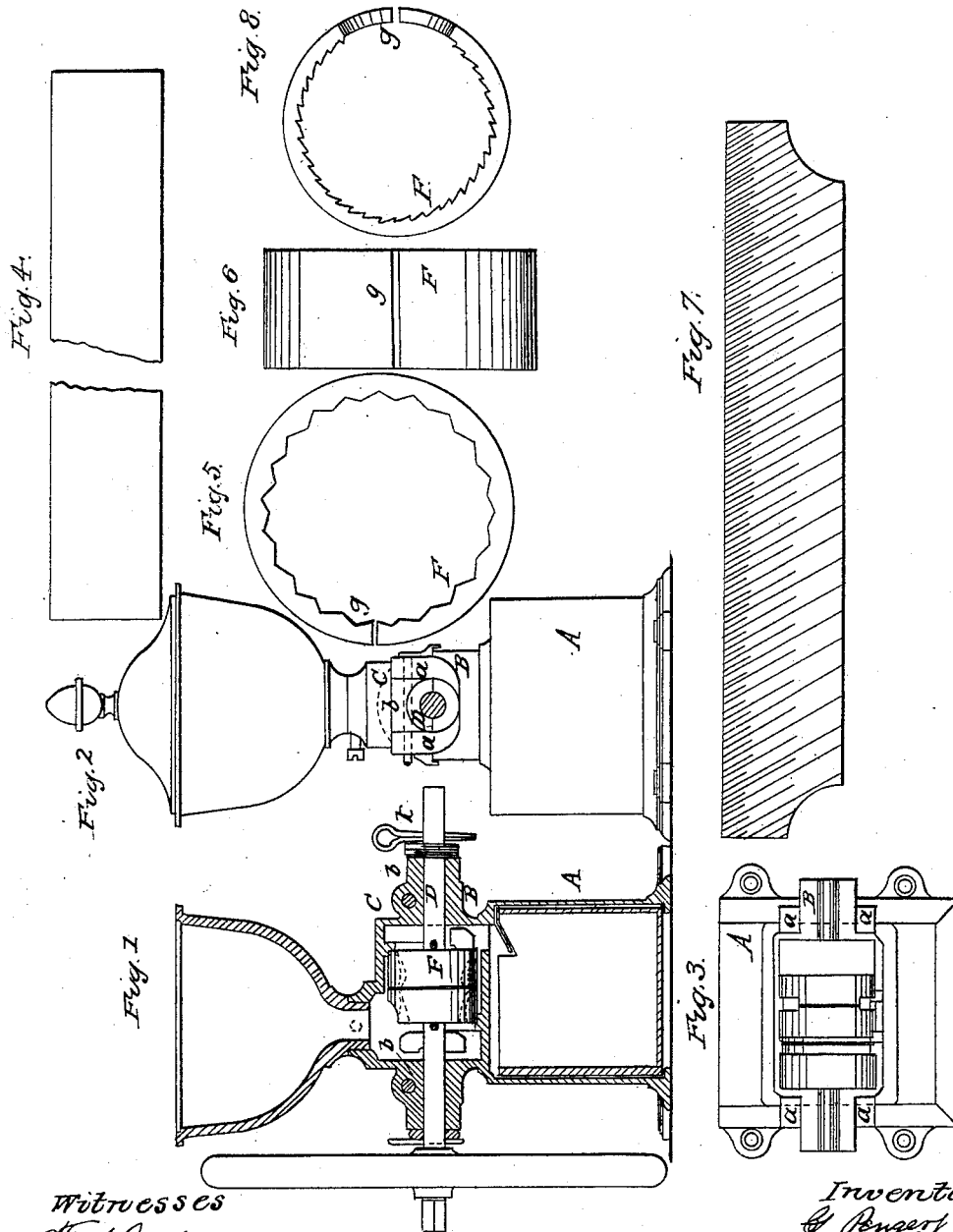


PENGEOT & LAURENT.  
Grinding Mill.

2 Sheets—Sheet 1.

No. 59,528.

Patented Nov. 6, 1866.



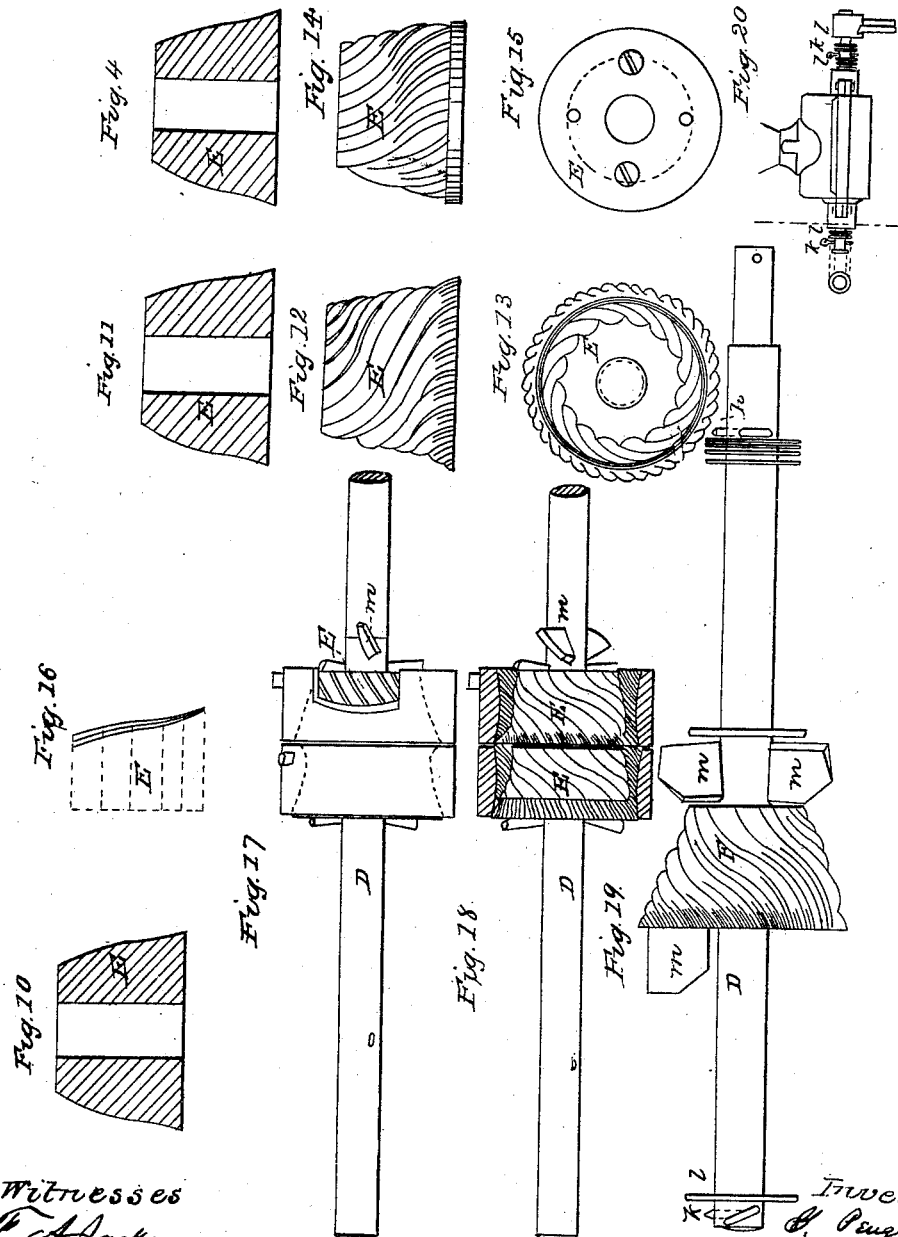
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EMILE PEUGEOT AND J. B. B. C. LAURENT, OF PARIS, FRANCE.

## IMPROVEMENT IN GRINDING-MILLS.

Specification forming part of Letters Patent No. 59,528, dated November 6, 1866.

*To all whom it may concern:*

Be it known that we, EMILE PEUGEOT and JEAN BAPTISTE BERNARD CHARLES LAURENT, of Paris, France, have invented certain new and useful Improvements in Grinding-Mills; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention. Fig. 2 is an end view of the same. Fig. 3 is a plan or top view of the same.

The remaining figures are details, which will be referred to as the description progresses.

Similar letters of reference indicate like parts.

This invention relates to a grinding-mill in which one or more grinding-cones are mounted on a shaft that has its bearings in a shell or box made of two parts, which are connected by conical pins passing through lugs on the ends of the two parts. Said grinding-cones are of peculiar form, and they work in concaves which are open at one point, so that they are free to accommodate themselves to the cones and also to the interior of the shell. The cones are adjusted in the concaves by means of washers and pins, which can be changed from one side of the shaft to the other; and from the shaft project agitators, which serve to feed the material to be ground to the grinding-surfaces.

A represents a hollow base or bed, which serves to support the shell B C. The lower part, B, of said shell may be cast solid with or otherwise rigidly attached to the bed, and it is provided with lugs or ears *a* at both ends, which are made to straddle projections *b* on the ends of the upper part, C, of the shell. The lugs *a* and projections *b* are bored out to receive pins *c*, and by these pins the two parts of the shell are firmly connected, and the whole device is constructed so that the upper part of the shell can be readily taken off.

The ends of the shell form the bearings for the shaft D, on which is mounted the grinding-cone E, or, instead of one cone, several cones may be mounted on one and the same

shaft, as shown in Figs. 17 and 18. The cones are made in different shapes, as represented in Figs. 9, 10, and 11, and they may also be provided with teeth on their bases, as shown in Fig. 13.

The cone shown in Fig. 9 is convex down to the lower part, which is slightly concave. That shown in Fig. 10 is also convex down near to its base, but instead of being concave its largest part forms a truncated cone. That shown in Fig. 11 is the same as Fig. 10 as far as its upper part is concerned; but between its base and the convex part there is an intermediate concave portion. This concave portion is of some importance, since it facilitates the discharge of the material to be ground, and prevents clogging.

The cones are provided with teeth, as shown in Figs. 12 and 14, said teeth being made in the form of a helix, the pitch of which decreases with the diameter of the cone, thus forming coarse teeth for crushing the material to be ground and fine teeth for the purpose of reducing said material to the required fineness. If desired, intermediate teeth may be placed between the main teeth of the cone, as shown in Fig. 14.

The precise size and shape of the cones can, of course, not be strictly defined; but experience shows that by retaining the proportions shown in the drawings good results are obtained, and if these proportions are changed it ought to be done within the limits indicated by the blue and red lines in Fig. 16.

The cones E work in concaves F, which are produced from plates such as shown in Fig. 4, and which are provided with teeth such as shown in Fig. 9. By bending these plates so that their ends come close together the concaves are formed as shown in Figs. 5, 6, and 8. By referring to these figures it will be noticed the ends of the plates do not come close together, leaving a gap, *g*, which enables the concave to adapt itself to the cone and to the shell. In order to give a chance to the concave to adjust itself the shell is bored out a little larger than the outside diameter of the concave.

In order to reduce the strain on the cones, particularly on the fine teeth, we mount two or more cones, end to end, on the same shaft,

as shown in Figs. 17 and 18. The teeth on these cones will be of gradually-decreasing fineness, so that the material to be ground is gradually reduced to as fine a powder as may be desired.

For the purpose of regulating the degree of fineness to which the material to be ground is to be reduced the driving-shaft is provided with a key, *k*, in either end, and by means of this key washers *l* are retained between the end of the shell A and the key itself, and by changing one or more washers from one end of the shell to the other the cone or cones are set closer to or farther from the concaves, said concaves being retained in the shell A by suitable stops or keys. The arrangement of the washers *l* and keys *k* is shown particularly in Fig. 20.

Suitable agitators *m* serve to feed the material to be ground to the cones and concaves, said agitators being composed of oblique wings secured in the main shaft or to the end of the cone. By the use of these agitators the operation of a horizontal mill is rendered practicable and uniform, and much time and labor are saved.

What we claim as new, and desire to secure by Letters Patent, is—

The gap *g* in the concave F, substantially as and for the purpose set forth.

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Witnesses:

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