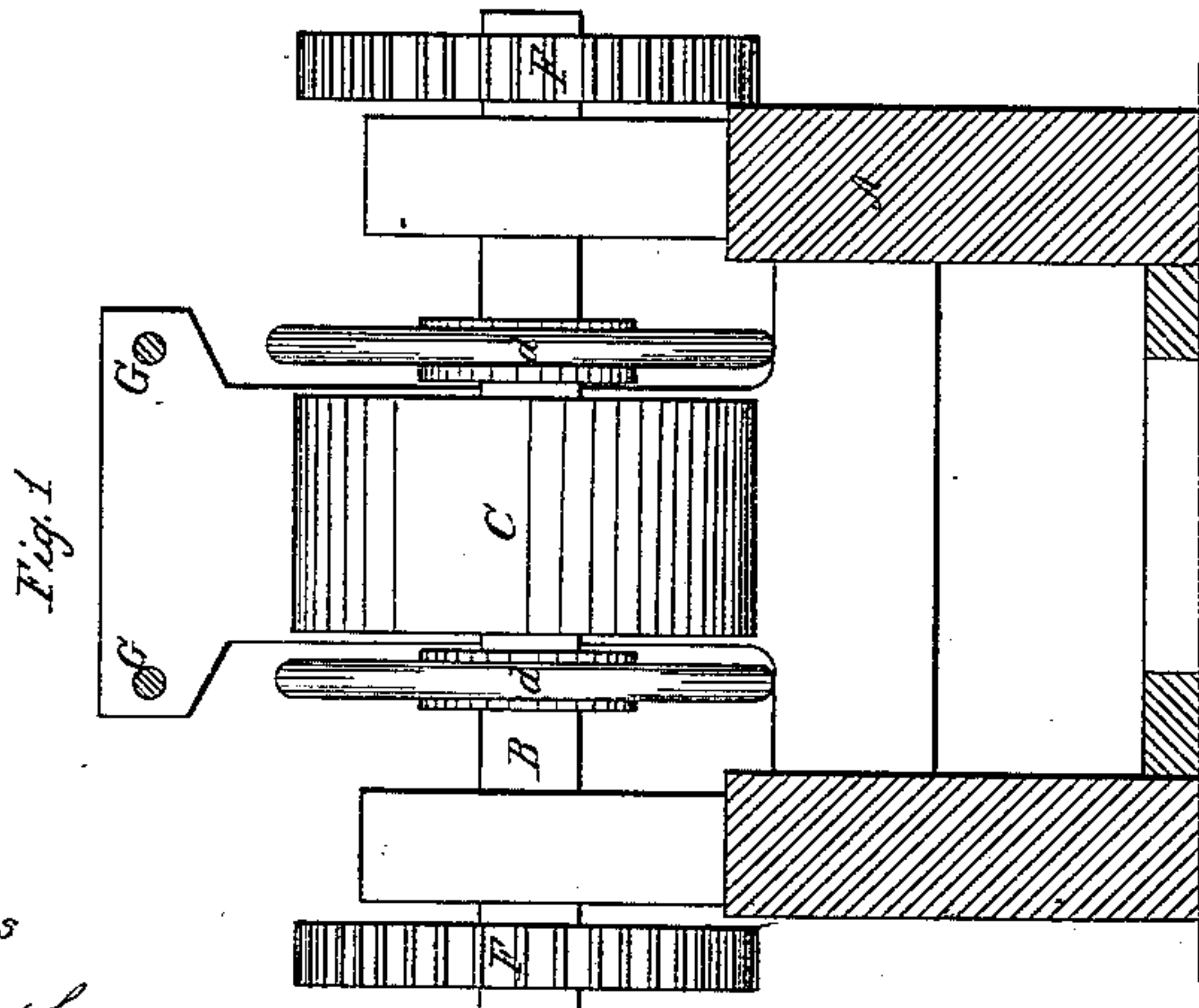
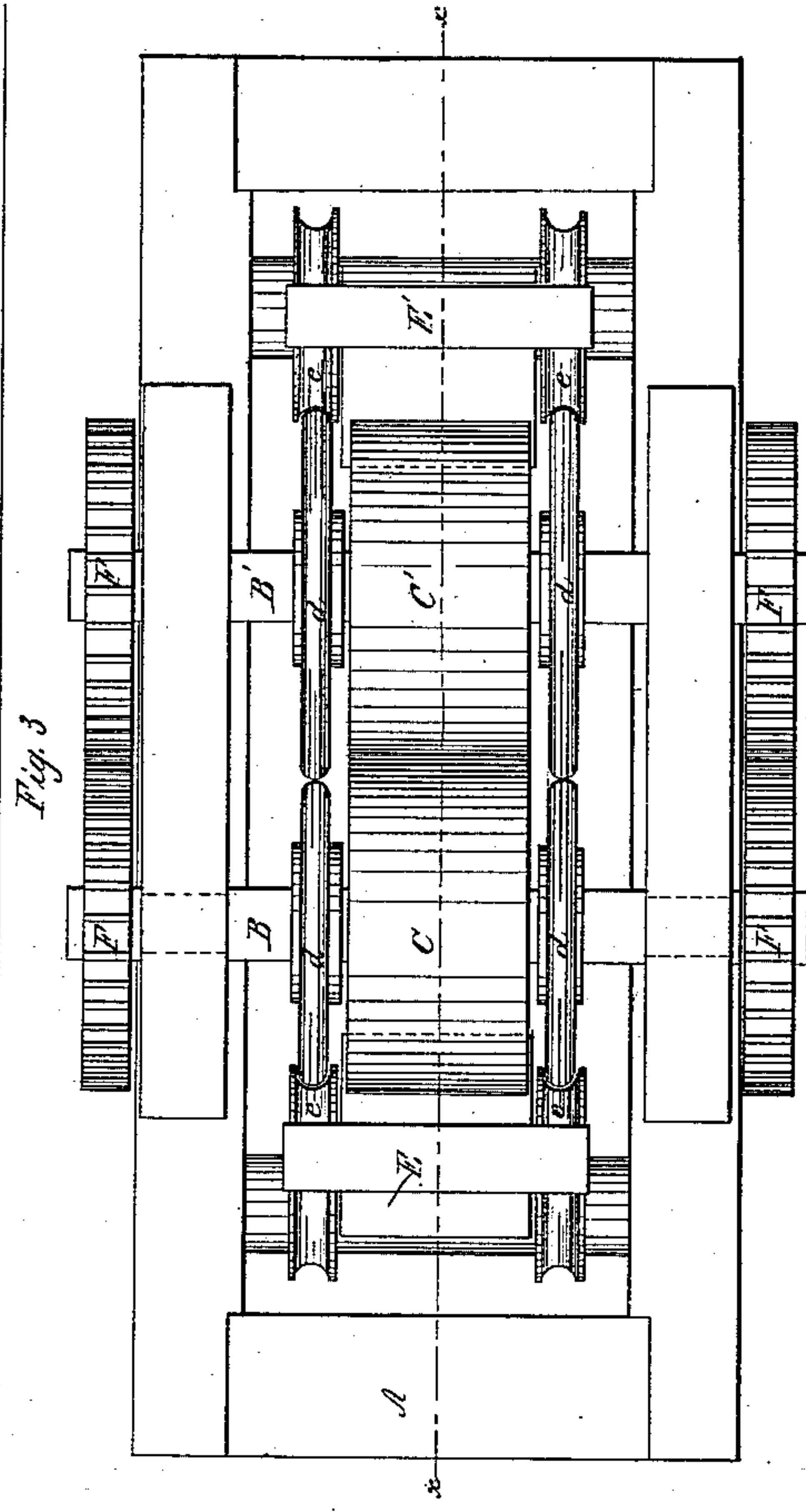
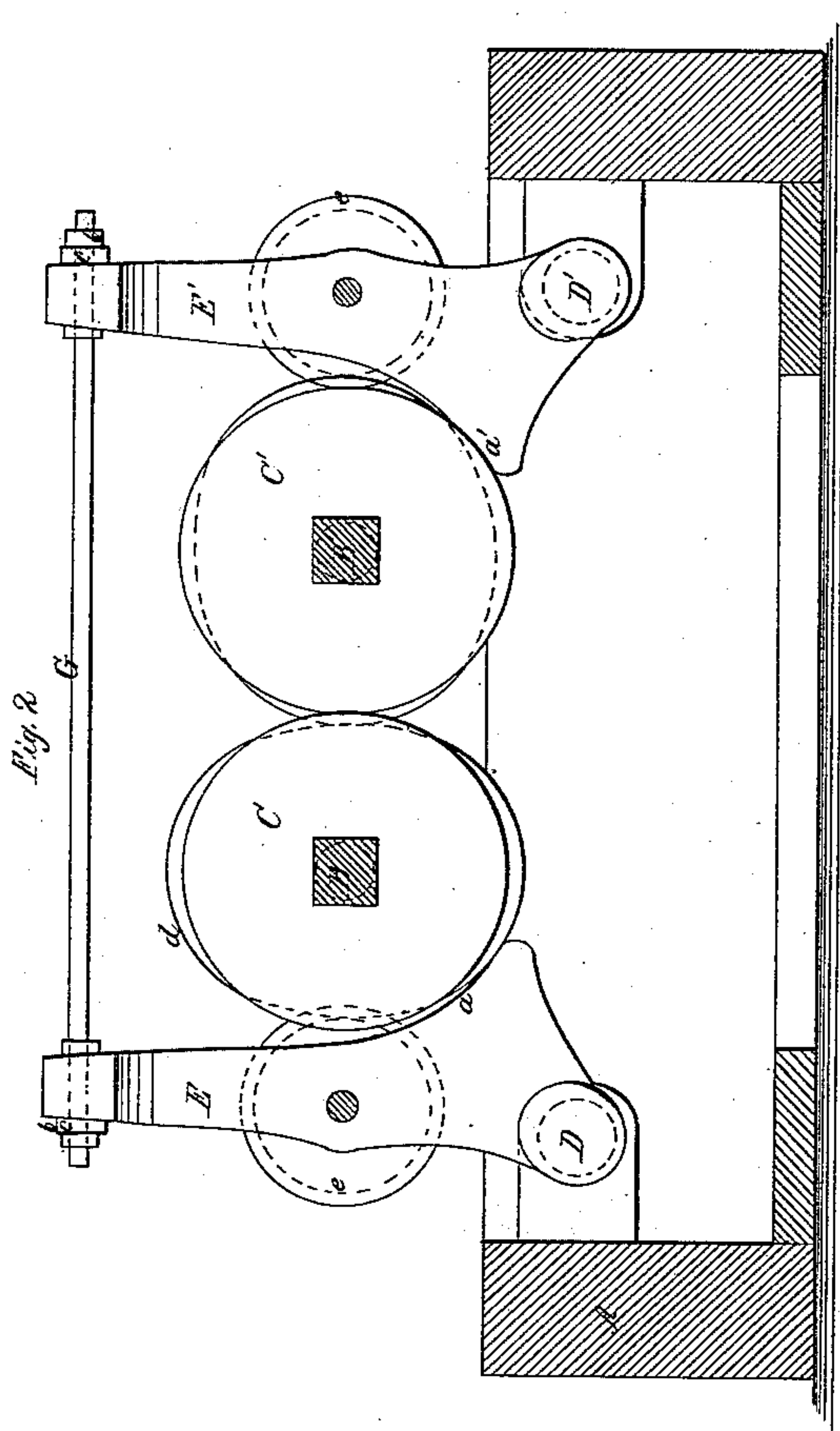


A. KOMP.
Quartz Crusher.

No. 64,333.

Patented April 30, 1867.



Witnesses
Geo. F. Southern
Gustav Berg

Inventor
A. Komp
By Van Antwerp Haaff
his attys

United States Patent Office.

A. KOMP, OF NEW YORK, N. Y.

Letters Patent No. 64,333, dated April 30, 1867.

IMPROVEMENT IN QUARTZ-CRUSHERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, A. KOMP, of 184 Fulton street, in the city, county, and State of New York, have invented a new and useful improved Apparatus for Crushing and Pulverizing Quartz and other hard substances; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a transverse vertical section of this invention.

Figure 2 is a longitudinal vertical section of the same, the line *x x*, fig. 3, indicating the plane of section.

Figure 3 is a plan or top view of the same.

Similar letters indicate corresponding parts.

This invention relates to an apparatus for crushing quartz, stones, and other hard substances, in which the substance to be reduced is exposed to the action of an oscillating and of a revolving jaw in such a manner that the same is drawn in between the crushing surfaces by the action of the revolving jaw or roller, and then crushed and ground by the combined action of the two jaws. The required motion of the oscillating jaw is effected by connecting the same with a similar jaw, acting in combination with a second revolving jaw, and by eccentrics, cranks, toggle-joints, or other suitable means, secured to or actuated by the shafts of the revolving jaws, in such a manner that, while one of the oscillating jaws swings towards its revolving jaw, the other swings from it, and *vice versa*, and that a large quantity of quartz or other material can be crushed with comparatively little expenditure of power. Elastic cushions, which are combined with the rod or rods connecting the two oscillating jaws, prevent injury in case a hammer, chisel, or other piece of iron, or similar material, should pass in between the working surfaces of the crushing jaws.

A represents a frame, which is made of cast iron or any other suitable material, and which forms the bearings for the shafts *B B'* of the revolving crushing jaws *C C'*, and for the gudgeons or rock-shafts *D D'* of the oscillating jaws *E E'*. The revolving jaws are made of cast iron or any other suitable material, and they are geared together by strong gear-wheels *F*, so that they revolve in opposite directions. The oscillating jaws are also made of cast iron or any other suitable material, and they are provided with toes *a a'*, extending under the revolving jaws in such a manner that, when the upper end of the oscillating jaw swings off from the revolving jaw, the toe of said oscillating jaw approaches the revolving jaw, and *vice versa*, and by these means the quartz or other substance to be reduced is drawn in between the crushing surfaces by the action of the revolving jaws or rollers, and then first crushed by the action of the upper part of the oscillating jaw, and afterwards ground by the combined action of the toe and its appropriate revolving jaw. The two oscillating jaws are connected by a rod or rods, *G*, passing through their upper ends, and secured in place by nuts *b*. With each rod are combined two elastic cushions, *c*, which are so arranged that the oscillating jaws are allowed to yield to a certain degree, and thereby injury to the apparatus is prevented if a hammer, chisel, or other piece of similar nature passes in between the crushing surfaces of the jaws. The required motion of the oscillating jaws is produced by the action of the eccentric-disks *d*, which are mounted on the shafts *B B'*, and act on friction-rollers *e*, pivoted to the sides of the oscillating jaws. Instead of eccentric-disks and friction-rollers, simple cranks or toggle-arms, or other suitable devices, might be employed to produce the required result. The motion of the oscillating jaws is so regulated that while one of said jaws recedes, the other advances, and *vice versa*, and consequently the apparatus grinds on one side, while its other side crushes. By this arrangement the power is uniformly distributed, and the apparatus is not liable to be overstrained, and the material to be reduced is crushed and then ground, all in one continuous operation.

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

The oscillating, crushing, and grinding jaws *E E'*, in combination with the revolving jaws *C C'*, constructed substantially as and for the purpose described.

This specification signed by me this 8th day of March, 1867.

A. KOMP.

Witnesses:

W. HAUFF,

J. BERG.