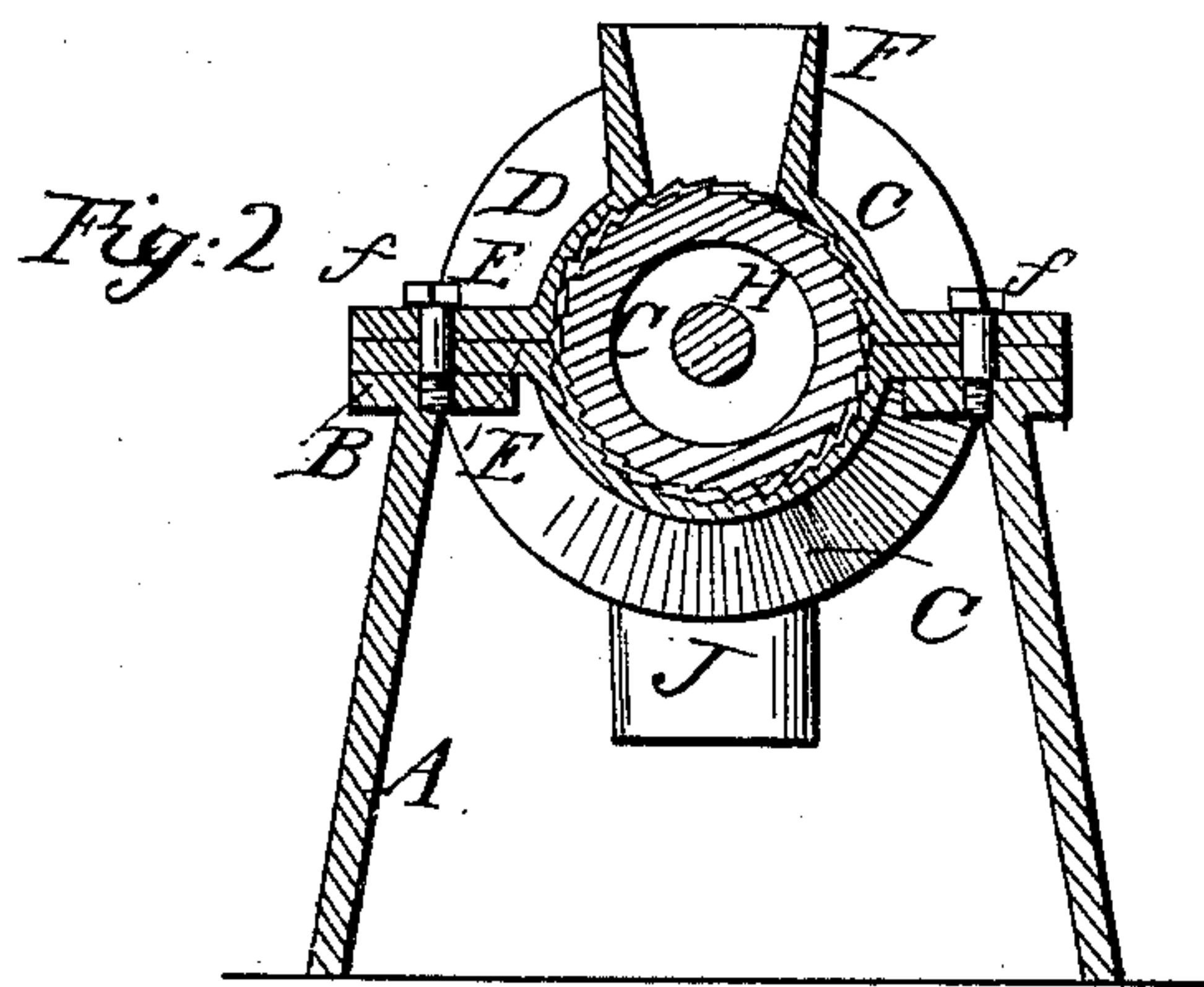
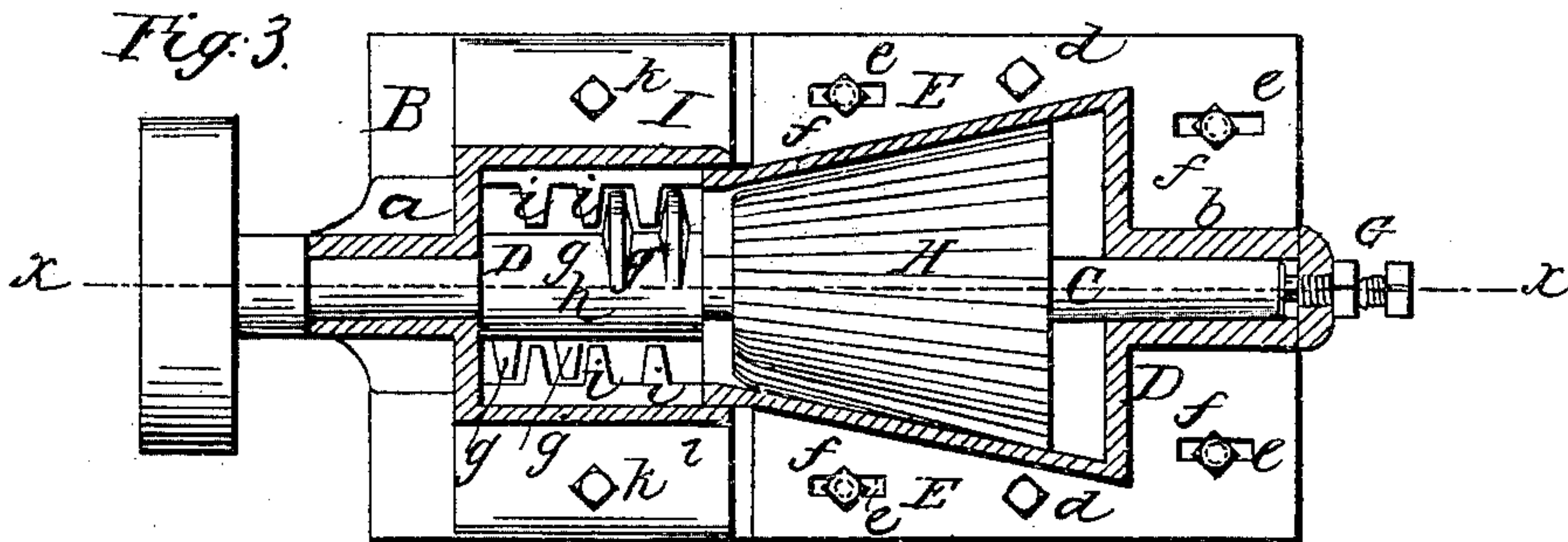
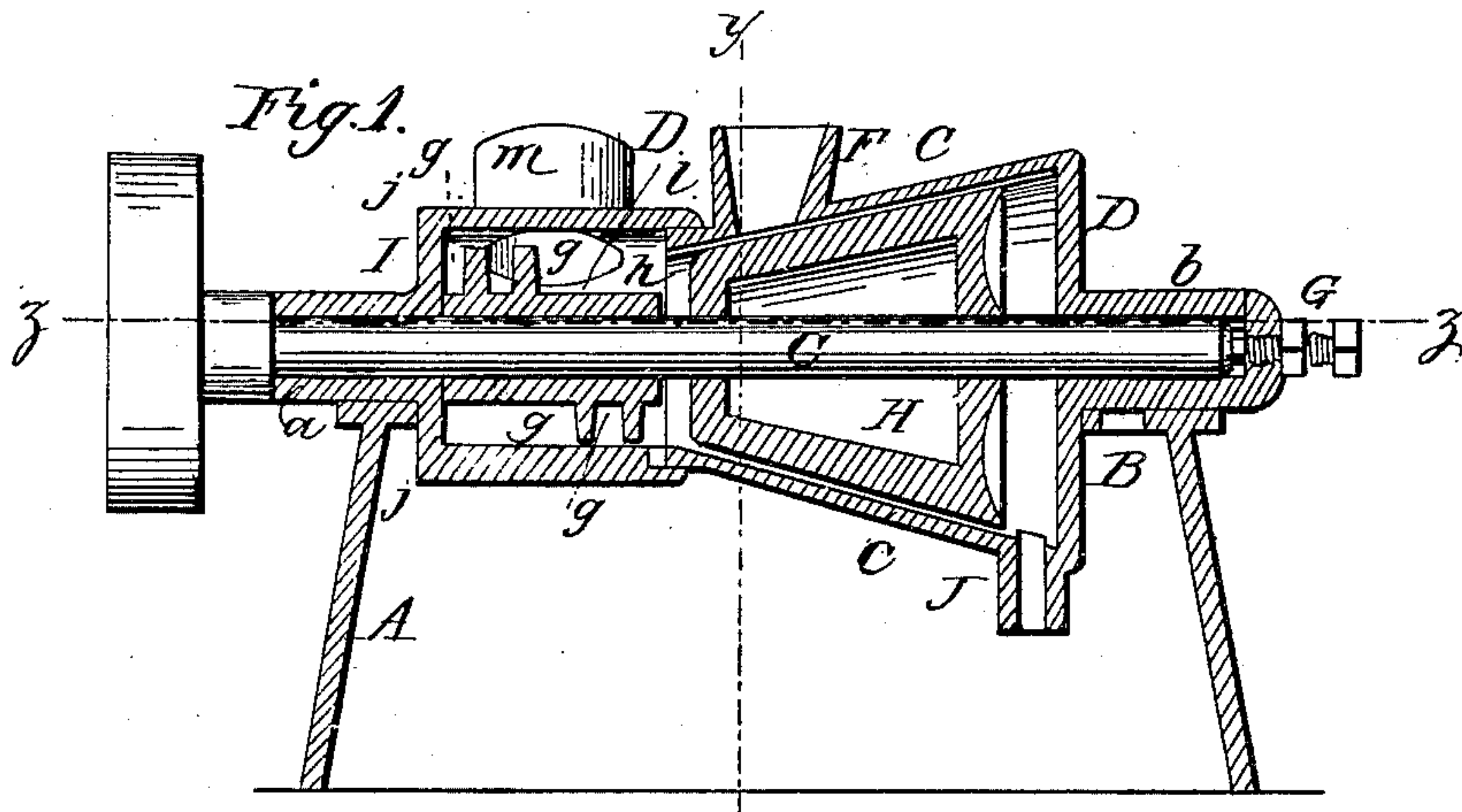


T. BENNETT.  
Grinding Mill.

No. 22,479.

Patented Jan'y 4, 1859.



Witnesses  
Mr. Tuschel  
W. Knapp.

Inventor  
Thos Bennett



# UNITED STATES PATENT OFFICE.

THOMAS BENNETT, OF NEW YORK, N. Y.

## GRINDING-MILL.

Specification of Letters Patent No. 22,479, dated January 4, 1859.

*To all whom it may concern:*

Be it known that I, THOMAS BENNETT, of the city, county, and State of New York, have invented a new and Improved Grinding-Mill; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a longitudinal vertical section of my invention, taken in the line *x, x*, Fig. 3. Fig. 2, is a transverse vertical section of ditto, taken in the line *y, y*, Fig. 1. Fig. 3, is a horizontal section of ditto, taken in the line *z, z*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in that class of grinding mills in which a rotary grinding cone is placed within a similar shaped shell.

The invention substantially consists in having the conical shell adjustable instead of the grinding cone and shaft as hitherto arranged in this class of mills whereby several important advantages are obtained which will be hereinafter described.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, is a box or case which may be of any suitable shape and having on its top a bedplate B.

C, is a shaft which is placed longitudinally on the bedplate B. One end of this shaft has its bearing *a*, on the bed plate and the opposite end has its bearing *b*, at the outer end of a conical shell, D, which is formed of two equal longitudinal parts *c, c*, provided each with flanches E, E, which are connected or secured together by screws *d, d*. In the flanches E, oblong slots *e*, are made and screws *f*, pass through these slots into the bed plate B, see more particularly Fig. 3. With the upper part *c*, of the shell a hopper F, is cast. In the outer end of the bearing *b*, a screw G, is placed, the use of which will be presently shown.

On the shaft C, a grinding cone H, is permanently secured. This cone may be of the usual form and construction sufficiently shorter than the shell to allow a certain degree of longitudinal adjustment of the latter, see Figs. 1 and 3. On the shaft C, there is also permanently secured a cob cutting device D', which is constructed in the usual

way, viz., by having projecting blades *g*, attached to a collar *h*, said blades working between corresponding projections *i*, in a shell I. The shell I, is formed of two parts *j, j*, the lower part being connected permanently with the bedplate and the upper part secured to the bedplate by screws *k*. The inner end of the shell I, of the cob crushing device fits over the adjoining end of the conical shell D, thereby forming a telescopic joint as shown at *l*, and permitting the longitudinal movement of the shell D, see Figs. 1 and 3. The upper part *j*, of the shell I, is provided with a hopper or spout *m*. The screw G, bears against one end of the shaft C, and one end of the collar *h*, of the cob cutter bears against the bearing *a*, of the shaft C.

J, is the discharge spout of the shell D.

The operation is as follows:—The shaft C, is rotated in any proper manner. The cobs or other substance to be crushed and ground is fed through the spout *m*, and is first crushed by the blades *g*, in passing between the projections *i*. The crushed substance then passes between the cone H, and shell D, and is ground thereby, the ground substance being discharged through the spout J. In order to regulate the degree of fineness of the grinding, the screws *f*, are relaxed or slightly unscrewed and the screw G, turned so as to adjust the shell D, the flanches E, of which move or slide on the bed plate, the cone H, being stationary so far as a longitudinal movement or adjustment is concerned. It will be seen that the end of the collar *h*, and the screw G, prevent the shaft C, from moving longitudinally.

The advantages obtained by the adjusting of the shell D, instead of the cone H, to regulate the grinding of the mill so far as fineness is concerned are as follows. In moving the cone and its shaft for the purpose specified two serious defects occur,—first, though the shaft and cone are held or prevented by the screw G, from moving backward or increasing the space between the surfaces of the cone H, and shell D, they are perfectly free to move forward in the direction of the apex of the cone and decrease the space between the cone and shell, and bring their metallic surfaces in contact. This it is well known will frequently occur, owing to the introduction of foreign substances into the mill, and the action of the



belt on the driving pulley, and will either cause the mill to become jammed or wedged, or produce a violent grinding and rubbing action which will quickly cut and destroy the grinding surfaces and wear out the mill, while the meal produced or ground is of an inferior quality owing to the heat generated by the excessive friction of the mill, and the varying and irregular action causing some portions to be ground fine and others coarse. Second, owing to the revolving cob cutter D', being placed loose upon the shaft to admit of longitudinal adjustment without affecting the position of said cutter, it is extremely liable to get out of order, and soon becomes loose, causing a rattling and rapid wear of the parts. These defects are entirely obviated by my invention. The cob cutter D', as well as the cone H, being firmly secured to their shaft C, prevent all rattling or wear and preclude the possibility of the device getting out of repair. The longitudinal movement of the shell D, in contradistinction to that of the cone H, and shaft C, while admitting of a permanent attachment of the cob cutter to the shaft provides an adjustment of the grinder without affecting the position of the cob cutter, and admits of the permanent retention of the parts in their adjusted position, and effectually prevents vibration or end play of the cone and shaft and its consequent heating and cutting by contact of the metallic surfaces, thereby rendering the mill much more du-

35 rable, while insuring a perfectly steady and uniform action, and a corresponding uniformity in the quality or fineness of the meal produced or ground. At the same time the box or bearings of the shaft and cone at one end being cast on the shell itself, no material adjustment is required in the construction to bring them to, or retain them in their concentric positions. Thus it will be seen that the improvement causes the mill to possess in an eminent degree the qualities of simplicity, efficiency, durability and cheapness. 40 45

I do not claim broadly a grinding cone H, placed within a conical shell D, for this is a well known grinding device, and is employed in a great variety of mills; but, 50

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,

1. The adjustable conical shell D, in combination with the grinding cone H, placed or secured upon a shaft C, having no end play or longitudinal adjusting movement, the parts being arranged substantially as and for the purpose set forth. 55

2. I further claim in combination with the adjustable shell D, and cone H, the cob cutter D', permanently attached to the shaft C, and having its shell I, fitted over the end of shell D, for the purpose set forth. 60

THOS. BENNETT.

Witnesses:

WM. TUSCH,

W. HAUFF.