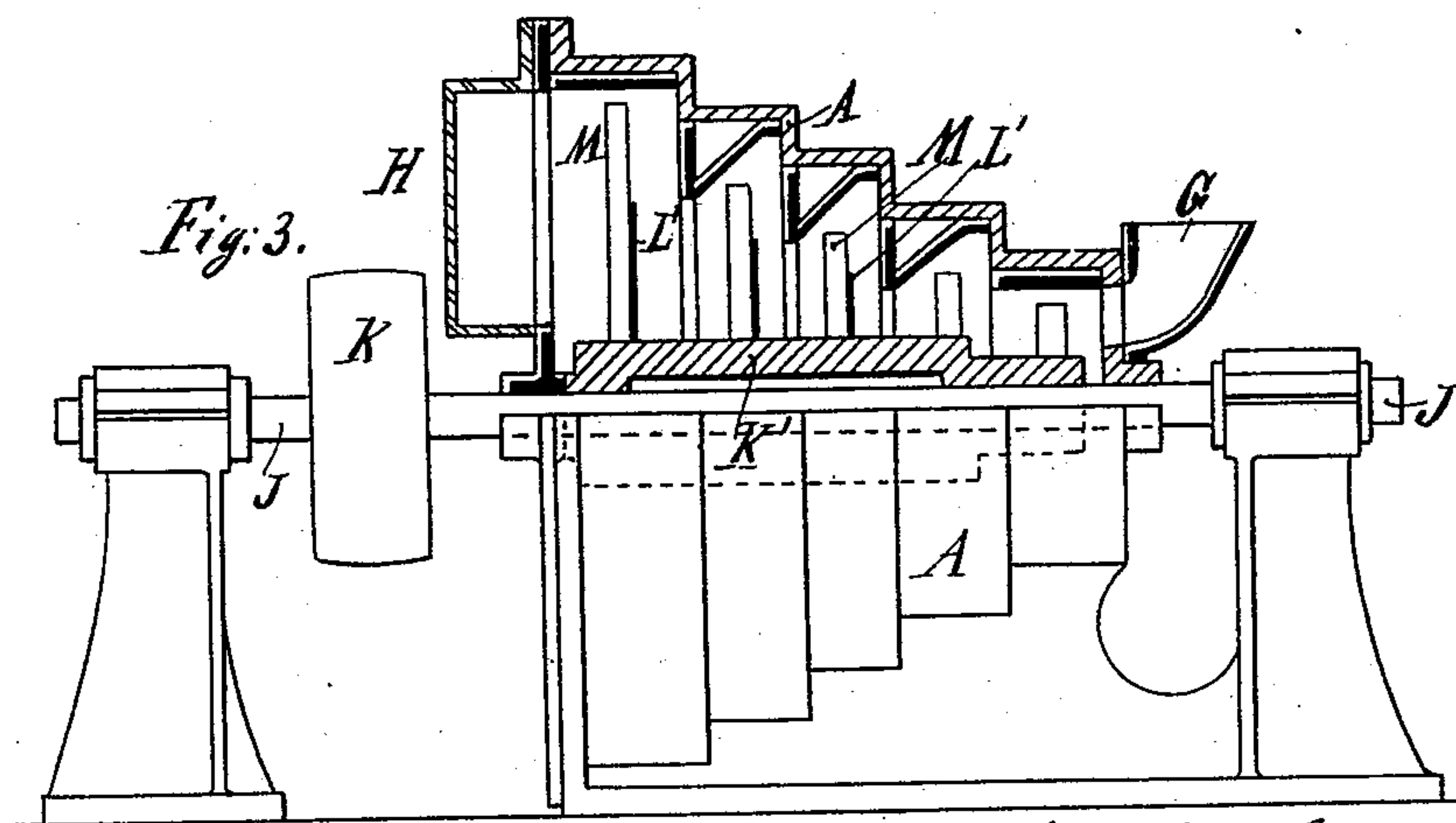
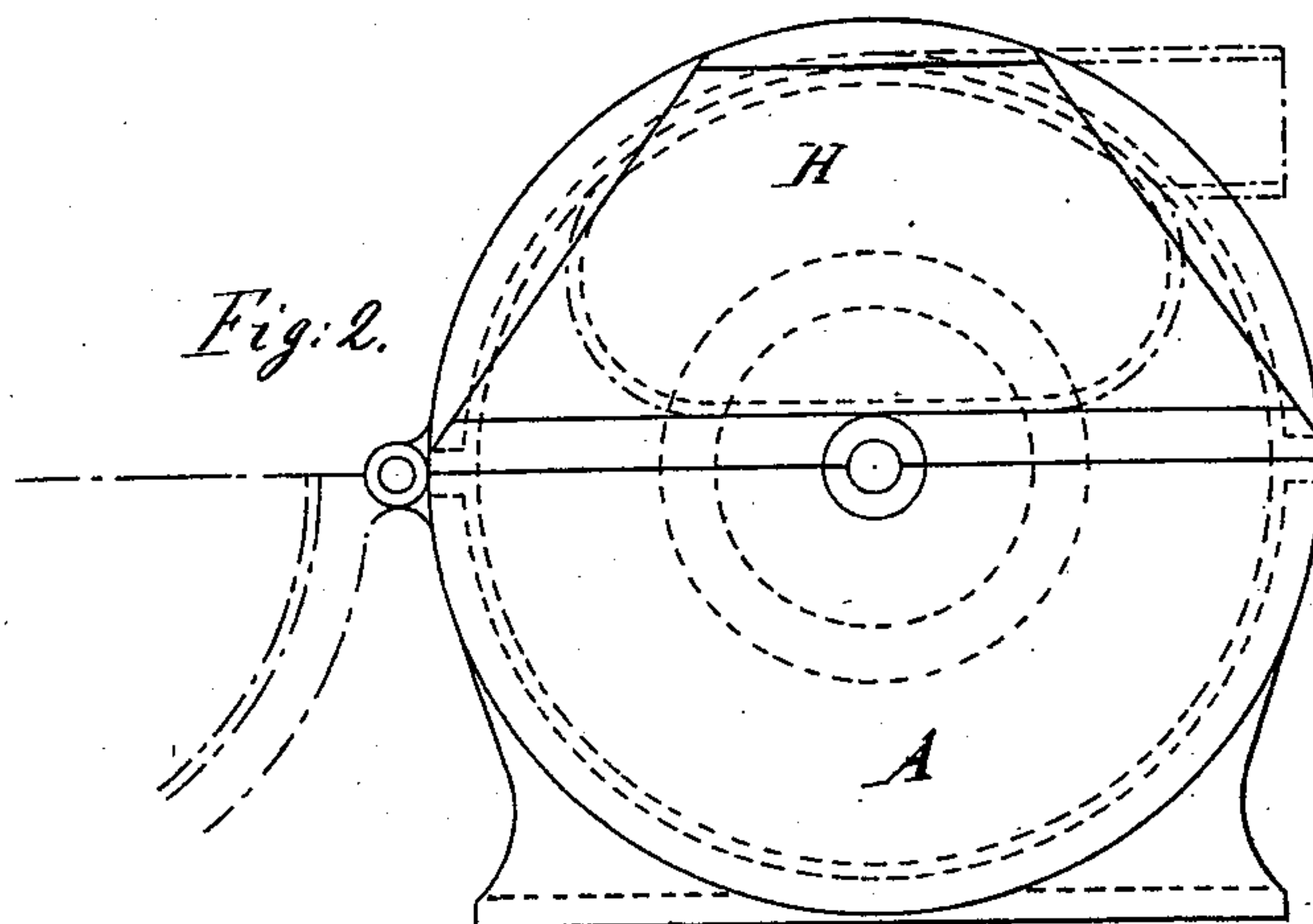
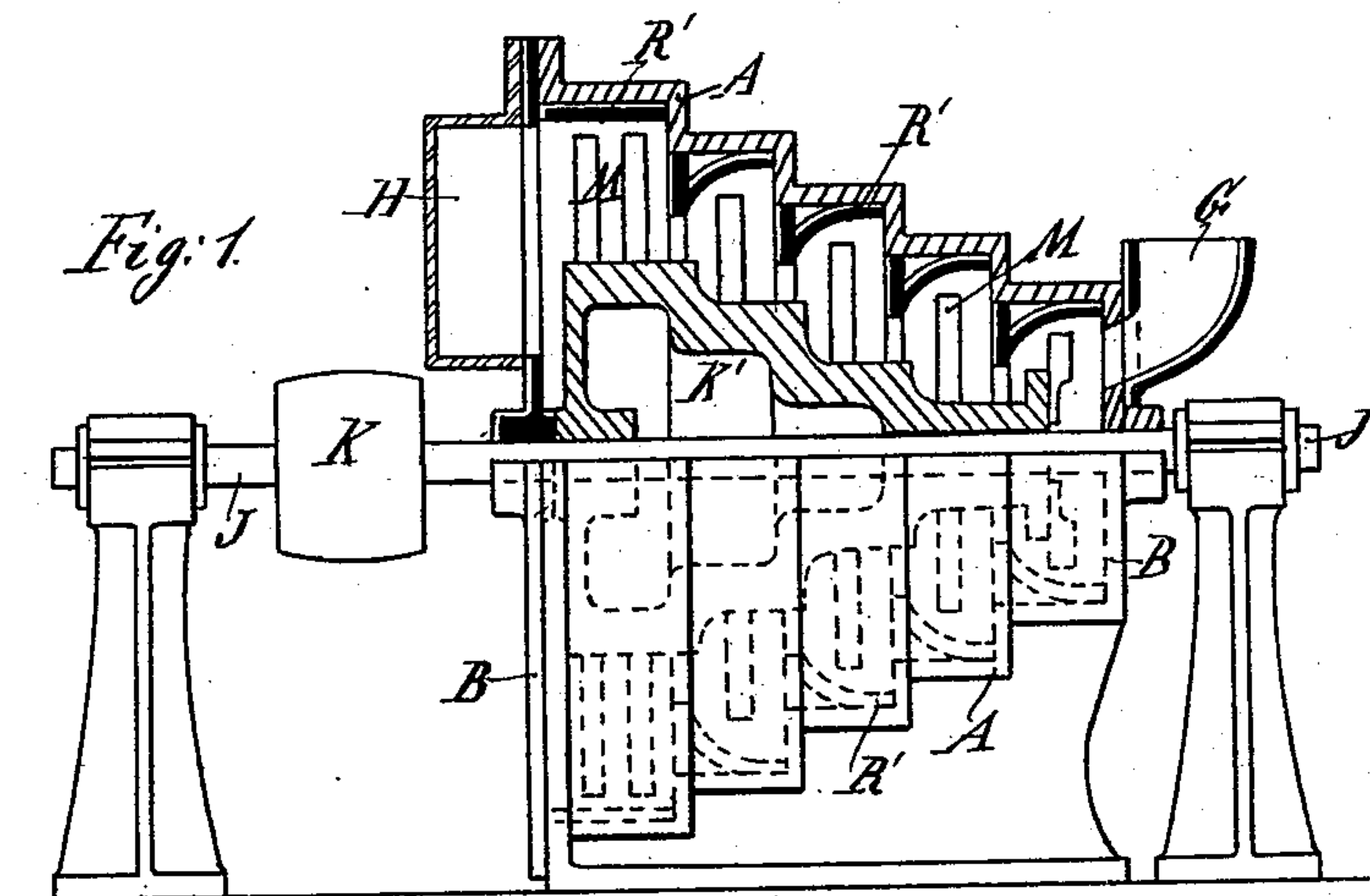


(No Model.)

G. W. ELLIOTT.  
PULVERIZING AND MIXING APPARATUS.

No. 539,507.

Patented May 21, 1895.



Witnesses:  
A. B. Degges  
L. D. Heinriche

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# UNITED STATES PATENT OFFICE.

GEORGE WILLIAM ELLIOTT, OF SHEFFIELD, ENGLAND.

## PULVERIZING AND MIXING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 539,507, dated May 21, 1895.

Application filed February 16, 1895. Serial No. 538,704. (No model.) Patented in England January 28, 1893, No. 1,916; in Germany May 15, 1893, No. 76,400; in France May 16, 1893, No. 230,102; in Belgium May 16, 1893, No. 104,680; in Denmark August 5, 1893, No. 3,802, and in Austria-Hungary June 5, 1894, No. 11,661 and No. 79,079.

*To all whom it may concern:*

Be it known that I, GEORGE WILLIAM ELLIOTT, engineer, a subject of the Queen of England, and a resident of Sheffield, England, have invented certain new and useful Improvements in Pulverizing and Mixing Apparatus, (for which I have obtained the following patents: in England, No. 1,916, dated January 28, 1893; in France, No. 230,102, dated May 16, 1893; in Belgium, No. 104,680, dated May 16, 1893; in Germany, No. 76,400, dated May 15, 1893; in Austria-Hungary, No. 11,661 and No. 79,079, dated June 5, 1894, and in Denmark, No. 3,802, dated August 5, 1893;) and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being made to the accompanying drawings, which are to be taken as part of this specification and read therewith, and one which will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to apparatus for grinding, disintegrating, pulverizing and mixing all kinds of materials.

This apparatus is represented in the accompanying drawings, wherein—

Figure 1 is a side elevation, partly in section. Fig. 2 is an end view of the apparatus, and Fig. 3 illustrates a modified construction of the inner arrangement.

The object of the novel construction is to form in the apparatus a number of chambers or compartments, in which the grist or the material to be ground or mixed is retained in each individual compartment by means of suitable obstructions, so that it will pass from one chamber to the other, only slowly and gradually, by forcing its way over the edge of such obstructions.

The apparatus consists essentially of a stationary casing A of suitable material and arranged horizontally, through which passes the horizontal shaft J driven by the belt pulley K and resting in fixed bearings.

The casing A is formed in offsets somewhat in shape like that of a cone pulley of a lathe. The smallest chamber is provided with an inlet funnel or hopper G and the largest chamber at the other end opens into an outlet

H. The ends of the casing are covered by

face plates B between which a drum K' revolves being keyed to the shaft J and being shaped in offsets similar to those of the outer casing. The latter is preferably made in two parts, suitably hinged together, so that the casing can easily be opened for access to the inner parts.

The drum K' which is preferably cast hollow is provided with radial arms M, of metal or other sufficiently resistant material extending near the inner surface of the different chambers, and serving to stir the material to be mixed and to cause it to follow the revolution. This drum can be substituted by a sleeve or hub K' as shown in Fig. 3 provided with the radial arms M. These arms may also be combined with disks L' which will prevent the free and fast passage of the material.

The compartments of the casing are provided with removable rings R' fitting snugly against the inner surfaces of said compartments, so that they can easily be pushed in place or removed. Set screws may be used to secure the rings in position but they are not absolutely necessary. These rings are employed to form an obstruction or obstructions in the passage of the material from the inlet G to the outlet H and they are therefore provided with an inner contracted surface, as shown in the drawings. The surfaces are roughened or provided with teeth, when the machine is to be used for grinding. The material is forced to follow the rotary motion of the shaft and drum or sleeve provided with the arms M. The centrifugal power is gradually increasing from one chamber to a successive larger compartment. Therefore the application of the ventilator, exhaust or other contrivance for the forward motion of the material can be dispensed with.

The outer casing and the drum are preferably cast, but evidently can be made in many other ways. They can be screwed together of parts of sheet metal or any other suitable material, without deviating from the nature of my invention.

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

In a machine for grinding, disintegrating,

pulverizing and mixing all kinds of materials  
a casing forming chambers of gradually in-  
creasing diameters provided with an inner  
revolving sleeve having arms extending to the  
5 circumferential surfaces of said chambers  
and provided with rings fitting against the  
inner surface of the chambers, the rings hav-  
ing inner contracted surfaces and the casing  
having an inlet to the smallest chamber and  
10 an outlet from the largest chamber, substan-  
tially as set forth.

In witness whereof I have hereunto affixed  
my signature, in presence of two witnesses,  
this 22d day of January, 1895.

GEORGE WILLIAM ELLIOTT.

Witnesses:

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