

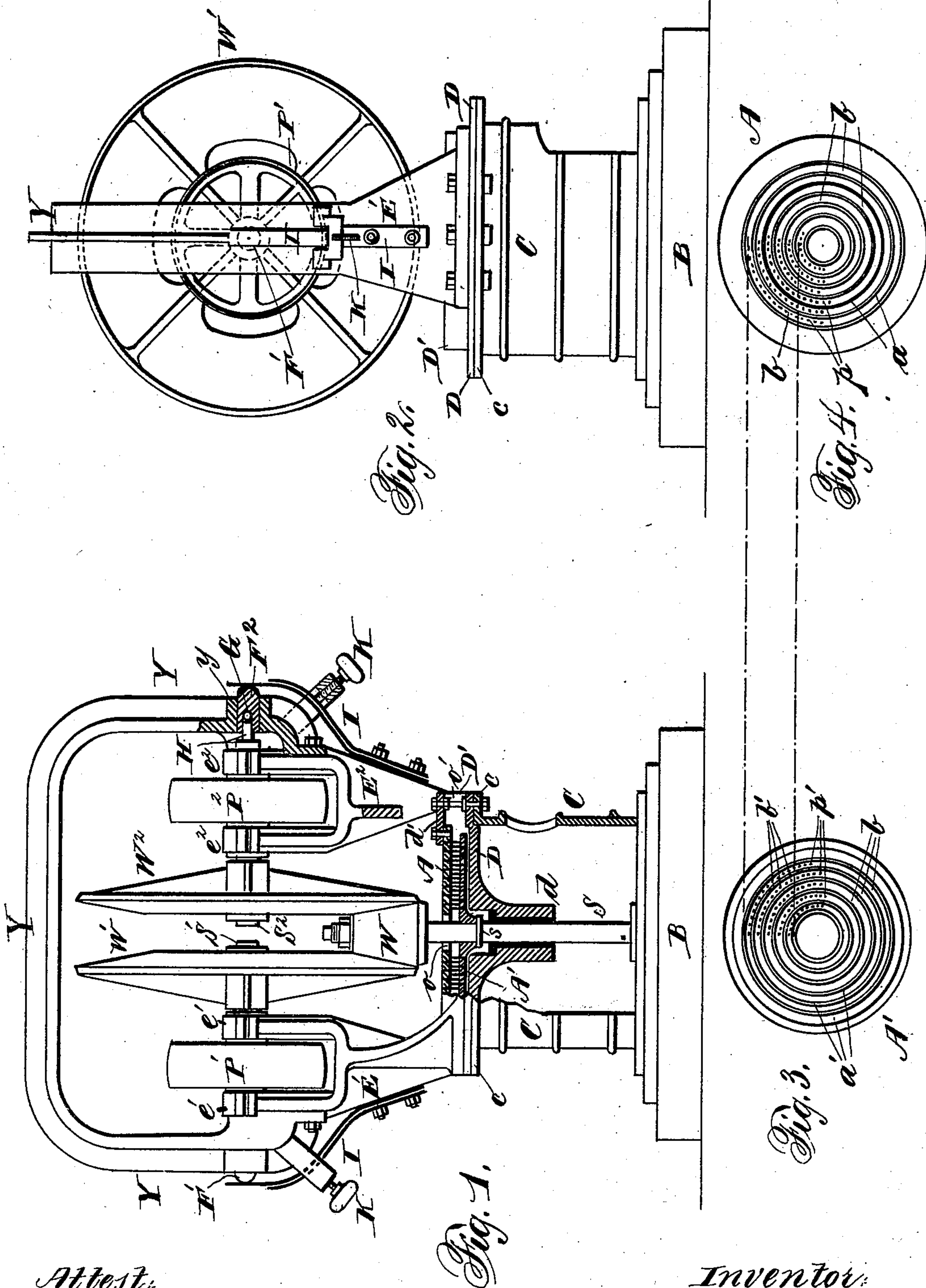
(No Model.)

2 Sheets—Sheet 1.

B. TOUYA, FILS.
GRINDING MILL.

No. 364,145.

Patented May 31, 1887.



Attest:
W. E. Butler,
W. R. Davis.

Inventor:
Baptiste Touya, fils
per *Henry Oth*
his atty.

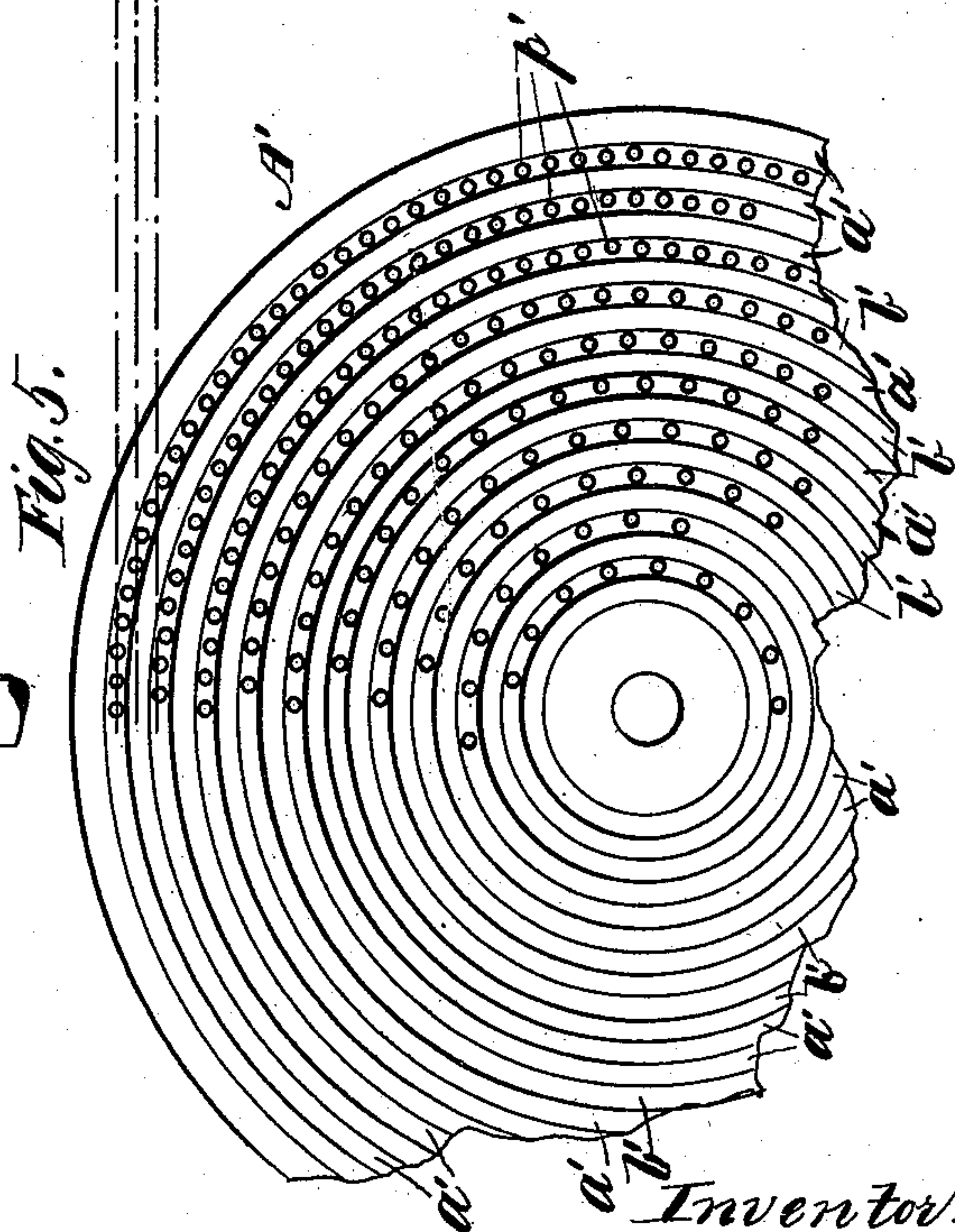
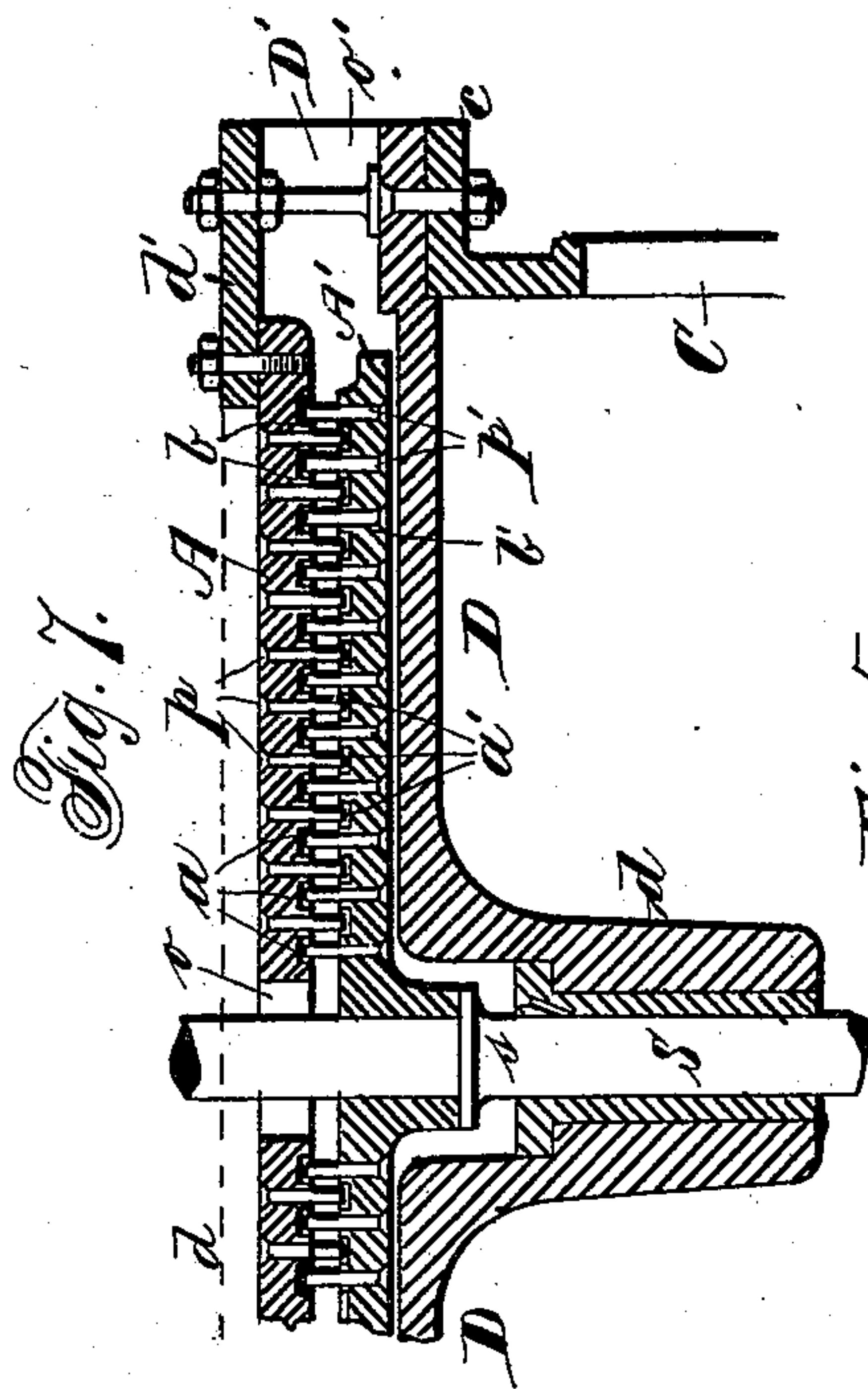
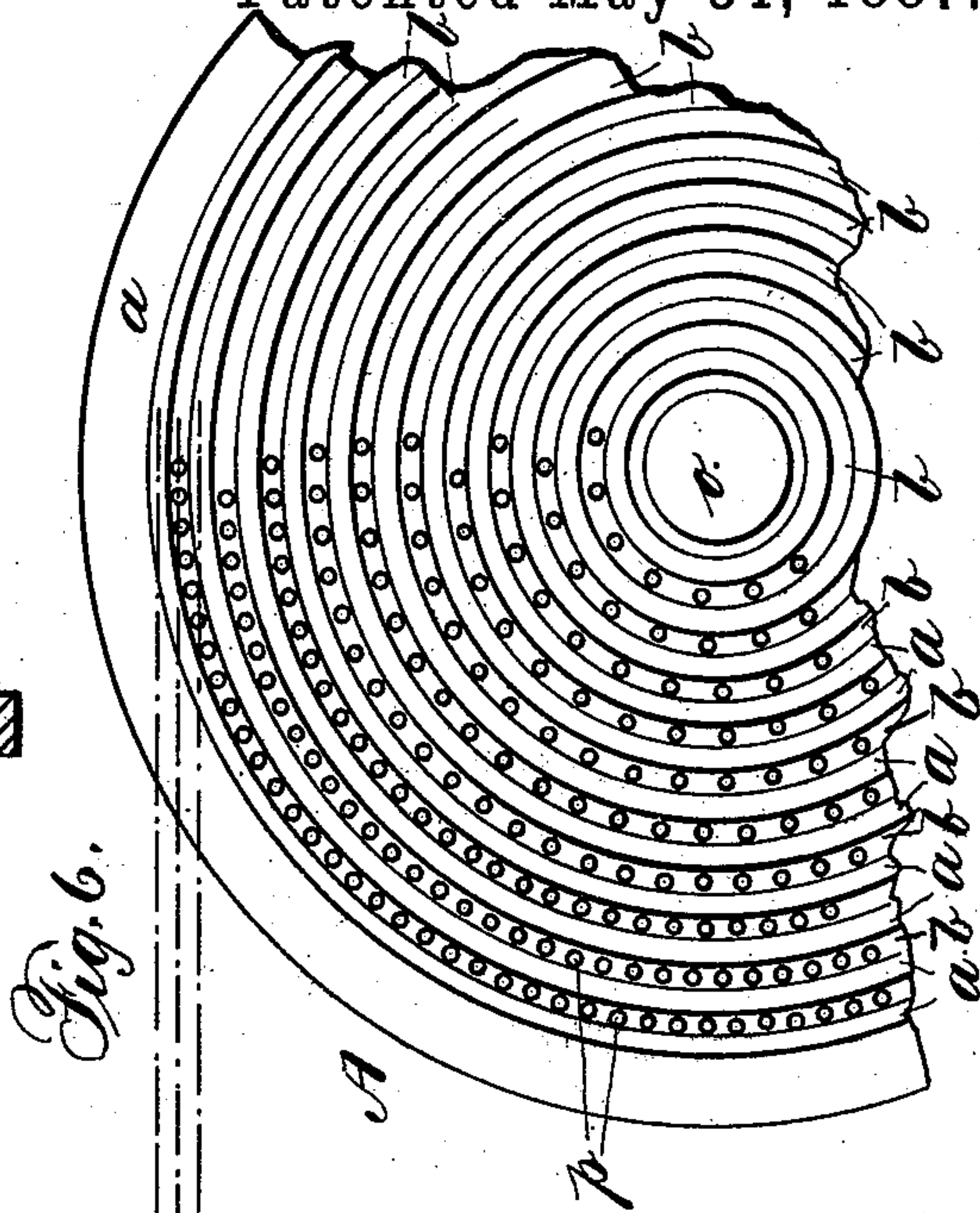
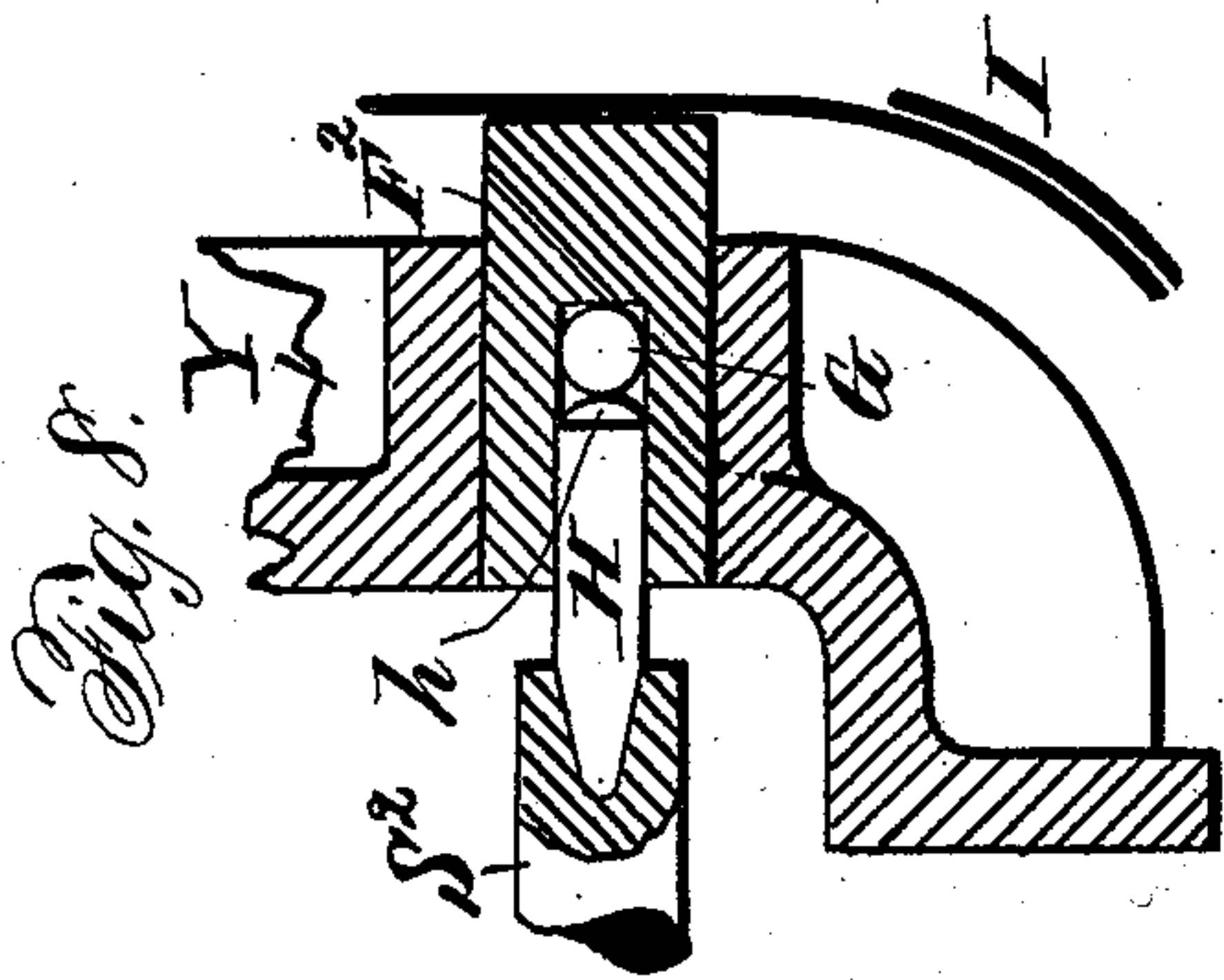
(No Model.)

2 Sheets—Sheet 2.

B. TOUYA, FILS.
GRINDING MILL.

No. 364,145.

Patented May 31, 1887.



Attest:
W. E. Boulter,
W. R. Davis.

Inventor:
Baptiste Touya, fils
per Henry M. H. his atty.

UNITED STATES PATENT OFFICE.

BAPTISTE TOUYA, FILS, OF TARBES, FRANCE.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 364,145, dated May 31, 1887.

Application filed September 22, 1886. Serial No. 214,218. (No model.) Patented in France February 4, 1886, No. 173,957; in Belgium May 14, 1886, No. 73,123; in Luxemburg May 14, 1886, No. 681; in Spain May 29, 1886, No. 9,489; in Italy June 24, 1886, No. 20,124, and in Portugal June 28, 1886, No. 12.

To all whom it may concern:

Be it known that I, BAPTISTE TOUYA, Fils, a citizen of the French Republic, residing at Tarbes, in the said French Republic, have invented certain new and useful Improvements in Grinding-Mills, (for which I have obtained Letters Patent in France, No. 173,957, under date of February 4, 1886; in Belgium, No. 73,123, dated May 14, 1886; in Spain, No. 9,489, dated May 29, 1886; in Portugal, No. 12, dated June 28, 1886; in Italy, No. 20,124, dated June 24, 1886, and in Luxemburg, No. 681, dated May 14, 1886;) and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Referring to the drawings, Figure 1 is a partly-sectional front elevation of a centrifugal grinding-mill embodying my improvements. Fig. 2 is an end elevation thereof. Figs. 3 and 4 are plan views of the grinding-disks, showing the dress thereof and arrangement of the grinding-pins. Figs. 5 and 6 are like views of portions of said disks on a larger scale. Fig. 7 is a detached detail section of a portion of the mill, showing the manner in which the grinding-disks are arranged, also drawn to an enlarged scale. Fig. 8 is a like view of one of the bearings for the driving-shafts.

The object of this invention is to increase the efficiency of this class of mills and to provide a friction driving mechanism for one of the grinding-disks and improved bearings for the driving-shafts.

To these ends the invention consists in certain novel features of construction and in the combination of parts, substantially as herein-after fully described, and as set forth in the claims.

In the drawings, B is the base upon which the mill is mounted; C, a cylinder firmly secured to or formed on said base and provided at its upper end with an annular flange, c, from which is supported a disk, D, that has an axial bearing, d, for a vertical shaft or spindle, S. The shaft S is stepped on the bottom of

the cylinder C; or said shaft may pass through said bottom to a step on the base B, and has a collar, s, upon which is seated the revoluble grinding-disk A', which is firmly keyed to or otherwise secured on shaft S.

Above the grinding-disk A' is arranged the stationary grinding-disk A, which is firmly bolted to a flange, d', of a ring, D', which latter is bolted to, or it may be formed on, disk D.

The grinding-disks A and A' have each a series of concentric grooves, a and a', respectively, formed in their juxtaposed faces, the concentric grooves a of the stationary grinding-disk A facing the concentric ridges or walls b', intervening between the concentric grooves a' of the revoluble grinding-disk A', while the grooves a' in the face of the latter grinding-disk face the ridges b in the stationary disk A, as more plainly shown in Figs. 5, 6, and 7.

From the ridges b and b' of the disks A and A' project steel pins p and p', respectively, so that the concentric rows of pins p on disk A will move in the grooves a' of disk A'. These pins and the surfaces of the alternate grooves and ridges constitute the grinding-surfaces between which the material is ground, said material being fed centrally of the disks, for which purpose the stationary disk A has an enlarged axial opening, o, through which the shaft S passes, and around which shaft the material is fed between the disks, the ground material passing out at o'.

E' E² are two chairs bolted to the disk D and the flange c of the cylinder C. Each of said chairs has two bearings, e' e' and e² e², respectively, for two short shafts, S' S², in the outer ends of which are formed conical recesses for the reception of cone-pins H. The two chairs E' E² are connected by means of a yoke, Y, bolted to said chairs, to brace the same firmly together, and in said yoke are formed openings y for pillow or bearing blocks F' F², which I make, preferably, of cylindrical form. The bearing-blocks F' F² are arranged to slide endwise in the openings y, and are chambered for the reception of a sphere of steel, G, and a steel cone-pin, H, having a semi-cylindrical head, h, Fig. 8, bearing upon the sphere G. A rolling bearing is thus provided for the end of the

pin, so that in case the latter should be rotated by friction with the driving-shaft the friction between the end of the pin and the sphere will be reduced to a minimum. The bearing-blocks project slightly beyond the openings y , and strong springs I are made to bear upon said projecting end, the degree of pressure exerted by the springs being regulated by means of set-screws K .

10 The shafts $S' S^2$ carry each a belt-pulley, $P' P^2$, mounted on said shafts between the bearings $e' e'$ and $e^2 e^2$ of the chairs $E' E^2$, respectively, and at their inner ends said shafts carry each a cone-wheel, $W' W^2$, in frictional contact with the cone-wheel W on the upper end of the shaft S , the said wheels forming a friction-gear for rotating the shaft S and the revoluble grinding-disk A' . Of course it will be understood that the belt-pulleys are belted 20 to the prime motor by a straight and cross belt, respectively, to rotate the friction wheels $W' W^2$ on opposite sides of cone-wheel W in reverse directions.

By means of the set-screws K , the wheels $W' W^2$ may be readily moved into or out of contact with the cone-wheel W and the degree of friction between them regulated.

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

30 1. The combination, with the shafts $S' S^2$, having their outer ends provided with conical recesses or seats, of pins having inner conical ends seated loosely in said recesses, chambered bearing-blocks for said pins, the frame of the mill having bearings for the blocks, means for imparting yielding pressure to said blocks to

hold the pins to their seats in the outer ends of the shafts, and a rolling bearing within the socket of the blocks, against which the heads of the conical pins abut, substantially as and for the purpose specified. 40

2. The combination, with the shafts $S' S^2$, having conical recesses in their outer ends, the chairs $E' E^2$, provided with bearings for said shafts, and the brace-yoke Y , connecting the chairs, of chambered bearing-blocks fitted in the yoke and arranged to move endwise therein, cone-pins fitted in said bearing-blocks and held therein by frictional contact, said pins seating in the conical recesses in the outer ends of the shafts, balls arranged in the bearing-blocks in rear of the cone-pins, and adjustable springs to hold the bearing-blocks against endwise motion, substantially as and for the purpose specified. 55

3. An improved mill comprising the cylinder C , disk D , the stationary grinding-disk A , the shaft S , the grinding-disk A' , and cone-wheel W , mounted thereon, of the chairs $E' E^2$, the yoke Y , the shafts $S' S^2$, the cone-wheels $W' W^2$, operating on opposite sides of the cone-wheel W , and the driving-pulleys $P' P^2$ on said shafts, said parts being constructed and operating substantially as described, for the purposes specified. 60

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of September, 1886.

BAPTISTE TOUYA, FILS.

Witnesses:

CAMILLE CHARROPPIN,
JULES PAROD.