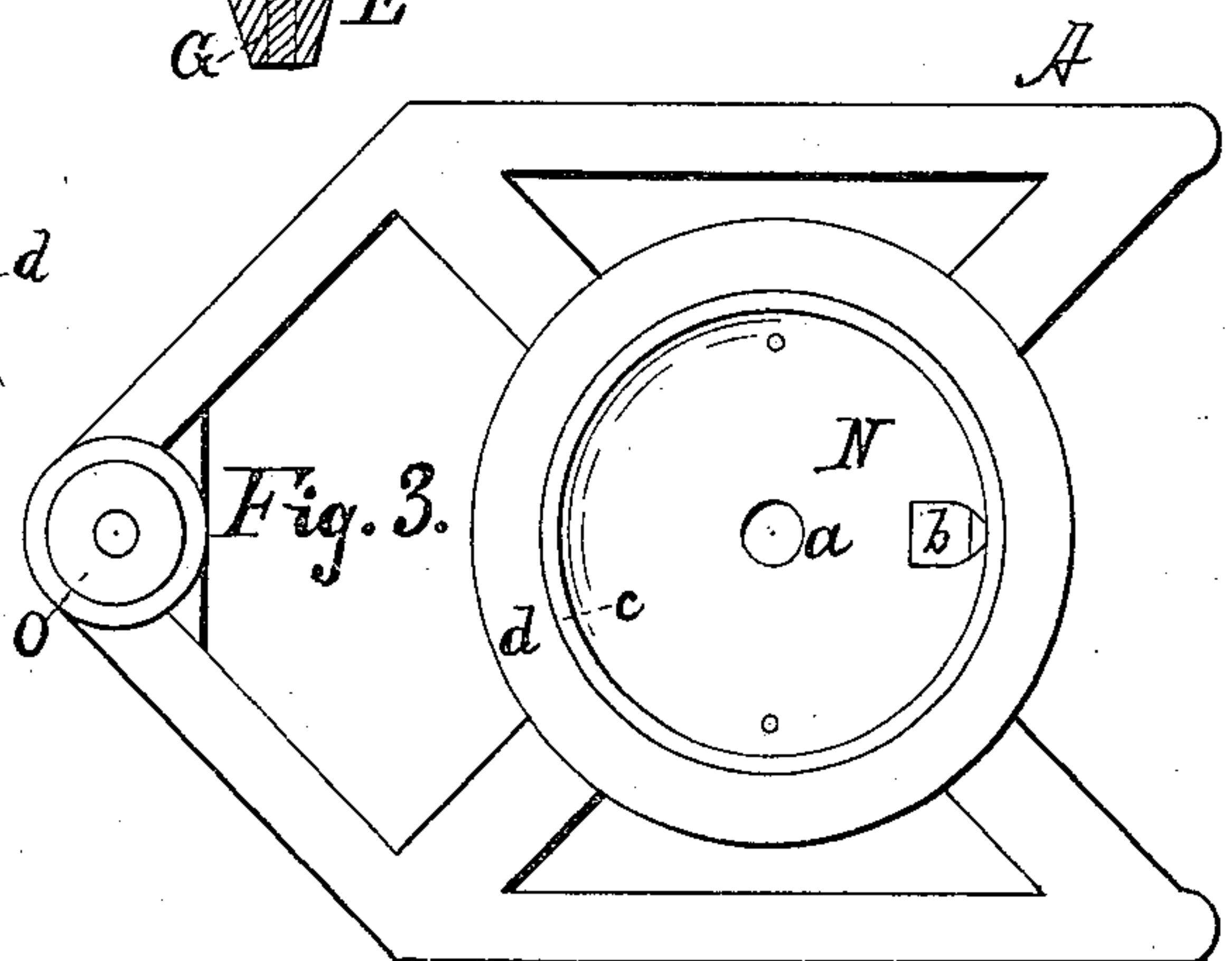
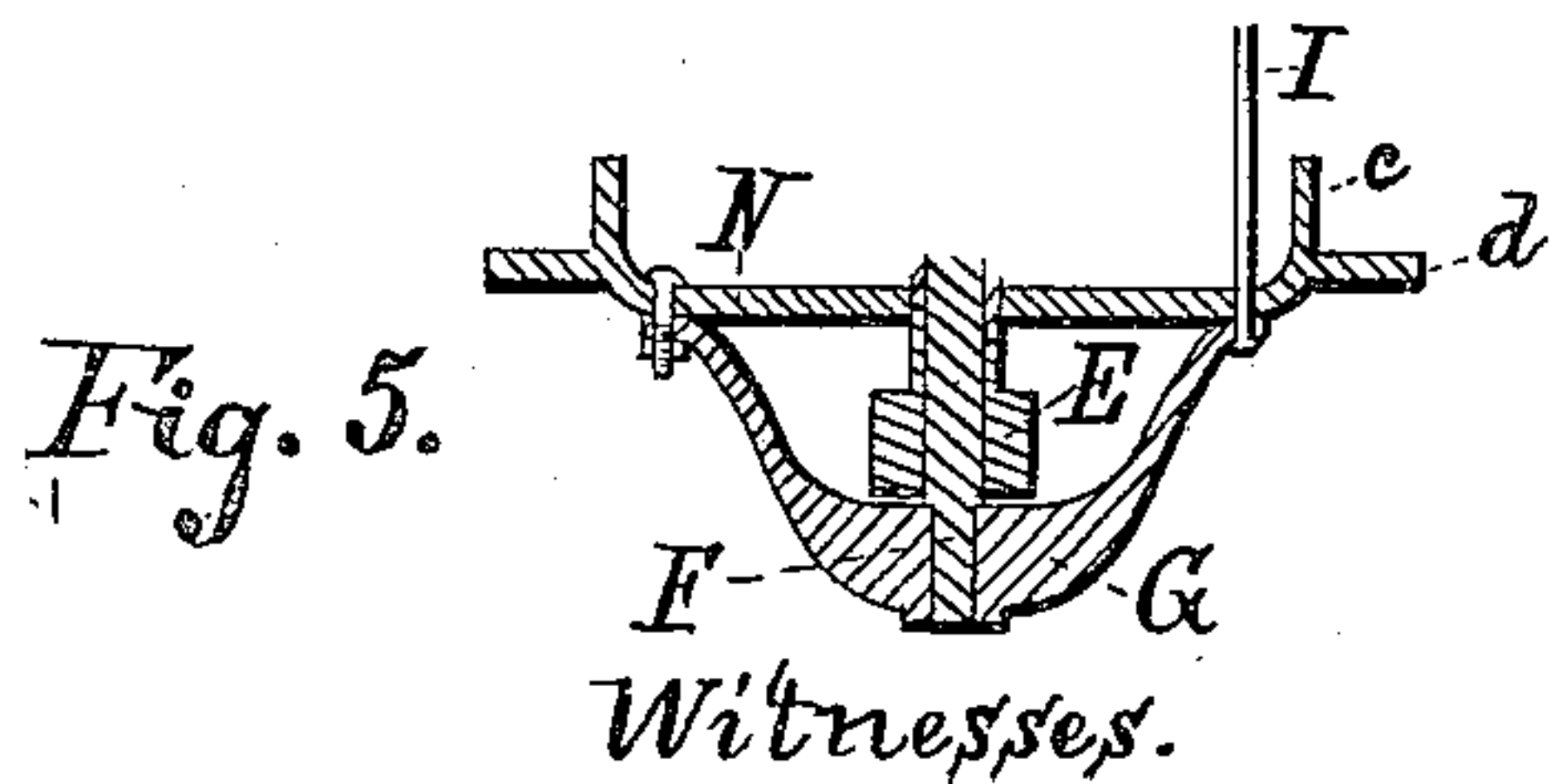
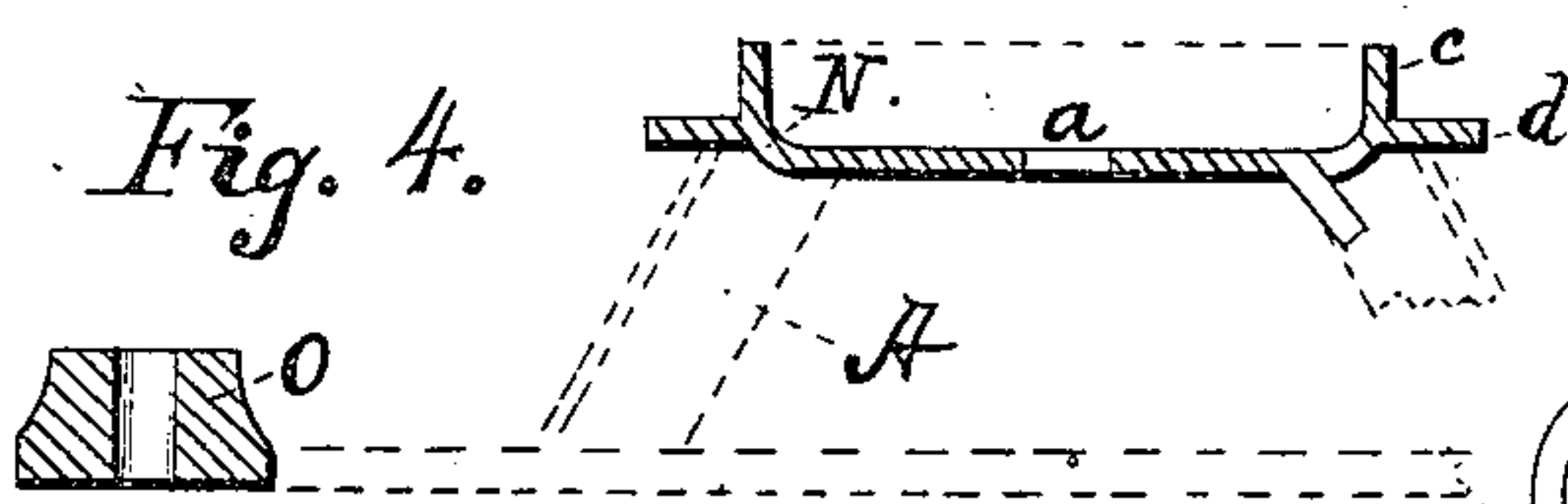
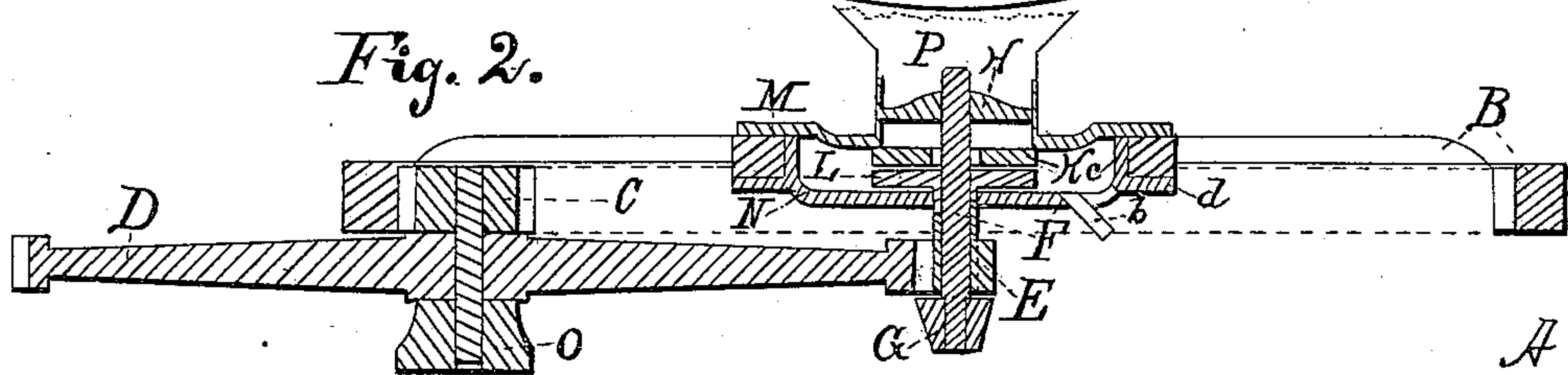
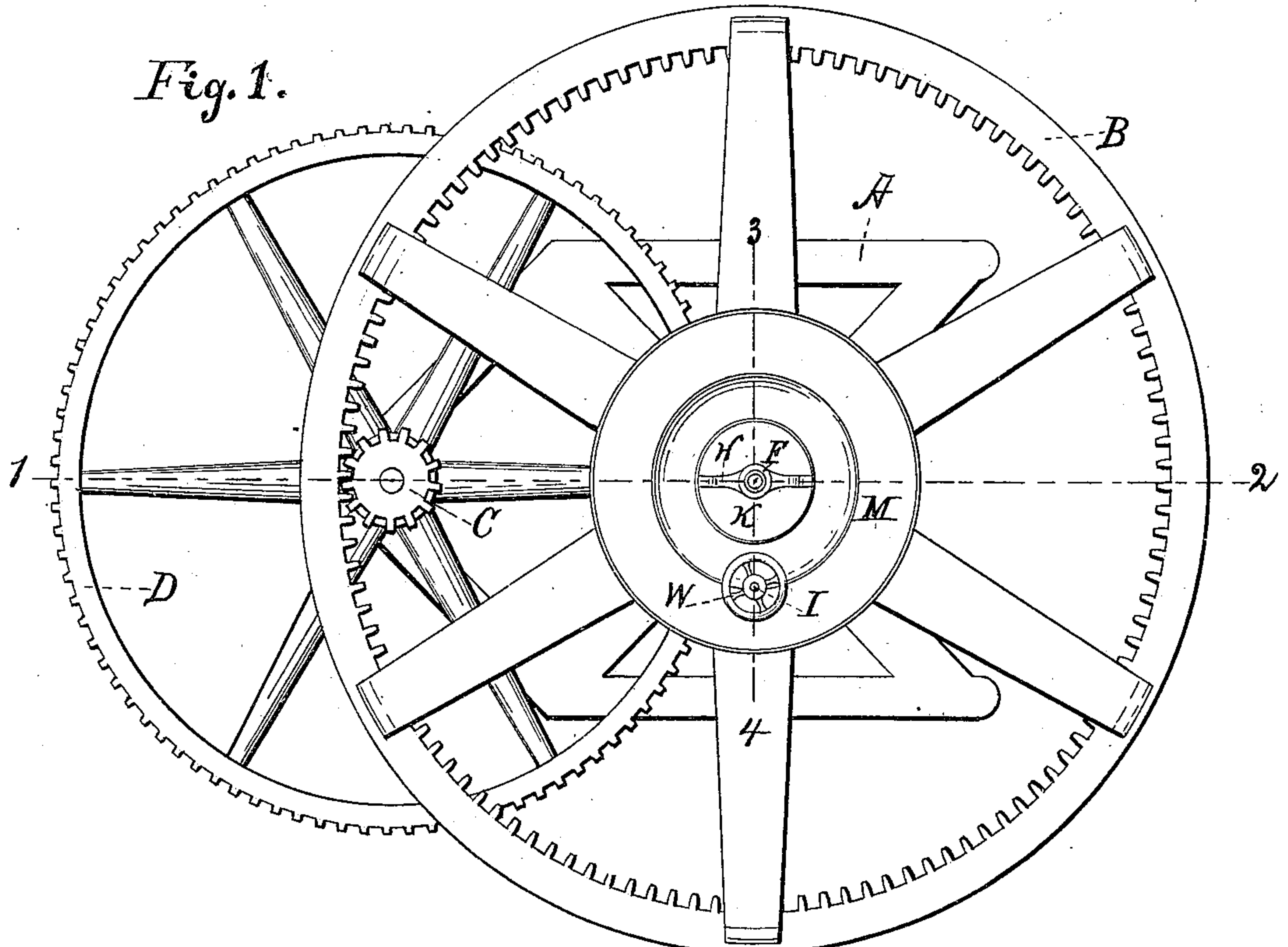


(No Model.)

G. K. SMITH.
GRINDING MILL.

No. 258,817.

Patented May 30, 1882.



W. Wilson
A. S. Held

Inventor.
George K. Smith

UNITED STATES PATENT OFFICE.

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GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 258,817, dated May 30, 1882.

Application filed March 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE K. SMITH, a citizen of the United States, residing at Freeport, in the county of Stephenson and State of Illinois, have invented a new and useful Improvement in Grinding-Mills, of which the following is a specification.

My invention relates to that class of grinding-mills in which the burrs are horizontal, one being stationary, while the other is rotated by suitable means; and its objects are, first, to provide a simple and effective mechanism within the mill itself for rotating the movable burr at a high speed; and, second, to afford a means of regulating the distance between the burrs, and consequently the fineness to which the grain is ground. The manner in which these ends are attained is shown in the accompanying drawings, in which—

Figure 1 is a top view of the mill with the hopper removed. Fig. 2 is a vertical section through the line 1 2 of Fig. 1. Fig. 3 is a plan of the frame which forms the support of the mill. Fig. 4 is a vertical section of said frame through the line 1 2, Fig. 1; and Fig. 5 is a vertical section through line 3 4, Fig. 1, showing lower part of spindle of movable burr, lower bearing of spindle, and lower end of regulating-rod.

Similar letters refer to the same parts in all the drawings.

The structure of the mill is as follows: A main frame, A, supports a plate, N, and a boss, O, both formed integrally with it, as shown in Figs. 3 and 4. The plate N is provided with two annular flanges, *cd*—one vertical, the other horizontal—which form a bearing for the inner geared master-wheel, B, as shown in Fig. 2, said plate so flanged being in fact the shaft of said master-wheel. The master-wheel B meshes with the spur-gear C, which is the hub of the spur-wheel D, their common axis passing through the boss O, before mentioned. (See Figs. 1 and 2.) The spur-wheel D meshes with a small spur-gear, E, Fig. 2, which is rigidly attached to spindle F of the movable grinding-burr L, Fig. 2. The spur-gear E is connected by means of a clutch with the movable burr L, in such a way that the rotary motion of the gear is imparted to the burr, while at the same time the burr has a slight amount of vertical play to allow it to accommodate itself to the

varying flow of grain. The lower end of the spindle F is held in a bearing in the yoke G. (Shown in cross-section in Fig. 2, and in longitudinal section in Fig. 5.) One end of the yoke G is bolted to the plate N. The other end is sustained by a vertical rod, I, Figs. 1 and 5, which passes up through the plate N and covering-plate M, and is secured by a hand-wheel, W, which acts as a nut for raising and lowering the yoke G, and with it the spindle F and grinding-burr L. The covering-plate M (shown in plan in Fig. 1, and in vertical section in Fig. 2) is fastened by bolts or other suitable means upon the vertical flange *c* of the plate N, and serves to retain in its bearing the master-wheel B, Fig. 2. It is provided with a central cylindrical opening of suitable size, across which extends a bar, H, Figs. 1 and 2, which forms the upper bearing of the spindle F. To the lower surface of the covering-plate is rigidly secured the upper grinding-burr, K, Fig. 2, having an opening of suitable size about the spindle F, which passes through its center. Above the plate M, and immediately over the central opening therein, is a hopper, P, of ordinary form, for the reception of the grain to be ground, and the plate N is provided with a spout, *b*, for the discharge of the meal after grinding.

The operation of the mill is evident. Power being applied to the master-wheel B by means of a sweep or other suitable device, its motion is communicated through the train of gearing to the movable grinding-burr L, the speed of revolution of said grinding-burr being much higher than that of the master-wheel. The grain to be ground is placed in the hopper P, passes down through the opening in the stationary burr K about the spindle F, and is ground between the burrs K and L, passing out at their periphery and discharges at spout *b*. The fineness of the meal is regulated by raising or lowering the burr L by means of rod I and hand-wheel W.

The burrs might be made vertical instead of horizontal, in which case the spur-wheel D and spur-gear E would be beveled gears; but the form shown is preferred.

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

1. In a grinding-mill, a master-wheel hav-

ing a central opening for the reception of the grinding-burrs, in combination with a pair of grinding-burrs, one stationary and one movable, arranged in said central opening, and suitable gearing for imparting the motion of the master-wheel to said movable burr, substantially as shown and described.

2. In a grinding-mill, a master-wheel having its shaft centrally chambered for the reception of the grinding-burrs of the mill, in combination with a pair of grinding-burrs, one stationary and the other movable, arranged in said central chamber, and suitable gearing for communicating the motion of the master-wheel to said movable burr, substantially as set forth.

3. In a grinding-mill, the combination of a centrally-chambered master-wheel and a pair of grinding-burrs, one stationary and one movable, located in said central chamber, with suitable gearing connecting said master-wheel and movable burr, said gearing being constructed substantially as described, and so as to drive said burr at a speed different from that of the master-wheel, substantially as shown.

4. In a grinding-mill constructed as shown,

the combination of the frame A, plate N, master-wheel B, and covering-plate M, so constructed and attached as to hold said master-wheel in its bearing, and at the same time form the upper bearing of the spindle of the movable grinding-burr of the mill, substantially as shown, and for the purpose set forth.

5. In a grinding-mill constructed as described, the combination of the plate N and yoke G thereto attached, the covering-plate M and cross-bar H, and stationary grinding-burr K thereto attached, the spindle F, having bearings in yoke G and cross-bar H, the movable grinding-burr L, and the regulating device consisting of rod I and hand-wheel W, all substantially as and for the purpose described.

6. The combination, in a grinding-mill, of the frame A, plate N, master-wheel B, covering-plate M, spur-wheels C D E, spindle F, and grinding-burrs K L, all substantially as and for the purpose set forth.

GEORGE K. SMITH.

Witnesses:

A. S. HELD,

M. H. WILCOXON.