

No 119,746

Fig. 1.

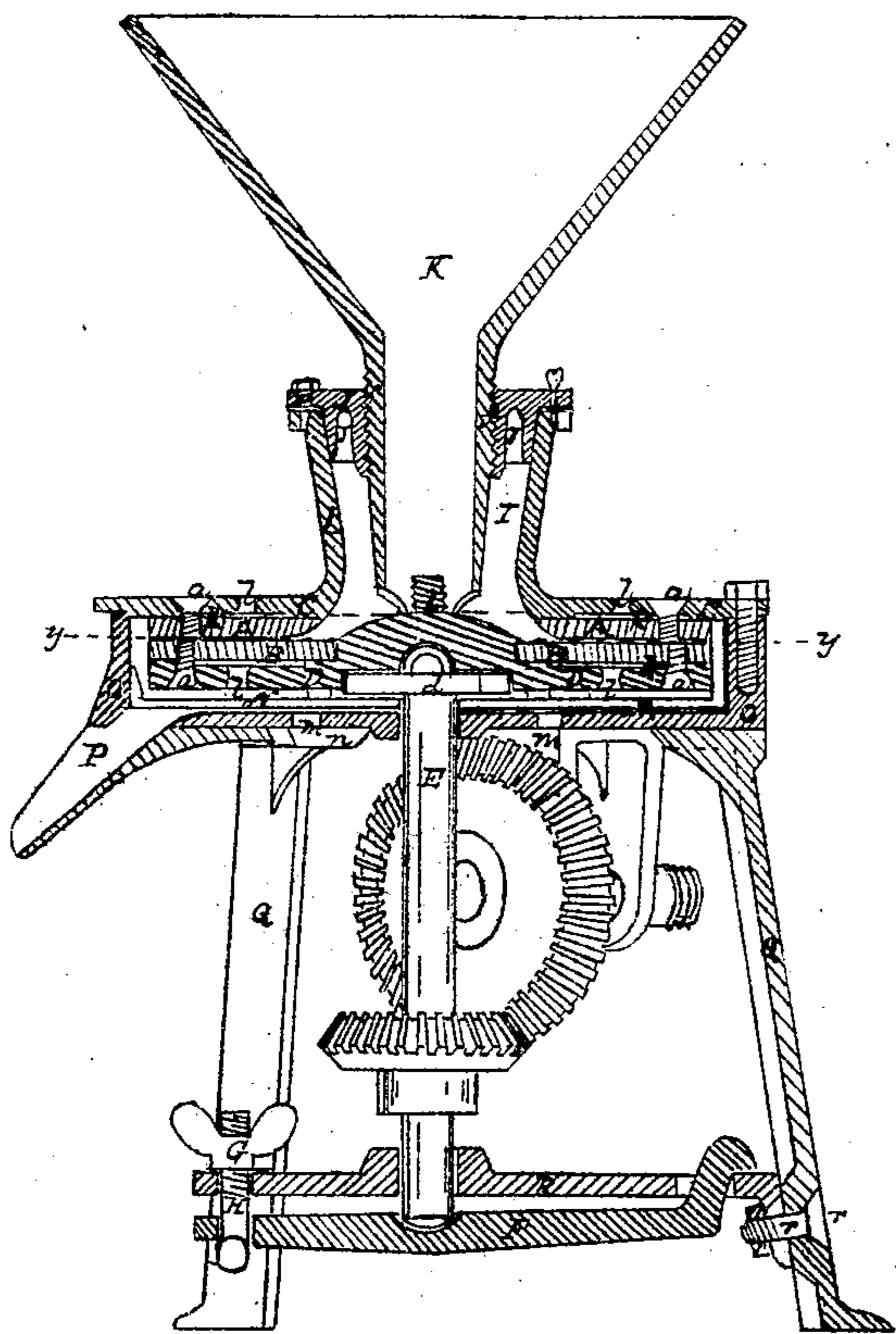


Fig. 3.

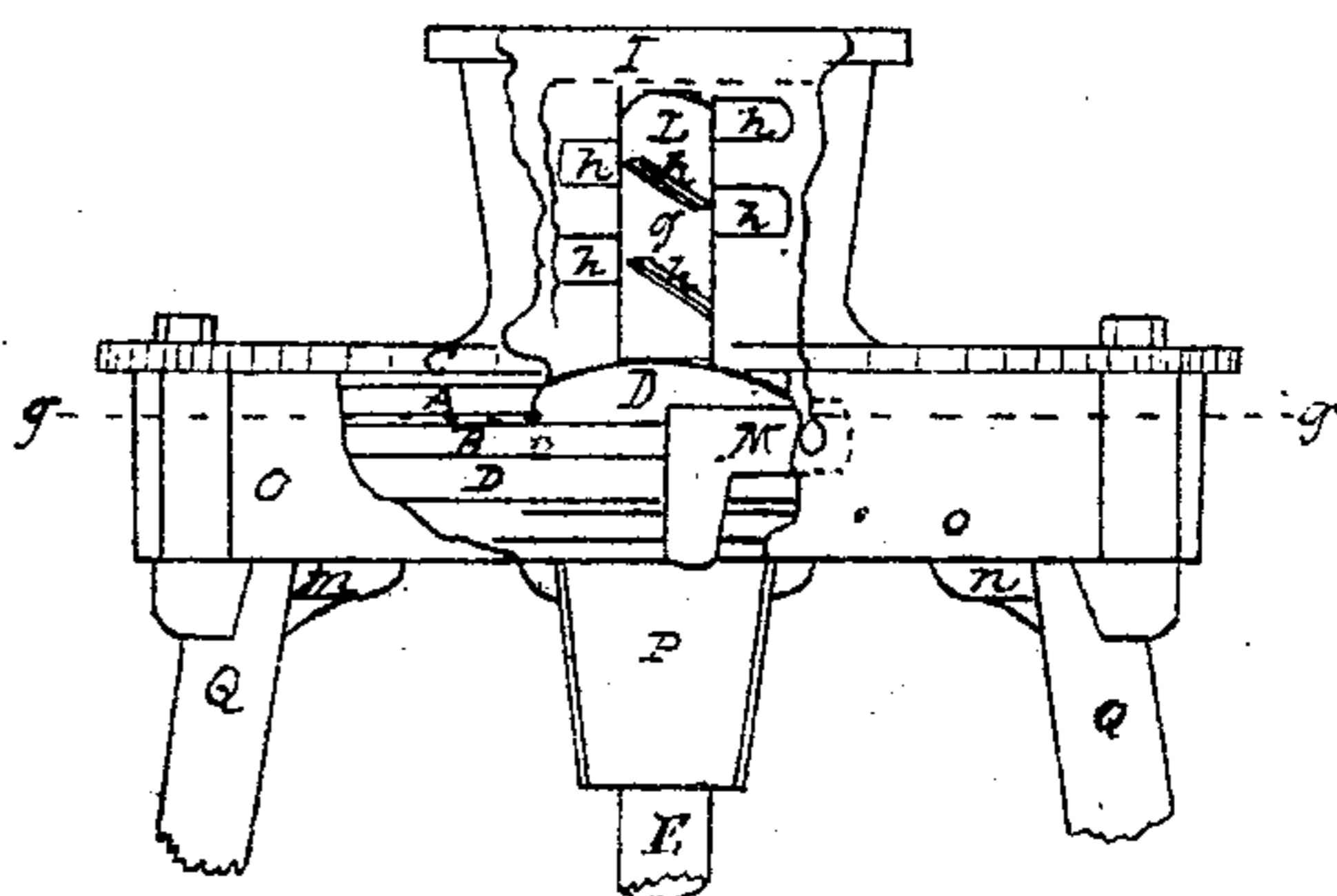
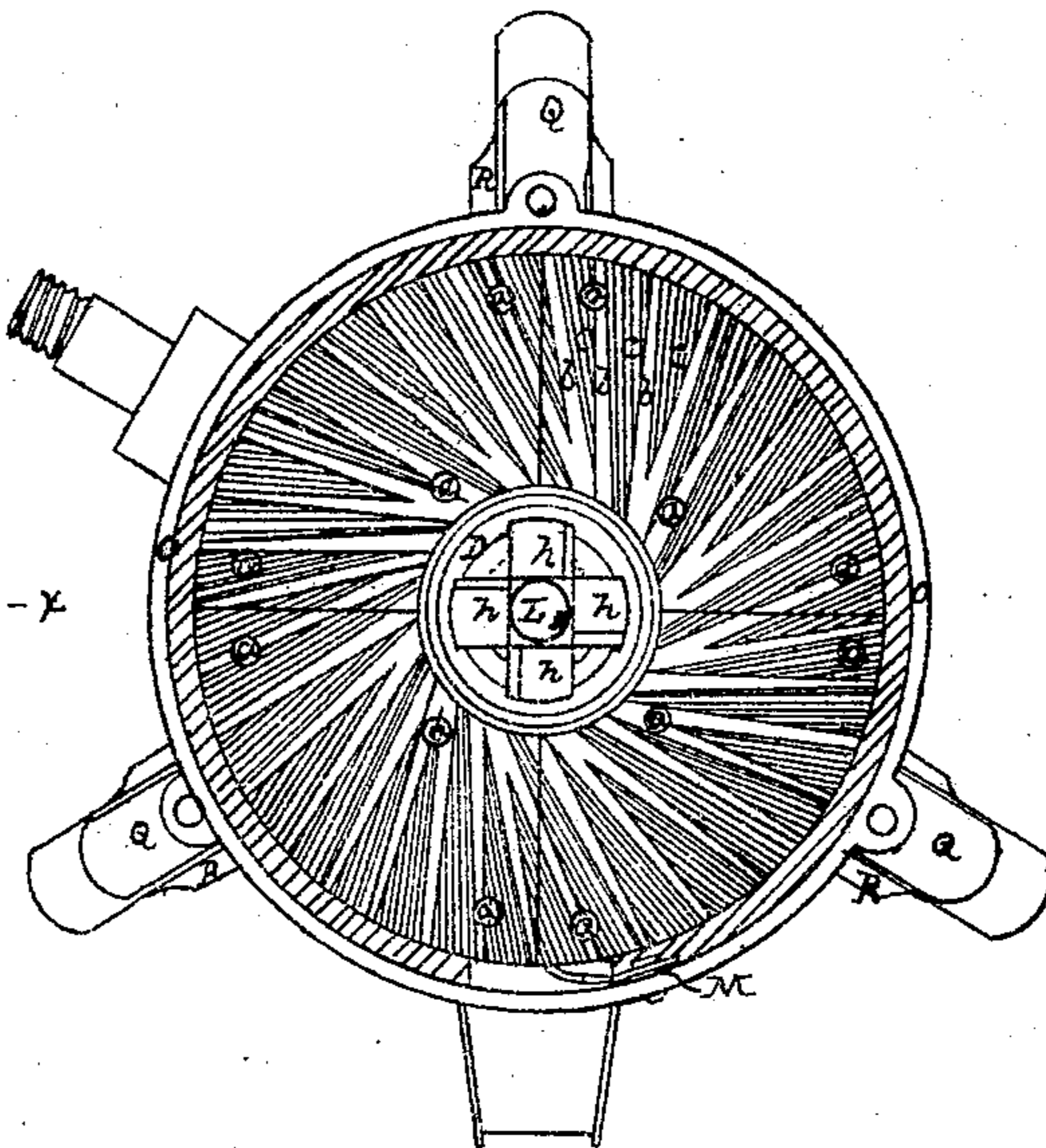
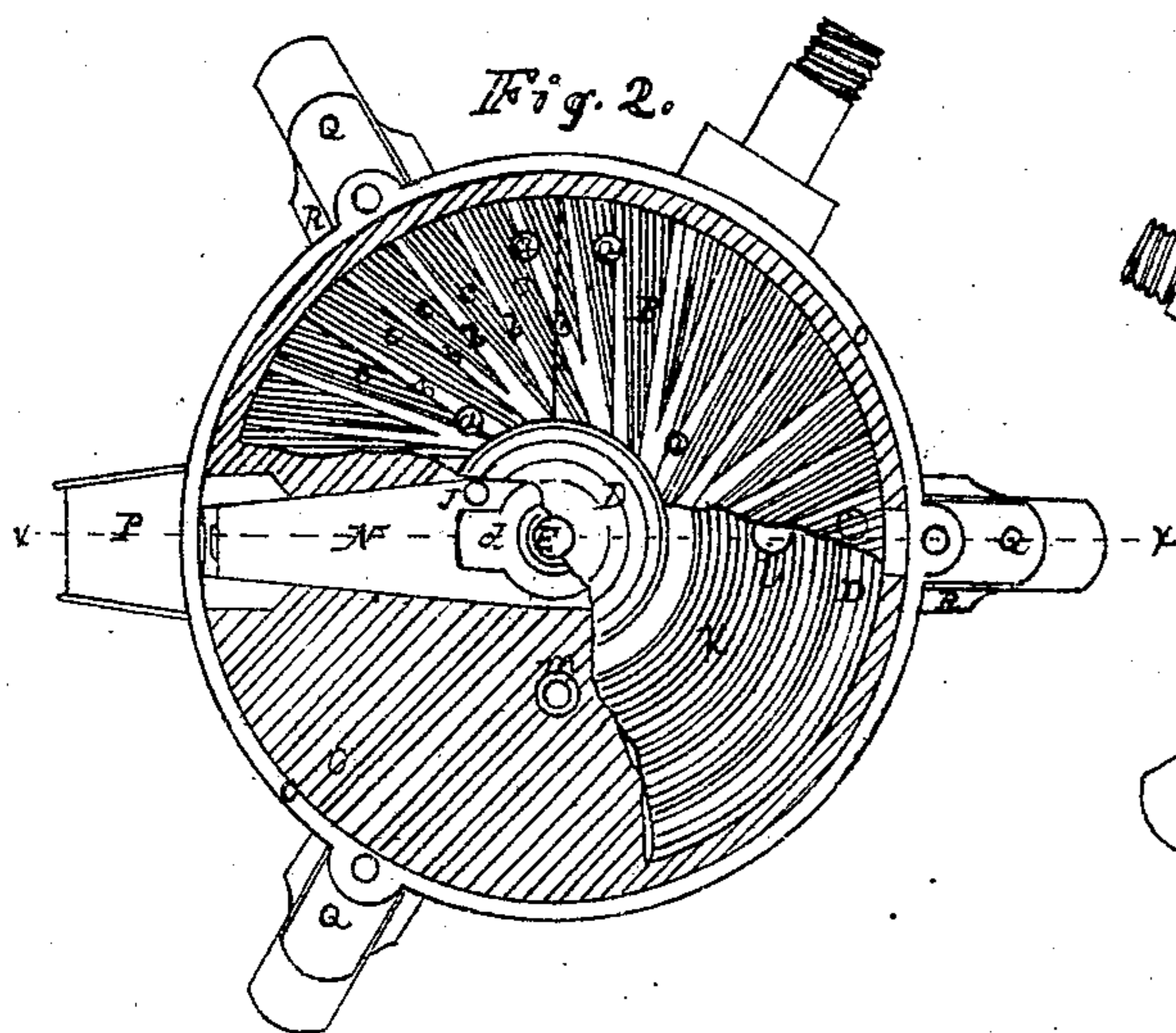


Fig. 4.



Witness:

J F Goodfellow
George Benton

Inventor:

William A. Culver

UNITED STATES PATENT OFFICE.

WILLIAM H. CULVER, OF WEST TROY, NEW YORK.

IMPROVEMENT IN GRINDING-MILLS.

Specification forming part of Letters Patent No. 119,746, dated October 10, 1871.

To all whom it may concern:

Be it known that I, WILLIAM H. CULVER, of the village of West Troy, in the county of Albany and State of New York, have invented a new and Improved Grinding-Mill, of which the following is a full and clear description, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a vertical central section taken in a plane represented by the line $x x$, Fig. 2. Fig. 2 is a horizontal plane view of that part of my invention represented below the line $y y$, Fig. 1, and with a portion of the grinding-plate B and its bed-plate D broken away. Fig. 3 is a vertical elevation of another modification of my invention with a portion of its side and its lower frame-work broken away. Fig. 4 is a horizontal plane view of that portion below the line $z z$, Fig. 3.

Similar letters refer to corresponding parts in the various figures.

The nature of my invention consists in the combination, arrangement, and construction of the various parts of a mill for the purpose of grinding grain, coffee, spices, cements, paints, &c., as hereinafter more fully described.

A is the upper, and B the lower hardened steel grinding-plates. C is the upper, and D the lower bed-plates, to which the grinding-plates A and B are attached by means of screws a . On the faces of grinding-plates A and B, and between the furrows b thereon, the lands c are formed in a manner similar to the teeth on a file, which raised teeth or dress on said lands c renders the grinding by these plates more perfect and with a less expenditure of power than is done by either chilled-iron or stone grinding-surfaces. The grinding-plates A and B may be made in one piece or divided into two or more sections, as shown in Figs. 2 and 4. When the grinding-plates A and B have become worn by use they may be removed from their bed-plates C and D, their temper drawn, and then repaired, and thus placed in as good a condition as when first used. This is not the case when chilled iron is used for grinding-plates, which, when they become smooth or worn, must be thrown aside and new ones furnished in their stead. Upon the under side of the lower bed-plate D is an indentation or recess corresponding with the hemispherical head of the

vertical driving-shaft E and the driver d , (firmly attached to or forming a part of said driving-shaft,) upon which it rests and with which it revolves. The lower end of the driving-shaft E rests upon the step-lever or bridge-tree F. By means of the hand-nut G, lighter-screw H, and bridge-tree F, the driving-shaft E and the various parts attached thereto and resting thereon are raised or lowered at the option of the operator, thus regulating the distance between the grinding-plates A and B according as it may be required to grind coarse or fine. In the upper part of the funnel I is fitted a collar, J, which collar is held in its place or position in the funnel by means of springs, set-screws, or equivalent device. Upon the inner circumference of the collar J is cut a screw-thread corresponding with and turning upon a similar screw-thread, f , on the upper portion of the neck of the funnel-shaped feeder K. By turning the feeder K either right or left in the collar J the distance between the lower extremity of the neck of the feeder K and the upper surface of the central portion of the lower bed-plate D is increased or diminished, thus regulating the continual supply of the grain or other material to be ground from the feeder into the mill. It has been proved by actual experiment that this feeder is efficacious when used in the grinding of grain, coffee, spices, cement, or other dry material, which, if allowed to pass in between the grinding-plates A and B in unregulated quantities, would interfere with the well working of the mill. But in grinding paint or white lead mixed with oil, or other moist or pasty materials, which, in order to be ground, must be forced between the grinding-plates, the feeder K and its collar J must be dispensed with and in its stead the revolving feeder L may be employed. (See Figs. 3 and 4.) The feeder L is composed of a vertical shaft, g , to which is attached the oblique arms or spiral flanges h . The shaft g is attached to upper surface of the bed-plate D by means of the screw i , (see Fig. 1,) forming a part of said bed-plate.

When the mill is in operation the feeder L attached to and turning with the lower bed-plate D, causes its arms or spiral flanges h , revolving among the material in the funnel of the mill, to act upon such material as a wedge in forcing it between the grinding-surfaces of the plates A and B. In grinding paints or white lead mixed

with oil, or other pasty material, as it passes from between the grinding-surfaces it is likely to adhere to the outer periphery of the lower grinding-plates, from which it is removed by the scraper M. Loosely fitted to the upper portion of the driving-shaft E, and beneath the driver d, is the sweeper N, which extends across the diameter of the floor of the curb O. Upon each arm of the sweep N, and near the shaft E, is a small vertical projection, j, and as the shaft E is caused to revolve the arms of the driver d, coming in contact with the said projections j, carries the sweep N around in a circular direction upon the floor of curb, cleaning the same of the products of grinding and passing it out at the spout or outlet P. Between the grinding-plate A and its bed-plate C, and grinding-plate B and its bed-plate D, are formed the hollow spaces k, which extend in a circle around the center of the mill and within the outer and inner circumferences of the plates A and B. Through the bed-plates C and D, and communicating with the hollow spaces k, are the perforations l; also, through the floor of the curb are similar perforations m. The object of the perforations m and l and the hollow space k is the admission of cool air to and among certain portions of the working parts of the mill, thus in a measure obviating their becoming heated while in operation. The legs or standards Q, upon

which the body of the mill rests, are attached to the under side of the curb O by means of the dovetail joints n. The legs or standards are held in position by the horizontal brace R toward the feet of said standards Q. The downward projections from the ends of the brace R are formed bifurcating, so as to form a receptacle for the end of bolts r. The object of this form of joint between the standards Q and the curb O, and also between the standards Q and the ends of the brace R, is that the lower frame-work may be constructed with the least expenditure of labor and time, especially in the construction of small mills.

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

1. The metal plates A and B, provided with the tangential furrows b b and intervening spaces c c cut with file-teeth, as shown and described, for the purpose set forth.

2. The combination and arrangement, in the mill herein described, of the plates A and B with the curb O, plates C D provided with perforations l and m, space k, and shaft E, when all these parts are constructed substantially as shown and described, for the purpose set forth.

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Witnesses:

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GEORGE BENTON.