

(No Model.)

J. M. COLLIER.

GRINDING MILL.

No. 270,747.

Patented Jan. 16, 1883.

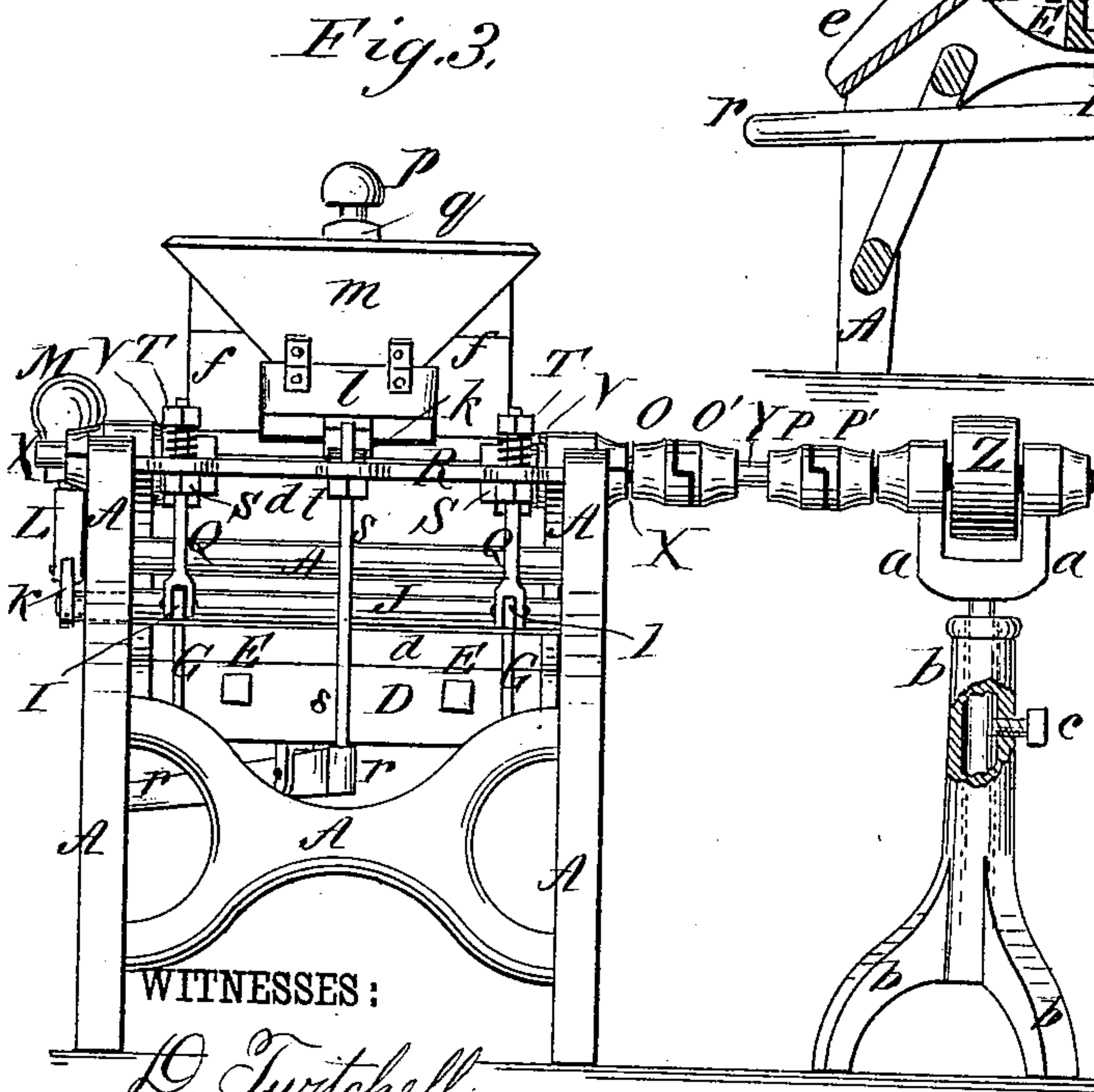
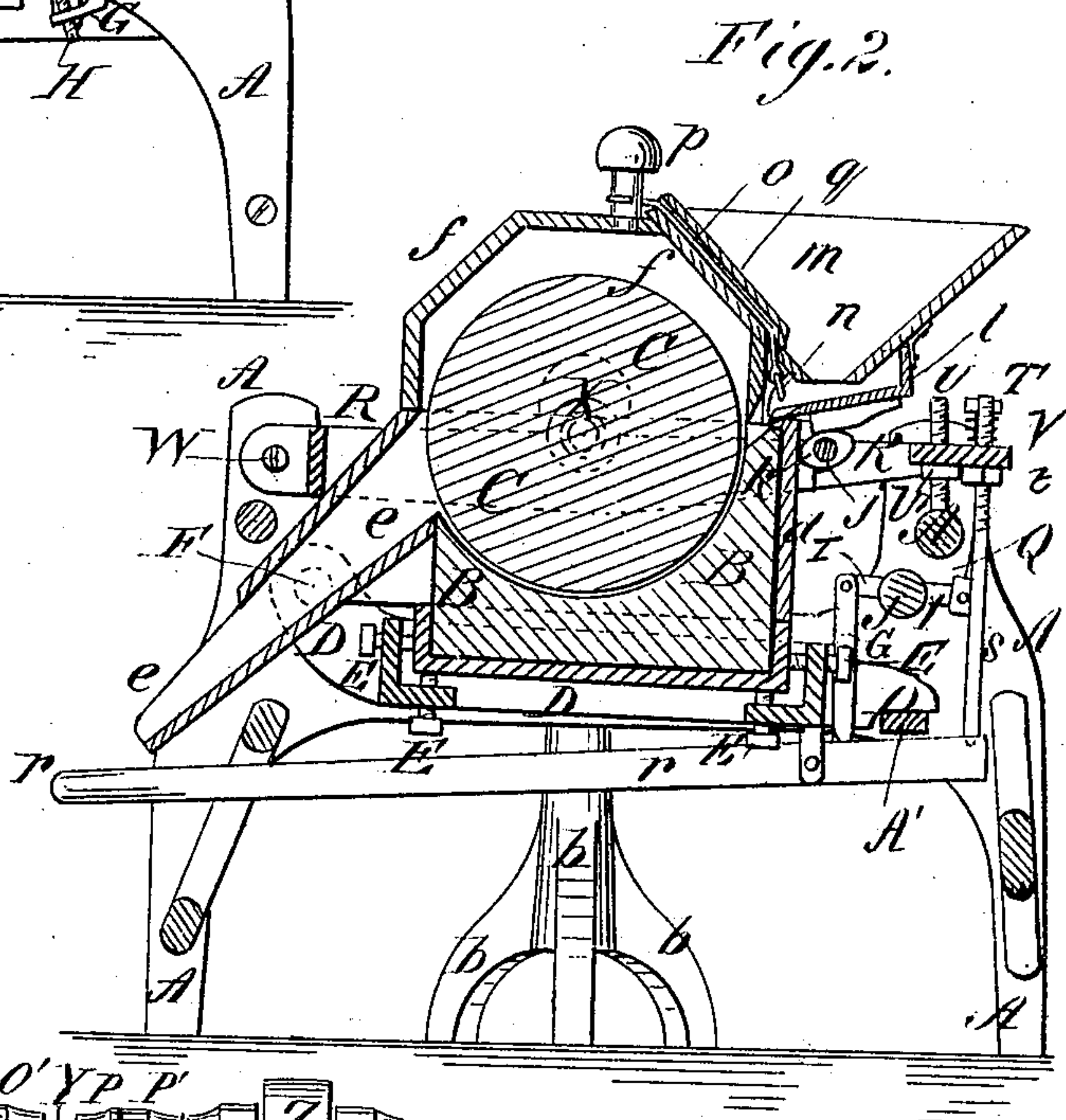
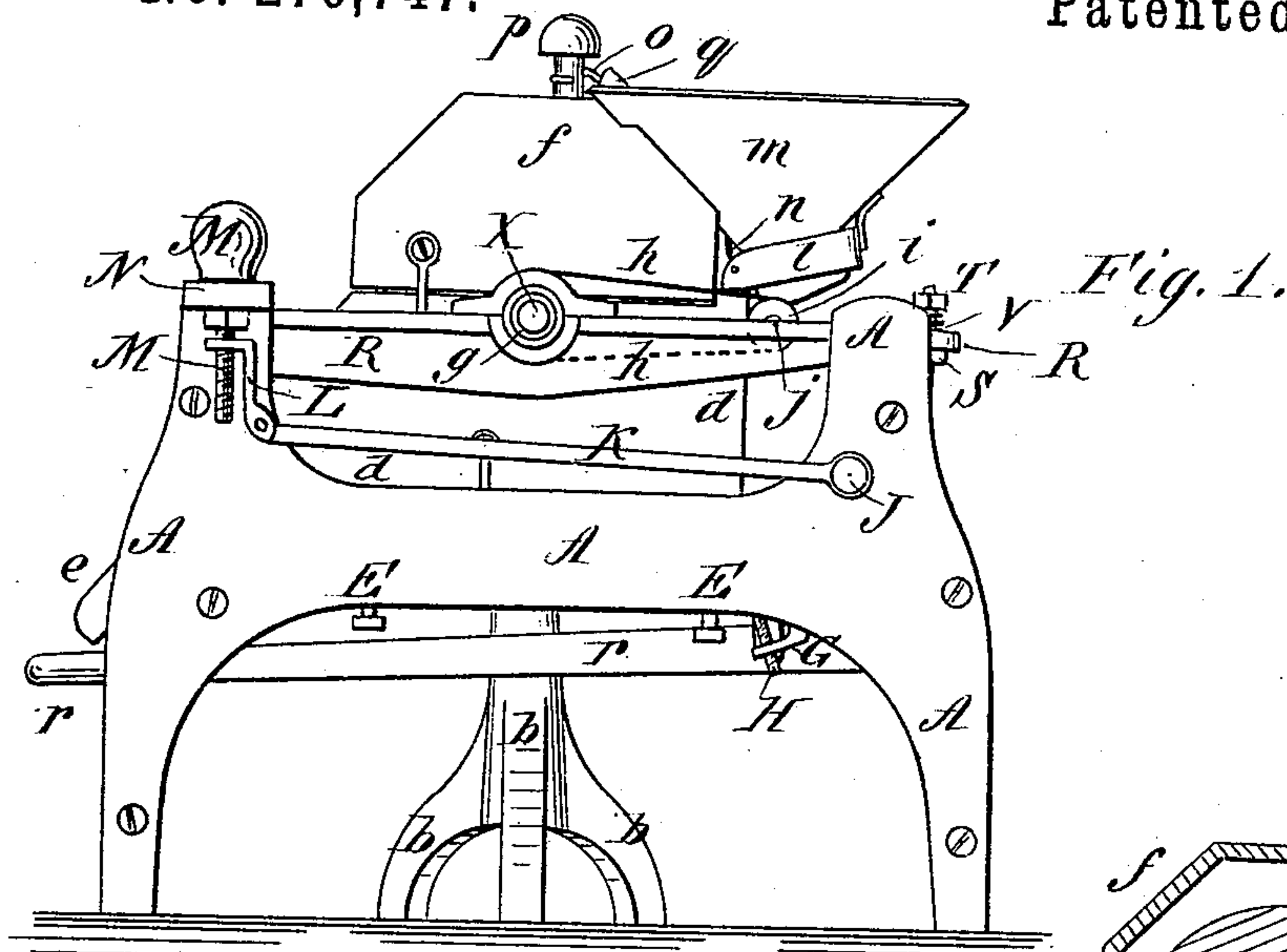
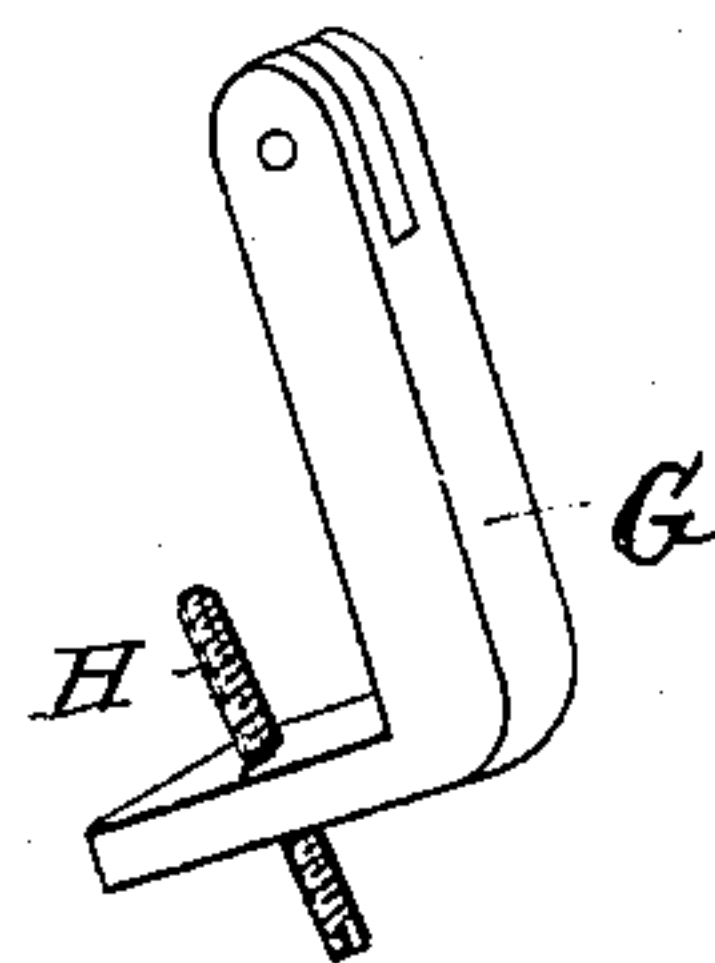


Fig. 4



WITNESSES:

D. Twitchell.

C. Sedgwick

INVENTOR:

BY

J. M. Collier

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES M. COLLIER, OF ATLANTA, GEORGIA.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 270,747, dated January 16, 1883.

Application filed August 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. COLLIER, of Atlanta, in the county of Fulton and State of Georgia, have invented a new and useful Improvement in Grinding-Mills, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improvement. Fig. 2 is a sectional side elevation of the same. Fig. 3 is a rear elevation of the same, and Fig. 4 is a detail.

The object of this invention is to improve the construction of the grinding-mills for which Letters Patent No. 257,658 were issued to me May 9, 1882, in such a manner that they can be more readily and accurately adjusted and controlled.

The invention consists in a grinding-mill constructed with a swiveled screw and hinged arm having a screw-hole, in combination with a lever attached to a shaft connected by rods with the upper and lower stone-carrying racks, so that the stones can be adjusted with accuracy. To the lower rack is fulcrumed a lever, which is connected with the upper rack by a rod and nut, so that the upper stone can be raised without changing its adjustment or set.

The invention also consists in the details of construction, as hereinafter fully described, and pointed out in the claims.

A represents the frame of the mill. B is the lower or stationary stone, and C is the upper stone or runner. The runner C is made cylindrical, and the stationary stone B is concaved upon its upper side to receive and fit upon the runner C, and has its rear part extended upward farther than its forward part, as shown in Fig. 2. The lower stone, B, rests upon the rack or frame D, and is adjusted and held by set-screws E passing through the said rack and resting against the front, back, and bottom of the said stone, or of a frame in which the said stone is fixed. The forward ends of the side bars of the rack D are curved upward, and are hinged to the side parts of the frame A by means of bolts F, so that the edge of the forward part of the stone B will not strike against the face of the runner C when the rear

end of the rack is lowered. The rear ends of the side bars of the rack D project to serve as handles when handling the said rack, and to rest upon the rear cross-bar, A', of the frame A when the rear end of the said rack D is released from its supporting-rods G. The rear end of the rack D is supported by the rods G, the lower ends of which are bent forward, project beneath the said rear end of the rack, and have screw-holes formed through them to receive the screws H. The forward ends of the screws H rest against the lower side of the rear end of the rack D, so that the said rack can be trued by adjusting the said screws H. The upper ends of the rods G are hinged to the inner ends of the cross-bars I, which pass through the shaft J, and are secured at their middle parts to the said shaft J. The ends of the shaft J, or journals formed upon or attached to the said ends, work in bearings in the rear parts of the frame A, and to one of the said ends is attached the rear end of a lever, K, which extends forward along the side of the frame A, and has an upwardly-projecting arm, L, hinged to its forward end. The upper end of the arm L is bent forward, and has a screw-hole formed through it to receive the screw M, which is swiveled to a lug or bracket, N, formed upon or attached to the frame A. To the upper end of the swiveled screw M is attached a knob or hand-wheel for convenience in operating it. With this construction, by turning the swiveled screw M in one or the other direction the lower stone can be raised or lowered.

To the outer ends of the cross-bars I are hinged the lower ends of the rods Q, the upper parts of which pass up through holes in the rear cross-bar of the rack R, and have screw-threads formed upon them to receive the nuts S T. The nuts S are placed below the cross-bar of the rack R, and the nuts T are placed above the said cross-bar, as shown in Fig. 3.

V are spiral springs placed upon the rods Q, between the cross-bar of the rack R and the nuts T, to allow the upper rack, R, to rise, should a hard substance get between the stones. The forward ends of the side bars of the rack R are hinged to the forward upper corners of the frame A by screws or bolts W or other suitable means.

To the middle parts of the side bars of the rack R are attached bearings for the shaft X, on which the upper stone or runner, C, is attached. With this construction the racks R and D will be moved at the same time toward or from each other by turning the shaft J so as to adjust the stones B and C closer to or farther from each other, according as the grain is required to be ground finer or coarser. With this construction, also, by taking off the nuts T and springs V the rack R and the runner C can be turned over forward to give convenient access to the face of the stationary stone B.

To the upper rear cross-bar of the frame A are attached two studs or stationary bolts, U, which pass up through short slots in the rear cross-bar of the rack R, and have screw-threads formed upon their upper parts, and nuts U' placed upon them below the said cross-bar of the rack R. With this construction, by disengaging the screws H from the rack D only the upper rack, R, will be moved by turning the shaft J; and by removing the nuts T from the rods Q and placing them upon the studs U and loosening the nuts S only the rack D will be moved by turning the shaft J, so that the two racks can be moved together or either separately in adjusting the stones, as may be desired.

One of the ends of the shaft X projects and to it is attached a part, O, of a clutch, the other part, O', of which is attached to the end of a short shaft, Y. To the other end of the shaft Y is attached a part, P, of a clutch, the other part, P', of which is attached to a journal of the driving-belt pulley Z. With this construction the driving-shaft of the machine will be unaffected by the pull of the driving-belt, and will run free even should the axis of the pulley be at an angle with the axis of the said driving-shaft, the clutches O O' and P P' and the short shaft Y forming a universal-joint coupling.

The journals of the pulley Z revolve in bearings in the forked upper end of a standard, a, the lower part or stem of which is made cylindrical in form, and is placed in a socket in the pedestal b, where it is secured in place by a set-screw, c, so that by loosening the said set-screw c the standard a can be raised, lowered, and turned to bring the axis of the pulley into line with the axis of the driving-shaft of the machine. The base of the pedestal b is made broad to give the said pedestal a firm support, and can be secured in place by bolts or other suitable means.

The lower stone, B, is surrounded by a casing, d, which rests upon and is secured to the lower rack, D, by hooks and staples or other suitable fastenings. The casing d has an opening in front for the escape of the chop, which slides down an inclined apron or spout, e, attached to the said casing, into some suitable receiver.

The upper stone, C, is inclosed by a casing

or cover, f, the lower edge of which rests upon the upper edge of the casing d, and which is secured to the said casing d by hooks and staples and dowel-pins or other suitable means.

Upon the shaft X, at the inner ends of its journals, are formed, or to it are attached, pulleys g, around which pass endless belts h. The belts h also pass around pulleys i, formed upon or attached to the ends of a shaft, j, which revolves in bearings attached to the rear end of the casing d.

To the middle part of the shaft j is attached a cam, k, which, as the shaft j revolves, strikes against the under side of the discharge-shoe l or a wear plate or block attached to the said shoe, so that the said shoe will be continuously jarred to cause a continuous and uniform feed of the grain to the grinding-stones. The shoe l is hinged at its outer or rear side to the lower part of the hopper m, which is secured to the rear part of the casing f.

To the forward corners of the shoe l are attached the ends of a bail, n, to the center of which is attached the lower end of a cord, o. The cord o passes up along the forward side of the hopper m, and its upper end is attached to a pin, p, which works in a hole in the top of the casing f, so that the shoe l can be adjusted to give a faster or slower feed or to close the discharge-opening of the hopper m by turning the pin p. The pin p has a knob formed upon or attached to its upper end for convenience in turning it, and may be held in place, when adjusted, by friction or by a ratchet-wheel and pawl connected with it and with the casing. The part of the cord o that passes along the forward side of the hopper m is protected by a cap, q, attached to the said hopper.

To a support attached to the rear part of the bottom of the lower rack, D, is fulcrumed a lever, r, the forward end of which projects into such a position that it can be readily reached and operated by the miller.

With the rear end of the lever r is connected the lower end of a rod, s, the upper part of which passes through a hole in the rear cross-bar of the upper rack, R, and has a screw-thread cut upon it to receive the nut t, placed upon it beneath the said cross-bar of the rack R. With this construction, should the stones become choked, by pressing the forward end of the lever r downward the upper stone will be raised, allowing the stones to instantly free themselves, when the lever can be released, and the upper stone will drop back to its former position, thus avoiding the tedious operation of separating the stones and resetting them by means of the swiveled screw M.

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

1. In a grinding-mill, the combination, with the frame A, the lever K, the shaft J, the stone-bearing racks D R, and the rods G I Q, of hinged arm L, having a screw-hole, and the swiveled hand-screw M, substantially as here-

in shown and described, whereby the stones can be adjusted with accuracy, as set forth.

2. In a grinding-mill, the combination, with the lower rack, D, and the upper rack, R, of the lever *r* and the rod *s*, having nut *t*, substantially as herein shown and described, whereby the upper stone can be raised without changing its adjustment or set, as set forth.

3. In a grinding-mill, the combination, with the frame A and the rack D, of the supporting-arms G, having their lower ends bent at right angles and provided with screw-holes, and the screws H, substantially as and for the purpose set forth.

4. In a grinding-mill, the combination, with the frame A, the racks D R, the shaft J, the rods Q, the supporting-rods G, the set-screws H, the lever K, the hinged arm L, and the swiveled hand-screw M, of the stationary bolts U, and nuts U', substantially as herein shown and described, whereby provision is made for moving the racks separately or together in adjusting the stones, as set forth.

JAMES M. COLLIER.

Witnesses:

F. M. COKER,

F. M. COKER, Jr.