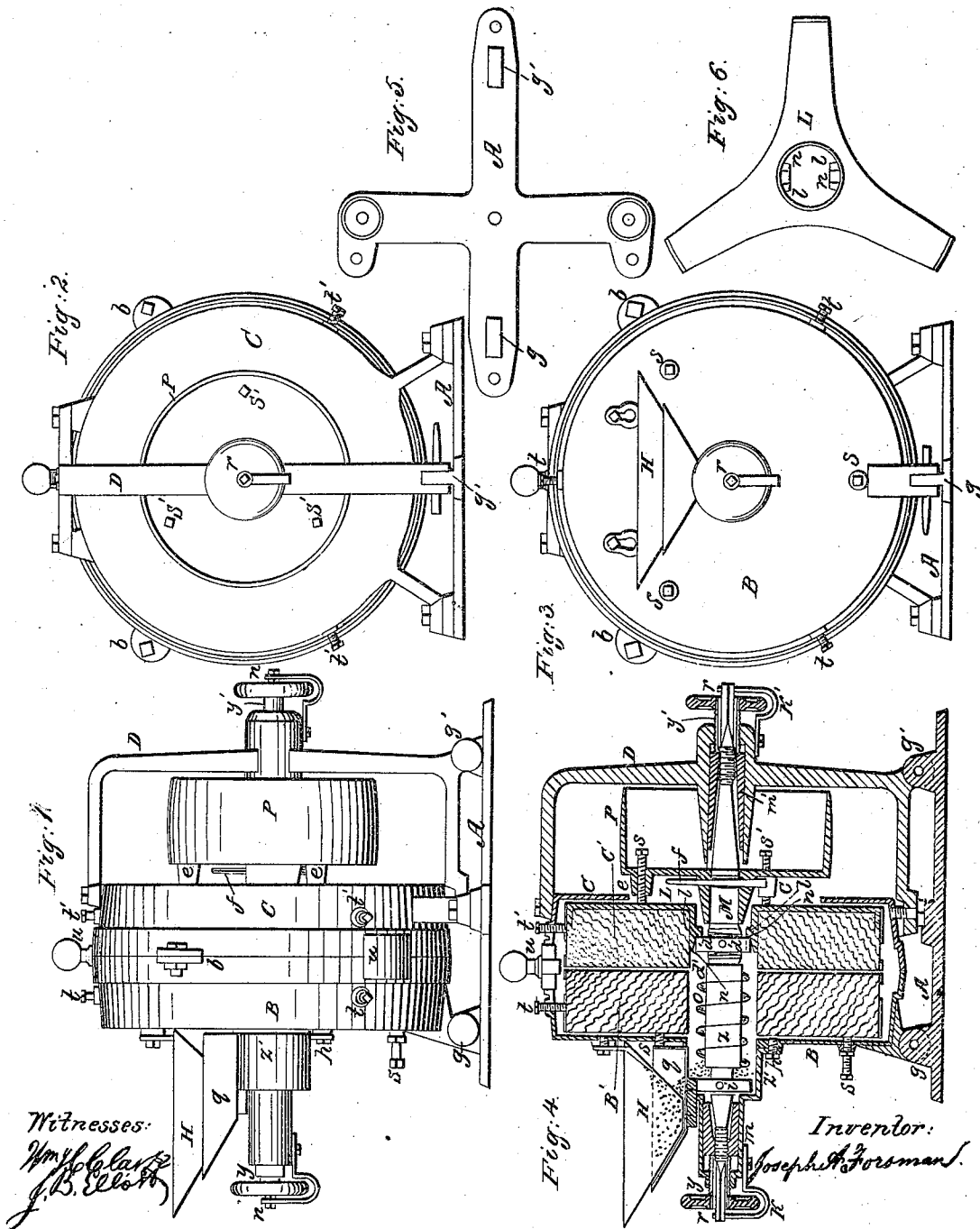


J. A. FORSMAN.

Grinding Mill.

No. 40,467.

Patented Nov. 3, 1863.



UNITED STATES PATENT OFFICE.

JOSEPH A. FORSMAN, OF JAMESTOWN, OHIO.

IMPROVEMENT IN GRINDING-MILLS.

Specification forming part of Letters Patent No. 40,467, dated November 3, 1863.

To all whom it may concern:

Be it known that I, JOSEPH A. FORSMAN, of Jamestown, in the county of Green and State of Ohio, have invented certain new and useful Improvements in Grinding-Mills, relating to the tramming of the burrs, construction of the cases for same, bearing-boxes for spindle, and the device for feeding the mill; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and letters of reference marked thereon, forming part of this specification.

Figures 1, 2, and 3 are vertical elevations of my mill, representing, respectively, a side, rear, and front view of the machine. Fig. 4 is an axial section. Fig. 5 is a plan of the base, and Fig. 6 represents a plate which carries the rear or running stone, as will be explained.

Like letters of reference indicate like parts in all the drawings.

A is the base or bed plate of the mill; B, the case or curb of stationary burr, in which the latter is adjusted and held by set-screws *s s t t*, &c.

C is the case or curb of rotating stone or burr. The cases B and C are made of iron, and are cast with ears or lugs, by which, when joined together, as represented, they are confined by bolts *b b*.

D is the bridge-tree or yoke, sustaining one end of spindle M, also curb C of the runner. This yoke is hinged to the bed-plate at *g*, and is capable of rotating outward with the curb C and runner until the latter is brought to a horizontal position conveniently for dressing.

B' C' are the burrs, made of French burr-blocks or other suitable material and in the usual manner. B', the stationary burr, is made with an eye, O, through which material to be ground is conveyed by a spiral conveyer, Z, formed on the spindle M. The burr B' is held in its case appropriately by set-screws *s s t t*, &c., which act against the back and verge or periphery of the stone. C', the rotating burr, is inclosed and carried by a triangular-shaped piece or plate, L, (represented in Fig. 6,) a cylindrical part of which enters the eye of the stone, fitting it accurately. On the inner face of this cylindrical part lugs *l l* are formed, in which are recesses *n n*, which receive the ends of driver *d*, the arrangement being such that the burr and the plate L are adjusted and held

in place by the set-screws *s' s'*, &c., pressing against the back of the plate L and holding the burr firmly against the driver *d*. The driver *d* passes through a mortise in the spindle, and is confined by a pin, *d'*. The tram-screws *s' s'*, &c., work in bosses *e e*, &c., projecting from the plate of pulley P, as represented. The pulley P is firmly secured on the spindle M, and is held by the pin *f* passing through its sleeve or hub, as seen in Figs. 1 and 4. Both ends of the spindle are made tapering, so that the boxes can be readily adjusted to them to compensate for any wear that may occur by use.

m m' are cylindrical boxes lined with anti-friction metal, as shown. They are prevented from turning in their seats by a feather or rib formed longitudinally upon their circumference, which enters appropriate grooves in the frame-work in which they are seated. They are adjusted endwise, and with them the spindle is controlled by the set-screws *y y'*, which work through the outer ends of the seats. The said screws *y y'* are made tubular or hollow to permit thrust-bolts of steel *r r'* to pass through into the ends of the boxes and against the ends of the spindle to receive the end-thrust of the same, the arrangement being such that the lined boxes *m m'* may be accurately adjusted to the spindle, after which the thrust-bolts *r r'* may be set up against the ends of the spindle, where they receive the end-thrust, as has been mentioned. The bolts *r r'* are made with a fine thread, so as to be nicely adjustable, and when set in place they are retained or prevented from returning by stays *k k'*, which have a square eye, into which the ends of the bolts, which are also squared, are received, the stays *K K'* being bolted to the frame-work, as shown.

The substance to be ground may be placed in a hopper, as at H, and fed into the conveyer Z through a shoe, *q*, which may be shaken by an eccentric disk, *i*, Fig. 4; or the conveyer may be extended out from the eye of the stone any desired distance, so as to receive cut straw, hay, roots, or any appropriate substance from a belt or apron running from a cutting apparatus, which may stand any convenient distance from the mill. This, it may be here remarked, constitutes a very important feature of my invention, inasmuch as no device has heretofore been introduced that would successfully feed such coarse substances to burr-mills; but in my invention it will be observed

that as the conveyer Z works through the eye of the stationary stone, said eye corresponding in size with the conveyer case or tube extending outwardly therefrom, as at Z', Fig. 1, a continuous tube may be formed from any point without inwardly to the face of the revolving burr.

Openings, as at U, Figs. 1 and 4, are made in the curb or case to permit the ground substances or meal to pass out; also to permit the operator to inspect the work or introduce gages in the process of tramping the runner.

The screws *t' t'*, surrounding the runner, serve to hold it in position when the spindle is to be introduced or removed, and this is necessary when the burrs require dressing, and is easily accomplished by first fastening the runner to its curb or case by said screws, then removing the pin *f* to release the pulley and unscrew the bolts *h*, which confine the conveyer end of the spindle, and it may be readily drawn out and replaced, as desired.

It has been mentioned that the runner carried by the bridge-tree or yoke D, which is hinged to the main frame or foundation, may be rotated on the hinge until the same is brought to a horizontal position. In a corresponding manner the stationary burr B', contained in the case B, which is hinged to the bed-plate at *g*, may be rotated outwardly until the face of the burr is in a horizontal position convenient for dressing by simply removing

the fastenings and the conveyer-case and spindle, the spindle being readily drawn out when the pulley is loosened from it by removing the pin through its sleeve.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is the following:

1. So hinging the curbs or cases B C which contain the burrs as that by the removal of the fastenings and the conveyer-case and spindle they may be opened outwardly in opposite directions, thereby bringing the faces of the burrs into a convenient position for dressing, substantially as described.

2. The combination of the hollow cylindrical box *m*, set-screws and thrust-bolt *r*, constructed and arranged substantially as and for the purpose described.

3. The combination of the adjustable or pivoted driver *d* with the tram-screws *s' s'*, by which the runner or revolving burr C' is easily tramped or set at right angles to its axis of motion, substantially as specified.

4. The combination and arrangement of the conveyer Z, curb or case B, tram-screws *s s*, and stationary burr B', when constructed and arranged substantially as described, and for the purposes set forth.

JOSEPH A. FORSMAN.

Witnesses:

WM. H. CLARK,
J. B. ELLIOTT.