C. P. BUCKINGHAM.

Grinding Mill.

No. 26,332. Patented Dec. 6, 1859.

Fig. 1.

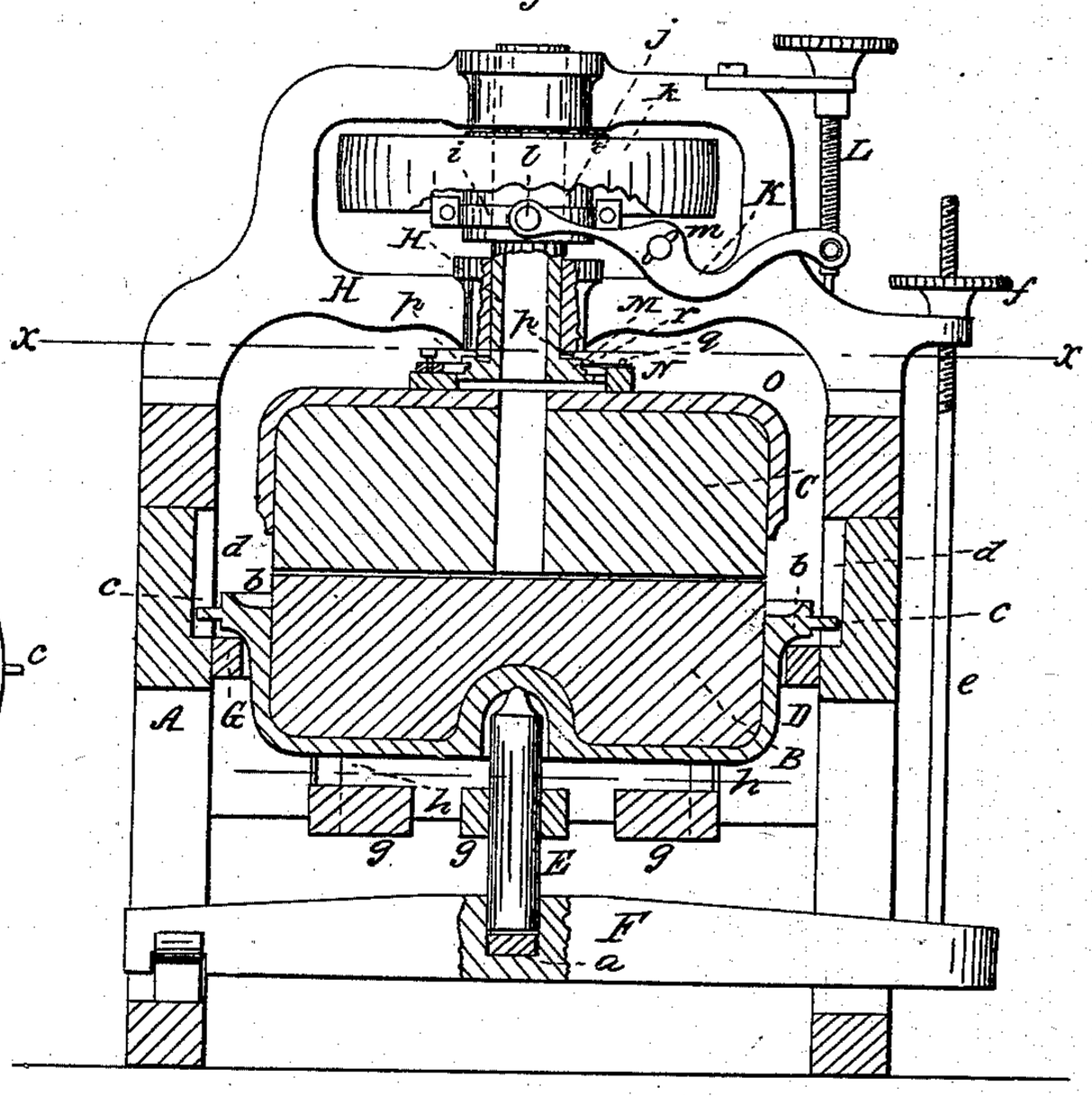


Fig. 3.

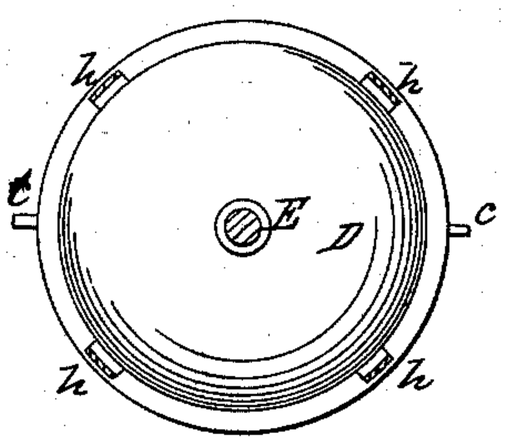
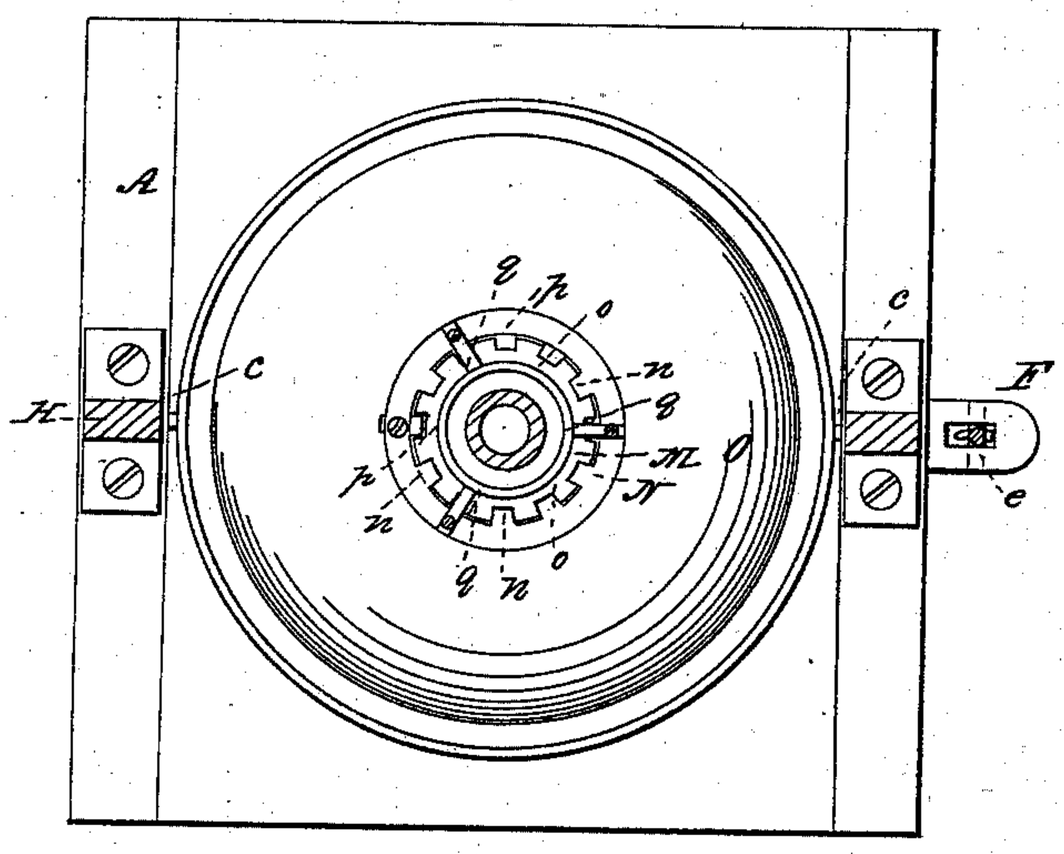


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

C. P. BUCKINGHAM, OF MOUNT VERNON, OHIO.

GRINDING-MILL.

Specification of Letters Patent No. 26,332, dated December 6, 1859.

To all whom it may concern:

Be it known that I, C. P. BUCKINGHAM, of Mount Vernon, in the county of Knox and State of Ohio, have invented a new and Improved Grinding-Mill; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical central section of my invention. Fig. 2, is a horizontal section of ditto, taken in the line *x*, *x*, Fig. 1. Fig. 3, is a detached inverted plan of the cap of the lower stone.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improved mode of hanging the stones substantially as hereinafter described, whereby the same may be readily adjusted and due provision made for the escape of foreign substances which may chance to pass between them, and the running stone rotated with a true or even motion.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents a framing which may be constructed in any proper way to support the working parts of the mill.

B, represents the lower and C, the upper stone. The lower stone B, is fitted within a metal cap D, the center of which at its under side is fitted on the point of an upright rod B, the lower end of which is stepped in a bridge-tree F, and rests on a spring *a*, of india-rubber or other suitable material. The upper edge of the cap D, has a flanch *b*, around it, said flanch projecting over a bed G, in the framing. From two opposite points of the flanch *b*, pins *c*, *c*, project and fit in vertical grooves *d*, *d*, in the sides of the framing. The bridge-tree F, is attached or adjusted by a screw rod *e*, and thumb nut *f*, as shown plainly in Fig. 1. In the framing A, and directly below the metal cap D, horizontal bars *g*, are secured and to these bars four elastic bars *h*, are attached at such point as to bear at equal distances apart against the cap D, and serve to prevent the lower stone from acquiring a vibratory motion while the mill is running.

H is a metal frame-work secured on the upper part of the framing A, and having a hollow spindle I, fitted within it. This spindle I, is sustained in its bearings by a collar *i*, which is fitted in a groove made circumferentially in the hub *j*, of a driving pulley J, on the spindle I, the hub *j*, being secured to the spindle by a screw *k*. The collar *i*, has two journals *l*, projecting from it at opposite points, and these journals are fitted in the inner end of a lever frame K, the fulcrum of which is at *m*. Through the outer end of the lever frame K, a screw rod L, passes.

The lower end of the hollow spindle I, has a circular flanch M, attached which flanch is turned accurately and is fitted within a ring N, secured concentrically and permanently to the upper surface of a metal cap O, in which the upper stone or runner C, is secured. The flanch M, is exactly equal in diameter to the inner diameter of the ring N, and the latter is considerably thicker than the flanch. At the inner side of the ring N, and above the flanch M, there are radial projections *n*, made at equal distances apart and the flanch M, is notched at its edge, the notches *o*, corresponding to the size of the projections *n*. In the ring N, a key *p*, is fitted or placed, said key projecting into one of the notches *o*, and locking the spindle I, and cap O, together. On the ring N springs *q*, are secured the inner ends of which are fitted in a groove *r*, at the inner part of the flanch M.

From the above description it will be seen that as the spindle I, is rotated the motion will be communicated to the cap O, and stone C, and the latter on account of its peculiar connection with the spindle, will be rotated with an even true motion and if the runner C, be thrown up at one side by the passage of any large foreign substance between the stones, it will gently drop back to its proper position without any wabbling or vibratory motion which would be produced by the ordinary modes of hanging the stones. The difference between the thickness of the ring N, and flanch M, allows of the upward yielding movement of the stone C, and the springs *q*, cause the stone C, to adjust itself promptly to its proper position when removed therefrom by the passage of large foreign substances between them.

The lower stone B, is stationary of course, that is to say, does not rotate, but in conse-

quence of being balanced, and supported wholly on the upper pointed end of the rod E, it can tip to one side and assist in letting obstructions pass between the stones and escape; while the action of the spring bars *h*, in clasping the stone with a moderate pressure, will prevent, by their friction, the vibration which is apt to ensue, after it has been tipped to one side, and still permit the vertical motion of the said lower stone in its adjustment by means of the bridge tree F. The rod E, is accurately fitted into a hole through the middle bar *g*, which guides it in its vertical motion, and keeps the center of gravity of the lower stone always in the line of the axis of the spindle. It will be seen from the drawing that either stone may be adjusted to grind fine or course by means of the respective screw rods L, and *e*. The spindle I, may be readily detached from the cap O, of the upper stone or runner by removing the key *p*, and turning the spindle until the notches *o*, register with the projections *n*. The grain or substance to be ground is fed down through the hollow spindle I, into the eye of the stone C.

I do not claim a hollow spindle, nor metal caps applied to the stones, but

I do claim as new and desire to secure by Letters Patent—

1. The improved method of securing the spindle to the runner stone of a grinding mill, by combining the flanch M at the end of the spindle I and the ring N attached to the metal cap O, of the runner C, said ring being provided with projections *n* which shall permit a rocking motion of the stone upon the spindle, and a kep *p* or its equivalent, substantially as and for the purposes set forth.

2. The use in connection with the bed stone B of the elastic bars *h* for the purpose specified.

C. P. BUCKINGHAM.

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