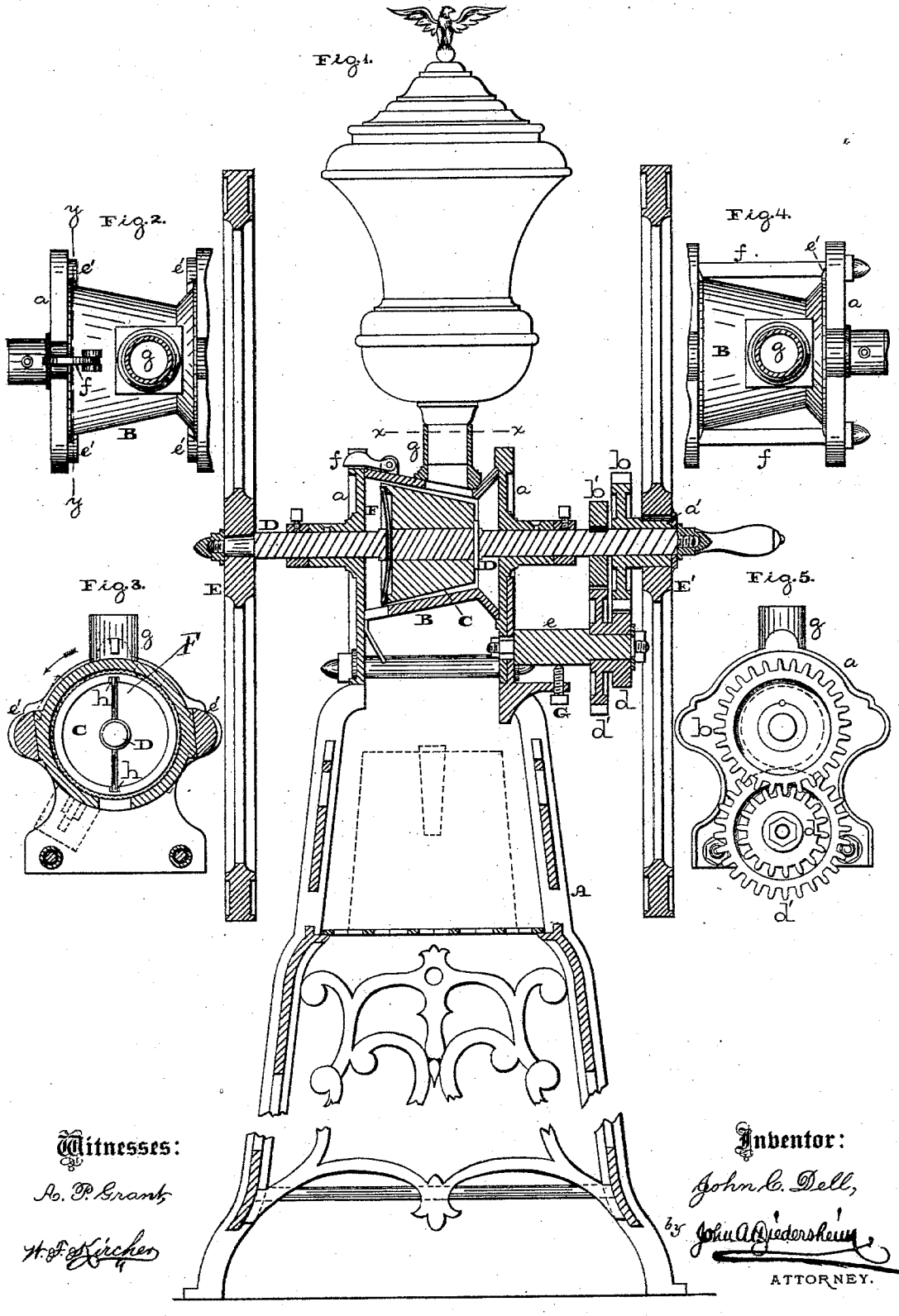
J. C. DELL.
Coffee-Mill.

No. 210,676. Patented Dec. 10, 1878.

Fig. 1.



Witnesses:

A. P. Grant

H. F. Kircher

Inventor:

John C. Dell,

by John A. Wiedersheim,

ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN C. DELL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN COFFEE-MILLS.

Specification forming part of Letters Patent No. **210,676**, dated December 10, 1878; application filed November 6, 1878.

To all whom it may concern:

Be it known that I, JOHN C. DELL, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Grinding-Mills for Coffee, Spice, &c., which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a central vertical section of the mill embodying my invention. Fig. 2 is a horizontal section of a portion in line *x x*, Fig. 1. Fig. 3 is a vertical section in line *y y*, Fig. 2. Fig. 4 is a modification of Fig. 2; and Fig. 5 is a side view of a detached portion.

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

My invention consists of a mill having at the ends of its burr-spindle or shaft power or balance wheels, which are operated at different degrees of speed, whereby the burr may be rotated with great rapidity without rotating the hand or driving wheel at a similar degree of speed.

It also consists in so forming the shell or bed of the burr that its spout or inlet may be overturned to discharge nails, stones, and other obstacles accidentally admitted thereinto.

It further consists in connecting the burr to the spindle or shaft by a connection which yields automatically when the burr is subjected to extraordinary or injurious strain.

It also consists of a screw for adjusting the gearing when applied in position or subsequently worn.

Referring to the drawings, A represents a stand or frame for supporting the parts of the mill. At the upper end of the stand there rise heads *a a*, between which is clamped the shell or bed B, whose inner face is properly dressed; and within the shell is the burr C, whose spindle or shaft D is mounted on the heads *a a*.

To one end of the spindle there is fixed a a power or balance wheel, E, and on the other end there is loosely mounted a hand-operated or driving-power or balance wheel, E′, which is held in position by a proper nut, sleeve, or other device. To the inner side of the hub or sleeve *a′* of the wheel E′ there is firmly connected a toothed wheel, *b*, which meshes with a smaller toothed wheel, *d*, to which is connected a large toothed wheel, *d′*, the wheels *d d′* being mounted on a shaft, *e*, arranged below the spindle D and properly secured to the upper end of the stand A. The wheel *d′* meshes with a smaller spur-wheel, *b′*, which is keyed or otherwise fixed to the spindle D adjacent to the wheel *b*.

It will be noticed that by this mechanism the wheel E′, though loose on the spindle, imparts motion to said spindle, and gear-wheels *b b′ d d′* are all on the one side of the mill.

It will also be seen that while the wheel E′ and wheel *b* rotate freely on the spindle, the wheel *b′* rotates therewith; consequently, owing to the diameters of the wheels *b b′ d d′*, the wheel E′ and spindle D rotate at different degrees of speed, the spindle exceeding that of the said wheel E′, wherefore the wheel E rotates at greater speed than the wheel E′, so that the grinding is quickly accomplished; and the rotation of the wheel E′ being less rapid than that of the wheel E, the hand, when employed, is correspondingly relieved, the advantage whereof will be readily appreciated by those operating the mill.

The shell or bed is held between the heads *a a* by lugs or flanges *e′*, on which it may be readily rotated, being held in position by one or more bolts, *f*, or clamps hinged to the shell and engaging with notches on the heads, or by sliding bolts *f*, passed through notches on the shell and screwed to the heads. Should nails, stones, &c., accidentally placed with the coffee, &c., in the urn or hopper, enter the shell or bed through the spout *g*, the urn is removed and the bolts are loosened, whereby the shell or bed may be rotated, so as to overturn the spout, and the obstacle will fall out or the bed clear itself.

The burr is connected to the spindle D by a spring, F, which, fitted to the spindle, enters notches or engages with shoulders, as at *h*, in the burr, and holds the burr on the shaft sufficiently secure for all practical purposes. Should, however, any obstacle be caught between the burr and shell or bed, or the burr is subjected to extraordinary or injurious strain, the spring or spring-connection yields, the spring automatically leaving its seat on the burr or runner and relieving the burr, and the spindle continues to rotate, leaving the burr inoperative, thus preventing injury to the burr

or bed. When the obstacle is removed or strain is relieved, the spring rotates with the spindle until its ends reach the notches or shoulders *h*, whereby the burr is again caused to rotate and render service.

In order to adjust the gearing *b b'* and *d d'* when applied to each other or subsequently worn, I employ a screw, G, which is fitted to an arm or projection from the upper end of the stand or one of the heads and bears against the shaft of the wheels *d d'* for evident purposes.

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

1. The burr-spindle provided with power or balance wheels operated at different degrees of speed, substantially as and for the purpose set forth.

2. The burr-spindle carrying at opposite ends the fixed and loosely-connected power or balance wheels E E', in combination with the intermediate gearing *b b' d d'*, substantially as and for the purpose set forth.

3. The shell or bed B, rotatably fitted to the heads, whereby the spout or inlet may be overturned, substantially as and for the purpose set forth.

4. The burr fitted loosely on the spindle or shaft, and connected thereto by the spring F, whereby in the event of obstructions between the burr and shell said spring automatically leaves its seat, thus relieving the burr, substantially as set forth.

5. The spindle D, balance-wheel E', and gearing *b b' d d'*, in combination with the adjusting-screw G, substantially as and for the purpose set forth.

JOHN C. DELL.

Witnesses:
JOHN A. WIEDERSHEIM,
H. E. GARSED.