(No Model.)

H. H. COLES.

GRINDING MILL.

No. 437,144. Patented Sept. 23, 1890.

Fig. 1.

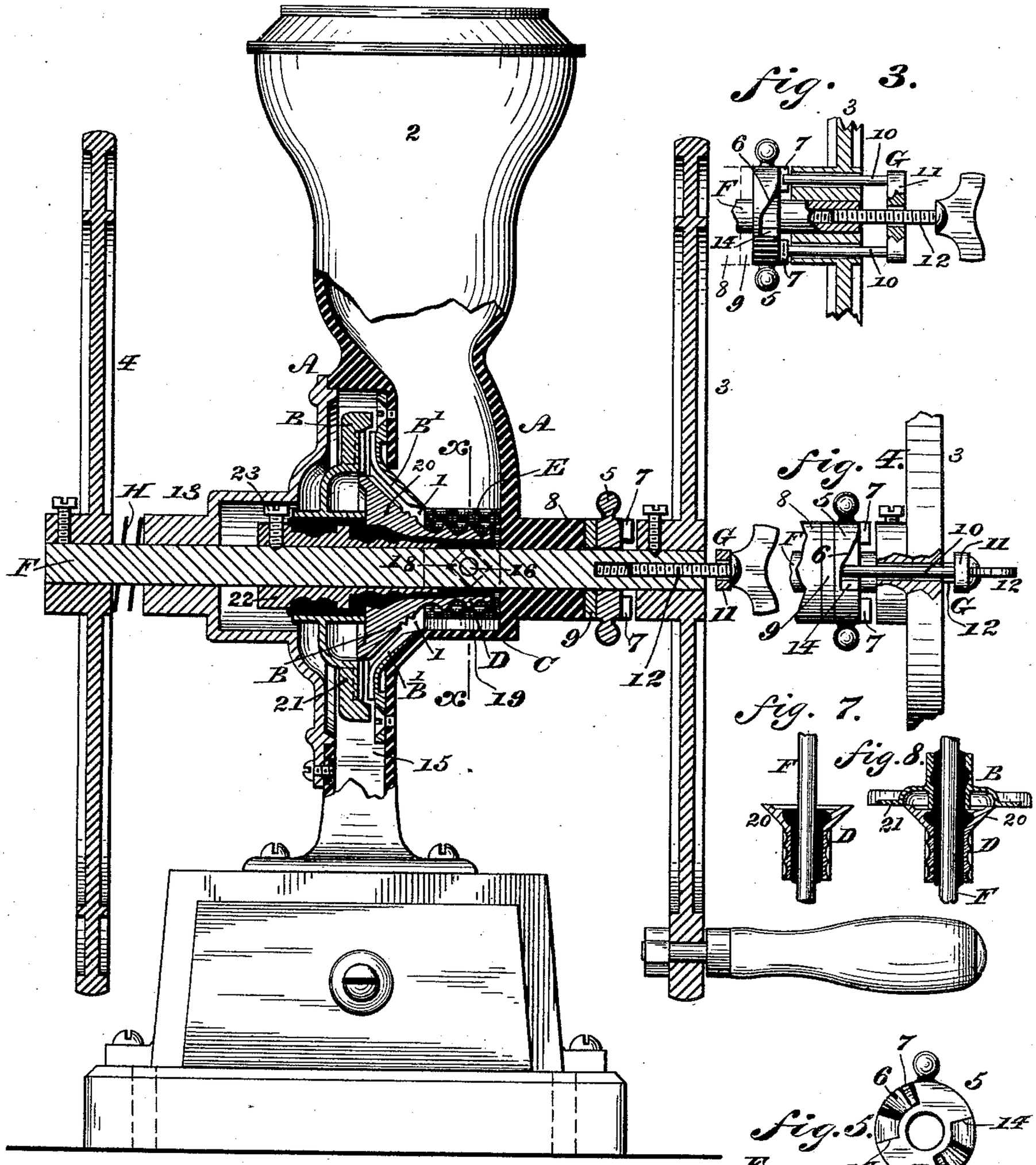


Fig. 3.

Fig. 4.

Fig. 7.

Fig. 8.

Fig. 5.

Fig. 2.

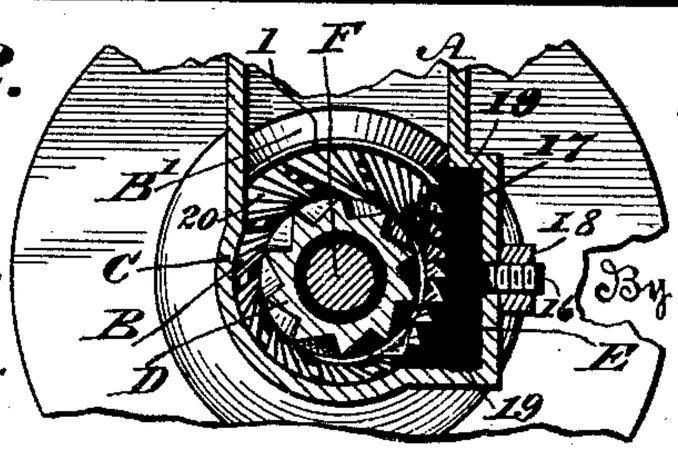
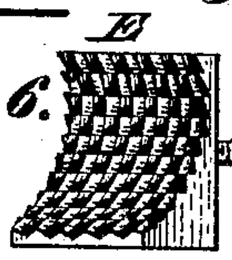


Fig. 6.



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GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 437,144, dated September 23, 1890.

Application filed December 17, 1888. Serial No. 293,818. (No model.)

To all whom it may concern:

Be it known that I, HENRI H. COLES, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Grinding-Mills, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in grinding-mills; and it consists in the combination of parts herein set forth and claimed.

Figure 1 represents a partial side elevation and partial vertical section of a grinding-mill embodying my invention. Fig. 2 represents a vertical section of a portion on line *x x*, Fig. 1. Figs. 3 and 4 represent views of the adjusting device detached, shown partly sectional. Fig. 5 represents a face view of the sleeve of said devices. Fig. 6 represents a perspective view of the concave of the device for cracking the material prior to grinding. Figs. 7 and 8 represent means for connecting the runner with the shaft.

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

Referring to the drawings, A designates the casing of the mill, the same containing the runner B and bed B′, and having a lateral extension C, which contains the cracking-burr D and concave E therefor, said runner B and burr D being secured to the shaft F, which latter is mounted on the end walls of the casing and extension, as seen in Fig. 1. The bed B′ is secured to the wall of the casing, the eye 1 between said bed and the runner B being in communication with the space between the burr D and concave E, said burr and concave being properly toothed. The hopper 2 is supported on the casing and extension A C and directs the coffee or other material to be ground to the concave and burr.

The shaft F is laterally movable in its bearings, whereby the runner may be moved nearer to or farther from the bed for fine or coarse grinding, said shaft having a crank-handle wheel or pulley 3 at one end and a power or fly wheel 4 at the other end.

Loosely fitted on the shaft F, adjacent to the hub of the wheel 3, is a sleeve 5, whose side toward said hub is formed with spirals or inclines 6, at the ends of which are stops 7. The back of the sleeve rests freely against the bearing 8 on the casing or a washer 9, interposed between said sleeve and bearing.

G designates a yoke, whose pins or limbs 10 pass freely through the hub of the wheel 3 and have their inner ends adapted to rest against the inclines 6. Through the head or cross-piece 11 of the yoke G is freely passed a screw 12, which enters the end of the shaft F and engages therewith, whereby said yoke may be moved in and out, so as to set the limbs 10 nearer to or farther from the inclines 6 of the sleeve 5, so as to adjust the pressure thereon. Interposed between the bearing 13 and the power-wheel 4 is a spring H, whose tendency is to force the shaft in the direction toward said wheel 4.

It will be seen that when the sleeve 5 is rotated in one direction the inclines 6 ride against the legs of the yoke G in the rise of said inclines, and thus force the latter outwardly, whereby the head of the screw 12 draws the shaft F with it in this case to the right, and thus forces the runner nearer to the bed and causing proper grinding, the screw, as is evident, also providing means for adjusting the degree of fineness. Should obstacles enter between the runner and bed, the sleeve is rotated in reversed direction, whereby the legs ride on the inclines in the descent of the latter, and thus the yoke is relieved of the pressing action of the sleeve. The spring H then exerts its pressure on the shaft in the direction at present to the left, and thus the runner is moved from the bed, whereby the obstacles are permitted to drop. The rotation of the sleeve 5 is limited by the stops 7 and the shoulders 14 at the base of the inclines. When the coffee or other material enters the hopper, it is directed between the burr D and concave E, and thus cracked or reduced preparatory to the grinding operation, the cracked or reduced material reaching the runner and bed through the eye 1. The ground material is directed through the throat 15 at the bottom of the casing into the drawer or box at the base of the mill.

The concave E has secured to its back a screw 16, which passes through an opening in the wall of the offset 17 of the extension C,

and is tightened by a nut 18, said offset forming shoulders 19, against which the concave is fitted, whereby by means of said shoulders and the screw 16 and nut 18 the concave is firmly held in position.

The runner B is formed of the two parts 20 and 21, the part 20 being conical in form and the part 21 cylindrical.

On the shaft F is secured a bushing 22 by means of the screws 23, the said bushing being within the runner and burr, and secured thereto by a soft metal part, (shown black in Fig. 1,) the said bushing having a notched, grooved, or irregular surface. The shell 21, which is larger than the shell 20 and constitutes the vertical part of the runner, is also fitted over the bushing and placed against the base of the shell 20. Soft metal is now poured into the space between the bushing and the hub of the shell 21 and united with the soft metal previously introduced, whereby the two shells are firmly connected with each other and with the shaft.

In Figs. 7 and 8 there are shown means for connecting the runner with the shaft without the employment of the bushing, the part 20 being illustrated in Fig. 7 as the first step, and the two parts being illustrated in Fig. 8 as connected with each other and the shaft.

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

1. In a grinding-mill, a shaft having a runner secured thereon, a casing with bed, the shaft having bearings in said casing, a sleeve on said shaft and abutting against said casing and having inclines on one of its sides, a cross-piece with pins, the latter bearing against said inclines, and a screw working in said cross-piece and the end of the said shaft, said parts being combined substantially as and for the purpose set forth.

2. A shaft with a runner secured thereon, a casing forming bearings for said shaft and having a bed secured thereto, a sleeve on said shaft and having inclines with shoulders and stops at the ends thereof on one of its sides, a cross-piece with pins bearing against said inclines, and a screw working in the end of the shaft and in the cross-piece, said parts being combined substantially as described.

3. In a grinding-mill, a shaft with a runner secured thereon, wheels or pulleys on the ends of said shaft, a casing forming bearings for said shaft, a coil-spring between one of the wheels and one end of the casing, a bed supported in said casing, a sleeve with inclines, having on one end of its sides a wheel having its hub against said sleeve, a cross-piece with pins bearing against said inclines, and a screw regulating said cross-piece and pin, said parts being combined substantially as and for the purpose set forth.

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