

G. S. Rust,
Cider Mill.

No 41,723.

Patented Feb. 23, 1864.

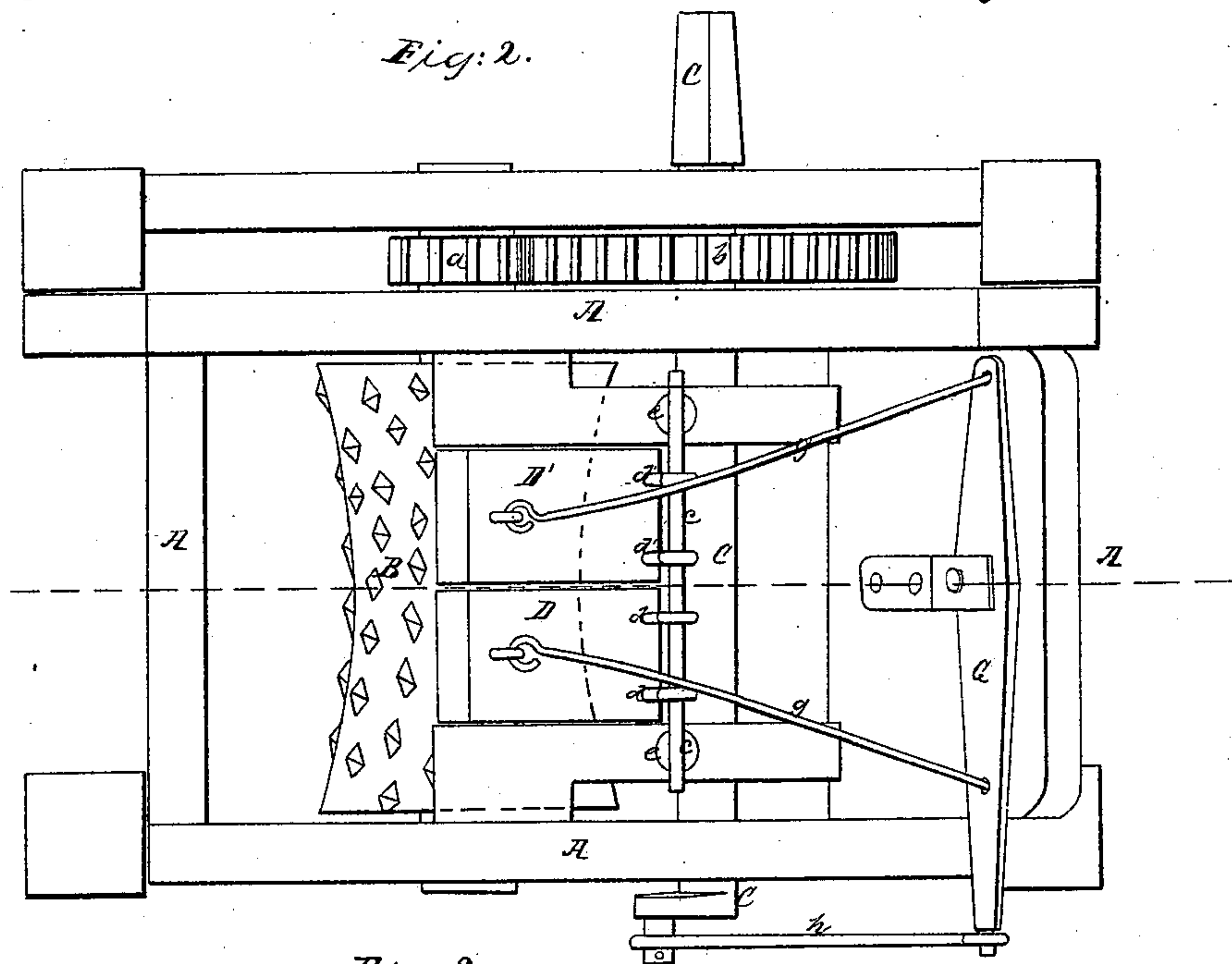
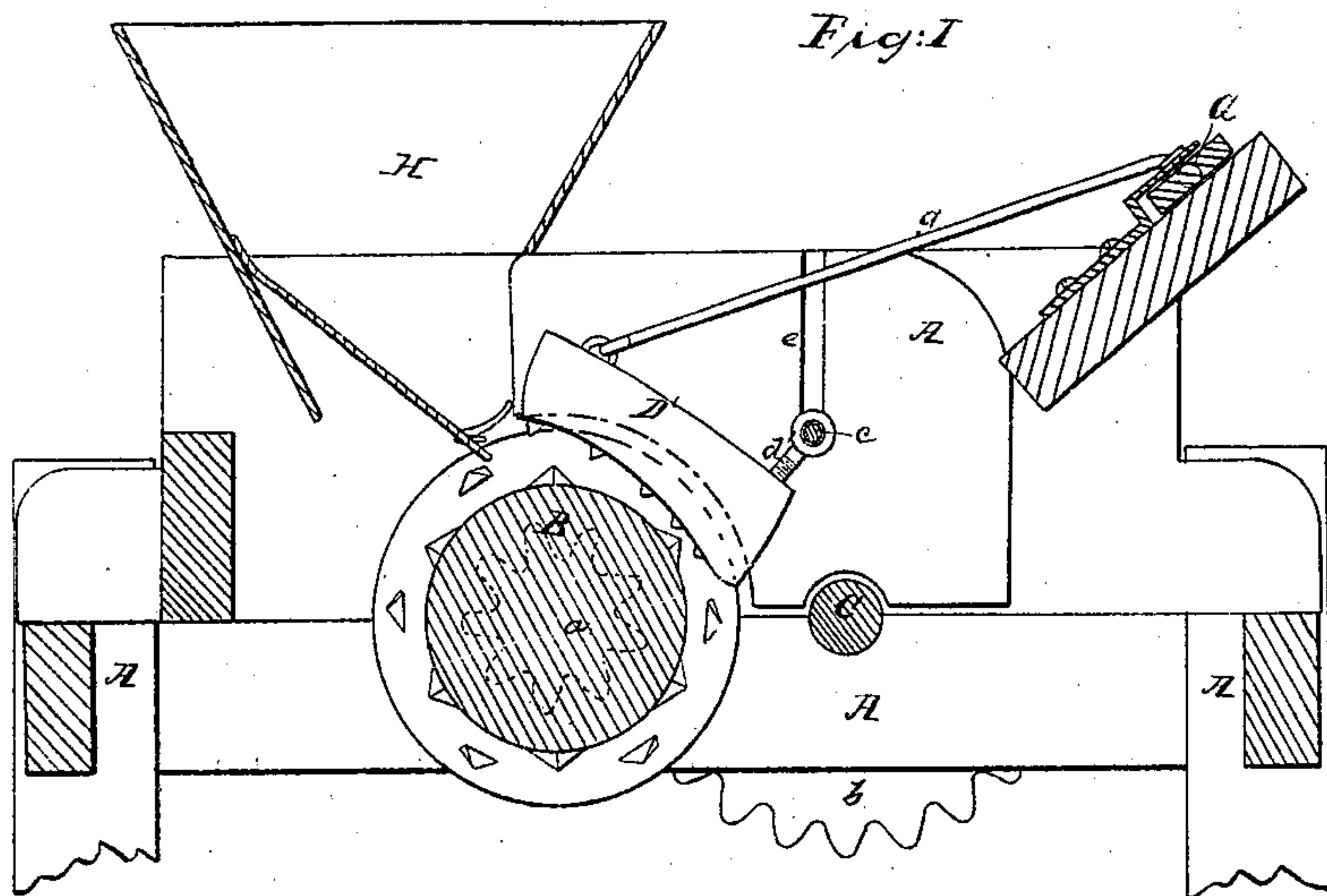
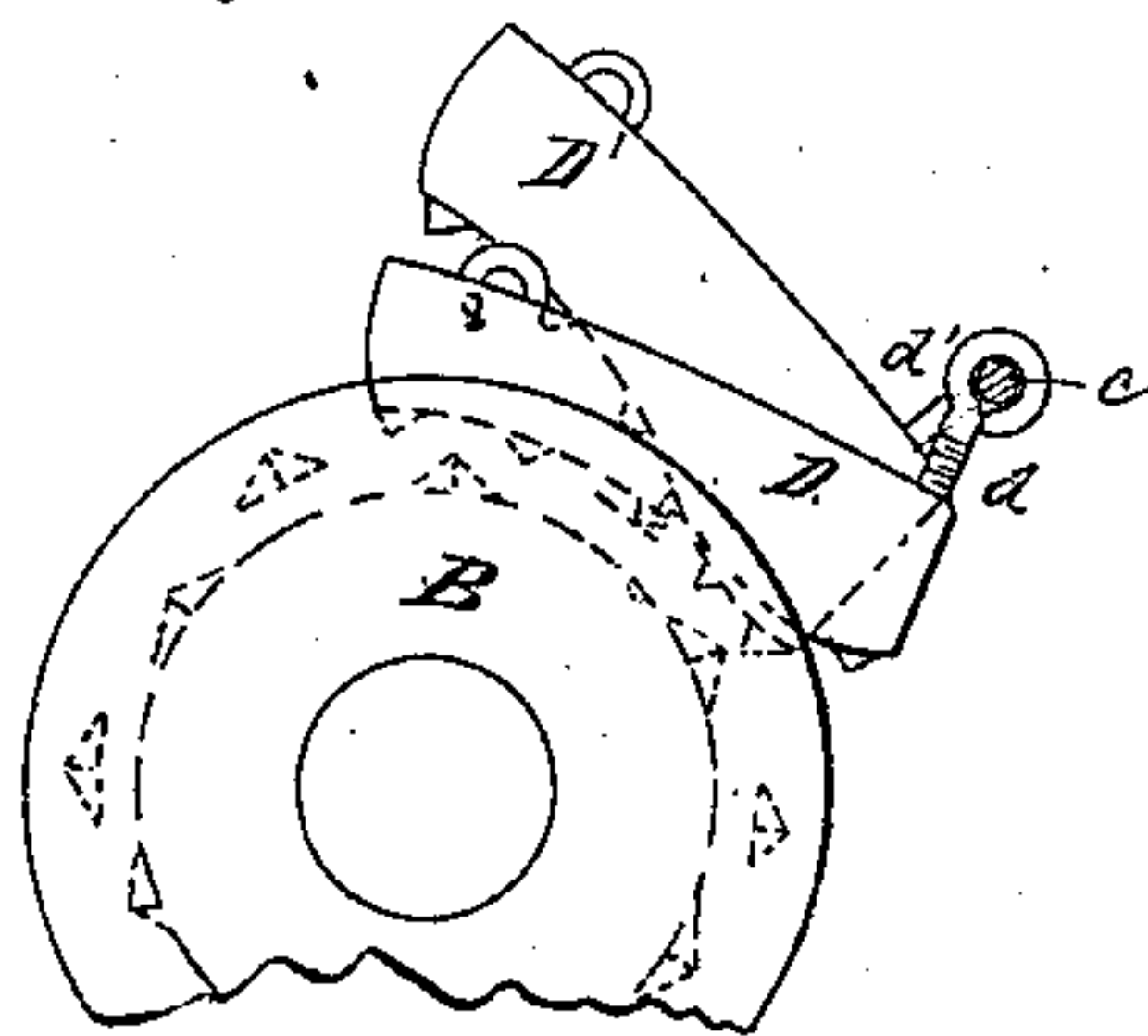


Fig: 3.



Witnesses:

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Inventor:

G. S. Rust
by his Atty
Mason, General Lawrence

UNITED STATES PATENT OFFICE.

GEORGE S. RUST, OF CHESTER, ILLINOIS.

IMPROVEMENT IN APPLE-MILLS.

Specification forming part of Letters Patent No. 41,723, dated February 23, 1864.

To all whom it may concern:

Be it known that I, GEORGE S. RUST, of Chester, county of Randolph, State of Illinois, have invented a new and Improved Apple-Mill; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical longitudinal section through the center of my improved mill. Fig. 2 is a top view of the same. Fig. 3 is an end view showing the concaves in two positions.

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

This invention relates to improvements in hanging and adjusting the concaves of that class of apple-mills wherein two or more alternately vibrating concaves are employed in conjunction with a rotary-drum for reducing the apples.

The object of my invention is to hang the concaves over the rotating drum in such manner that a greater vibration or swinging motion can be given to their rear or discharging ends for the purpose of keeping the crushed mass under them until it is finely reduced, and then allowing the pomace to escape more freely after it has been properly reduced, as will be hereinafter described.

It also has for its object a novel means for adjusting the concaves to increase or diminish their vibration, and also for grinding and crushing fine or coarse, as may be desired.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The frame A, rotating toothed grinder B, driving-shaft C, and gearing *a b* are all constructed and arranged precisely in the manner described in my corn-sheller and combined straw-cutter and corn-sheller applications which accompany this. These parts above referred to are constructed and arranged with a view to their being used in connection with the several devices which are added in the conversion from one kind of machine to another. The concaves D D' in this machine are constructed so that their curved surfaces are adapted to work in connection with a rotating toothed grinder, B, of the form of a hyperboloid. These concaves D D' are suspended beneath a transverse bar, *c*, by means

of arms or eyebolts *d d'*, the eyes of which receive the bar *c* and form pivotal connections of the concaves with said bar. Two eyebolts are used for each concave, and these bolts *d d'* are screwed into the concaves before they are slipped on their supporting-bar. This bar is then introduced into the slotted guides *e e* in the sides of the frame A, which guides are adapted for receiving springs for holding the bar *c* down in its bearings when it is desired to employ springs.

The lower ends of the pivoted arms *d d'* are secured into the upper surfaces of the concaves D D' at a point which is near their rear or lower ends. The concaves are thus suspended by pivoted arms above and on one side of the axis of the rotating grinder B, as shown in Figs. 1 and 3, so that by vibrating these concaves their serrated lower or acting surfaces will be made to approach and recede from the grinder, and thus to crush the apples on the surface of said grinder during the rotation thereof. The effect of this mode of hanging the concaves is to give to them a rocking motion about their fulcrum-bar *c*, and as their forward ends rise their rear ends move toward the surface of the grinder B, and vice versa; hence it will be seen that the rear ends of the concaves will press the crushed mass forward on the rotating grinder as their upper ends rise, and thus keep the pomace between the crushing and grinding surfaces as long as possible.

The forward ends of the concaves D D' are pivoted in a suitable manner to the ends of rods *g g*, the opposite ends of which are pivoted to the ends of a vibrating lever, G, that receives its motion from the driving-crank shaft C through the medium of a connecting-rod, *h*, as shown in Fig. 2. By this mode of vibrating the concaves they receive an alternate motion, the forward end of one rising as the forward end of the other is depressed. This alternate motion of the concaves has been found well suited to the purpose of crushing the apples on a rotating drum, as the crushed mass is pressed during the operation from one end toward the other of the drum, and is thus constantly acted upon by one or the other of the concaves. Where such concaves have been pivoted directly to a bar—*i. e.*, by a bar passing through their rear ends—these ends will preserve nearly the same distance and relation to

the drum at all times, but by attaching these concaves to the vibrating pendent arms *d d'*, as above described, their rear ends will move upward and forward in an opposite direction to the motion of the drum when their forward ends are raised; then, when their forward ends are depressed, a free space will be left between these ends and the surface of the drum for the escape of the crushed pomace.

By this mode of hanging the concaves by vibrating arms I also obtain a longer leverage, and consequently require less power to operate the machine. The great advantage which I obtain, however, is in causing each concave to operate upon the pomace both in its rising and falling motions, at the same time allowing the forward or receiving ends of these concaves to rise sufficiently far above the surface of the grinder B to receive the apples from the hopper H.

I also obtain the advantage of being enabled to adjust the concaves with reference to the rotating grinder B for grinding fine or coarse, as may be desired. This is done by removing

the concaves from from their supporting-bar *c* and adjusting the eyebolts *d d'*.

What I claim as new, and desire to secure by Letters Patent, is—

1. Attaching the concaves D D' of fruit-mills to the ends of pendent pivoted arms *d d'* at an intermediate point between the ends of these concaves, substantially as and for the purposes described.

2. While not claiming, broadly, alternately-vibrating concaves, I do claim supporting said concaves or crushers by means of pivoted vibrating arms *d d'*, in combination with a rotating drum, or its equivalent, substantially as and for the purposes described.

3. The eyebolts *d d'*, serving as hinges and adjusting devices to the concaves, substantially as described.

Witness my hand in the matter of my application for a patent for an improved apple-mill.

Witnesses:

R. T. CAMPBELL,
E. SCHAFER.

G. S. RUST.