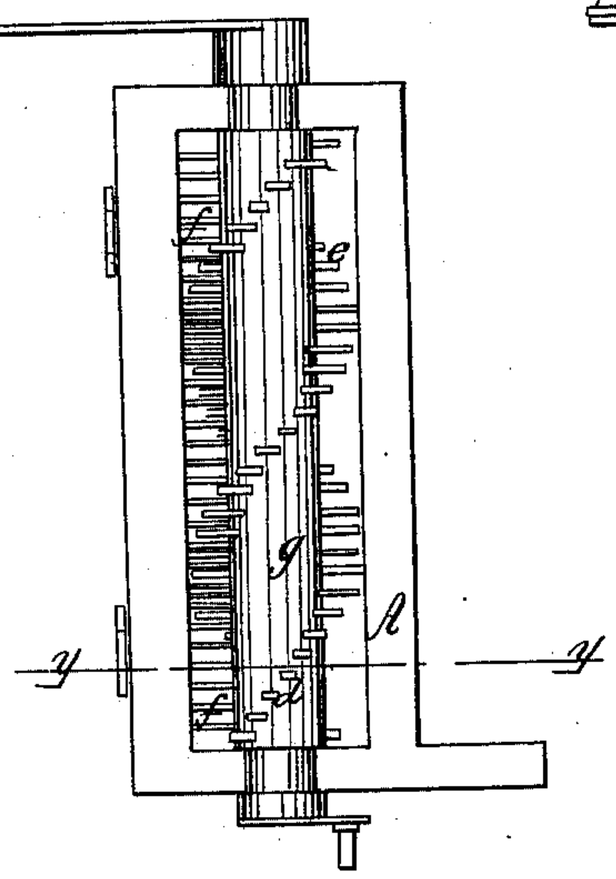
B. Mackerley,

Cider Mill.

No 16,040. Patented Nov. 4, 1856.

Fig: 3.



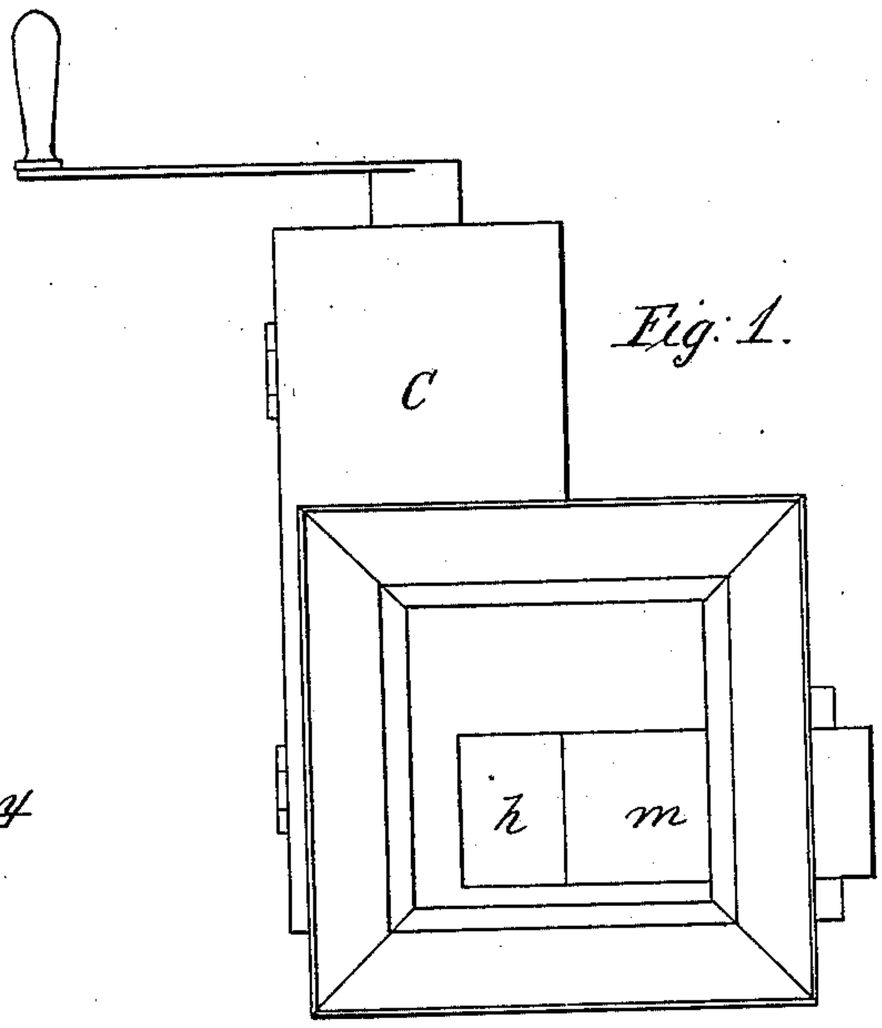


Fig: 1.

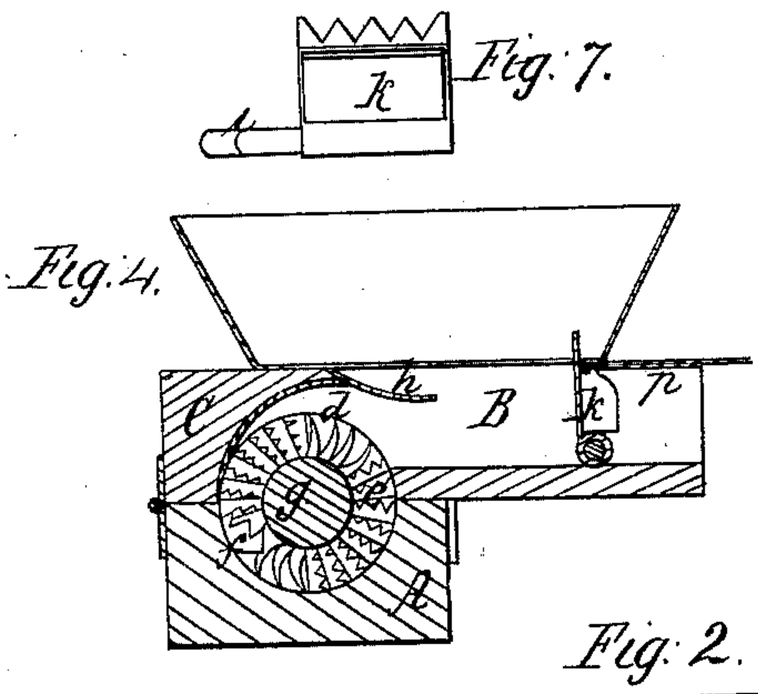


Fig: 7.

Fig: 4.

Fig: 2.

Fig: 5.

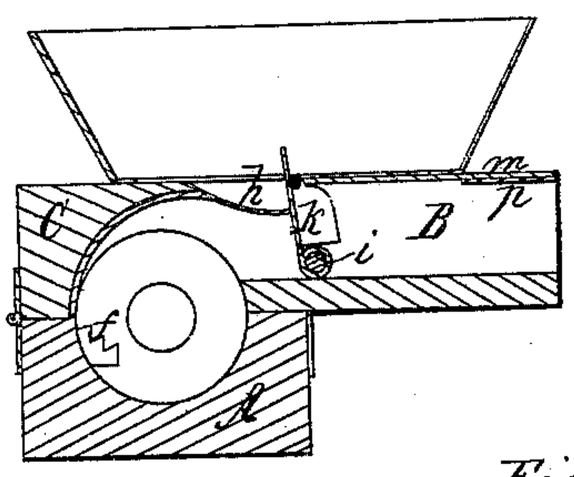
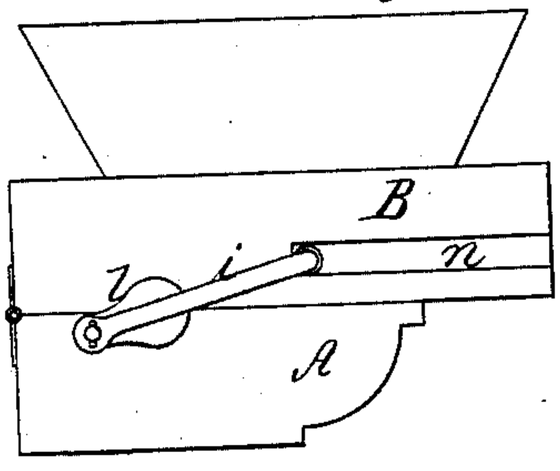
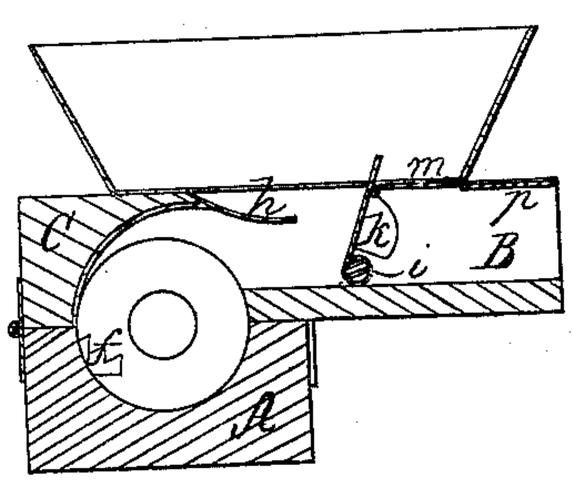


Fig: 6.





THE HELIOTYPE PRINTING CO. 220 DEVONSHIRE ST. BOSTON.

UNITED STATES PATENT OFFICE.

BENJAMIN MACKERLEY, OF NEW PETERSBURG, OHIO.

CIDER-MILL.

Specification of Letters Patent No. 16,040, dated November 4, 1856.

To all whom it may concern:

Be it known that I, BENJAMIN MACKERLEY, of New Petersburg, in the county of Highland and State of Ohio, have invented a new and Improved Machine for Grinding Apples; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, Figure 1 being a top view of said machine; Fig. 2, an end view of the same; Fig. 3, a top view of the grinding-cylinder and concave-base of the machine after its cover has been removed; Fig. 4, a vertical section in the line *y y* of Fig. 3; Fig. 5 and Fig. 6, sections of the machine in the line *y y* of Fig. 3 after the grinding-cylinder has been removed, and Fig. 7 is a portion of the machine detached.

Similar letters indicate like in all the drawings.

The oblong base A, of my improved apple grinder, has a concave formed in it which is armed on one side with saw-edged teeth *f*, of the shape shown in Fig. 4. The grinding cylinder *g*, which works in said concave, is armed at the hopper end of the machine, with curved pointed hooks *d*, which extend in double spiral rows under the opening in the bottom of the hopper, and then the said double spiral rows of hooks cease and instead thereof, saw-edged radial teeth *e*, *e*, are inserted in double spiral lines into the said grinding cylinder and extend to its outer extremity; the said hooks *d*, and teeth *e*, being respectively placed in such positions within the grinding cylinder, that they will pass between the teeth *f*, in the lower concave of the machine.

The cover C, of the machine, corresponds in shape with the base thereof,—with the exception that a horizontal spout B, projects laterally from and communicates with the concavity in the hopper end of said cover, as represented in the drawings. The hopper opens into the said spout B,—save when it is temporarily closed by the reciprocating gate *m*, as shown in Figs. 1 and 5. The outer end of the gate *m*, is supported by and slides freely upon the plate *p*, whose extremities are made fast to the sides of the spout B. The inner end of said gate is jointed to the head *k*, whose upper end rises above the gate and has a series of notches formed in it,—and whose lower end descends to the bottom of the spout B, and is jointed to one end of the pitman *i*, which is connected to the crank *l*, on the end of the journal of the grinding cylinder. When the gate is moved outward, from the closed position shown in Fig. 5, the first impulse exerted upon its head *k*, will throw its lower end in advance of its upper end, and carry outward the said head in the inclined position shown in Fig. 5; and as soon as the crank *l*, passes its center and begins to draw inward the gate, the said gate-head will be inclined in an opposite direction, as shown in Fig. 6, in consequence of its lower end being carried in advance of its upper end. The said last mentioned inclination of the head *k*, of the gate, will prevent the clogging of the machine, in case a larger quantity of apples should pass from the hopper into the spout B, than could be forced into the cavity of the grinding cylinder; which will be effected by the lower end of said head of the gate passing under the apples, when their forward movement is resisted, and forcing them up the inclined surface of said head into the hopper again.

The toothed upwardly projecting end of the gate head *k*, as it vibrates back and forth, during its reciprocating movements, will loosen the apples in the hopper and prevent them from adhering to each other and forming an arch over the entrance into the spout B.

As the apples are forced into the inner end of the spout B, they will be seized hold of by the double series of hooks *d*, *d*, which will rapidly draw them into the machine and at the same time crush them between the saw-edged teeth *f*, *f*, in the concave, and move them along laterally to be more finely disintegrated by the joint action of the double series of saw-edged teeth *e*, *e*, on the grinding cylinder, and the single series of saw-edged teeth in the concave. The crushed portions of the apples will be steadly moved in a lateral direction, as they

are operated upon by the joint action of the rotating saw-edged teeth in the grinding cylinder and the stationary saw-edged teeth in the concave, until they reach the opposite end of said concave and are discharged through an aperture therein in a thoroughly disintegrated state.

I am aware that round teeth whose sides are spirally and annularly grooved have been used on a cylinder and within the concave combined therewith; and

Therefore I wish it to be understood that what I claim as my invention and desire to secure by Letters Patent, is—

The combined use of flat sided saw-edged teeth upon the cylinder and within the concave, substantially as herein set forth.

The above specification of my improved machine for grinding apples, signed this 24th day of May 1856.

BENJAMIN MACKERLEY.

Witnesses:

Z. C. ROBBINS,

JOHN S. HOLLINGSHEAD.