

(No Model.)

2 Sheets—Sheet 1.

W. M. WILLIAMS.  
Cider Mill.

No. 238,824.

Patented March 15, 1881.

Fig. 1.

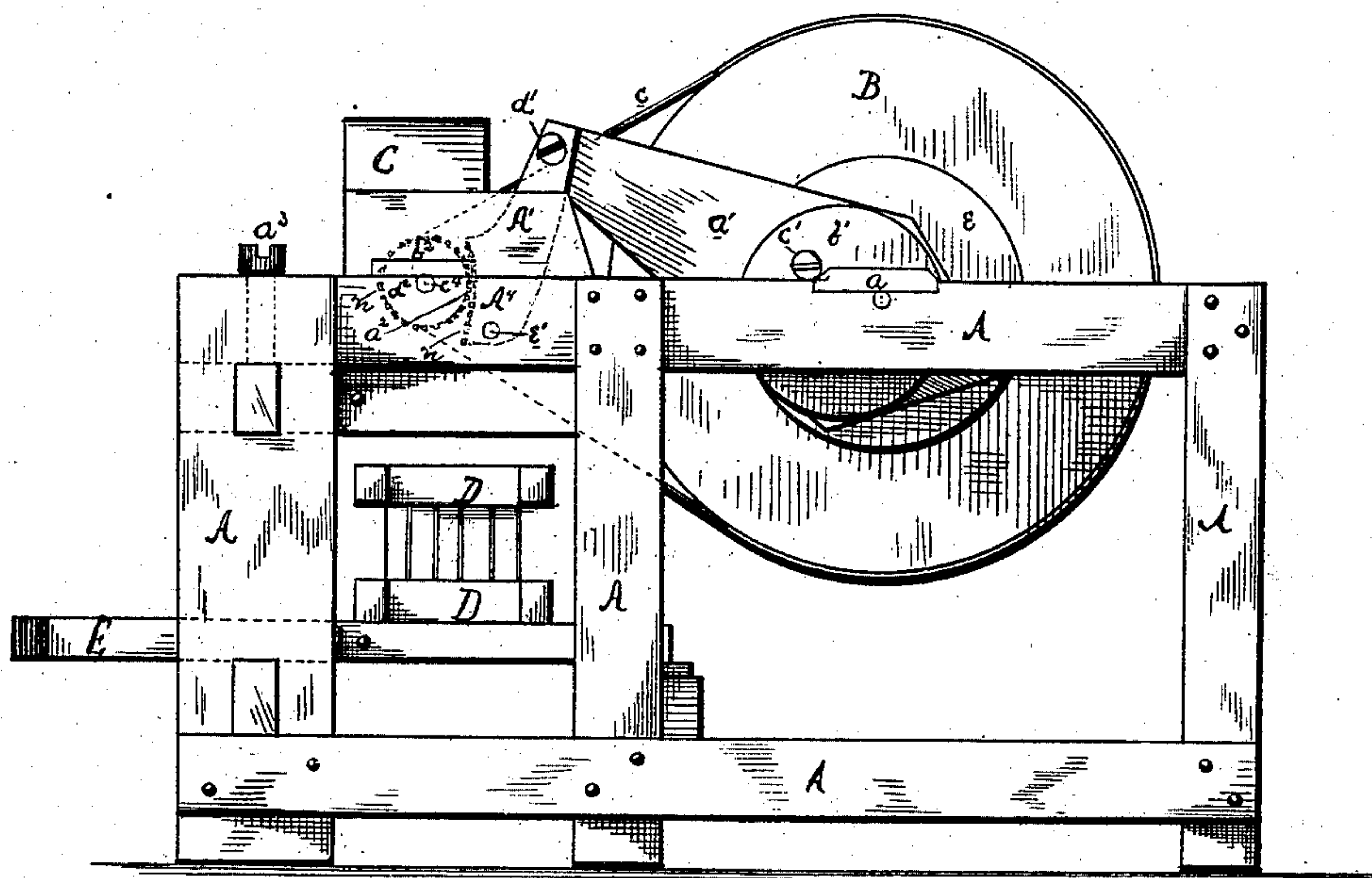
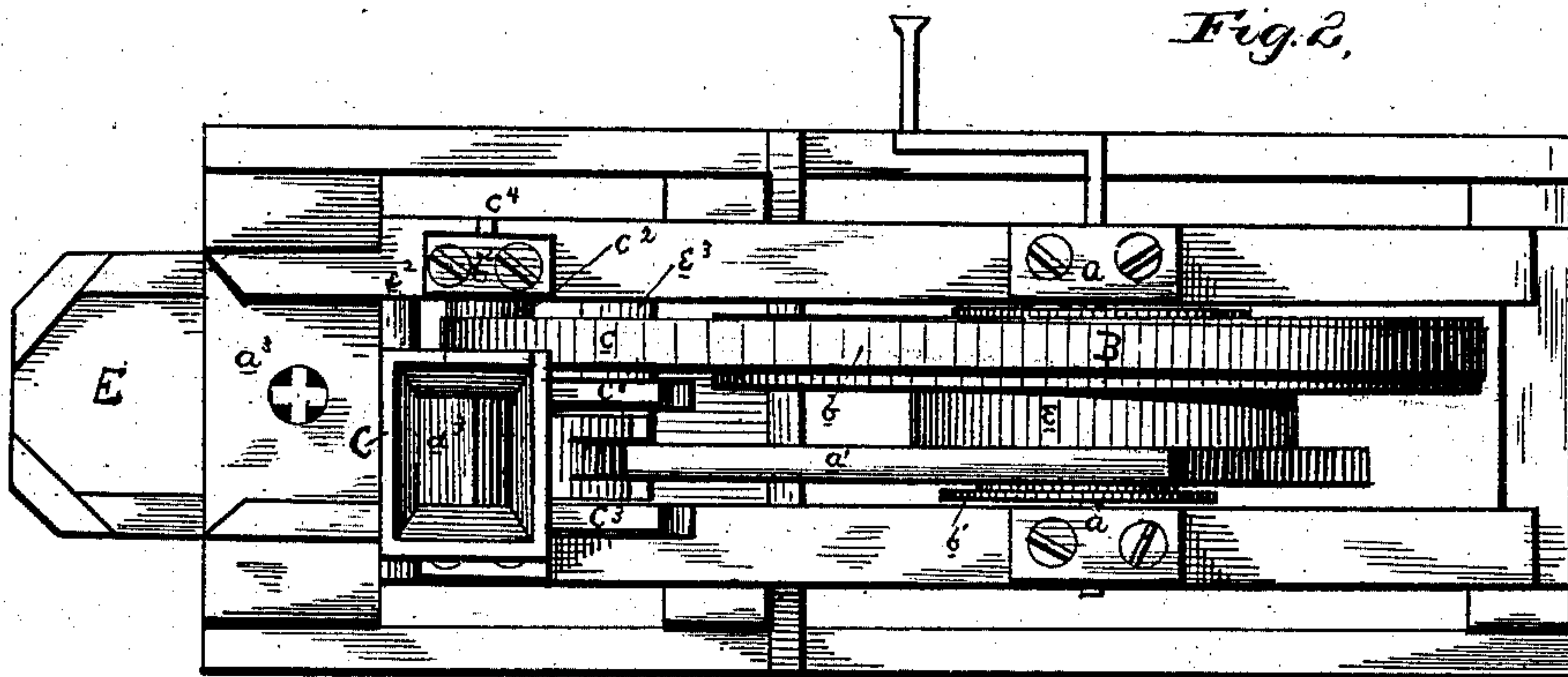


Fig. 2.



WITNESSES

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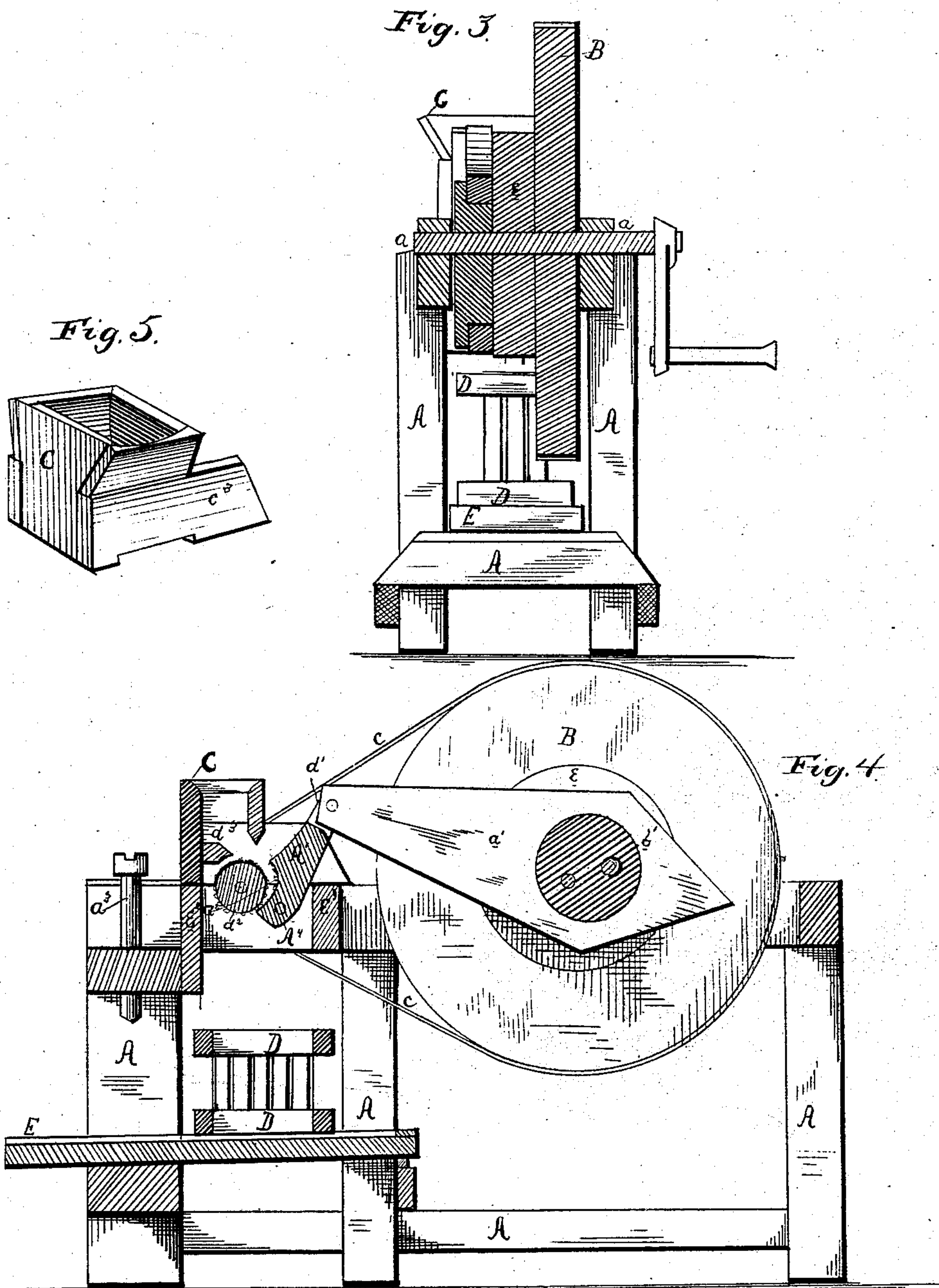
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# UNITED STATES PATENT OFFICE.

WILLIAM M. WILLIAMS, OF SUMMER SHADE, KENTUCKY.

## CIDER-MILL.

SPECIFICATION forming part of Letters Patent No. 238,824, dated March 15, 1881.

Application filed September 23, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM M. WILLIAMS, of Summer Shade, in the county of Metcalf and State of Kentucky, have invented certain new and useful Improvements in Cider-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in cider-mills, the design of which is to produce a device of that character of simple and durable construction, easily operated, and maintained in working condition, and capable of being manufactured and supplied to the trade at a comparatively light cost.

With these ends in view my invention consists in the combination, with a fly-wheel having a disk made integral therewith or secured thereto, of an eccentric detachably secured to said disk, and an eccentric-rod journaled on said eccentric and attached at one end to a pivotal concave.

My invention further consists in the combination, with a pivoted concave having an upwardly-extending arm, of an eccentric-rod attached to the extreme upper end of said concave arm.

My invention further consists in the combination, with a concave having an upwardly-projecting arm, of a hopper provided with wings or arms which inclose said concave arm.

My invention further consists in the combination, with a fly or driving wheel having an eccentric attached to one face thereof and a rod operated by the eccentric and attached to a pivotal concave, of a pulley located on the grinding-cylinder shaft, and a belt connecting said fly-wheel and pulley.

In the accompanying drawings, Figure 1 is a view, in side elevation, of my invention. Fig. 2 is a plan view thereof. Fig. 3 is a view in vertical cross-section. Fig. 4 is a view in horizontal cross-section, and Fig. 5 is a detached view of the hopper.

Let A represent the frame, B the driving or fly wheel, C the hopper, D the press, and E the pomace-trough, of my improved cider-mill.

Fly or driving wheel B, journaled to the

press-frame at *a*, consists of a large wheel of suitable material and construction, and having a broad peripheral face, *b*, to retain a band or belt, *c*, by which it is connected and its movements transmitted to the grinding-cylinder *d*<sup>2</sup>. Disk *e*, firmly secured to or formed integral with the wheel B, forms a bearing for the eccentric-rod *a'*, and offers a point of attachment to the eccentric *b'*, which, as here shown, is secured thereto by screw *c'*. The forward end of the eccentric-rod is pivotally secured to the upwardly-projecting arm *d'* of the concave *A'*, the lower arm, *A*<sup>4</sup>, of which is secured in the frame A by pivot *e'*, to the right of and below the grinding-cylinder. The eccentric connection of the concave *A'* imparts to it a rocking motion, which operates to present and then withdraw its concave face *a*<sup>2</sup> from the grinding-cylinder *d*<sup>2</sup> during the operation of making pomace from the fruit.

The grinding-cylinder *d*<sup>2</sup>, journaled at *b*<sup>2</sup> *b*<sup>2</sup> to the frame A of the mill, is formed of wood or metal, and has a pulley, *c*<sup>2</sup>, rigidly secured to or made integral with the grinding-cylinder shaft *c*<sup>4</sup>. A recessed block and cross-pieces, *e*<sup>2</sup> *e*<sup>2</sup>, separate the cylinder from the pulley *c*<sup>2</sup> and screw *a*<sup>3</sup>, and prevent the pomace from being scattered. Both the grinding-cylinder and the concave face *a*<sup>2</sup> of the concave *A'* are studded with nails *n*, to assist in thoroughly reducing the fruit to fine pulp, called "pomace." The hopper C, into which the fruit or apples are poured preparatory to grinding, is adapted to fit down over the journals of the grinding-cylinder, and has two extending arms or wings, *c*<sup>3</sup> *c*<sup>3</sup>, which inclose the upper arms, *d'*, of the concave *A'*. The hopper also has a seat, *d*<sup>3</sup>, located in its interior and adapted to throw the fruit forward toward the concave *a*<sup>2</sup>.

A pomace-trough, E, is supported on a framework directly under the grinding mechanism, and a movable cider-press, D, is placed thereon and arranged to be moved under the grinding-cylinders and be filled with pomace, and when so filled to be drawn forward and pressed under the screw *a*<sup>3</sup>.

Having thus described my invention in detail, I will now briefly describe its method of operation.

The fly or driving wheel is first set in motion, either by a hand-crank attached thereto

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or by other motive powers, and belt-connection is made between it and the pulley of the grinding-cylinder. When the eccentric carries the concave away from the said grinding-cylinder the fruit in the hopper will fall down between its concave face and the cylinder. A half-revolution of the driving-wheel will now throw the concave forward and hold the fruit on the grinding-cylinder, which is rapidly rotating, until it is reduced to a pulp and falls into the press onto the pomace-trough or in other receptacle provided therefor. The motion of the fly-wheel is a steady one, and the cylinder is rotated with great rapidity, enabling a great quantity of fruit to be reduced to pomace in a comparatively short time.

Among the attributes of superiority which my improved cider-mill possesses over those now in use are, the particular construction of the fly-wheel and its eccentric connections with the concave, and the method of transmitting its motion to the grinding-cylinder. Great economy of motive power and a reduction of friction are effected by attaching the eccentric directly to the fly-wheel; again, by providing the concave with a long arm and connecting it with the eccentric-rod at its extreme upper end an excellent leverage is obtained and a better motion is imparted to the concave.

Heretofore connection has been made between the fly-wheel and the grinding-cylinder by trains of gear-wheels. However, these are objected to, because if any foreign substance is introduced into the hopper, and the cylinder revolving at a high speed is suddenly stopped, the shock will often wrench and break the machine, while with a belt-connection, if such accident should happen the belt will slip on the pulley and such wrenching be avoided.

Less power is required to operate the pomace mechanism of a cider-mill when constructed according to my invention than with the old

form, where the friction between a long train of gear-wheels must be overcome.

I would have it understood that I do not limit myself to the exact construction shown and described, but hold myself at liberty to make such slight changes and alterations as come within the spirit and scope of my invention.

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

1. In a cider-mill, the combination, with a fly-wheel having a disk made integral therewith or secured thereto, of an eccentric detachably secured to said disk, and an eccentric-rod journaled on said eccentric and attached at one end to a pivotal concave, substantially as set forth.

2. In a cider-mill, the combination, with a pivotal concave having an upwardly-extending arm, of an eccentric-rod attached to the extreme upper end of said concave arm, substantially as set forth.

3. In a cider-mill, the combination, with a concave having an upwardly-projecting arm, of a hopper provided with wings or arms which inclose said concave arm, substantially as set forth.

4. In a cider-mill, the combination, with a fly or driving wheel having an eccentric attached to one face thereof and a rod operated by the eccentric and attached to a pivotal concave, of a pulley located on the grinding-cylinder shaft, and a belt connecting said fly-wheel and pulley, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand.

WM. M. WILLIAMS.

Witnesses:

WM. M. RIGGS,  
H. A. GRIDER.