A. C. STEVENS.

Cider-Mills.

No. 154,723. Patented Sept. 1, 1874.

Fig. 1.

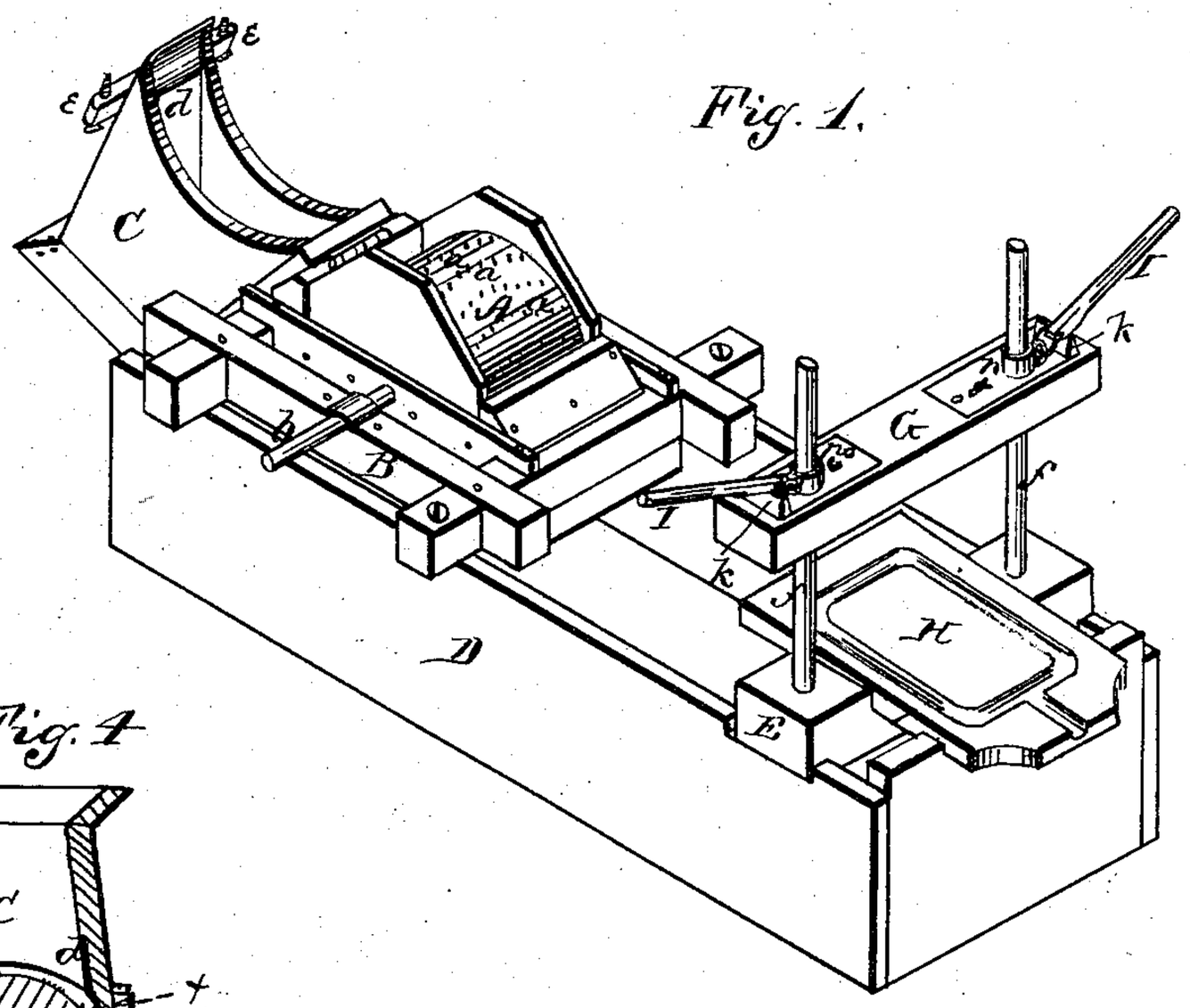

Fig. 4

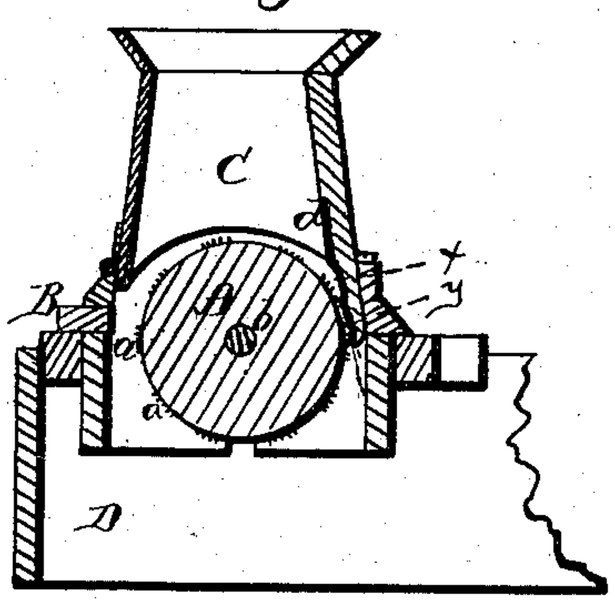

Fig. 2.

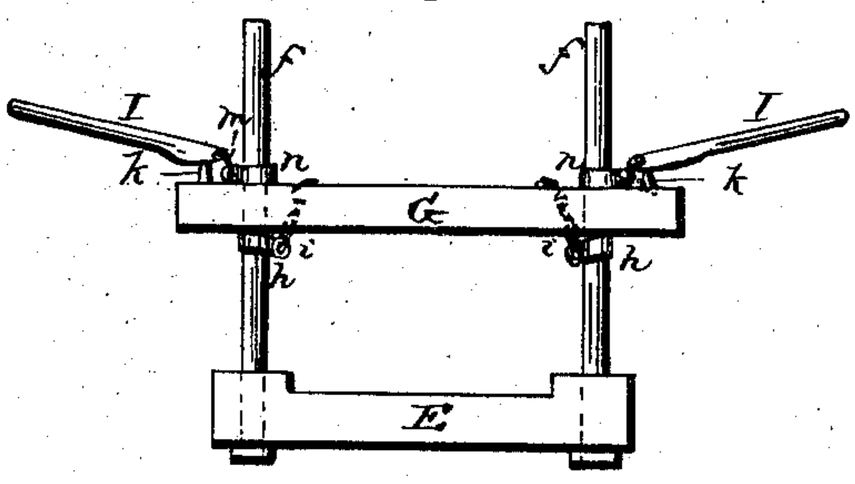

Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

AARON C. STEVENS, OF NEWARK VALLEY, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE BYRON SUTTON, OF SAME PLACE.

IMPROVEMENT IN CIDER-MILLS.

Specification forming part of Letters Patent No. **154,723**, dated September 1, 1874; application filed May 16, 1874.

To all whom it may concern:

Be it known that I, AARON CALENDER STEVENS, of Newark Valley, in the county of Tioga and in the State of New York, have invented certain new and useful Improvements in Cider-Mills; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The object of my invention is to increase the amount of juice expressed from a certain quantity of apples, and at the same time lessen the manual labor required; also, to decrease the cost of construction and weight of the mill; and to this end the nature of my invention consists in the prolongation of the hopper into a diminishing curved conducting and grinding space. It also consists in the construction and arrangement of a portable lever-press forming part of my cider-mill, all as hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a perspective view of a cider mill and press, embodying my invention. Fig. 2 is a side elevation of the press. Fig. 3 is a view of one of the levers used in the press; and Fig. 4 is a longitudinal vertical section of the mill.

It is found that in order to set free the maximum amount of juice a thorough disintegration of the cells of the fruit by grinding is as important as the subsequent pressure. To insure fast and fine grinding I have added an improvement to the ordinary grinding apparatus, known as the grater or scratcher, and which is made by driving small brads *a a* into a wooden cylinder, A, and allowing their ends to protrude. This cylinder is mounted upon a shaft, *b*, in a suitable frame, B, and has a hopper, C, above it.

My improvement consists in the prolongation of the hopper C into a diminishing curved conducting and grinding space, as shown in Fig. 4, by means of a metal-lined barrier-board or concave, *d*, extending partly around the grinding-cylinder A, and so curved and shaped and placed with regard to it as to first lessen the space between them and draw the apples in and partly grind them as the cylinder revolves. Said concave then follows the cylinder as closely as possible, and parallel to it far enough to finish the grinding, and no farther.

In the drawings, *y* represents the lower curve running concentric with the cylinder, and *x* represents the upper curve running eccentric with the cylinder, both of which form a part of the barrier-board *d*. The barrier-board *d* forms one side of the hopper or cylinder cover C, and regulates the fineness of the grinding, and it is adjusted by means of set-screws *e* at the same end of the hopper, and hinging the hopper at the opposite end, as shown. The cylinder A may be driven by horse, water, or steam power, as is most convenient. The frame B, upon which the cylinder and the hopper are arranged, is secured over one end of a vat, D, into which the pomace falls from the grinding-cylinder. Over or upon the other end of this vat the press is supported. This press consists of a bed-piece, E, into each end of which is fastened an upright rod, *f*, by means of keys or otherwise. Upon this bed-piece E rests the plank floor H, on which the cheese is laid up, this plank floor being constructed in the ordinary manner for such purposes. A follower, G, with holes corresponding with those of the bed-piece, plays up and down on the rods *f f*. Around each rod *f*, below the follower, is a clutch, *h*, connected by a link, *i*, with the follower. Upon each end of the follower G is a block, *k*, upon which the lever I is to rest, the inner end of said lever being, by a link, *m*, connected with a clutch, *n*, placed on the rod *f*. The follower is thus made the fulcrum for the lever-pressure at its ends, and this may be done either by resting the levers on the followers, as shown, or by suspending them from the same. The clutches are so formed as to hold firmly on the rods, when thrown out of a horizontal position by lifting, but to promptly drop when released. Thus, when power is applied to one of the le-

yers at the end of the follower, the clutch *n* at once holds on the rod, keeping the short arm down, while the power is communicated to the fulcrum-follower, which is crowded down and is held by its own clutch *h*, said clutch having been loosened by the downward motion, and now holds by the reaction of the cheese. By the use of these clutches the friction of screws is avoided.

By this method of compression the necessity of a cumbrous frame-work of wood is obviated.

This mill is equally adapted to portable or stationary use, by reason of the lightness of its press, and in either case its operation is simple. If used in the orchard with horse-power, it should be secured in position, and, having obtained sufficient motion, the apples are placed in the hopper, and require no ramming down or other attention, as, by means of the improved barrier board or concave *d*, the usual rolling and bounding of the apples and consequent obstruction and delay are prevented, while they are instantly drawn in, thoroughly ground, and discharged.

By reason of the fineness of the grinding a free use of straw is necessary in laying up the cheese, so as to prevent small particles of pomace from escaping with the juice, as well as the bursting of the cheese when pressure is applied.

The method of laying up a cheese is that in general use, viz., in successive layers of pomace, each separated by a layer of straw. Either a "hoop" is used to form the successive layers in, and on it laid a layer of long straw, with ends projecting over the hoop far enough to turn back over and be embedded in and confine the pomace, and the hoop then raised for the next layer; or the cheese is laid up in a "crib," which remains during pressure and supports it.

Before commencing to lay up a cheese the follower of the press may either be lifted entirely off from the rods by unhooking the clutches, or it may be suspended at the top of the rods by means of a temporary strip of wood stretching from one rod to the other and resting on their ends by means of holes bored partly through the ends of the strip. After laying up the cheese the usual platform of planks is laid on it, so crossed and arranged as to distribute the pressure equally, when the follower is lowered and attached to clutches. The levers are attached to the lifting-clutches and rested on the fulcrum-bearings *k k*. The levers may be worked alternately by two persons, or by one person, changing back and forth, but in either case cautiously and slowly at first, until the cheese becomes settled and firm. Nothing remains to be done but to strain the juice as it flows from the press, first by wire cloth and then through a hay filter.

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

1. The combination, with the cylinder A and the hinged adjustable hopper C, of the barrier-board *d*, constructed with two curves *x* and *y*, as shown, one running eccentrically with the cylinder and the other concentrically with it, substantially as and for the purposes herein set forth.

2. The combination, in a cider-press, of the follower G, levers I, clutches *n*, and rods *f*, whereby the follower forms the fulcrum of the lever-power, and said power resisted by the clutches, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of March, 1874.

AARON CALENDER STEVENS.

Witnesses:
JOHN CAMERON,
GEO. E. RICH.