2 Sheets--Sheet 1.

J. BOWEN.

Cider-Mill.

No. 166,251. Patented Aug. 3, 1875.

Fig. 1

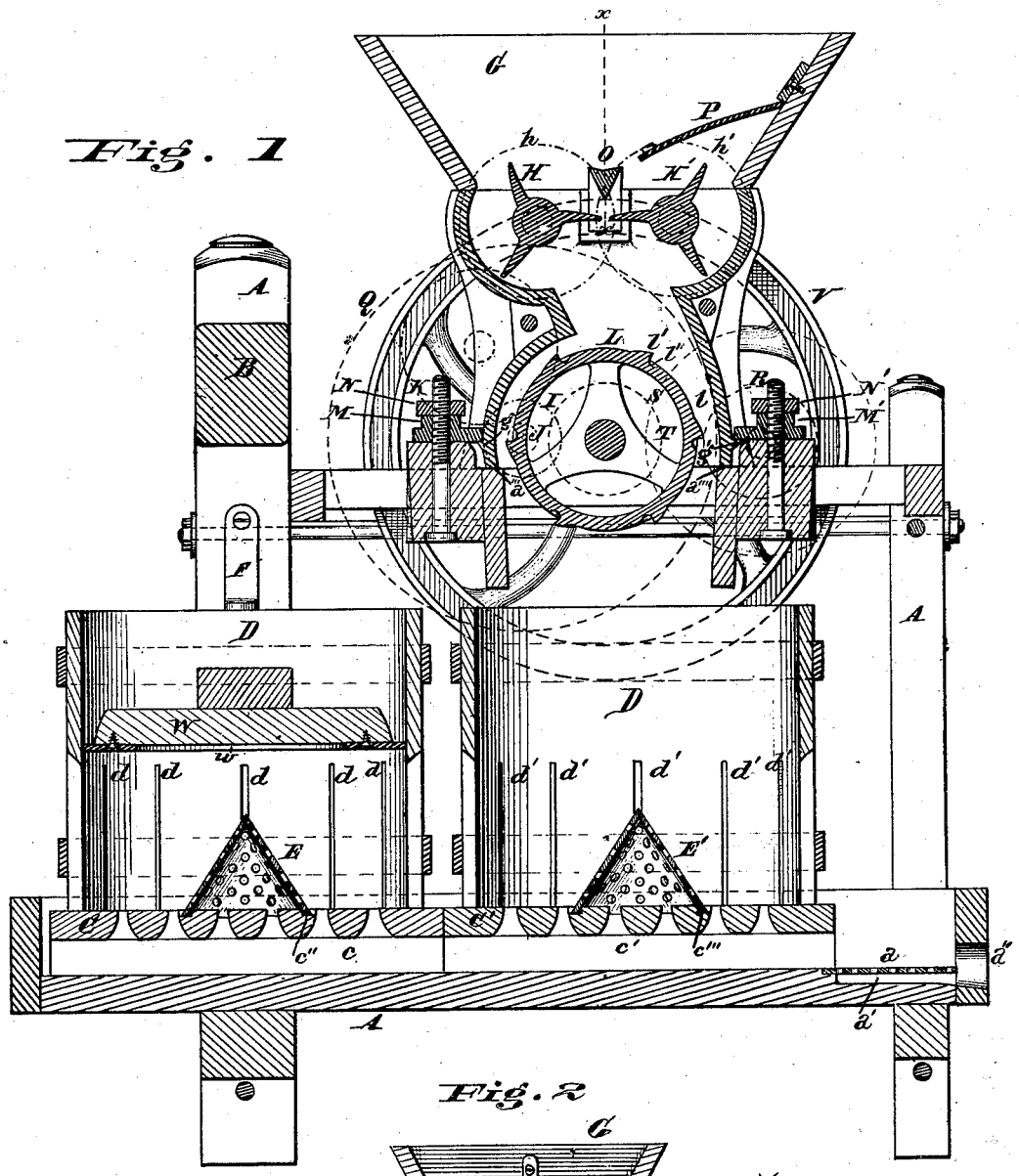
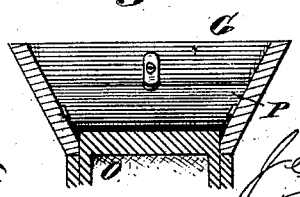


Fig. 2



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2 Sheets--Sheet 2.

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Fig. 3

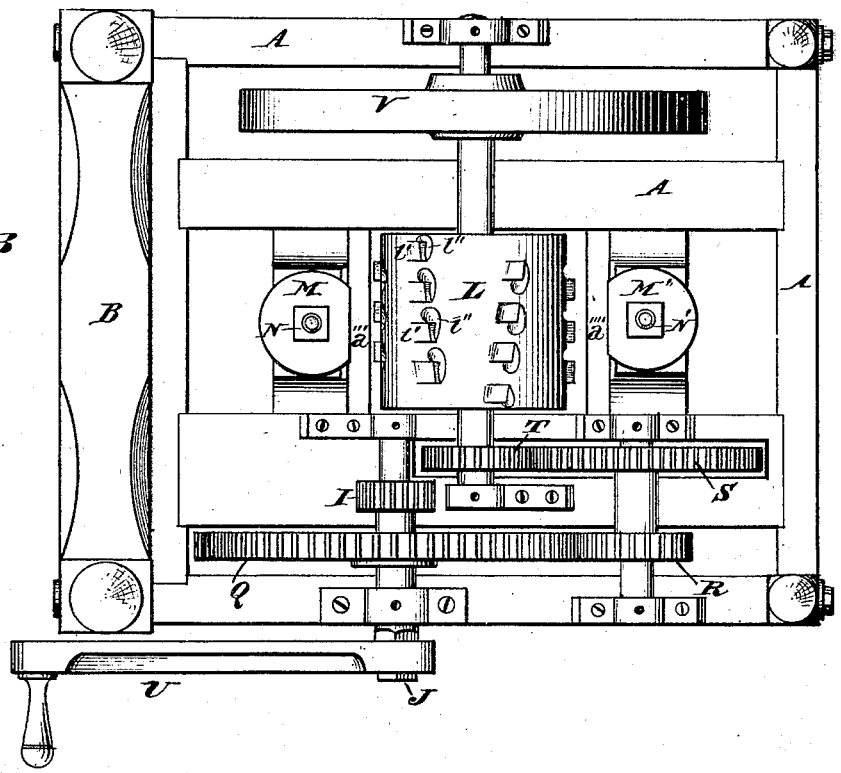
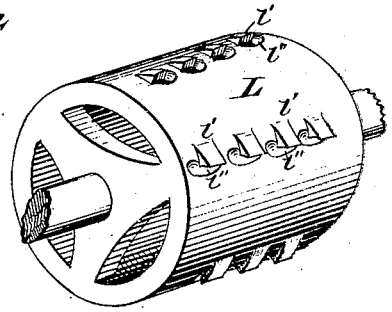


Fig. 4



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UNITED STATES PATENT OFFICE.

JESSE BOWEN, OF LANCASTER, OHIO.

IMPROVEMENT IN CIDER-MILLS.

Specification forming part of Letters Patent No. **166,251**, dated August 3, 1875; application filed August 22, 1874.

To all whom it may concern:

Be it known that I, JESSE BOWEN, of Lancaster, Fairfield county, Ohio, have invented certain new and useful Improvements in Cider-Mills, of which the following is a specification:

My invention relates to a class of cider-mills known as "hand-presses;" and consists, in the first part, of a rasping-cylinder, so formed that it will readily clear itself of pomace. My invention consists, in the second part, in connection with an annular groove in the false bottom of the press, of a perforated metallic conical sieve, whose object is to collect and discharge the juices formed in the center of the pomace.

Figure 1 is a sectional elevation through entire mill, having dotted lines to represent the position of the driving mechanism. Fig. 2 is a section through line *x x*, Fig. 1. Fig. 3 is a plan of the mill with hopper removed. Fig. 4 is a perspective view of the crushing-cylinder, showing cutting-teeth and adjacent cavities.

A is the frame of a cider-mill intended to be operated by hand-power. B is the cross-head, in which is secured the nut on female press-screw. The bottom or trough of the press-frame is fitted at one end with a metallic strainer, *a*, resting over a cavity, *a'*, and immediately in front of an escape-vent, *a''*, the whole device acting to collect and drain the juices from the press. Resting upon this true bottom of the press are false bottoms C C', composed of slotted boards secured to battens *c c'*, thus permitting an unobstructed flow of the juices from the press-cages which rest upon them to the vent *a''*. As above mentioned, there are resting upon these false bottoms press-cages D D', formed of staves cut or bent to a circle, inclosed within metallic hoops, and having partial saw-cuts *d d'* from the bottoms up, which drain the juices from the exterior of the cage. These staves, being jointed together at the upper ends, admit of being bound firmly together by hoops, as shown, and thus prevent the shackling incident to separated staves riveted or otherwise fastened separately to the hoops. At the centers of the false bottoms, and resting in annular rings *c'' c'''*, formed in the latter, are metallic perforated cones E E, which drain the juices from the central part of the cage through the slotted bottoms to the escape-vent. Secured to the frame A directly below the cross-head B are swinging latches F F', which, when in use, rest upon the edges of the cage D, and prevent any displacement of the latter during the process of pressing, the swinging character of the latches admitting of the convenient release of the fastening, and the removal of the cage. The frame of the press is so arranged that one cage will be under the grinding machinery, while the other is under the press, thus rendering the machine continuous in its action. G is the hopper in which the fruit is placed, being funnel-shaped and of wood at top, and formed of metal, with double concaves below, in which revolve the feed-rollers H H', by virtue of gearing, with decreased motion, as is desirable for this purpose, communicated from pinion I on prime-motive shaft J, through wheel K, to the wheel *h* on first feed-roller shaft, which latter communicates it to the wheel *h'* on second roller-shaft. The hopper G, below the feed-rollers H H', expands in concave around the rasping-cylinder L to form the rasping-chamber, and rests upon the frame A at *a''' a''''*, and has lugs *g g'* formed upon it. In close proximity to the line of descent of the hopper when being placed in position are secured cam-washers M M' upon bolts in the frame A, having blanks cut from the edges nearest to their centers, which must face the descending hopper, in order to allow the lugs *g g'* to pass, which otherwise they would not do. The cams may then be swung around and over the lugs, and retained in position, so as to secure the hopper by check-nuts N N'. These cams are so situated, as regards distance apart, that if one presents its longest radius between its center and the side of the hopper, the other must, perforce, present its shortest radius when acting upon the lugs *g g'* to retain the hopper; and it is obvious that, by reversing the cams, the position of the hopper must change correspondingly, thus increasing or decreasing the space *l* between the revolving rasping-cylinder L and movable rasping-chamber G, and the fruit ground will be correspondingly coarse or fine. The feed-rollers are formed with feeding-blades, which act in concert to take in a regular amount of fruit, which amount is decided partly by the extent of opening leading thereto;

and this opening is regulated by means of the detachable slide O and plate P, which are both, or singly, removable, or used in position as required by the strength of the operator. If the operator is desirous of working light, he retains both slide O and plate P in place. If he is desirous of increasing the amount of apples fed, he can remove plate P, so that apples may pass in from both sides of the hopper. If he still desires to increase the feed of apples, he can remove the central slide O, so that the apples can pass in from both sides, and also from the center.

The fruit, after being thus admitted, is crushed in the chamber by the rasping-cylinder L, having rows of teeth *l'* placed diagonally over the surface, as relating to its axis, with cavities *l''* formed in it at the front and one side of the rear cutting-edge of each tooth, which cavities serve to hold the pomace until the concave is passed, and afterward, by centrifugal action, to clear the teeth from pomace.

The teeth of one row are placed directly in front of the spaces between the teeth of the succeeding row, and any two consecutive rows are diagonally opposed to each other across the axial line of the cylinder, as shown.

The cylinder receives accelerated motion from the multiplying gearing shown in dotted lines Q R S T, the wheel Q being keyed to the driving-shaft J, to which is secured a crank, U, for utilizing manual labor, and is kept in uniform velocity by fly-wheel V. W is the press-cage follower, formed of a wooden disk to loosely fit the inner periphery of the press-cage, while a metallic disk, *w*, of suitable diameter to fit accurately inside the cage, is secured to its under surface, so as to prevent the difficulty of either having a loose-fitting follower-head when simply a wooden one is used, or having the same an accurate fit when dry, and finding it to stick when damp and swelled.

I claim—

1. The crushing-cylinder L, when formed with teeth *l'* and cavities *l''*, constructed and arranged substantially as and for the purpose specified.

2. In combination with the annular grooves C'' C''', the conical perforated metallic strainers E E', constructed and operating substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

JESSE BOWEN.

Witnesses:

EDGAR J. GROSS,

R. M. HUNTER.