(No Model.) 2 Sheets—Sheet 1.

O. E. DAVIDSON.

MACERATOR FOR FRUIT, &c.

No. 525,004. Patented Aug. 28, 1894.

Fig. 1.

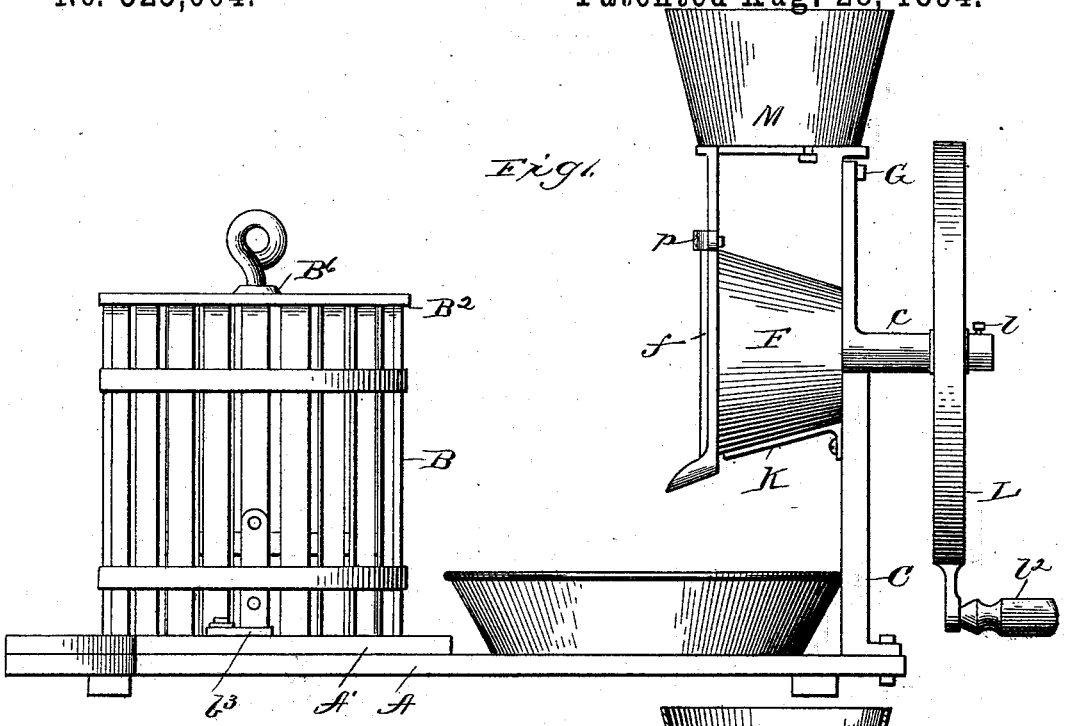
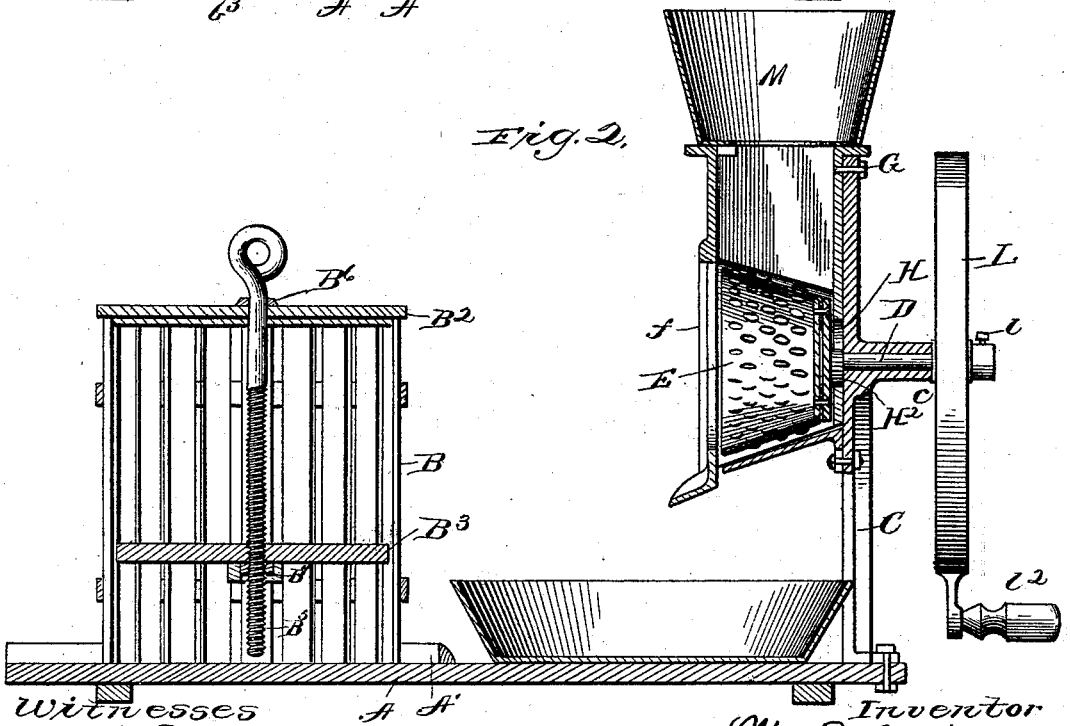


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

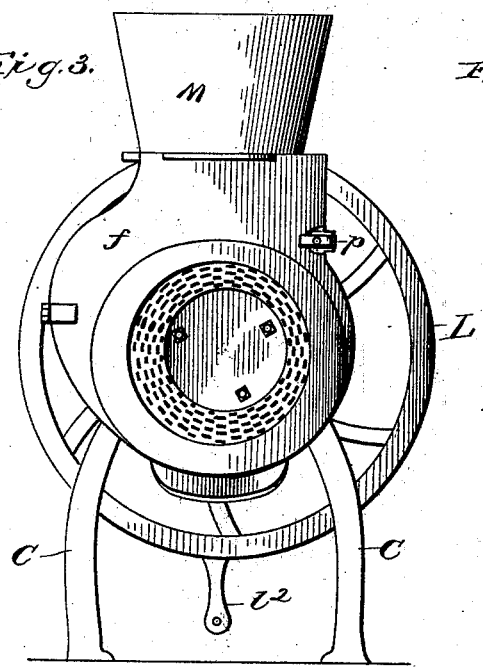


Fig. 4

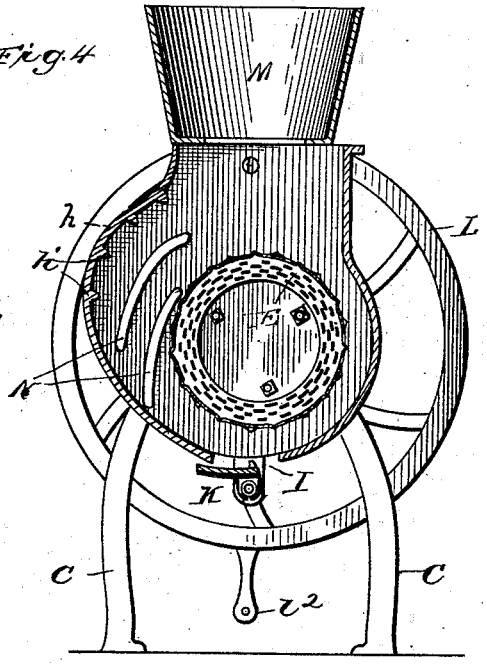
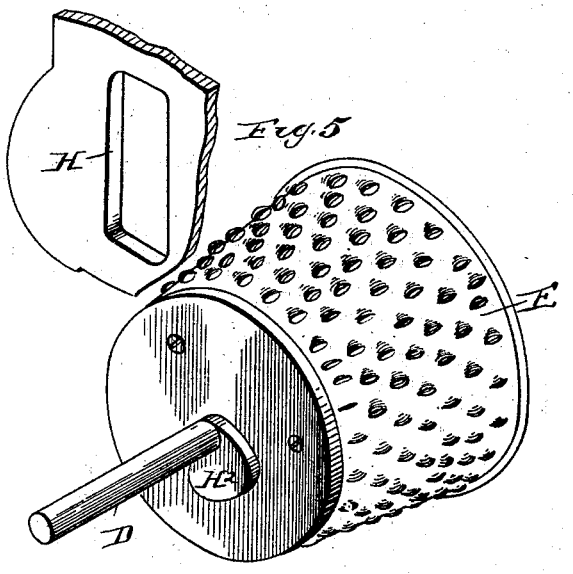


Fig. 5



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UNITED STATES PATENT OFFICE.

OTIS E. DAVIDSON, OF NASHVILLE, TENNESSEE.

MACERATOR FOR FRUIT, &c.

SPECIFICATION forming part of Letters Patent No. 525,004, dated August 28, 1894.

Application filed November 6, 1893. Serial No. 490,064. (No model.)

To all whom it may concern:

Be it known that I, OTIS E. DAVIDSON, of Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Macerators for Fruit, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in machines for making cider from apples, &c., embodying a grinding or macerating mechanism. Practical machines of this kind as heretofore constructed have been heavy and expensive and it is one of the principal objects of this invention to provide a simple and efficient machine at an extremely low cost, and of such character as to be readily operated in a small space and with the expenditure of little power.

Referring to the accompanying drawings: Figure 1 is a side elevation of a complete apparatus constructed in accordance with my invention. Fig. 2 is a longitudinal section through the same. Fig. 3 is a front elevation of the grinder or macerator. Fig. 4 is a section through the same taken at right angles to Fig. 2. Fig. 5 is a detail perspective of the grinding cylinder, showing the cam for vibrating the hopper, casing and also the slot in the rear face of the hopper in which the cam works.

Similar letters of reference in the several figures indicate the same parts.

In carrying out this invention, I preferably provide a base board, such as that lettered A in the drawings, adapted to be mounted on a bench or stand and to receive both the mechanism for grinding the apples and the crate in which the pressing is done. At the lower end of the base, for it should be placed on a slight incline, its upper surface is properly channeled to conduct the cider or juice away, and further, a molding A′ preferably extends around this portion of the base to catch the juice which might otherwise escape over the edge of the base. A crate such as B in which the macerated fruit is placed as soon as macerated is placed in convenient position, as just specified, and it preferably contains the mechanism for expressing the juice.

On the upper end of the base is rigidly mounted the frame C carrying the grinding or macerating mechanism. This frame C is relatively tall, and about half way up, is provided with a bearing *c* in which is journaled a shaft D having rigidly affixed thereon the grinding or macerating cylinder E. The latter is preferably, but not necessarily made conical with the larger end open for the escape of the pomace, the latter being ground off and forced through the openings in advance of each of the teeth on the cylinder. A cheap construction, and as shown, consists in forming the cylinder of perforated sheet metal with the edges of the perforations turned up to form teeth for grinding the apple off and simultaneously forcing it through the perforations.

Surrounding the macerating cylinder is a casing F the upper portion of which serves as a hopper for grinding the apples to the cylinder and conveying the refuse away, while permitting the pomace to escape through the large central opening in the hinged front *f*.

The hopper casing F is pivotally supported preferably on a bolt G near the top so as to be capable of an oscillation transversely of the axis of the cylinder and in order to secure a regular oscillation which will cause the apples to feed regularly and discharge the refuse, as will presently appear, the rear wall or face of the casing is slotted as at H for the passage of the cylinder shaft, and a cam H^2 on said shaft works in the slot, hence as the shaft rotates, the cam engaging the walls of the slot will force the casing first in one direction and then in the other.

At the top of the hopper casing, the inclined wall *h* is provided with ribs *h′* and the apples held by these ribs will be forced up against the cylinder as the casing oscillates toward the cylinder, and allowed to feed down as it moves out. This it is found, gives an extremely rapid feed and the apples are kept from dancing or jumping about while being macerated, a difficulty not easily overcome in this class of machinery. Furthermore, the

portions of the apples not cut by the teeth, such as the core, decayed parts and a large proportion of the skin, feed down outside of the cylinder and escape through an opening I at the bottom of the casing.

In order to prevent the escape of the valuable portions of the apple through the discharge opening at the bottom, as the casing moves out, a stationary plate K is secured to the frame immediately beneath the opening and so as to leave only a narrow opening for the escape of the parts of the apple mentioned. The edge of the stationary plate K is toothed to catch and hold the pieces until all the meat of the apple is ground off into the cylinder. This arrangement enables me to separate the best and inferior qualities of pomace by providing separate receptacles, or allowing the inferior material to fall outside of the receptacle. A balance wheel L secured by a thumb screw *l* on the outer end of the cylinder shaft and provided with a crank handle l^2 serves as a means for rotating the macerating cylinder. On top of the hopper casing, a supplemental hopper M may be placed to receive a large quantity of apples which will feed down as those at the bottom are ground into pomace.

In operation, it will be understood, the apples are placed in the hopper and the grinding cylinder rotated in the proper direction to cause them to be ground or cut up ready for the pressing operation. As the cylinder rotates it gives the hopper casing an oscillating movement thereby alternately increasing and diminishing the size of the opening down which the apples feed, causing them to feed with great rapidity, leaving the refuse matter on the outside where it works down between the cylinder and casing and is discharged from the bottom opening as before described. The ribs on the side of the casing grip the apples and prevent them from dancing about and the ribs N in the end of the casing guide the apples away from the base of the cylinder causing them to be properly presented at all times. The ground apples or pomace is discharged through the open end of the cylinder and opening in the front of the casing and any form of receiver may be provided for it. After a sufficient quantity is ground, it is dumped into the crate.

To clean the grinder, it is only necessary to open the hinged front which is held closed by the turn button *p*, remove the fly wheel and draw the cylinder and its shaft out thereby giving access to all the interior parts of the device.

Obviously the particular form of cutting or macerating teeth on the cylinder is quite immaterial, and any of the ordinary forms may be employed, but I prefer teeth which will cause the ground material to feed through into the interior of the cylinder as it is ground or cut.

Having thus described my invention, what I claim as new is—

1. In a mill, the combination with the frame, the casing having the discharge openings in the front and bottom respectively and the feed or hopper opening at the top, of the foraminous macerating or cutting cylinder having its end open and registering with the opening in the front of the casing with means for rotating said cylinder, and the tooth-edged plate at the bottom opening of the casing for holding pieces of apple in contact with the cylinder until reduced; substantially as described.

2. In a mill, the combination with the frame, the foraminous macerating cylinder journaled therein and having the open end, of the casing surrounding the cylinder, pivoted at the upper end to the frame and having the slot in the rear face and discharge opening at the bottom, the shaft for the cylinder passing through the slot in the casing and the cam on the shaft cooperating with the walls of the slot to oscillate the casing; substantially as described.

3. In a mill, the combination with the frame and macerating cylinder journaled therein, of the oscillatory casing around the cylinder having the discharge opening at the bottom and the stationary plate over said opening for holding the pieces which pass around the cylinder against the same until reduced; substantially as described.

4. In a mill, the combination with the frame and macerating cylinder journaled therein, of the oscillatory casing around the cylinder, having the discharge opening at the bottom and the stationary plate over said opening having the toothed edge for holding the pieces which pass around the cylinder; substantially as described.

5. In a mill, the combination with the base, the frame secured thereon and having the central bearing, the shaft journaled in said bearing, the conical macerating cylinder on the shaft at one end and the removable fly wheel and handle on the opposite end of the shaft, of the casing pivotally connected with the frame at the upper end surrounding the cylinder and having the discharge openings in front and bottom and the slot in the rear side, the cam on the shaft lying in the slot for oscillating the casing and a toothed plate at the bottom discharge opening; substantially as described.

6. In a mill, the combination with the rotary macerating cylinder, of the oscillatory hopper casing having the transverse ribs on the side and longitudinal ribs on the end and a driving mechanism for oscillating the casing; substantially as described.

OTIS E. DAVIDSON.

Witnesses:
F. A. GEAR,
J. E. GUNN.