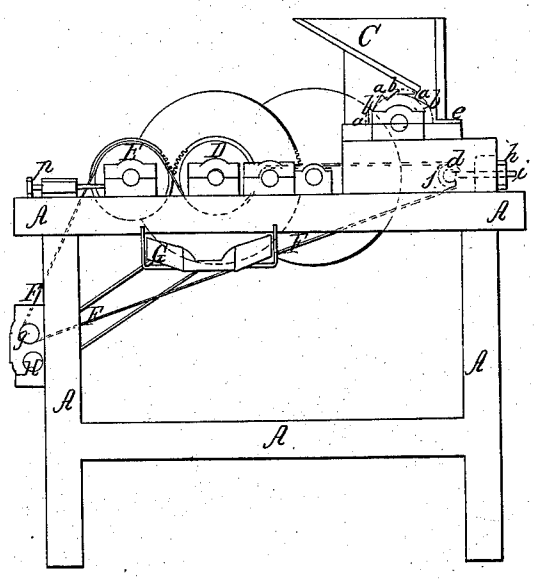
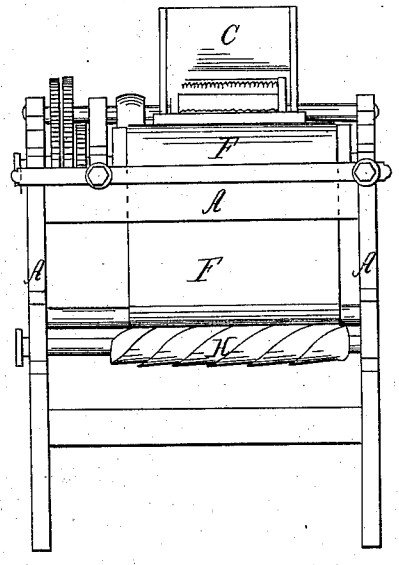
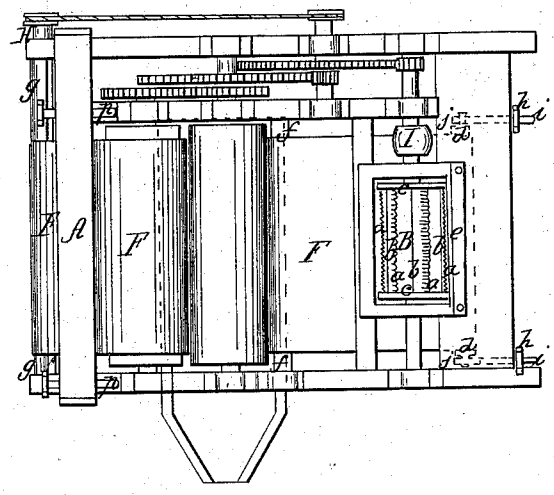
S. A. Hebard,

Cider Press.

No 39,731. Patented Sep. 1, 1863.







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UNITED STATES PATENT OFFICE.

S. A. HEBARD, OF NORTH STAMFORD, CONNECTICUT.

IMPROVEMENT IN CIDER-MILLS.

Specification forming part of Letters Patent No. **39,731**, dated September 1, 1863.

To all whom it may concern.

Be it known that I, S. A. HEBARD, of North Stamford, county of Fairfield, and State of Connecticut, have invented certain Improvements in Machines for Making Cider; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is an elevation of left-hand end, and Fig. 3 is a top view.

My invention relates to a machine for cider-making, wherein, by a system of mechanism consisting of grinding and pressing cylinders, endless apron, &c., the fruit is reduced to pulp, pressed, and strained at a continuous operation.

The first part of my invention consists in the construction of the grinding or reducing cylinder, and in the combination therewith of an adjustable blade or bar, substantially as hereinafter specified.

The second part of my invention consists in the mode of clearing the apron of pomace or waste pulp—viz., by carrying the apron around a roller of small diameter, causing the bulk of pulp to break and fall off, in combination with the use of a brush or beating cylinder to act on the apron while presented and supported by said roller.

This machine is not confined in its use or purpose to cider-making, but is adapted to grinding or crushing various sorts of fruit, &c., and expressing the same.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same and its operation.

In the annexed drawings the marks of reference correspond in all the figures.

I provide a suitable frame, A, having such form, essentially as shown, as to afford places for the journals of the several shafts, and in general to sustain the various parts of the machine.

B is the grinding or reducing cylinder. The upper half thereof is inclosed in a hopper, C, of which a skeleton view is given in Fig. 1. The periphery of said cylinder has longitudinal rows of teeth *a*, alternated with cutting-edges *b*, and said teeth and cutting-edges act against a bar or blade, *e*. Said blade is secured by screws which pass through slots in the blade, and said blade is thus adjustable with respect to the cylinder B. I prefer to form this cylinder of sections, making each row of teeth and cutting-edge respectively of separate sections or staves, and securing them between a pair of disks, *c*, fixed to their shaft.

D E are two revolving cylinders for pressing the pomace. They are geared so as to revolve together in the usual manner, and one is set in movable bearings, so that it may be moved up to and away from its fellow by screws *p* or other competent means. Said cylinders are also connected by a train of gearing with the reducing-cylinder B. The object of such gearing is not simply to communicate motion, but also to greatly diminish speed, in order that the pressing-cylinders run very slow, as compared with the reducing-cylinder, the result being that a considerable body of the pomace will be fed to the pressing-cylinders continuously, and form a species of cushion of the pomace itself, which will prevent the seeds and stems from being crushed by allowing them to be embedded in the pulp. The amount of pomace required to produce this effect is that which will make about half an inch or more in thickness of pressed pomace, and the proportion of speed of the reducing to that of the pressing cylinders may be as great as twelve hundred revolutions of the former to six of the latter. This provision of a cushion is very important, as without it the seeds would be crushed and the flavor of the expressed juice deteriorated.

To convey the pulp to the pressing-cylinders and discharge the same from the machine, I make use of an endless apron or belt, F. Said belt passes under the reducing-cylinder B from a roller, *d*, (dotted,) over a roller, *f*, under the pressing-cylinder D, up between D and E, over the latter and down around a very small roller, *g*, and thence back to *d*. And this belt or apron also serves the purpose of straining the juice from the pulp during the operation of pressing. I therefore make it of a fibrous material, suited to holding the mass or cushion of pulp, and have found that a fabric woven of hard twine is well adapted to the purpose, as it combines with the extreme strength required a texture sufficiently porous or open properly to accomplish the separation of the juice from the pulp. For wine, a finer fabric, more closely woven, is desirable.

G is a trough or conduit to receive and carry off the juice as it comes from between the pressing-cylinders.

H is a small revolving cylinder with brushes or beaters, which act on the apron or pomace thereon, or both, and assist in clearing the belt or apron of the expressed pomace. The belt is strained and held taut by nuts *h h* on screws *i i*, at the inner ends of which are loops *j*, encircling the journals of the roller *d*.

The operation of the machine is as follows: Motion is communicated through the pulley I on the shaft of the cylinder B. The fruit is placed in the hopper, and the rotation of the cylinder B, acting in conjunction with the blade *e*, reduces the fruit to pulp, throwing it at the same time onto the endless apron F underneath, whence it is conveyed to and carried in between the pressing-cylinders D E. As the pomace is carried up between the said cylinders, the juice is forced below through the apron running on the trough or conduit G. The action of the reducing-cylinder on the fruit is to score and cut alternately, which mode of reducing the fruit effects a great saving, does the work neater and better, and by doing more work with the same power increases the capacity of the machine over those wherein the fruit is crushed and torn by fixed and rotating teeth. When the pomace is expressed of the juice, it is left on the apron in the form of a hard, dry cake. The apron, with this caked pomace, now passes to the small roller *g*, and as the apron begins to assume a curved form, as it follows around the periphery of that roller, the caked pomace breaks and falls off. The brush-cylinder H revolves in the opposite direction from that of the apron, and, being located underneath and immediately beyond where the pomace breaks, conjointly assists in clearing said apron of the pomace, and said brush cylinder, when located contiguous to the roller *g*, as above stated, so as to act on the apron while presented and supported on such roller, is much more effectual in operation than when located at a point where the apron is not so supported.

I claim as my invention and desire to secure by Letters Patent—

1. The combination of the grinding or reducing cylinder with the adjustable blade or bar, when constructed to operate substantially as and for the purpose set forth.

2. The combination of the roller *g* with the brush-cylinder, when the said roller and brush-cylinder are arranged relatively to each other and operate substantially as described.

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Witnesses:
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