S. M. ELLIS.

CIDER-PRESS.

No. 190,713. Patented May 15, 1877.

Fig. 1

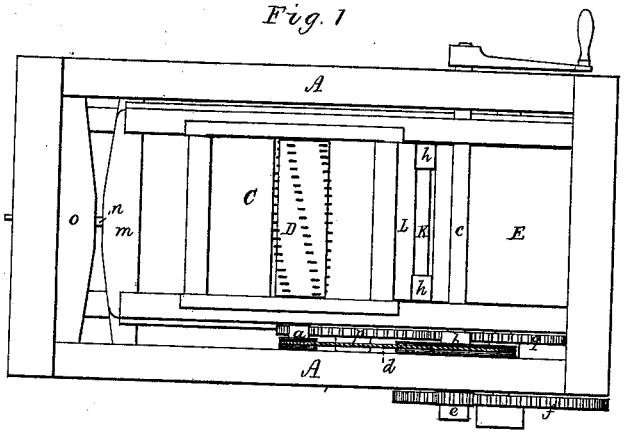


Fig. 2.

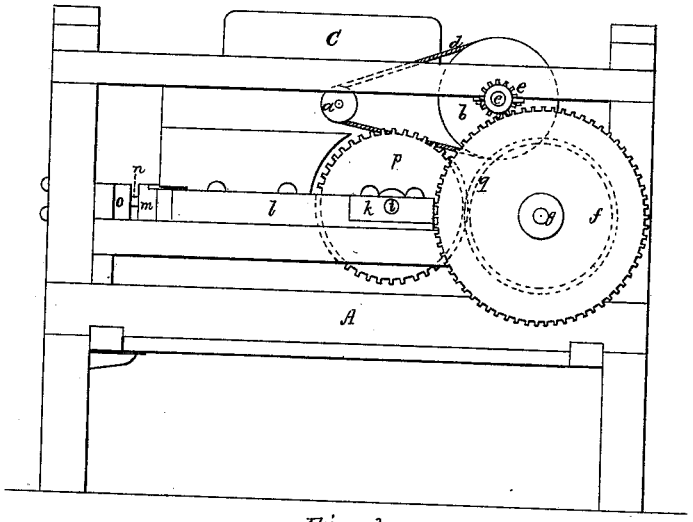


Fig. 3.

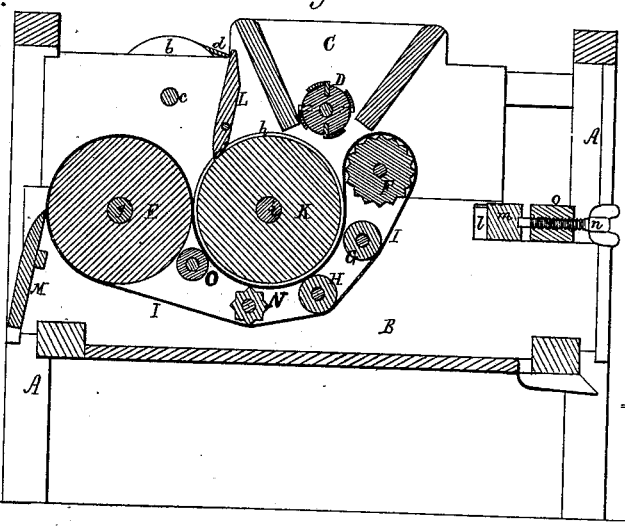
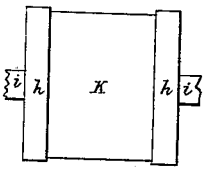


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

SILAS M. ELLIS, OF EAST ANDOVER, NEW HAMPSHIRE.

IMPROVEMENT IN CIDER-PRESSES.

Specification forming part of Letters Patent No. **190,713**, dated May 15, 1877; application filed November 13, 1876.

To all whom it may concern:

Be it known that I, SILAS M. ELLIS, of East Andover, of the county of Merrimack and State of New Hampshire, have invented a new and useful Machine for Separating from Fruits or Vegetables the Juices thereof; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a side elevation, and Fig. 3 a longitudinal section, of it.

The said machine consists of a crushing-hopper and cylinder or juice-receiving chamber, crushing-cylinders, an endless absorbing-apron, and certain scrapers, all arranged in a frame, and applied and provided with operative mechanism, substantially as hereinafter set forth.

In such drawings, A denotes the frame of the machine, it being provided with a liquor-receiving chamber, B. It also has a hopper, C, arranged over and above the chamber B, in manner as shown.

Within, and extending across, the hopper is a rasping or crushing cylinder, D, having its shaft duly supported in bearings, and provided with a grooved pulley, *a*. Around the said pulley and another and larger pulley, *b*, fixed on a driving-shaft, *c*, is an endless band, *d*. The shaft *c*, arranged as shown, has fixed on it a pinion, *e*, that engages with a gear, *f*, carried by another shaft, *g*. On the shaft *g*, and within the upper part of the chamber B, is a cylinder, E.

Around this latter cylinder and a series of rolls, F G H N O, an endless apron, I, is arranged, in manner as shown. This belt also passes underneath and partially around another cylinder, K, upon whose periphery at each end is an elastic water-proof band, *h*, such being as represented in Figs. 3 and 4, the latter being a side view of the cylinder. The rollers F and N are fluted, and operate as feed and crushing rolls.

The shaft *i* of the cylinder K has its journals supported in boxes *k*, fixed to two slide-bars, *l l*, which, at their outer ends, are connected by a cross-head, *m*. A screw, *n*, is screwed into and through a stationary cross-head, *o*, and against the middle of the cross-head *m*. By turning the said screw the cylinder K or its elastic bands may be forced up against the endless apron, so as to crowd it firmly up to the cylinder E.

A gear, *q*, fixed on the shaft of the said cylinder, engages with another gear, *p*, fixed on the shaft of the cylinder K.

A scraper, L, arranged as shown, rests on the peripheries of the two elastic bands of the cylinder K. Furthermore, there is in advance of the cylinder E another such scraper, M, to act against the endless apron to effect discharge of the pomace or pulp therefrom.

In using the said machine, the fruits or vegetables from which juice is to be expressed are to be thrown into the hopper. As the crushing-cylinder D may revolve, it, by its action with the hopper, will crush and force downward such fruits or vegetables, which, with the juice expelled from them, will fall or be delivered directly upon the endless apron, and by it and the cylinder K will be advanced underneath such cylinder and up between it and the cylinder E, and thence over such cylinder to its scraper. The endless belt is to be of cloth or some proper liquid-absorbing fabric or material, whereby it will be caused to absorb juice from the pomace or pulp, while the latter may be passing over such apron or be pressed against it.

The elastic bands of the cylinder K yield under pressure of them against the belt, and serve to keep the pomace or pulp from spreading out over the ends of the cylinder. They cause it to be delivered from the cylinder in a sheet of even width, such sheet being removed from the endless apron by the scraper M.

The scraper L removes from the elastic bands any waste pulp that may get thereon.

The absorbent endless belt *m*, having become surcharged with the expressed liquid or juice, will, in passing under its supporting-rollers, deliver into the chamber more or less of it, which, falling upon the bottom of the chamber, may be conducted therefrom by a spout or suitable educt.

It is usually the case in the extraction of juice from fruits or vegetables—as cider, for instance, from apples—to first crush them to pomace, and afterward remove such to a press, and by it separate the juice from the rest of the mass. My machine performs all such op-

erations automatically, and, by means of its absorbent apron, not only transfers the crushed fruit or vegetable matter to and between the pressing-rolls, but absorbs the juice as it is expressed from the sheet of pomace, and separately delivers or discharges both it and the pomace. Furthermore, in my machine the two outer rollers E F, that sustain the endless apron, are arranged close to the expressing-cylinder K, so as to co-operate with it and the apron in compressing the pulp. The intermediate rolls G H N O, besides supporting the apron, are so arranged with reference to it and the cylinder K as to co-operate therewith in compressing the pulp. Thus it will be seen that not only the said rollers, but the others, which sustain the endless apron, are so disposed with the intermediate cylinder as to operate therewith on the pulp; also, that the elastic bands *h* bear peripherally against the apron, and that they do not bear at all against the ends of either cylinder.

Therefore, I do not claim, in a machine for the purpose described, a roller provided with flanges, to extend from it at its ends and lap on the ends of another or fellow roller.

I claim—

1. The combination of the hopper C, crushing-roller D, the expressing-cylinder K, its elastic bands *h h*, the endless apron I, and its end and intermediate carrying and expressing rolls E F G H N O, arranged substantially as represented.

2. The combination of the scraper L with the hopper C, crushing-roller D, the adjustable expressing-cylinder K, its elastic peripheral bands *h h*, and the endless apron and its end and intermediate rolls, arranged with the said roll K and the hopper C, as and to operate therewith, as set forth.

3. The combination of the scrapers I and L with the hopper C, crushing-roller D, the expressing-cylinder K, the elastic bands *h h*, and the endless apron I, and its end and intermediate rollers, arranged and to operate with the cylinder K, substantially as specified and represented.

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