

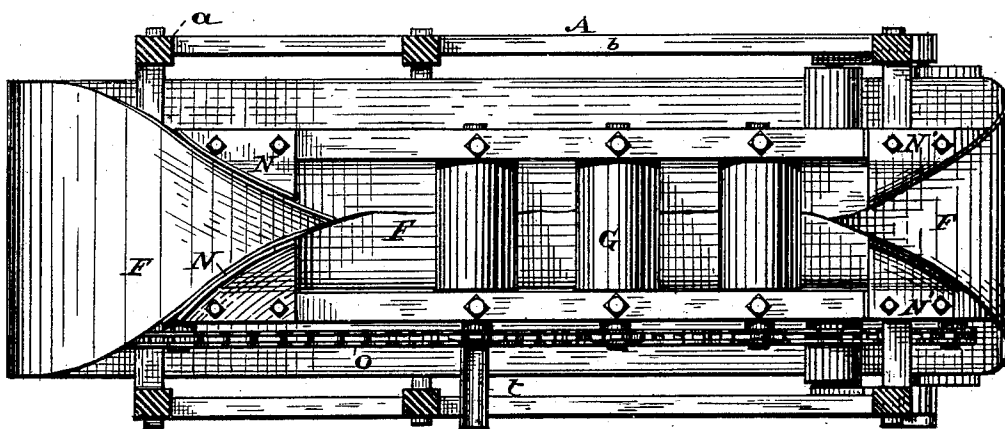
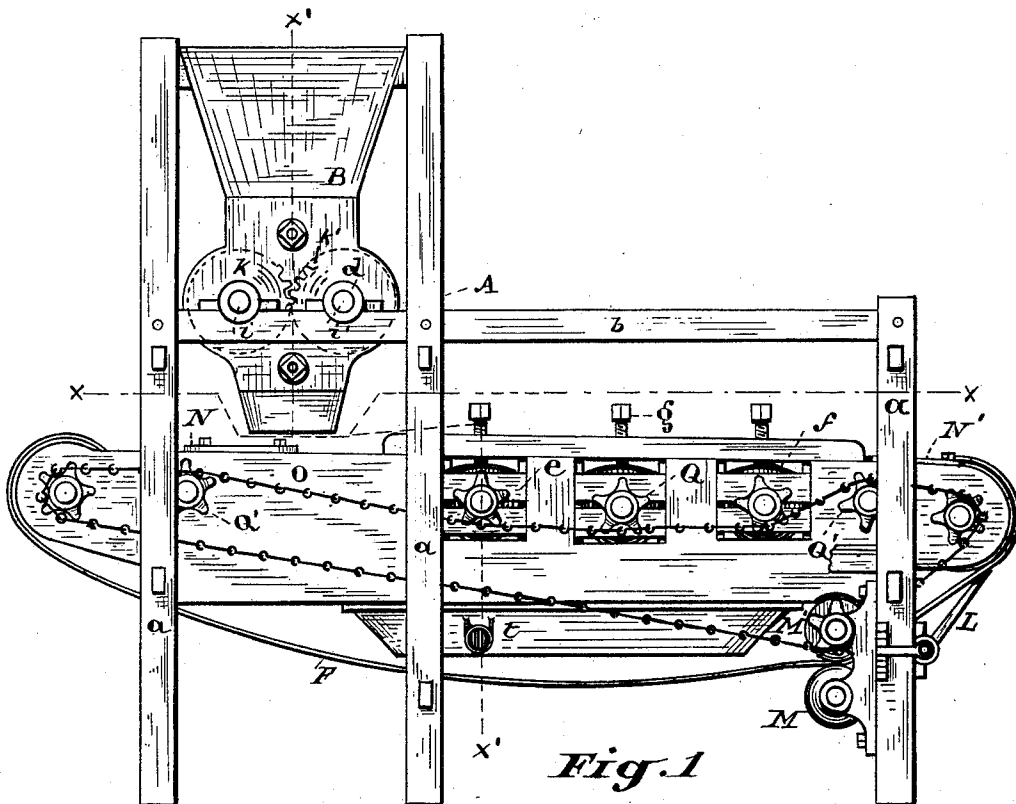
(No Model.)

2 Sheets—Sheet 1.

G. W. SANOR.
CIDER MILL.

No. 358,989.

Patented Mar. 8, 1887.



WITNESSES

C. L. Burridge
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INVENTOR

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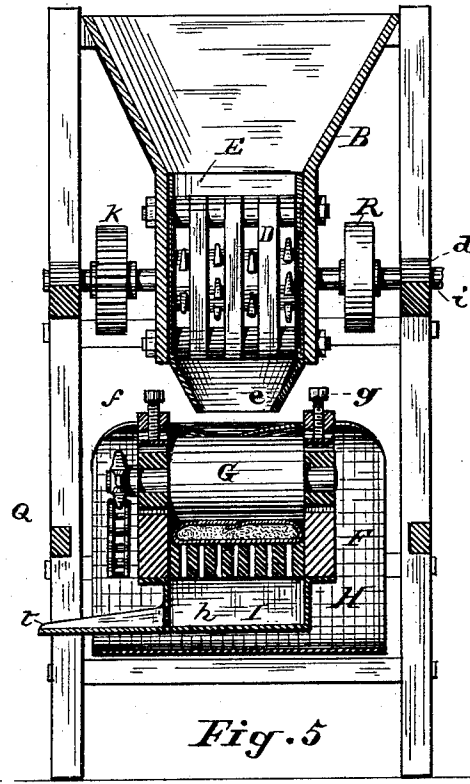
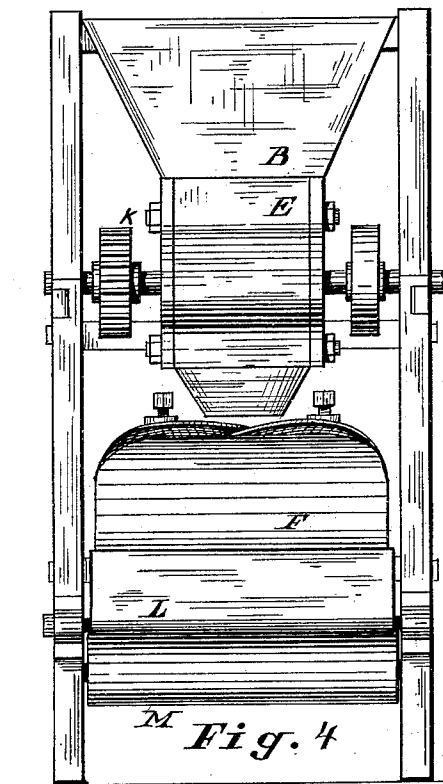
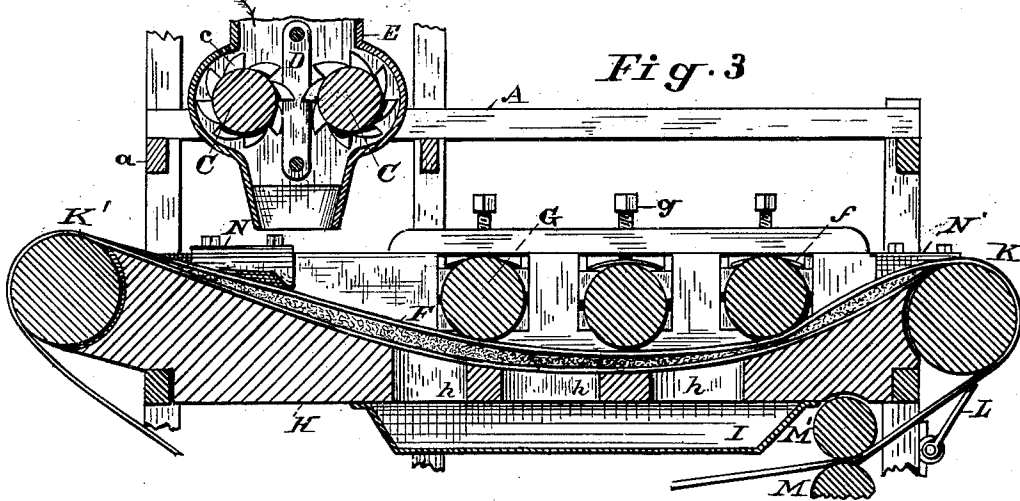
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UNITED STATES PATENT OFFICE.

GEORGE W. SANOR, OF OZARK, MISSOURI.

CIDER-MILL.

SPECIFICATION forming part of Letters Patent No. 358,989, dated March 8, 1887.

Application filed October 4, 1886. Serial No. 215,257. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SANOR, of Ozark, in the county of Christian and State of Missouri, have invented a certain new and useful Improvement in Cider-Mills; and I do hereby declare that the following is a full, clear, and complete description thereof.

This invention consists of a grinding or crushing device, in combination with a pressing or separating mechanism, arranged in such co-operative successive relation as to crush apples or other similar fruit to pomace, press, and separate the same in one continuous operation.

The object of my improvement is to reduce the pomace to such a condition as to render it most suitable for an exhaustive extraction of the juice from the mass and reduce to a minimum the usual manual labor connected therewith. These objects are attained with the machine hereinafter described, and illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of the mill, press, and separator combined. Fig. 2 is a plan view of the press and separator below the mill in direction of the line *x x*, Fig. 1. Fig. 3 is a vertical sectional view showing interior parts of the machine. Fig. 4 is a rear end view, and Fig. 5 is a transverse vertical sectional view in direction of the line *x' x'*, Fig. 1.

Like letters of reference refer to like parts in the several views.

In Fig. 1 are shown, in relation to their respective functions, the different devices mounted upon the frame A, which consists of the vertical posts *a*, connected to and with the lateral and longitudinal sills *b*. In the upper and front part of the frame A is situated the hopper B, into which the fruit is placed, there to be exposed to the cutters *c*, projecting from the drums C, Fig. 3. These cutters divide the fruit, while the drums crush it, the action of the two in setting free the juices being very effective. Fixed vertical angular bars D are arranged between these cutters, alternating therewith. These bars constitute a grating arranged in the space between the two drums C. They allow the cutters *c* to turn without coming in contact with them; but they aid the action of said cutters and the drums C by additional resistance which they oppose to the passage of the fruit. The bars are securely

fastened to the housing or casing E and the lower part of the hopper B, whereas the drums are journaled outside thereof in bearings *d*, 55 connected with the frame A. The lower part of the casing is tapering in form, for the purpose of discharging the pomace in a more concentrated mass into the endless apron F, in which it is conveyed in under the pressing-rollers G, between said rollers and the bed H, 60 where the juice is set free, flowing off through the opening *h* in the bed H into the chute I underneath. The remainder or refuse is carried along in the apron and discharged while passing over the guide-roll K. 65

The above-mentioned pressing-rollers G are journaled in bearings *e*, located in the side pieces of the bed H, as shown in Figs. 1 and 5, and are so constructed as to allow a vertical 70 movement of the same by means of the spring *f* and set-screw *g*, according to the required pressure of the rollers upon the apron and the pomace contained therein. More or less pressure may be obtained by means of the set- 75 screws *g*.

The apron consists of an endless strip or belt of cloth, the sides of which are folded over, by means hereinafter referred to, about midway between the front guide-roll, K', and the first 80 pressing-roller, G, while receiving and completely enveloping the pomace from the mill before it is exposed to the pressure of the said roller. The following two rollers are or can be so adjusted as to bear down with increasing 85 pressure upon the pomace, thereby securing a most perfect separation of the juice from the pomace, which pomace, after passing the last roller, is readily discharged, completely freed from the juice. 90

To the lower side of the rear guide-roll, K, is attached the scraper L, for the purpose of perfectly cleaning the cloth before it comes in contact with the friction-rollers M M', which draw the same along, thereby keeping up a 95 continual receiving, pressing, and discharging of pomace.

To assist the folding and unfolding of the apron at the proper time and place, the guide-plates N and N' (which are connected to the 100 sides of the bed H, Figs. 1 and 2) are formed in such a manner as to perform their respective functions; hence the plates N cause an inward turning and folding of the apron-cloth by ta-

pering in and down toward the first roller, thus delivering the same to said roller with the sides lapping over each other, as shown in Fig. 5, where the pomace is completely 5 surrounded by the cloth, which, when leaving the rollers, is met by the plates N' , to be unfolded while passing along their sides, which are formed like a mold-board of a plow, tapering up and out from the last roller.

- 10 The curved plates $N N'$ lap the sides of the endless apron F over each other, as seen in Figs. 2 and 4, with the pomace inclosed, as seen in Fig. 5, as fast as the crushed fruit enters on the apron from the mill. The apron 15 is unfolded at the opposite end by means of the curved plates $N' N'$, to admit of the removal of the pomace by the scraper L as the apron is moved around by the rollers, as shown.

- The guide-rollers $K K'$, pressing-rollers G , 20 and friction-rollers $M M'$ are all set in motion by the same link-belt O , and are for the purpose provided with sprocket-wheels Q , with which the link-belt engages, as seen in Fig. 1. In the same Fig. 1, two additional sprocket- 25 wheels, Q' , will be noticed, which are for the purpose of taking up the slack of the link-belt or maintaining the same in a straight line and in actual contact while driving or rotating the sprocket-wheels attached to the pressing-rollers G . This link-belt may be operated 30 by rotating the shaft on which belt-wheel R and gear-wheel k are mounted. Power is communicated to said shaft through suitable gearing acting on one of said wheels, the other being connected in any suitable manner to roll 35 K , or some one of the other rolls which have sprocket-wheels engaging said link-belt.

The means used for setting the link-belt in motion for operating the mill are not shown in the drawings, but they may be applied in 40 various ways without departing from the nature of my invention. However, on the shaft i of the drum C , Fig. 5, a small pulley, R , is shown, which is driven by a belt. On the opposite side to this shaft is the gear k , which 45 engages one of like size, k' , on the shaft i' , whereby an equal speed of both drums is attained. Furthermore, the juice or cider may be drawn off into bottles or barrels through the spout t from the chute I , into which the 50 juice runs through the openings in the bottom from the pressed fruit within the apron.

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

1. A pair of crushing-drums, C , provided 55 with cutters c , in combination with a series of fixed bars, D , arranged between said drums and alternating with respect to said cutters, substantially as set forth.

2. The crushing-drums C , having cutters 60 projecting therefrom, the vertical bars D between them, the bed H , the adjustable pressing-rollers G , endless apron F , and link-belt O , in combination with a slotted or open bed below the apron, folding plates $N N'$, and scraper 65 L , substantially as described, and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. SANOR.

Witnesses:

W. H. BURRIDGE,
J. W. BURRIDGE.