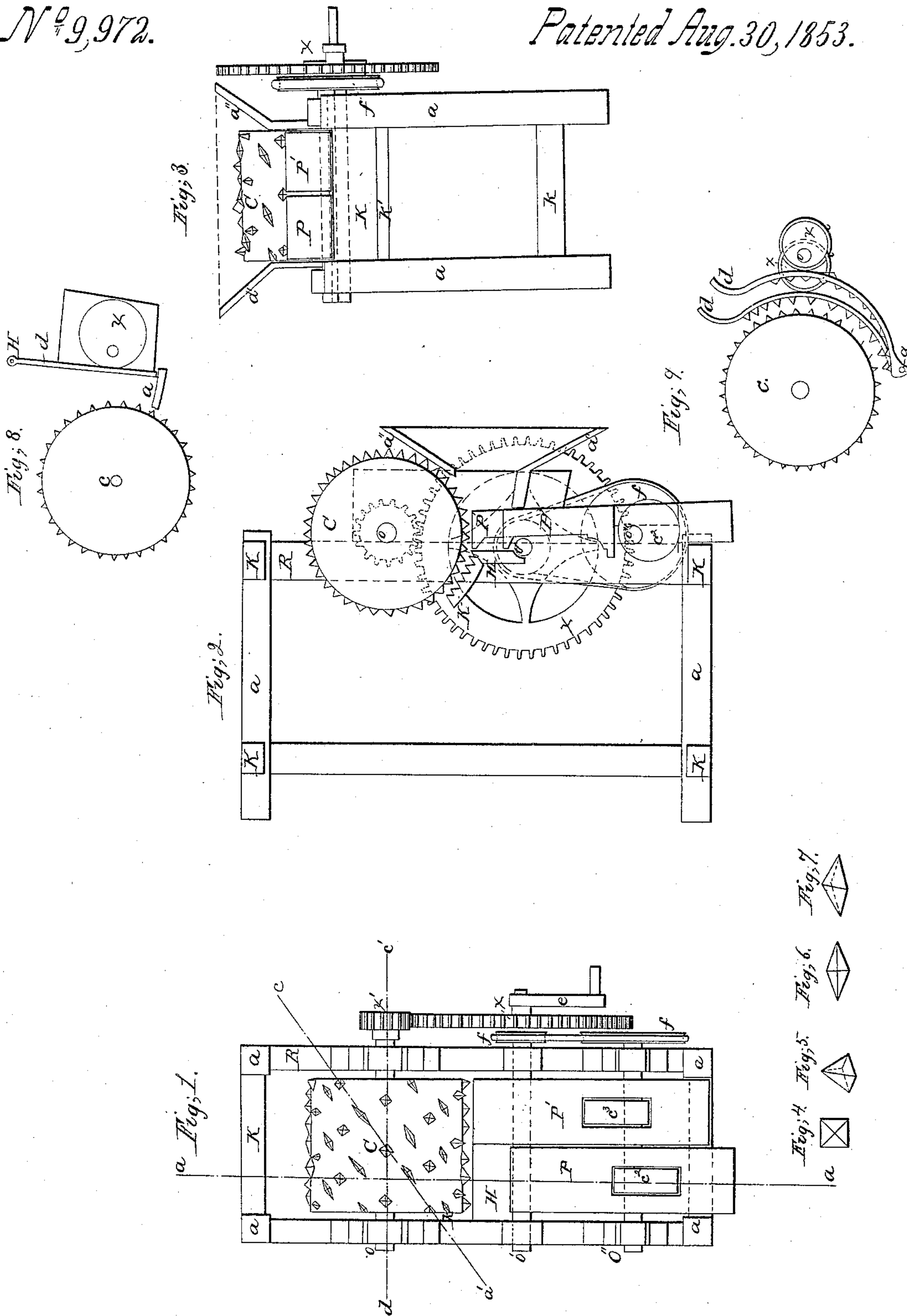


# J. Krauser, Cider Mill.

N<sup>o</sup> 9,972.

Patented Aug. 30, 1853.





# UNITED STATES PATENT OFFICE.

JOHN KRAUSER, OF READING, PENNSYLVANIA.

## CIDER-MILL.

Specification forming part of Letters Patent No. 9,972, dated August 30, 1853; Reissued October 11, 1864, No. 1,793.

*To all whom it may concern:*

Be it known that I, JOHN KRAUSER, of Reading, in the county of Berks and State of Pennsylvania, have invented a new and  
5 useful Improvement upon Cider-Mills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed draw-  
10 ings, making a part of this specification, in which—

Figure 1 is a plan or top view of the machine with its hopper and side casing removed so as to exhibit the working parts  
15 of the machine to better advantage. Fig. 2 is a vertical longitudinal section taken through the dotted lines *a a* in Fig. 1. Fig. 3 is a rear elevation with a portion of the hopper removed so as to expose to view the  
20 cylinder.

The same letters refer to like parts in all the figures, in which—

*c* is a grating or grinding cylinder, armed with two sorts of teeth, the first kind  
25 represented by Fig. 4, a top view, and Fig. 5 a perspective of the same. The second kind are an elongation of the first and are represented by a top view in Fig. 6 and a perspective of the same in Fig. 7. These  
30 teeth are arranged in a spiral form upon the exterior of the cylinder and are so combined that in the direction from *a'* to *c*, Fig. 1, they alternate each other, but in the direction from *c'* to *d* they are placed in  
35 rows of similar kinds. Cylinder *c* is permanently fast upon shaft *o* and receives its motion from the crank shaft *o'* by means of the cog wheels *x x'* which are fast upon their respective shafts and gear with each  
40 other as represented in Figs. 1 and 2. The band wheels *f f* are fast upon their shafts and communicate with each other by means of a belt passing around them. Cog wheels can be used in their stead if required. Upon  
45 the shaft *o''* are keyed two eccentrics *c<sup>2</sup> c<sup>3</sup>*. They revolve within vertical slots cut into the pistons *P P'*, to which they communicate an alternating reciprocating movement when the machine is in operation. The  
50 front ends of the pistons slide upon the upper surface of the floor *H* and their rear ends upon the upper end piece *K*, Fig. 3, by which arrangement they receive their proper direction when in motion. Upon  
55 shaft *o'* a crank *e* is permanently keyed, by

which motion is communicated to the machine. Another crank can be attached to the opposite end of said shaft if required.

In Figs. 2 and 3 *a'' a''* indicate the four sides of the hopper intended to contain the  
60 material to be operated upon by the machine. This hopper it will be observed is not placed over the top of the cylinder so as to conduct the fruit immediately upon its roughened exterior, and by its pressure  
65 thereon contribute to its reduction to pulp, but it is placed immediately along side of the grinding cylinder and its four converging sides *a'' a''* are so arranged as not to conduct the fruit directly upon its rough-  
70 ened exterior, but directly upon the top surface of the feeding pistons and floor *H*, so that did the pistons remain stationary and the cylinder only revolve no practicable reduction of fruit to pulp could be effected.  
75 Now the object in thus arranging the hopper with reference to the several operating parts of the machine is three fold: First, by the direct pressure of the apples upon the top surface of the pistons, they, the said  
80 apples, are constantly more or less agitated by coming in contact with the said upper surface of the pistons and also with the moving mass of apples contained in one of the cells while in the act of being pressed  
85 forward against the grinding cylinder by the action of one of the pistons. Therefore by the means of so agitating the apples I prevent them from choking up the narrow  
90 passage of the hopper immediately above the pistons, and in the second place the filling of the cells formed by the receding pistons is facilitated, and in the third place by the direct pressure of those apples which are superincumbent to those contained with-  
95 in the cells the latter are prevented from being upheaved or ejected from their proper position when in the act of being pressed against the grinding cylinder by the action of the pistons. (Note: The term cell as  
100 made use of in this description has reference to the space alternately formed between the grinding cylinder and front face of the pistons.) Underneath the floor *H* is affixed the stationary concave *K'* armed on its  
105 inner surface with angular ribs arranged parallel with the shaft *o*. The entire machine is erected upon a rectangular frame composed of four vertical posts *a* connected together by the side rails *R* and end pieces  
110



K at top and bottom a vertical partition can be placed between the two pistons if required.

Operation: Suppose the machine be found in the position represented in Figs. 1 and 2 and the hopper be now filled with apples or other fruit. It is apparent that some of the fruit must drop into the cell between the front face of piston P and the grinding cylinder, while another portion will rest upon the top surface of piston P'. The machine is now started by turning the crank, by which cylinder *c* is made to revolve rapidly, while the revolving eccentrics which are fast on shaft O'' move the pistons P P' in opposite directions. Piston P moves forward, forcing the apples or other fruit in front of it gradually against the exterior of cylinder *c*, which by the action of its teeth upon the fruit reduces the latter to a fine pomace as rapidly as the whole fruit is pressed against them. The operation of piston P' is precisely similar to that of piston P, for when the latter has completed its forward stroke and is about to retreat the former will cease to retreat and commence moving forward toward the cylinder with a fresh supply of apples with which the cell in front of it was charged during its retreating movement. The slower the pistons move in proportion to the velocity of the cylinder the finer will be the pulp and so vice versa, and the finer the teeth upon the grinding cylinder the finer will be the pulp and so vice versa. It is apparent that the operation of reducing apples to a pulp can be effected by means of other devices represented in Figs. 8 and 9, although their mode of operation is different from that of the pistons or plungers above described, and are not viewed as their mechanical equivalents.

In Fig. 8, *c* is a grinding cylinder *x* the eccentric and *d* a strip of board of any required length and width suspended from point H, and *a* the floor over which its lower surface slides. Now should the eccentric be made to revolve, it will cause the board *d*

to vibrate so that any fruit coming between it and the revolving cylinder would be pressed against the latter and be reduced to pulp, so in Fig. 9 *c* is the grinding cylinder, *x x* eccentrics fast upon shaft *o*, and *d d* two vibrating concaves turning upon pivots *a*. When the machine is in motion the apples are received into the space between the concaves and cylinder *c* and are ground fine by being pressed against the latter by the vibrating movement of the concaves produced by the motion of the eccentrics.

I do not claim as of my invention the employment of two or more pistons or plungers in combination with a grinding cylinder nor operating them by the machine itself, whether the motion derived therefrom be uniform or not. But

What I do claim as of my invention and wish to have secured by Letters Patent is—

In the first place, so arranging the hopper with reference to the several operating parts of the machine, that the fruit or other substance contained therein shall not rest directly upon or against the roughened exterior of the grinding cylinder, but directly upon so much of the upper surface of the anterior ends of the pistons or plungers as shall be found operating or exposed within its inclosed sides, for the purpose of agitating the incumbent substance so as to insure and facilitate the filling of the cells as the pistons recede from the cylinder, and in the second place which is a consequence of the first, viz., to cause the incumbent substance to press upon the cumbent or that contained within the cells so as to oppose the upheaving or ejection of the same while in the act of being pressed against the passing teeth of the revolving cylinder *c* by the action of the alternating pistons or plungers as herein more fully described and set forth.

JOHN KRAUSER.

Witnesses:

I. N. ANDERSON,  
SAML. KRAUSER.