

Whitely, Fassler & Kelly.

Cider-Mill.

N^o 73417

Patented Jan. 14, 1868.

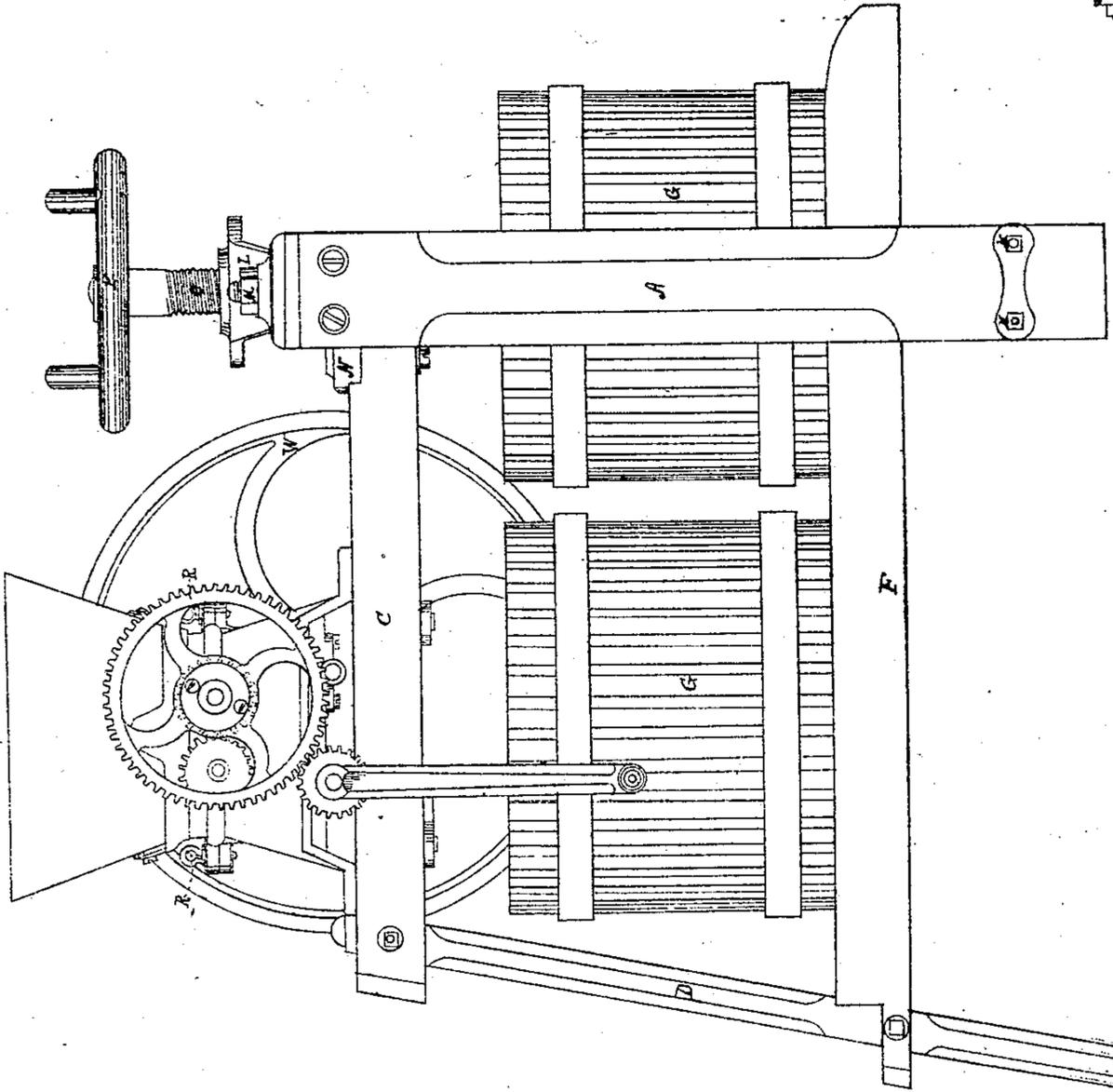
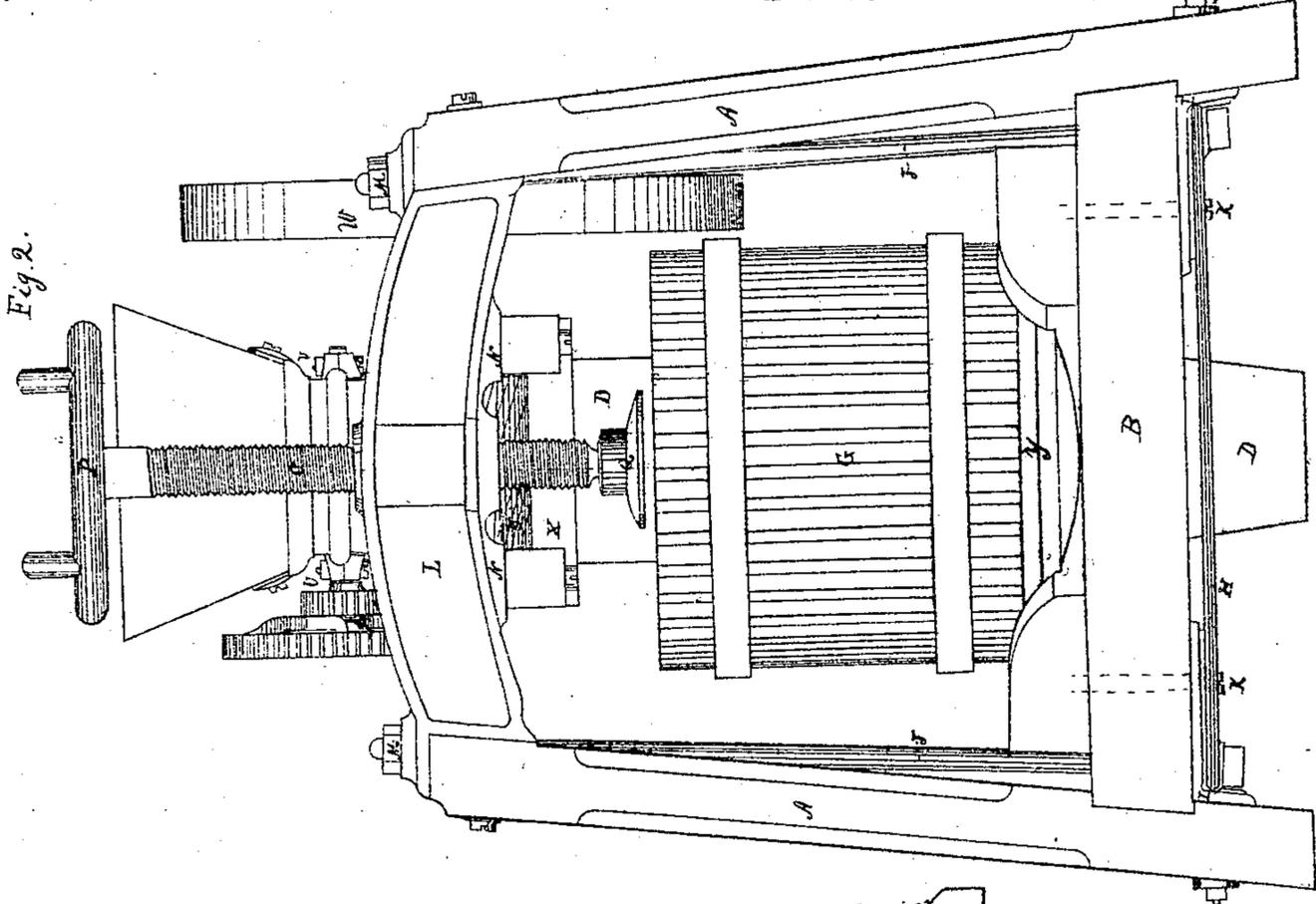


Fig. 1.

Fig. 2.

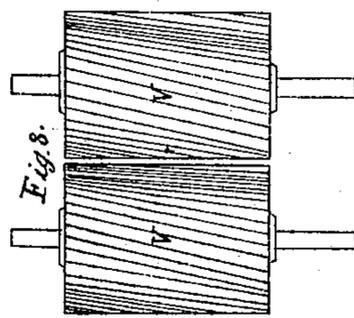
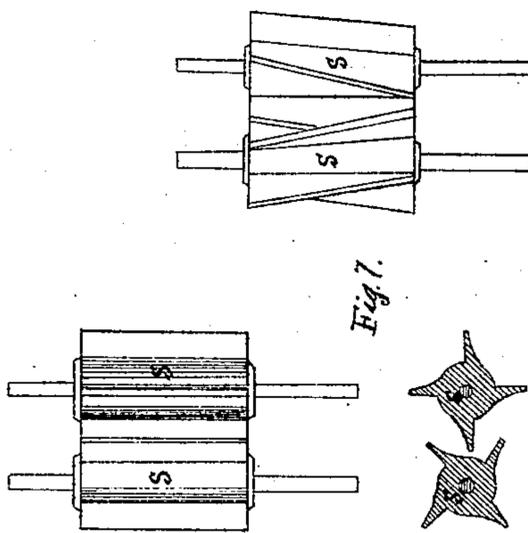
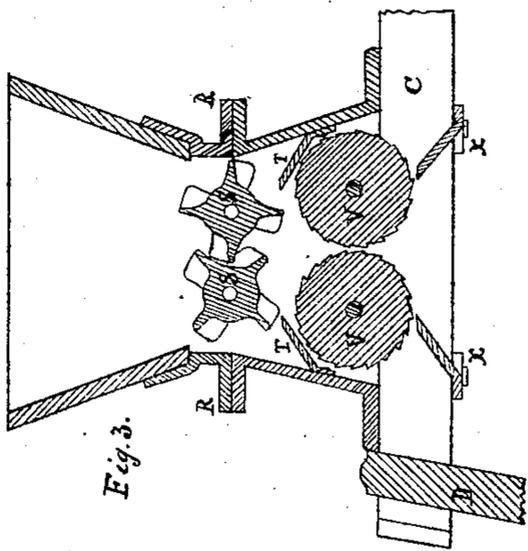
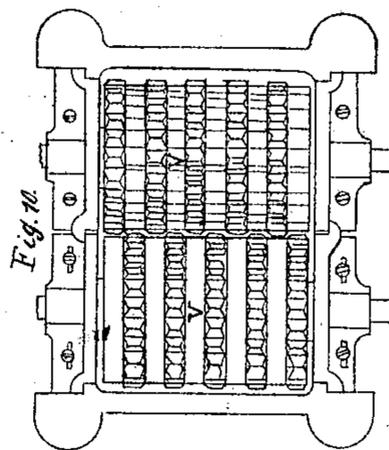
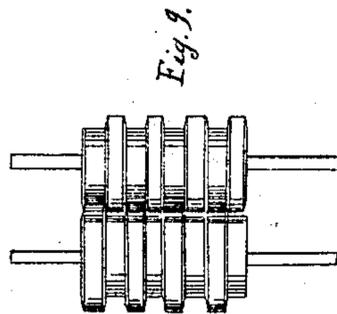
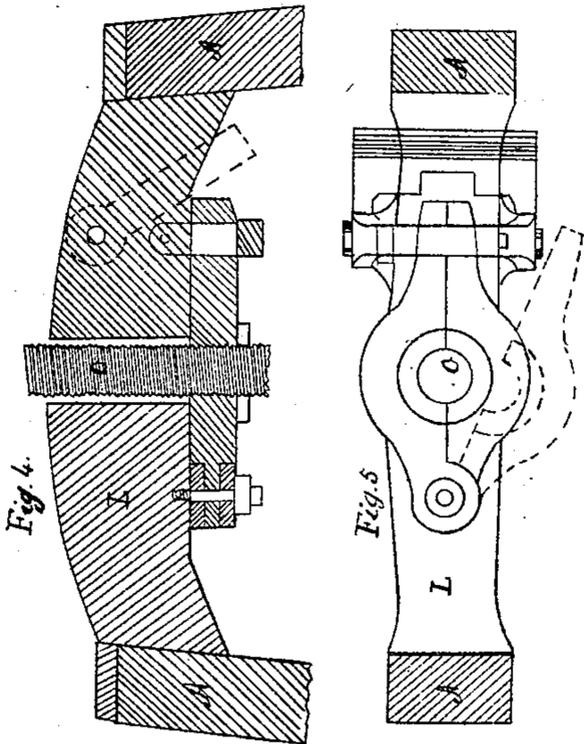
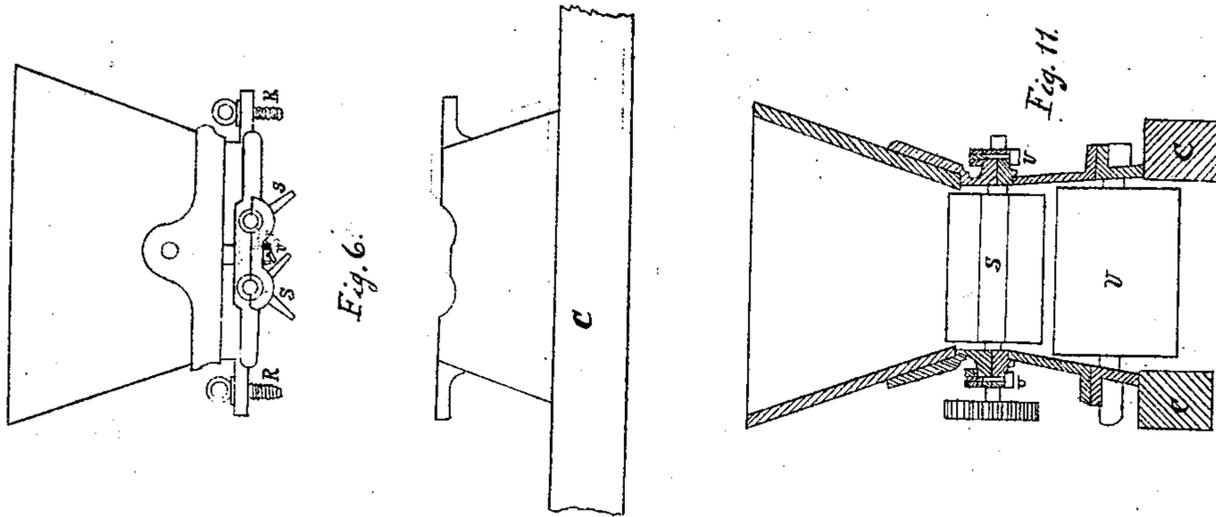
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Whitely, Fassler & Kelly. Cider-Mill.

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Letters Patent No. 73,417, dated January 14, 1868.

IMPROVED CIDER-MILL.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, W. N. WHITELY, JEROME FASSLER, and O. S. KELLY, of Springfield, in the county of Clark, and State of Ohio, have invented a new and useful Improvement in Cider-Mills; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of our mill.

Figure 2 is a front elevation of the same.

Figure 3 is a vertical longitudinal section through the grinding-box.

Figures 4 and 5 exhibit a modified construction of press-beam.

Figure 6 exhibits the parts of the grinding-box detached.

Figures 7 and 9 exhibit modified constructions of the crushing-rollers.

Figures 8 and 10 exhibit modified constructions of the grinding-rollers.

Figure 11 is a vertical cross-section through the grinding-box.

In order that others may fully understand the construction and operation of our invention, we will particularly describe it.

The frame to support the operative mechanism of our machine is constructed of wood and iron, and consists of two posts A A at the front end, a cross-beam or girder, B, connecting them near the foot; two side pieces, C C, supporting the grinding-box with its mechanism; a single post, D, at the rear end, and a floor, F, on which are placed the pomace-tubs G G. The posts diverge toward their lower ends, so as to give them a very wide and firm bearing upon the ground. The transverse connecting-beam or girder is placed near the foot of the front posts, in suitable seats which are cut into the sides of the posts, and receive the ends of the girder, and the whole are firmly bound together by the tie-rods H H, which pass beneath the girder and through both posts. Angle-irons I I are placed below the girder, to give them a firm support, and to form seats for the lower ends of the stay-rods J J. The tie-rods H H also pass through the angle-irons I I, and aid in sustaining them in their position. The screw-bolts K K pass upward through the horizontal portion of the angle-irons I I, and into screw-nuts bedded in the floor, so that the front end of the platform is secured to the girder by the same bolt which holds the angle-iron up in place.

To the tops of the posts A A is attached the press-beam L, made of iron, and its ends flanged so as to embrace both the top and a portion of one side of each post. Two bolts pass through the posts horizontally, into tapped holes in the end of the press-beam, so as to secure them against lateral movements, and the stay-rods J J pass upward through the same beam, close to the tops of the front posts, and the nuts M M are screwed down hard upon proper seats, so as to bind the press-beam and girder firmly together, and relieve the posts from strain while the press is in operation.

On the rear side of the press-beam are cast projecting lugs N N, located at suitable distances apart, and recessed on their under sides, to receive the ends of the side pieces C C of the frame, which are firmly secured to said lugs by screw-bolts and nuts. At the rear ends of these side pieces, (which are placed at suitable distances to allow of the grinding-rollers to revolve between them, and parallel to each other,) and between them, is fitted the rear post D of the machine, which is firmly fastened by a screw-bolt passing through the three. The floor is placed upon the beam, between the front posts, and extends backward to the rear post, which is received into a recess cut into that end of the floor, and the whole bolted together.

In the centre of the press-beam the thickness is increased, so as to permit a vertical hole to be drilled and a screw-thread cut therein to receive the press-screw O. This vertical hole may be made large enough to allow the free passage of the screw, and the screw-nut may be constructed in two parts jointed together, as shown in figs. 4 and 5, and secured by a clamping-mechanism, so that when the screw is to be raised, it may be done quickly by opening the nut and raising the screw by hand. In order to render the press-screw O more efficacious, a wheel-head, P, is fitted upon its upper end, and this head is provided with vertical pins, between which a lever may be applied to force the screw down with power. A large step-plate, Q, is fitted to the lower end of the screw, and secured there by a small screw, which enters a channel in the lower end of the screw. This

step-plate rests upon the top of the follower, and affords a wide and firm bearing for the point of the screw in forcing the pomace down into the tub.

The pomace-tubs are constructed, as shown in figs. 1 and 2, of staves of wood, secured to the inner sides of stout hoops of iron by rivets or other suitable means. The inner faces of these staves are somewhat broader than their outer faces, and they are set with slight intervals between, so as to permit the juice to run freely out from the pomace and escape from the tub. Each tub stands upon a small independent loose bottom or platform, Y, which may be moved bodily with the tub from one end of the platform to the other; as, when the tub has been filled beneath the grinding-box, it is moved to a position beneath the press. A follower of stout plank, almost large enough to fill the internal area of the tub, is laid upon the pomace, and the screw applied to its upper side.

The grinding-box is placed upon the side pieces C C of the frame, and is secured thereto by screw-bolts, which pass through flanges projecting outward from the lower edge of the journal-box. The grinding-box is constructed in two parts secured together by the screws R R, which pass through corresponding lugs upon each part of said box. The grinding-box contains two sets of rollers or grinders, and supports all the gear-wheels by which motion is communicated to them. This grinding-box is rectangular in plan, and is made of iron or other metal, and its surface may, if desired, be protected from the acids of the fruit by a coating of some non-corrosive metal or alloy. The upper part of the grinding-box is the one to which the hopper is attached, and contains within it two solid cast-metal cutting or crushing-rollers S S, the axes of which are transverse to the side pieces of the frame of the machine. These crushing-rollers have their surfaces deeply fluted, so as to make a small number of very prominent ribs, either straight upon the surface of the roller, or spiral, as in fig. 7. The shafts of the two crushing-rollers are connected together by gears of equal size, so that they move in connection with each other, the rib upon one meshing in the groove or flute of the other. By this arrangement and construction, the fruit is caught between the ribs of the crushing-roller, and crushed as it passes below to the grinding-rollers, by which it is reduced to the condition of fine pomace. The crushing-rollers may be made with projecting teeth, which mesh with each other, as shown in fig. 9, if that construction is preferred. Scrapers T T may be attached to the inner side of the upper part of the grinding-box, as shown in fig. 3, to remove any portions of crushed fruit which may adhere to the crushing-rollers. The shafts of the crushing-rollers rest in boxes secured by the screw-bolts U U to the upper part of the grinding-box, so that when the upper part is separated from the lower part of said box, the crushing-rollers are conveyed with it, and all parts of the grinding-box are thus rendered accessible without removing any of the shafts from their bearings.

The grinding-rollers V V are constructed solid, of cast metal, and are mounted on shafts, which rest in boxes secured by screw-nuts to the lower side of sidewise-projecting flanges of the lower part of the grinding-box, so that the grinding-rollers are attached to the metallic grinding-box, instead of being attached to the frame as hitherto, and therefore, when the grinding-box is removed from the side pieces of the frame, the entire grinding and crushing-mechanism is also removed, and without changing the relation of any of the parts of said mechanism. The boxes which hold the shafts of the grinding-rollers V V, are made slightly adjustable, so that the grinding-rollers may be changed slightly in their distance from each other, so that they may grind the fruit more or less fine, as desired. The surfaces of the grinding-rollers are fluted, but not very deeply, and the ribs are quite numerous, and present sharp edges on one side, so as to cut the fruit rather than simply crush it. Instead of ribs and flutes, the surface may be serrated with pointed teeth, as in fig. 10. The grinding-rollers are geared so as to have different speeds. The crank is attached to the end of one of the shafts of the grinding-roller, and upon the other end of the same is the driving-gear, which meshes with a pinion, and upon the shaft of said pinion is the balance-wheel W, which equalizes the motion of the rollers. The crushing-rollers S S receive their motion by means of wheel and pinion, so graduated as to reduce the speed of the crushing-rollers below the speed of the crank.

The scrapers X X extend across the frame parallel with and below the grinding-rollers V V, and their upper edges are placed within a very short distance of the surface of said rollers, so that nearly or quite all of the pomace which adheres to the ribs of said rollers will be removed, and caused to drop into the pomace-tub beneath the grinding-box.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. Constructing the grinding-box in two parts, substantially as set forth, and attaching the bearings of the crushing-rollers to the upper part, as and for the purpose set forth.
2. Mounting the journals of the grinding-rollers V V in boxes, which are attached to the lower side of the sidewise-projecting flange, by screw-bolts, and so that the said boxes may be slightly adjustable as to their distance from each other, as set forth and described.
3. The construction of the press-frame with the press-beam L, the stay-rods J J, the front posts A A, the girder B, the tie-rods H H, and the angle-irons I I, as set forth.
4. The two ribbed crushing-rollers S S, and the two grinding-rollers V V, directly beneath them, and running at different speeds, combined and arranged in a metallic grinding-box constructed in two parts, and the bearings of one set of rollers connected to one of said parts, and the bearings of the other set connected to the other of said parts.

Witnesses:

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