2 Sheets—Sheet 1.

C. R. COWLEY & D. S. FARQUHARSON.

CIDER AND WINE PRESS.

No. 181,775. Patented Sept. 5, 1876.

Fig. 1.

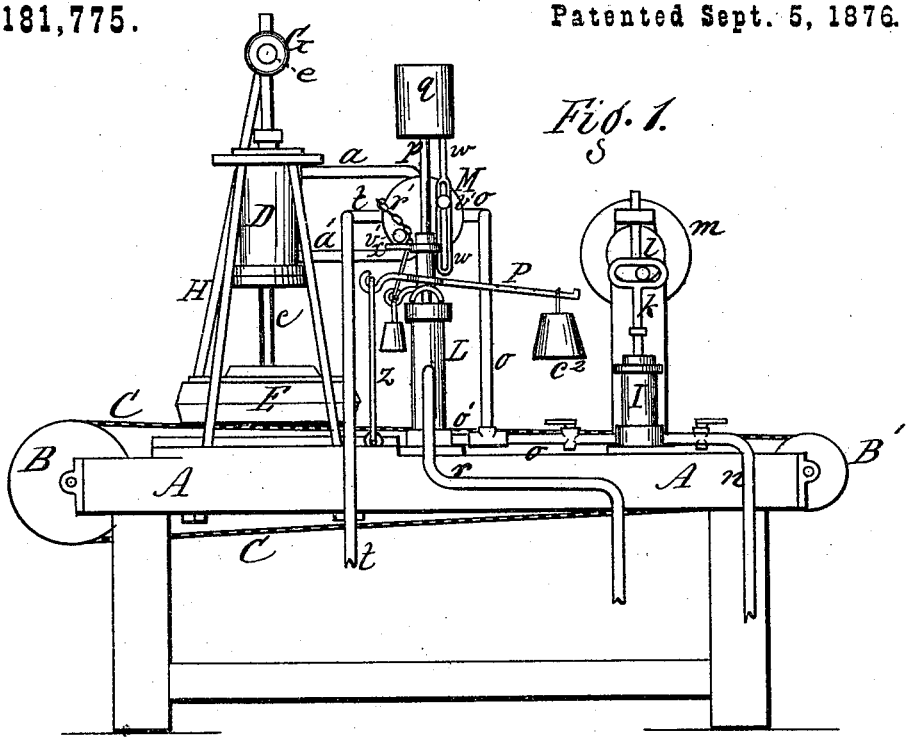
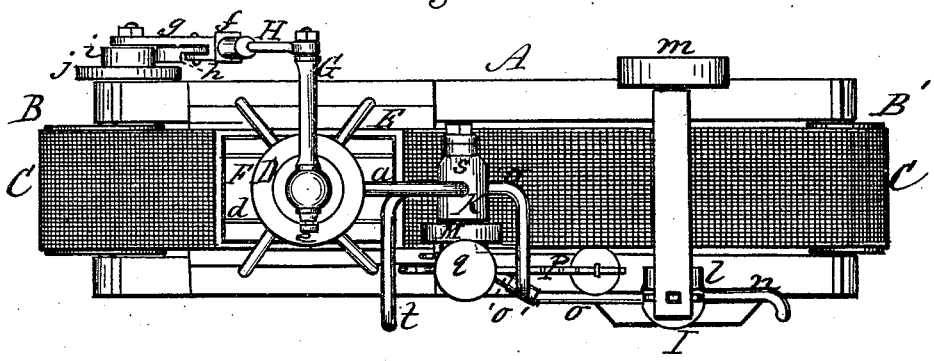


Fig. 2.



Witnesses.
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Atty.

2 Sheets—Sheet 2.

C. R. COWLEY & D. S. FARQUHARSON.

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Fig. 3.

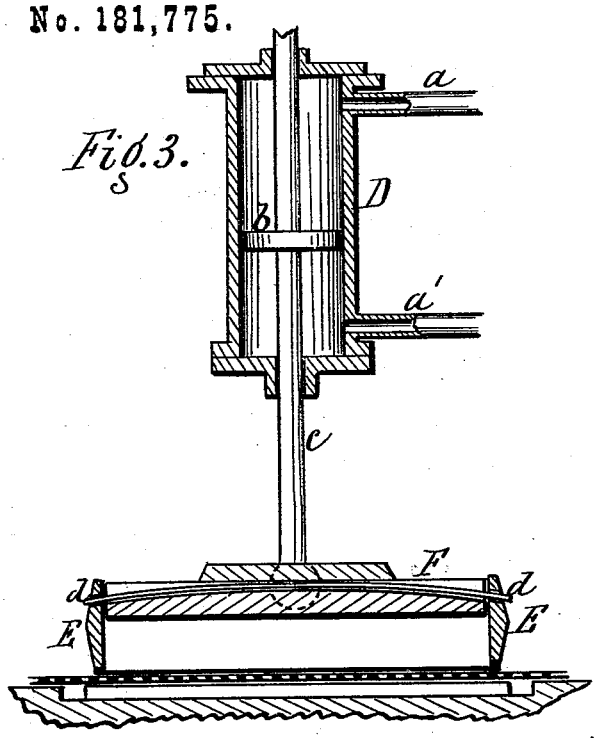


Fig. 4.

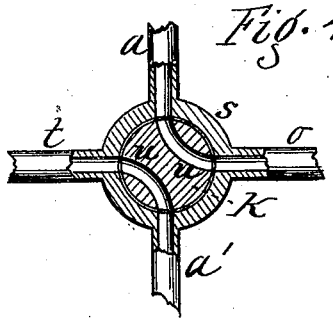


Fig. 5.

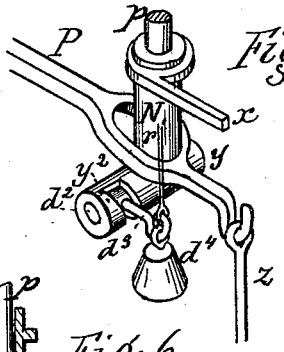


Fig. 7.

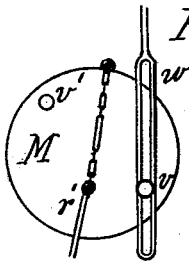


Fig. 6.

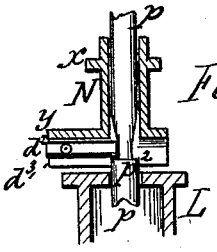
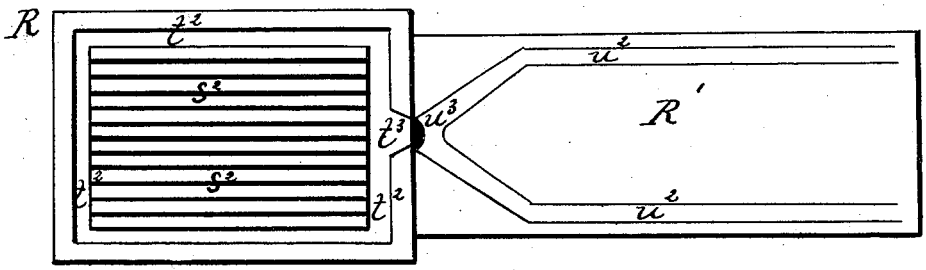


Fig. 8.



Witnesses.
Edwin B. Scott.
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UNITED STATES PATENT OFFICE.

COVEL R. COWLEY AND DUNCAN S. FARQUHARSON, OF ROCHESTER, N. Y.

IMPROVEMENT IN CIDER AND WINE PRESSES.

Specification forming part of Letters Patent No. **181,775**, dated September 5, 1876; application filed March 26, 1875.

To all whom it may concern:

Be it known that we, COVEL R. COWLEY and DUNCAN S. FARQUHARSON, both of the city of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Cider and Wine Presses; and we 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 accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a plan. Fig. 3 is an enlarged sectional view of the press-cylinder, curb, and follower. Fig. 4 is a cross-section of the four-way cock. Figs. 5, 6, and 7 are perspective, sectional, and elevation views, respectively, of the devices for shifting the cock. Fig. 8 is a plan of the bed and chute.

The prime feature of this invention consists of a curb and follower resting over an endless apron, and acted upon by a hydrostatic press, to force the curb and follower down to cut off a section of the pomace on the apron and express the juice therefrom; then to raise them again, while the apron makes a forward movement to bring a new section beneath the curb, the action being thus intermittent. It also further consists of a four-way cock of peculiar construction, a shifting device for changing the cock, and a bed beneath the endless apron for carrying off the juice, all constructed substantially as hereinafter described.

A is a frame of any convenient construction. B B′ are two rollers at the ends of the frame, and C is an endless apron of canvas passing around the rollers. D is a hydrostatic press resting over the front end of the machine, and sustained by strong rods bolted to the frame, or by any other means. It is fed by pipes *a a′*, opening into the top and bottom above and below the piston *b*. The piston *b* is attached to a rod, *c*, which extends above and below the cylinder. E is the curb, and F is the follower, which parts are connected with the rod *c* by a ball-and-socket joint, (shown by dotted lines, Fig. 3,) which enables said parts to adjust to position on the bed as they are forced down.

The curb is simply a rectangular frame, open at top and bottom, and having vertical walls on the inside for the play of the follower. The follower is of the same shape in outline, filling the area of the curb, and connected therewith by longitudinal springs *d d*, passing through holes in the ends of the curb, or by any other kind of springs that will hold the follower to the top of the curb when not under pressure. The edges of the follower which rest in the curb may be packed to prevent passage of the cider upward.

G is an arm attached to the upper end of the rod *c*, and made adjustable vertically thereon by means of a set-screw, *e*. To its outer end is jointed a connecting-rod, H. The bottom of the connecting-rod is similarly jointed to a block, *f*, which adjusts upon a pivoted arm, *g*, and is secured by a set-screw. This arm carries a pawl, *h*, which engages with a disk, *i*, operating a wheel, *j*, which engages with a pinion on the shaft of the pulley B, carrying the endless apron.

The operation of this part of our invention is as follows: The curb and follower are forced down by reason of the water being let in through the upper pipe *a*, and pressing downward upon the piston *b*. The curb strikes upon the apron and incloses a section of the pomace thereon, and when seated, the follower is then pressed down by the excess of pressure so as to express the juice. When a certain degree of pressure is attained, sufficient to express the juice, the ingress of water to the press is changed from the upper pipe *a* to the lower one *a′*, as will presently be described, and the follower and curb are thereby raised from the apron. In the upstroke, the arm G gives motion to the connecting-rod H, arm *g*, and pawl *h*, thereby operating the rim *i*, wheel *j*, and roller B, and feeding the apron along in position to receive another action of the curb and follower.

By the means above described, the apparatus acts intermittently, alternately pressing a section of the pomace upon the apron, and then moving the apron up for a new action, doing the whole work automatically, and discharging the dry pomace over the end of the apron.

If desired, the pomace may drop from the

grinding apparatus directly upon the rear end of the apron, and the pressing be done as fast as the apples are ground.

The lower edge of the curb is preferably made thin, so as to cut through the pomace readily. The ball-and-socket joint connecting the follower with the piston-rod is essential to allow the curb to adapt itself to position, and the follower to work without binding. The springs *d d* give the proper elasticity to the follower, as well as hold the follower up from the bottom of the curb, and they also serve as the connection between the follower and the curb, by which both parts are raised together in the upstroke of the piston.

I is the force-pump, by which water is forced to the hydrostatic press. Its piston-rod *k* is operated by a crank-wheel, *l*, driven by a pulley, *m*, on its shaft, or by any other means. *n* is the induction-pipe, and *o* is the eduction-pipe, connected with said force-pump. The eduction-pipe *o* extends to the four-way cock, and it also has a branch, *o'*, which opens into the base of a regulating-cylinder, L. This cylinder has a piston resting therein, whose rod *p* extends upward, and has a weight, *q*, on top. The regulating-cylinder also has a discharge-pipe, *r*, which allows escape of the dead-water therefrom. K is the four-way cock. It rests in a case, *s*, into which opens the four pipes *a a' o t*. The pipe *o* is the feeding-pipe from the force-pump to the cock, and the pipes *a a'* are the feeding-pipes from the cock to the hydrostatic press, as before described. The pipe *t* is simply a discharge or exhaust pipe for allowing escape of the dead-water from the press.

The cock is provided with curved ports *u u*, Fig. 4, so arranged that in making a quarter-turn of the cock the water is alternately turned on and off through the pipes *a a'* by the shifting of the ports from one pipe to the other. By this means, when the water is let on—say, through *a*—it is discharging through *a'* into the waste-pipe *t*, and vice versa. By this means the dead-water above or below the piston *b* is discharged without impeding the motion of the piston, and the whole is done automatically by the shifting device, as will presently be described.

M is a disk attached fast to the inner end of the cock, and having two pins or studs, *v v'*, Fig. 7, projecting from its face. To the weight *q* or rod *p* is attached a loop, *w*, which rests over the pin *v*. To a loose sleeve or tube, N, Figs. 5 and 6, which rests on the rod *p*, is attached an arm, *x*, that rests under the pin *v'*. The sleeve N has an offset, *y*, on which rests a lever, P, connected at the front end to a hinged link, *z*, which forms the fulcrum, and having on its long end a counter-weight, c^2, adjustable to any position by means of notches on the beam. Within the offset *y*, which forms a bearing, rests a short shaft or pin, d^2, having an arm, d^3, upon which is hung a light weight, d^4. The arm d^3 rests in an open slot having an inclined side, *y*. The weight d^4, pressing downward, bears the arm against this incline, and the tendency is to force the shaft d^2 in endwise. The rod *p*, in line with the shaft d^2, has a square shoulder, p^2, with which the end of the shaft d^2 engages when so forced inward. The end of the arm d^3 is connected with the outer edge of disk M, above the pin *v'*, by means of a chain or other flexible connection, *r'*, as shown.

The arrangement above described forms the shifting device to the cock. The operation is as follows: The water is forced by pump I, through pipe *o*, into and through the cock, and thence through pipe *a* into the top of the hydrostatic press. When a certain degree of pressure is attained, sufficient to express the cider under the follower, the overpressure through the branch *o'*, and beneath the piston in the regulating-cylinder L, raises the rod *p* and weight *q*. In rising, the loop *w* strikes the pin *v*, and turns the disk M, thereby shifting the cock. The piston-rod *p* then falls. This shifting motion slackens the chain *r'*, and allows the shaft d^2 to press inward. In the next upward stroke the shaft d^2 engages with the shoulder p^2, and the sleeve N rises with the pistod-rod. The arm *x* then strikes the pin *v'* and shifts the cock in the opposite direction. The weight c^2 serves simply to force the sleeve down with the piston-rod. In the down motion of the piston in the regulating-cylinder L the water in the cylinder beneath the piston is forced back through the branch pipe *o'*, and is then raised through pipe *o* with the water from the pump.

If desired, the chain *r'* may have a soft link, which will break when destructive pressure is applied, thereby allowing the piston in the regulating-cylinder to rise above the opening of waste-pipe *r*, and permitting escape of the water.

R is a bed, which rests beneath the curb E, and R' is a chute beneath the endless apron. The bed R is a raised platform, and has a removable rack, composed of slats s^2 s^2, Fig. 8, which is surrounded by a groove, t^2, ending at the inner extremity in a spout, t^3. The chute R' has corresponding grooves u^2 u^2, ending in a common discharge, u^3. At this point a side spout may run out to discharge the cider into a suitable vessel.

The bed R serves to receive the pressure of the curb and follower, and the liquid which passes through the apron runs between the slats and discharges into the grooves t^2 t^2, and is run off through spout t^3. The liquid which passes through the endless apron before reaching the curb is received by the chute R', and discharged by the grooves u^2 u^2. The bed R is essential to receive and support the apron under the pressure of the curb and follower, and its slatted form is necessary to allow the liquid a ready passage and prevent it from running off at the sides under the heavy pressure.

This press is adapted to pressing wine and other liquids, as well as cider.

Having thus described our invention, we do not claim in this application, broadly, the four-way cock shown in Fig. 4, as the same will be the subject of a separate application by Duncan S. Farquharson. Neither do we claim, broadly, the use of springs such as are shown in Patent No. 73,690; but

What we claim as new is—

1. The combination, with the endless apron C, of the curb E and follower F, said parts receiving an intermittent action, and operating in the manner and for the purpose specified.

2. The combination, with the curb E and follower F, of the springs *d d*, secured in the middle to the follower, and passing at the ends through sockets of the curb, whereby the follower is made elastic in its action, and is raised to the top of the curb when not under pressure, as herein shown and described.

3. The combination, with the curb E and follower F, of the hydrostatic press D, feeding-pipes *a a'*, and the four-way cock K, for operating the curb and follower alternately in opposite directions, as shown and described.

4. The combination, with the force-pump I and cock K, of the regulating-cylinder L, provided with a weighted piston, and with a shifting device for changing the cock, as shown and described.

5. The combination, with the cock K and the piston of the regulating-cylinder L, of the sleeve N, weighted shaft d^2, shoulder p^2, the chain r', and the stop w and arm x, connecting with the stops v v' on the disk M of the cock, as and for the purpose specified.

6. The bed R, consisting of a raised platform, resting under the curb and supporting the endless apron, and constructed with the slats s^2 s^2 and grooves t^2 t^2, for allowing ready escape of the expressed juice, as described.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

COVEL R. COWLEY.
D. S. FARQUHARSON.

Witnesses:
R. F. OSGOOD,
EDWIN B. SCOTT.