

(No Model.)

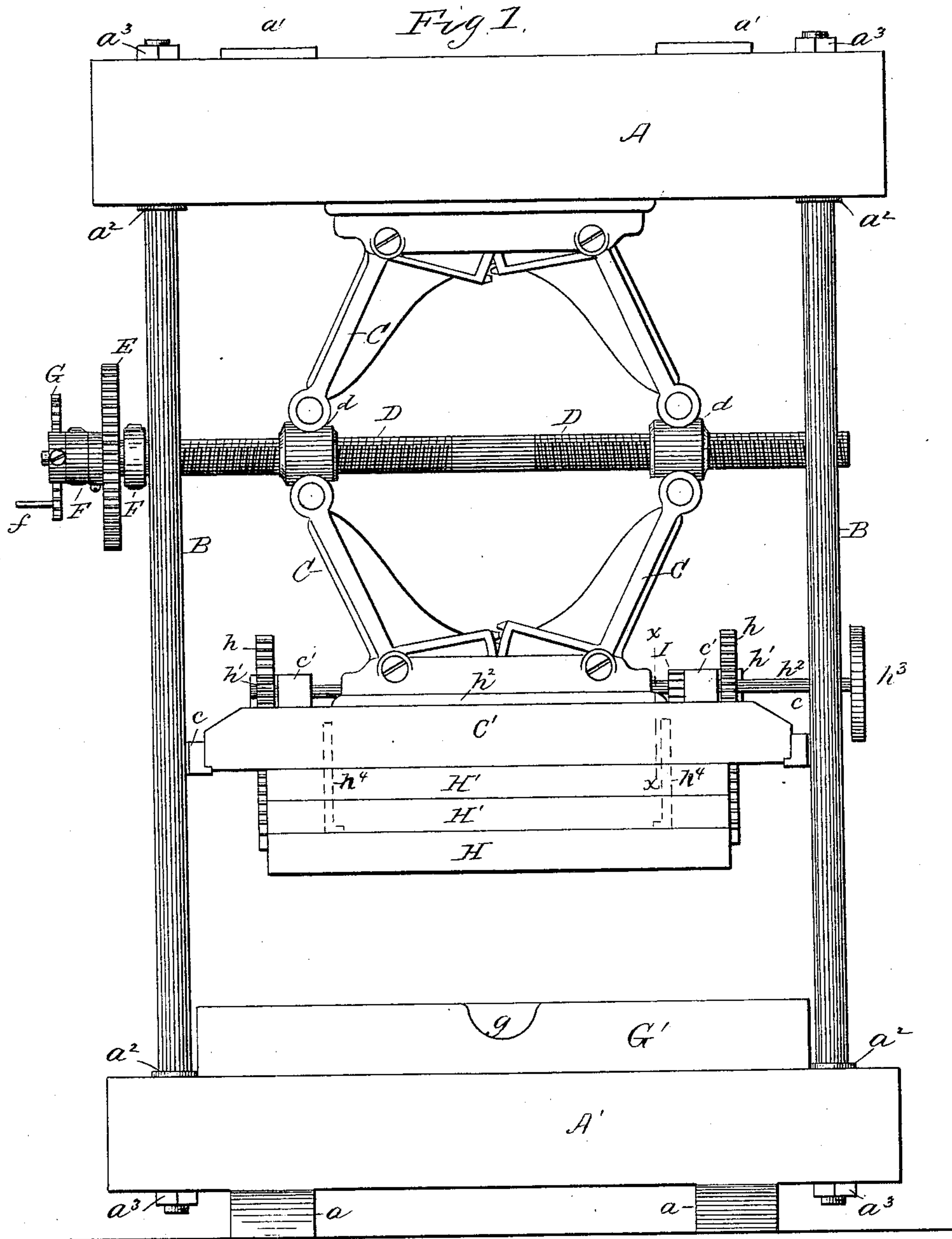
2 Sheets—Sheet 1.

R. BUTTERWORTH.

CIDER PRESS.

No. 368,276.

Patented Aug. 16, 1887.



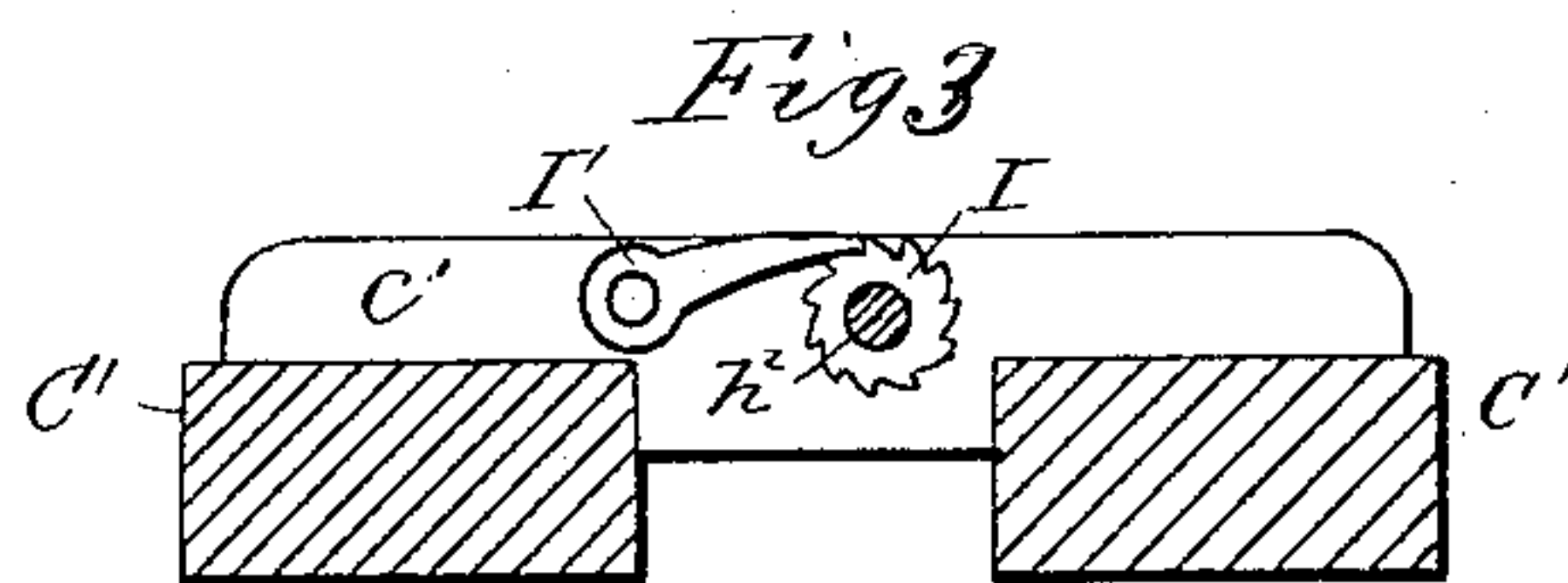
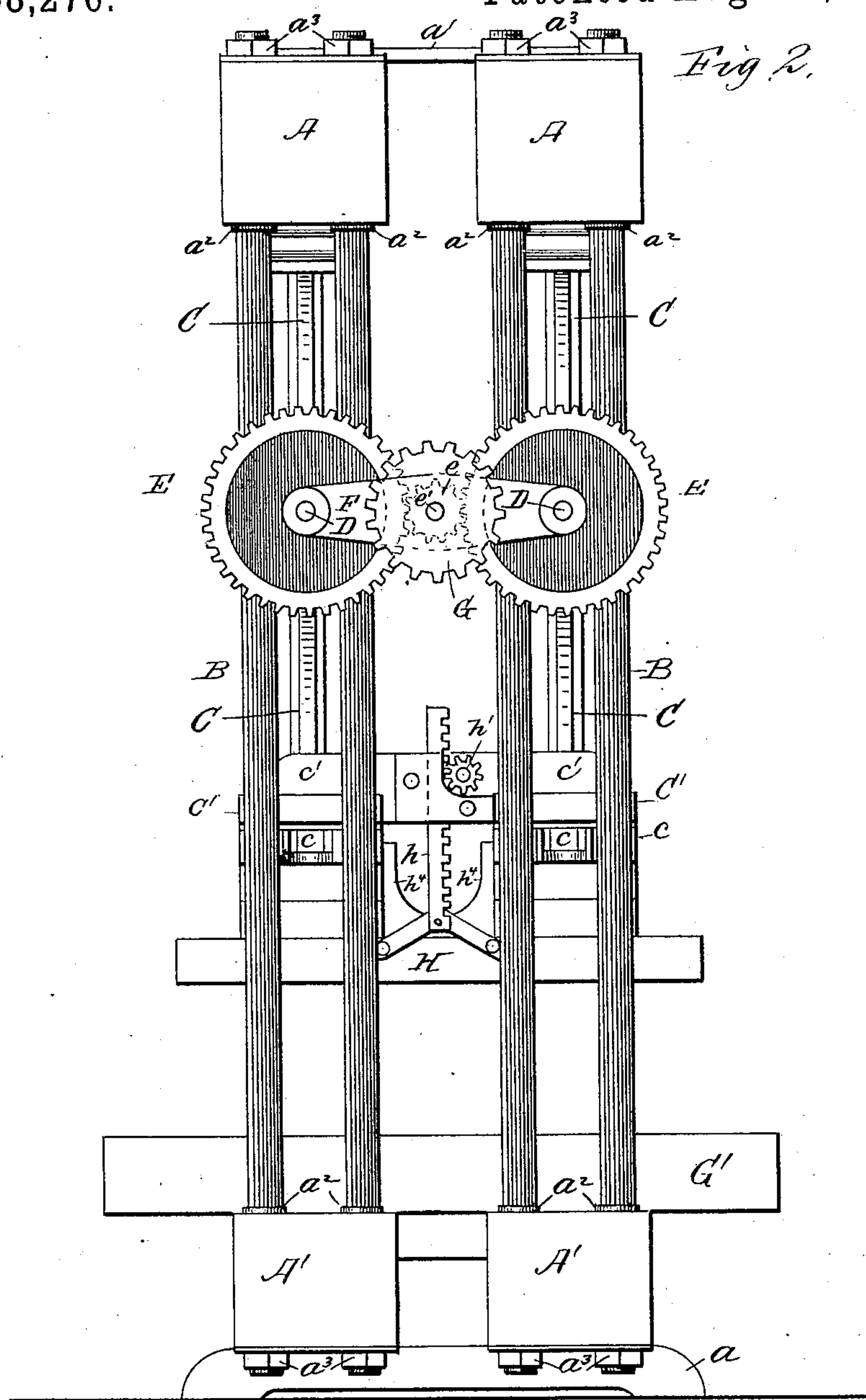
Witnesses:
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2 Sheets—Sheet 2.

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By Marble & Mason,
Attys.

UNITED STATES PATENT OFFICE.

ROBERT BUTTERWORTH, OF TRENTON, NEW JERSEY.

CIDER-PRESS.

SPECIFICATION forming part of Letters Patent No. 368,276, dated August 16, 1887.

Application filed May 9, 1887. Serial No. 237,603. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BUTTERWORTH, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Cider-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-
10 pertains to make and use the same.

My invention relates to improvements in cider-presses; and it consists in the peculiar construction and combination of parts, which will be fully hereinafter described, and definitely
15 pointed out in the claims.

The main object of my invention is to produce a double power-press for extracting juice or cider from fruit, in which the parts are so constructed and arranged that a comparatively
20 small amount of power applied to the operative mechanism will exert an amount of pressure upon the fruit which will insure thorough extraction of the juice therefrom.

A further object of my invention is to provide means for adjusting the pressure plate or plates, whereby they may be raised or lowered to suit the depth or size of the material which is to be operated upon thereby.

I attain these objects by the mechanism illustrated in the accompanying drawings, wherein the same letters of reference indicate the same or corresponding parts, and in which—

Figure 1 shows a front elevation of my improved press; Fig. 2, an end elevation, and
35 Fig. 3 a detail section taken through the line *x x* of Fig. 1.

In the drawings, A A and A' A' represent two sets of upper and lower frame-pieces, the latter being connected by and mounted upon the supports *a a* and the former united by the
40 braces *a' a'*, said supports and braces serving to prevent the frame-pieces from spreading laterally; also, said upper and lower frame-pieces are united at each end by four upright tie-rods, B B, which pass therethrough, and
45 are provided near their ends with shoulders *a²* *a²* and at their ends with locking-nuts *a³* *a³*, which operate to rigidly hold said frame-pieces in vertical alignment.

50 C C represent two sets of toggle-levers, there being four levers to each set, the upper mem-

bers thereof being pivoted at their upper ends in bearings secured to the under sides of the upper frame-pieces, A A, while the lower members are pivotally connected to bearings se-
55 cured to the upper sides of the followers C' C'. These followers are arranged longitudinally of the machine and have their ends provided with projections *cc*, which extend out between the upright tie-rods B B, and thus guide said
60 followers and prevent any lateral play thereof, and at the same time admit of their free upward and downward movement; also, said two sets of followers are connected by braces *c' c'*, secured to their upper surfaces.
65

In order to move the toggle-levers for raising and lowering the followers C' C', operating-screws D D are employed, which are provided with right and left hand threads, passing through correspondingly-threaded nuts *d* *d*,
70 to which the inner ends of the toggle-levers are secured. These operating-screws are extended out between and beyond the upright tie-rods B B at one end of the machine, and have gear-wheels E E secured thereto.
75

The screws are connected together on each side of said gear-wheels by yokes F F, which not only form braces for the outer ends of said screws, preventing any lateral movement thereof, but serve as supports for the central
80 power-transmitting devices. These devices consist, preferably, of the central pinion, *e*, which is mounted on the short shaft *c'*, journaled in said yokes and meshing with the gear-wheels E E, and of the sprocket-wheel G,
85 which is mounted upon the outer end of said short shaft and receives power from any suitable source. A hand-crank, *f*, may be applied to said sprocket-wheel for operating the same, if
90 desired; also, instead of cog-wheels, I may employ an endless chain belt and sprocket-wheels for operating the screws.

G' represents the press-bed, which rests upon the lower frame-pieces, A' A', and is provided with the usual gutter or spout, *g*, in its side
95 for the discharge of the juice into any suitable receptacle.

Located beneath the followers C' C', and extending out beyond the sides of the same, is a single pressure-plate, H, (but it may be made
100 in two parts, if desired,) which is not only adapted to be moved up and down therewith,

but is adjustable independently thereof. To this end I employ the rack-bars $h h$, which are secured to the ends of said pressure-plate H , and pass up through vertical grooves formed in the connecting-braces $c' c'$, their toothed surfaces meshing with pinions $h' h'$ on the shaft h^2 , which is journaled in bearings in said connecting-braces. The shaft h^2 extends the entire length of the followers $C' C'$ and has on one of its ends a hand-wheel, h^3 , by which it is revolved for moving the pressure-plate up or down. In order to raise or lower said pressure-plate and adjust its position with respect to the depth or size of the cheese or material to be pressed, the rack-bars $h h$ are raised or lowered by the hand-wheel h^3 of the shaft h^2 and the pinions $h' h'$, and thus the distance between the press-bed or the material thereon and the pressure-plate is increased or decreased, as desired.

As the rack-bars and pinions sustain the weight of the pressure-plate, it is necessary to provide means for preventing said rack-bars from moving down over the pinions and dropping said pressure-plate; hence I place the ratchet-wheel I on the shaft h^2 and engage and hold the same by a pawl, I' , which is pivotally mounted on the side of one of the connecting-braces $c' c'$. When it is desired to lower the pressure-plate, the pawl is released from the ratchet-wheel, then it is again engaged therewith for holding said pressure-plate in the position in which it has been adjusted.

When the pressure-plate has been thus adjusted, or before, I introduce between the same and the followers one or more pieces or blocks of wood or other suitable material, $H' H'$, according to the size of or depth of the material beneath said plate; also, in order to prevent too far inward or side movement of said blocks, I mount upon the pressure-plate, at short distances from the ends thereof, two risers or brackets, $h^4 h^4$, of the form shown in Fig. 2. These blocks are of uniform thickness, and hence transmit uniform pressure from the followers to the pressure-plate, and have the same effect as if they and said followers and pressure-plate were constructed as one single or solid piece.

It will be obvious that, by means of the capability of adjustment of the parts named, when the toggle-levers assume perpendicular positions and the followers are as low as they will ordinarily go it will be possible to still further lower the pressure-plate and further diminish the volume of the cheese or material beneath the same, and thus save a great quantity of juice that is ordinarily lost by being thrown out with the pomace; also, from the foregoing it will be obvious that my improvements combine immense power with great ease of movement, that the press, while designed to be worked by power, can be worked by hand, that it is adapted to operate upon an uneven-shaped or small cheese just as effect-

ally as upon one that is regular and full sized—a point of great value in custom presses—and that through the adjustability of the pressure-plate or plates great quantities of juice are saved which are usually lost.

I am aware that there is at present a great variety of toggle-lever presses, and that toggle-levers operated by screws having right and left hand threads are not of my invention; but I am not aware that a press has ever been invented which contains the advantages and peculiarities of construction which are incident to mine.

Having thus fully described my invention, what I claim as new is—

1. In a press, the combination of the followers, toggle-levers, the right and left threaded screws provided with gear-wheels, the yokes on opposite sides of said gear-wheels connecting said screws, and means for revolving said gear-wheels, substantially as described.

2. In a press, the combination of the followers, the toggle-levers, the operating-screws provided with the gear-wheels, the yokes arranged on each side of said gear-wheels and connecting said screws, the power receiving and transmitting devices arranged centrally of and upon said yokes for imparting motion to said gear-wheels and screws, consisting of the short shaft having a pinion on its inner end and a sprocket-wheel on its outer end, substantially as described.

3. In a press, the combination of the pressure-plate, the followers, the two sets of toggle-levers, each set comprising four levers, the right and left threaded screws provided with gear-wheels on their ends, and the power-transmitting gears, substantially as described.

4. In a press, the combination of a follower, the adjustable pressure-plate provided with rack-bars for connecting said plate to the follower, a shaft provided with pinions, and means for preventing movement of said rack-bars and pinions, and thus holding said pressure-plate in its adjusted position, substantially as described.

5. In a press, the combination of the followers having the connecting-braces, the adjustable pressure-plate provided with rack-bars for connecting said plate to the followers, the shaft journaled in said connecting-braces and provided with the ratchet-wheel, pinions, and hand-wheel, and a pawl, substantially as and for the purpose set forth.

6. The combination of a follower, the adjustable pressure-plate provided with rack-bars for connecting said plate to the follower, and means for holding the latter in different positions, with blocks interposed between said followers and pressure-plate for securing firmness or steadiness between the same, and thus insuring accuracy of pressure, substantially as described.

7. The combination of the followers, the pressure-plate, and the blocks, with the risers

or brackets mounted upon said pressure-plate and between said followers and blocks for preventing undue inward movement thereof, substantially as described.

- 5 8. A cider-press comprising the press-bed, the head-blocks, the upright tie-rods, the two sets of toggle-levers, the two followers, the adjustable pressure-plate, the blocks interposed between said followers and pressure-plate, and

devices, as described, for adjusting and holding the latter, substantially as described.

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

ROBERT BUTTERWORTH.

Witnesses:

GEORGE W. SPRACKLEN,
L. L. HOWELL.