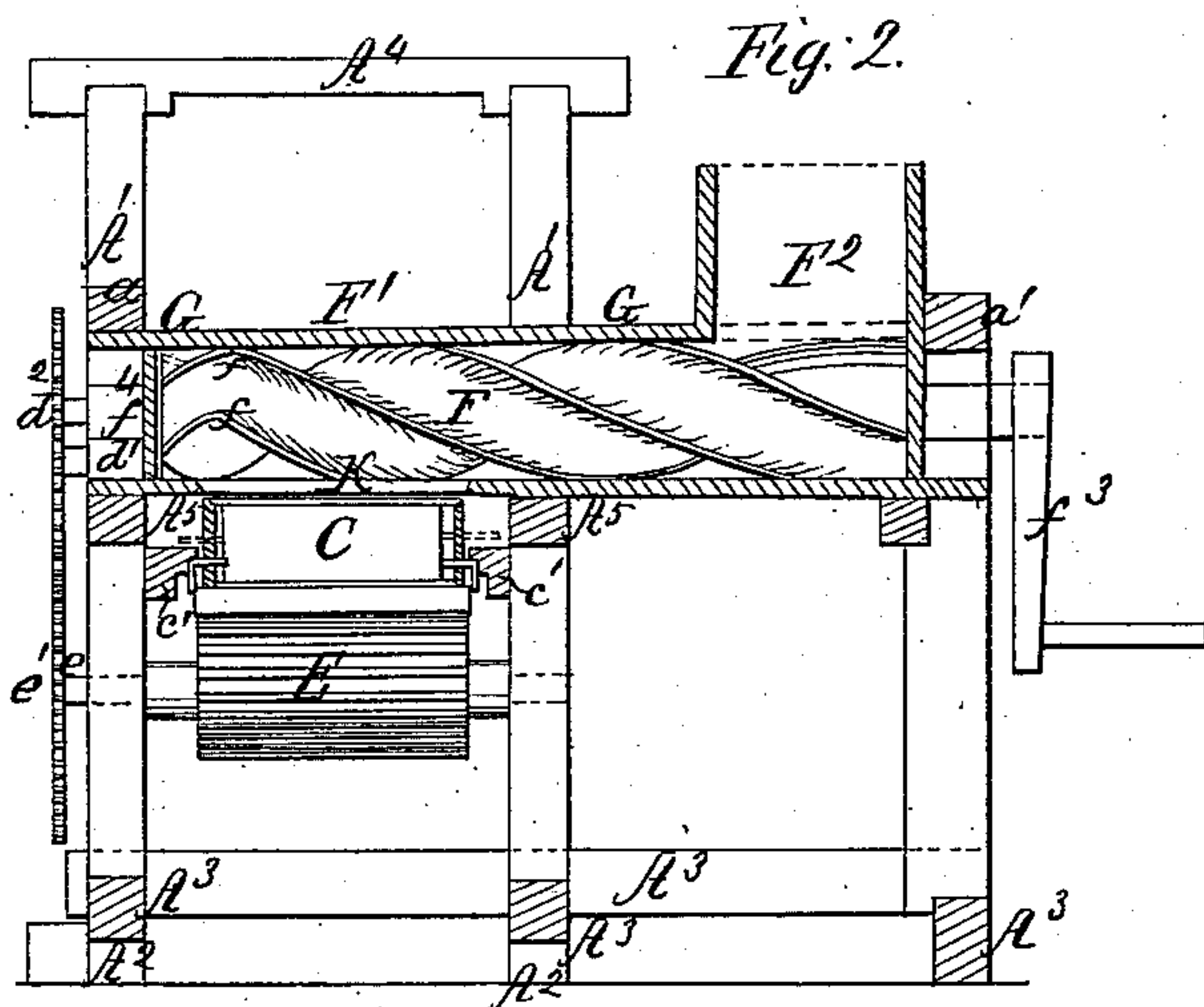
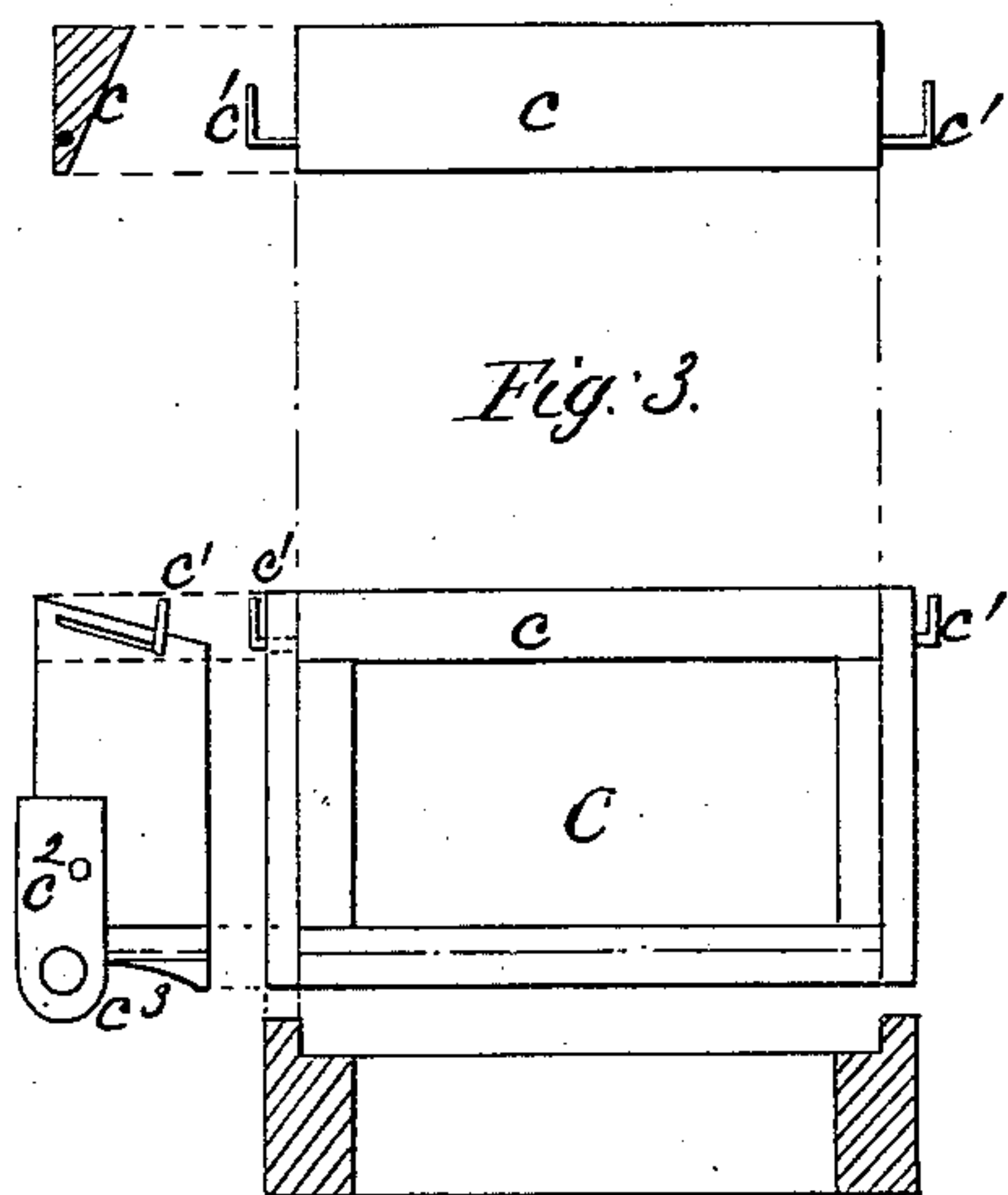
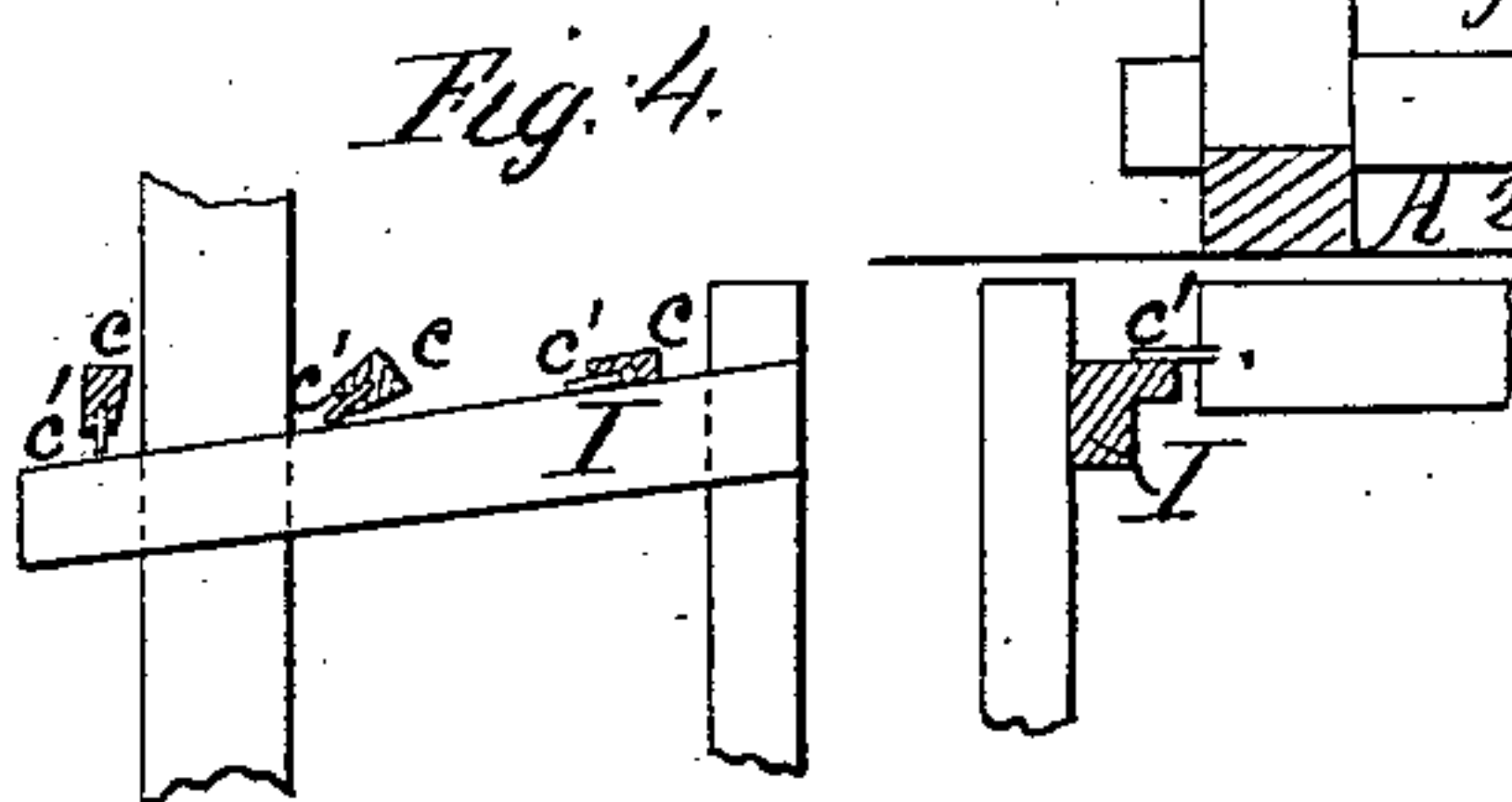
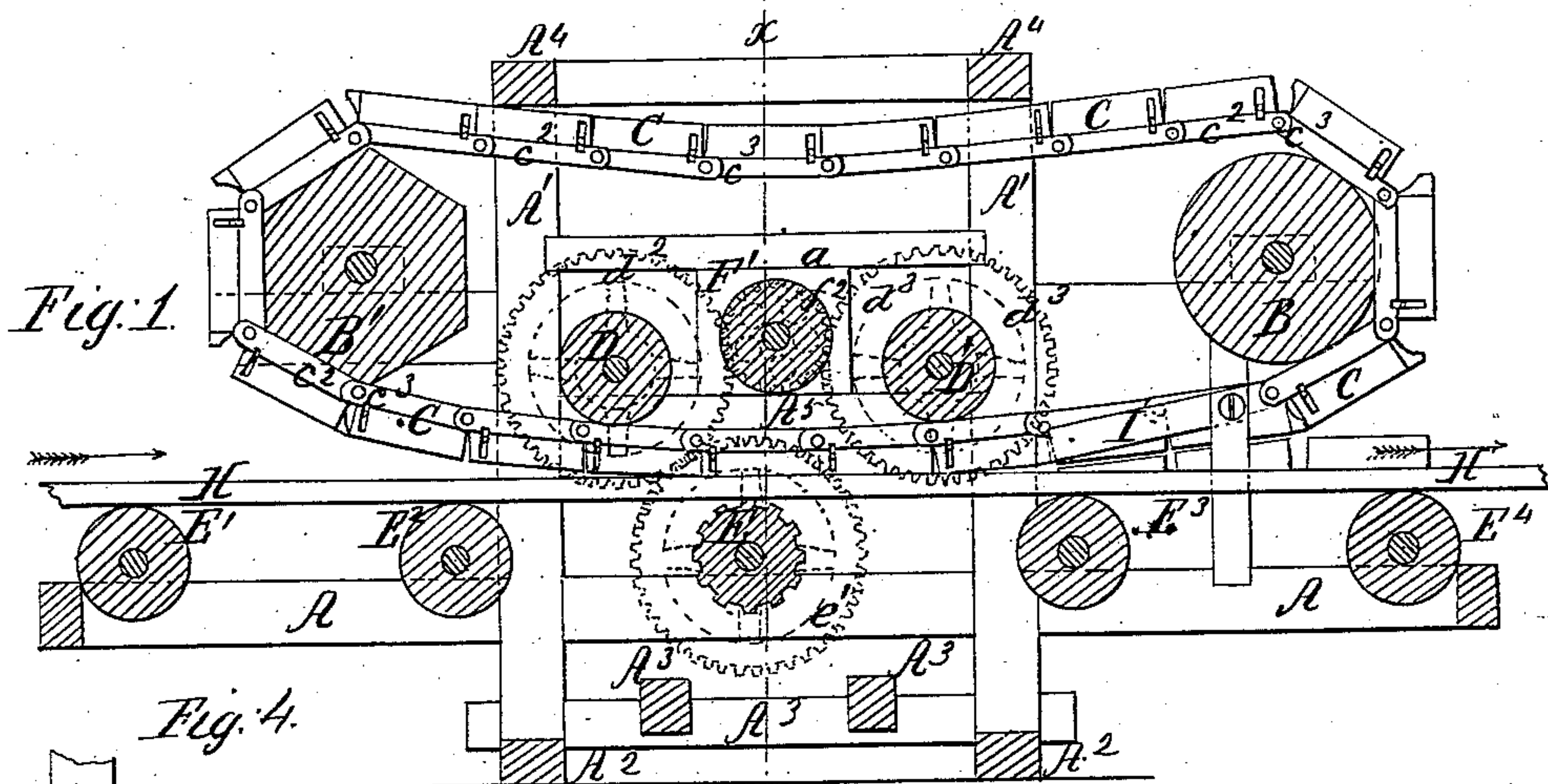


## Brick Machine.

N<sup>o</sup> 84,727.

*Patented Dec. 8, 1868.*



Witnesses;  
Edwin James.  
W B Phillips.

Inventor;  
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# United States Patent Office.

ELI S. BITNER, OF LOCK HAVEN, PENNSYLVANIA.

Letters Patent No. 84,727, dated December 8, 1868.

## IMPROVED BRICK-MACHINE.

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

To all whom it may concern:

Be it known that I, ELI S. BITNER, of Lock Haven, county of Clinton, and State of Pennsylvania, have invented certain new and useful Improvements in Brick-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, and the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a longitudinal elevation of the machine, partly in section.

Figure 2 is a transverse section on the line  $x-x$  of fig. 1.

Figure 3, detail plans of the mould-boxes.

Figure 4 is a plan view of the inclined planes, showing their action upon the crank-ends of the mould-boxes.

In brick-machines working over cylinders and on continuous bands or endless chains, as heretofore constructed, great difficulties have occurred in discharging the bricks from the moulds. Various methods have been adopted to overcome these difficulties, but the machinery has been so complicated, that its liability to get out of order has prevented its universal adoption. I provide a simple apparatus, and employ but few means to produce the desired result.

The moulds, in my machine, are constructed open at top and bottom. One side is made of a movable piece, and is pivoted to the ends, in which slots are cut at a slight angle from a perpendicular. These pivots are made with crank-ends which project out a convenient distance beyond the sides, to catch over the inclined planes at the rear end of the frame-work, and, as these crank-ends are carried up the inclined planes, they have a rotary motion given them, which causes the false or movable side also to slightly turn up, as well as to be moved away from the moulded brick, thus relieving it, and enabling it immediately afterwards to slide bodily and squarely out upon the board.

The chain of moulds continuing to revolve, the movable side being displaced, is again put in position as the moulds pass under the first pressure-roller, before they pass to the feed-hopper. The clay is then deposited in the mould, which passes to the second pressure-roller, and so on to the inclined planes. When the moulds reach this point, by the action of the inclined planes upon the crank-ends of the mould-boxes, the brick is deposited upon one of a series of boards, said boards being moved forward upon rollers acted upon by the main driving-power of the machine.

The screw in my hopper is constructed like all feed-screws, except at the lower end, the threads, instead of continuing the regular pitch to the end, are to be turned back at any convenient angle, and the end of the screw, to the full diameter of the threads, is to be finished with a solid disk. The object in thus turning the threads, and the use of the disk, is to prevent the crowding of the material upon the end of the trough, and choking or jamming the screw.

I also construct the frame-work which holds the pressure-rollers and the feed-trough, in such a manner that the pressure upon the moulds can be increased or diminished, and also, to act with elasticity should stones or other hard substances be conveyed to the moulds.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A is the main frame of the brick-machine, which may be made of timber or of metal, having the bearings of all the rollers appropriately placed on the side sills.

The uprights  $A^1 A^1$  have bottom cross-sills,  $A^2 A^2$  and  $A^3 A^3$ , and top plates,  $A^4 A^4$ , to brace the whole in a substantial manner.

B and  $B^1$  are large rollers, at the ends of the frame, around which the endless chain is conveyed. B is a cylindrical and  $B^1$  a hexagonal roller.

C C is the endless chain of mould-boxes, constructed to match into each other, having common partitions, and each a movable slide,  $c$ , with crank-pivots,  $c^1$ , fastened to a side chain,  $c^2$ , pivoted at  $c^3$ .

D and  $D^1$  are the pressure-rollers, having on the ends of their shafts,  $d$  and  $d^1$ , spur-wheels,  $d^2$  and  $d^3$ .

E is a feed-wheel, corrugated longitudinally, having on its shaft  $e$  a wheel,  $e^1$ .

F is the screw, enclosed in a box,  $F^1$ , which communicates with the hopper  $F^2$ . The threads of the screw are returned at  $f$ , and  $f^1$  is a disk on the end of the screw-shaft. On the outer end of the shaft is a pinion,  $f^2$ , and on the other end of the shaft is a crank,  $f^3$ .

G is the board covering the screw-box, and which is under the cross-beams  $a$  and  $a^1$ .

$E^1 E^2 E^3 E^4$  are rollers, for supporting the planks H H.

H H are planks, upon which the brick are deposited after leaving the moulds. These planks are carried forward by the action of the feed-wheel E.

The gearing is shown in red, fig. 1.

I is the inclined plane.

K is the vent in the feed-box.

The operation is as follows:

The clay, properly prepared in a pug-mill, or by any usual process, is fed into the upright hopper  $F^2$ , and, by the action of the screw F, it is drawn to the vent K, in the bottom of the box, and is gradually fed to the moulds as they pass under.

The gearing on the side of the frame, shown in red, fig. 1, having wheels  $d^2 d^3$  to the ends of the shafts  $d$  and  $d^1$  of the first and second pressure-rollers, meshes into the pinion  $f^2$  on the end of the feed-screw F, and into the wheel  $e^1$  on the end of the corrugated feed-roller E, under the board H, and which, by its rotary action, carries the board along out of the machine, in the direction of the arrow.

These gear-wheels are adjusted as to speed in such a manner that they effect precisely in proper periods



of time the several objects of feeding the clay, conveying the moulds, and also moving the plank out of the machine; and the crank, which is here placed on the end of the feed-screw, can be placed upon either of the other rollers to suit mechanical conveniences, or, if the machine is to be run by any outside power, a pulley can be substituted, and a belt be used from any such motor.

The frame  $A^5$  is made separately from the main frame A, to carry the rollers D D', the feed-box F' with the screw F, and the hopper F<sup>2</sup>, and is so arranged that it bears upon the moulds of the chain, and, should there at any time be stones or other unyielding substances mixed with the clay, the frame will rise so as not to derange the rollers; and, should the weight of the frame not be sufficient to produce a proper impression on the moulds, as they pass under it, the proper pressure can be obtained by the use of springs under the beam  $a$ , or additional weights upon the covering-board G.

Having thus fully described my invention,

What I claim therein as new, and desire to secure by Letters Patent of the United States, is—

1. The pressure-rollers D D' in the movable frame  $A^5$ , chain of moulds C, plank H, and corrugated feed-roller E, constructed and arranged substantially as and for the purposes herein set forth.

2. The mould C, when provided with the movable side  $c$ , and crank-pin  $c'$ , operated by contact with the inclined planes I, and pressure-roller D, substantially as and for the purposes herein described.

3. The combination of the feed-screw F, when deflected at  $f$ , with the disk  $f'$  and feed-box F', all constructed and operating substantially as and for the purposes set forth.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ELI S. BITNER.

Witnesses:

EDWIN JAMES,

JOHN S. HOLLINGSHEAD.