

C. V. HEMENWAY, F. W., & W. H. BENNETT, & T. KIRK.  
Brick-Machine.

No. 225,283.

Patented Mar. 9, 1880.

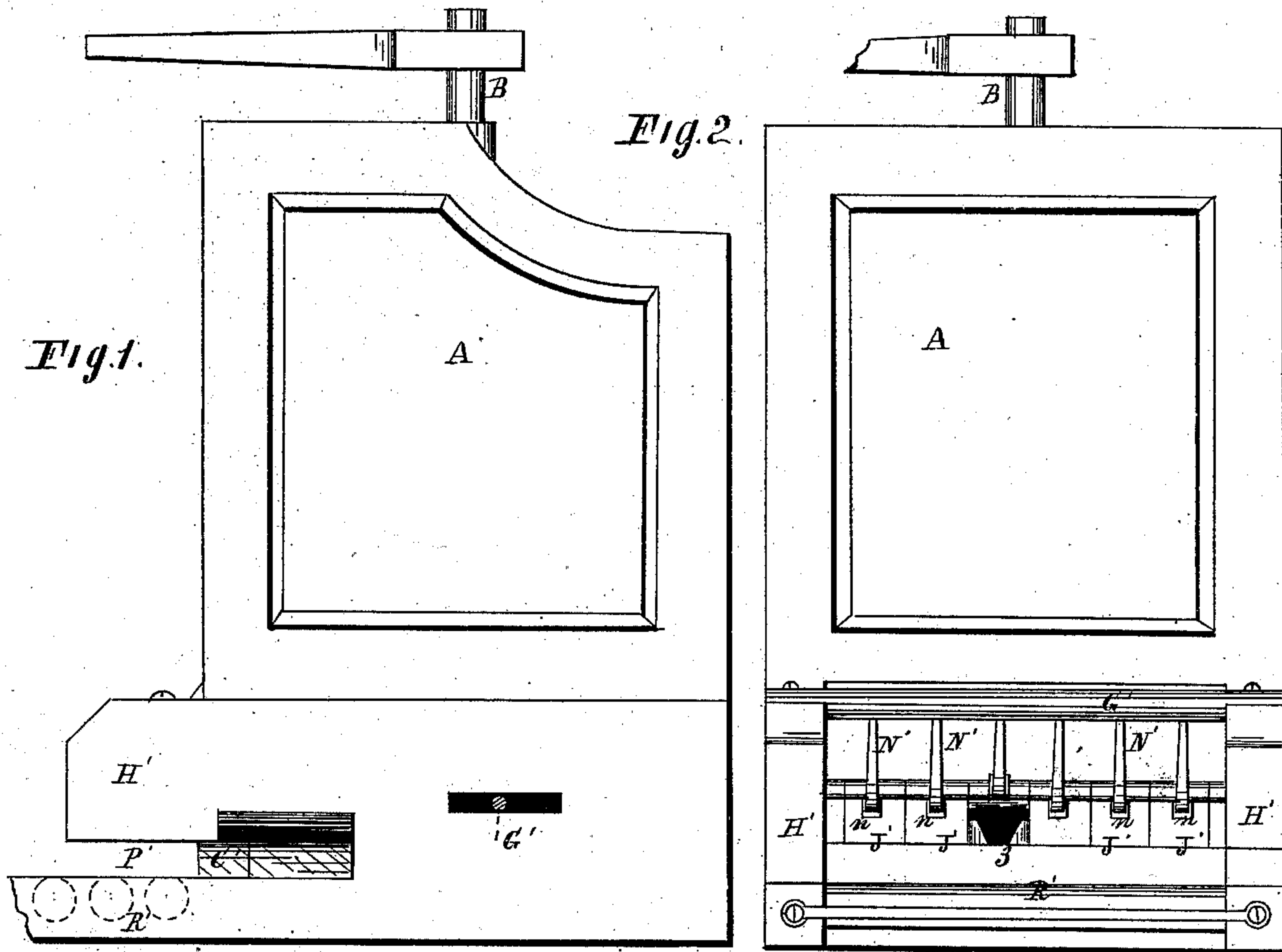


Fig 3

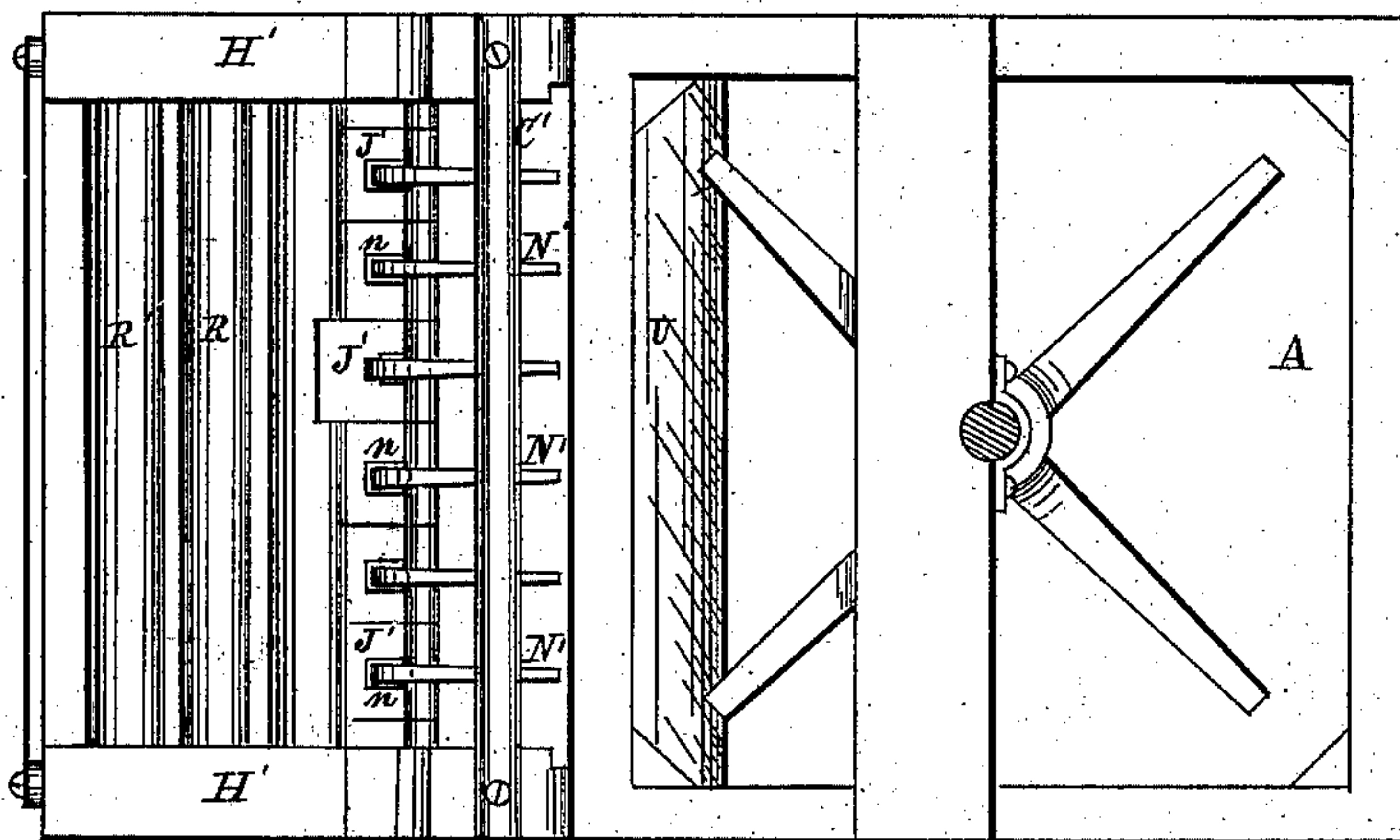
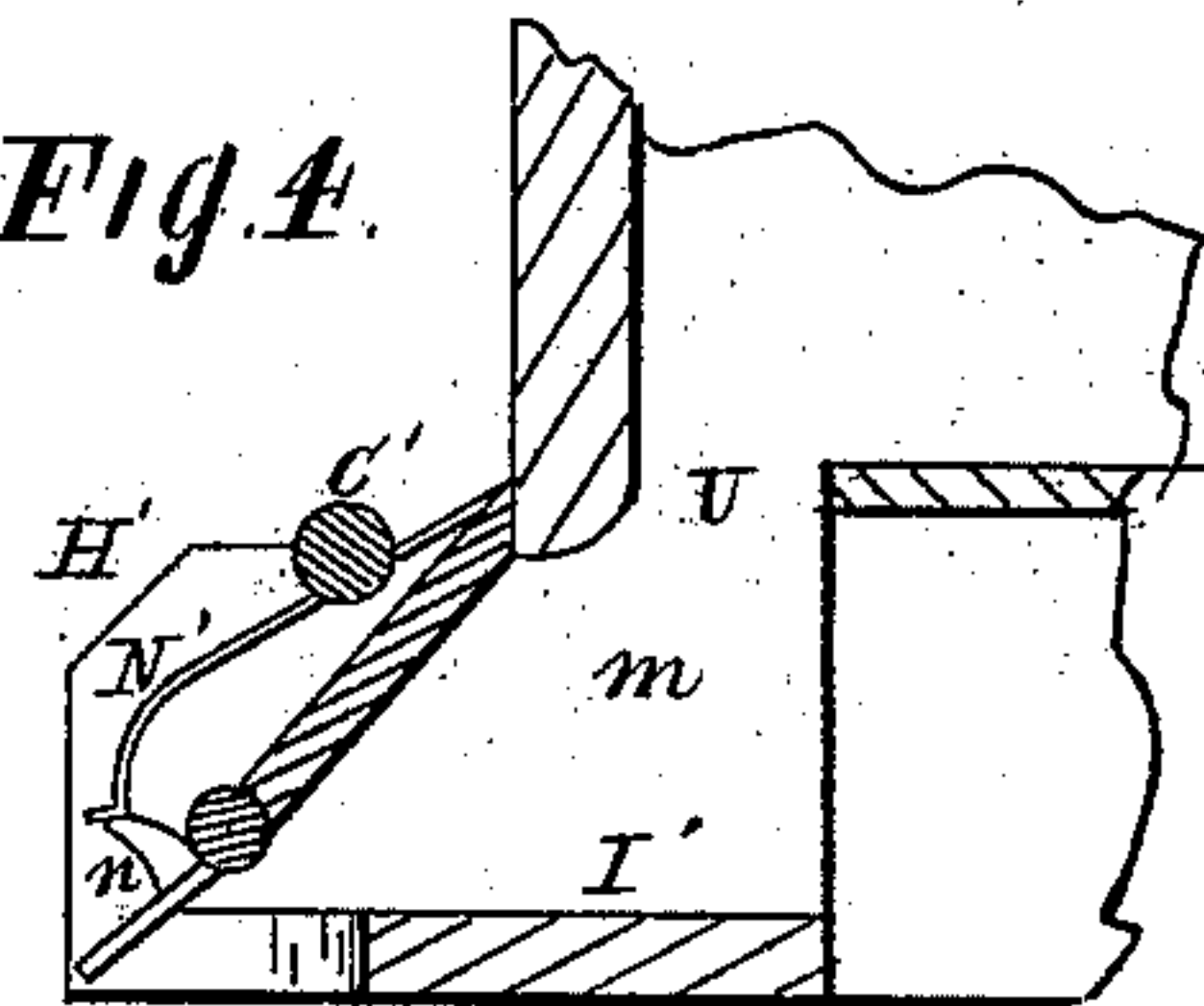


Fig. 4.



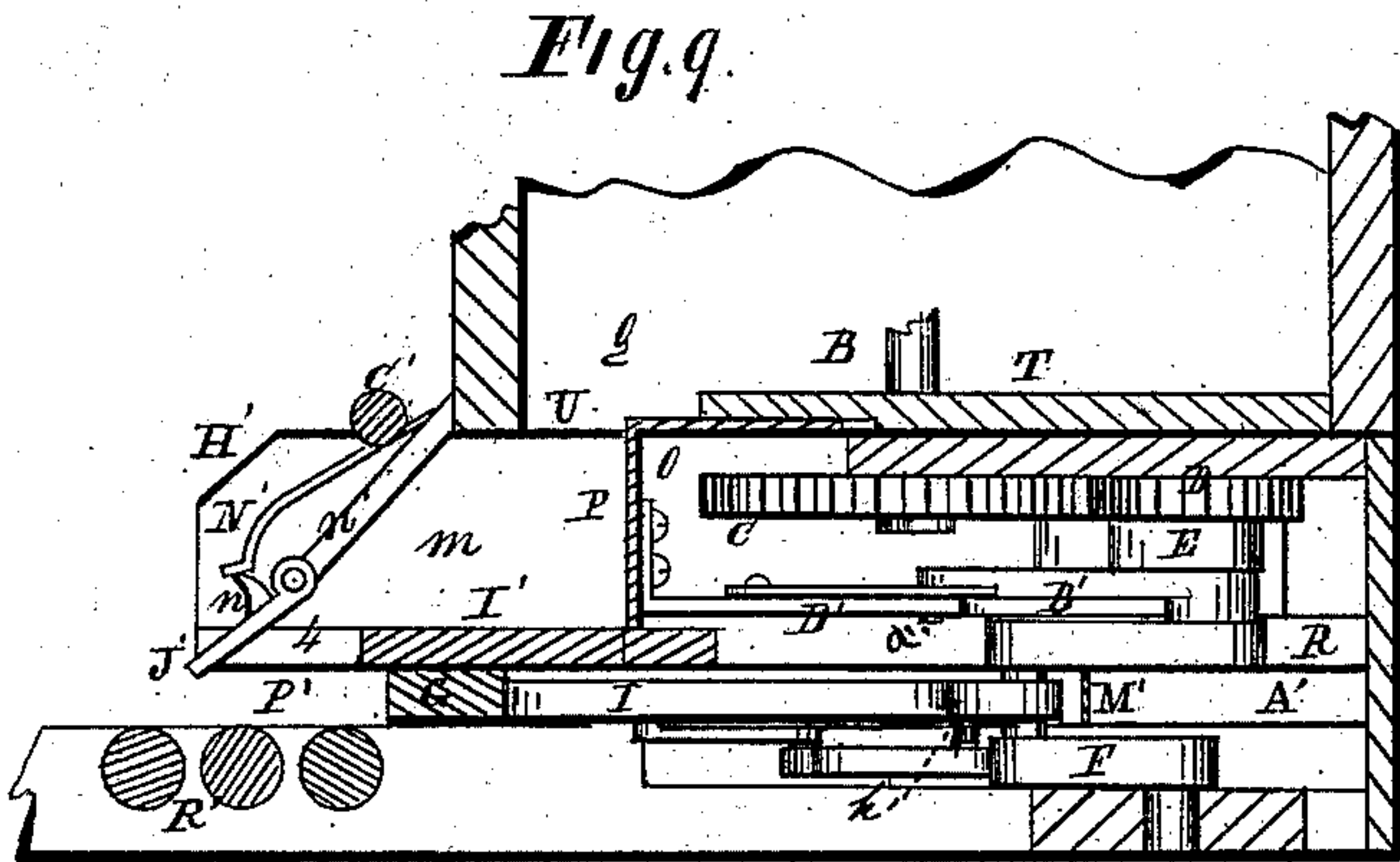
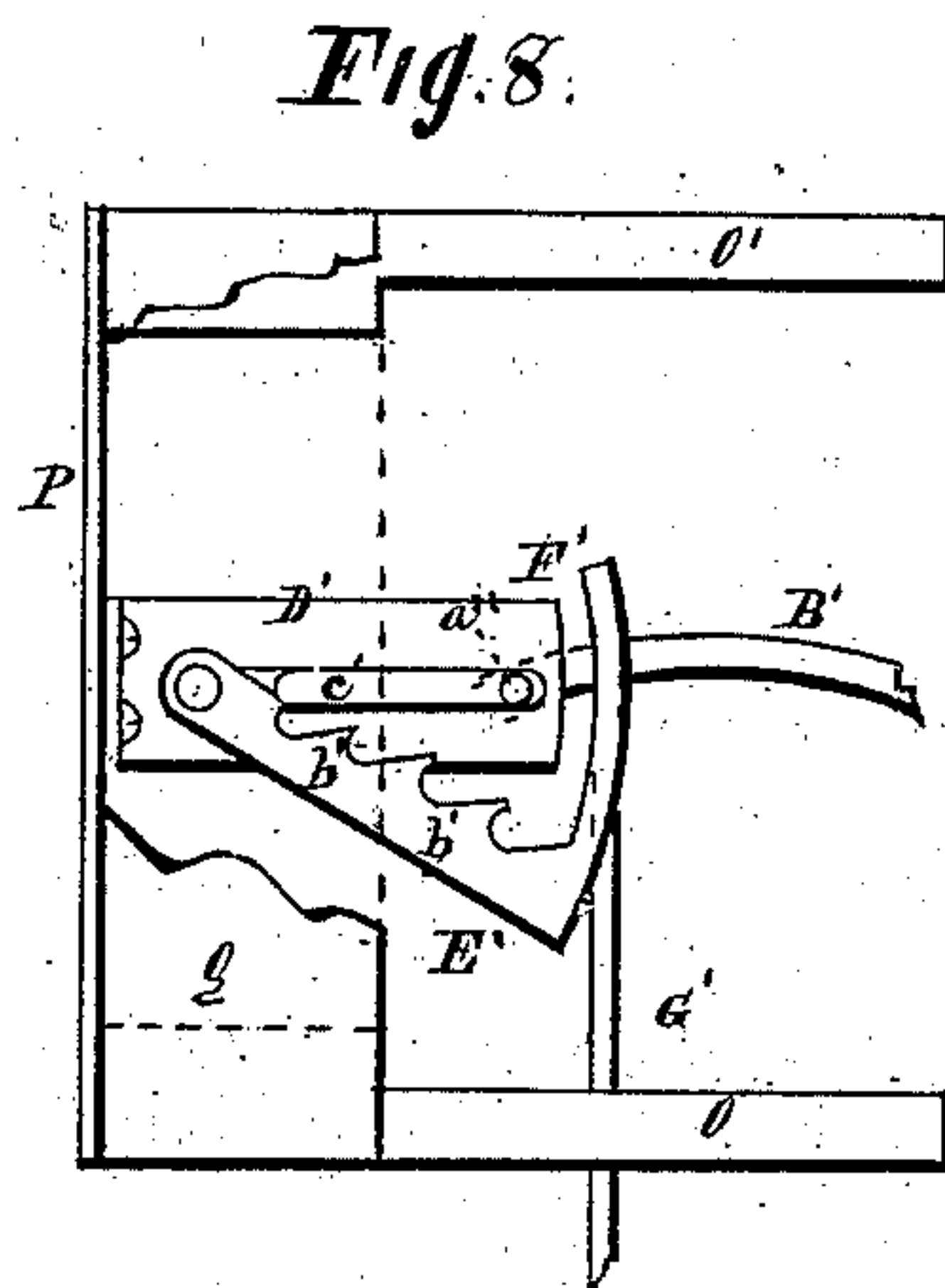
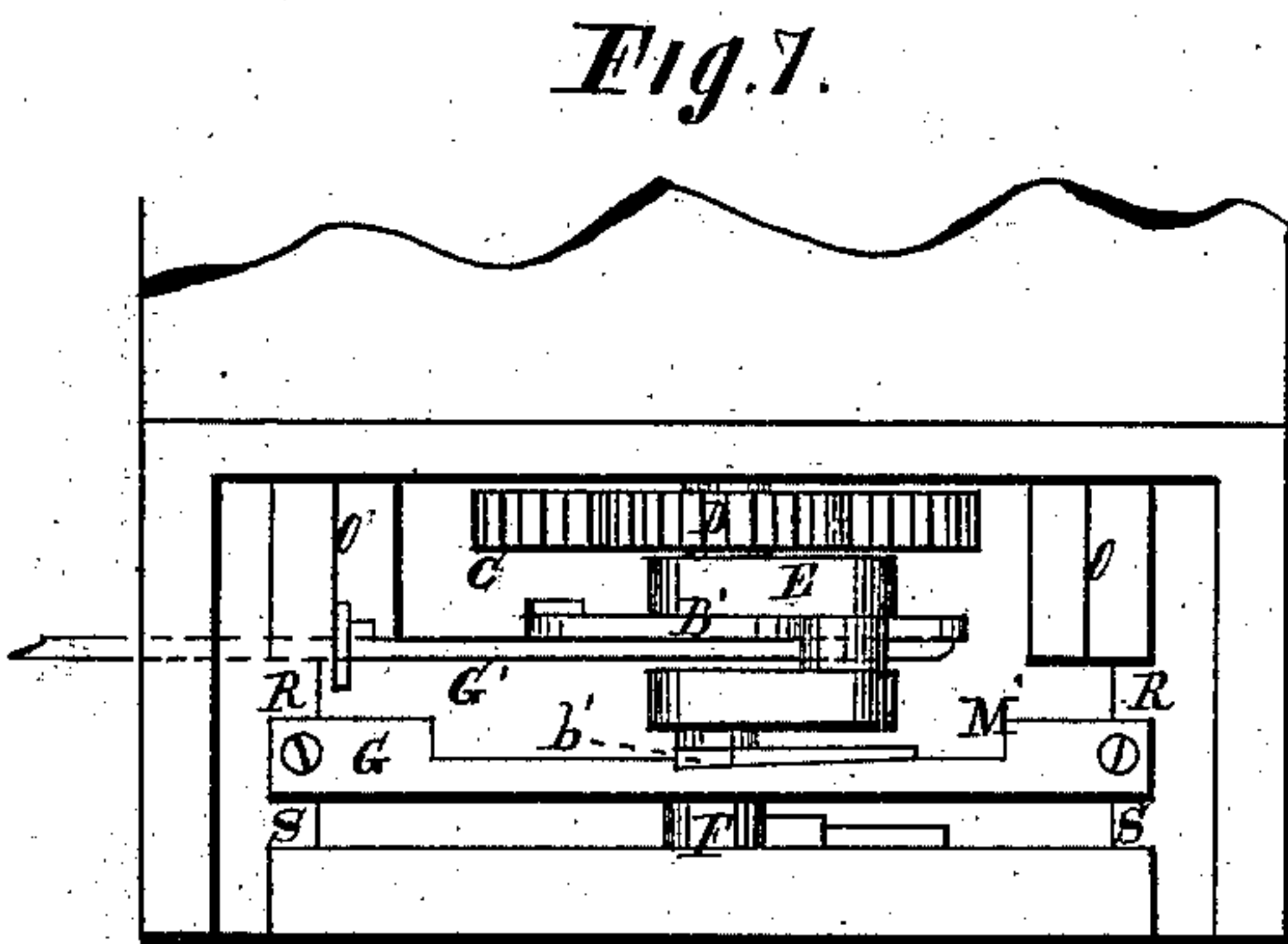
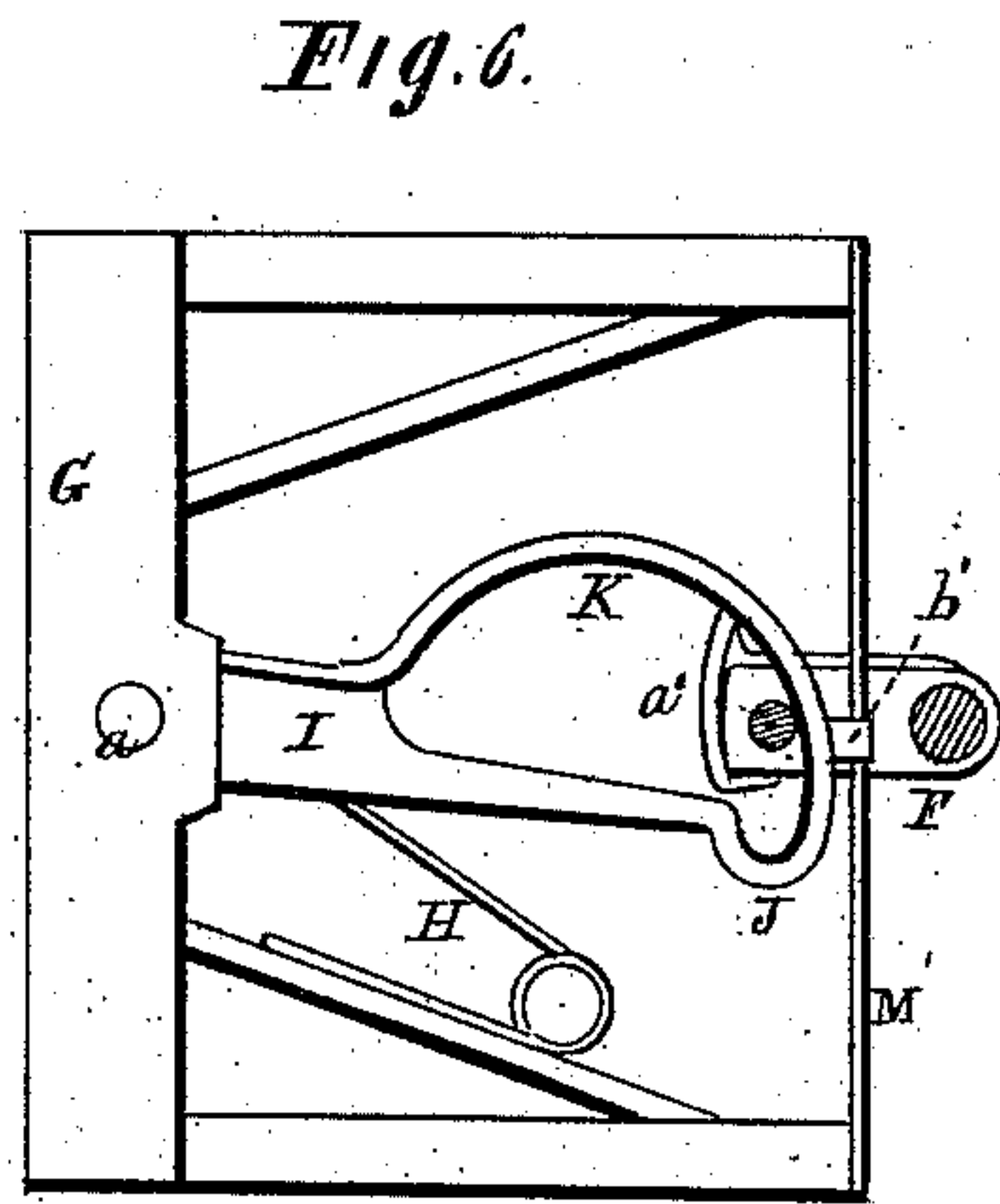
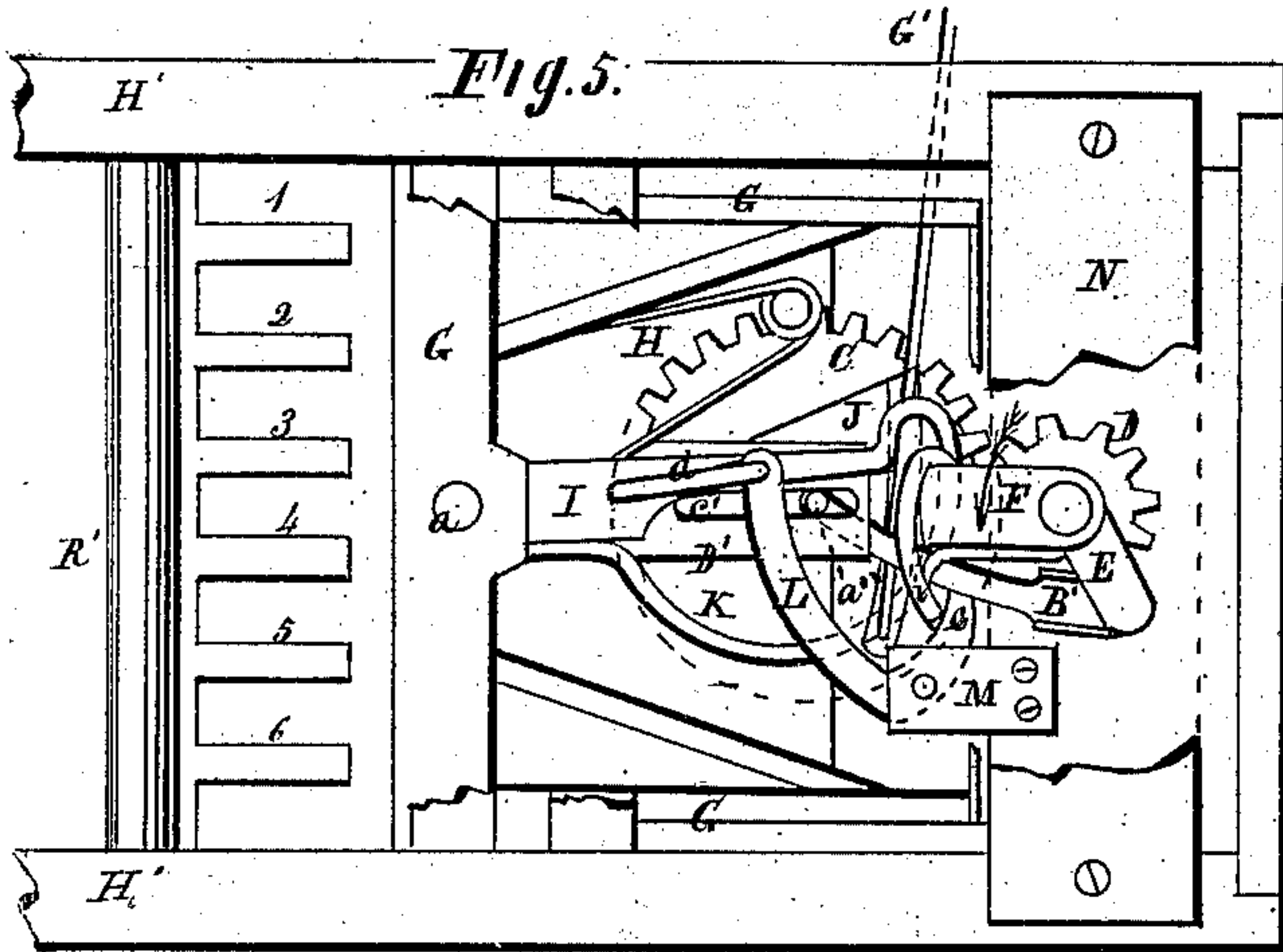
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# UNITED STATES PATENT OFFICE.

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## BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 225,283, dated March 9, 1880.

Application filed December 22, 1879

*To all whom it may concern:*

Be it known that we, C. V. HEMENWAY, WM. H. BENNETT, THOS. KIRK, and FRANK W. BENNETT, of Wellington, in the county of Lorain and State of Ohio, have invented a certain new and Improved Brick-Machine; and we do hereby declare that the following is a full, clear, and complete description thereof.

This invention relates to a machine for making bricks; and the improvements thereon consist of a device for the escape of stones and indurated lumps of clay, &c., from the machine, which, by virtue of their large size, cannot pass through the mold-openings into the molds.

A further improvement consists in a certain mechanism for moving back the mold-slide in less time than the same is moved forward for ejecting the molds from under the press.

The improvement also relates to a device for regulating the pressure for forcing the clay into the molds, all of which is fully described in the following specification, reference being had to the annexed drawings, making a part of the same, in which—

Figure 1 represents a side elevation of the machine; Fig. 2, a front elevation; Fig. 3, a plan view; Fig. 4, a detached section; Fig. 5, a view of the under side of the machine; Figs. 6 and 8, detached sections; Fig. 7, a rear view of the working part of the machine; Fig. 9, a side view of the same.

Like letters of reference refer to like parts in the several views.

Of the machine, A in the drawings represents the mill in which the clay is ground and prepared for the molds. This part of the machine is or may be like the clay-mills in ordinary use; hence a detailed description thereof will not be necessary in this place.

Under the floor of the mill is secured to the upright shaft B thereof a cog-wheel, C, Figs. 5 and 9, made to engage a pinion, D, fixed on the shaft of the cranks E and F for operating the same. The two cranks together form a double crank.

To the crank F is attached the mold-slide G, Fig. 5, by means of a vibrating pitman, I, pivoted at a to the cross piece or head of the

slide. The connection of the pitman with the crank is not continuous, but at intervals, by means of a hook, J, terminating the end of the pitman. The point of the hook is continued to the pivoted end of the pitman, forming a loop or bow, K, Fig. 6, around the wrist of the crank.

Said Fig. 6 represents a detached view of the mold-slide and pitman in their relation to the crank F, of which a' is the wrist.

H is a spring, one end of which is secured to the slide, whereas the other end rests against the edge of the pitman. The purpose of said spring will presently be shown.

To the under side of the pitman is attached by a link, d, Fig. 5, one end of the curved lever L. Said lever is pivoted to the plate M, secured to the cross-piece N, which is represented as broken away, that the working devices may be seen. The opposite end, e, of the curved lever extends beyond the plate to the end of the finger i, projecting from the crank F, substantially as shown in said Fig. 5. Further reference will be made to this part of the works hereinafter.

The pressing device of the machine consists of the slide O, Fig. 9, a detached view of which is shown in Fig. 8, in which it will be seen that it is composed of the sides O O'. The front ends of the sides are connected to each other by a metal plate, P, and partially covered by a plate, Q, Fig. 9, which in Fig. 8 is shown as broken away that the operative works below may be seen. Said pressing-slide is supported upon cleats R, Fig. 7.

The cleats R, together with the cleats S, form a groove, A', Fig. 9, in which moves the mold-slide above described. The plate Q of the pressing-slide is fitted beneath the floor T of the mill. A portion of the edge of the floor is cut away, forming a rabbet for the plate to move in, so that on moving the pressing-slide back from the throat U, Figs. 3 and 9, it will not be pressed upon by the clay in the mill. The pressing-slide when moved back is shown in the said figure.

The pressing-slide is operated by the crank E, to which it is connected, as follows: To the crank is attached a link or pitman, B', Figs. 5 and 7. The opposite end of the pitman is pro-



vided with a pin,  $a''$ , adapted to fit in a slot,  $c'$ , made in the arm  $D'$ , projecting from the plate  $P$  or head of the pressing-slide, substantially as shown in said Figs. 5, 7, and 8. To the upper side of the slotted arm  $D'$  is pivoted a catch,  $E'$ , provided with a series of notches,  $b'$ , Fig. 8. To the arm  $F'$  of the catch is attached a rod,  $G'$ , extending therefrom to the outside of the machine, as seen in Figs. 1 and 5. The purpose of said notched catch will hereinafter be made known.

In the front of the machine, between the sides  $H'$ , is a series of mold-openings, 1 2 3, &c., Fig. 5. Said Fig. 5 represents the under side of the openings, which are a little narrower than a brick, but somewhat shorter. The upper sides of the openings are wider than the lower sides, thereby making the sides of the openings oblique, as will be seen in Fig. 2, which represents an end view of one of the openings. It will be observed that the said mold-openings are lower than the floor of the mill, and forward of the throat  $U$ , as will be seen in Fig. 9. Immediately in the rear of the openings is a plain flat surface,  $I'$ , forming a bottom to the throat and a surface over which the pressing-slide moves toward the openings.

In front of each of the mold-openings is hinged a drop-door,  $J'$ , Figs. 2 and 4, closely covering the ends of the openings in a slanting position, as seen in Figs. 4 and 9. Said doors are kept in close and firm contact with the end of the openings by springs  $N'$ , the free ends of which rest upon nibs  $n$ , projecting, respectively, from the face of the doors, as seen in Figs. 3 and 4. The bar  $C'$ , extending across the springs, keeps them in place and prevents their slipping from the nibs.

The practical operation of the above-described machine is as follows: A nest of empty brick-molds corresponding in number and arrangement to the mold-openings 1 2 3, &c., is pushed into the space  $P'$ , Figs. 1 and 9, immediately under the said mold-opening, and with which the nest of molds will be in open relation. A similar nest of brick-molds is pushed into the space  $P'$  directly behind the nest of molds above alluded to. This second nest of brick-molds will be under the closed plain surface  $I'$ , and is pushed in while the mold-slide  $G$  is drawn back by the pitman  $I$  during the operation of the machine. The slide  $G$ , as shown in said Figs. 1 and 9, is represented as pushed forward. The nest of brick-molds under the mold-opening is filled by the clay from the mill, which passes therefrom through the throat  $U$  into the space  $m$  in front of the pressing-slide  $O$ . The clay is forced from the space  $m$  through the mold-openings into the nest of brick-molds below by the now forward movement of the slide  $O$ , which is forced forward by the crank  $E$  and its connections therewith. As the slide moves forward the top  $Q$  thereof closes the throat  $U$ , thereby preventing the clay from falling from the mill while that in the space  $m$  is being forced into the molds. The pressure exerted upon the clay while in

the space  $m$  is resisted by the front wall,  $n'$ , and the doors  $n$ , thereby impelling the clay into the molds, which, when full, are pushed from under the mold-openings upon the rollers  $R'$  by the slide  $G$ , which, at the proper moment during the operation of the machine, is driven forward by the crank  $F$  and its connections therewith.

It will be noticed that the exertion of the slide  $G$  is made directly upon the nest of empty molds in the rear of the filled ones under the mold-openings; hence the rear empty molds push out from under the mold-openings the nest of filled ones, and take their place under the said openings for being filled. The moment the rear empty molds have been pushed under the mold-openings the slide  $G$  moves back, giving time before its return for inserting another nest of empty molds in the rear of the molds pushed under the openings, which, during the return of the slide  $G$  and the introduction of the empty nest of molds, are being filled. This filling of the molds takes place immediately on the arrival of the rear molds to the front.

During the time the rear molds are moving to the front the pressing-slide  $O$  is moving back, opening the throat of the mill, so that the space  $m$  may be again filled with clay for being pressed into the molds, which is done by the timely return of the slide  $O$ , such return and pressing of the clay into the molds taking place while the slide  $G$  is moving back, as above described.

In order that the slide  $G$  may move back quickly, or in less time than it takes to move forward, for removing the filled molds is the purpose of the curved lever  $L$ , above described. Said slide is moved forward by the wrist  $a$  of the crank  $F$ . As the crank revolves in direction of the arrow in Fig. 5 the wrist lodges in the hook  $J$  and carries the slide forward the length of the crank. The wrist then leaves the hook, and the fingers  $i$ , projecting from the end of the crank, engages the short arm  $e$  of the curved lever, thereby causing the long arm of the lever to draw upon the slide by its connection therewith by the link  $d$ .

In consequence of the length of the longer arm of the lever  $L$ , the slide is drawn back in much less time than it would be were it continued in connection with the crank, thereby shortening the time of the operation of the machine.

The purpose of the spring  $H$  is to keep the pitman  $I$  in such relation to the crank that it may readily be engaged therewith, for the purpose above described. That the pitman  $I$  may be retained in proper position to receive into the hook  $J$  the wrist of the crank  $F$  (when said crank is in the opposite position from that shown in Fig. 5, which figure represents the mold-slide pushed forward, whereas the opposite position is when the slide is drawn back) is the purpose of the nib  $b'$ , Fig. 6, projecting from the bow  $K$  of the pitman. Said nib in the movement of the pitman lodges against a



shoulder made in the edge of the cross-bar M' of the slide, as shown in Fig. 7. Said nib prevents the pitman from moving laterally until the wrist of the crank enters the notch J, at which time the nib is lifted from the shoulder by the crank F engaging a lug, *h*, Fig. 9, on the under side of the hook of the pitman, which allows the said nib to pass over the shoulder, so that the pitman may be carried forward for operating the slide, for the purpose above specified.

In the clay prepared for the bricks there is unavoidably more or less stones and hard lumps of clay, &c., too large to pass with the clay through the openings into the molds. Said stones, &c., unless removed, obstruct the clay from passing into the molds. This in brick-machines as ordinarily constructed is attended with much trouble and loss of time in working the machine. To avoid this difficulty is the purpose of the doors J', above described.

As will be seen in the drawings, said doors open outwardly, and are held closed by the springs, the tension of which is sufficient to prevent the doors from opening by the pressure exerted upon the clay, as the clay, instead of pressing strongly against the doors, will pass down through the mold openings into the molds below. In the event there are any stones, &c., too large to pass through the said openings, they will be forced against the doors, push them open, and fall therefrom. The doors may be opened by hand to see if there are any stones to be removed.

In Figs. 2 and 3 one of the doors is shown as open, and held in this position by the end of the spring dropping over the end of the nib, as shown in Fig. 3.

Various degrees of pressure can be exerted upon the clay for forcing it into the molds by means of the notched catch E', Fig. 8, above described.

In the event the condition of the clay requires but light pressure the pin *a''* is allowed to move to the end of the slot before it can push forward the slide; hence the pressure upon the clay will be light.

For a stronger pressure, more or less, the

catch E' is drawn by the rod G' over the slot *c'*, so that one of the notches, according to the degree of pressure required, may form an end to the slot, so that the pin *a''* may engage it and push forward the slide.

It will be obvious that by this device a full stroke or a less length stroke of the crank can be given to the slide, causing a corresponding pressure (more or less) upon the clay, as above said.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In brick-machines, the mold-slide G, provided with a pivoted vibrating pitman having a bow, K, and a hook adapted to receive the wrist of the crank F, in combination with said crank, whereby the slide is operated, substantially as described, and for the purpose specified.

2. In combination with the pitman of the mold-slide, the spring H, as and for the purpose set forth.

3. In brick-machines, the curved lever L, having the long arm thereof attached to the pivoted pitman of the mold-slide, and the short arm of the said lever arranged to engage the finger *i* of the crank for operating said slide in the manner as described, and for the purpose specified.

4. The pivoted vibratory pitman I, provided with a nib, *b'*, in combination with the shouldered cross-bar M' of the mold-slide, nib *h*, and crank, as and for the purpose set forth.

5. In brick-machines, the pressing-slide O, provided with a slotted arm adapted to receive the pin *a''* of the link or connecting-rod B', and having pivoted to said arm a notched catch actuated by a rod, G', in combination with the crank E of the machine, substantially as described, and for the purpose specified.

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