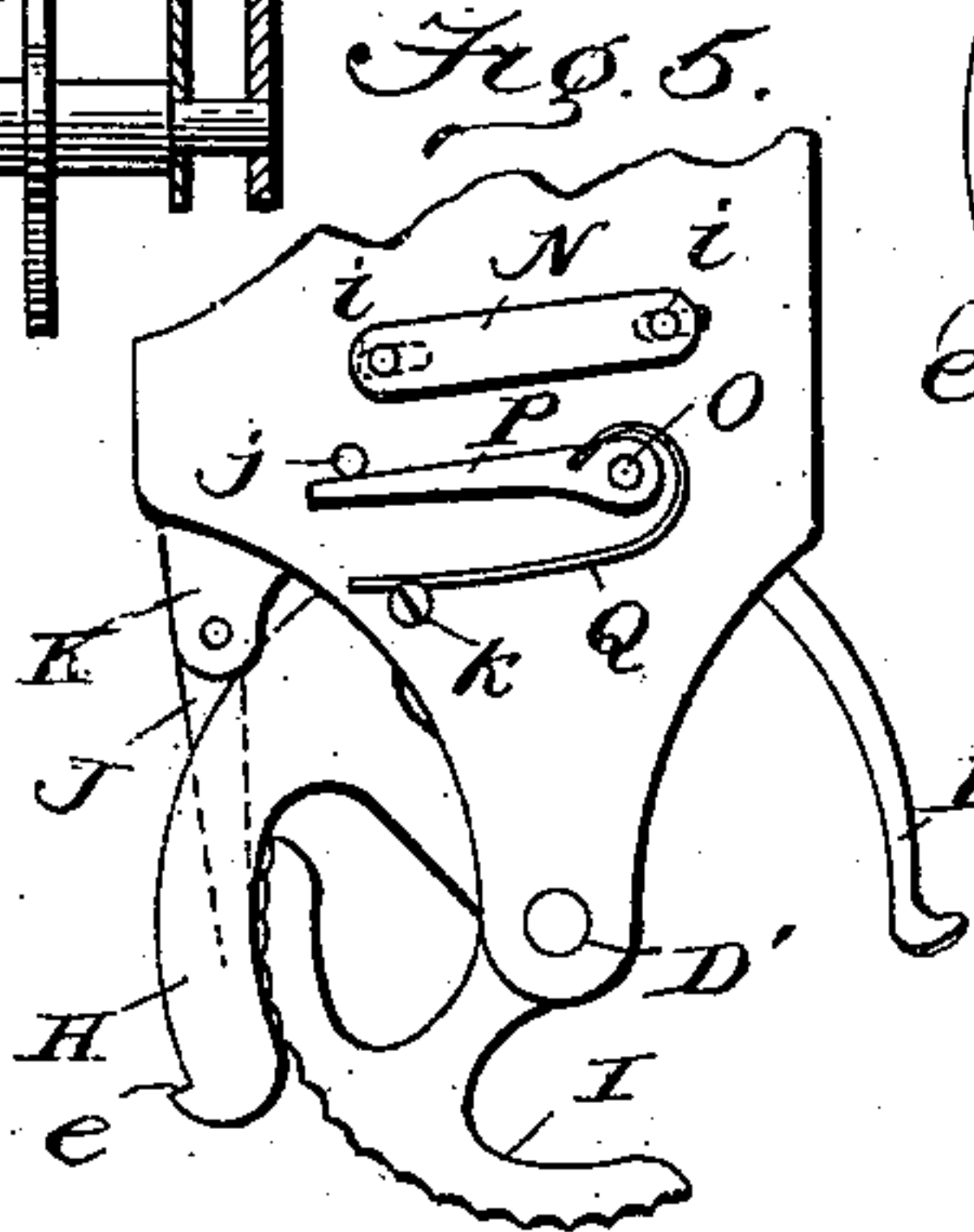
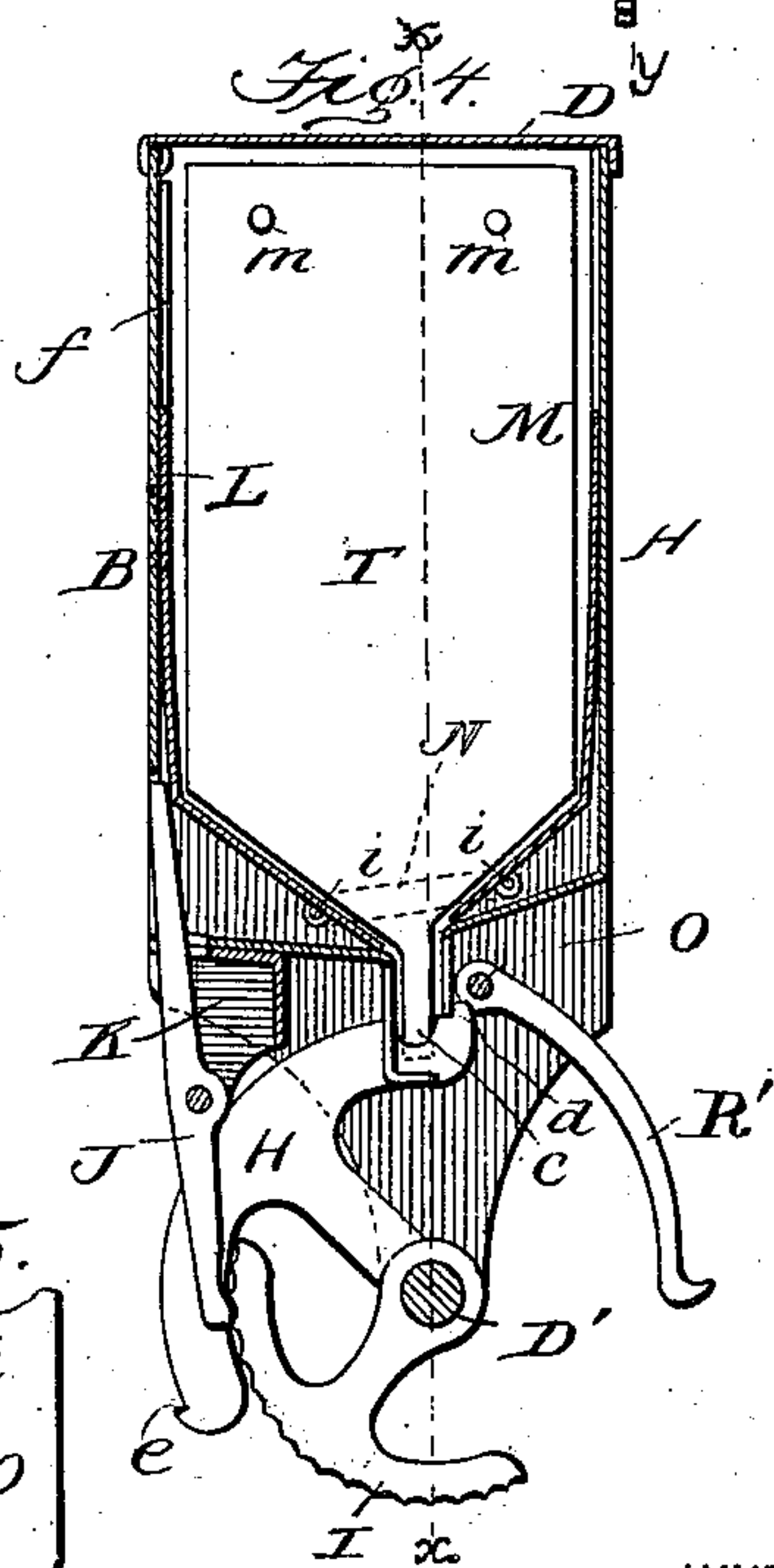
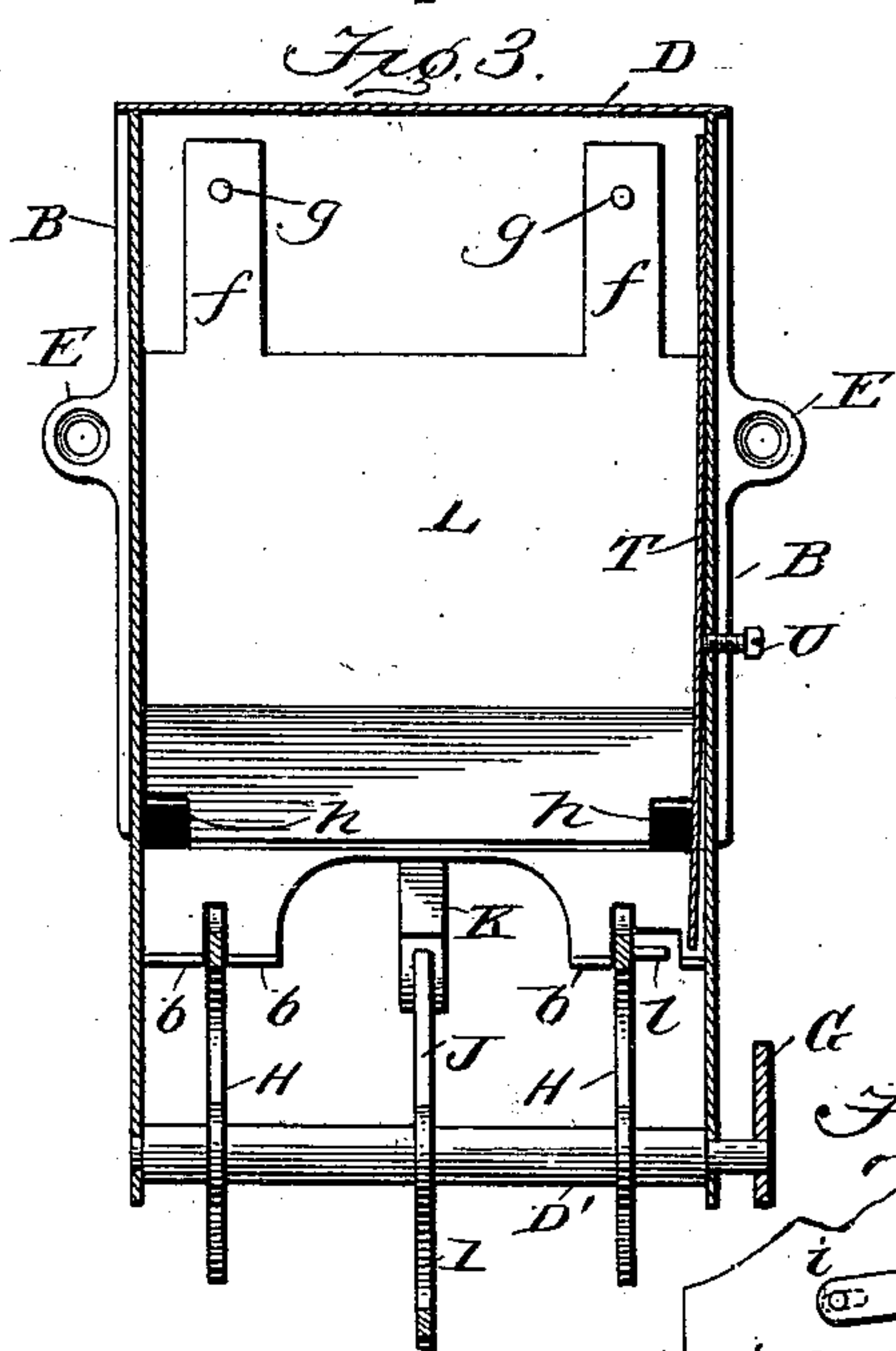
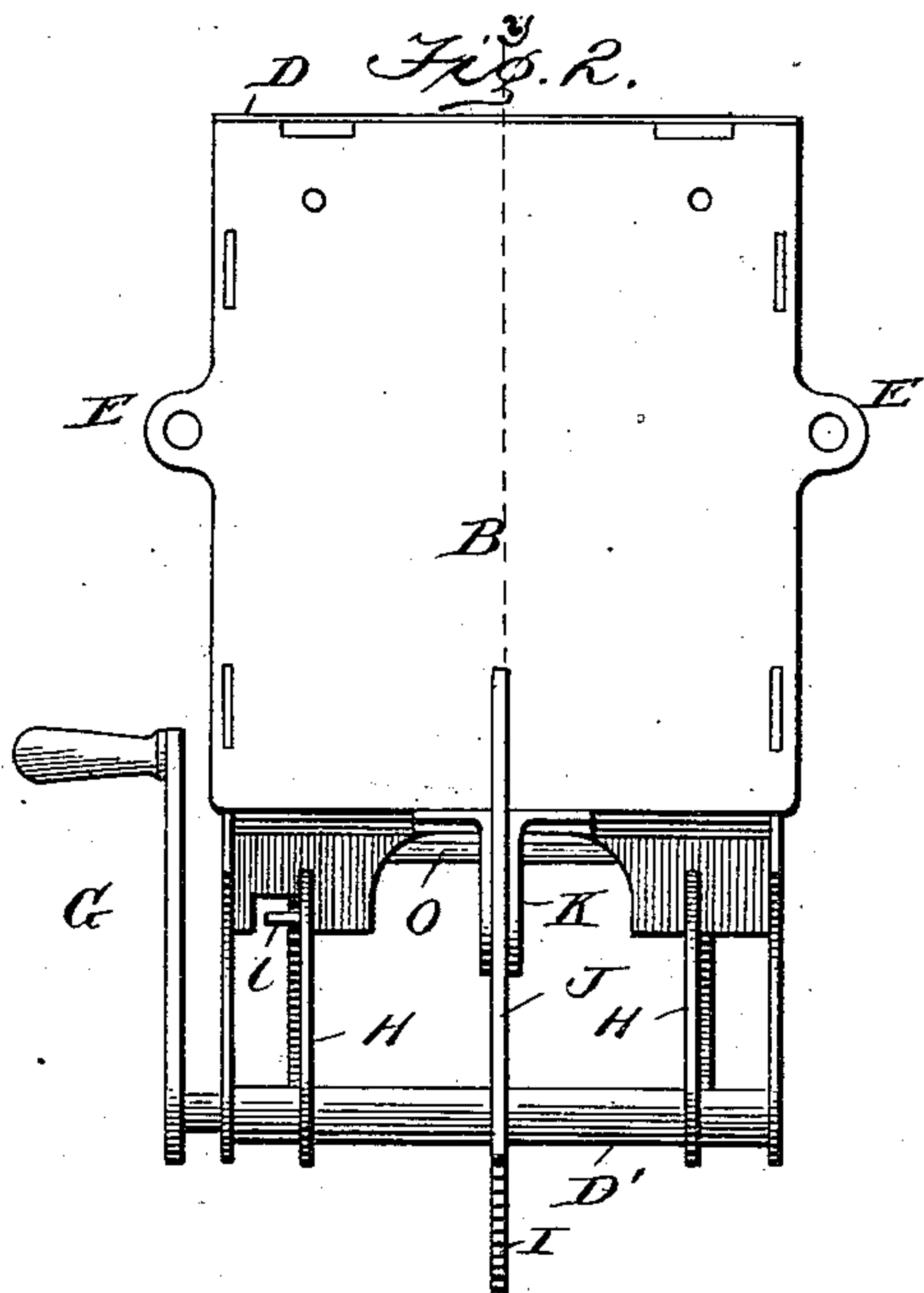
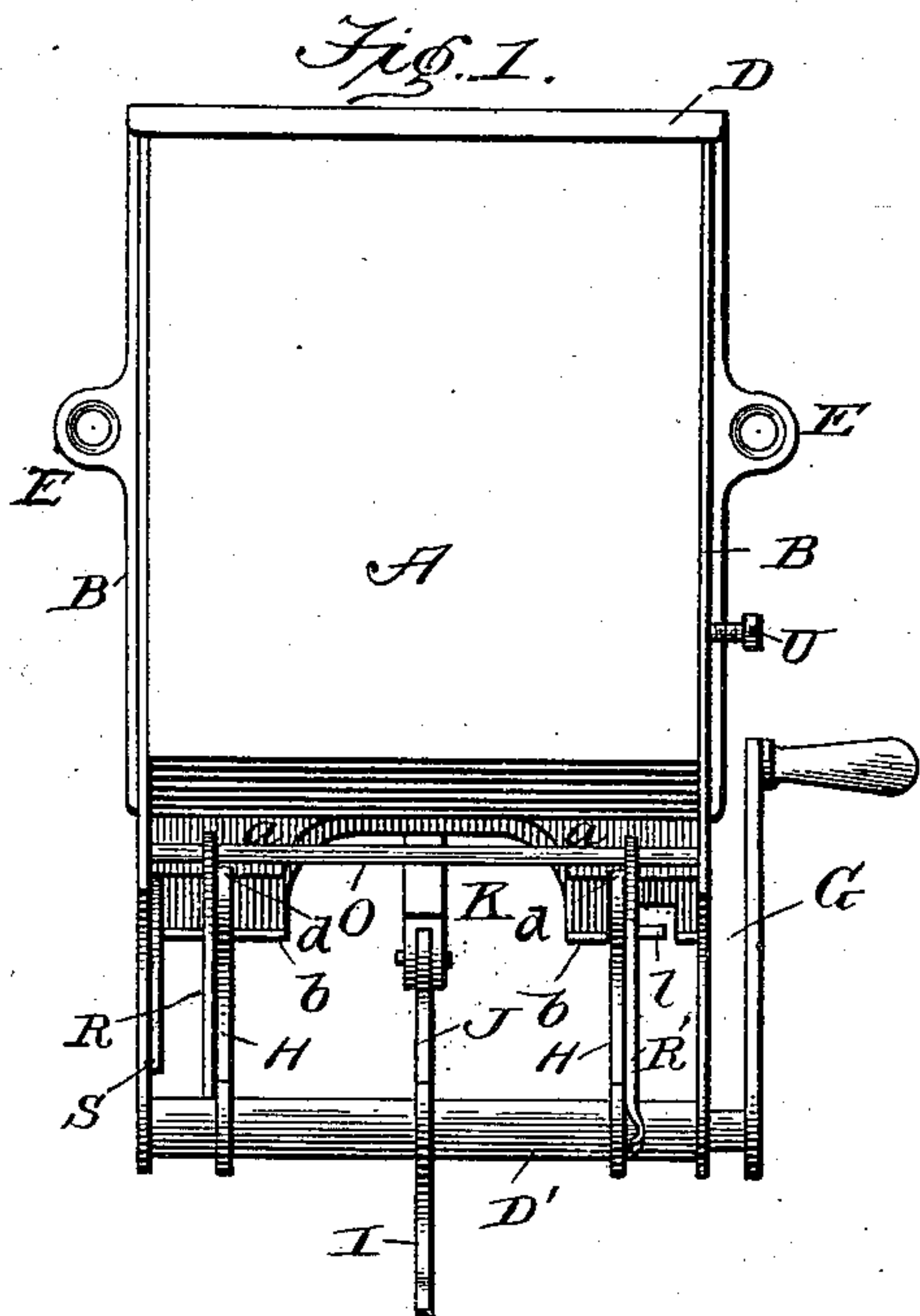


(No Model.)

J. B. DENNIS.
MATCH BOX.

No. 546,583.

Patented Sept. 17, 1895.



WITNESSES:

Edwin L. Bradford
N. Curtis Hammond

INVENTOR

Jno. B. Dennis
BY
Ym. C. W. Fitts
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN B. DENNIS, OF OTTUMWA, IOWA, ASSIGNOR OF TWO-THIRDS TO C. W. MAJOR, OF SAME PLACE, AND GUY G. MAJOR, OF TOLEDO, OHIO.

MATCH-BOX.

SPECIFICATION forming part of Letters Patent No. 546,583, dated September 17, 1895.

Application filed June 27, 1895. Serial No. 554,254. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. DENNIS, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented certain new and useful Improvements in Match-Boxes; 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 appertains to make and use the same.

My invention relates to certain improvements in match-safes of that class described and illustrated in an application for Letters Patent filed by me February 26, 1895, Serial No. 542,677, in which the matches are contained within a hopper and automatically and successively fed to devices designed to ignite and present the match to the user.

The object of my present invention is to simplify to some extent the details of construction illustrated in my pending application, and thus reduce the cost of manufacture, and at the same time to secure perfection in the operation; and with these ends in view my invention consists in the details of construction and arrangement hereinafter more fully set forth and specifically claimed.

In order that those skilled in the art to which my invention pertains may know how to make and use the same, I will proceed to describe the construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a front elevation of a match-safe embodying my invention. Fig. 2 is a rear elevation. Fig. 3 is a vertical section on the line *x x* of Fig. 4. Fig. 4 is a transverse vertical section on the line *y y* of Fig. 2, and Fig. 5 is a detail elevation of the lower portion of the side of the safe opposite that upon which the operating-handle is located.

Similar letters indicate like parts in the several figures of the drawings.

A represents the front, B the back, and C the sides, of a sheet-metal box made of metal cast or stamped into form and secured together in any suitable manner.

D is the cover hinged to the top edge of the back B and formed with a flange to overlap the front and to be held in place by friction. The back B is formed with two or more ears

E, with orifices therein to receive screws for securing the safe firmly in position.

The lower portions of the back and front are inclined, as shown in Fig. 4, the lower edge of the front A being extended each side of the center a short distance in a vertical line, as shown at *a a*, to constitute a match shield and guide, and the back B is similarly extended, but to a greater extent, and then re-turned horizontally, as shown at *b b*.

The sides C C are extended below the extreme lower portions of the front and back and tapered as shown at Fig. 4, the lower extremities constituting bearings for a rock-shaft D', to one end of which is secured an operating-handle G. On the rock-shaft D', near each end and adapted to traverse in slots within the extensions *b b* of the back B, are fixed two segmental arms H H, each formed with a curved recess *c* to receive a match and with a stop-shoulder *d*, the latter adapted to come in contact with the vertical extensions *a a* of the front when the curved recesses *c* have been brought into alignment with the vertical space between the extensions *a b*, through which the matches successively drop, the curved edges of the segmental arms in the rear of the recesses *c* passing in close contact with the lowest edge of the extensions *a a* to prevent the matches from dropping until the arms H have traveled rearward a sufficient distance to bring the recesses into position to receive the match. The rear ends of the arms H are formed with a shoulder *e*, (see Fig. 4,) which, coming in contact with the rear surface of the extensions *b* of the back B, limit the forward movement of the arms.

I is a segmental ratchet fixed centrally on the rock-shaft D' and contacting with the lower end of a vertical lever J, which is pivoted in a vertical bracket K, the upper end of the lever vibrating through a slot in the back B (see Figs. 2 and 4) and bearing against a spring-plate L, the lower portion of which is inclined to correspond with the bottom of the back B. A similar spring-plate M is arranged on the inside of the front A, and in order that they may each have a sensitive spring action the metal is cut away near the top, as shown at Fig. 3, to produce arms *f f*, Fig. 3,

which are secured by rivets *g*. The lower inclined portions of these plates are cut and rolled up slightly, as shown at *h h*, Fig. 3, to provide stock for the reception of pivots or
 5 rivets *i*, which pass through slightly elongated slots in the sides *C C* and into a connecting flat link *N*.

From this construction and arrangement it will be seen that as the segmental ratchet
 10 strikes the lower end of the pivoted lever *J* the upper end of said lever will cause the rear spring-plate to vibrate, and by reason of the link connection between the rear and front
 15 spring-plates the latter will also be caused to vibrate, and in this manner the matches contained within the safe are agitated and caused to gravitate one at a time into the notches of the segmental arms *H H*.

Above the path of the arms *H* a shaft *O* is
 20 journaled in the sides *C C*, one end extending beyond the outside face of the side, and having secured thereon a radial arm *P* and spring *Q*, the arm *P* limited in its movement by a stop *j* and the free end of the spring *Q*
 25 confined by a stop *k*.

On the shaft *O*, inside of the side pieces *C C*, are securely fixed two curved arms *R R'*, the under edges of which overlie a match located in the recesses *c* of the segmental arms
 30 *H*, so that as the arms move forward with the match the latter is held firmly in place while the fulminate or head is traveling in contact with a curved roughened plate *S* to be ignited. The curved arm *R'* is formed with a crook at
 35 its free end, (see Fig. 4,) and the segmental arm *H*, adjacent thereto, is provided with a short pin *l*, and when the arms *H* carrying the match have reached the limit of their forward movement and the match-head has been
 40 ignited the crook in the free end of the curved arm *R'* will grasp the rear end of the match and throw the burning end up, while at the same time the pin *l* will come in contact with the opposite surface of the match,
 45 and thus the latter will be grasped and firmly held between the crook in the end of arm *R'* and the pin *l* and present and hold the lighted match to the user. This result is accomplished through the medium of the radial
 50 arm *P* and spring *Q*, for as the match, lying in the notches *c* of the segmental arms *H H*, travels in contact with the under edges of the arms *R* and *R'*, which, under the action of the spring *Q*, bear down upon the upper sur-
 55 face of the match, the shaft *O* is slightly rotated, so as to compress the spring, and thus increases the power of its reaction, which takes place when the match passes the extreme end of the shorter arm *R*, and the
 60 power of the spring is immediately exerted to throw the arms *R* and *R'* downwardly, and thus throw upwardly the burning end of the match, as heretofore explained.

In order that the safe may be adapted for
 65 use with matches of different lengths, I secure to the inside of the right-hand side

plate *C* a spring-plate *T*, secured by rivets *m* near the upper end, and near the lower end of the side plate *C*, I provide a set-screw *U*, the end of which is adapted to bear against
 70 the spring-plate *T* to cause the same to be moved toward the opposite side plate *C*, and thus shorten the space, a reverse movement of the screw obviously increasing the space.

To operate the match-safe first load the
 75 hopper with matches, and then turn the set-screw *U* to adjust the interior space to the length of the matches which will cause the segmental ratchet *I* to impinge upon the lower
 80 end of lever *J*, vibrating the upper end against the rear spring-plate *L*, which latter and the front plate *M*, through their link connection, will pulsate and shake the matches in such
 85 manner that one will drop through the vertical space in the bottom of the box and into the notches or recesses *c* in the front end of the segmental arms *H*. Then return the handle toward the front end, which will cause
 90 the head of the match to rub against and be ignited by the roughened plate *S*, and when the arms *H* have reached the limit of forward
 95 movement the lighted end of the match will be thrown upward and the opposite end grasped between the crooked end of the curved arm *R'* and the pin *l* on the arm *H* ready for use.

Having described the construction and operation, what I claim as new, and desire to secure by Letters Patent, is—

1. In a match safe having the hopper shaped
 100 bottom open to permit the passage of a single match, the segmental arms *H* constructed as described and mounted on the rock-shaft *D*, the shaft *O* with curved arms *R* and *R'* and exterior arm *P* and spring *Q*, substan-
 105 tially as and for the purpose set forth.

2. In combination with the hopper shaped safe and interior spring plates *L*, *M*, connected near their lower ends by links *N*, the
 110 rock-shaft *D* provided with segmental ratchet *I* and the pivoted lever *J* whereby the matches within the safe are agitated, as hereinbefore set forth.

3. In combination with the rock shaft *D* and segmental arms *H H* having recesses *c*,
 115 the spring arm *R'* formed with a crooked end, and the pin *l*, whereby the match is caused to be turned upwardly and firmly grasped, substantially as and for the purpose set forth.

4. The spring plates *L*, *M*, constructed as
 120 described, secured at their upper ends to the box and cut away and rolled up at their lower corners, in combination with the links *N*, *N* and pivots *i*, *i*, whereby both plates are caused to vibrate in unison, substantially as de-
 125 scribed.

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

JOHN B. DENNIS.

Witnesses:

C. W. MAJOR,
 T. M. THORNBURG.