

A. SOHN.
MACHINE FOR FILLING MATCH FRAMES.

No. 10,809.

Patented Apr. 18, 1854.

Fig. 1.

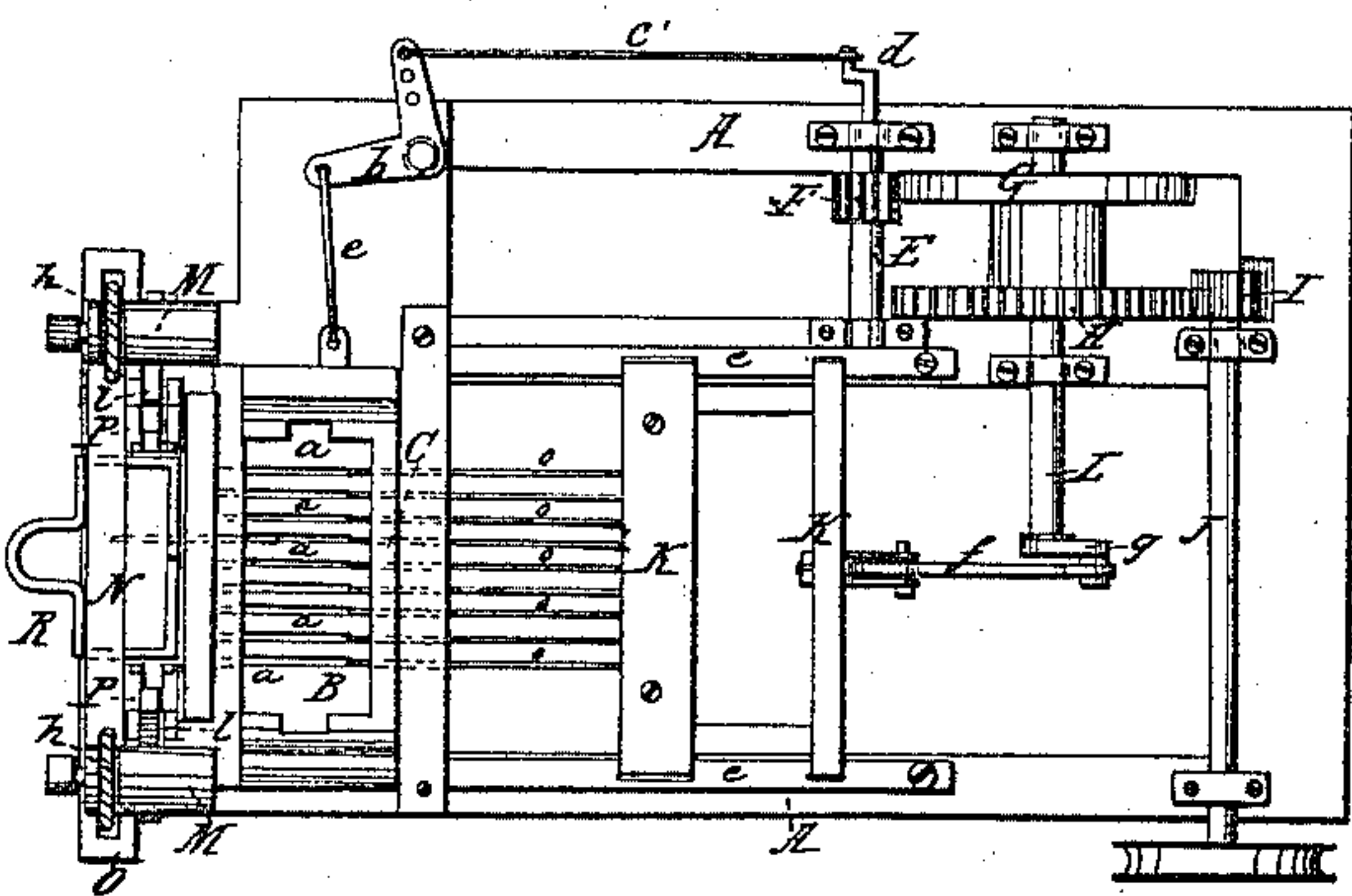


Fig. 2.

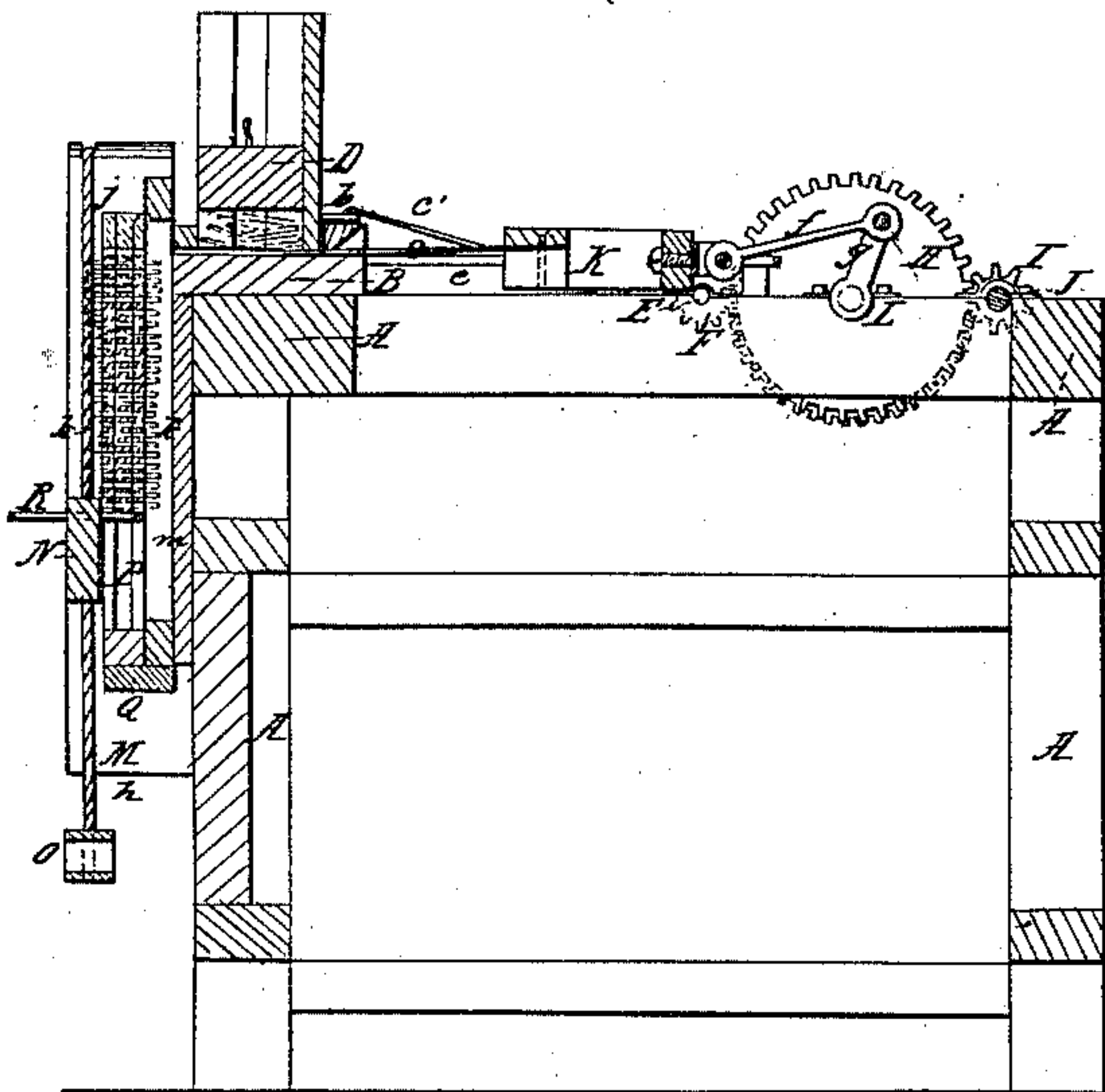
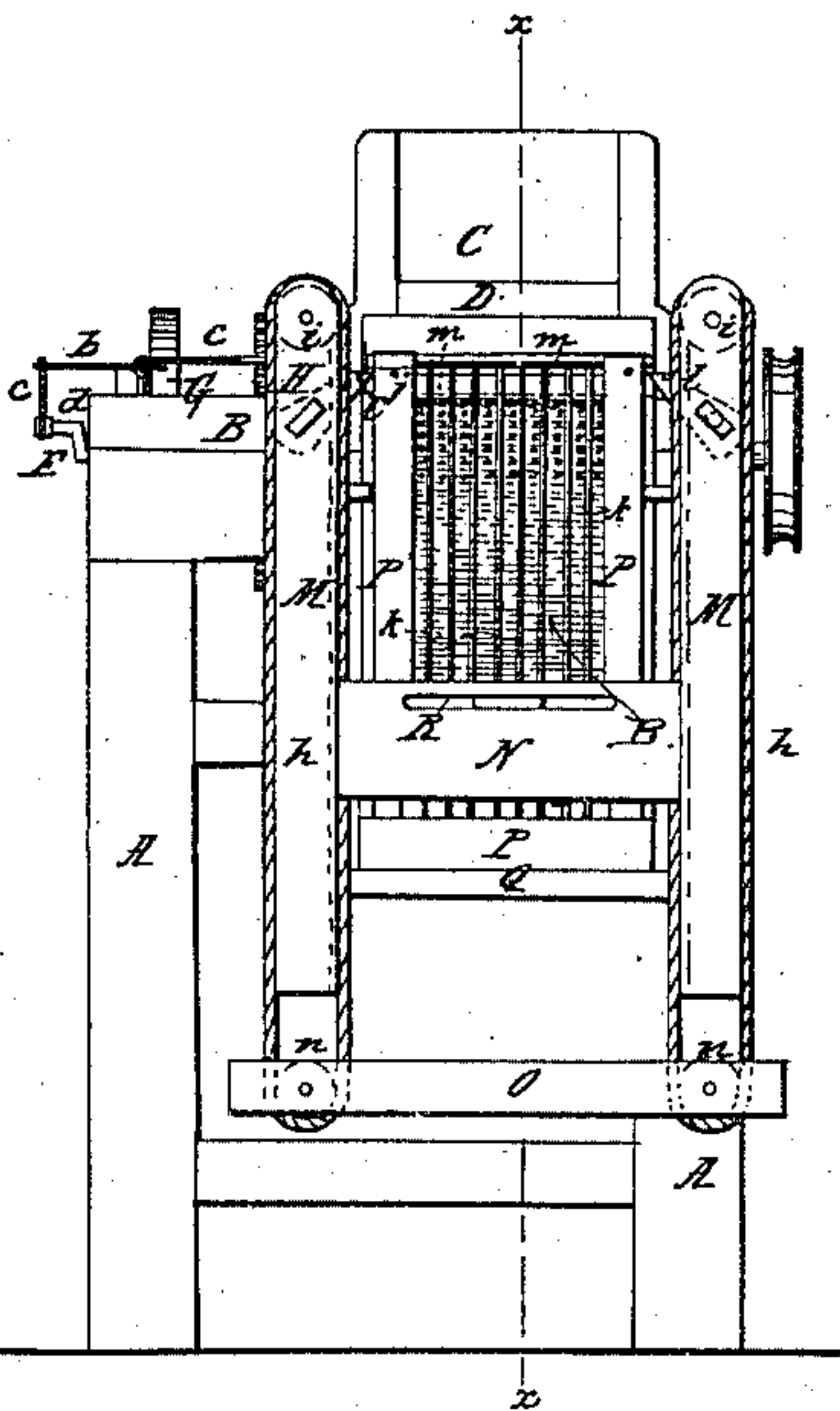


Fig. 3.



UNITED STATES PATENT OFFICE.

ANTHONY SOHN, OF MONROEVILLE, OHIO.

MACHINE FOR FILLING MATCH-FRAMES.

Specification of Letters Patent No. 10,809, dated April 18, 1854.

To all whom it may concern:

Be it known that I, ANTHONY SOHN, of Monroeville, in the county of Huron and State of Ohio, have invented certain new and useful Improvements in Machinery for Filling Match-Frames Preparatory to the Dipping Operation; 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, making a part of this specification, in which—

Figure 1, is a plan of a machine, constructed according to my improvements. Fig. 2, is a longitudinal vertical section of the same. Fig. 3, is a front elevation of the same.

Similar letters of reference indicate corresponding parts, in each of the several figures.

In the manufacture of friction matches, the dipping of a large number is always effected at the same time, by securing them in a frame in such a manner that their ends are all even. They require to be held in the frame, each match by itself, to prevent their being made to adhere by the sulfur or the igniting compound; and the process of placing them in the frame has always been an object of difficulty, and has been almost entirely performed by hand.

The machine which forms the subject of this invention is intended to perform and repeat the operation of taking a suitable number for one row from a box or hopper, and depositing them separately in the frame, so that all the manual labor necessary is to place a piece of pasteboard or thin slab of any material between the successive rows.

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

The working parts of the machine are all supported by a framing, A, near the front of whose upper part is a horizontal bed, B, of wood or metal, with a number of straight parallel grooves, *a, a*, extending from back to front, the said grooves being of a suitable width and depth to each receive a match, and having small spaces between them. On the bed, B, is placed a box, C, which serves as a hopper; it is without a bottom or front and is of the proper width from back to front edges of the sides to

receive the matches lengthwise. On each side of the box is a groove, which receives a tongue on the end of a loose cover, D, which fits the box so as to work freely up and down within it. The box is confined in such a manner that it can only move transversely on the bed, B; in that direction, it is capable of being moved freely, and receives a reciprocating motion, and then comes to a state of rest, at regular intervals; the said motion being transmitted by a bent-lever, *b*, and rods, *c, c'*, from a crank, *d*, on a shaft, E, which is furnished with a pinion, F, receiving an intermittent motion from a wheel, G, which is toothed only about one half round. The wheel, G, is fast upon the same shaft, L, with a wheel, H, which derives a constant rotary motion from a pinion, I, on the driving shaft, J, of the machine. At the back of the bed, B, there is a sliding frame, K, which receives a reciprocating motion horizontally back and forth on slides, *e, e*, through a pitman, *f*, from a crank, *g*, on the shaft, L. In front of this frame are secured a number of wires or rods, *o, o*, which, by the motion of the frame, are driven back and forth through the grooves, *a, a*. The motion is of such length as to bring the points of the wires as far forward as the edge of the bed, B, and to carry them so far back as to withdraw them from under the box, C.

In front of the framing, there are firmly secured two uprights, M, M, in which are grooves, to guide a movable crosspiece, N, which is attached to two endless cords or chains, *h, h*, passing over pulleys, *i, i*, in the upper part of the uprights, and supporting a weight, O, which is furnished with pulleys, *n, n*, where it is suspended on the cords. The weight serves to balance the crosspiece and the weight of a sufficient quantity of matches and separating slabs to fill a frame. The match-frame, P, is of the ordinary construction; having a movable top piece, *j*, and also having grooves in its sides, to receive tongues on the slats, *k, k*, which serve to keep the several rows of matches in place, and which are represented in red color in Figs. 2, and 3; but these slats, instead of being notched as is commonly the case, are made of flat pieces of pasteboard, wood, or other material.

The match-frame is supported between the uprights, M, M, upon a fixed crosspiece,

Q, and is held in place against the front of the framing of the machine, by buttons, *l, l*, in the uprights, *M, M*, and by the movable crosspiece, *N*, which works close in front of it. At the back of the match-frame and secured to the main framing, there are a number of fixed vertical slats, *m, m*, which extend from the bottom of the match-frame up to a little higher than the top of the bed, *B*, close to the front edge of which, they fit. The spaces between the slats, *m, m*, correspond with the notches in the bed, *B*; and the slats serve to keep the matches apart, after they are deposited in the frame, until they are secured. The sliding crosspiece, *N*, is furnished with a light iron step-frame, *R*, whose sides are parallel, and fitted to slide horizontally through holes in the crosspiece, between the sides of the match-frame, and whose front stands parallel with the front edges of the slats, *m, m*, and of the bed, *B*; the said step-frame being provided with a handle in front of the crosspiece.

The frame is filled in the following manner:—The box, *C*, is supplied with matches, which are laid with their ends toward the back and front; and the cover, *D*, is then put on, to hold them down. The frame to be filled is placed, without its movable top-piece, in its proper position, as shown in several figures of the drawing. The step-frame, *R*, is pushed forward against the slats, *m, m*; and the sliding crosspiece, is elevated to such a position that the step frame is a very little below the level of the top of the bed, *B*. A slat is placed upon the step-frame; and the machinery may now be supposed to commence its motion. The only attendant needed is a child, who stands in front of the machine, with a number of the slats, *k, k*, always at hand. The rapid reciprocating movement of the box, *C*, moves the matches across the grooves, *a, a*, and rubs a match into each groove. The forward motion of the frame, *K*, passes the wires, *o, o*, through the grooves, and pushes those matches which are contained in the said grooves, over the edge of the bed, *B*, and deposits them upon the slat, *k*. The attendant then places another slat, *k*, in the frame, *P*, on the top of the first row of matches, and depresses the sliding crosspiece, *N*, slightly, to bring the last slat below the top of the bed, *B*. The succeeding movement of the box, *C*, refills the grooves; and the wires, *o, o*, again remove the matches therefrom to the frame, *P*. The attendant then puts in another slat, and again depresses the sliding crosspiece, *N*. In this way, the operation continues; the attendant

putting in a slat, every time a row of matches is deposited on the last row put in, and depressing the sliding crosspiece, *N*, until the step, *R*, reaches the bottom of the frame, *P*, at which time the latter is full. The step is then withdrawn, and the top piece, *j*, of the frame, is put in and secured; thereby securing the whole of the matches in place. It should be understood that the rubbing motion of the box, *C*, should only take place when the wires, *o, o*, are drawn back from the box; and this is why the motion of the box is intermittent. The ends of the matches in the frame are all even, in consequence of the points of the wires coming all evenly to the edge of the bed, *B*, and just pushing them over. When one frame is filled, the machine is stopped; and the full frame is taken out. A new empty frame is then put in; and the sliding crosspiece, *N*, is then raised, the step, *R*, is pushed forward, and a slat is placed upon it. The machine is then again started; and the operation proceeds as before.

What I claim as my invention and desire to secure by Letters Patent, is,—

1. The combination of the bottomless, shaking, or reciprocating box or hopper, *C*, and the fixed bed, *B*, which is grooved transversely to the motion of the box, but longitudinally to the direction of the matches, substantially as described, for the purpose of separating a number of matches, and laying them parallel in a row, at a required distance apart.

2. The reciprocating series of rods, *o, o*, in combination as described with the grooved bed, *B*, for the purpose of pushing the matches longitudinally from the grooves into the frame, *P*.

3. Placing the match frame, *P*, for the purpose of being filled, in an upright fixed frame, *M, M, Q*, which is furnished with a sliding balanced crosspiece, containing a movable step, *R*, which is capable of being protruded through the said crosspiece, between the sides of the match frames, and withdrawn therefrom, for the purpose of receiving the slats, *k, k*, and matches, nearly on a level with the grooved bed, and lowering them into the match frames until the latter are full, and then being withdrawn therefrom, to leave the matches in the frames, and leave the frames free to be taken from the machine, substantially as herein described.

ANTHONY SOHN.

Witnesses:

O. D. MUNN,
L. F. COHEN.