

(No Model.)

L. BRADFORD, 2d.
NAIL MACHINE.

2 Sheets—Sheet 1.

No. 333,103.

Patented Dec. 29, 1885.

Fig. 1.

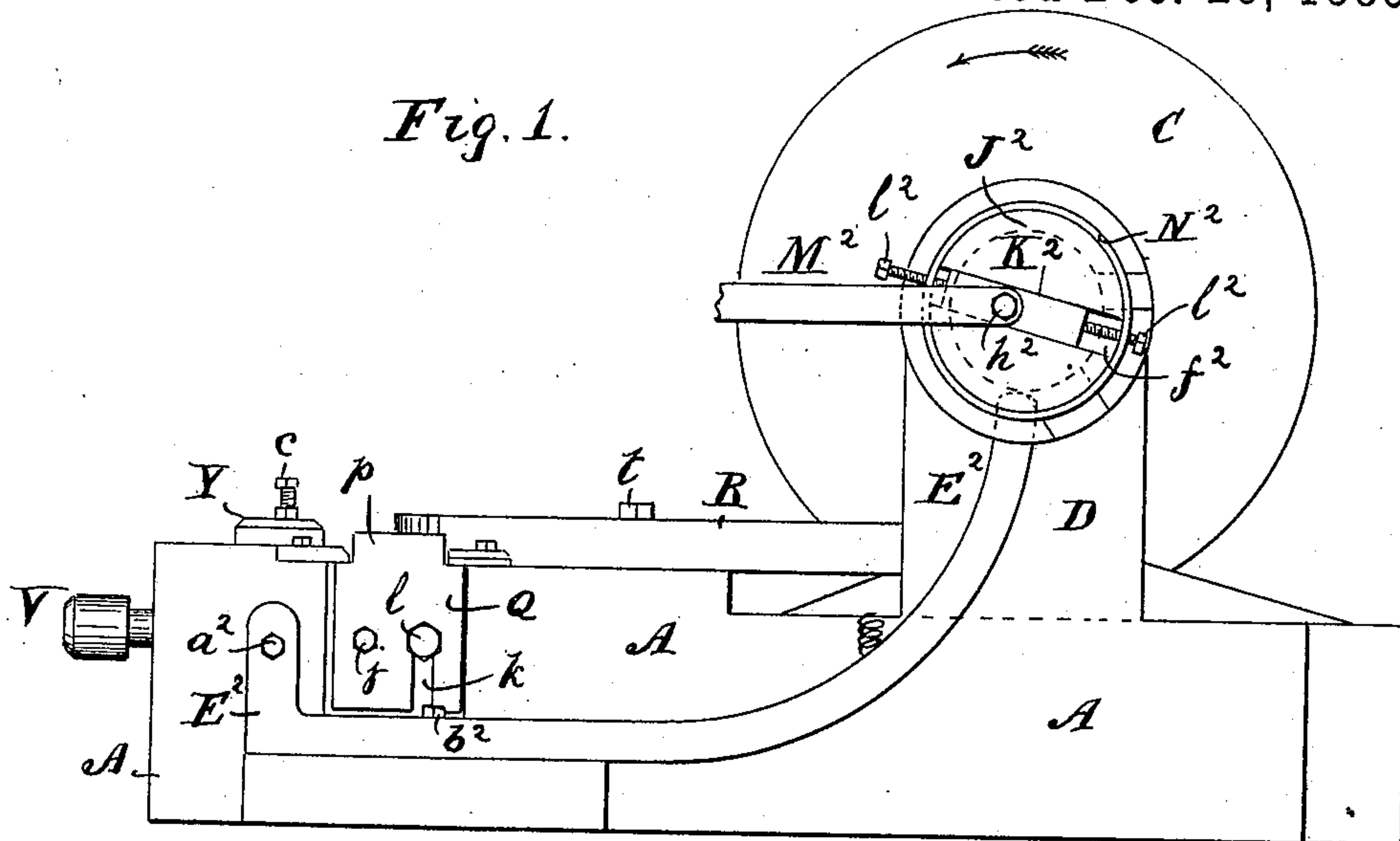
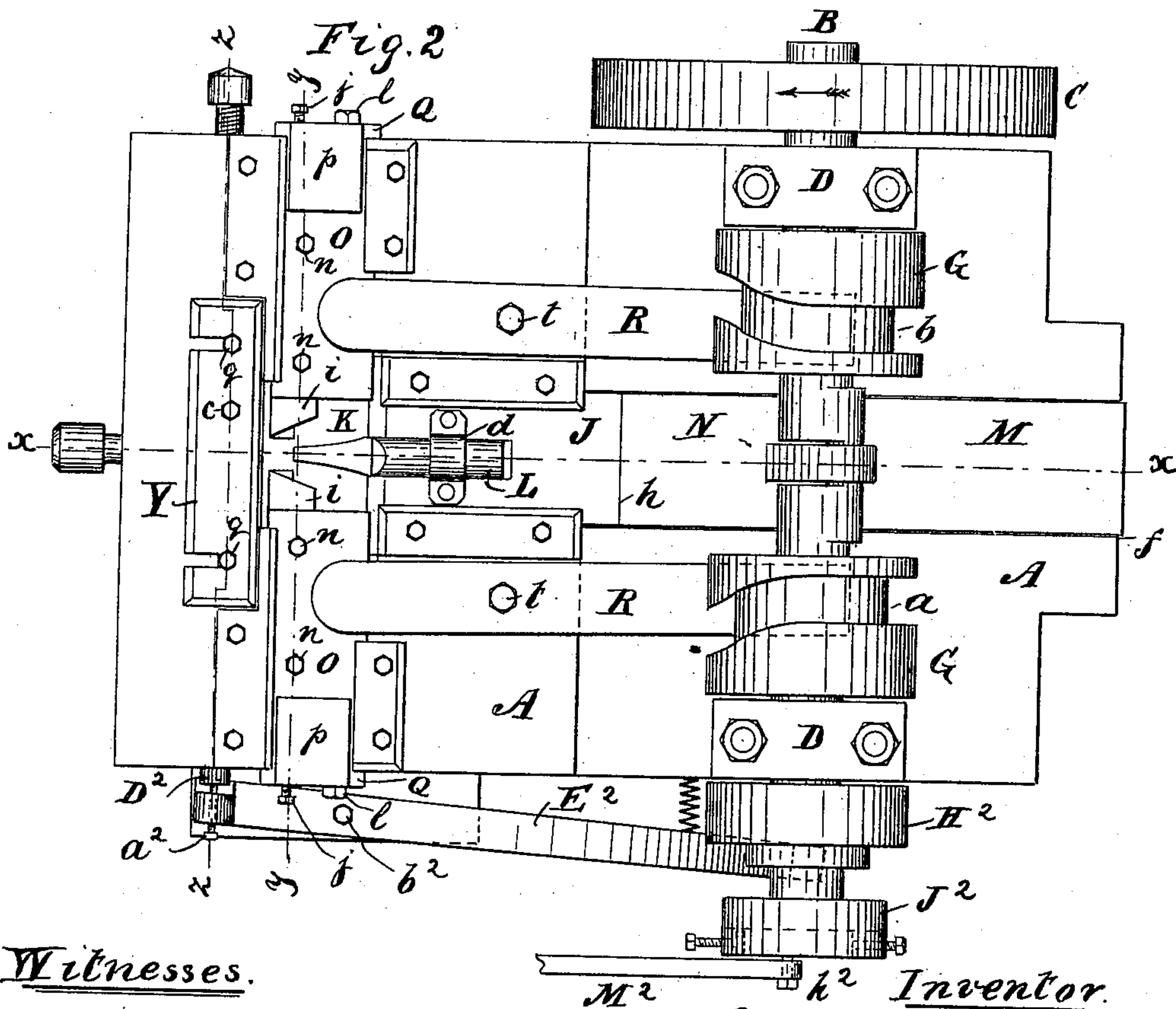


Fig. 2.



Witnesses.

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(No Model.)

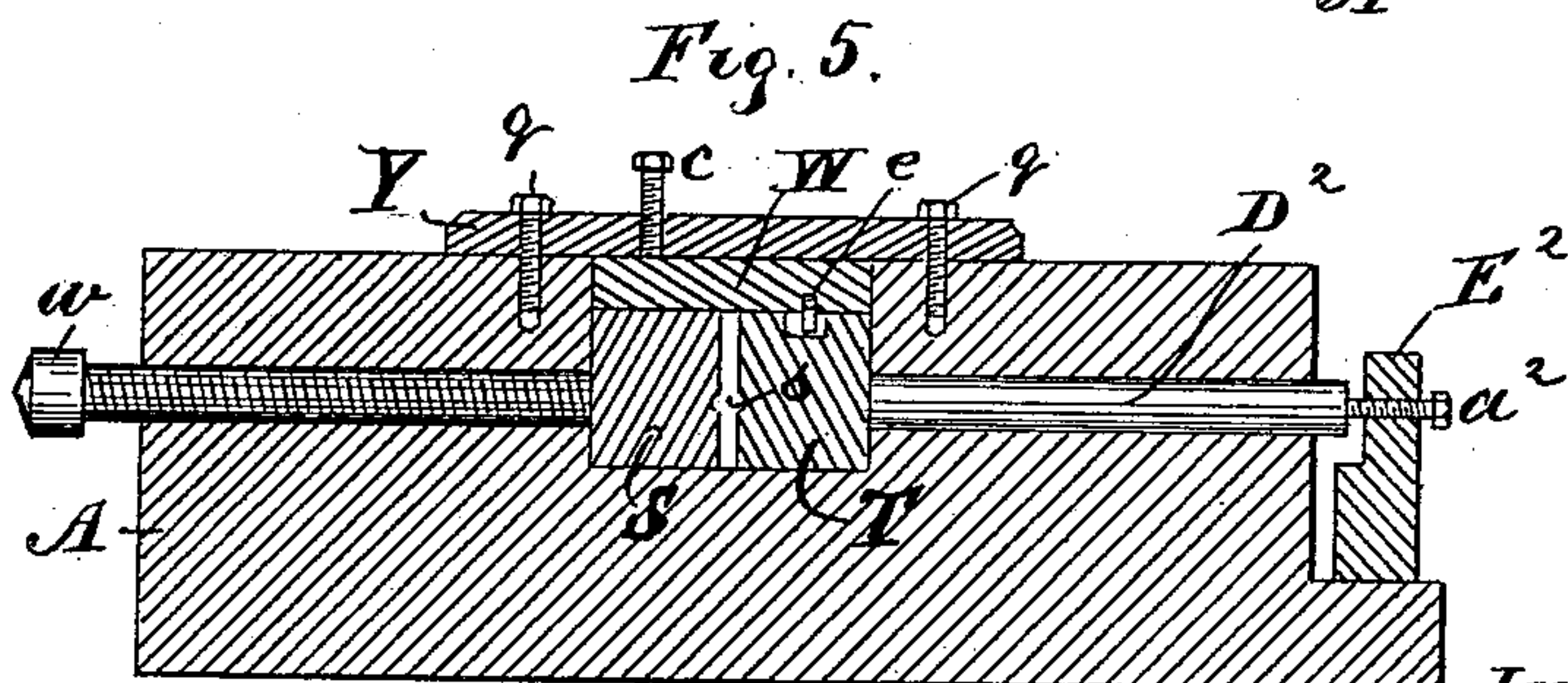
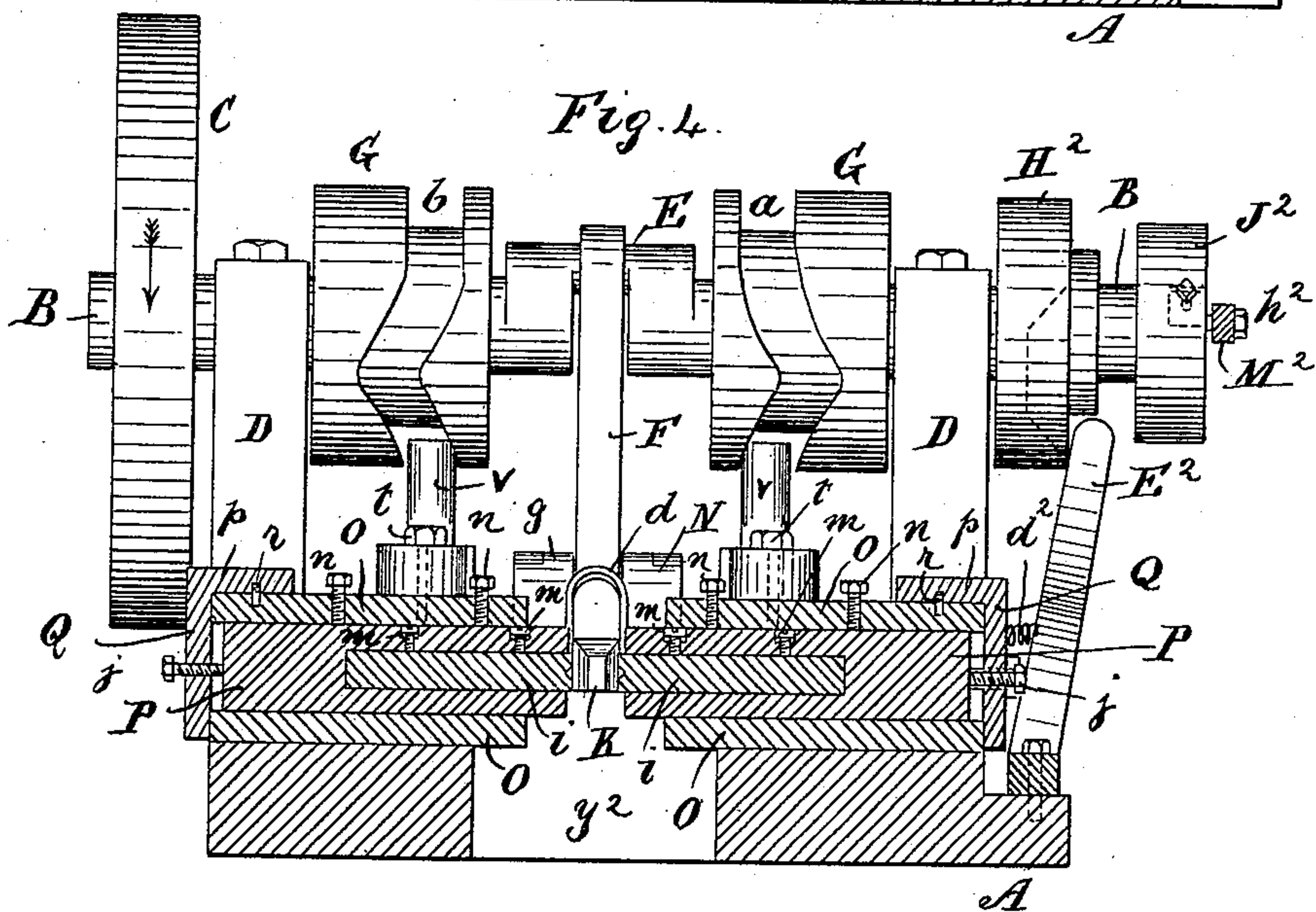
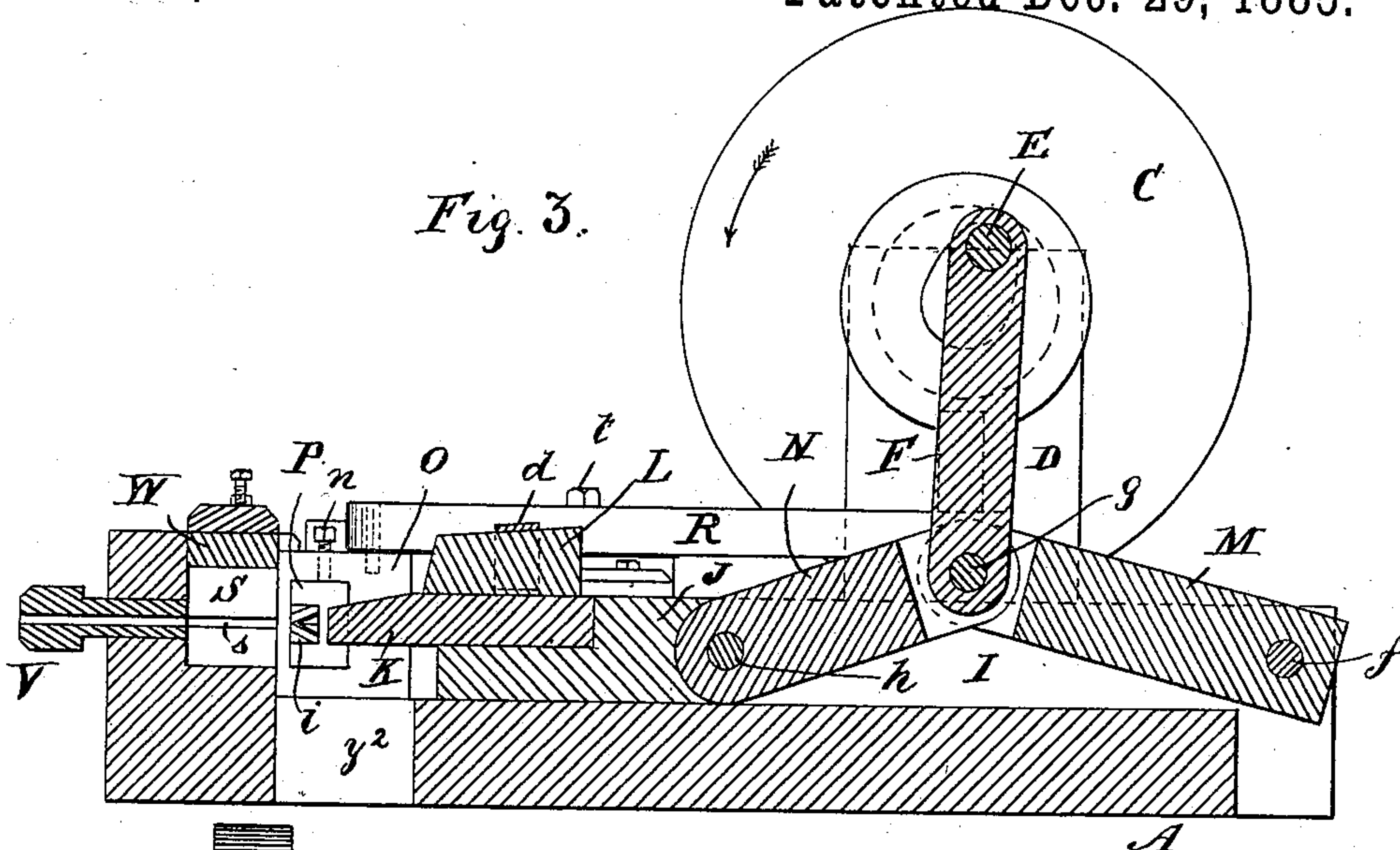
2 Sheets—Sheet 2.

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Witnesses.

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UNITED STATES PATENT OFFICE.

LEMUEL BRADFORD, 2D, OF PLYMOUTH, MASSACHUSETTS.

NAIL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 333,103, dated December 29, 1885.

Application filed February 24, 1885. Serial No. 156,660. (No model.)

To all whom it may concern:

Be it known that I, LEMUEL BRADFORD, 2d, of Plymouth, in the county of Plymouth, State of Massachusetts, have invented a certain new and useful Improvement in Nail-Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved nail-machine; Fig. 2, a top plan view of the same; Fig. 3, a vertical longitudinal section taken on the dotted line *xx* in Fig. 2; Fig. 4, a vertical transverse section taken on the dotted line *yy* in Fig. 2, and Fig. 5 a vertical transverse section taken on the line *zz* in Fig. 2. Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to that class of nail-machines which are designed for making wire nails, or nails which are cut from a continuous wire; and it consists in a novel construction and arrangement of the parts as hereinafter more fully set forth and claimed, by which a more effective and otherwise desirable device of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the bed-piece or body of the machine, B the main shaft, and C the balance or fly wheel. The shaft is journaled horizontally in standards D, and provided at its center with a crank, E, and pitman F. Disposed on the shaft at either side of the crank E there is a cam, G, the cams being respectively provided with corresponding peripheral grooves, *a b*, cut or arranged in reverse order, as best seen in Figs. 2 and 4. A centrally-arranged longitudinal slot, I, is formed in the bed A, and fitted to slide therein there is a stock or bar, J, carrying the header K, which is kept in position in the stock by the band or loop *d* and key L. Pivoted at *f* in the bed A there is a lever, M, the inner end of which is jointed at *g* to a corresponding

lever, N, said last-named lever being also jointed at *h* to the stock J, and both of said levers jointed at *g* to the lower end of the pitman F, the upper end of which is connected with the crank E. Fitted to slide transversely in proper ways in the bed A, at either side of the machine, there is a block, O, and arranged to slide longitudinally in either of said blocks there is a stock, P, carrying a cutter, *i*, the cutters being respectively secured in the stocks by the screws *m* and the stocks in the block by the screws *n*. A cap, Q, carrying an adjusting-screw, *j*, is placed over the outer end of either block O, the caps being respectively provided with slots *k*, for receiving the screws *l*, and with inwardly-projecting horizontally arranged lips or flanges *p*, which rest on said blocks. The screws *l* are inserted in the outer ends of the blocks O, the caps Q being passed down over the same until the lips or flanges *p* rest on said blocks. The screws *j* are for adjusting the stocks P, said stocks being firmly secured in their respective blocks after adjustment by the screws *n*. As an additional means of securing the caps Q on the blocks O, the lips *p* of said caps are each provided with a downwardly-projecting stud, *r*, which enters a corresponding socket in the block when the cap is in position for use, as shown in Figs. 1 and 4. Pivoted at *t* to the bed A, at either side of the stock J, there are horizontally-arranged levers R, said levers being respectively jointed at one end to the blocks O, and provided at the other with studs *v*, which project upwardly into the grooves *a b* of the cams G. Two clamping-blocks or "grippers," S T, are disposed in a proper socket formed in the bed A, opposite the outer end of the header K, the block S being made laterally adjustable by the screw *w*. A plate, W, is placed in the socket above the blocks, said plate being provided on its under side with a stud, *e*, which projects downwardly into an elongated slot in the top of the block T, as shown in Fig. 5, thereby permitting said block to slide laterally. A cap-plate, Y, is placed over the plate W, being secured to the bed of the machine by screws *q*, which pass through slots in the plate and permit its removal, as shown in Fig. 2. A screw, *c*, passes through the plate Y, and is adapted to engage the plate W, the object of said screw being to secure the block S firmly after it is

adjusted by the screw *w*. The blocks S T are centrally grooved on their adjoining faces, as shown at *s*, to receive the wire, which is passed into the machine by feed mechanism (not shown) through the guide V. A push-pin or sliding rod, D², is fitted to work horizontally in the bed A, the inner end of said pin being adapted to engage the block T, and its outer end an adjusting-screw, *a*², in a curved lever, E², which is pivoted at *b*² to the bed A. A face-cam, H², is mounted on the shaft B, said cam being kept in engagement with the upper end of the lever E² by the contractile action of the coiled spring *d*², one end of which is attached to said lever and the other to the body of the machine. An annular face plate or disk, J², is also mounted on the shaft B, said plate being grooved transversely across its outer face, as shown at *f*² in Fig. 1. A bar, K², is fitted to slide in said groove, and jointed thereto at *h*² is a pitman-rod, M². A tire or band, N², is fitted to the disk J², said band being provided with the screws *l*², adapted to engage and adjust the sliding bar K².

The disk J², adjustable bar K², and pitman M² are designed to actuate the feed mechanism of the machine, which it is not deemed essential to show, as any suitable mechanism for that purpose may be employed in conjunction with the blocks S T, rod D², lever E², and cam H².

In the use of my improvement, a sufficient quantity of wire having first been fed into the machine to form one nail, the shaft B is turned, as indicated by the arrows, causing the cam H² to act upon the lever E² and force the rod D² against the block T, thereby clamping the wire firmly between the blocks S T. The shaft continuing to revolve, the header K is drawn back out of the way of the cutters *i*, after which said cutters are moved toward each other by the cams G and levers R until the cutters sever the wire or cut off the nail, which then falls through the space or opening *y*² into any proper receptacle. After the nail has been cut off, as described, the shaft continuing to revolve, the cutters are withdrawn, the levers M N depressed, and the header K forced forward between the receding cutters against the inwardly-protruding end of the wire, which is still held clamped between the blocks S T, thereby forming a head on the next succeeding nail. The shaft still continuing to revolve, the lever E² is next withdrawn from contact with the pin D², thereby releasing the wire, after which it is fed forward the length of another nail and again clamped between the blocks S T, the header K at the same time receding to permit the entrance of the wire. When the wire has been clamped, as described, the shaft still continuing to rotate, the cutters will be again moved toward each other, and cut off the headed nail in a manner which will be readily obvious without a more explicit description.

It will be understood that the cutting-edges or inner ends of the cutters are so constructed as to "point" the nails or give the points a suitable shape; also, that the header may be so constructed as to give the head of the nail nearly any desired form. The cap-plates Q enable the cutter-stocks and cutters to be readily removed from or inserted in the sliding blocks O, for the purpose of grinding the cutters or replacing them when broken.

It will also be understood that all of the working parts of the machine are to be so constructed and "timed" as to perform their respective functions properly.

Having thus explained my invention, what I claim is—

1. In a nail-machine, the pivoted lever E², push-pin D², blocks S T, cutters *i*, stocks P, blocks O, and header K, in combination with means for securing and adjusting the stocks P in the blocks O, securing and adjusting the blocks S T in their socket, and means for actuating said lever, cutters, and header, substantially as described.
2. In a nail-machine, the plate Y, provided with the clamping-screw *c*, the plate W, provided with the stud *e*, the blocks S T, screws *g*, and bed A, combined and arranged to operate substantially as set forth.
3. In a nail-machine, the stocks P, carrying the cutters *i*, in combination with the sliding blocks O and means for reciprocating said cutters, substantially as set forth.
4. In a nail-machine, the blocks O, carrying the stocks P, and provided with the plates Q, substantially as described.
5. In a nail-machine, the plates Q, provided with the adjusting-screws *j*, in combination with the blocks O and means for detachably connecting said plates to said blocks, substantially as and for the purpose set forth.
6. In a nail-machine, the blocks O, provided with the screws *n l*, stocks P, provided with the cutters *i* and screws *m*, plates Q, provided with the screws *j*, and the levers R, provided with the studs *v*, in combination with the cams G H², shaft B, lever E², push-pin D², blocks S T, header K, stock J, levers N M, pitman F, and body A, substantially as described.
7. In a nail-machine, the push-pin D², in combination with the pivoted lever E², blocks S T, cutters *i*, stocks P, blocks O, header K, cam H², shaft B, and operative mechanism, substantially as described.
8. In a nail-machine, the plate W, provided with the stud *e*, the block T, provided with an elongated slot for receiving said stud, means for securing said plate, and means for forcing said block against the block S to grasp the wire, substantially as described.

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Witnesses:

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