

(No Model.)

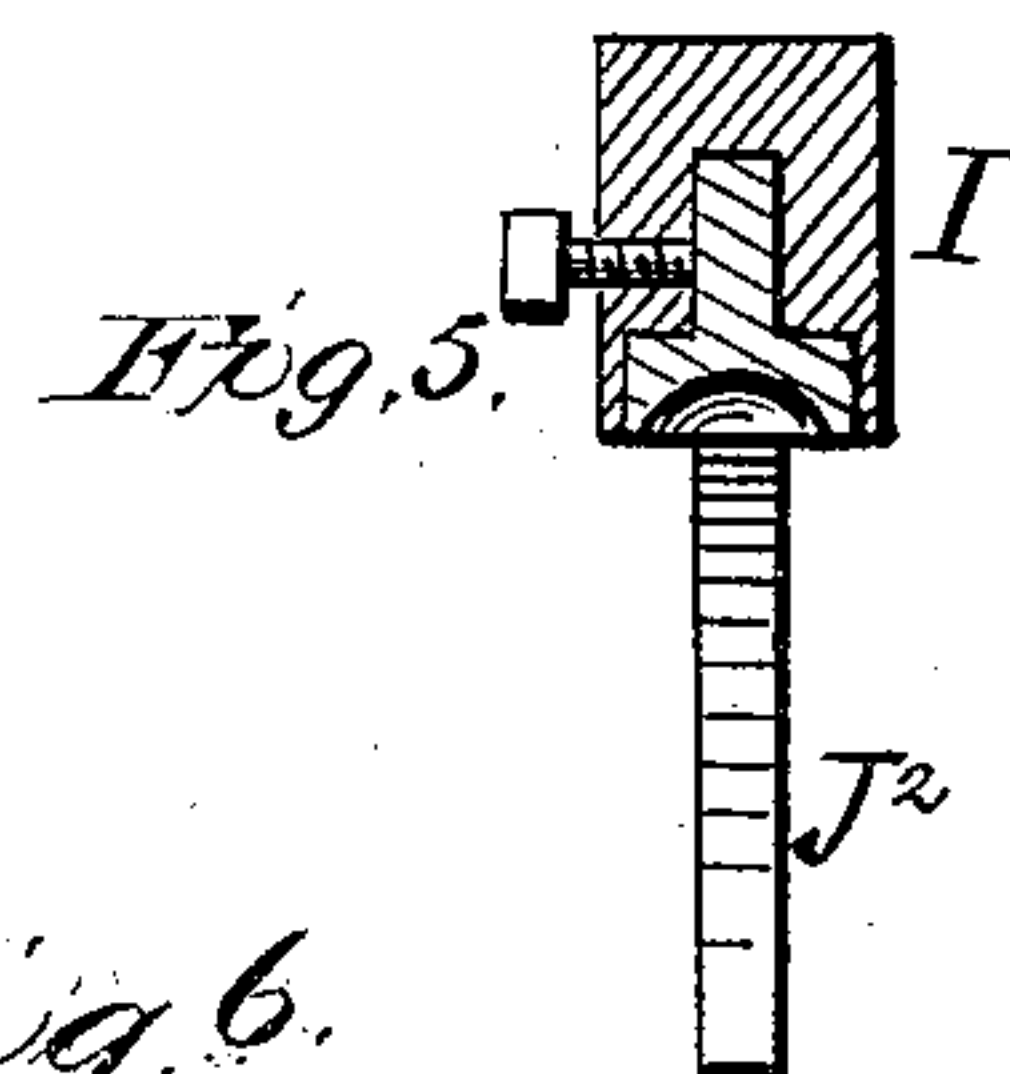
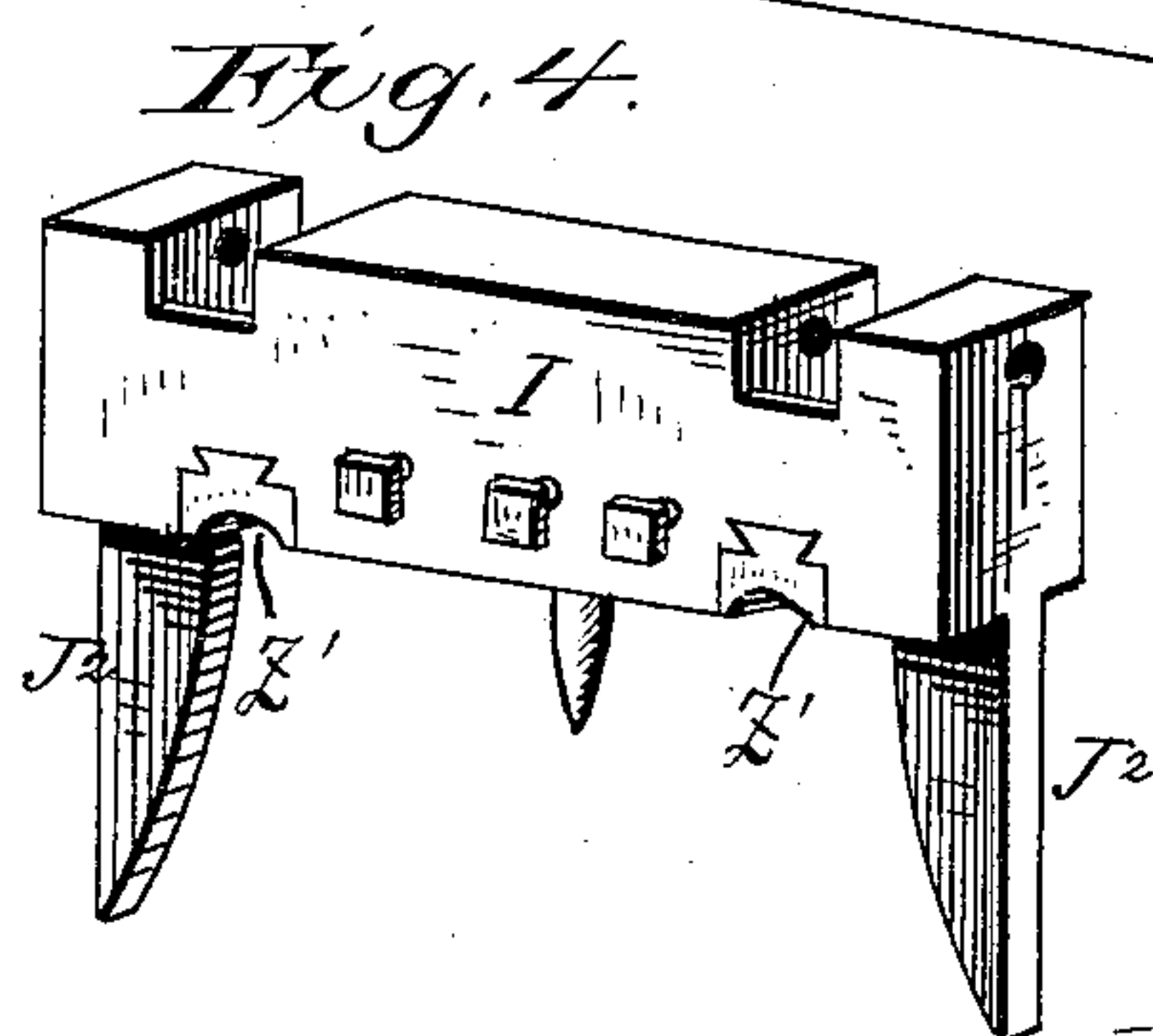
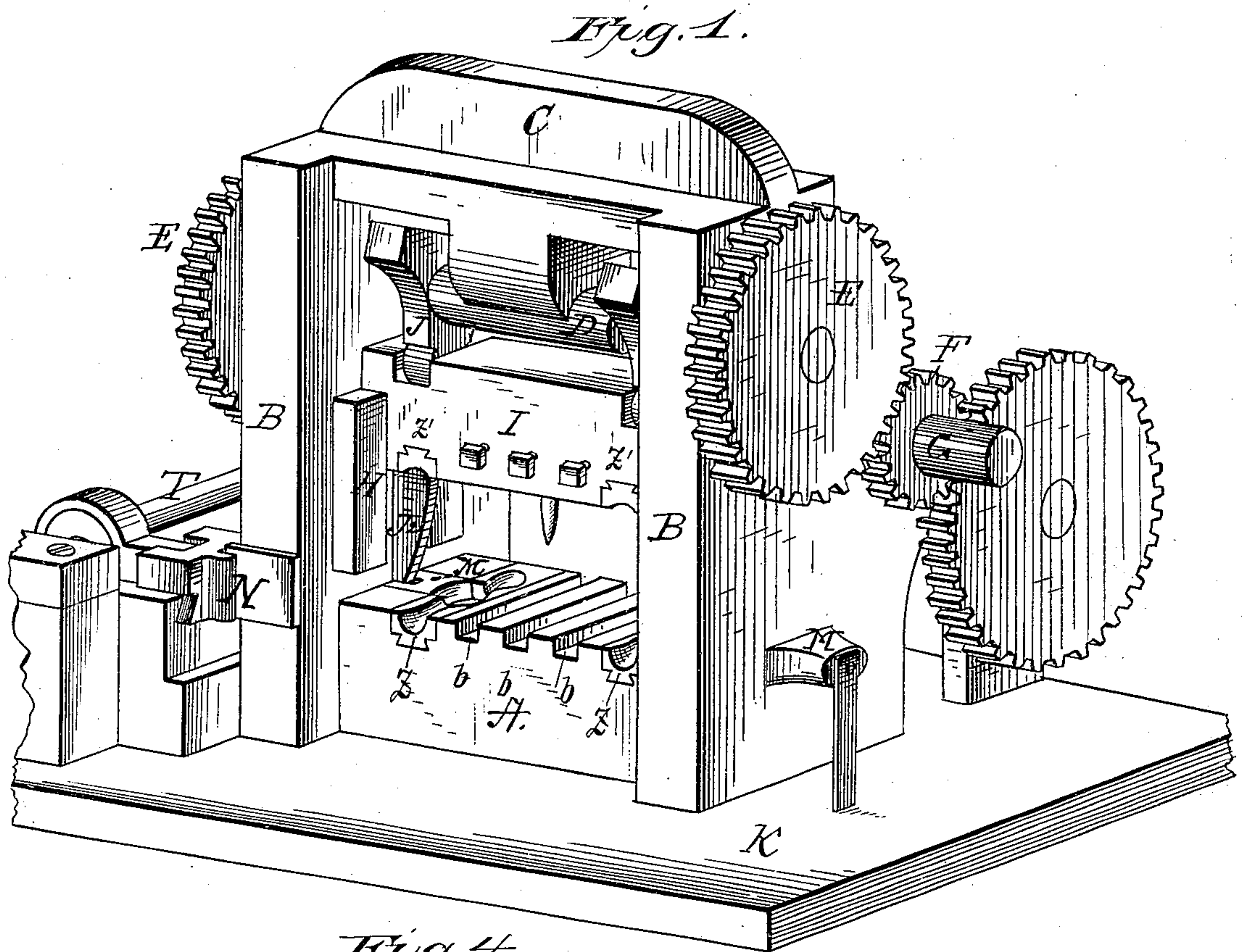
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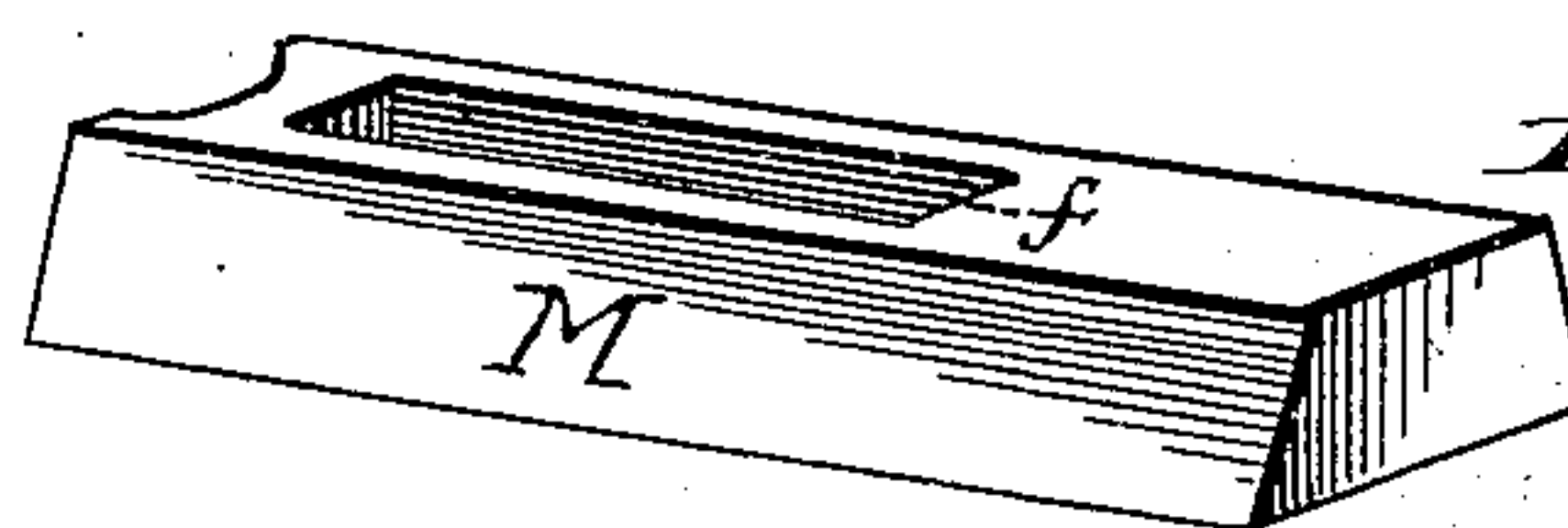
MACHINE FOR FORGING HAMMERS.

No. 258,569.

Patented May 30, 1882.



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(No Model.)

2 Sheets—Sheet 2.

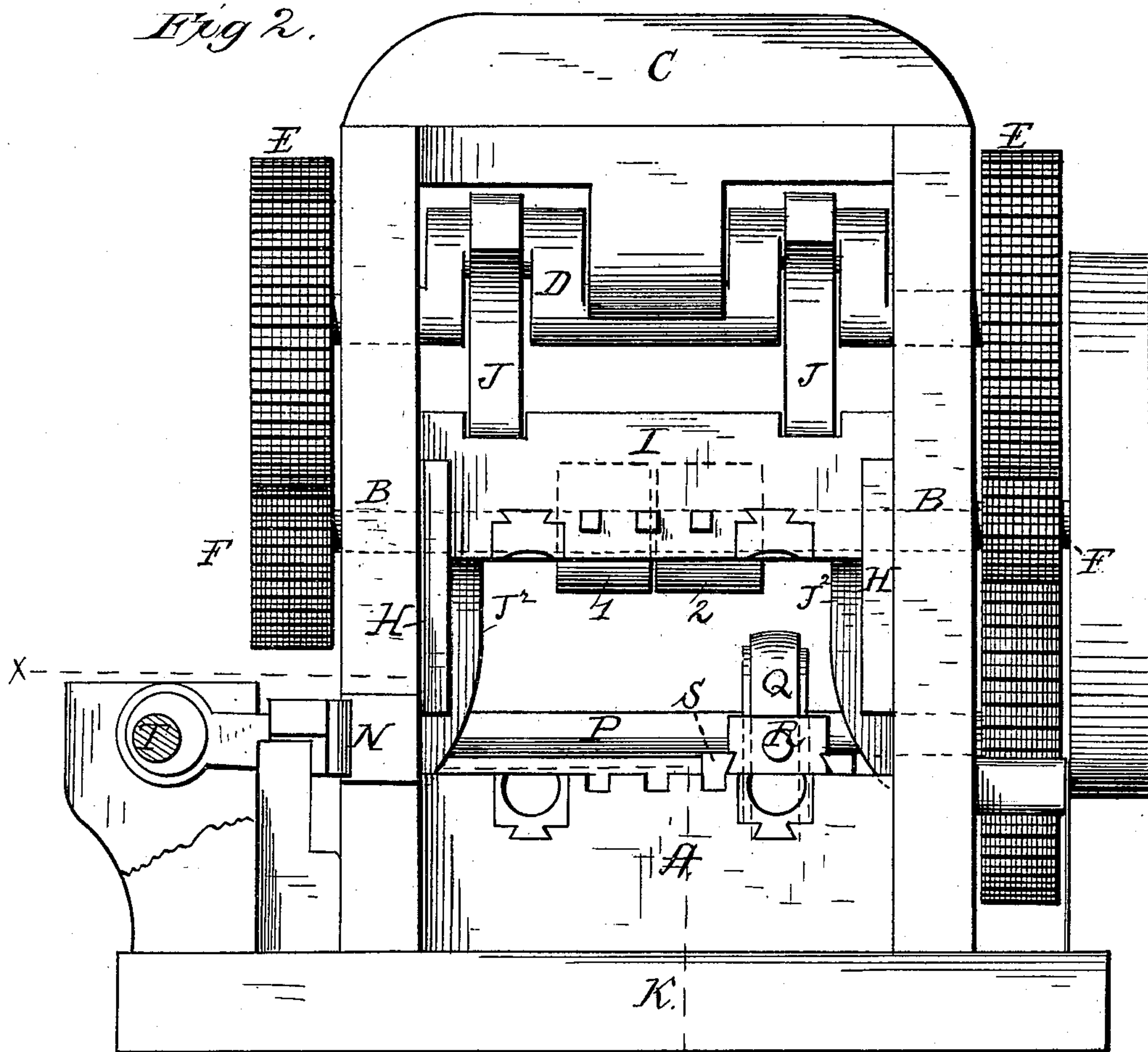
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MACHINE FOR FORGING HAMMERS.

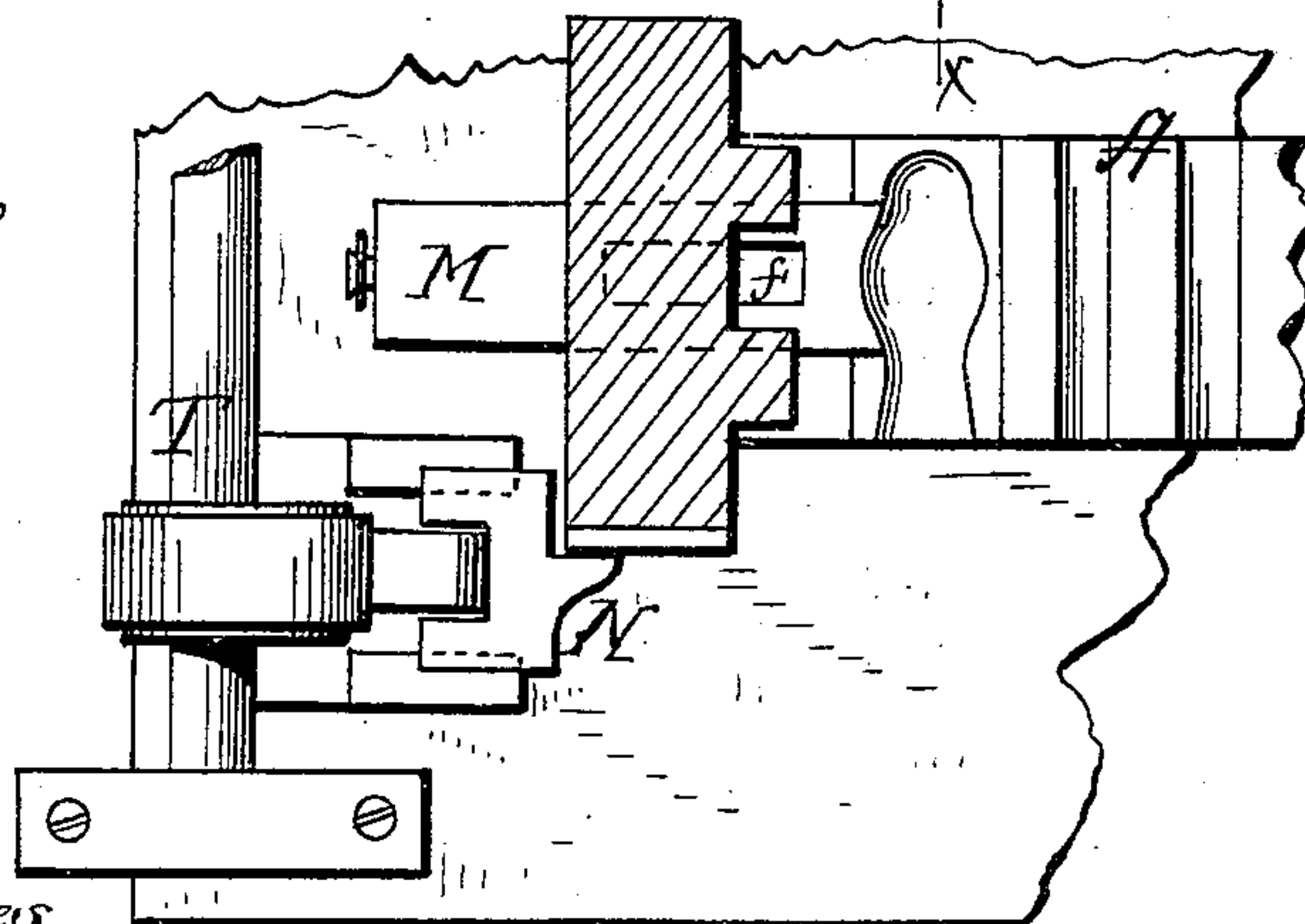
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*Fig 2.*

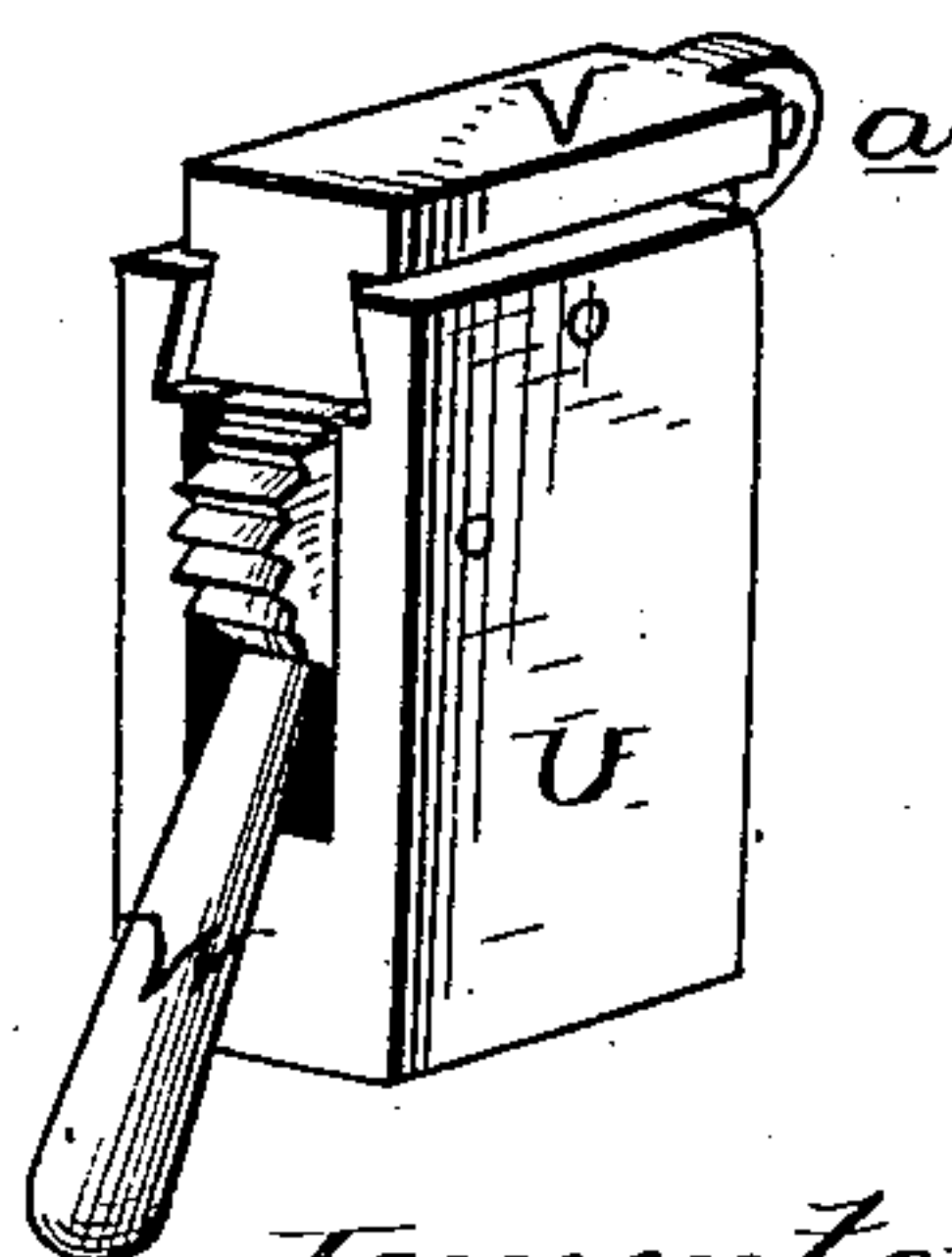


*Fig. 3*



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*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

WILLIAM EVANS, OF CHESTER, PENNSYLVANIA.

## MACHINE FOR FORGING HAMMERS.

SPECIFICATION forming part of Letters Patent No. 258,569, dated May 30, 1882.

Application filed May 26, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM EVANS, a citizen of the United States, residing at Chester, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Forging Hammers; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of my improved forging-machine. Fig. 2 is a front view of the same. Fig. 3 is a transverse sectional view taken through the line *xx* of Fig. 2. Fig. 4 is a perspective view of the cross-head or follower. Figs. 5, 6, and 7 are detail views.

This invention is designed as an improvement on the machine shown and described in my Patent No. 144,969, dated November 25, 1873, and has for its main object to shape or forge a hammer and to compress the metal sidewise or laterally.

My invention therefore consists in the novel organization of a machine adapted to be operated by power so as to compress the metal to form the hammer and to give the hammer its proper shape or form.

It also consists in the novel construction and combination of parts, as will be hereinafter more fully set forth and specifically claimed.

In the annexed drawings, the letter A represents a suitable bed or foundation block, on which removable dies Z for forming or shaping hammers are arranged. The upper surface of this bed-block is also provided with a plurality of transverse passages, *b*, adapted to receive the blanks, holders, or supports for the iron to be acted upon by the punches attached to the follower, and the opposite ends of this bed-block are formed with lateral or side passages opening into the die-chambers or passages for the operation of the side plungers or dies, the inner end of each forming a section of the die or a continuation thereof. At each end of this foundation-block rises a vertical standard, B, connected at their upper ends by means of the transverse or cross bar C, substantially as shown in Fig. 1 of the drawings.

The letter D represents a crank-shaft, having its bearings in the standards B B and provided at each end with a gear-wheel, E, which latter meshes with pinions F on the driving-shaft G, arranged below and in a different plane from the crank-shaft D. The driving-shaft is provided with the usual fixed and loose pulleys, 1 and 2, and is operated from a main driving shaft by belting. It is obvious that other power may be employed for operating the driving-shaft.

On the inner sides of the standards B B are vertical guides or ways H H, parallel to each other, between which moves vertically a horizontal cross-head or follower, I. This cross-head or follower, which is connected to the crank-shaft D by means of pitmen J J, is reciprocated vertically by the cranks of the aforesaid shaft. The ends of the reciprocating cross-head or follower are provided or formed with pendent or downward-projecting arms J<sup>2</sup>, having their lower ends beveled or tapered for the purpose, as will be hereinafter described. The under side of this cross-head or follower I, which constitutes the hammer-face, is provided with upper removable facing-dies, Z', having the outlines of the hammer to be made, and which register and work in operation with the respective dies below.

To the intermediate portion of the cross-head, between the facing-dies, (see Figs. 1 and 4,) are arranged one or more detachable punches, secured by set-screws or otherwise, for removing or pressing the metal from the bar or blank arranged on the supports in the passage or passages *b* in the base-block to form the eyes of the hammers.

The base-block A of the foundation-bed K (see Fig. 3) is provided or formed with two or more dies, Z, having the outlines of a hammer intended to be manufactured. The outer sides of these dies are formed with recesses of the same depth as the stationary portion of the dies, through which pass side plungers or dies, M, having at their ends the outline or shape of the hammer at the eye portion thereof. Each of these plungers, constituting a portion of the outer side section of the die, is formed with a vertical slot, *f*, through which descend the beveled or tapered arms J<sup>2</sup> of the cross-head or follower, to communicate to the same a sliding motion to compress the metal within



the die. The object of compressing the metal of the hammer is to condense that portion of the metal surrounding the eye, thereby obviating the liability, to a great extent, of the metal to crack or break at the ends of the eye portion of the hammer. As the cross-head is reciprocated upward the arms are withdrawn from the slots or mortises in the plungers or dies, and said dies are retracted to their normal positions by means of springs. These side plungers or dies are provided with means (not shown) for regulating the thrust or forward movement of the same, so as to regulate the compression of the metal of the hammer.

From the foregoing description, and by reference to Figs. 1 and 2 of the drawings, it will be noticed that the die for forming a hammer is composed of the upper and lower parts, arranged respectively in the follower and base-block, with the side section or plunger, M, constituting a portion on one side. The dies shown in the drawings are for making machinists' "ball-peen" hammers. The bars or stock from which the intended hammers are to be manufactured are heated, then placed on the supports of the base-block, for the removal, through the agency of punches attached to the follower I, of metal to form the eye, and afterward placed within the shaping-dies of the bed-block with a detachable pin in the formed eye, and by the powerful action of the opposing die-faces the hammers are formed into the desired shape, and upon the upward movement of the cross-head or follower the bars having the formed hammers at their ends are removed from the respective dies and passed to the shears N, arranged at the side of the machine substantially as shown in Fig. 1 of the drawings. The hammers being severed from the bars and dropped into a box or other receptacle, they are taken to the emery-wheel or other polishing means for removing the fins at the junction of the die-sections and finishing the same for the market. Thus it will be observed that by this method a hammer can be forged by one heating of the metal stock-piece. At the rear end of the dies, (see Fig. 2,) which will now hold the shaped article to which the steel facing is to be applied, is arranged a shaft, P, suitably supported in journal-bearings at a height a little above the horizontal plane of the dies. On this shaft (only one shown) is arranged an eccentric-rod, Q, connected to the welding-die or header R, of the desired shape, arranged in a plane with the dies, with open ends next to the header, and having horizontal reciprocating motions in cross-head blocks S. The shaft P, as well as the shaft T, is provided with an

eccentric operating the movable portion of the shears, and receives rotary motion by means of meshing gear and mitered cogs from the driving-shaft.

The object of the header, (which is capable of being changed to suit the work,) arranged at the rear end of the dies, is for the purpose of facing the hammers made of wrought or malleable iron with steel, which process of uniting these metals is well understood by those skilled in the art.

As the art of forging hammers and like articles is well known to the trade, I do not deem it necessary to enter into further details of the operation.

This machine, with proper changes in the dies, is applicable to the manufacture of all styles of hammers and edge-tools. The removable upper dies may be secured in position by means of set-screws, instead of the dovetailed recesses.

Fig. 7 represents an attachment or means for removing the dies from the base-block and follower.

The means for removing the dies from the base-block and follower (see Fig. 7) consists of the slotted rectangular block U, dovetailed sliding plunger V, formed with a rack on its under side, and at the front end with a perforated lug, a, for the connection with lugs (not shown) on the dies, and the pivoted eccentric-lever W, having teeth to engage with the rack of the sliding plunger and operate the same.

I do not confine myself to the construction and arrangement of the parts herein described and shown, nor to the form of the dies, as different styles of hammers will obviously require different forms.

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

1. In a machine for forging hammers, the combination, with the upper and lower sections of a hammer-die, of the movable side section or plunger, M, means for advancing the said side section, and a spring for retracting the same, substantially as described.

2. In a machine for forging hammers, the combination of the bed-block A, having dies, and the side sections or plungers, M, with slots f, and the follower I, with dies and tapering arms J<sup>2</sup>, with means for operating the follower, substantially as described.

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

WILLIAM EVANS.

Witnesses:

GEO. B. LINDSAY,  
J. WALTER LINDSAY.