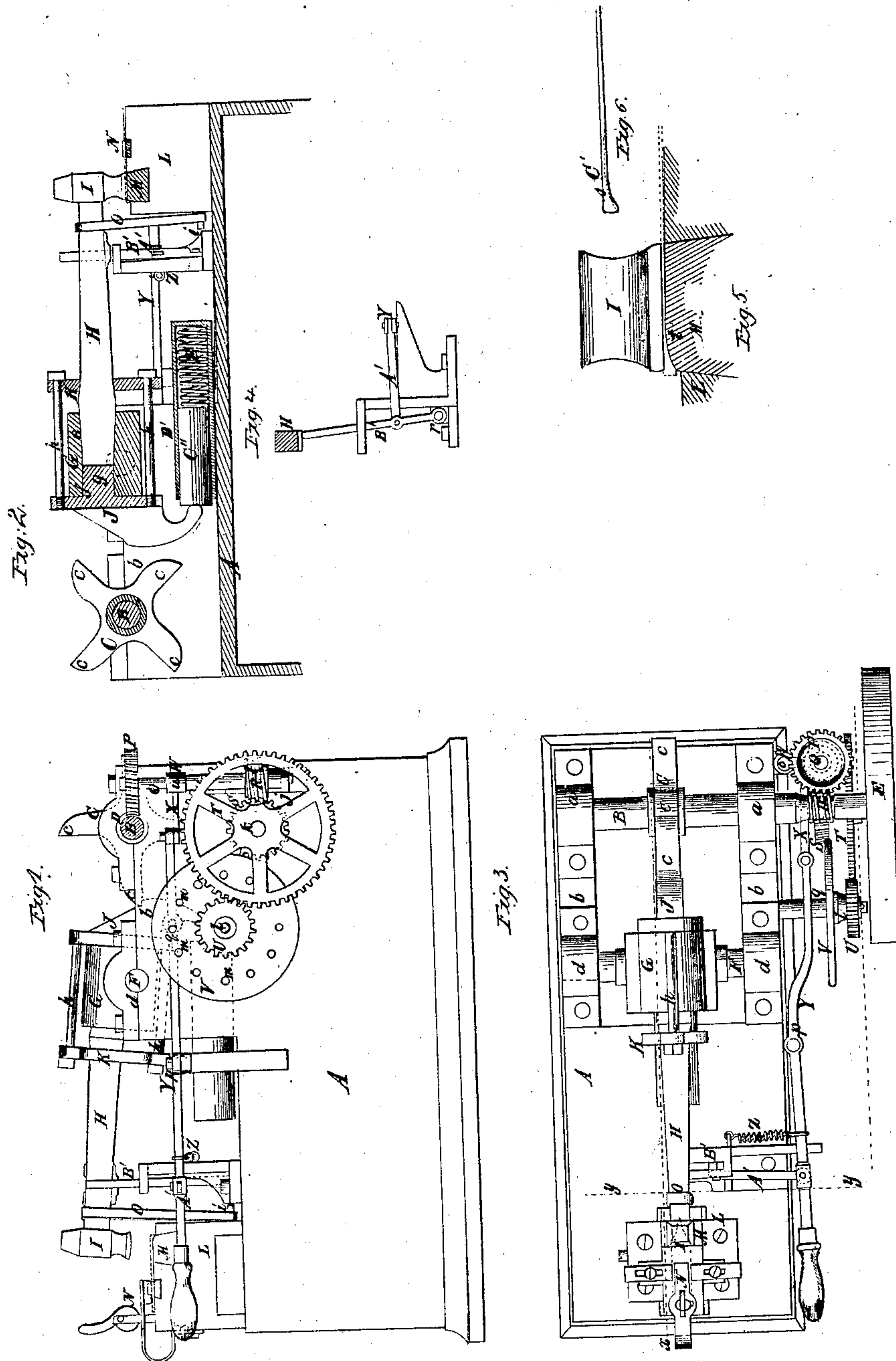


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PATENTED SEPT. 18, 1860.

A. MORTON.  
TRIP HAMMER.



Witnesses.

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## TRIP-HAMMER.

Specification of Letters Patent No. 30,080, dated September 18, 1860.

*To all whom it may concern:*

Be it known that I, ALEXANDER MORTON, of the city, county, and State of New York, have invented certain new and useful Improvements in Trip-Hammers for Hammering Gold-Pen Blanks and for other Similar or Analogous Purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side elevation of a trip-hammer with my invention attached to it; Fig. 2, a side sectional view of the same taken in the line *x, x*, Fig. 3; Fig. 3, a plan or top view of the same; Fig. 4, a vertical section of a portion of the same taken in the line *y y* Fig. 3; Fig. 5, an enlarged detached view of the hammer and bed with a pen blank; Fig. 6, a detached view of a rolled pen blank ready for hammering.

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

This invention consists, firstly, in the employment of an automatic stop mechanism applied to a trip-hammer, in such a manner as to insure an equal or given number of strokes of the hammer upon each article of a certain class (different sizes of articles such as gold pens requiring a different number of blows) thereby subjecting each to the same amount of positive hammering to produce in each of the same class or size a uniform density of metal and give control of the elasticity.

The invention consists, secondly, in the employment or use of an elastic attachment applied to the hammer to prevent backlash and thereby insure a uniform operation of the hammer.

The invention consists, thirdly, in a novel and improved arrangement of a hammer-arm, socket and head, substantially as hereinafter fully shown and described, whereby durability in the hammer-mechanism is obtained and also facility in constructing and keeping the same in proper working order.

The invention consists, fourthly, in the employment or use of convex anvil beds so arranged as to control or modify the form of

articles as may be required while being subjected to the hammering operation.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents a metal block or bed-piece which supports the working parts of the device and B, is a driving shaft which has its bearing *a, a*, on upright plates or ledges *b, b*, on the block or bed-piece. The shaft B, is placed transversely on the block A, and it has a tappet C, secured on it, said tappet being provided with arms *c* of equal length. On the shaft B, there is cut a screw D, which is shown clearly in Fig. 3, and to one end of said shaft a fly wheel E, is secured.

On the upright plates or ledges *b, b*, there are placed the bearings *d, d*, of a shaft F, which is parallel with the driving shaft B. This shaft F, forms the trunnions of a socket G, which receives the wooden arm H, of a hammer I, see Fig. 2.

The socket G is open at both ends and its front part *e*, which receives the arm H, is slightly taper while its back part *f*, is of equal dimensions throughout, see Fig. 2.

J, is a head which has a quadrilateral projection *g*, at its front part to fit into the back part *f*, of the socket. The outer part of the head is formed in such a way that the arms *c*, of the tappet may in acting upon it raise the arm H, to a requisite height and then release it. The head J, should be of hardened steel and the socket G, may be of the same material.

The wooden arm H, is secured in the socket G by means of a plate K, and screw rods *h, h*, the plate K, being fitted tightly on the arm just in front of the socket G, and having the rods *h*, passing through its upper and lower ends and into the upper and lower ends of the head J. By this arrangement it will be seen that by screwing up the rods *h, h*, the wooden arm H, will be firmly secured in the socket and it will also be seen that in case the head J, should become worn by use a new one may be readily applied. The fixing of the arm H, in the socket G, in a secure manner is essential; solid metal arms cannot be used with advantage, as the



fibers of the metal are disarranged by continuous concussions, and they soon break. Besides having the arm H, socket G, and head J, formed in three separate parts secured together as shown, either part if  
 5 broken or injured in any way may be replaced at a trifling expense.

L, is an anvil which is placed on the block or bed-piece A, and secured thereto in any  
 10 proper way. This anvil occupies a position directly under the hammer I, and in the upper part of the anvil there is placed or fitted a bed M, on which the article to be hammered is placed. The face of this bed is of  
 15 convex form as shown more particularly in Fig. 5. The hammer I, of course works over the bed M, and the article to be operated upon may be secured in proper position by an eccentric N.

O, is an elastic band of india-rubber or other suitable material. This band is placed  
 20 on the outer part of the arm H, just back of the hammer I, and its lower end is fitted on a pin *i*, which projects horizontally from the lower part of the anvil L. The tension of  
 25 this band O, is such that it will keep the hammer I, on the bed, or rather in contact with the article thereon each time the hammer strikes, preventing any recoil or back  
 30 lash and thereby always keeping the head J, in proper position to be acted upon by the arms *c*, of the tappet. If the hammer I, were allowed to recoil the head J, might in many instances be beyond the action of the  
 35 arm *c*, of the tappet, when the latter arrives at the proper acting point and consequently a stroke of the hammer would be omitted by every contingency of this kind. The elastic band O, fully obviates this difficulty.

The screw D, on the driving shaft B, gears, when the hammer is at work, into a  
 40 worm-wheel P, which is at the upper end of a shaft Q, which is allowed to work or play to a certain extent in its step *j*. On the  
 45 lower part of the shaft Q, there is a screw R, which gears into a worm wheel S, on the axle *k*, of a wheel T, the latter gearing into a pinion U, on the axle *l*, of a circular disk V, which is perforated near its periphery  
 50 with one or more holes *m*.

The upper part of the shaft Q, has its bearings *u*, in an arm W, the lower end of which is fitted on a pivot *o*, and to the upper  
 55 end of the arm W, a horizontal rod X, is attached, the end of which is pivoted to a horizontal lever Y, having its fulcrum at *p*. To the lever Y, near its point of connection with the rod X, a pin *q* projects horizontally, said pin being made to bear against the inner  
 60 side of the disk V, by a spring Z, which is attached to the lever Y. To the lever Y, near the spring Z, there is connected a rod A', the outer end of which is attached to an upright bar B', the lower end of which is  
 65 connected by a pivot or joint *r*, to the upper

surface of the block A. The bar B', is of such a height that when under the arm H, it will sustain it sufficiently high to keep the head J, beyond the action of the tappet C. The spring Z, has a tendency to throw the  
 70 bar B', underneath the arm H, as well as to keep the pin *q*, in contact with the disk V, and the latter prevents the spring from throwing the bar B', underneath the arm at an improper time. When however a per-  
 75 foration *m*, comes opposite pin *q*, the latter passes into it and the bar B, is moved under the arm H, the spring Z, effecting the result and at the same time the arm W, is turned  
 80 under the action of lever Y, and rod X, and the shaft Q, is tilted or canted sufficiently thereby to throw the worm-wheel P, out of gear with the screw D. The hammer I, therefore is automatically stopped and re-  
 85 tained in an elevated position.

The hammer receives its downward motion in consequence of the lower end of the head J, bearing against a rod C'', which is fitted in a cylinder D', and against a spiral  
 90 spring E'. This arrangement being quite common and well known does not require a minute description.

It will be seen of course from the above description that the hammer may be allowed  
 95 to operate any number of times before being stopped by having more or less holes *m*, in the disk V, and also by change of the gearing T, U.

The convex form of the bed M, is important as it enables the articles to be ham-  
 100 mered, to be modified in form while being subjected to the hammering process; for instance, by reference to Fig. 6, a gold pen blank C', will be seen rolled into a form which approximates only to the correct one.  
 105 In order to give this blank the required elasticity it should be made a little more concave at the point *s*, indicated in red, and by having the face of the bed M, made to correspond inversely with the under side of the  
 110 blanks as shown at *t*, Fig. 5, the desired end will be attained. The hammering of the blanks it will be understood is to give them density, correct and permanent elasticity—  
 115 elasticity being as density—and as it is difficult to give every class of pen its exact proper form in the rolling process, the approximate form thus obtained may be perfected in the subsequent hammering operation.  
 120

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is—

1. The automatic stop mechanism for giving the positive number of strokes required  
 125 to the hammer formed by the gearing D, P, R, S, T, U, with the perforated disk V, the tilting shaft Q, lever Y, provided with the pin *q*, and spring Z, and bar B', the latter being arranged relatively with the hammer  
 130



arm H, essentially as set forth: The rotary motion of the regulating disk V, being controlled by the hammer shaft so that the disk is moved simultaneously with the hammer  
5 and the number of blows of the latter regulated by the movement of the former.

2. The employment or use of the elastic band O, applied to the hammer-arm H, essentially as and for the purpose set forth.

10 3. Forming the hammer-arm H, socket G, and head J, separately and connecting them

together by means of the plate K, and screw rods *h*, *h*, the latter being screwed into head J.

4. The employment or use of the bed M, 15 provided with a convex face and fitted in the anvil L, for the purpose herein set forth.

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Witnesses:

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