

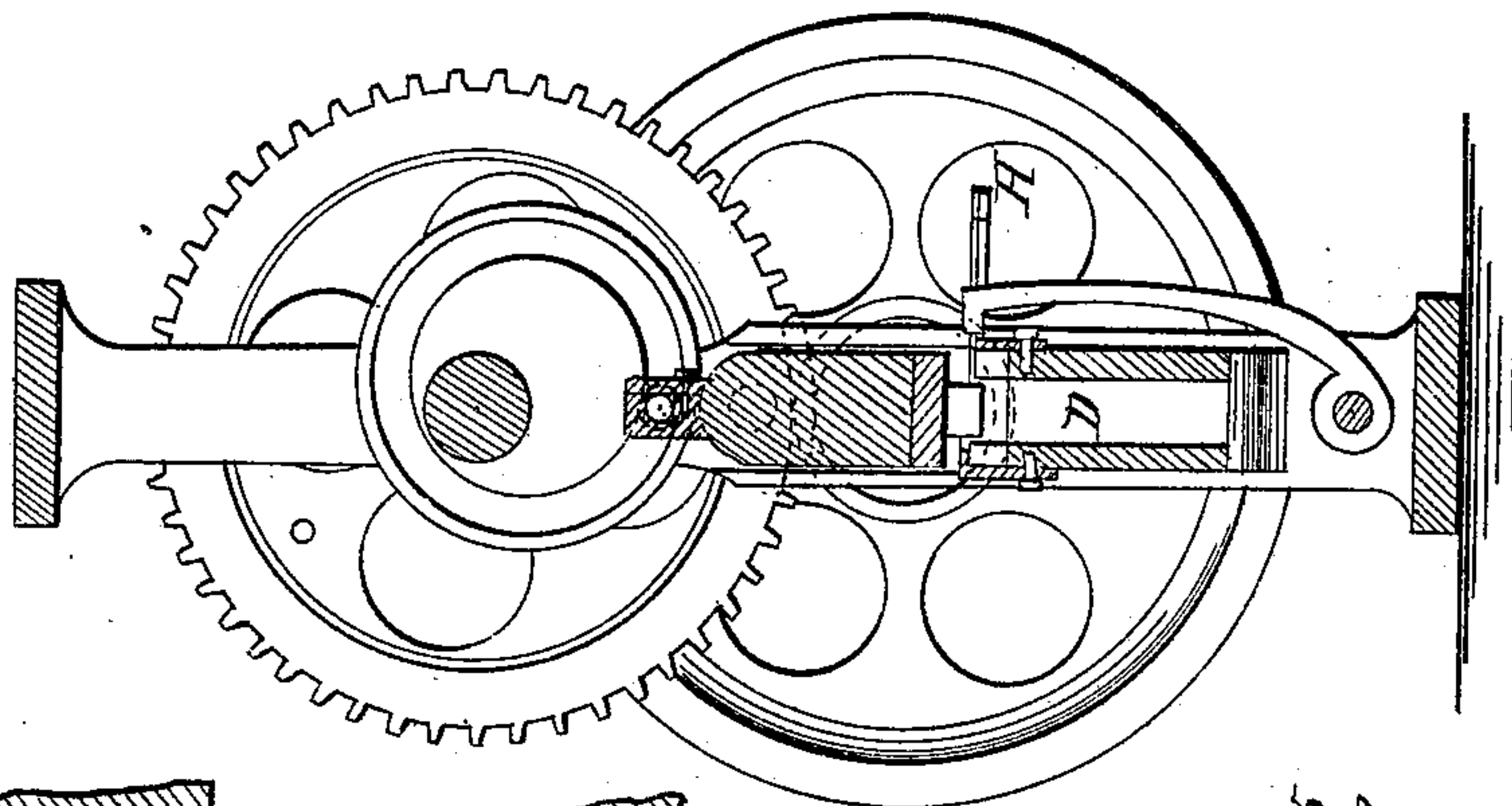
*L. Chapman.*

*Forming Bits for Axes.*

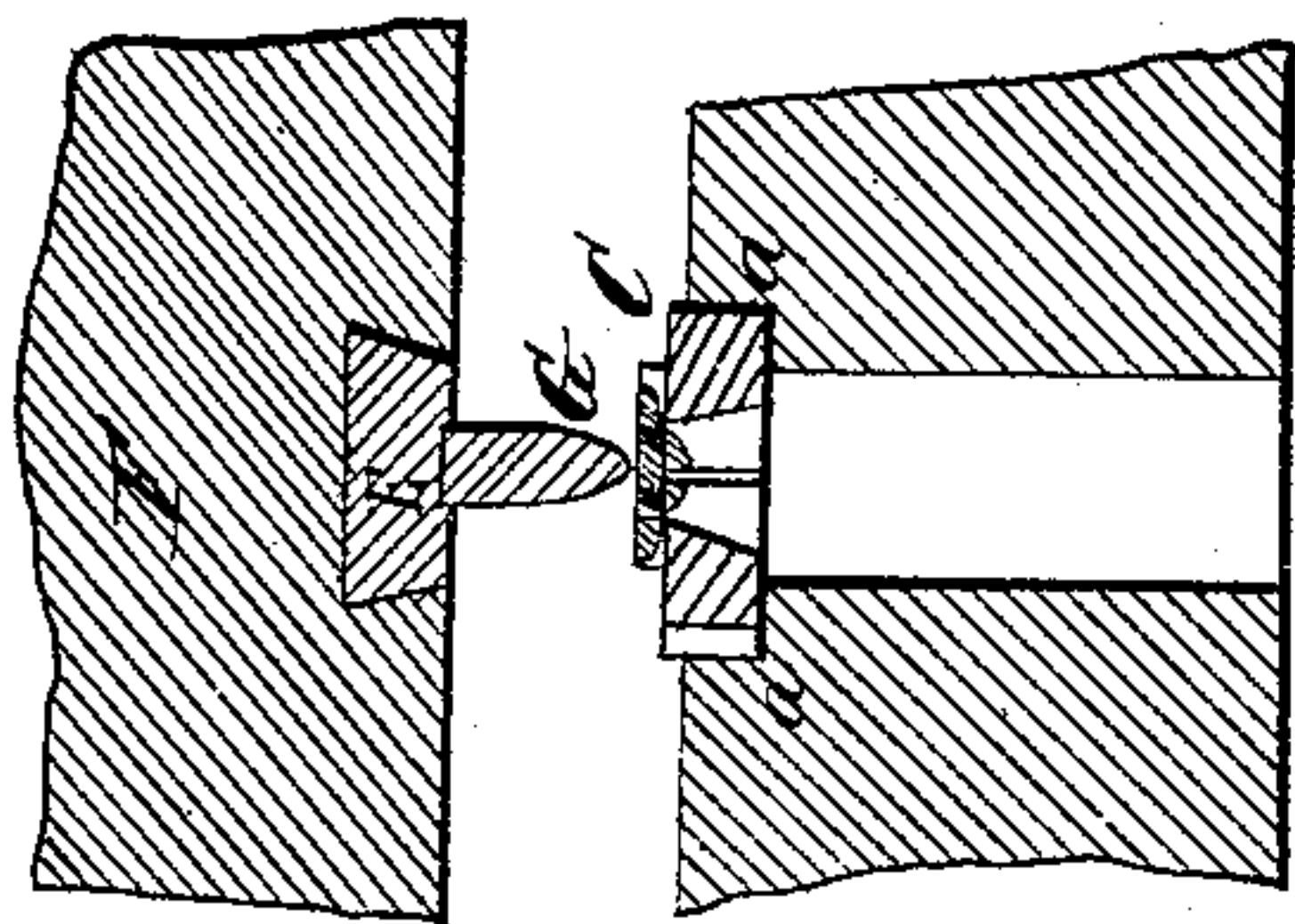
*N<sup>o</sup> 90,720.*

*Patented Jun. 1, 1869.*

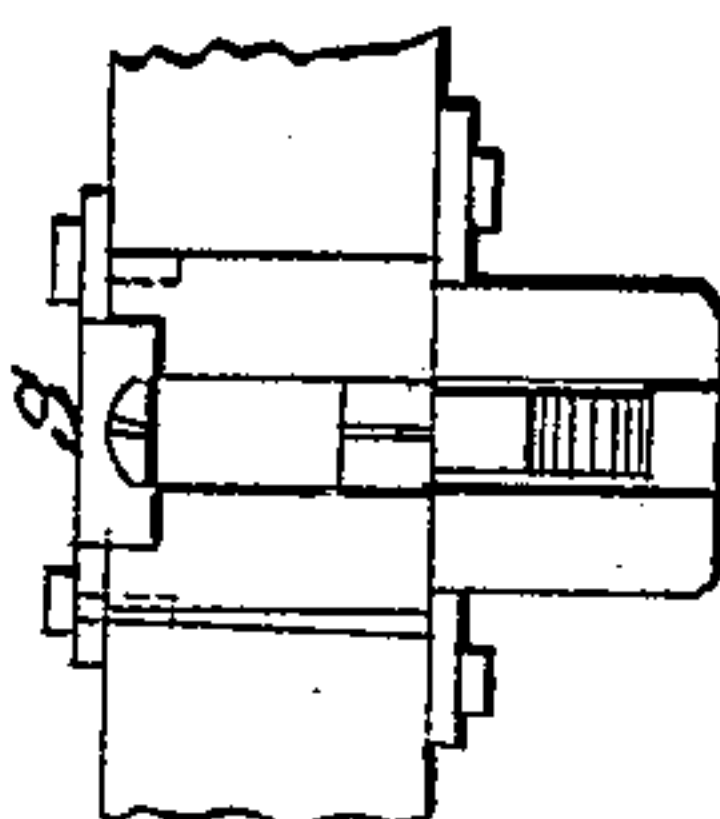
*Fig. 2.*



*Fig. 3.*



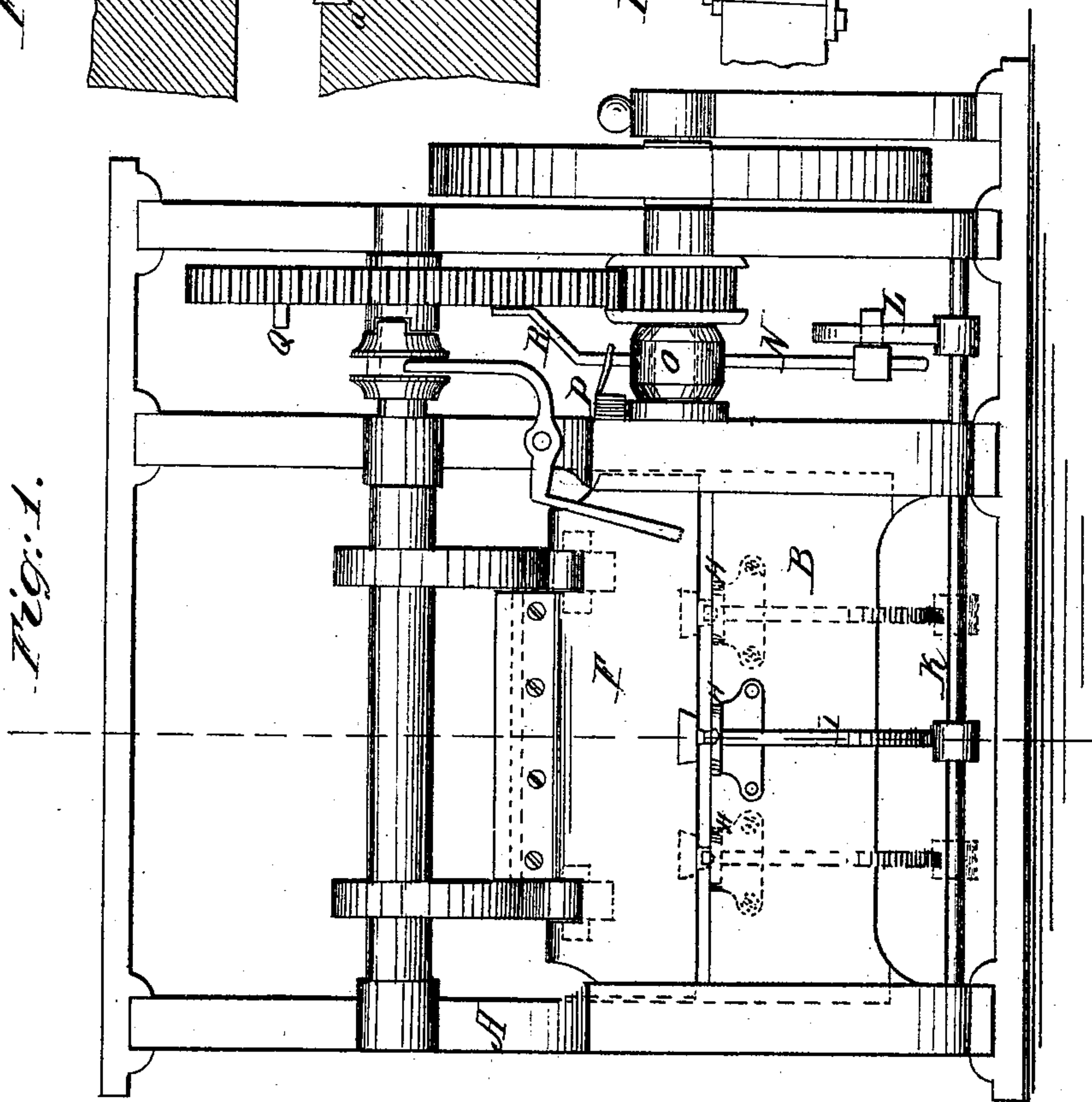
*Fig. 4.*



*Fig. 5.*



*Fig. 1.*



*Witnesses*  
*M. W. Landa*  
*John H. Brooks*

*Inventor*  
*Luke Chapman*  
*per Wmmt & Co*  
*Attorneys*



# United States Patent Office.

LUKE CHAPMAN, OF COLLINSVILLE, CONNECTICUT.

Letters Patent No. 90,726, dated June 1, 1869.

## IMPROVED MACHINE FOR FORMING BITS FOR AXES.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, LUKE CHAPMAN, of Collinsville, in the county of Hartford, and State of Connecticut, have invented a new and improved Machine for Forming Bits for Axes; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in machines for shaping the steel bits for axes and other similar tools; to facilitate fitting and welding them to the poles.

The metal for the bits is first rolled into bars of the proper form, and cut into blanks of about the length of the breadth of the pole of the tools they are designed for.

These blanks are then formed into a U-shape, for lapping the edges of the bits for welding thereto, by an operation of male and female dies similar to punching; and

The invention consists in certain improvements in the dies employed; also, in the arrangement of them in the press; and also certain improvements in apparatus for feeding the blanks to the dies.

Figure 1 represents a front elevation of a press constructed according to my improvements;

Figure 2 represents a transverse sectional elevation;

Figures 3 and 4 represent detail views, showing the dies and their arrangement; and

Figures 5 and 6 represent the bits previous to and after being operated upon.

Similar letters of reference indicate corresponding parts.

A represents the frame of a punching-press, of which B is the support of the female-dies C, which are made in two parts, *a*, with the opening between them increasing toward the bottom, or the same size for a short distance, and enlarged below, and connecting with passages D through the support, for the delivery of the formed bits through them.

The said dies are placed in dovetail-recesses in the upper side of the support B, and secured therein by keys *d*.

The male dies E are provided with enlarged bases, and secured to the cross-head F in a similar manner.

I make these dies of cast-iron instead of steel, as now commonly used, and I find in practice that I am enabled to accomplish a very much greater amount of work with a single set than can be done with steel dies, as I have demonstrated by actual experiment. This I account for by the difference in the nature of the two metals, the steel dies having a welding affinity

for the steel being worked, which, under the heat of the blanks, which are first heated in a furnace, and that generated by the friction of punching, together with the great pressure, causes the two to unite to a considerable extent, which cuts and scratches the dies, and soon unfits them for use; while the cast-iron, having little or none of this affinity, performs the operation without being cut or scratched, and lasts very much longer. It is, however, highly essential that the male die be so set that it be not subject to lateral strain.

The blanks G are placed on the female dies C, as represented in fig. 3, and forced through by the male punch, which shapes them into the required form. They are delivered from the punches below the upper part of the dies C, by the action of the latter on the bits, as the punches are withdrawn.

The supports B are so arranged in the housings as to permit them to rise, in case the punches fail to withdraw readily from the blanks.

H represents brackets or tables projecting from the upper face of the die-supports B, whereon the heated blanks are placed by the attendant to be fed to the dies at the proper time.

I represents feeding-arms, rising up from an oscillating shaft, K, through slots in the said tables.

The shaft K is provided with a slotted arm, L, in which a stud, projecting from an arm, N, connected to a loose hub, O, works, and maintains the feeding-arms I at the outer ends of the slots in the tables H by the action of a spring, P, connected to the said loose hub.

A stud, Q, on the driving-wheel strikes an arm, R, of the hub O at the time required for feeding the blanks, and oscillates the hub against the action of the spring, moving the arms forward against the blanks, previously placed on tables in front of the said arms, forcing them over the dies, where they are arrested by stops S in, the right position to be acted upon.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. The bit-forming dies E C, made of cast-iron, and constructed and arranged substantially as specified.

2. The dies C, made in two parts, *a*, and secured to the recesses in the support B, having the passages D, by keys, as specified.

3. The combination of the feeding-tables H, arms I, shaft K, arms L, N, R, hub O, spring P, and stud Q, on the driving-wheel, all substantially as specified.

LUKE CHAPMAN.

Witnesses:

OLIVER F. PERRY,  
CHAS. H. BLAIR.