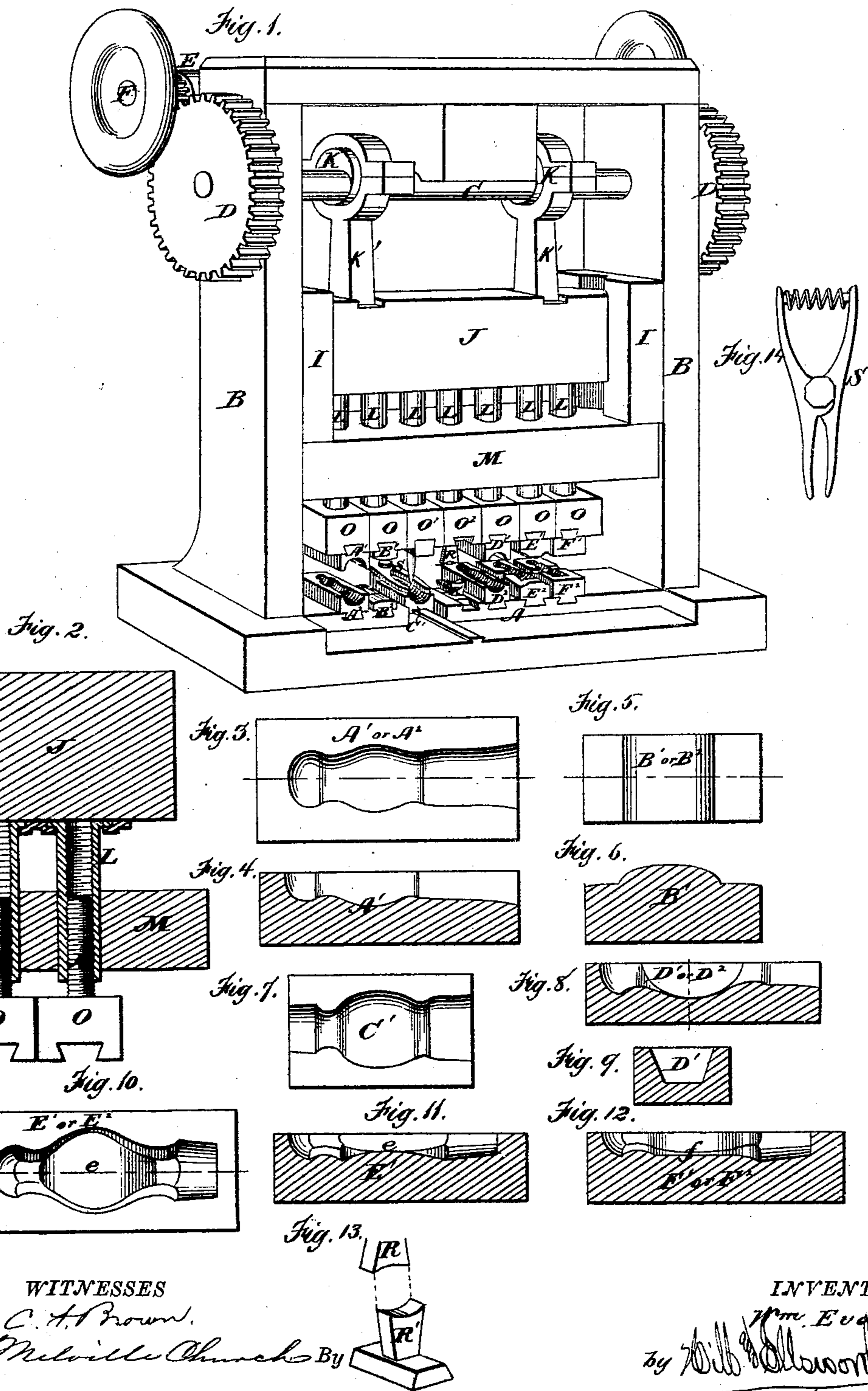


W. EVANS.

Machines for Forging Hammers.

No. 144,969.

Patented Nov. 25, 1873.



UNITED STATES PATENT OFFICE.

WILLIAM EVANS, OF LONG ISLAND CITY, NEW YORK.

IMPROVEMENT IN MACHINES FOR FORGING HAMMERS.

Specification forming part of Letters Patent No. **144,969**, dated November 25, 1873; application filed October 25, 1873.

To all whom it may concern:

Be it known that I, WILLIAM EVANS, of Long Island City, in the county of Queens and State of New York, have invented a new and Improved Method of Forging Hammers; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a perspective view of my improved machine. Fig. 2 is a sectional view, showing the means for adjusting the die-holders. Figs. 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 are views, showing the dies used in the different stages of the process. Fig. 13 is a perspective view of the shears for cutting off the end of the head; and Fig. 14, a plan view of the jaws for holding the blank while being punched.

Similar letters of reference in the accompanying drawings denote the same parts.

This invention has for its object to forge hammers in a cheaper, better, and more rapid manner than has heretofore been done; and to this end it consists in the peculiar formation and arrangement of a series of divided dies adapted to give the hammer its proper form by successive stages, the first pair of the series giving a rough outline to the steel blank, which is gradually finished by the rest, the upper half of each die being reciprocated vertically by a suitable mechanical contrivance. It also consists in the method of forging hammers, all of which I will now proceed to describe.

In the drawing, A represents a suitable bed-plate, on which the lower half of each die is received, and from which, at each end, rise vertical standards B. C represents a shaft having its bearings in the standards B, and provided at each end with a cog-wheel, D, which latter meshes with pinions E on the driving-shaft F above the shaft C, this being operated from the main driving-shaft by belting the latter to suitable pulleys. On the inner sides of the standards B are vertical guides I, in which slides a horizontal cross-head, J. This latter is reciprocated vertically by eccentrics K K on the shaft C, said eccentrics being connected with the cross-head by rods K' K'. From the lower side of the cross-head J de-

pend vertical tapped tubes L, which are so attached to the cross-head as to turn freely, and are provided with orifices for the insertion of a turning-handle. These tubes pass through orifices in a stationary horizontal guide-block, M, and into their lower ends extend screw-stems N on the upper die-punch and shear-holders O O¹ O². The bed A and die-holders O are provided with dovetail mortises, by means of which the correspondingly-dovetailed dies are attached in pairs, as shown in Fig. 1, and the punch and shear-holders O¹ O² have similar mortises, in which the punch P and upper shears R are held. The dies are shown in detail in Figs. 3, 4, 5, 6, 8, 9, 10, 11, and 12, and are for making machinists' "ball-pene" hammers. A¹ A² represent the first pair of dies which give the first blow to the steel blank from which the hammer is formed, and impart a rough outline to the same. The second pair, B¹ B², next indent two sides of the blank, and take the first step toward forming the flat sides. The blank is now placed in the holding-guide C', which is located under the punch P, and slides on a transverse dovetail guide on the bed A. A pair of spring-jaws, S, are pivoted on the bed A, so as to project over the guide C' and grasp the blank on each side, and hold the same while the punch is being withdrawn. The surplus metal is now cut from the end of the head by the shears R R', and the blank passed to the first finishing-dies D¹ D², which shape the edges of the hammer and impart the first angles. The succeeding pairs, E¹ E² F¹ F², complete the formation of the sides and head of the hammer, the blank having a pin inserted in its eye while in these dies, thus preventing the filling of the latter. The dies E¹ E² are provided with convex faces e, which act as fullers, pressing the metal outward from the center of the hammer and forcing it into all other parts of the die, while the dies F¹ F², having flat faces f, complete the sides and give the finishing touch. By this method, a hammer can be forged at one heating, the dies being located in the most convenient manner, and operated simultaneously. Hence, the steel is not injured by repeated heatings, and the whole process can be attended to by one operator. The upper holders can be adjusted independently by turning

the tubular supporters L, which operate the screw-stems N, the latter being prevented from turning by the close contact of the square holders with each other.

I do not confine myself to the form of dies which I have described, as different styles of hammers will obviously require different forms.

I claim as my invention—

1. The arrangement and combination of the forming-dies, the punch, the shears, and the finishing-dies in a machine for making hammers, substantially as described, for the purposes specified.

2. The dies E¹ E², for the purpose of crowd-

ing out the metal and perfecting the contour of the hammer, substantially as described.

3. The method of making hammers from a steel blank by subjecting the blank, first, to the outlining-dies; secondly, to the convex dies for indenting the cheeks; thirdly, to the punch; fourthly, to the shears; fifthly, sixthly, and seventhly, to the finishing-dies, substantially as described.

WILLIAM EVANS.

Witnesses:

MELVILLE CHURCH,
W. READ.