(No Model.) 2 Sheets—Sheet 1.

J. HAUSMAN.

HAMMER FORMING MACHINE.

No. 342,009. Patented May 18, 1886.

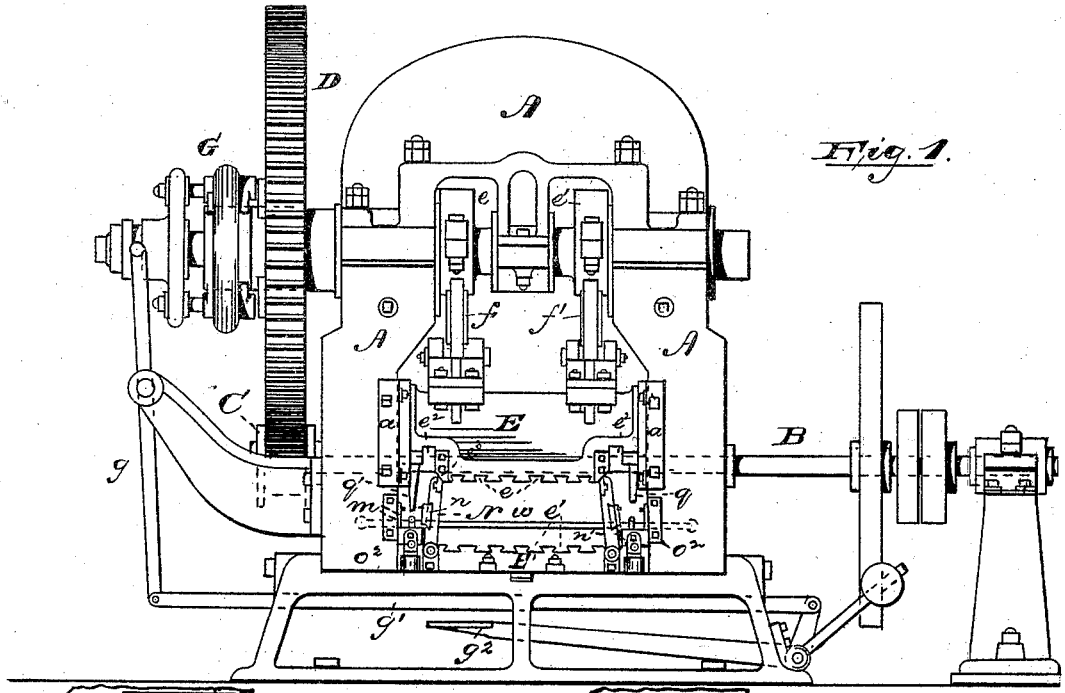

Fig. 1.

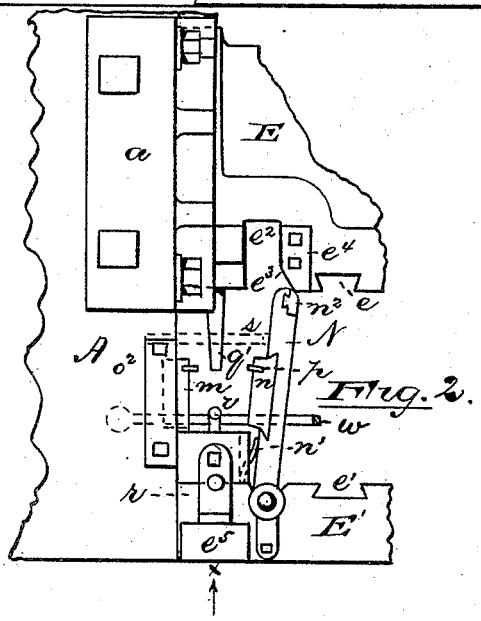

Fig. 2.

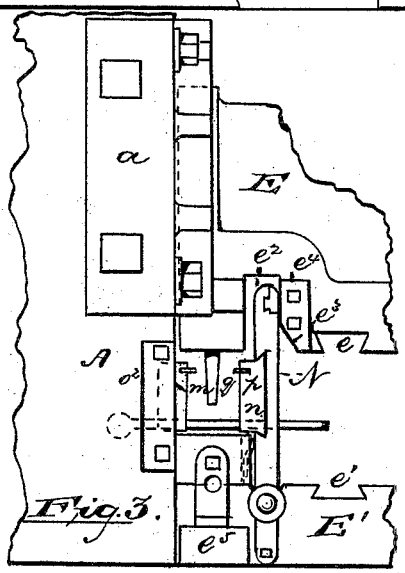

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

J. HAUSMAN.

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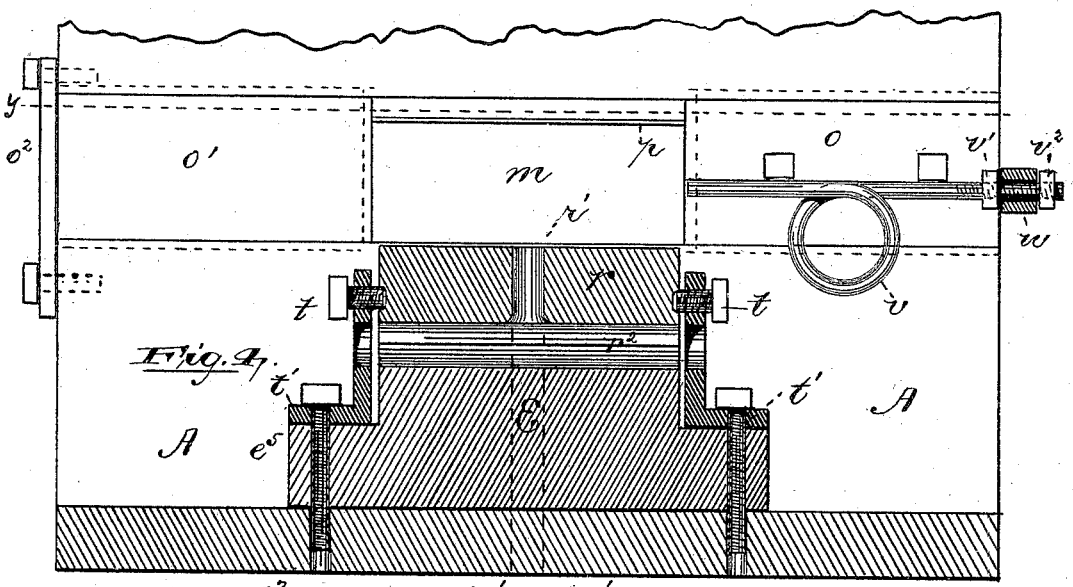

Fig. 4.

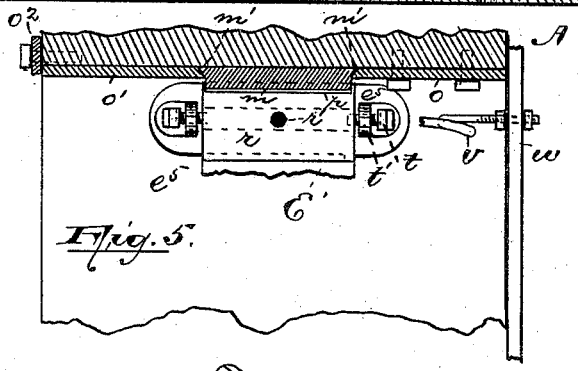

Fig. 5.

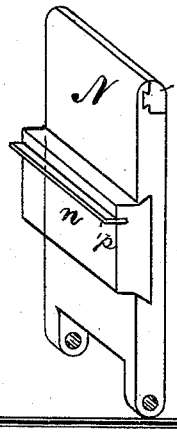

Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN HAUSMAN, OF NEWARK, NEW JERSEY.

HAMMER-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 342,009, dated May 18, 1886.

Application filed February 26, 1886. Serial No. 193,269. (No model.)

To all whom it may concern:

Be it known that I, JOHN HAUSMAN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hammer-Forming Machines; 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 of reference marked thereon, which form a part of this specification.

This invention relates to improvements in hammer-forming machines, employed especially in making sledge-hammers, and refers more specifically to that portion of the machine by which the eye of the hammer is made, being designed to simplify the construction of said eye-forming portion and render the operation thereof more effective, and, furthermore, to increase the working space in said machine.

The invention consists in the combination and arrangements of mechanical devices, substantially as illustrated in the drawings, and described and claimed hereinafter.

In the accompanying two sheets of drawings, in which similar reference-letters indicate corresponding parts, Figure 1, Sheet 1, is a side elevation of a hammer-forming machine with which the improved mechanism is intended to be used, but in no wise limited, and illustrative of said mechanism thereto. Fig. 2 is an enlarged detail view in elevation of said improved punching mechanism, as shown in Fig. 1, and Fig. 3 is a view similar to that shown in Fig. 2, but indicating the position of the operative parts when the punch is forming the eye. On Sheet 2, Fig. 4 is a longitudinal section of the hammer-bed, &c., taken in the direction of line *x* on Fig. 2. Fig. 5 is a reduced plan of the parts shown in Fig. 4, and Fig. 6 is a perspective view of the pivoted arm in which the movable die is placed.

The machine shown in Fig. 1 of the drawings is one in which sledge or other hammers are formed completely from cutting off the proper length of metal from the heated bar sufficient to form a single hammer, through the successive operations of shaping the hammer and forming the eye. The tool thus formed needs only to be ground and polished to be ready for use.

A in the drawings indicates the frame of said machine, B the main driving-shaft, and C a gear-wheel keyed on said shaft at the back of the machine, which meshes with a gear-wheel, D, which actuates the shaft from which the movable die-bed E receives its motion through the eccentrics *e e'* and rods *f f'*.

G is the clutch mechanism, which, operated through the rods *g g'* and treadle g^2, causes the transmission of the motion of the gear-wheel D to the die-bed-actuating shaft at the will of the operator.

a a' are guides bolted to the frame, between which the die-bed frame E moves vertically, said bed being provided with dovetailed mortises *e*, in which the upper dies are held, the fixed die-bed E' being similarly mortised to receive the lower dies. The several operations of shaping the hammers are performed on these dies, which are omitted from the drawings, as these, together with the co-operating and actuating portions of the machine, in themselves form no part of the invention sought to be covered by this application, and are not thought necessary to illustrate the novel portion of the mechanism.

The novel portion of the machine consists in the eye-forming devices, which are arranged at each end of the die-bed, as indicated in Fig. 1, and are constructed and adapted to center the blank directly beneath the punch, thereby forming the eye centrally in said blank. The said punching mechanism consists of holding or clamping dies *m n*, one of which, *m*, is immovably secured in the side frame of the machine, the other die, *n*, being dovetailed or suitably secured to or in a pivoted arm, N.

The fixed die is dovetailed on the ends *m'*, which engage with the undercut ends of removable plates *o o'*, as shown in Fig. 5, one of which, as *o*, being bolted in a groove in the frame, and the second plate, *o'*, is dovetailed on the upper and lower edges, as indicated by the dotted lines on Fig. 4, and slides reciprocally in the same groove in which the fixed die and bolted plate *o* are placed, to permit the removal of the said fixed die. A plate, o^2, bolted to the face of the frame A against the end of the plate *o'*, prevents any longitudinal movement thereof. By means of this con-

struction the fixed die may be readily removed and another die of a different form inserted in place thereof, according to the form of the hammer desired. The die *n* in the pivoted arm is also detachably secured thereto for the same purpose, and both of said dies are provided with stripping projections *p*, which extend over the top edge of the hammer-blank and prevent the punch carrying the said blank upward therewith after it has formed the eye and rises clear thereof.

The arm N is pivoted at the end of the die-bed E′, and moves toward and from the opposite die, *m*, thus affording ample room for the insertion and removal of the blank between the dies *m n*, the motion of said arm being caused by the downward movement of the upper die-bed, E, which is constructed, substantially as shown in Figs. 1, 2, and 3, to engage with the upper edge of said arm, and moves the same toward the die *m*, as in Fig. 3. To accomplish this result, the frame of the die-bed is recessed at e^2, to receive the end of the arm N, as shown in Fig. 3, and the lower edge at e^3 of the recess is beveled to enable the end of the arm, which rests against said incline when the die-bed is raised, as shown in Figs. 1 and 2, to slide up into the said recess as the die-bed frame descends, as illustrated in Fig. 3. A spring, *n′*, arranged in the recessed side of the hammer-bed, presses against the pivoted arm and throws it away from the die *m*.

To provide increased leverage, a spring may be secured to the frame at the back by one end, and the opposite end thereof bear against the face of the pivoted arm near the top, above the die *n*, as indicated by the dotted lines *s* on Fig. 2.

To prevent the excessive friction from wearing the end of the arm N where it engages the incline e^3, a plate of hard steel, n^2, is inserted in the said end of the arm, and a plate, e^4, of similar material, in the side of the recess e^2 in the upper die-bed frame.

The punches *q q′* are suitably secured in the die-bed frame E, one of which, as *q*, at one end of the frame, is of sufficient length to penetrate about one-half way through the hammer-blank, while the finishing-punch *q′* at the other end of said frame is preferably much longer.

Between the dies *m n* is arranged a hammer-bed, *r*, resting upon the bed E′, having a perforation, *r′*, immediately under the punch, and a second perforation, r^2, at right angles to and communicating with said perforation *r′* and extending entirely through the beds *r* E′, preferably at the point of union thereof, out to the front and back faces thereof, as illustrated in Fig. 4. The said perforations receive the superfluous material punched out from the hammer-blank in forming the eye, and while each of said beds may be perforated, still it is only essential to provide a perforation in the bed under the finishing-punch, as indicated in Fig. 4.

To center the hammer-bed *r* under the punch, the said bed rests loosely upon the bed E′, and is held in position and moved longitudinally under the punch by means of set-screws *t*, extending through the fixed angle-plates *t′*, which are bolted to ears e^5 on the bed E′.

As will be seen by reference to Fig. 1, the punching mechanism is arranged at each end of the die-beds E E′, upon which the hammer is formed, within easy reaching distance of the workman, the punching mechanism on the right being adapted to make the first hole or eye in the blank, while that on the left completes the formation of the eye.

The punching devices may be identical in most respects, with the exception of the punches, and may be provided with yielding stops *u*, which serve to assist the workman in placing the blank centrally under the punch. A stop is especially desirable in forming the eye in the first operation from the unpunched blank, as it prevents the workman from pushing the blank too far in, so that the center of said blank and the punch do not coincide. The yielding or giving of the stop provides sufficient play in adjusting the blank properly. The construction and arrangement of said stops are shown particularly in Figs. 1, 3, and 4, consisting preferably of a coiled spring rod, *v*, threaded on one end and passing through a bar, *w*, secured to the frame of the machine and extending across the back of the machine, substantially as shown in Fig. 1. Nuts *v′ v²* enable the spring-stop to be adjusted toward or from the dies. The same kind of stops may be arranged back of the hammer, forming dies in the beds E E′ on the bar *w*, if desirable.

Instead of a perforation, r^2, at right angles to the perforation *r′*, through which the buttons cut from the blank are pushed out, the perforation *r′* may continue straight down through the bed E′ and the frame of the machine, as dotted on Fig. 4.

The holding-dies *m n* are intended to conform to the shape of the dies arranged in the beds E E′, both of which, as will be understood, may be changed as desirable.

Having thus described my invention, I desire to claim the following:

1. In a hammer-making machine, in combination, a fixed die removably secured in position in the frame of said machine, a pivoted arm having a die removably secured thereto, said pivoted arm moving toward and from the fixed die, a hammer-bed arranged between said fixed and movable dies, a punch, and an actuating device engaging with said pivoted arm to cause the pivotal movement thereof, substantially as and for the purposes set forth.

2. In a hammer-making machine, the combination, with fixed and movable die-holding beds E E′, of eye-punching devices arranged at the opposite ends of said beds, consisting of fixed dies *m*, removably secured in the frame of the said machine, pivoted arms N, having removable dies secured thereto, hammer-beds, one of which is provided with a perforation therein, arranged between the said fixed and movable dies, punches secured in the movable

die-holding bed E, above the perforation in the hammer-beds, inclines e^3 on the bed E, engaging with the ends of said pivoted arms, and actuating mechanism for causing the movement of said movable die holding bed E, for the purposes set forth.

3. In a hammer-making machine, the combination, with a movable die-holding bed, E, having punches q q' secured in the ends thereof, recesses e^2, and inclines e^3, the main portion of said bed between the recesses being constructed and adapted to hold dies, of a fixed die-holding bed, at the end of which are arranged fixed and movable holding-dies, the fixed dies being secured in the frame of the machine by plates o o', pivoted arms N, to which are removably secured said movable holding-dies, the said arms engaging at their upper ends with the inclines on the movable die-holding bed, for the purposes set forth, repressing-springs engaging with said pivoted arms, adjustable hammer-beds arranged between the fixed and movable dies, one of said beds being provided with a perforation therein, and a yielding stop, all said parts being arranged and operating substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of February, 1886.

JOHN HAUSMAN.

Witnesses:
FREDK. F. CAMPBELL,
CHARLES H. PELL.