No. 666,248. Patented Jan. 15, 1901.

J. A. SCOTT.

SHIFTING DIE FOR FORGE HAMMERS.

(Application filed Mar. 12, 1900.)

(No Model.) 2 Sheets—Sheet 1

FIG. 1.

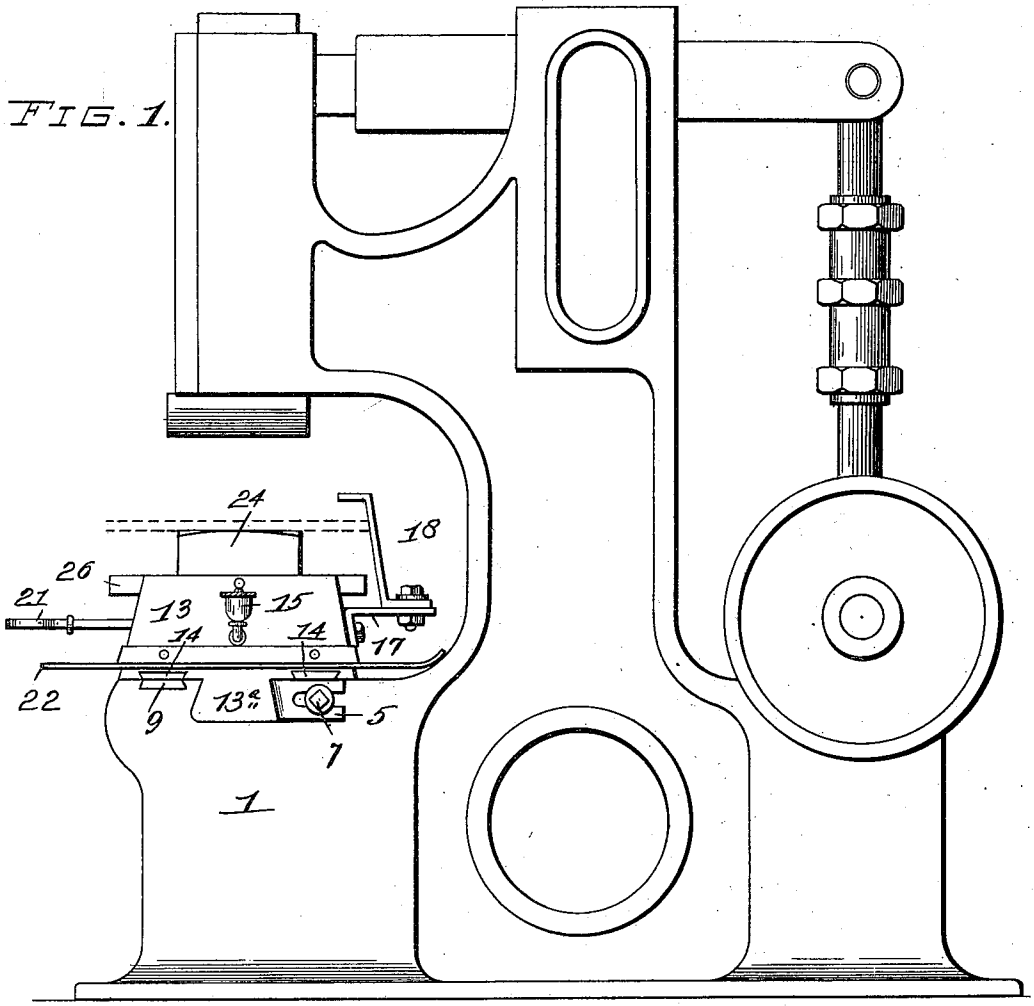
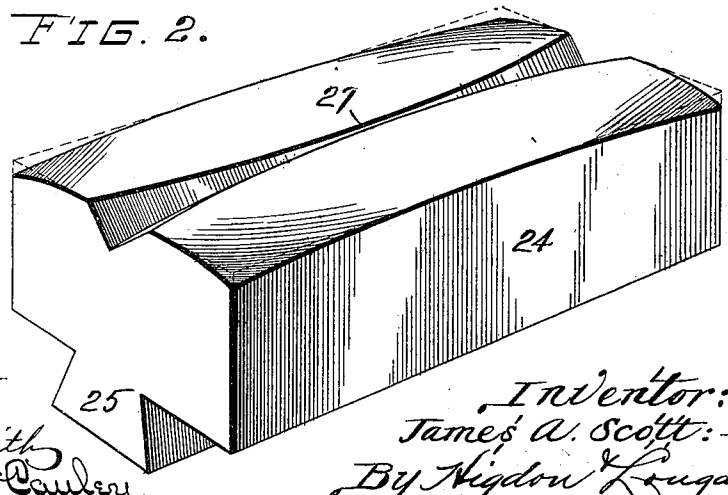


FIG. 2.



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FIG. 3.

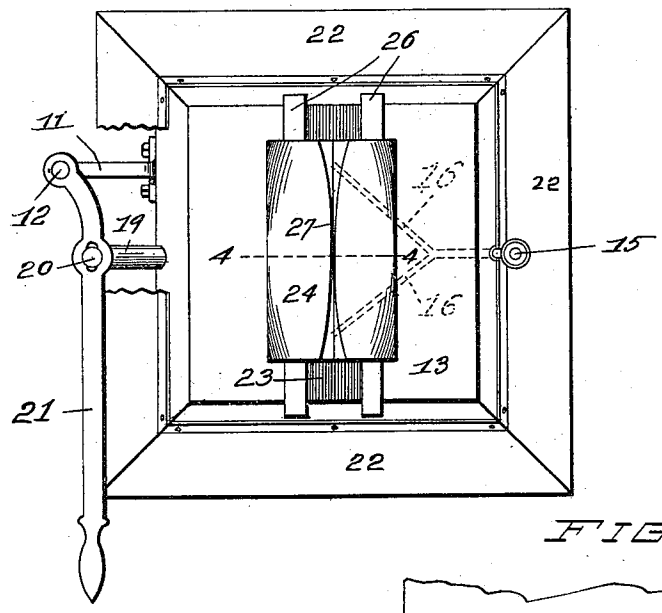


FIG. 5.

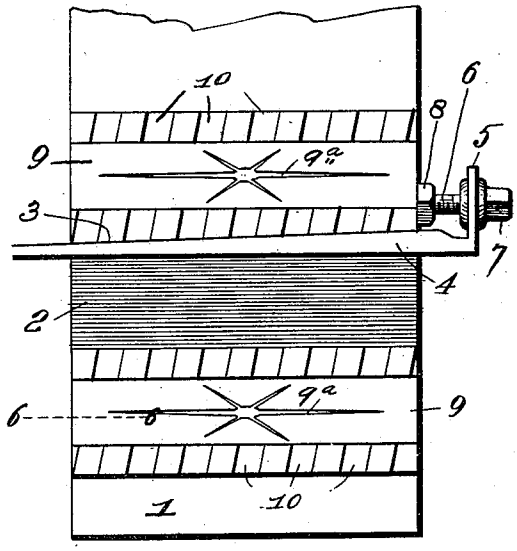


FIG. 4.

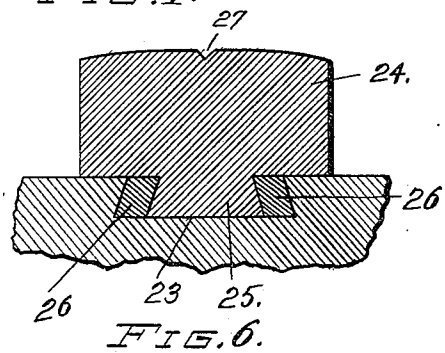
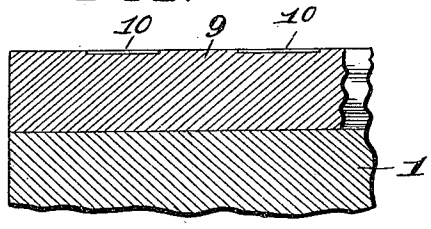


FIG. 6.



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UNITED STATES PATENT OFFICE.

JAMES A. SCOTT, OF EDWARDSVILLE, ILLINOIS.

SHIFTING DIE FOR FORGE-HAMMERS.

SPECIFICATION forming part of Letters Patent No. 666,248, dated January 15, 1901.

Application filed March 12, 1900. Serial No. 8,326. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. SCOTT, of the city of Edwardsville, Madison county, State of Illinois, have invented certain new and useful Improvements in Shifting Dies for Forge-Hammers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to shifting dies for forge-hammers; and it consists of the novel construction, combination, and arrangement of parts hereinafter described and claimed.

Figure 1 is a side elevation of a forge-hammer equipped with my improved shifting die. Fig. 2 is a view in perspective of the die such as I make use of in carrying out my invention, said die being for the purpose of forming singletree-clips. Fig. 3 is a plan view of the shifting die and die-block. Fig. 4 is an enlarged cross-sectional view taken approximately on the line 4 4 of Fig. 3. Fig. 5 is a plan view of the base of the forge-hammer upon which the die-block is arranged to slide. Fig. 6 is an enlarged detail sectional view taken approximately on the line 6 6 of Fig. 5.

Referring by numerals to the accompanying drawings, 1 indicates that portion of the base of the forge-hammer which occupies a position beneath the hammer, and in the top of said portion 1 is formed a transverse way 2, the side walls 3 of which are formed at slight angles relative to each other, and against one side wall is positioned a plate 4, the same being slightly wedge-shaped. One end of this plate 4 is bent rearwardly, as indicated by 5, which rearwardly-bent end is bifurcated and engages over the screw-threaded rod 6, which enters the base of the hammer, which rod 6 is provided with a head 7, whereby the same is manipulated, and a lock-nut 8 is also arranged upon said rod, which lock-nut normally engages against the side face of the base of the hammer. By manipulating the screw-threaded rod 6 the plate 4 can be moved inwardly or outwardly, so as to increase or lessen the space in the way which is normally occupied by a portion of the die-block yet to be described.

Fitted into the top surface of the base 1, on each side of the way 2, are hardened-metal plates 9, the same performing the function of bearing-plates, and slight grooves or depressions 10 are formed on an angle in the top surfaces of those portions of the base 1 in which said plates are positioned. Formed in the top surface of these bearing-plates 9 are the oil-ways 9^a. The depressions 10 are for the purpose of receiving the oil after it has become congealed through the operation of the die-block, and they also serve to reduce the friction-surface.

Formed on or fixed to the left-hand side of the base 1 and projecting laterally therefrom is a bracket 11, the outer end of which is provided with a vertically-arranged pin 12.

13 indicates the shifting die-block, which is approximately rectangular in plan view, provided with slightly-inclined side faces, and integral with the under side of said die-block is a transverse rib 13^a, which normally occupies and operates in the way 2. Let into the bottom of the die-block 13, on each side of the rib 13^a, are the plates of hardened metal 14, the same being identical in form with the plates 9, and when the die-block is in position in the base 1 the hardened-metal bearing-plates 14 operate directly upon the bearing-plates 9, previously mentioned. An oil-cup 15 is carried by the side of this die-block 13, and there are oil-ducts 16, which extend from this oil-cup 15 through the lower portion of the die-block, which oil-ducts finally discharge through the wear-plates 14 and into the oilways 9^a. In this manner the bearing-surfaces of the upper portion of the base 1 and the under side of the die-block 13 are lubricated.

Formed on or fixed to the rear side of the center of the die-block 13 is a rearwardly-projecting bracket 17, to the upper side of which is adjustably fixed a vertically arranged guide 18, the said guide being held in position by means of a bolt or other suitable fastening device. Projecting from the left-hand side of the die-block 13 is an arm 19, the outer end of which is provided with a vertical pin 20, said pin passing through a slot formed in the operating-handle 21, the rear end of which handle is pivoted upon the pin 12. Removably secured by means of rivets or bolts to the four sides of the die-block 13 are the outwardly-projecting sheet-metal shields 22, the same being for the pur-

pose of deflecting the sparks and small particles of material that are thrown off from the work while the same is being beaten by the hammer.

Formed in the top of the die-block 13 is a longitudinally-extending rectangular groove 23, in which is removably positioned the die 24. This die is rectangular in plan view and provided with a dovetailed rib 25 on its under side, which rib extends downwardly into the groove 23, and wedge-shaped bars 26 occupy the space within said grooves 23 at the sides of said rib 25. Formed in the top of the die 24 is the longitudinally-extending V-shaped groove 27, the same being very narrow and very shallow at the exact center of the die, and said groove is gradually widened and deepened toward the ends of said die. The four corners of the top surface of the die 24 are slightly rounded off, thus forming practically a gradually-rounded surface on the top of the die.

The operation is as follows: The die-block 13, carrying the die 24, is shifted by means of the hand-lever 21 until the groove 27 in the die 24 is approximately beneath the vertically-operating hammer of the forge, and the rod or bar of metal to be fashioned into a singletree-clip is positioned directly upon the die 24 with its rear end against the gage or guide 18, the same having previously been set to the desired position. The mechanism of the forge for operating the hammer is now brought into use, and the hammer will vertically reciprocate and strike directly upon the bar or rod of iron lying upon the die 24. After a few blows of said hammer, or when the rod or bar commences to flatten out, the operator engages the hand-lever 21 and shifts the die-block and die laterally at the same time the hammer is in operation, and thus the center of the rod or bar is flattened out over the rounded top surface of the die 24 in the desired manner, and owing to the gradual curvature of the top surface of said die the exact shape or contour to the flattened portion of the rod or bar that is desired is obtained. During the shifting or lateral movement of the die-block 13 the hardened-metal bearing-plates 14 ride directly upon the bearing-plates 9, and all of the sparks and small pieces of metal from the work upon the die 24 will be deflected outwardly away from the lower portion of the die-block by the shields 22, and therefore dust and small particles of material from the work cannot lodge in the way 2 or upon the top bearing-surface of the base 1 to clog up and interfere with the free operation of the die-block. The plate 4 is adjusted to compensate for the wear of the rib 13^a in the way 2.

The die 24 that I have shown is, as stated, specially applicable for forming singletree-clips, and for that reason the groove having the gradually deepened and widened ends is formed in the top of said die. Thus when a clip is formed upon the top of said die a continuous rib, gradually narrowing toward its center, is formed upon the top or outside of the clip. It is apparent that dies of different form and for different purposes may be positioned upon the top of the shifting die-block 13.

I claim—

1. The combination with a forge-hammer, in the base portion of which are hardened-metal bearing-plates and depressions formed to each side of said bearing-plates, of a die-block located upon the hammer-base, hardened-metal bearing-plates seated in the under side of the die-block and operating upon the first-mentioned bearing-plates, a die removably positioned in the top of the die-block, and an operating-handle pivoted to one side of the hammer-frame and to the die-block for shifting the same, substantially as specified.

2. The combination with a forge-hammer, in the base portion of which beneath the hammer-head is formed a transverse way, of a die-block located upon the hammer-base beneath the hammer-head, a rib integral with the under side of said die-block, which operates in the way, hardened-metal bearing-plates seated in the under side of the die-block, a die removably positioned in the top of the die-block, a gage adjustably secured to the rear side of the die-block, outwardly-projecting shields carried by the lower portion of the die-block, and an operating-handle pivoted to one side of the hammer-frame and to the die-block for shifting the same, substantially as specified.

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

JAMES A. SCOTT.

Witnesses:
F. C. GILLHAM,
H. KIRKPATRICK.