E. SPAULDING.

Forge Hammer.

No. 45,187. Patented Nov. 22, 1864.

Fig: 1.

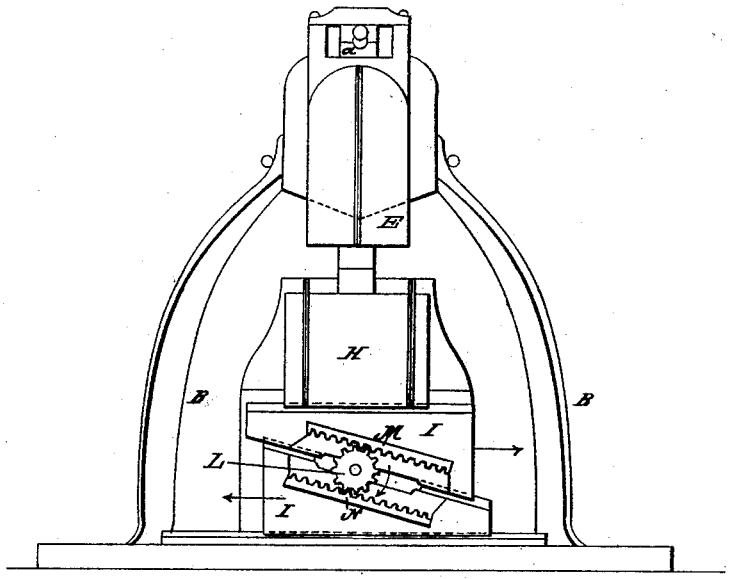


Fig: 2.

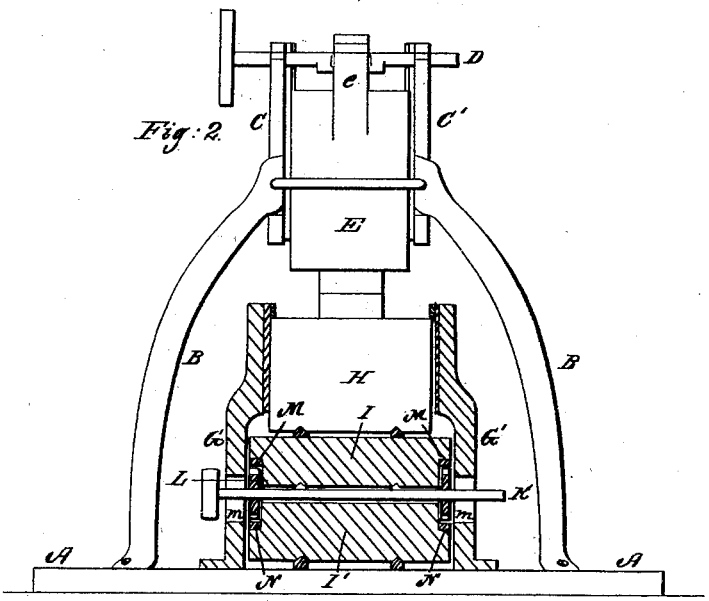
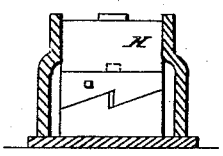


Fig: 3.



Witnesses:

Charles E. Foster

Charles Howson

Inventor:

Henry Howson

Atty for E. Spaulding.

UNITED STATES PATENT OFFICE.

EDWARD SPAULDING, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN FORGE-HAMMERS.

Specification forming part of Letters Patent No. **45,187**, dated November 22, 1864; antedated November 17, 1864.

To all whom it may concern:

Be it known that I, EDWARD SPAULDING, of Worcester, county of Worcester, State of Massachusetts, have invented an Improvement in Forge-Hammers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of certain blocks, with inclined adjacent faces, arranged and operated substantially as described hereinafter, so that the movement of one block on the other will raise or lower an anvil on the upper block, and situated below a hammer to which a reciprocating motion of unvarying extent is imparted.

The object of my invention is to enable the operator to regulate the force of the blow of the hammer with certainty and rapidity.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a vertical section of my improved forge hammer; Fig. 2, a transverse vertical section, and Fig. 3 a diagram illustrating a modification of my improvement.

A is the base-plate of the hammer, and on this plate the four legs, B B, rest and are secured, the upper ends of the legs being attached to the guide-plates, C and C′. In the upper ends of the latter are formed suitable bearings for the reception of the shaft D, the cranked portion of which is adapted to a box, *a*, arranged to fit snugly but slide freely in a horizontal oblong opening in a projection, *e*, which forms a part of the hammer E, the opposite sides of which have vertical V-shaped grooves adapted to similarly shaped ribs on the inside of the guide-plates C and C′, so that on turning the shaft a vertical reciprocating motion will be imparted to the hammer. To the base-plate A are secured the two frames G and G′, between which are arranged the anvil H, the upper wedge formed block, I, and the lower similarly shaped block, I′. The anvil H is so guided by V-shaped ribs on the inside of the frames G and G′ that it can have a vertical movement only, the under side of the anvil having V-shaped grooves adapted to similarly-shaped ribs or guides on the block I, the latter being arranged to slide on V-shaped guide-ribs on the block I′, and this block being arranged to slide on similar ribs on the base-plate A.

A shaft, K, passes through a space formed between the two blocks I and I′ by cutting away a portion of each block, as best observed in Fig. 1, the shaft passing through and turning in oblong openings *m m*, formed in the opposite frames G and G′.

On each side of the two wedge-formed blocks is formed a recess for the reception of a cog-wheel, L, the two wheels gearing into racks M on the upper block, I, as well as into similar racks, N, on the lower block, I′, so that on turning the shaft with its wheels in the direction pointed out by the arrow, Fig. 1, the two blocks must be moved away from each other in the direction shown by the arrows, and the anvil H must be depressed to a distance determined by the extent of the movement of the blocks in the direction pointed out.

On turning the shaft in a direction contrary to that shown the two blocks will be so moved toward each other as to raise the anvil H. It will be seen, therefore, that by means of a suitable lever on the shaft K the operator can readily adjust the anvil vertically.

It is important in all forge-hammers, and especially in those used for the smaller class of work, that the attendant should be enabled to so control the hammer that blows of more or less force may be given, and that the change from light to heavy blows, and vice versa, be accomplished promptly.

As the reciprocating movement of the hammer is invariably the same in extent, the force of the blow on the iron submitted to it will depend on the altitude of the anvil, and as this altitude can be regulated to the greatest nicety by the movement of the wedge-formed blocks it follows that the attendant can regulate and change the force of the blow with the greatest promptitude.

Although I prefer the use of the wedge-formed blocks described for raising and lowering the anvil, it will be evident to any skilled machinist that other arrangements of movable inclined planes may be used for effecting the same object—as, for instance, the plan illus-

trated by the diagram Fig. 3, in which the anvil rests on a circular block, the under side of the latter having three or more inclined planes adapted to similar planes on a permanent projection on the base-plate A.

On turning the circular block in one direction the anvil will be raised, and on turning it in the contrary direction it will be lowered.

Without confining myself therefore to the precise mechanism described for raising and lowering the anvil, I claim as my invention and desire to secure by Letters Patent—

The blocks I I, with their inclined adjacent faces, when arranged in respect to each other, to the anvil H, and to the hammer E, to which a reciprocating movement unvarying in extent is imparted, and when operated substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWD. SPAULDING.

Witnesses:

HENRY HOWSON,

JOHN WHITE.