

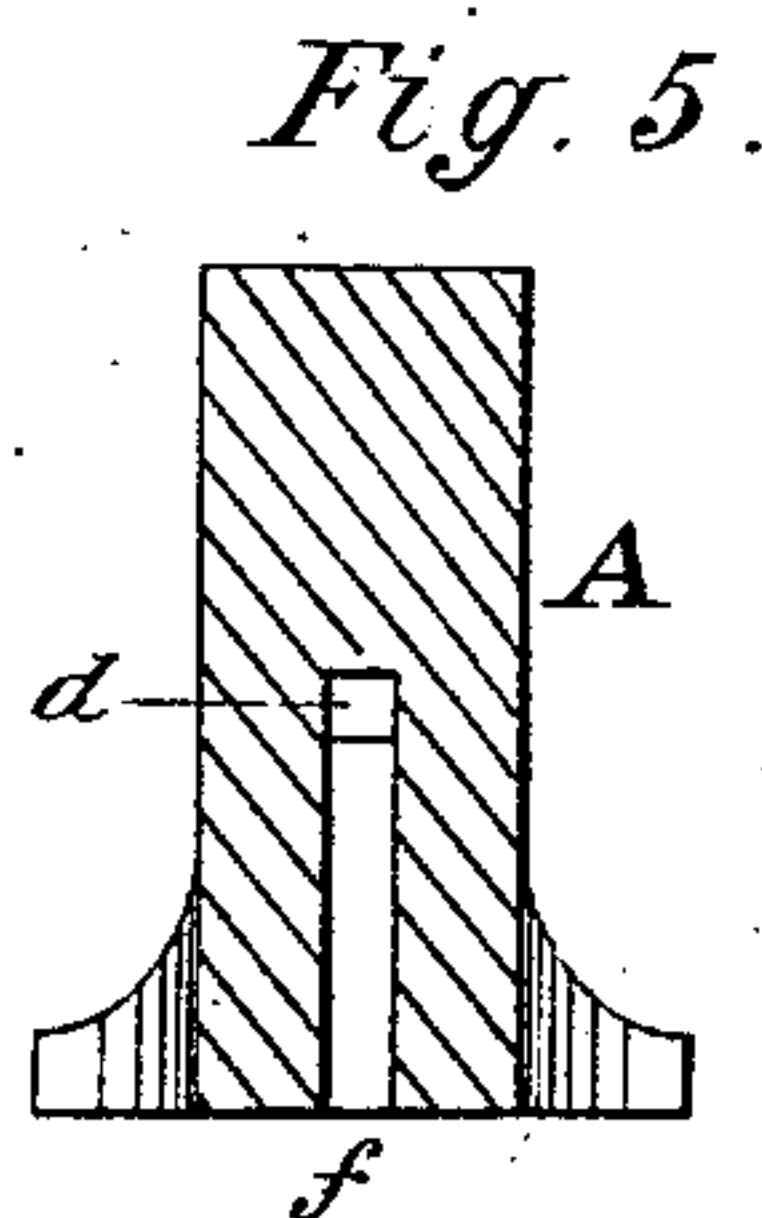
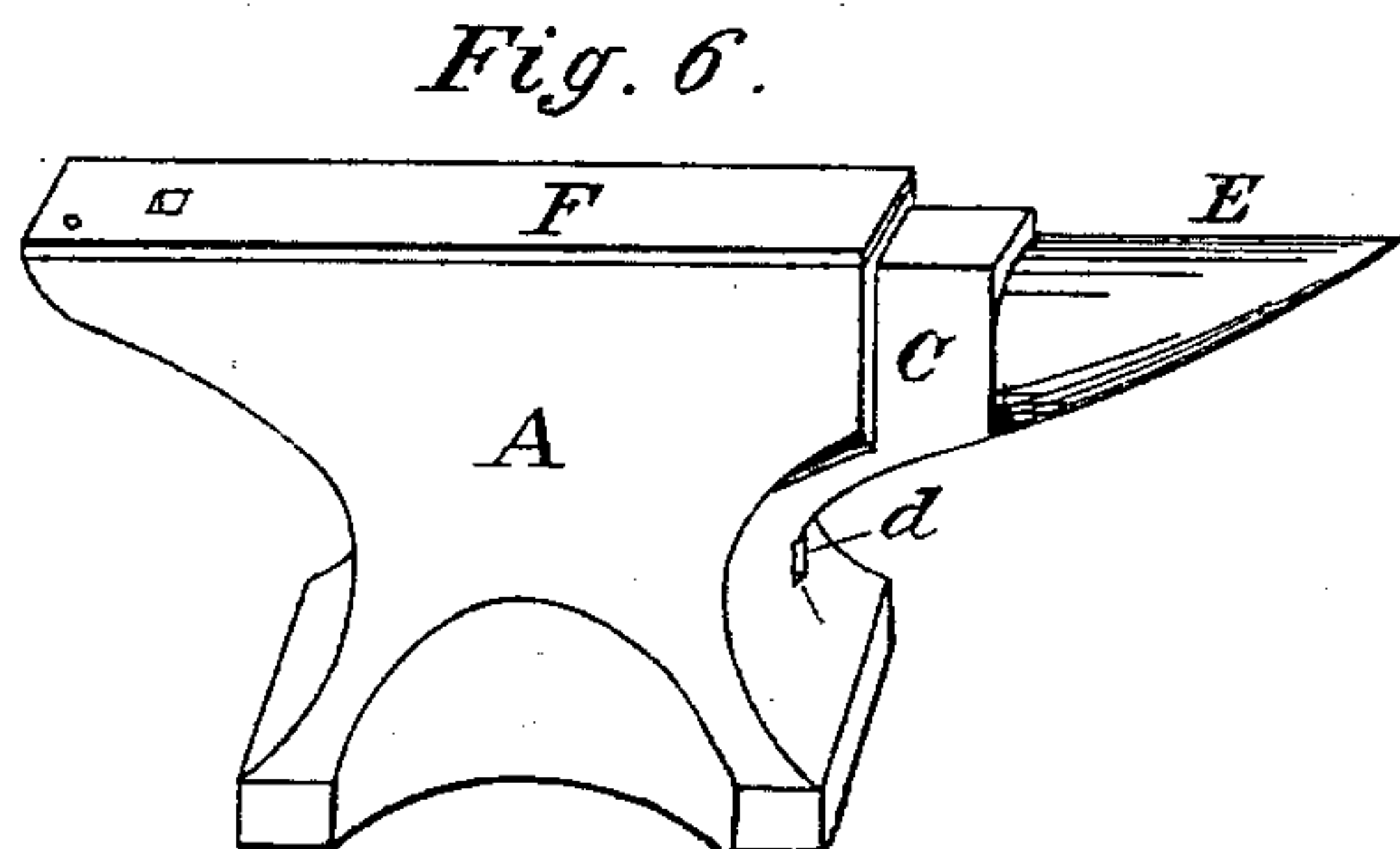
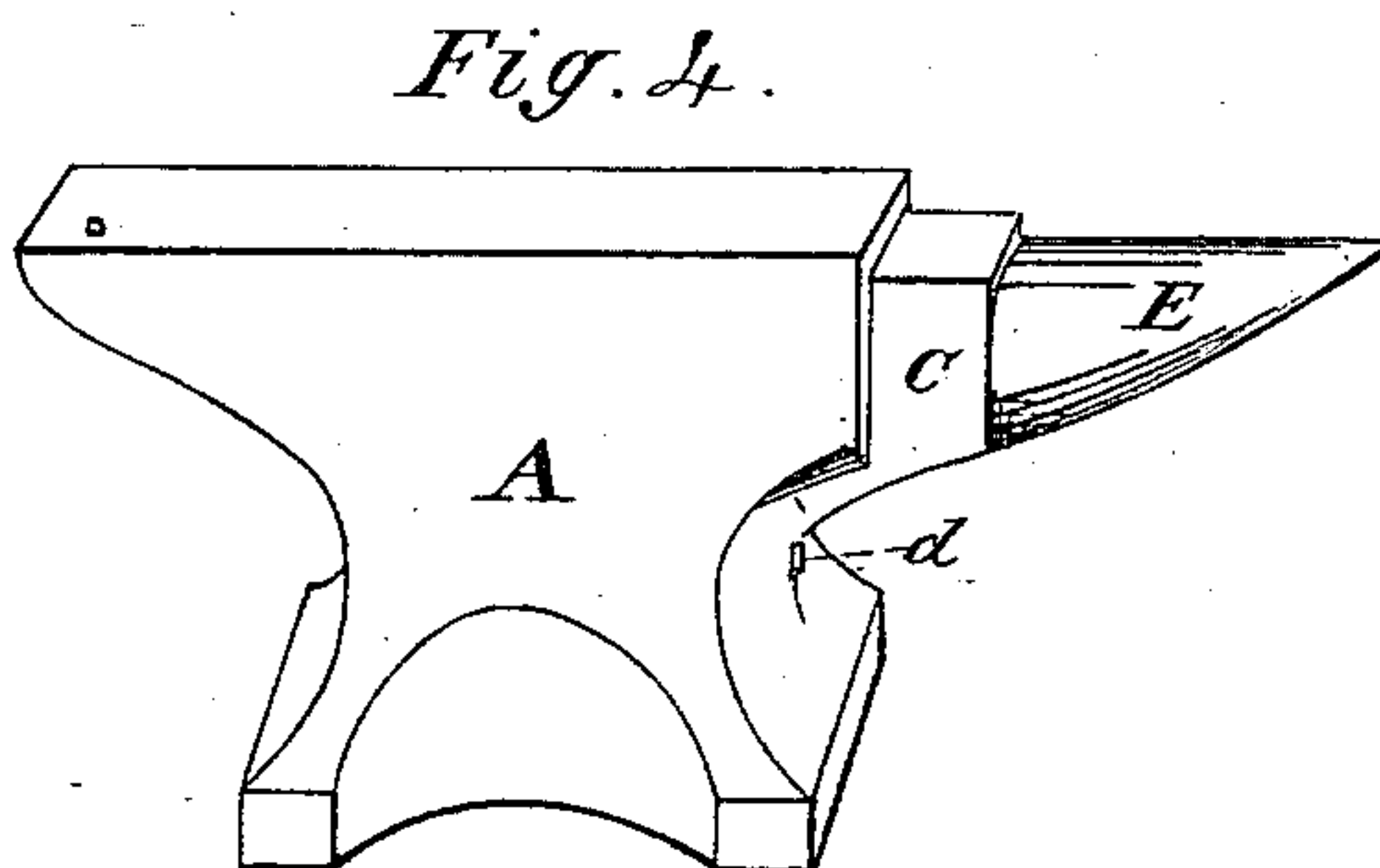
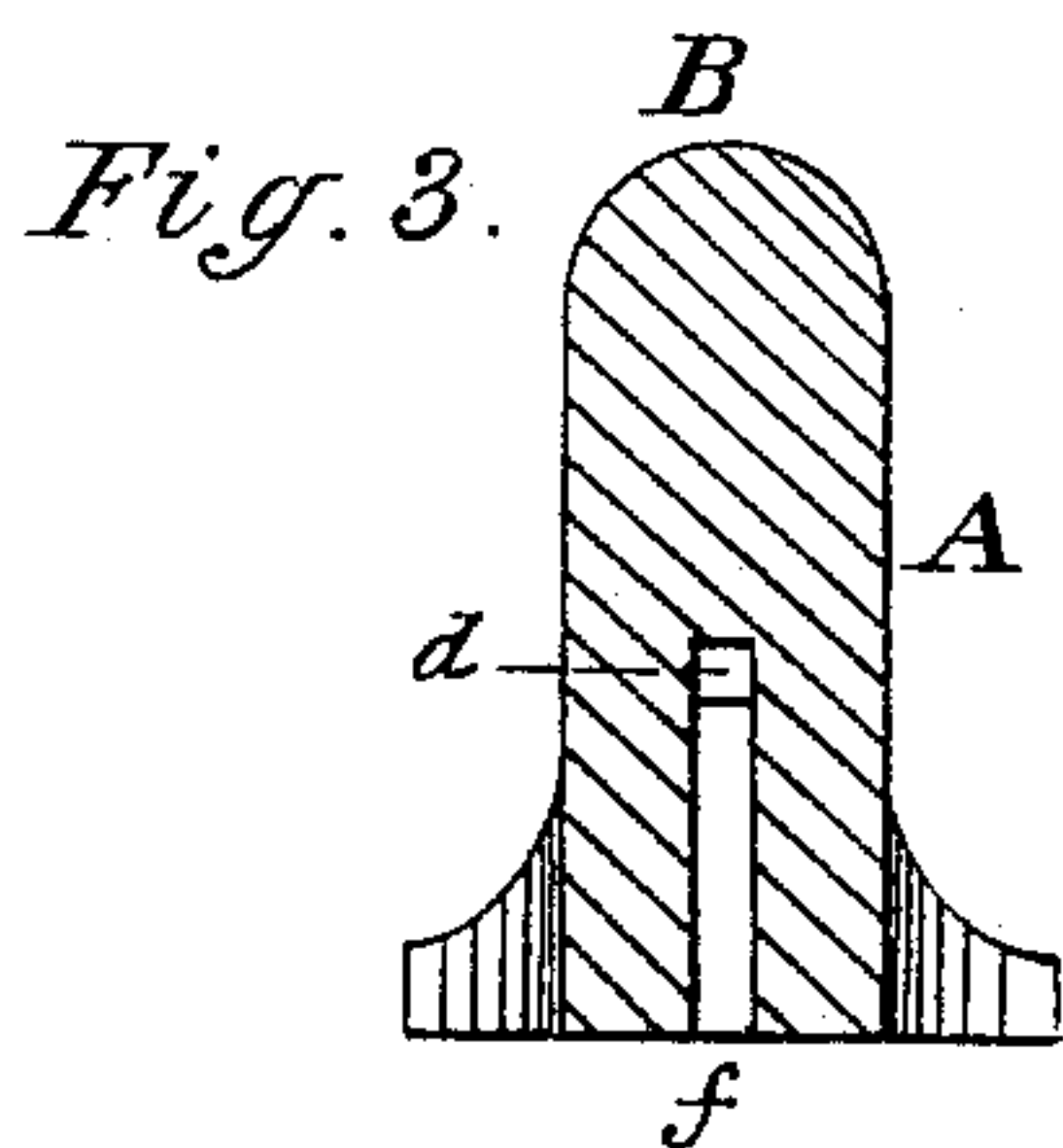
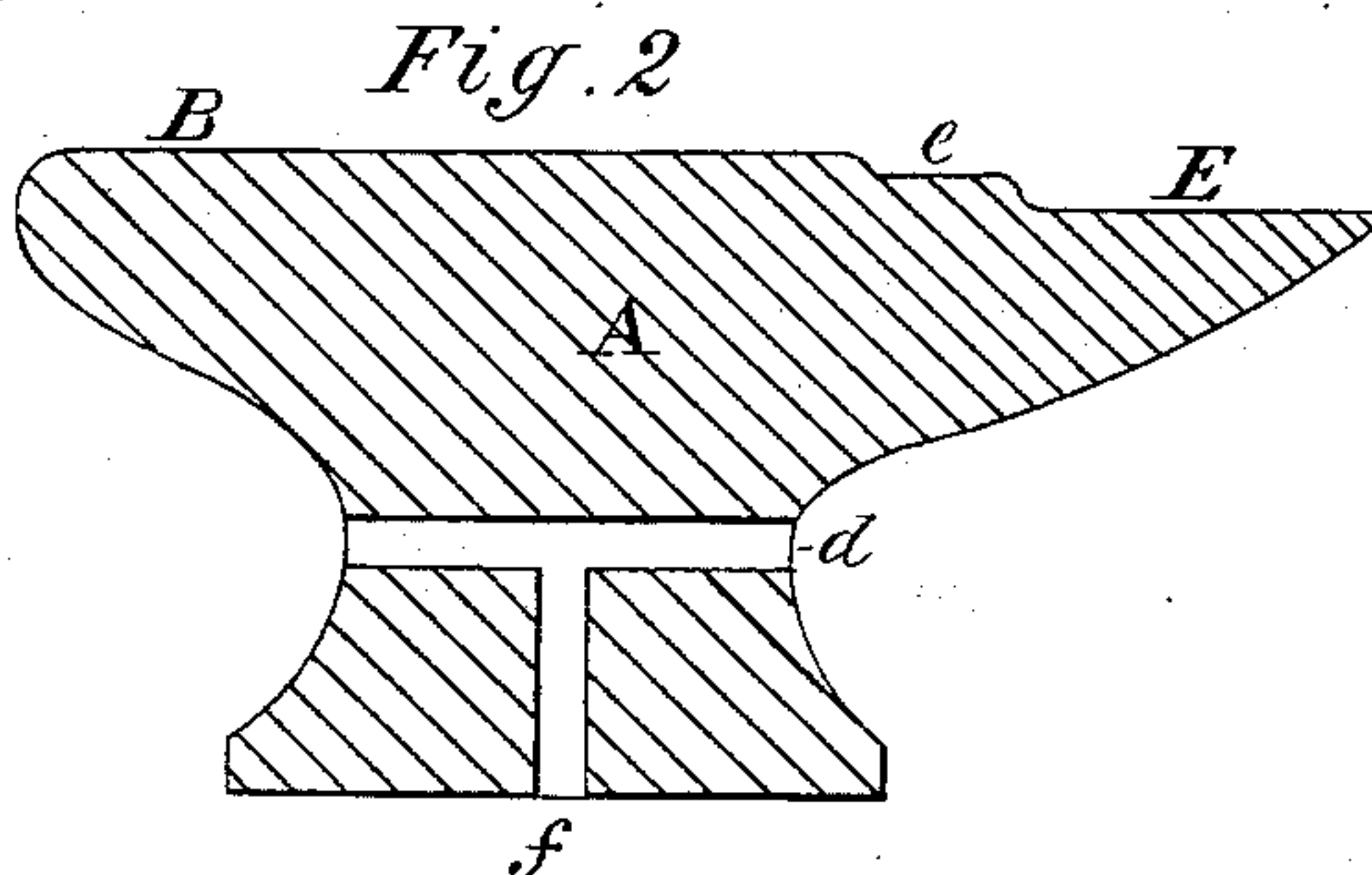
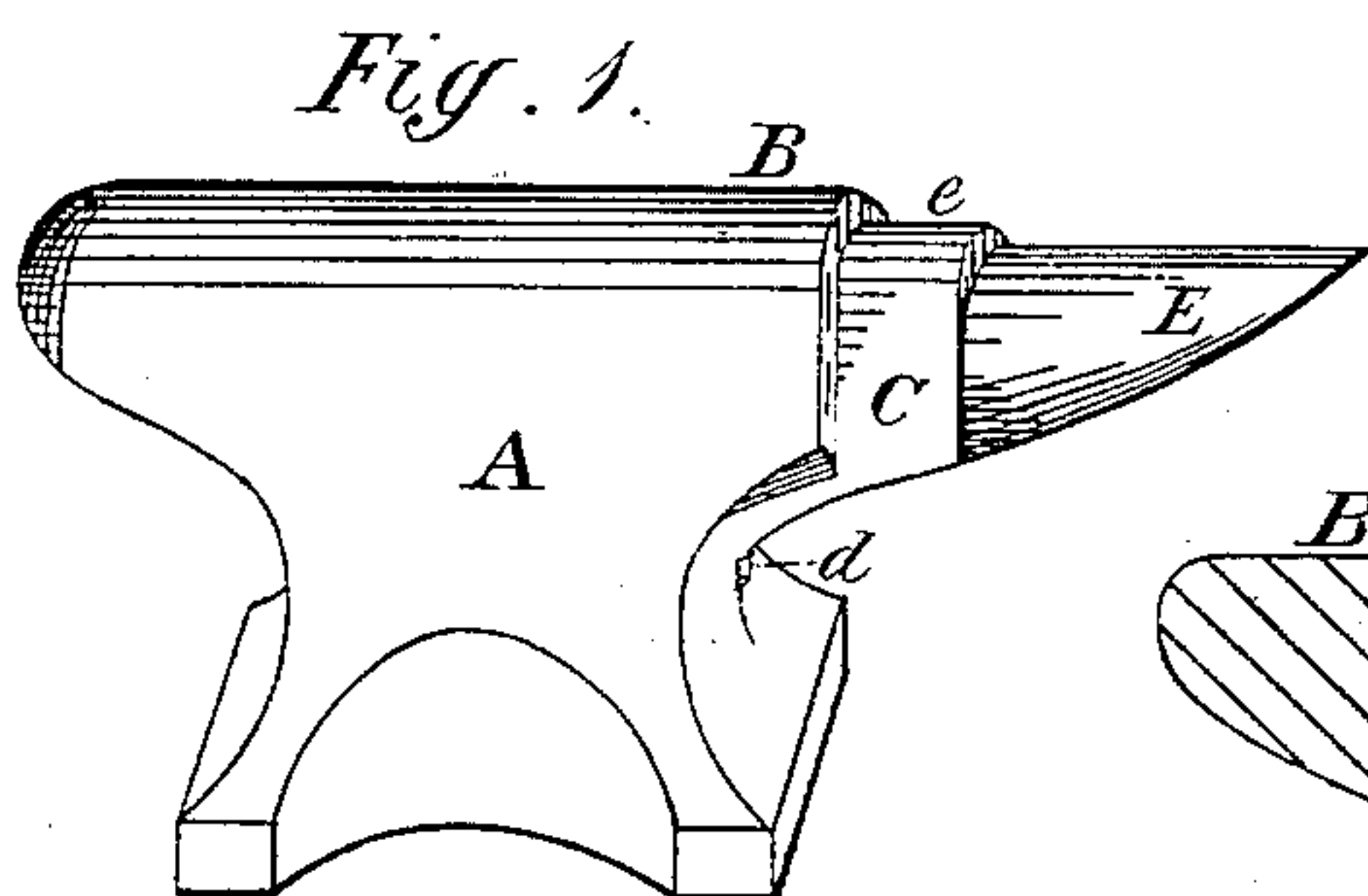
(No Model.)

W. C. McCARTHY.

MODE OF CONSTRUCTING ANVILS.

No. 277,311.

Patented May 8, 1883.



Witnesses.

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MODE OF CONSTRUCTING ANVILS.

SPECIFICATION forming part of Letters Patent No. 277,311, dated May 8, 1883.

Application filed June 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. McCARTHY, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Steel-Faced Cast-Metal Anvils, of which the following is a specification.

In the manufacture of anvils it has been customary to cast the upper side of the anvil with a flat surface, to which is applied, by welding, a steel plate, forming the working-face of the anvil, such flat surface having square edges and corners; and it has been found that after the casting has been made the edges of that part which is to receive or form the working-face is very liable to crack, fissure, or disintegrate, by reason of the fact that at those points the metal cools first, and is by such premature cooling often subjected to a tensile strain, which eventually results in its cracking or parting, as described. The liability to crack at the edges is increased by the fact that at those points the lines of force cross one another. Hence the power of resistance at the edges is very materially decreased as compared with the rest of the casting.

My invention relates to the manufacture of anvils, and has for its object the prevention of injury to that portion of its surface which forms or receives the working-face by cracking or disintegration of its edges.

A further object of my invention is the provision of means for rendering that part of the surface which forms or receives the working-face more dense than the other portions of the anvil.

A still further object of my invention is the provision of means for avoiding any unnecessary heating of the interior of the anvil during any of the processes through which it may have to pass subsequent to its casting, and for accelerating the cooling of the interior after such processes.

My invention consists, first, in casting the anvil with the edges and corners of that part of its surface which receives or forms the working-face and the square base of the horn with rounded edges and corners, whereby attenuation of such edges and corners, and consequent danger of injury from shrinkages, is avoided; secondly, in casting an anvil with an

abnormal amount of material at that part of the surface which forms or receives the working-face, and afterward hammering down or pressing in such extraneous material to form a face or surface for the reception of a face of the ordinary contour, but of greater density than the rest of the anvil; thirdly, in casting the anvil upon cores which form a longitudinal opening through its waist, and a vertical opening running from the longitudinal opening to the bottom of the anvil, the said openings serving, by the admission of air to the interior, to prevent unnecessary heating of the anvil-body during the heating of the face preparatory to hammering the same up into shape and the reheating necessary for the attachment of the working-face, also to accelerate the cooling of the interior by admitting water when the anvil is placed in the tempering-bath.

Referring to the accompanying drawings, which illustrate an anvil during its several stages of manufacture, Figure 1 is a perspective view of an anvil as it appears when taken from the mold. Fig. 2 is a longitudinal sectional view of same. Fig. 3 is a transverse sectional view of same. Fig. 4 is a perspective view of an anvil with its head and faces flattened or compressed. Fig. 5 is a transverse sectional view of Fig. 4. Fig. 6 is a perspective view of a finished anvil with a steel face attached thereto.

A represents the body of the anvil, B the face, E the horn, and C the square base of the same.

It will be seen that the surface of the anvil that is to form or receive the working-face is convex or raised up, and that its edges and corners, as well as the edges and corners of the base of the horn, are rounded, as shown in Fig. 1. This increase of material in the neighborhood of the face of the anvil is hammered down or compressed in after casting until the surface assumes the ordinary contour—i. e., a flat surface with square edges and corners, as shown in Fig. 4—and this compression of the metal on or near the face renders that portion denser, and adapted to sustain shock or strain with less danger of injury than where the material of which the anvil is composed is of the same density throughout. This increase of material also allows for

any wastage of the material of the surface B during the process of manufacture.

The process of manufacture is as follows: I first prepare an appropriate mold and insert 5 suitable cores to form the openings *d* and *f*. After the casting has cooled sufficiently it is removed from the mold and the cores taken out. It is then heated to a proper degree and the convex surface of the face B hammered 10 down or compressed; or, if a rib around the edge is employed, the same is hammered or compressed until the surface B has assumed its proper contour. That part of the casting which forms or receives the working-face is 15 reheated to a welding-heat, and a steel face is applied and welded on. The steel face, or, if the anvil is to be made without a supplemental steel face, that portion which is to form the working-face, is refined by hammering, and 20 finally the working-face is hardened by submitting it to a bath of water. The openings through the body of the anvil serve to ventilate the interior and prevent unnecessary heating of the same during the foregoing processes, and they also serve to accelerate the 25 cooling of the body during the hardening process by permitting of the passage of a stream of water completely through said body. The opening *G* will also serve to receive a bar or 30 rod, by means of which the necessary handling

of the anvil during its various processes will be facilitated.

I do not desire to limit myself to an anvil having a steel face, as the flat top of the anvil may be hardened by any known process, after 35 it has been hammered or compressed, and used as the working-face.

Having fully described my invention, I claim—

1. In the manufacture of anvils, the method 40 described of casting the body with the edges and corners of its face rounded to prevent cracking of the same, as set forth.

2. In the manufacture of anvils, the process of hardening the face of the same, consisting 45 in casting the body with an enlargement of that portion which is to form or receive the working-face, and afterward hammering down or compressing such enlargement, substantially as described, whereby such portion is 50 rendered more dense than the rest of the anvil.

3. As an improvement in the manufacture of anvils, the method of casting the same with openings through its body, substantially as and for the purpose described.

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Witnesses:

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