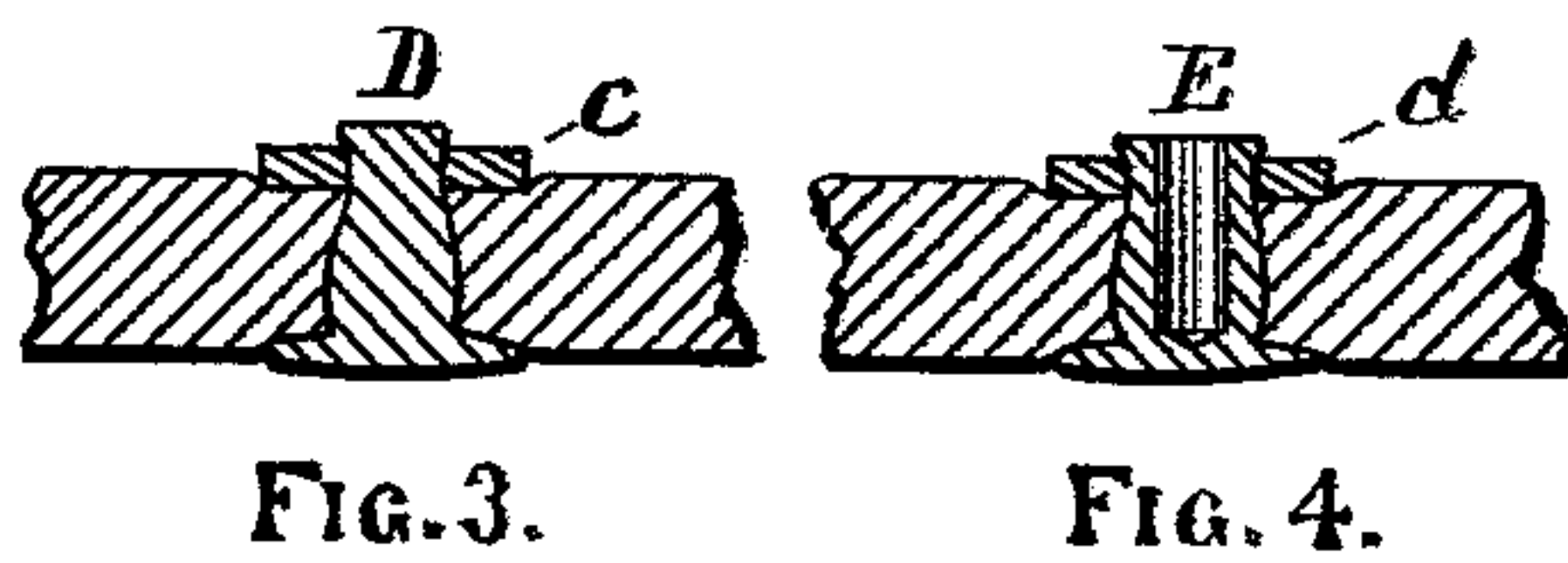
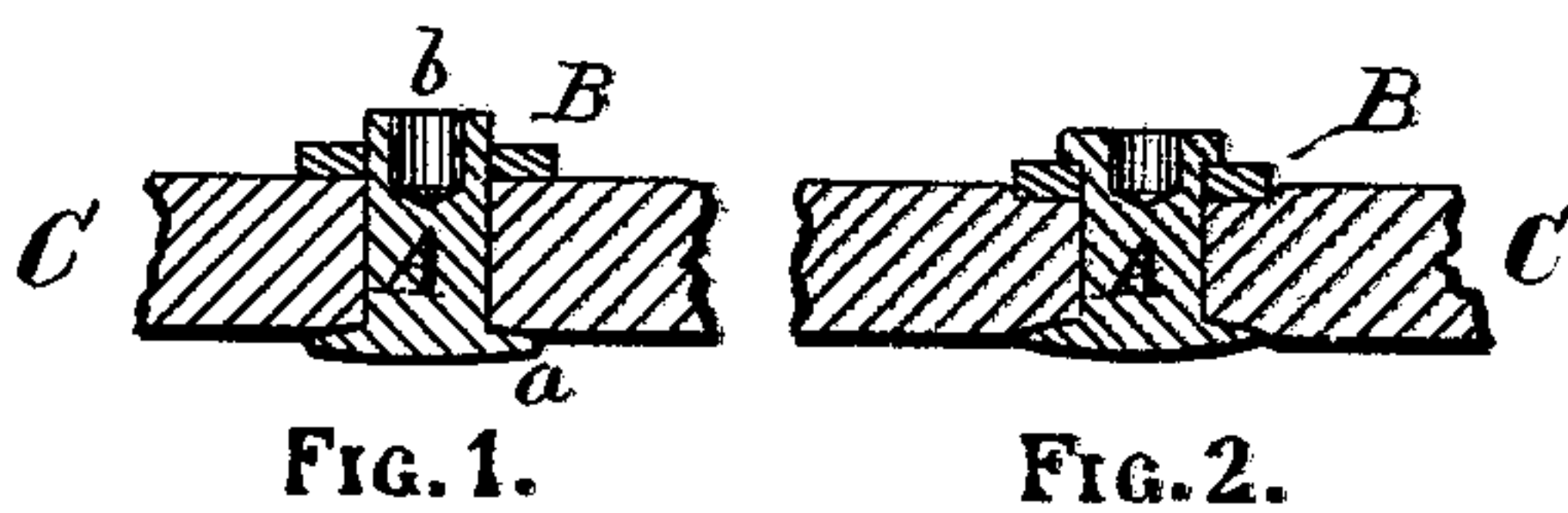


M. BRAY.  
RIVETS.

No. 180,748.

Patented Aug. 8, 1876.



WITNESSES.

*N. P. Lombard*  
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INVENTOR.

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# UNITED STATES PATENT OFFICE.

MELLEN BRAY, OF NEWTON, MASSACHUSETTS.

## IMPROVEMENT IN RIVETS.

Specification forming part of Letters Patent No. 180,748, dated August 8, 1876; application filed January 12, 1876.

*To all whom it may concern:*

Be it known that I, MELLEN BRAY, of Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Rivets, of which the following, taken in connection with the accompanying drawings, is a specification:

My invention relates to the construction of rivets, and is more especially applicable to securing together two or more pieces of leather, rubber, cloth, or other flexible material, and is designed to be used in combination with a burr or washer, upon which it is headed.

In the application of solid or tubular rivets, in combination with burrs for securing together two or more pieces of soft yielding material, as heretofore practiced, the rivet has been headed by striking a single blow upon its end; and it has been found that, in consequence of the yielding nature of the material through which the rivet passes, and the fact that the shank or body of the rivet has an equal area in cross-section at all points in its length, the greater part of the force of the blow is absorbed in upsetting the body of the rivet below the burr, and, as a consequence, but very little if any head is formed above the burr, and the articles are very imperfectly secured together.

To obviate this difficulty I take a solid rivet and drill a hole in the center of its point to a depth about equal to the length that the rivet is to protrude through the material to be secured before it is headed, thus reducing the amount of stock in the point of the rivet, and forming therein a chamber, the walls of which are substantially parallel to the exterior periphery of the shank of the rivets, while that portion of the rivet between the burr and the head of the rivet remains solid.

By this construction I am enabled, at a single blow, to form a good firm head above the burr without upsetting or enlarging the rivet between the head and the burr.

Figure 1 of the drawings is a section through the center of one of my improved rivets and its burr, in position to be headed. Fig. 2 is a similar section, showing the parts

as they appear after being headed. Fig. 3 is a similar section, illustrating the appearance of the ordinary solid rivet and burr after being headed in yielding material; and Fig. 4 represents, in section, a rivet having the whole length of its shank made hollow, and of even thickness, as it appears after having been headed upon a burr and inclosed in a yielding material.

A, Fig. 1, represents my improved rivet, provided with a head, *a*, and having drilled in the center of its point the chamber *b*, which is concentric with, and parallel to, the periphery of the body of the rivet, and extends to a depth about equal to the length of rivet which protrudes through the material, as shown. B represents the ordinary burr, placed over the end of the rivet, and resting upon the upper surface of the material C.

If, now, a blow be struck upon the end of the rivet A by means of a hammer or spring-plunger, while the head *a* rests upon a suitable anvil, the tubular end thereof will be headed down over the burr B, as shown in Fig. 2, without affecting materially that portion of the body of the rivet between its head and the burr.

If a similar blow be struck on the end of the solid rivet D, or a tubular rivet, E, having the whole length of its shank made hollow and of even thickness, to head them down upon the burrs *c* and *d*, the first and principal effect of said blow is to upset or expand the body of the rivets near their heads, as shown in Figs. 3 and 4, and, as a consequence, but very little head will be formed unless a second, or perhaps a third, blow is struck, which is impracticable to do in setting such rivets by automatic machinery, such as is usually used for the purpose.

I do not claim, broadly, a tubular rivet, for I am aware that rivets having their entire shanks made hollow, or in the form of a tube, have been used before; neither do I claim a rivet having its end countersunk to aid in heading, as I am aware that such rivets have been used; but they do not fully meet the requirements of the case.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

As a new article of manufacture, a rivet having a portion of the length of its shank made tubular, and of nearly even thickness, and the remaining portion next its head made solid, as and for the purpose described.

Executed at Boston, Massachusetts, this 26th day of November, 1875.

MELLEN BRAY.

Witnesses:

N. C. LOMBARD,  
WM. P. EDWARDS.