J. B. CORNELL.

Rivet.

No. 221,447. Patented Nov. 11, 1879.

Fig. 1.

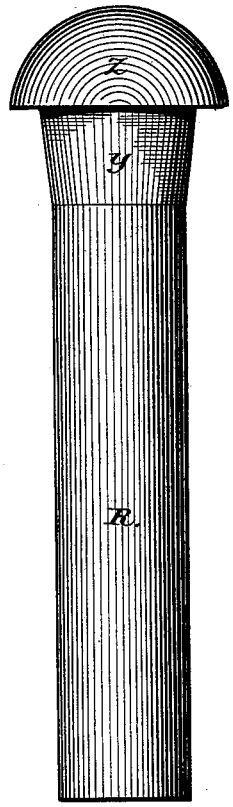


Fig. 3.

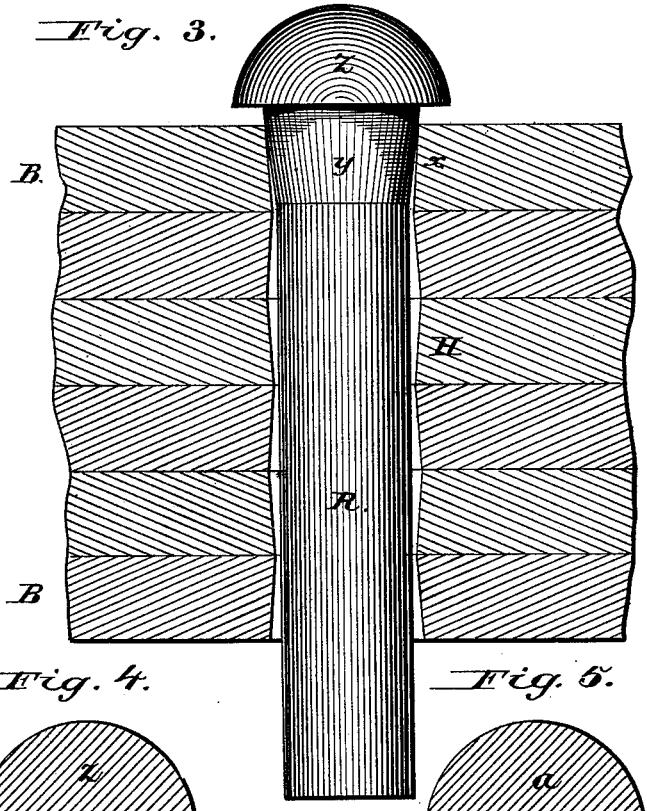
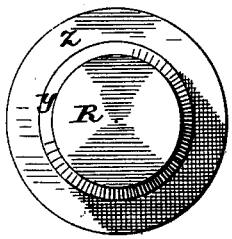
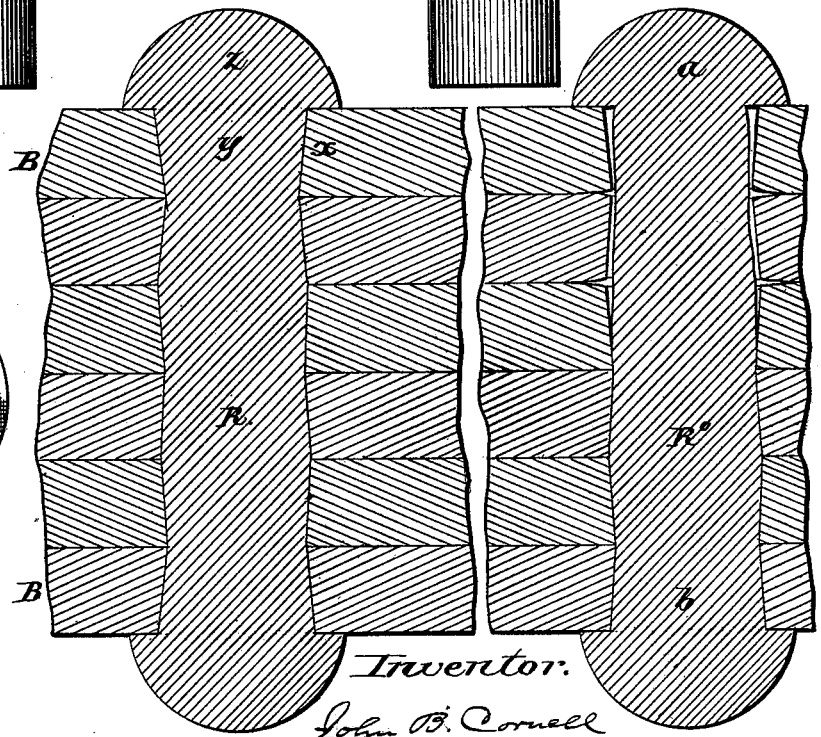


Fig. 4.

Fig. 5.

Fig. 2.





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IMPROVEMENT IN RIVETS.

Specification forming part of Letters Patent No. **221,447**, dated November 11, 1879; application filed July 25, 1879.

To all whom it may concern:

Be it known that I, JOHN B. CORNELL, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Rivets; and I do hereby declare the following to be a full, clear, and exact description of the said 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, which form a part of this specification.

This invention relates to hot-riveting, as practiced in building elevated railways and similar iron structures; and it consists in manufacturing the rivet with an enlargement immediately beneath its head, so as to insure tight work, as hereinafter more fully set forth.

Figure 1 of the accompanying drawings is an elevation of an unused rivet illustrating this invention. Fig. 2 is an end view of the same. Fig. 3 is another elevation of the same in position within a rivet-hole and ready for riveting. Fig. 4 is a sectional view of the same riveted. Fig. 5 is a section similar to Fig. 4, representing an ordinary rivet within a like rivet-hole.

Like letters of reference indicate corresponding parts in the several figures.

In building elevated railways and other riveted iron structures, and especially in the production of lattice-girders, where the rivets must unite several iron bars, great difficulty has been experienced in making the rivets completely fill the holes through which they pass, which is essential to tight and secure joints. The result has been that thousands of rivets have been cut out at the manufactory, and thousands on the road after the work is put up, and the cost of so cutting out one rivet on the road and putting in a new one is about as much as the putting in of six where the work is made.

The cause of loose riveting I find to lie in the difficulty of upsetting what is known as the "head end" of the rivet by hammering against the stub end, owing to the expansion of the latter first and the rapid loss of heat during the operation.

In making heavy iron lattice-work it is necessary to punch the holes in the several bars B, so as to form a rivet-hole, H, about an eighth of an inch larger than the rivet R, in order that the latter may be inserted without trouble, and, owing to the flaring form of the respective punched holes, the greatest diameter within the contiguous bar is immediately beneath the head of the rivet, the outer bars being so punched that the holes will flare outwardly. At the same time, as before stated, it is essential to tight riveting that each rivet shall be made to completely fill the hole in which it is used. With the ordinary rivet R^0 this, in many instances, is impossible, owing to the reasons aforesaid, and one or more bars next beneath the head *a* of the rivet remain loose, as illustrated by Fig. 5, although the stub end *b* of the rivet may be perfectly tight.

To insure tight riveting in every instance, I manufacture a rivet, R, Figs. 1 and 2, with an ordinary head, *z*, and immediately beneath this an enlargement, *y*, which is readily formed by upsetting in the ordinary process of original manufacture, said enlargement being, by preference, conical, concentric with the stub end of the rivet, and slightly larger than the flaring head end *x* of a rivet-hole, H, of corresponding size, so that the rivet must be driven home an eighth or a fourth of an inch by the riveter, as illustrated by Fig. 3. When so driven home the rivet fills, or nearly fills, the said space immediately beneath the rivet-head *z* by means of said enlargement *y*, so as to leave less upsetting to be done from the other end of the rivet, and thus to insure its perfection, as illustrated by Fig. 4.

The shape and relative size of the enlargement *y* are not considered essential.

The following is what I claim as new and of my own invention, and desire to secure by Letters Patent, namely:

As a new article of manufacture, the improved rivet R, constructed with a conical enlargement, *y*, immediately beneath its head, and a concentric stub end, adapted to be upset by hot-riveting, as herein specified.

JOHN B. CORNELL.

Witnesses:

THOS. CROCKER,

C. R. LEFFINGWELL.