

M. BRAY & M. N. BRAY.
Tubular Rivet.

No. 227,092.

Patented May 4, 1880.



Fig. 2.

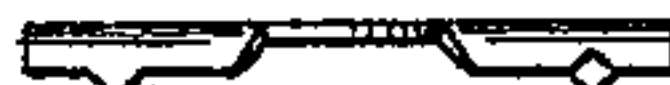


Fig. 4.



Fig. 5.



Fig. 1.



Fig. 3.



Fig. 6.



Fig. 7.



Fig. 8.

Witnesses:

H. J. Obmsted
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UNITED STATES PATENT OFFICE.

MELLEN BRAY AND MELLEN N. BRAY, OF NEWTON, MASSACHUSETTS.

TUBULAR RIVET.

SPECIFICATION forming part of Letters Patent No. 227,092, dated May 4, 1880.

Application filed October 8, 1879.

To all whom it may concern:

Be it known that we, MELLEN BRAY and MELLEN N. BRAY, both of Newton, in the State of Massachusetts, have invented a new and useful Improvement in Tubular Rivets, of which the following is a specification.

The invention consists in a tubular rivet of sheet metal in one piece, having a flat circular head and a cylindrical shank formed in sections, each section being independently connected with the head and re-enforcing a portion of the head.

The invention consists, further, in interlocking the parts which form the tubular shank.

Hitherto the formation of the heads of tubular rivets formed from a single piece of sheet metal and having flat cylindrical heads and cylindrical shanks with which we are acquainted has been governed by the upsetting capacity of the metal.

A tube with one end closed and with an unbroken wall has been formed by drawing up a disk of metal, and then, a mandrel having been inserted in the tube, the closed end, with a portion of the unbroken wall, has been upset by swaging, thus throwing out a flange.

There has been some modification of the manner of forming the lower portion of the cylindrical shank, so that it has been seamed; but the heads of all tubular rivets with cylindrical shanks made from a single piece of sheet metal have been thrown out, as just described, from a portion of a tube having a closed wall.

Tubular rivets have also been made from a single piece of sheet metal, in which the metal of the head retained its original condition, the tubular shank being formed by folding flat projecting arms beneath the head; but such shanks have not had the requisite strength.

In the drawings, Figures 1 and 2 are plan and edge views of the sheet-metal blank, while Fig. 3 is a plan, and Figs. 4 and 5 are side and end views, of the blank after it is struck up into the form from which it is to be folded into the rivet. Fig. 6 is a plan, and Fig. 7 a side

elevation, of the completed rivet. Fig. 8 is a sectional elevation on the dotted line in Fig. 6.

In making the rivet shown in the drawings we first cut the blanks from sheet metal to the shape shown in Figs. 1 and 2, the blank thus formed consisting, as it were, of a disk with two arms, each of the arms having a nick and a projection corresponding to a nick and a projection in the other. We next strike these blanks in dies to the form shown in Figs. 3, 4, and 5, the dies so acting upon the arms of the blank that the greater portion becomes semi-cylindrical, while a portion remains as nearly flat as may be. The flat part, which we have termed the "disk," is not acted upon by the dies, but is left at its full size for a head, the arms being folded under it to form the shank. This folding is done in dies which double the flat part of the arm upon the disk, as shown in Figs. 6 and 8, and bring the semi-cylindrical parts of the arms together, so that the projections and nicks interlock, as shown in Figs. 7 and 8. The lines of fold next the disk are continuations of the arcs which in part bound the disk as originally cut.

The flat parts of the arms, when the rivet is completed, form a second layer or re-enforcement for a part of the head, and make the connection between the shank and the head proper.

We claim—

1. A tubular rivet of sheet metal in one piece, consisting of a flat circular head and a cylindrical shank formed in sections, each section having an independent connection with and re-enforcing a portion of the head, substantially as described.

2. A tubular rivet made of sheet metal, the tube or shank being formed in sections interlocked, substantially as described.

MELLEN BRAY.
MELLEN N. BRAY.

Witnesses:

W. W. SWAN,
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