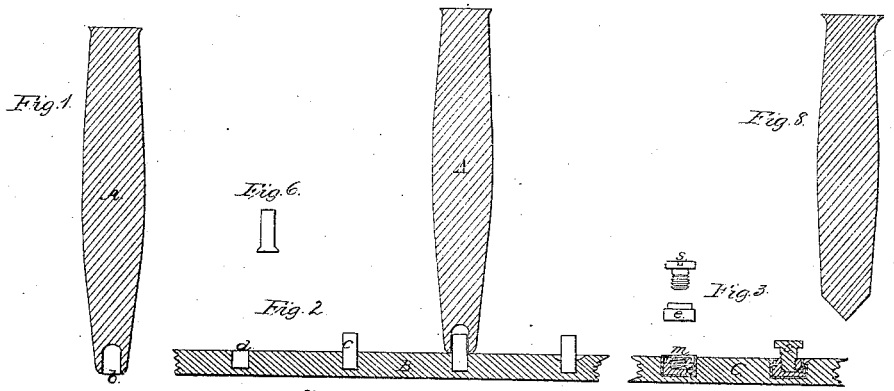
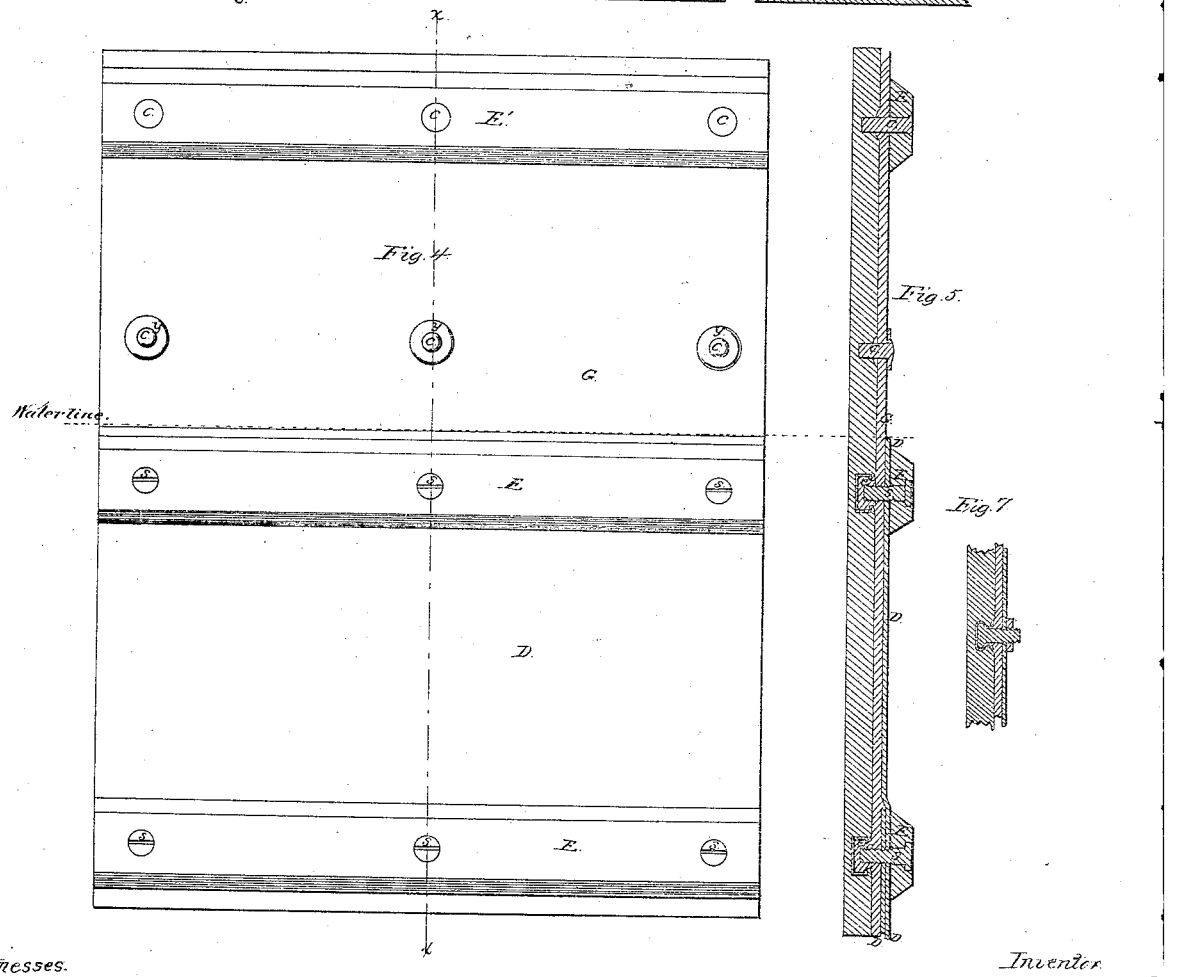
W. B. Barnard.

Riveting Metal Plates.

No. 44,928. Patented Nov. 8, 1864.





Witnesses.
J. King
Edward B. Fowles.

Inventor.
Wm B. Barnard
by Robbins & Burr
his Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM B. BARNARD, OF WATERBURY, CONNECTICUT.

IMPROVED MODE OF UNITING METALLIC SURFACES.

Specification forming part of Letters Patent No. **44,928**, dated November 8, 1864.

To all whom it may concern:

Be it known that I, WILLIAM B. BARNARD, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in the Mode of Fixing and Securing Rivets, Screw-Sockets, and other Devices in Metallic Plates; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a longitudinal section of my improved punch used in securing rivets or screw-sockets. Figs. 2 and 3 illustrate in section my manner of securing rivets or screw-sockets to metallic plates by means of my improved punch. Fig. 4 is an elevation of a portion of the side of an iron ship coppered by means of my invention. Fig. 5 is a vertical section thereof in the line *x x*. Fig. 6 represents a rivet having its lower end enlarged so that it may be more firmly held in its retaining cavity, and Fig. 7 a threaded rivet.

Similar letters indicate like parts in each of the drawings.

The nature of my invention consists in a novel mode of securing insulated rivets, screw-sockets, &c, in metallic plates by means of a peculiar punch, so that the insulating coating or wrapper upon such rivets, screw-sockets, &c., will not be broken or injured by the fastening process.

Fig. 1 represents in section the form of punch which I use for the purpose of contracting or countersinking the edges of the cavities into which the rivets, &c., are inserted. This punch A is made of a suitably-tempered metallic bar, having its lower end rounded or beveled off in a conical or convex form, so as to fit upon the mouth of the cavity to be countersunk. A recess, *b*, is drilled longitudinally in the center of this end equal in diameter to the size of the rivet or socket to be placed in the cavity, and of a depth equal to the length of such rivet. The rivet *c*, being first properly insulated by dipping it in a suitable varnish or by covering it with an envelope of india-rubber, such as covers the screw-sockets *e e*, represented in Figs. 3 and 5, is inserted in a simple cylindrical hole, *d*, Fig. 2, drilled in the metallic plate B, and is secured therein by placing the hollow punch A over the same, so as that its edge shall rest on the rim of the hole, and then striking a blow thereon. This blow will countersink and drive in the rim of the hole *d* around the rivet *c* so tightly and closely as to grip and secure even a straight rivet; but if additional security be desired the lower end of the rivet may be enlarged, as shown by *r* in Fig. 6, so that the contracted neck of the cavity shall in a measure overlap the same. The rivets *c c*, thus secured to the plate B, may be left long enough to project through simple apertures formed in the superimposed plate D, Figs. 4 and 5, and by heading them thereon outwardly or screwing a nut on the end of the rivet the fastening of the two plates together is completed.

This invention is peculiarly useful in the sheathing of iron-clad vessels with copper, because of the entire insulation of the rivets, as well as the sheathing itself, for it is evident that this insulating material will not be displaced by the countersinking and clinching of the rim of the cavity around the same, and that the rivet or screw-socket of copper is thereby prevented from coming in contact with the iron of the vessel, so that if the sheathing itself be properly separated from the iron by some insulating substance there will be no danger of galvanic action. To effect such an insulation of the sheathing, I propose to place a thin sheet of india-rubber or gutta-percha, G, Figs. 4 and 5, or a thick coating of some non-corrosive paint or other insulating material, between the copper plates and the iron surface of the vessel, and to extend the same some distance above the water-line, or the point at which the copper sheathing terminates, as I have illustrated in Figs. 4 and 5.

By the use of screws *s s* and insulated screw-sockets *e e* in fastening on the copper sheets, the ready removal and replacement of the sheathing, or of any portion thereof, may be effected without disturbing the hull of the vessel, and without the objection and expense of fixing new sockets or forming new cavities in the iron.

To obviate the necessity of using a very large number of screws or rivets in the sheathing of a vessel, I propose to use, in combination with my improved fastenings, copper strips or battens E E, Figs. 4 and 5, placed upon the edges of the sheets of copper, these battens being secured by screws or rivets placed at intervals of about twelve inches apart.

Threaded rivets *t* (see Fig. 7) may be substituted for the screws and screw-sockets *s s* and *e e*, the enlarged ends thereof being insulated and secured in the iron plate by the process hereinbefore described, leaving its threaded end projecting through the copper sheathing to receive a nut, *u*.

I deem it important to place closely-fitting rings or washers of rubber around each projecting screw or rivet before putting on the sheathing as an additional precaution against the presence of moisture about the same.

The top strip or batten, E′, which is placed above the water-line of the vessel to hold the upper edge of the rubber sheet, may be made of wood and fastened and secured by means of rivets or screws, as are the others.

Having thus fully described my invention, I will proceed to set forth what I claim therein as new and desire to secure by Letters Patent, as follows, viz:

When a metallic rivet, screw, or screw-socket is covered or partially covered by an envelope or coating of india-rubber, paint, or other suitable insulating material, combining such insulated rivet, screw, or screw-socket with a metallic plate by inserting it in a simple cavity in said plate, and then securing it therein by means of the punch A, formed and employed as herein set forth.

WM. B. BARNARD.

Witnesses:
G. H. BENEDICT,
S. W. KELLOGG.