(No Model.)

C. E. TEST.

PROCESS OF MAKING RIVETS, STUDS, &c.

No. 565,049. Patented Aug. 4, 1896.

Fig. 1.

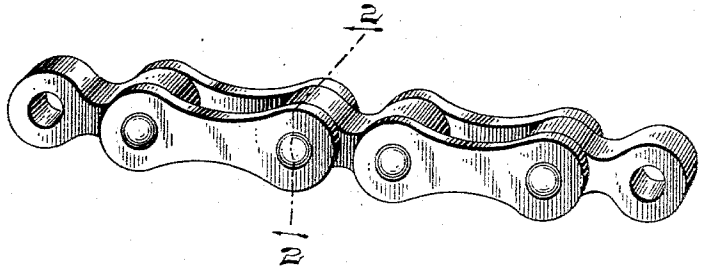

Fig. 2.

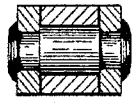

Fig. 3.

Fig. 4.

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES E. TEST, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO THE INDIANAPOLIS CHAIN AND STAMPING COMPANY, OF SAME PLACE.

PROCESS OF MAKING RIVETS, STUDS, &c.

SPECIFICATION forming part of Letters Patent No. 565,049, dated August 4, 1896.

Application filed February 19, 1895. Serial No. 538,928. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES E. TEST, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Processes of Making Rivets, Studs, &c., of which the following is a specification.

It is very desirable in the manufacture of link chains of that variety commonly employed in driving sprocket-wheels, which are made up of flat links riveted together, that the wearing-surfaces of the rivets should be comparatively hard, to resist the effects of the wear thereon, and that the central portion which extends through to the ends should be comparatively soft to facilitate riveting. There are also many other uses to which rivets of this character can be advantageously applied, and other analogous devices are similarly improved. To produce rivets, studs, and analogous mechanical parts with hardened wearing-surfaces and softer centers is the object of my said invention, which consists in a process of treatment of the previously perfectly formed rivets, as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a perspective view of a fragment of chain such as heretofore referred to, in which rivets of the character specified are used; Fig. 2, a transverse sectional view of said chain on the dotted line 2 2 in Fig. 1; Fig. 3, a side elevation of a rivet separately; and Fig. 4, a perspective view of a rivet with protecting coverings or caps on the ends ready for treatment, a portion of one of the caps being shown as broken away to illustrate this feature more clearly.

The process consists in first forming the rivets complete from soft steel in the form desired, as, for instance, shown by Fig. 3 of the drawings, then placing coverings on the ends, and then carbonizing or charging with carbon the exposed central portion of the rivet by any usual treatment for that purpose, such as heating the same and immersing it in a hardening liquid or compound. The coverings are shown as small caps, and, in the preferred way of carrying out my improved process, as illustrated in Fig. 4, are placed upon the ends of the rivet. These caps are commonly of a different metal, such as copper, as they are more easily formed and handled when made of such a metal; but of course they may be made in any way or of any material suitable for the purpose, or any other suitable covering may be substituted without departing from my invention.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

That process of forming rivets having hardened centers and softer ends, which consists in first forming the rivet of metal of substantially the degree of hardness which it is desired the ends shall have, then covering said ends with closely-fitting caps of material adapted to protect them from the action of the hardening process, then charging with carbon the exposed central portion by heating and then immersing in a hardening liquid or compound, and then removing said caps, all substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 16th day of February, A. D. 1895.

CHARLES E. TEST. [L. S.]

Witnesses:

CHESTER BRADFORD,

JAMES A. WALSH.