

J. A. BIDWELL.

Annealing and Tempering Articles of Bessemer Steel.

No. 148,590.

Patented March 17, 1874.

Fig. 1

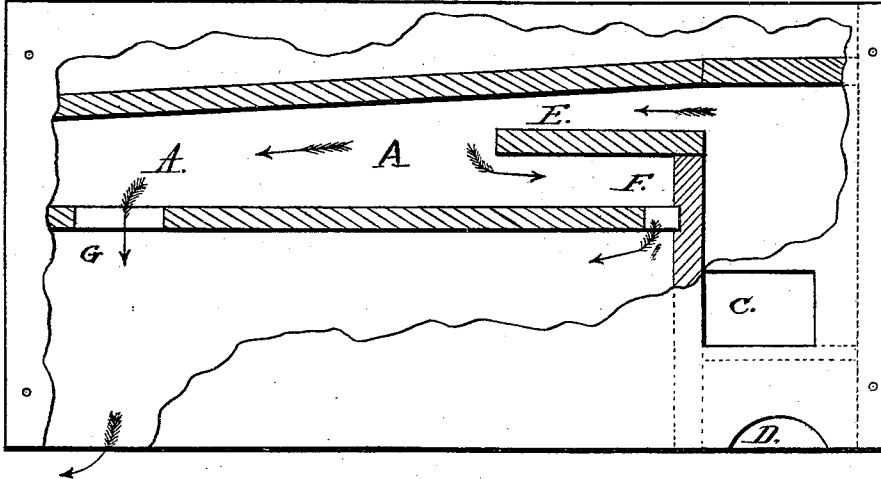


Fig. 2.

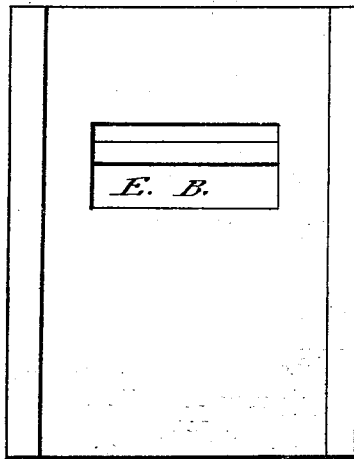
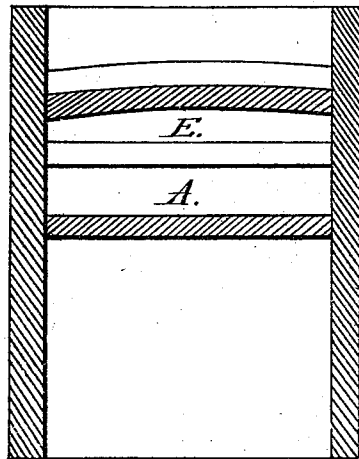


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

JASON A. BIDWELL, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF HIS
RIGHT TO STILMAN WITT, OF SAME PLACE.

IMPROVEMENT IN ANNEALING AND TEMPERING ARTICLES OF BESSEMER STEEL.

Specification forming part of Letters Patent No. **148,590**, dated March 17, 1874; application filed
February 24, 1874.

To all whom it may concern:

Be it known that I, JASON A. BIDWELL, of Cleveland, county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Treating Articles made from Bessemer-Steel Wire; and I do hereby declare the following to be a full and complete description thereof.

The nature of this improvement relates to the treatment of articles, such as wood-screws, &c., made from Bessemer-steel wire, whereby the articles become much better adapted to general use than when not subjected to the process herein described.

It is well known to those skilled in the art to which this invention belongs that, in the manufacture of wood-screws from Bessemer-steel wire in the best condition for working, during the upsetting or swaging of the metal to form the head, the metal about the head and shank becomes contorted or strained, and remains in this torsional condition. Thus the head is liable to crack or break off from the shank. This is particularly the case when any additional strain is exerted upon the head when being forced into wood or other material by a screw-driver or other means, as the head is subject to continual torsion by the strain upon the metal in upsetting.

It often follows that, in using the screw, any additional force exerted upon the head breaks or cracks it off. The inherent properties are thus relieved of the torsion to which it must be subjected in forming the head. The nick in the head for the screw-driver also tends to weaken the metal of the head which has been subject to the strain of pressure in upsetting.

The object of this invention is to so treat the screw, or other similar article, after it is made, that it will become tenacious, tough, and capable of enduring all the ordinary strain to which it may be subjected in practical use.

In order to accomplish this result, one mode or process will be given as an example, without confining the process to the means described, as it is susceptible of various changes embracing substantially the same features.

In carrying out this process in one example, reference will be made to the annexed

drawing, in which Figure 1 represents a side view of the muffled furnace employed in the said process. Fig. 2 is an end view, and Fig. 3 a transverse section.

In the drawings, like letters refer to like parts.

After the screws are completed—that is to say, after they are finished by the mechanism required—they are put into suitable pans or vessels, and then placed in the chamber A, Fig. 1, there being a door, B, Fig. 2, at the rear end into the chamber, through which opening the articles are passed in and out. C represents the fire-place, and D the ash-pit. E is a bridge-wall, under which is one or more flues, F. In the opposite end of the chamber is one or more flues, G. The chamber is heated by the fire from the fire-place C.

For fuel, charcoal is preferred, to prevent flame or smoke being brought in contact with screws or other articles in the chamber.

The draft is through the chamber and flues, as indicated by the arrows, and then out through a stack or chimney, in the ordinary way.

The screws are allowed to remain in the chamber until they become a grayish blue, (or at a low red heat,) care being taken to prevent smoke and flame from contact with the screws, which will tend to excessive oxidation, thereby causing the article to rust, when taken from the chamber, much more rapidly than when subjected only to the action of heat from the fire-place, and by which the articles become coated with a thin film, which aids in arresting oxidation. When the screws in the chamber have reached the condition before mentioned, which may be known by examination, they are then withdrawn and allowed to cool; then they are ready for use.

By this process the screws become relieved of the tension acquired during the operation of gathering up the metal and compressing it to form the head. There is a continual strain upon the head of the article by the contortion of the metal in swaging the head, which changes the original character of the metal. This more or less injures the value of the screw.

By the method or process herein described the entire screw, or any part thereof which

may have been strained in the manufacturing, is restored to the original integrity of the metal before such strain or torsion took place.

What I claim as my invention is—

1. The process herein described for treating articles made from Bessemer-steel wire after said articles have been formed, in whole or in part, into shape by swaging or compression, for the purpose set forth.

2. A wood-screw made from Bessemer-steel wire, having its head tempered or annealed, substantially as and for the purpose set forth.

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Witnesses:

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