(No Model.)

J. J. UNBEHEND.

PROCESS OF MAKING RIVETS.

No. 435,908. Patented Sept. 2, 1890.

Fig. 1.

Fig. 2.

Fig. 3.

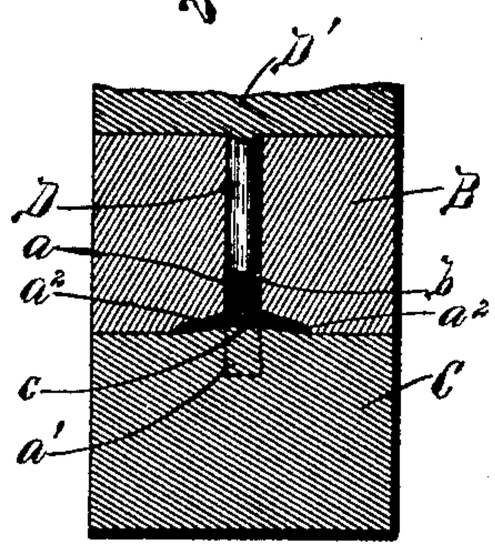


Fig. 4.

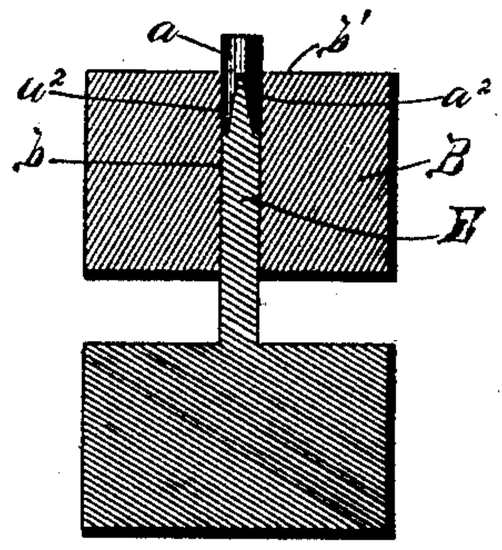


Fig. 5.

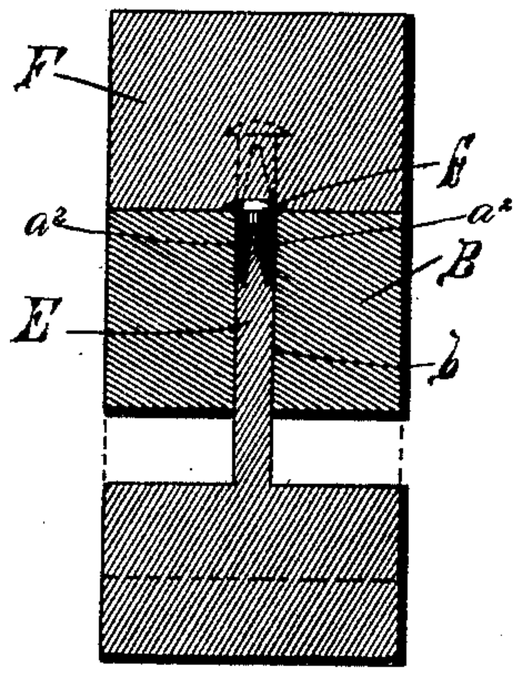
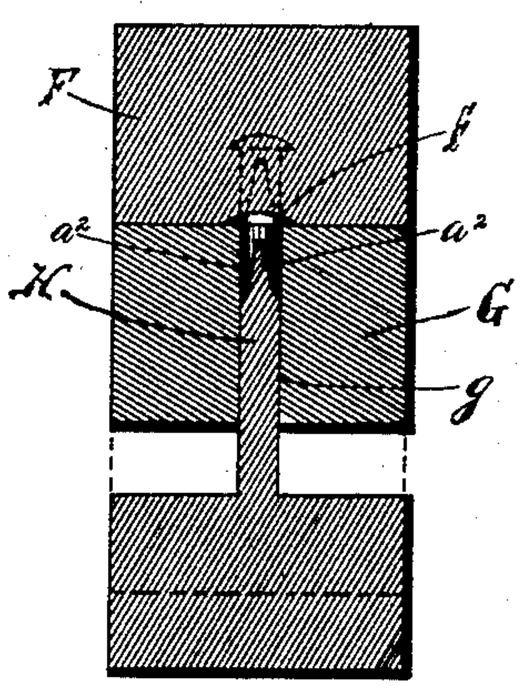


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

JACOB J. UNBEHEND, OF SYRACUSE, NEW YORK.

PROCESS OF MAKING RIVETS.

SPECIFICATION forming part of Letters Patent No. 435,908, dated September 2, 1890.

Application filed June 23, 1890. Serial No. 356,372. (No model.)

To all whom it may concern:

Be it known that I, JACOB J. UNBEHEND, of Syracuse, in the county of Onondaga, in the State of New York, have invented a new and useful Process of Making Rivets, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improved process for constructing rivets from solid wire, and has for its object the production of a simple and effective method, whereby the rivets are continuously, rapidly, and automatically formed from solid wire at a minimum cost of expense; and it consists, essentially, in cutting the wire into sections, contacting one extremity with a die or dies for splitting or dividing the same and forming clinching or securing prongs, and contacting the opposite extremity with a die or dies for upsetting the same and forming a head, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 represents an elevation of a section of wire. Fig. 2 represents an elevation of the completed rivet formed from said section and shown with its prongs edgewise. Fig. 3 is a sectional view of a pair of oppositely-arranged dies, illustrating the first step of splitting or dividing one extremity of the wire section into projecting arms. Fig. 4 is a sectional view illustrating the second step of approximating said arms in operative position, and thus forming the same into securing-prongs. Fig. 5 is a sectional view illustrating the final step of upsetting the opposite extremity of the wire section for forming the rivet-head; and Fig. 6 is a sectional view showing a modified form of my process.

A represents a short section of wire of suitable length and diameter to form the desired size of rivet. These sections are preferably continuously cut by suitable cutting mechanism, not necessary to herein illustrate or describe, since it is evident that in carrying out my invention any desired form of cutting mechanism is used which will cut off the wire.

B represents a die having at one extremity an opening *b*, with which the upper extremity *a* of the wire section is registered, thus allowing the lower extremity *a'* to project therefrom, as shown in dotted lines, Fig. 3.

C represents a die oppositely arranged to the die B, and formed with a suitable operating-face *c*, adapted to be brought in contact with the projecting extremity *a'* of the wire section for splitting or dividing the same.

As illustrated, the operating-face *c* of the die C in the operation of splitting or dividing the projecting extremity *a'* of the wire section forces the separate divisions thereof into laterally-projecting arms a^2 a^2. At the present time experience has demonstrated that this operation is more practical than that of supporting the wire section completely within the opening *g* of the die G and splitting its lower extremity thereof by forcing the plunger H into said extremity, as shown in Fig. 6. It will be understood, however, that when using metal of suitable hardness and density this latter process may be used, and that the same would be an immaterial departure from my invention.

In order to render the operation of forming the rivet-head more simple, practical, and economical, I extend the opening *b* entirely through the die B, and during the formation of the prongs or arms a^2 support the section A in position by means of a plunger or rod D, secured to a suitable support D'. Immediately after the formation of the arms or prongs a^2 the plunger D is withdrawn from one side of the die B and the die C from the opposite side, whereupon the wire section A is, by means of a suitable plunger E, forced through the opening *b* until its upper extremity *a* projects beyond the face *b'* of said die. As the section is forced through the opening *b*, the arms a^2 are drawn together, as shown in Fig. 4, into their normal operative position, and thus form prongs suitable for entering the article to which the rivet is to be secured. After the wire section is forced to the position shown in Fig. 4, a suitably-formed die F, having an operating-face *f*, is brought into contact with said outwardly-projecting extremity *a*, for upsetting the same and forming the rivet-head. The plunger E is then further operated through the opening *b* to discharge

the completed rivet, as shown in dotted lines in Figs. 5 and 6.

As illustrated and described, I have shown but one operation as necessary both for splitting or dividing one extremity of the wire section A and upsetting the opposite extremity, but it is evident that instead of a single operation two or more may be used.

It will readily be understood that by means of suitable connecting mechanism, not necessary to herein show or describe, these separate dies are arranged relatively or consecutively, so that the various operations upon the wire section are produced automatically and consecutively. This method of producing rivets from solid wire is of particular advantage, since a rivet produced from wire is far stronger than rivets produced from sheet metal, and, moreover, by producing the rivet directly from the wire by the consecutive operation of dies the rivets are produced with the utmost rapidity and economy.

It will be understood that I do not herein limit myself to any particular construction of dies, nor to the order of the steps of my process, since, if desired, the head may be formed first instead of the securing-prongs.

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

1. The herein-described process of forming rivets from solid wire, the same consisting in cutting the wire into sections, contacting one extremity of said section with dies for splitting or dividing the same and forming securing-prongs, and then contacting the opposite extremity with the die or dies for upsetting the same and forming a head, substantially as set forth.

2. The herein-described process of forming rivets from solid wire, the same consisting in cutting the wire into sections, contacting one extremity of the section with a die or dies for splitting or dividing the same and forming lateral projecting arms or projections, forcing said section through an opening for bringing together said arms and forming securing-prongs, and then contacting the opposite extremity of said section with an oppositely-arranged die or dies for upsetting the same and forming a head, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 10th day of June, 1890.

JACOB J. UNBEHEND.

Witnesses:
CLARK H. NORTON,
M. BAXTER.