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 METHOD FOR PIERCING NUT BLANKS.
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1,279,716.

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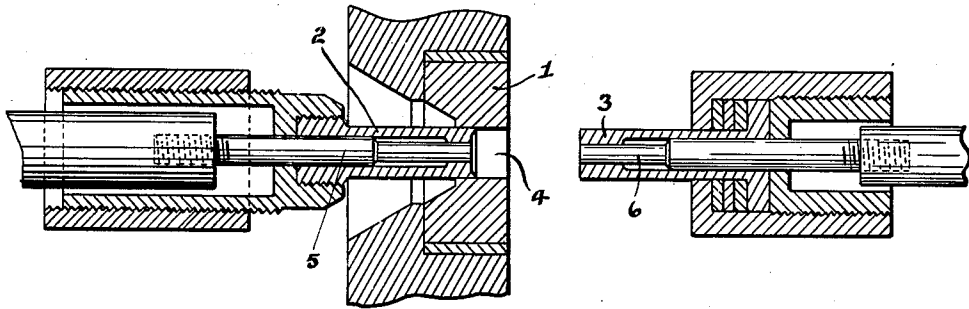


Fig. 1

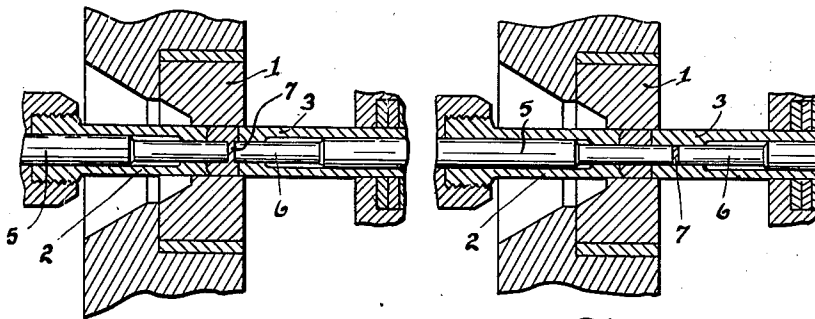


Fig. 2

Fig. 3

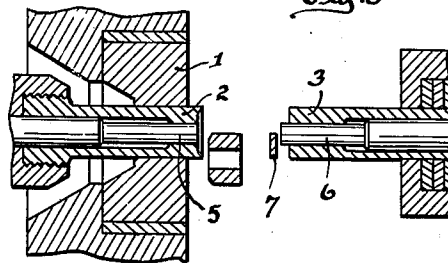


Fig. 4

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES S. LANMAN, OF COLUMBUS, OHIO, AND WILLIAM N. ESCHLEMAN, DECEASED,
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METHOD FOR PIERCING NUT-BLANKS.

1,279,716.

Specification of Letters Patent.

Patented Sept. 24, 1918.

Original application filed April 22, 1912, Serial No. 692,453. Divided and this application filed July 24, 1916. Serial No. 110,821.

To all whom it may concern:

Be it known that CHARLES S. LANMAN, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, and WILLIAM N. ESCHLEMAN, deceased, by ELLEN ESCHLEMAN, administratrix, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, invented certain new and useful Improvements in Methods for Piercing Nut-Blanks, of which the following is a specification.

This invention relates to an improved method for piercing nut blanks, or, in other words, to a method whereby the central contents of a nut blank may be removed.

This application is also a division of our application, serial number 692,453, filed April 22, 1912.

The main object of this improved method is to produce a nut blank wherein the central opening may be uniform in shape and size throughout its length. To this end, the method of manipulating the various machine parts, as shown in the accompanying sheet of drawings is resorted to. In this sheet of drawings, similar characters of reference designate corresponding parts, and

Figure 1 diagrammatically represents the crowning and piercing tools in their proper position with respect to the shaping die previously to insertion of the severed blank, and,

Figs. 2, 3 and 4 represent the successive stages of the various elements as outlined above during the process of compressing and dislodging the central core.

The die is represented by the reference numeral 1 and is suitably shaped to receive a sufficient quantity of metal which may be fed thereto in any desired manner. Two co-operating presser elements or crowning tools 2 and 3 are provided, to operate in opposition to each other in such manner that the severed nut blank material is forced into the die space 4 by the tool 3 and into engagement with the tool 4 in which manner the rear presser elements form an abutting wall. After this operation has been completed, the removing of the central contents of the blank takes place. This is accomplished by means of piercer tools 5 and 6, shown as being slidably mounted within the crowning tools 2 and 3 respectively. It

necessarily follows that these latter tools 55 are independently operated as regards the crowning tools. From the drawings, it will be apparent that these piercer tools are in longitudinal alinement with each other and enter the material forming the nut blank 60 centrally. The novel portion of the operation of these piercer elements is that they are forced into the nut blank unequal distances, during which operation the central contents of the nut blank are displaced to 65 completely fill up the space 4 in the die 1, whereby the nut blank is properly shaped. However, it is essential that the slug 7 formed between the two piercer ends, should be displaced and in order to do this properly, we found that the same should be effected by bringing the two piercer elements into the nut blank unequal distances and then forcing the slug out by the continued 75 movement of the piercer which has entered the nut blank the greater distance. Thus, in Fig. 2, it will be observed that the two crowning tools are in proper position to form a housing with the aid of the die 1 to hold the nut blank properly located and 80 also that the two piercer elements 5 and 6 have been forced into the nut blank unequal distances as related above, to form the central slug 7. Fig. 3 shows the succeeding operation, in which the two crowning tools 85 have remained stationary, but the two piercer tools have moved toward the right to expel the central slug 7, which causes the dislodgment of the slug 7 by the continued movement of the piercer which has entered 90 the greater distance. The reason it is desirable to dislodge the slug in this manner is that during the commercial operation of the machine, it is practically impossible to keep the two piercer tools in proper longitudinal alinement with each other due more 95 particularly to the wear of the various parts. Assuming that these tools are not in longitudinal alinement with each other, the expulsion of the central slug by the continued movement of the other, will cause 100 the formation of a hole which is round on one side and slightly oblong on the opposite side, this opposite side having an opening formed by the overlapping of two circles 105 not concentric. This same condition may, of course, exist by the employment of the method outlined above before the swaging

action of the follow-up piercer 5, in such that before the fibers joining the slug 7 to the nut blank are broken, they will be drawn and distributed over the surface of the hole or socket formed by the tool 6 where this shifting is possible and are subsequently entirely severed by the action of the follow-up tool. Therefore, we have located and caused the tools 5 and 6 to be operated in such manner that the slug lies closer to one face of the nut blank than the other. By this arrangement then the socket formed by the piercer 6 is re-formed due to the swaging of the metal connection the slug 7 has with the nut blank should the tools not be in proper alinement and, therefore, it follows that the hole through the nut blank must be smooth and well formed and the same on both sides of the blank. Fig. 4 shows the operation of dislodging both the slug and blank after the piercer tools have been moved from the position shown in Fig. 3 to the position shown in Fig. 4, which movement is taken relative to the crowning tools which also have been moved to a position outside the die 1.

From the foregoing description, it will be

apparent that we have provided an improved method whereby the central openings formed in the nut blanks will be smooth throughout their entire surface and that this smoothness is caused directly by the swaging action of the follow-up piercer tool in swaging the metal fibers connecting the slug to the blank body as has been outlined, this swaging action being confined only to a small portion of the nut blank so that a perfect hole may be formed before the fibers are completely severed.

What we claim is:

The method of piercing nut blanks which consists in compressing a central slug to a position at one side of the center of said blank and then forcing said slug out of that side of the blank.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES S. LANMAN.
ELLEN ESCHLEMAN,

Administratrix of William N. Eschleman.

Witnesses:

WALTER E. S. BOCK,
RUSSEL M. McCORMICK.