Feb. 19, 1935. S. G. SYVERSEN 1,992,102

METHOD OF MAKING NUTS

Filed April 28, 1932

Fig. 1.

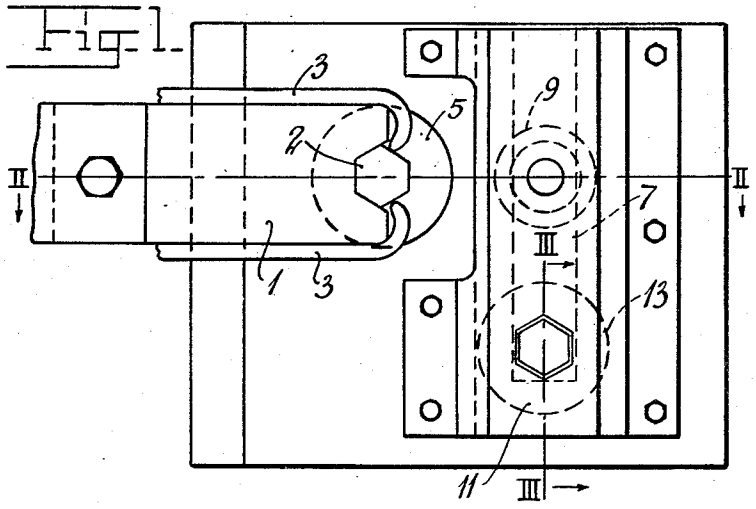


Fig. 2.

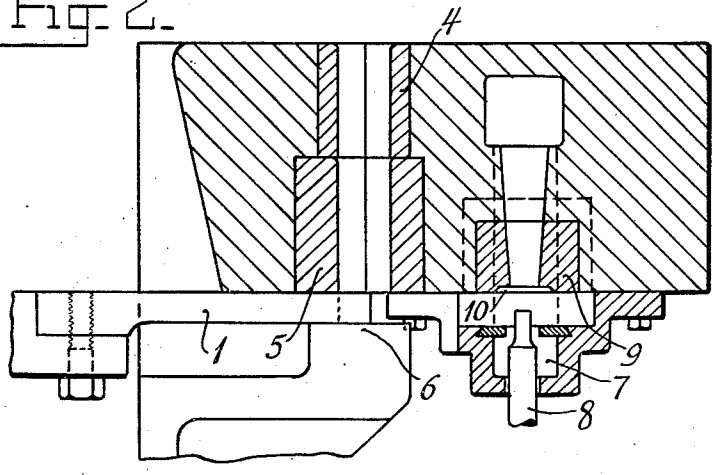


Fig. 3.

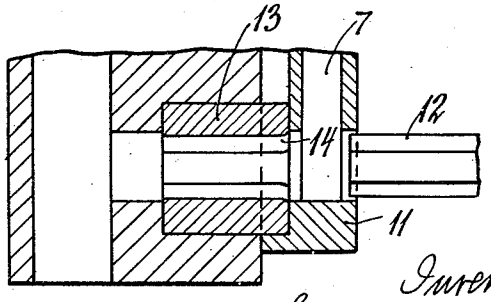
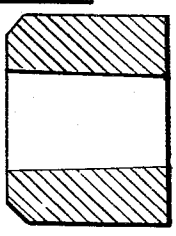


Fig. 4.



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METHOD OF MAKING NUTS

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3 Claims. (Cl. 10—86)

It is formerly known to manufacture screw nuts in the manner that the separate pieces of work are cut off from hexagonal bars with a cross sectional shape corresponding to the nuts by means of a cutting knife, whereupon such pieces by means of the said knife are passed on to a punching die and are then punched or perforated. In carrying out this method the pieces are treated in a heated condition.

The present invention relates to a device for the manufacture of screw nuts in a cold condition. The expenses connected with the heat treatment are thereby avoided as well as the alterations in the qualities of the piece caused by such treatment. Further, the invention makes use of finishing the nuts by pushing them through a draw-die as commonly used in the manufacture of nuts when cutting them from a flat bar or stamping them from plates or the like.

This is obtained according to the invention by the arrangement that the cutting knife operates perpendicularly to a vertical channel, in the upper part of which a punching piston operates transversely to the channel, whereas the piece of work is still retained by the cutting knife, then firstly the knife and secondly the punching piston are withdrawn and the punched or perforated piece falls through the channel in front of a draw-die and is then pushed through same.

An embodiment of the invention is illustrated in the accompanying drawing. Fig. 1 is an elevation of the device. Fig. 2 is a longitudinal sectional view on the line II—II, Fig. 1. Fig. 3 is a cross sectional view on the line III—III of Fig. 1. Fig. 4 is an enlarged detail sectional view of the nut blank after being punched, and disclosing the tapered bore formed by the punching operation.

In the drawing 1 denotes the cutting knife serving to cut off a piece of work from a hexagonal bar 2. Spring fingers 3 with bent ends are adapted to retain the cut piece of work in position in relation to the cutting knife.

The hexagonal bar 2 is fed through guides 4, 5, and the correct height of the piece of work is secured by means of an abutment 6. By the knife 1 and the fingers 3 the piece of work is then passed into a vertical channel 7 and is retained therein provisionally by the knife 1 and the fingers 3 until a punching piston 8 has been forced through the piece to produce the thread bore in same. During the punching of the bore by the piston lateral radial stresses are set up which increase progressively so that although the punching piston is of true cylindrical form, the bore formed thereby is of slightly tapered form as shown in a somewhat exaggerated degree, for the purposes of illustration, in Fig. 4 and the nut blank or piece of work is correspondingly somewhat deformed. A die 9 opposite the piston 8 has a recess 10 adapted to shape the inclined nut edges on one side during the punching operation.

The knife 1 is withdrawn during the perforation of the piece of work by the piston 8, the fingers 3 sliding over the piece. When the knife 1 and the piston 8 have been withdrawn, the piece of work falls down to the bottom 11 of the channel 7. Then a draw-piston 12 enters in operation and forces the piece of work through a draw-die 13 provided with a widened mouth 14. During this step the piece is calibrated, the material being compressed from outside, whereby the exterior sides of the nut are reshaped and returned to their original form exactly parallel to and at the correct distance from the axis as will be understood. Further some material is displaced on to the central nut portion, whereby the tapered hole is transformed into a cylindrical shape, and the hole is now well adapted to receive the threads produced in the ordinary way.

I am aware that nuts have been heretofore made from hexagonal bars. However, the blanks have according to the known methods been compressed by pressure endwise either in a mould or freely, so that the outer surface is bowed. In the first case punching of the hole has taken place when the blank was placed in the mould, and in the latter case a calibrating operation of the outer surface was made. In both cases the final form of the hole will, owing to the elasticity or ductility of the cold material, be not cylindrical. According to my invention the hole will be cylindrical when the calibrating operation of the outer surface takes place after removal of the punch from the hole.

I claim:

1. The method of making a nut, consisting in forcing out the central portion of a blank through a die by means of a punch while the side faces of the blank are unconfined and thereby forming a bore through the blank, and thereafter forcing such bored blank through a draw die by means of a draw piston to thereby correct deformations of the side faces and also impart true cylindrical form to the bore.

2. The method of making a nut, consisting in forcing out the central portion of a cold blank through a die by means of a punch while the side faces of the blank are unconfined and thereby forming a bore through the blank, and thereafter forcing such bored blank while cold through a

draw die by means of a draw piston to thereby correct deformations of the side faces and also impart true cylindrical form to the bore.

3. The method of making a nut, consisting in cutting a nut blank from the end of a cold stock bar by means of a knife, moving said cut blank by a further movement of the knife, to a position between a die and a punch, forcing out the central portion of the blank through the said die by means of said punch while the side faces of the blank are unconfined and thereby forming a bore through the blank, releasing the bored blank from the knife and from between said die and said punch and thereafter forcing such bored blank through a draw die by means of a draw piston to thereby correct deformations of the side faces of the blank and also impart true cylindrical form to the bore thereof.

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