W. L. WARD.

MEANS INSTRUMENTAL IN MAKING NUT BLANKS.

APPLICATION FILED DEC. 8, 1909.

1,045,483.

Patented Nov. 26, 1912.

2 SHEETS—SHEET 1.

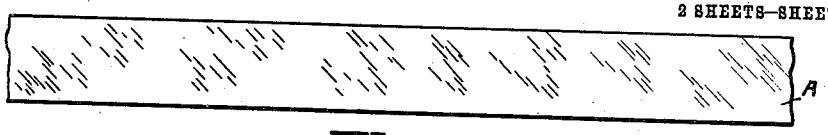
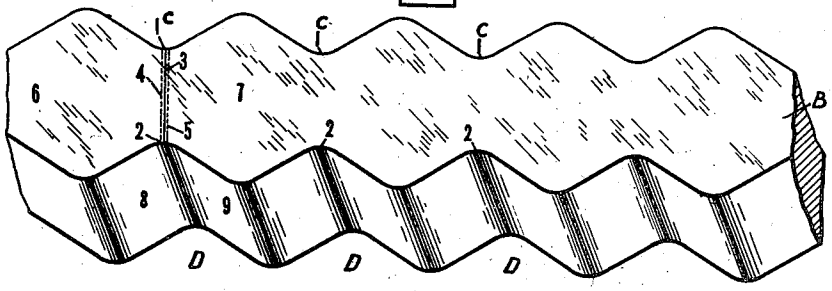


Fig. 1.

Fig. 2.



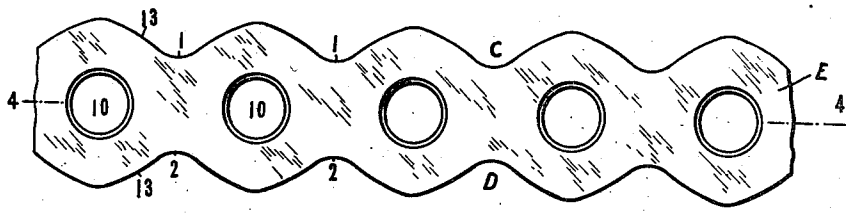


Fig. 3.

Fig. 4.

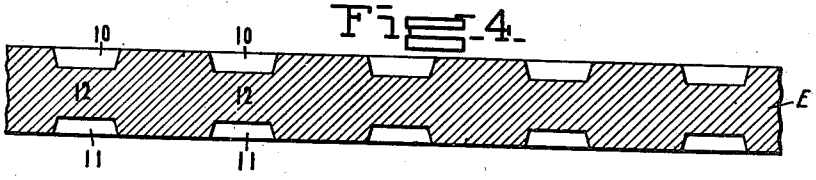
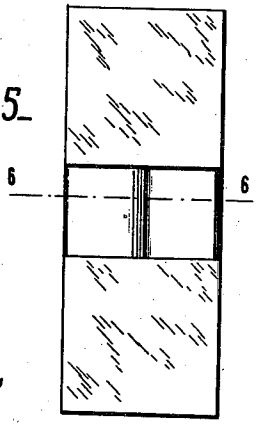


Fig. 5.



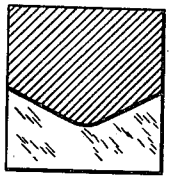


Fig. 6.

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2 SHEETS—SHEET 2.

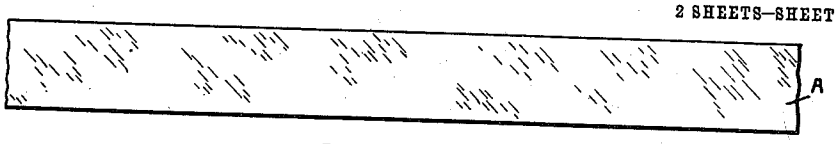
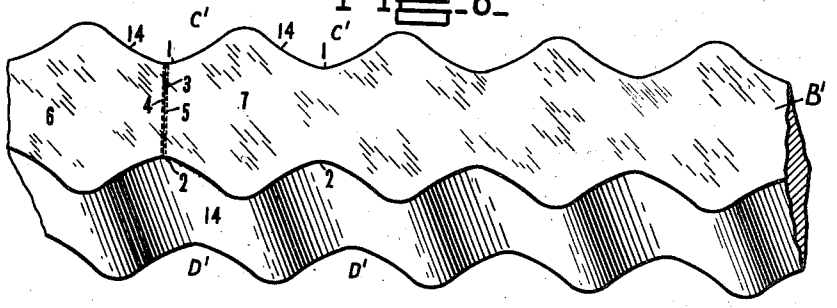


Fig. 7.

Fig. 8.



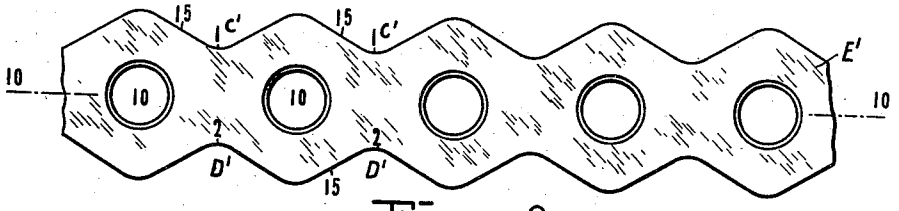


Fig. 9.

Fig. 10.

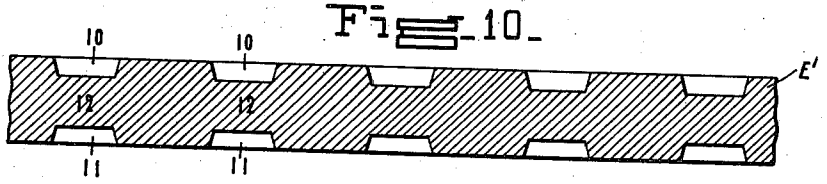


Fig. 11.

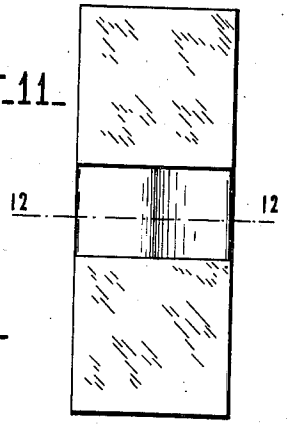
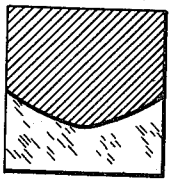


Fig. 12.



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ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM L. WARD, OF PORT CHESTER, NEW YORK.

MEANS INSTRUMENTAL IN MAKING NUT-BLANKS.

1,045,483. Specification of Letters Patent. Patented Nov. 26, 1912.

Application filed December 8, 1909. Serial No. 532,073.

To all whom it may concern:

Be it known that I, WILLIAM L. WARD, a citizen of the United States, residing at Port Chester, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Means Instrumental in Making Nut-Blanks, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention deals with means instrumental in making nut-blanks and proposes to render available a stock-bar so serrated and indented as to be especially adapted for yielding nut-blank sections or units in such form and proportions as to enable finished nuts to be inexpensively made therefrom.

One object within the contemplation of this invention is to so outline and devise the stock-bar as to not only enable the same to be made in a commercially efficient manner by a cold swaging and indenting process, but also especially adapt it to being successively sheared into a multiplicity of sections or units, each of which, without containing a very great excess of material, nevertheless has a sufficient amount to enable highly finished nuts to be produced therefrom by means of trimming dies with a minimum loss of material.

The invention accordingly consists in the elements of construction, proportions of features and arrangement and relationship of parts which will be more fully exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

Other objects will be in part set forth in the following description, and in part obvious from the accompanying drawings exemplifying two of the various modifications which this invention may assume.

In such drawings, like characters of reference denote corresponding parts throughout all the views, of which—

Figure 1 is a side view of an ordinary elongated rectangular stock-bar from which the serrated stock-bar constituting this invention is made. Fig. 2 is a perspective view showing a length of a serrated stock-bar contemplated by this invention, in which the converging faces of the side serrations are substantially flat or plane. Fig. 3 is a plan view of a bar such as that illustrated by Fig. 2, additionally provided with a series of top recesses, and furthermore showing the slight bulging produced in the converging faces of the side notches by the flow or displacement of metal under the action of the punches. Fig. 4 is a section taken through line 4—4 of Fig. 3. Fig. 5 is a front elevation of a die having the capacity of producing the serrated stock-bar of Fig. 2 in a commercially efficient manner. Fig. 6 is a section taken through line 6—6 of Fig. 5. Figs. 7 to 12, inclusive, correspond to Figs. 1 to 6, inclusive, save for the fact that the converging faces of the swaging die are made slightly convex so as to produce counterpart concave serrations as shown by Fig. 8, which concavities are adapted to counter-act the bulging effect of the recess-indenting punches and thus ultimately produce a serrated and recessed stock-bar in which the converging faces of the serrations are approximately flat or plane as shown by Fig. 9, as counter-distinguished from the convex faces illustrated by Fig. 3.

Continuing now by way of a more detailed description of this invention, A indicates an ordinary stock-bar which, by a suitable mechanical process will be converted into the serrated bar B. Side swaging dies of the nature depicted by Figs. 5 and 6 may be advantageously utilized as a means instrumental in carrying out this conversion. This bar B differs from an ordinary serrated bar in certain details which, though appearing somewhat minute from a cursory viewpoint, have nevertheless been developed only as a result of a long study and demonstrated to be of a marked practical utility by extensive experiments. Bar B is of uniform thickness (between top and bottom faces) and the side notches or serrations are especially characterized by having their internal apices blunted slightly, as contra-distinguished from the sharply pointed apices which have heretofore been proposed. Thus, turning to Fig. 2, the V-shaped side notches or serrations C, C, C, and D, D, D, have their internal apices 1, 1, 1 and 2, 2, 2 somewhat rounded so as to provide a slight excess of material on each section or blank after the serrated stock bar has been sheared into its units. For example, 3 in Fig. 2 indicates the shear line along which the end section 6 is severed from its companion 7. This shear line lies midway the narrow strip of excess metal

connecting or bridging the several sections together so as to enable a slight amount of metal to be shaved off in the trimming dies which will act along the dotted lines 4 and 5. In this manner the roughness formed on the shear faces may be eliminated with no undue loss of material. Were this narrow bridge of metal not present, a greater loss of metal as scrap would occur by reason of the fact that in practice the blanks may not be sheared apart without leaving a scored face. This must then be trimmed to make it smooth and if sufficient excess material does not exist, the trimming will produce an unsymmetrical blank, unless this operation is repeated on the other angular sides. When said other angular sides have been produced by a cutting operation, as distinguished from a straight-line swage, they will also have to be trimmed to make them smooth, whereas in the present invention such faces are characterized by a smooth surface. And it will be observed that by the aforesaid construction is provided a bar in which the distance between lines joining pairs of opposing inner apices is greater than the distance between pairs of opposing faces, the latter being represented in the present embodiment by the parallel faces of the alternating opposite angles. A further advantage of the blunted or flattened apices lies in the fact that the notches may be readily formed in the cold by a purely swaging process without danger of splitting or cleaving the metal.

The converging faces 8 and 9 will be quite smooth and will require little trimming. These faces will subtend an angle of approximately 120° when the bar is to be utilized in the production of hexagonal nuts and the distance between the opposing apices will be about equal to the length of the face of the finished nut. In this embodiment of the invention, the faces 8 and 9 are shown to be flat or plane.

The form of bar depicted by E is formed by impressing the top and bottom recesses 10 and 11 in the bar B. In this case, recess 10 may be slightly smaller in diameter than recess 11 so as to better adapt the intervening plug of metal 12 to be subsequently punched out to complete the perforation. It has been found that this operation tends to produce a slight bulging 13 in the converging faces of the V-shaped notches, but this can be practically eliminated by employing the form of bar illustrated in Fig. 8.

Turning now to Fig. 8, B′ denotes an improved form of bar B in which the side faces 14 of the notches are slightly concaved, being produced by means of the swaging die shown in Figs. 11 and 12. Otherwise bar B′ is similar to bar B. When bar B′ is provided with the top and bottom recesses, it will be found that the resultant bar E′ will have substantially flat faces 15, thus effecting a further saving in the metal to be trimmed off.

It is to be understood that the term "inclined sides" used herein as descriptive of certain features of the V-shaped swaging projection, has reference only to the effective portions or areas of such faces as may be used and does not, of course, apply to such surfaces of the inclined swaging faces or sides as constitute non-swaging areas or merely form continuations or extensions of the effective faces, and accordingly dimensional references to such elements are to be taken as applicable to effective parts thereof. So, also, the term "rectangular cross-section" as applied to the cross-bar, is to be regarded in a generic or practical sense as comprehending such diversely modified cross-sections of the stock-bar as may be required in the various refinements of this invention, and is not to be taken in the rigidly precise manner required of geometrical definitions. Furthermore, in speaking of the top, bottom, etc., such terms have been adopted as a matter of brevity and clearness and do not carry an implication tending to limit the position of the element having such feature.

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

1. A pressed metal stock bar of the nature disclosed, providing in each of its two longitudinal sides a series of V-shaped notches subtending an angle of not less than about 120°, the distance between lines joining pairs of opposing inner apices being greater than the distance between pairs of opposing faces.

2. A pressed metal stock bar of the nature disclosed, providing in each of its two longitudinal sides a series of V-shaped notches subtending an angle of not less than about 120° and having their inner apices slightly rounded, the distance between lines joining pairs of opposing inner apices being greater than the distance between pairs of opposing faces.

3. A pressed metal stock-bar of the nature disclosed providing in each of its two longitudinal sides a series of V-shaped notches, each of which has concaved faces converging into an internal blunt apex, the opposite apices of each pair being spaced apart a distance approximately equal to the length of one of the peripheral faces of the polygonal blank to be severed from the bar.

4. A stock-bar of the nature disclosed having in each of its two longitudinal sides, a series of V-shaped notches, each interiorly terminating in a blunt apex, the opposite apices of each pair being spaced apart a distance approximately equal to the length of one of the peripheral faces of the polygonal

blank to be severed from the bar, said stock-bar also providing in its top face a series of impressed indentations corresponding to said series of notches.

5. A stock-bar of the nature disclosed having in each of its two longitudinal sides a series of V-shaped notches, each formed with substantially plane faces subtending an angle of not less than 120° and interiorly terminating in a blunt apex, the opposite apices of each pair being spaced apart a distance approximately equal to the length of one of the peripheral faces of the polygonal blank to be severed from the bar, said stock-bar also having a corresponding series of circular indentations impressed in its top face.

6. A stock-bar of the nature disclosed having each of its two opposite longitudinal sides formed of a series of equal spaced V-shaped notches, each subtending an angle of approximately 120° and interiorly terminating in a blunt apex, said stock-bar also being indented in its top and bottom faces with a corresponding series of circular recesses, the recesses of each pair being in coaxial relationship and separated by a relatively thin metallic partition and being centrally disposed with respect to the external apices of the bar.

In testimony whereof I affix my signature, in the presence of two witnesses.

WILLIAM L. WARD.

Witnesses:

WALTER S. COMLY,

R. J. SNYDER.