

H. G. CARLSON.
METHOD OF MAKING NUTS AND THE LIKE.
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1,156,973.

Patented Oct. 19, 1915.

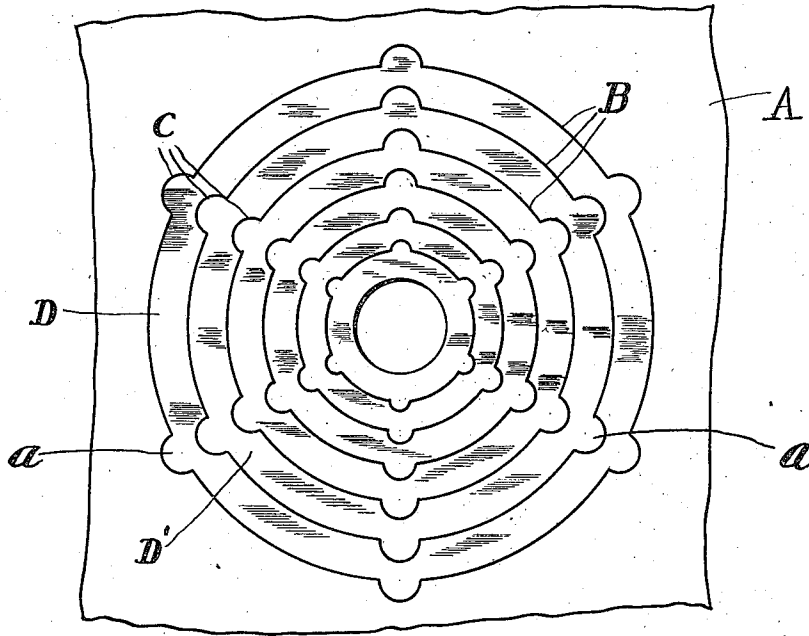


Fig. 1.

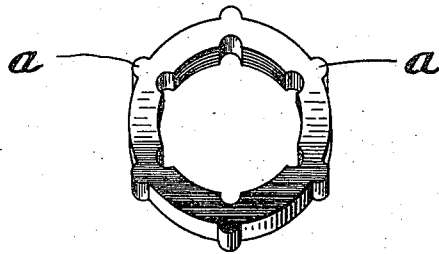


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING NUTS AND THE LIKE.

1,156,973.

Specification of Letters Patent.

Patented Oct. 19, 1915.

Original application filed February 1, 1913, Serial No. 745,527. Divided and this application filed February 24, 1914. Serial No. 820,500.

To all whom it may concern:

Be it known that I, HJALMAR G. CARLSON, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Method of Making Nuts and the like, of which the following is a specification.

This is a division of my application for patent filed on the first day of February, 1913, Serial No. 745,527.

This invention relates to the manufacture of nuts and similar objects and particularly to that type of nuts which are of relatively thin and flat construction, used chiefly as lock nuts.

The principal objects of the invention are to provide a method of manufacture which will eliminate a very large percentage of the waste ordinarily caused in punching out of thick sheet metal; also to provide a method which will enable a series or nest of nuts or the like to be punched out of a piece of sheet metal, each nut, except the largest thereof, being not only formed of the material taken out of the interior of a larger nut, but having its periphery coincident with the interior surface of the next larger nut so as to avoid substantially all waste between these two surfaces, and yet provide a nut which will be capable of being properly screw threaded on the interior, and of being held between the jaws of an ordinary wrench.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a plan of a sheet of metal with a series or nest of nuts cut from it in accordance with this invention, showing one step in the method; and Fig. 2 is a perspective view of one of said nuts, which is a product of said method.

Broadly stated this method involves the punching out of a sheet of metal of a series of concentric rings, these rings being of a general circular shape and each being provided in the punching operation with a series of outwardly projecting ribs spaced apart around the circumference thereof. Thus each ring, except the outer one, fits within an outer one and is coincident in its outline with the internal boundary thereof.

In this way the formation of the outwardly projecting ribs on each inner ring also simultaneously forms a corresponding series of recesses on the inner walls of the outer rings. In this way no material is wasted between any two of the concentric nuts, and each punching operation really performs double service, that is, it cuts out the outside boundary of one ring and the inside boundary of another.

Referring to the drawings, a sheet of metal A is cut along a series of lines B, each of these lines being circular in general form, but having a plurality of outward extensions C. These extensions are arranged in radial alinement and spaced apart equally around the circumference. In this way a plurality of rings D, D', etc., are formed between the several cuts. In the case of hard or thick metal, each one of these cuts is made separately. The nuts, as indicated in Fig. 2, are thus made of a general cylindrical form, and on the outer surface thereof they are provided with longitudinal ribs *a*, that is, ribs parallel with the axes of the nuts. These ribs in the present instance are shown as convex and substantially semi-cylindrical in form, but other shapes can be employed. They are, however, spaced apart around the periphery of the nut sufficiently to permit the jaws of the usual wrenches to be inserted at the spaces so as to grip the nuts with the same force and effect as is the case with polygonal nuts. The nuts are also provided with internal recesses preferably of the same shape and location as said ribs, whereby the ribs of a small nut are formed from the metal removed from the next larger sized nut in the formation of the recesses; also with this arrangement it will be seen that the nuts having the recesses are not materially weakened at these points as the recesses although extending in beyond the normal surface of the nut are strengthened on the outer surface by the ribs.

From what has been said, it will be seen that the external surface of the nut is capable of performing all the functions of the usual polygonal surfaced nut.

As to the interior of the nut it will be seen that it can be tapped out so as to provide a discontinuous screw thread, this thread being interrupted at each of the re-

cesses. This facilitates the cutting of the thread as a material portion of the metal usually cut by the tap is missing, but further, the chips produced by the screw cutting tap can be discharged through the recesses as the process of cutting goes on. Moreover when the nut is in use the dirt and particularly metal chips and the like tend to be discharged through these recesses or rather to be forced out into them where they remain out of contact with the screw. A very important advantage of this invention, however, lies in the fact that a series of these nuts can be punched out of sheet metal so as to utilize all of the metal except that which is inside the smallest and outside the largest one. In this way a very high degree of economy is attained in the manufacture of these articles, nearly all the waste being eliminated, and moreover the punching operations are virtually reduced nearly fifty per cent., because the operation of each punch or cutter performs two functions, namely, the shaping of the entire exterior of one nut and of the entire interior of another. In this way the life of the dies is almost doubled, that is to say, they can be used to produce almost double the number of nuts heretofore possible.

Although I have illustrated and described only a single order of steps and shown the invention as applied only to a single article of manufacture, I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited in these respects, but what I do claim is:—

1. The method of making nuts which con-

sists in punching from a sheet of metal a series of concentric rings each of a general circular shape by a series of successive punching operations, the periphery of each ring, except the outside one, being substantially coincident with the internal boundary of the next larger one, and each ring having ribs on its outer surface spaced from each other and cut from the material of the next larger ring in position to register with the corresponding recesses thereof.

2. The method of making nuts and the like which consists in punching from a sheet of metal a series of concentric rings of a general circular shape, and providing thereon external ribs, the ribs being formed from material cut from the circular inner edge of the next larger ring, and screw threading the arcuate portions of the inner surface of each ring.

3. The method of making metal articles which consists in punching from a sheet of metal a series of concentric rings each of a general circular shape, the periphery of each ring, except the outside one, being substantially coincident with the internal boundary of the next larger one, and providing each ring with ribs on its outer surface spaced from each other and cut from the material of the next larger ring to form internal recesses therein, the ribs of each ring being in position to register with the recesses thereof.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

HJALMAR G. CARLSON.

Witnesses:

ALBERT E. FAY,
C. FORREST WESSON.