

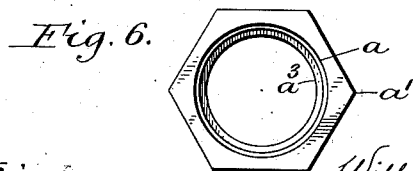
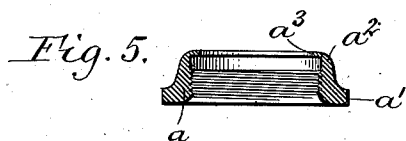
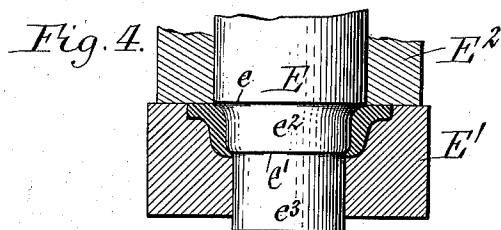
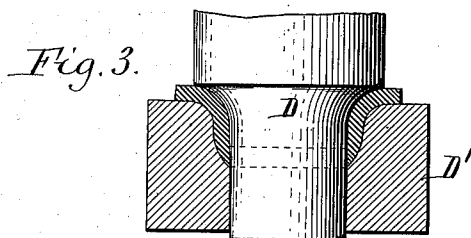
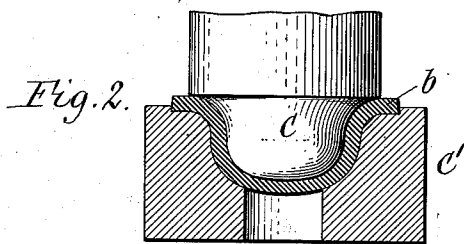
No. 680,991.

Patented Aug. 20, 1901.

W. H. CROSBY.
SCREW NUT.

(Application filed May 15, 1901.)

(No Model.)



Witnesses:
Frank H. Kibitz
Edwin Popp.

William H. Crosby Inventor
By Seyer & Popp.
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM H. CROSBY, OF BUFFALO, NEW YORK, ASSIGNOR TO THE CROSBY COMPANY, OF SAME PLACE.

SCREW-NUT.

SPECIFICATION forming part of Letters Patent No. 680,991, dated August 20, 1901.

Application filed May 15, 1901. Serial No. 60,324. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. CROSBY, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Screw-Nuts, of which the following is a specification.

This invention relates generally to screw-nuts, and more particularly to the class of nuts which are commonly known as "cap-nuts" and which are provided at their crown or outer end with an inwardly-turned lip adapted to overlap the end of a tube or other member or a shoulder of the member to which the nut is applied for forming a neat finish. My invention has more especial reference to a cap-nut stamped from sheet metal and to a method of making the same. Heretofore it has been attempted to make such nuts partly of sheet metal by stamping a cup-shaped blank or crown with a cap-flange at its small end and a hexagonal socket at its large end and driving an ordinary screw-nut into this socket. Cap-nuts comprising two pieces have also been constructed by stamping the body of the nut from a blank and driving a sheet-metal cap or flanged collar upon the reduced cylindrical portion of the stamped-nut body. Both of these constructions are comparatively expensive, and the two parts of the nut are liable to become separated.

The object of my invention is the production of a strong screw-nut or cap-nut which is cheaper than nuts machined from a solid bar of metal and those composed of a number of pieces and which is free from the objections above stated.

In the accompanying drawings, Figure 1 is a perspective view of the flat blank from which my improved nut is stamped. Figs. 2, 3, and 4 are sectional elevations of different sets of dies which are employed for forming the nut, showing the shape of the blank at different stages of the stamping operation. Fig. 5 is a longitudinal central section of the completed nut. Fig. 6 is a bottom plan view of the same.

Like letters of reference refer to like parts in the several figures.

Referring to Figs. 5 and 6, a is the base

portion of my improved cap-nut, having a projecting hexagonal rim a' , and a^2 is its crown portion, having an inwardly-turned lip or flange a^3 , which forms the cap of the nut. The nut is stamped in a single piece from a flat blank of sheet metal, such as sheet-steel. The base portion a of the nut, in which the greater portion of its screw-thread is cut, is thicker than the original thickness of the blank, while the crown portion a^2 may be thinner than the original thickness of the blank, as shown.

In making my improved cap-nut a flat sheet-metal plate or blank B of circular form is first cut or punched, and this blank is stamped between suitable male and female dies C C' to approximately the shape of a tapering cup, with a convex bottom and a projecting rim b , as shown in Fig. 2. It is desirable to stamp the blank to this form by progressively-deeper dies, two sets of dies being sufficient for this purpose and Fig. 2 showing the deeper set. A circular hole somewhat smaller than the bore or internal diameter of the screw-threaded portion of the finished nut is next punched centrally in the bottom of the cup-shaped blank by suitable dies D D', as shown in Fig. 3. The rim of the perforated blank is then trimmed off to reduce its diameter, and the blank is further stamped between dies E E' of substantially the shape of the preceding dies, but shallower and larger in diameter than the same, as shown in Fig. 4. The bottom of the female die E' is substantially horizontal, and the lower portion of the male die E is stepped to form upper and lower annular shoulders ee' . The portion e^2 of the male die between these shoulders is somewhat larger in diameter than the corresponding portion of the male die D of the preceding set, and the portion e^3 of the male die E below its lower shoulder e' is somewhat smaller in diameter than the corresponding portion of the male die D. The upper portion of the male die is surrounded by a collar or stripper E², which descends with the same and which has its under side arranged flush with the upper shoulder e of said die. By the action of the dies E E' E² the metal at the small end of the cup-shaped blank is turned

inwardly to form the cap-flange a^3 of the nut, and the blank is at the same time upset or compressed lengthwise to the form shown in Fig. 4, the same being reduced in height and enlarged in diameter, its walls thickened, and the metal condensed. The collar E^2 , descending upon the rim portion of the blank, aids in upsetting the blank and confines the metal in the upper portion of the female die. The blank may be gradually upset to the form shown in Fig. 5 by two or more sets of dies made successively shallower and wider. A screw-thread is next cut in the ring-shaped nut-blank so formed, and the rim of the blank is finally punched by suitable dies to the hexagonal form shown in Fig. 6, or, if desired, the same may be left circular or flattened only at opposite points or otherwise suitably formed to receive a wrench or other tool for turning the nut. Before threading the nut the portion of its bore adjacent to its cap-flange a^3 may be undercut by a suitable tool, as shown in Fig. 5.

By stamping the nut as above described its base portion, in which the greater part of the screw-thread is cut and which is subjected to the greatest strain, is thickened beyond the original thickness of the flat blank, providing a sufficient amount of stock in that part of the nut for cutting the screw-thread without sacrificing the strength of the nut. A nut practically as strong and of as slight dimensions as a nut machined from a solid bar is thus produced from a blank of minimum thickness and at a much smaller cost than that of a machined nut or one composed of two stamped members or partly of a machined member and partly of a stamped member, and as the improved nut is stamped of an integral piece it has none of the objections of a two-piece nut.

While I have herein shown and described my improvement as applied to a cap-nut, the feature of providing an integral sheet-metal nut with a thickened base portion is equally applicable to nuts unprovided with a cap-flange.

I claim as my invention—

1. A screw-nut pressed from an integral blank of sheet metal and having its screw-

threaded base portion upset for thickening the same, substantially as set forth.

2. A screw-nut pressed from an integral blank of sheet metal and provided at its crown with an inwardly-turned cap-lip and having its screw-threaded base portion thickened by upsetting the same between suitable dies, substantially as set forth.

3. A screw-nut pressed from an integral blank of sheet metal and provided at its crown with an inwardly-turned cap-lip, the capped crown portion of the nut being stamped of less thickness and its base portion upset to a greater thickness than that of the blank, substantially as set forth.

4. A nut-blank pressed from an integral plate of sheet metal, and consisting of a ring provided at one end with an inwardly-turned cap-lip and at its opposite end with a projecting rim and having the portion thereof adjacent to said rim upset to a greater thickness than that of the plate from which the nut-blank is pressed, substantially as set forth.

5. The herein-described method of making an integral sheet-metal nut-blank, which consists in stamping a flat plate or blank approximately to the form of a cup, then forming an opening in the bottom of the cup, and then thickening the wall of the perforated cup by upsetting the same between suitably-shaped dies, substantially as set forth.

6. The herein-described method of making an integral, sheet-metal cap-nut, which consists in stamping a flat blank approximately to the form of a cup, then forming in the bottom of the cup an opening of smaller diameter than the bore of the completed nut, and finally thickening the wall of the perforated cup by upsetting the same between suitable dies and at the same time turning the perforated end of the cup inwardly to form the cap-flange of the nut, substantially as set forth.

Witness my hand this 8th day of May, 1901.

WILLIAM H. CROSBY.

Witnesses:

A. D. DANA,

CARL F. GEYER.