

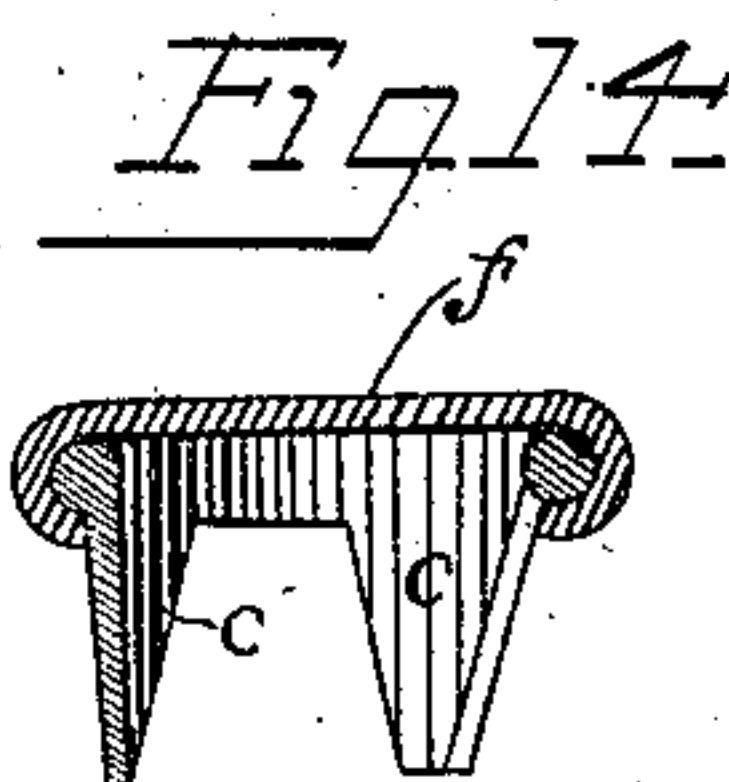
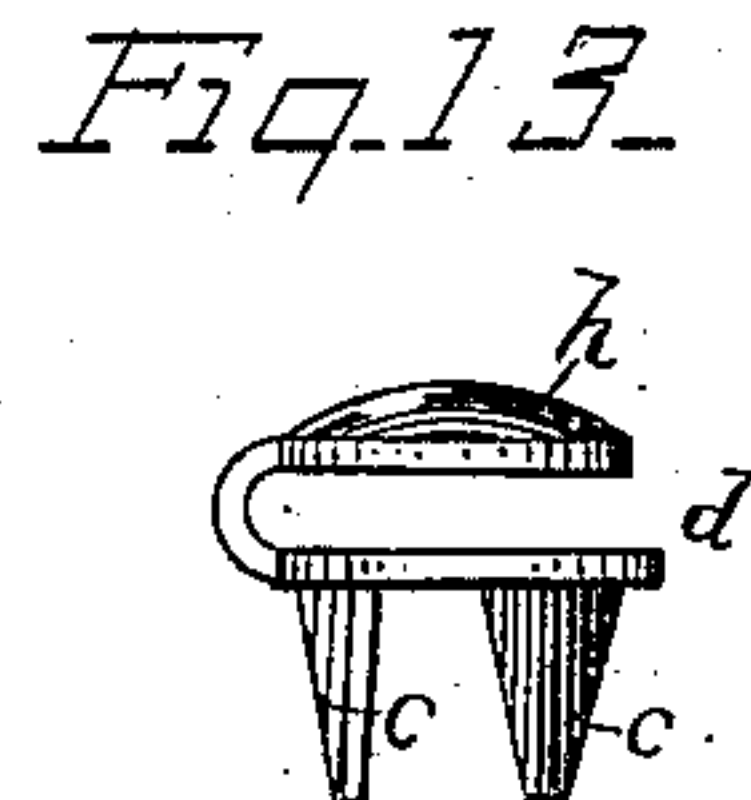
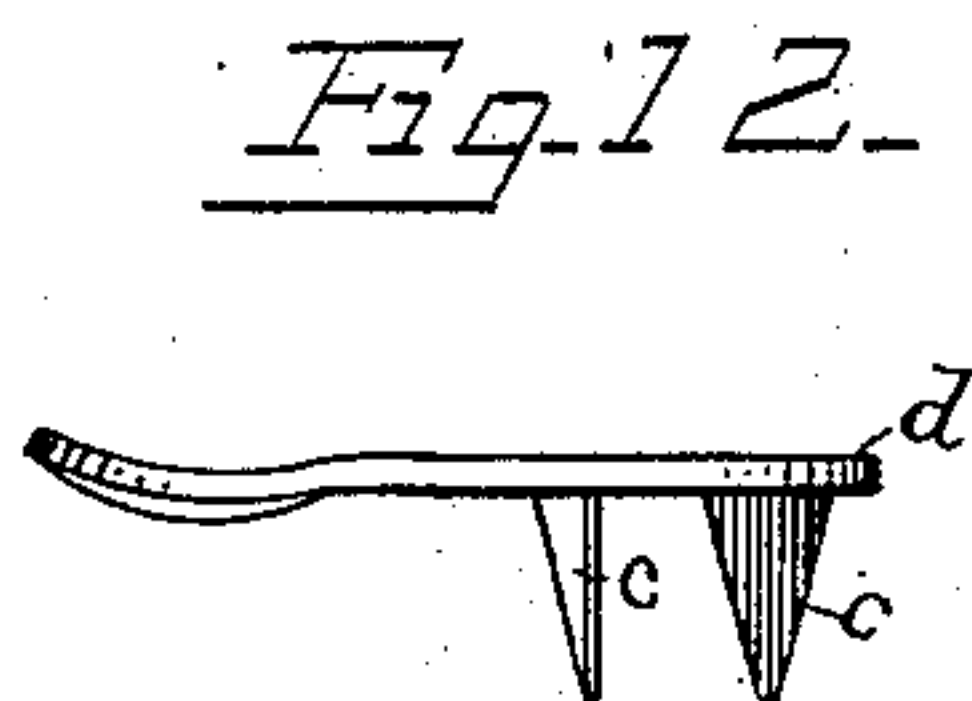
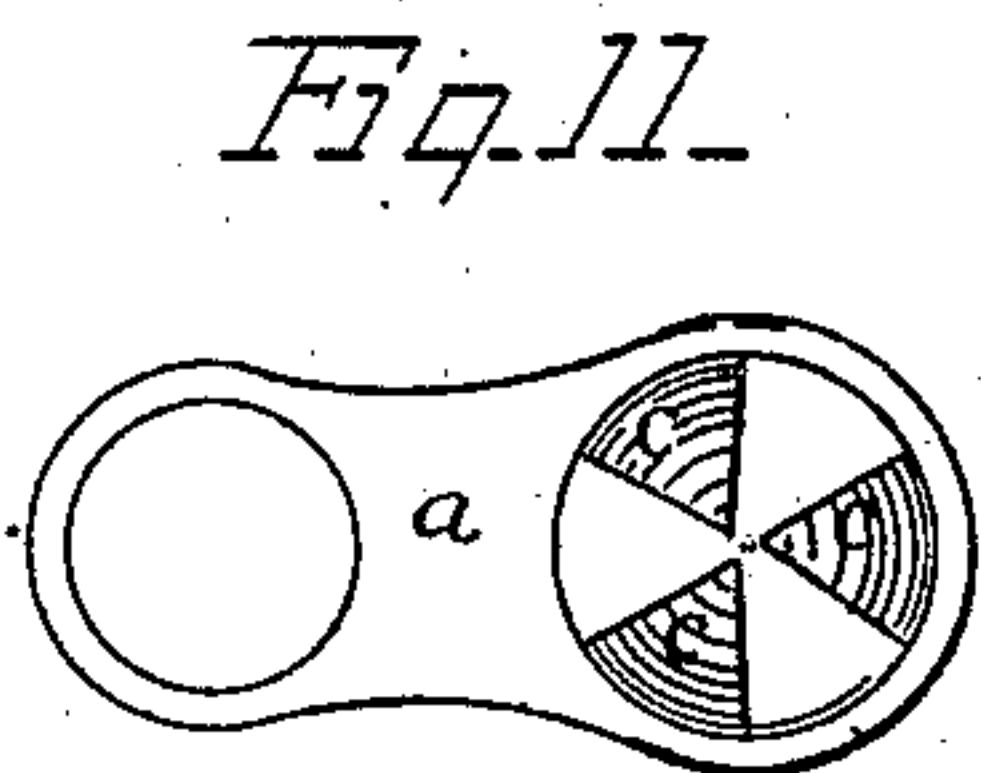
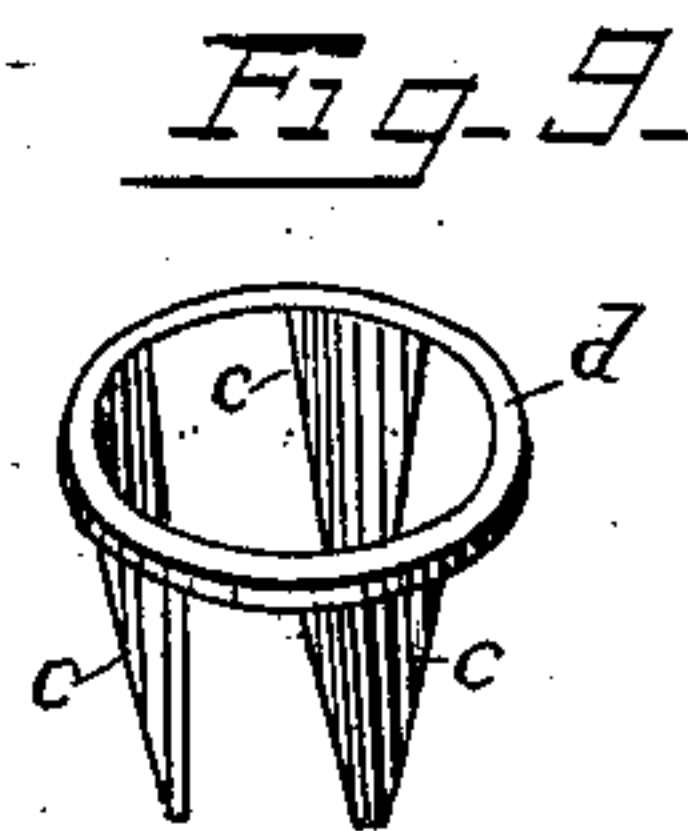
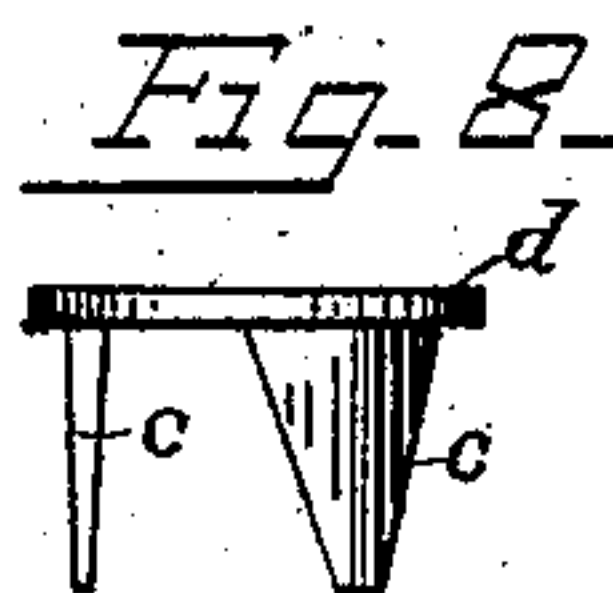
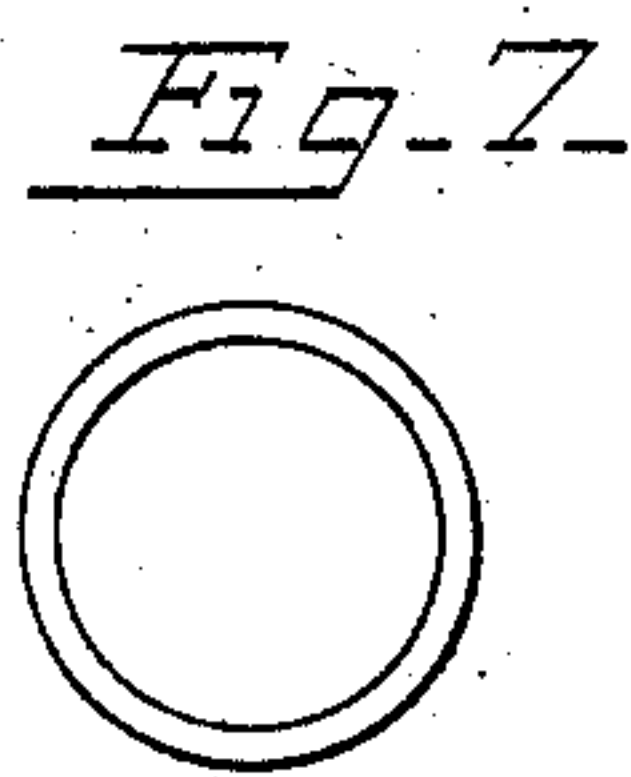
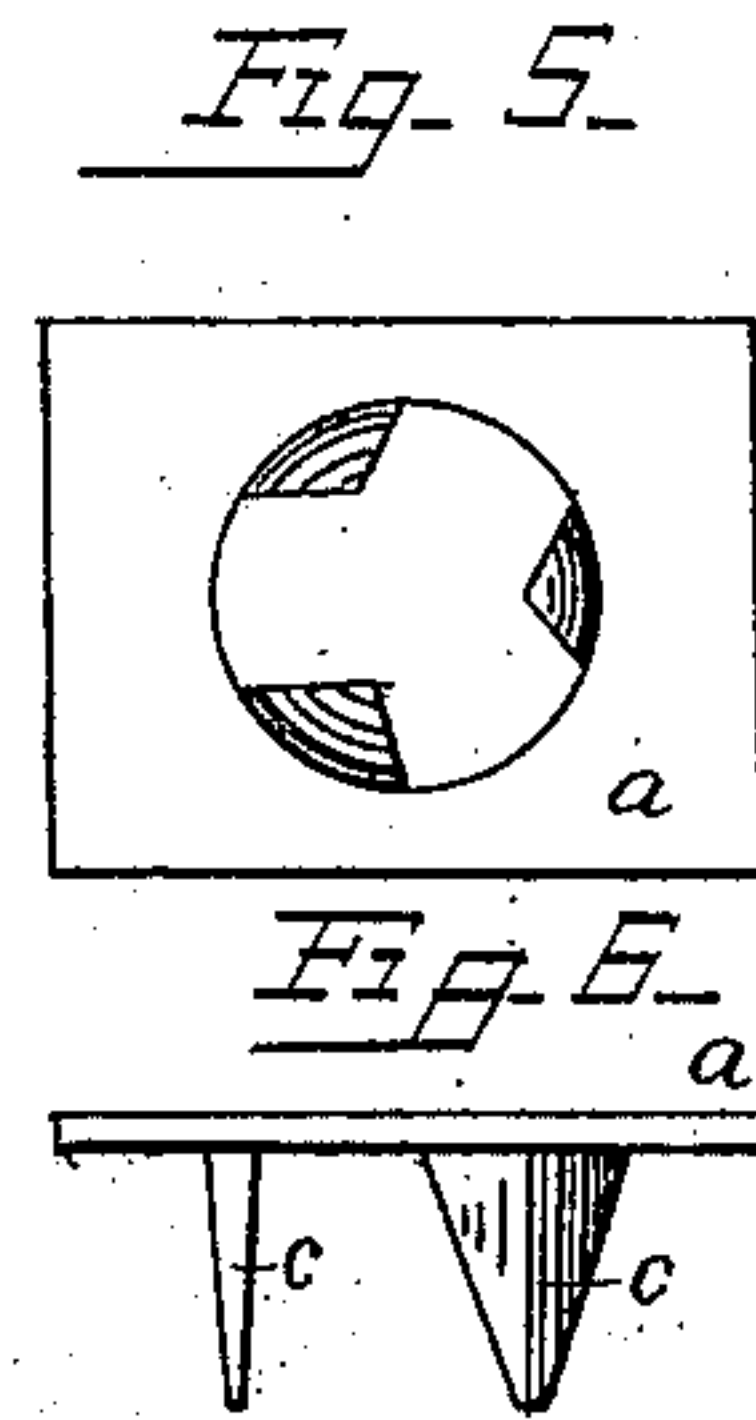
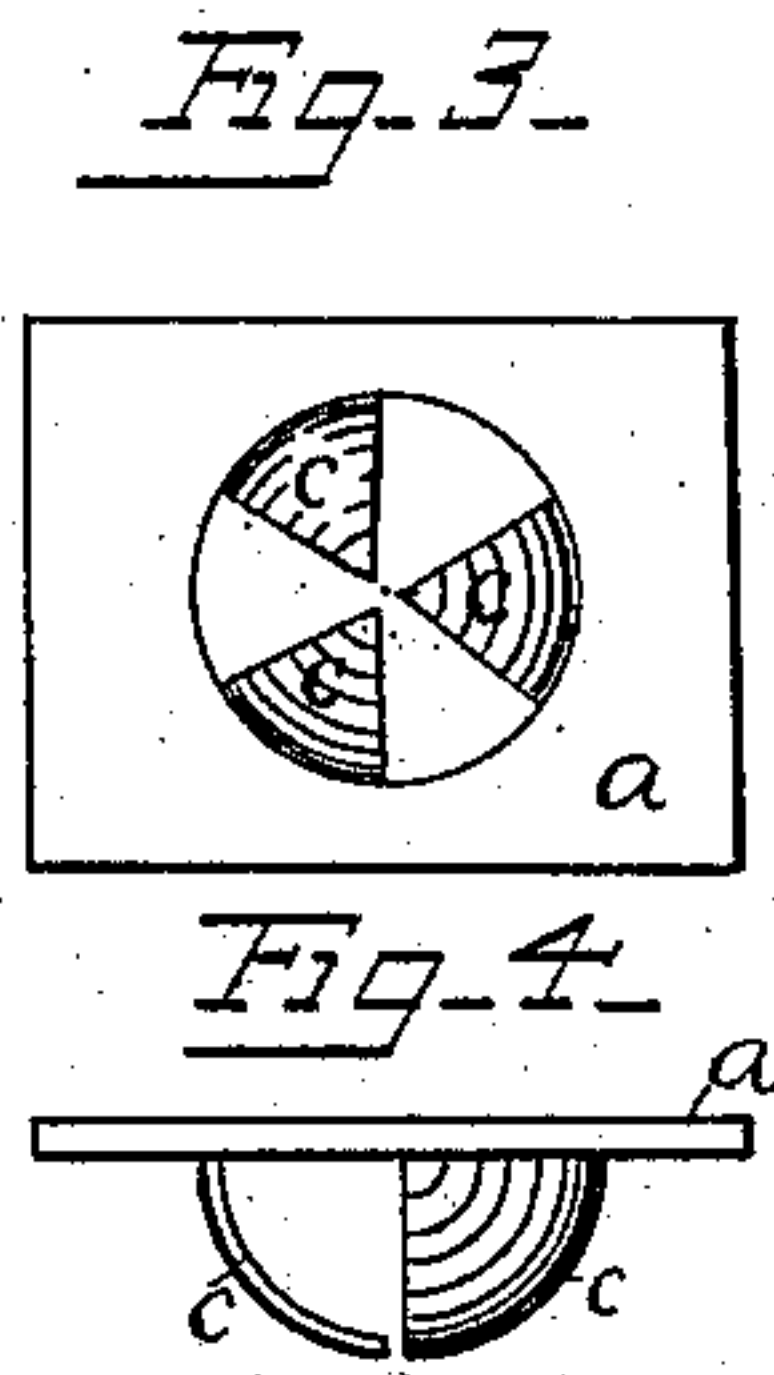
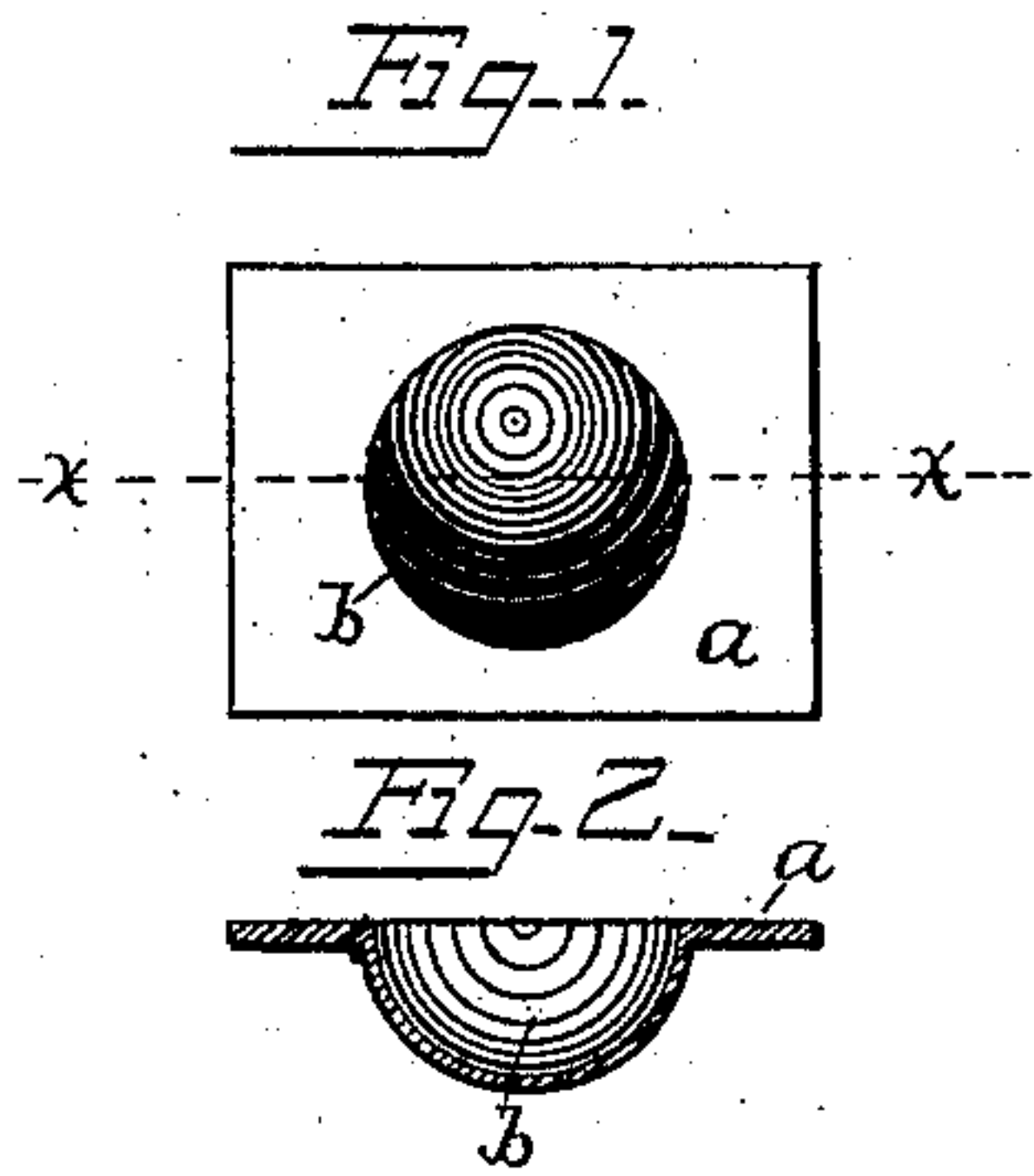
(No Model.)

A. EPPLER, Jr.

RIVET.

No. 294,979.

Patented Mar. 11, 1884.



Witnesses.
C. P. Judd
Joseph L. Liddle

Inventor
A. Eppler Jr.
by Wright & Brown
Atty.

UNITED STATES PATENT OFFICE.

ANDREW EPPLER, JR., OF BOSTON, MASSACHUSETTS.

RIVET.

SPECIFICATION forming part of Letters Patent No. 294,979, dated March 11, 1884.

Application filed August 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, ANDREW EPPLER, Jr., of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Rivets, of which the following is a specification.

This invention has for its object to provide an improved rivet adapted for use as a means for securing two superposed bodies or articles to each other, as the ends of a belt, or to form a part of a lacing-hook or other device, and serve as a means for securing said device to the article on which it is to be used.

The invention consists in the improved rivet and method of making the same, hereinafter described and claimed.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top view of the blank from which my improved rivet is made, showing the first step in the operation. Fig. 2 represents a section on line *x x*, Fig. 1. Fig. 3 represents a top view of the blank after the second step has been taken. Fig. 4 represents an edge view of the blank, as shown in Fig. 3. Figs. 5 and 6 represent, respectively, top and edge views of the blank after the third step has been taken. Figs. 7, 8, and 9 represent, respectively, top, edge, and perspective views of the completed rivet. Fig. 10 represents a top view of the rivet as applied to a belt or other flat article. Figs. 11 and 12 represent a blank used for making a lacing-hook having my improved rivet. Fig. 13 represents an edge view of the completed lacing-hook. Fig. 14 represents a sectional view of the rivet shown in Figs. 8 and 9, with a cap applied to its head.

The same letters of reference indicate the same parts in all the figures.

In carrying out my invention, I take a flat blank or strip, *a*, of sheet metal and form a cup, *b*, therein by means of suitable dies, the cup being nearly or quite hemispherical, so that the metal forming it has its area considerably increased and its thickness correspondingly decreased, as shown in Fig. 2. I next perforate the cupped portion by punching out a portion thereof, as shown in Figs. 3 and 4, so as to form prongs or teeth *c*, the bodies of which are the remaining portions of the cup. The teeth or prongs are then straightened, as shown in Fig. 6, to remove the curved form

shown in Fig. 4, and cause the teeth to stand substantially at right angles with the plane of the blank. The blank is then trimmed around the cupped portion, so as to form an open or skeleton head, *d*, integral with the teeth or prongs, the latter being bent at their bases from the inner margin of said head. In some cases it may be found desirable to trim the blank to form the outer margin of the head before forming the teeth or prongs.

It will be seen that by making a rivet with an open or skeleton head, and forming the clinching prongs or teeth from the metal surrounded by said head, the material from which the rivet is made is utilized to much better advantage than it would be if the teeth or prongs were formed on the outer margin of the head, in which case much more stock would be required for the blank. The cupping operation, by drawing out or increasing the area of the metal of which the teeth or prongs are formed, elongates said teeth or prongs, so that they are considerably longer than they would be if struck up from the same portion of the blank in a flat condition or not cupped. The cupping operation also reduces the thickness of the teeth or prongs, so that they are more flexible, and therefore more readily clinched, than they would be if they retained the original thickness of the blank.

The rivet, when its head has an annular form, as shown in Figs. 7, 8, 9, and 10, is adapted for a variety of uses, but more particularly for use as a belt-fastening, the limited amount of metal presented by the annular head enabling it to run over a pulley without forming a protuberance on the surface of the belt, and without giving the belt a tendency to slip on the pulley.

Many of the metallic belt-fasteners now in use present a considerable extent of smooth metallic surface projecting from the surface of the belt, and are therefore liable to slip when they come in contact with a driving-pulley. If desired, the open head *d* may have a cap, *f*, applied to it, as shown in Fig. 14, a practically solid-headed rivet being thus formed.

My improvements may be applied to a lacing-hook adapted to be used as a fastening for boots and shoes, as shown in Figs. 11, 12, and 13. In making this article, the blank is cupped and perforated to form the teeth or

prongs, and the teeth or prongs are straightened in the manner above described. The blank is trimmed into proper form to be bent into a hook, as shown in Figs. 11 and 12, and 5 the hook portion *h* is suitably molded and bent, as shown in Fig. 13. The body and hook portion are therefore made of thicker and stiffer stock than the prongs.

I am aware of the patent of Young, No. 10 183,978, of October 31, 1876, for process of making eyelets, which process is quite similar to but not identical with mine.

I claim—

1. A rivet or similar article having a head, 15 and teeth bent from the inner circular edge or margin of said head, said teeth being separated by spaces, and being narrower and thinner at

the points than at the bend, where they are united to the head.

2. A rivet or similar article having a head 20 with a round central perforation, and teeth extending from the inner edge of said head at about a right angle thereto, said teeth being separated by spaces at their line of union with the head, substantially as shown and described. 25

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 10th day of August, 1883.

ANDREW EPPLER, JR.

Witnesses:

C. F. BROWN,
A. L. WHITE.