

June 6, 1939.

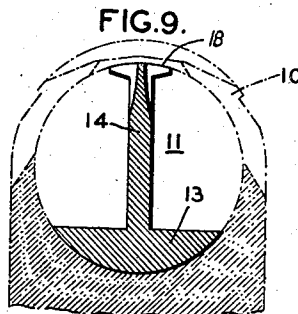
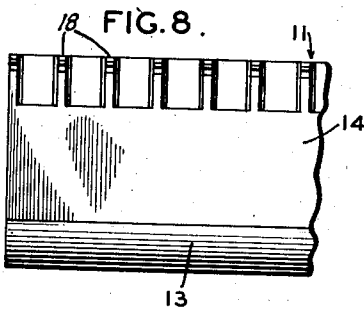
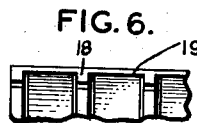
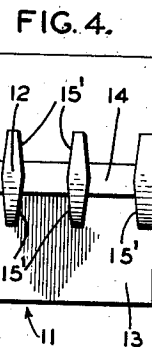
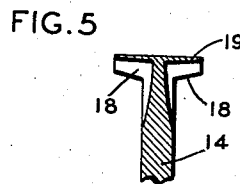
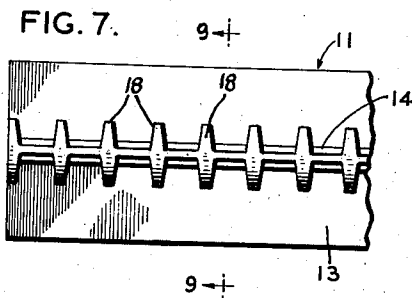
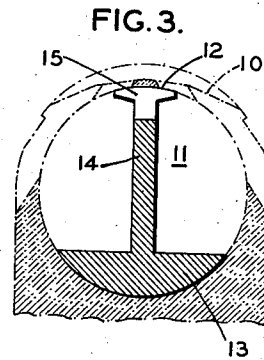
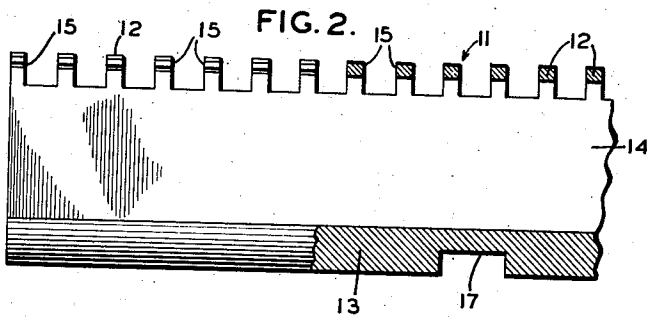
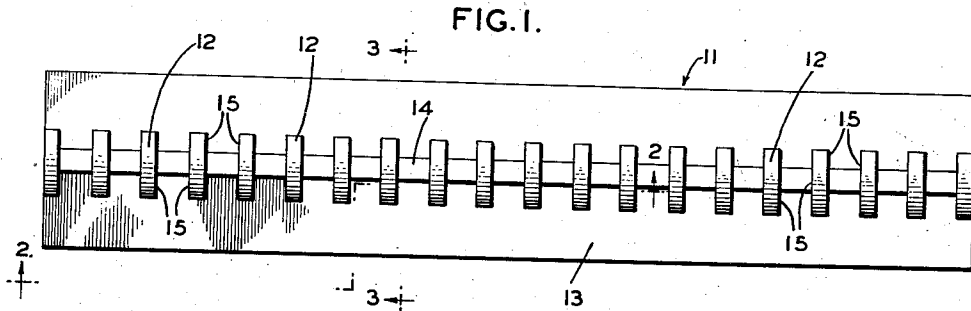
R. E. BENNER

2,160,952

CONSTRUCTION OF CUTTER HEADS

Filed Dec. 4, 1937

2 Sheets-Sheet 1



INVENTOR.
RUSSELL E. BENNER.

BY *R. A. Sparks*
ATTORNEY

June 6, 1939.

R. E. BENNER

2,160,952

CONSTRUCTION OF CUTTER HEADS

Filed Dec. 4, 1937

2 Sheets-Sheet 2

FIG. 10

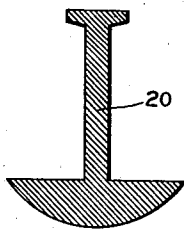


FIG. 12

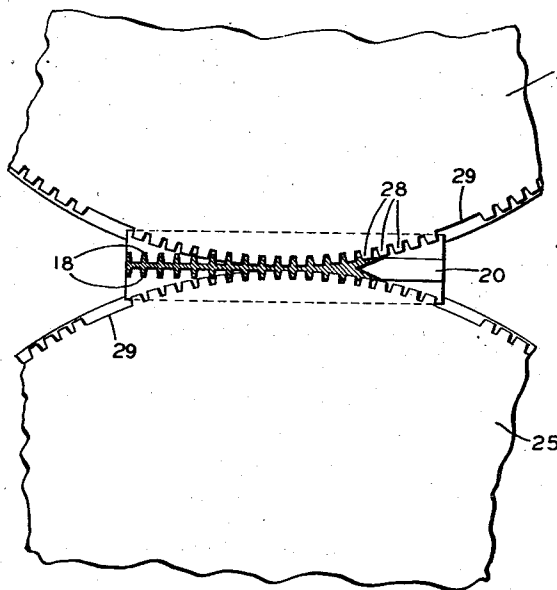
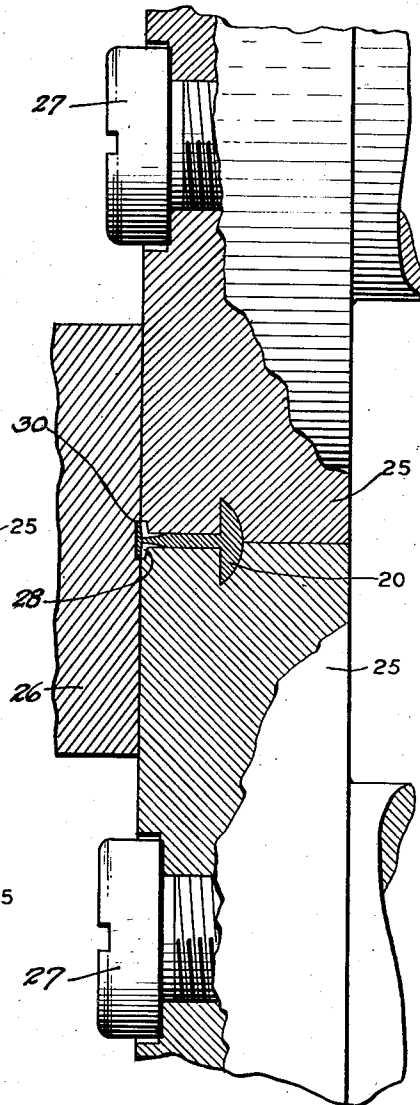


FIG. 11



INVENTOR
RUSSELL E. BENNER

BY *W. A. Spark*
ATTORNEY

UNITED STATES PATENT OFFICE

2,160,952

CONSTRUCTION OF CUTTER HEADS

Russell E. Benner, New York, N. Y., assignor, by
mesne assignments, to Remington Rand Inc.,
Buffalo, N. Y., a corporation of Delaware

Application December 4, 1937, Serial No. 178,072

6 Claims. (Cl. 76—104)

This invention relates to improvements in the method of constructing cutter heads of electric dry shaving implements, particularly the inner cutters thereof.

Usually the precision required in the making of cutters for dry shavers well known in the art is such that it entails a rather costly operation. This results in limiting a rapid and steady turn-out which often affects the retail price.

The general object of my invention is to provide a simple method of manufacturing an improved form of an inner cutter to be used in devices of the type described herein.

Another object of my invention is to produce an improved form of an inner cutter head that may be turned out rapidly in large quantities and at a minimum cost.

Additional objects of this invention will appear from the following description and will be pointed out in the appended claims.

This invention resides substantially in the method of construction of the parts of an inner cutter, all of which will be described in greater detail in the following specification and will be made more apparent from a detailed description in connection with the accompanying drawings, in which:

Fig. 1 is a top plan view of an inner cutter head constructed in accordance with the invention described herein;

Fig. 2 is a fragmentary vertical cross section of the inner cutter head described herein taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a cross sectional view of the inner cutter head described herein taken substantially on line 3—3 of Fig. 1 and showing the outer cutter in phantom;

Fig. 4 is a fragmentary top view of a modified form of the device in accordance with the invention described herein;

Fig. 5 is a cross sectional view of a modified form of cutter bar as it appears after rolling;

Fig. 6 is a fragmentary side view of the modified device shown in Fig. 5 as it appears before the web across the top of the cutter bars is ground away;

Fig. 7 is a fragmentary top plan view of that form of inner cutter head shown in Fig. 5 when finished;

Fig. 8 is a fragmentary front elevational view of the device shown in Figs. 5, 6, and 7;

Fig. 9 is a cross sectional view of the device shown in Fig. 7 taken substantially on line 9—9 thereof;

Fig. 10 is a cross sectional view of a blank used in forming the cutter of Figs. 5—9, inclusive;

Fig. 11 is an enlarged detail view of the rollers used in forming the cutter, disclosing the dies in cross section;

Fig. 12 is a plan section of Fig. 11 taken along line 12—12 of Fig. 11.

Like characters of references refer to like parts in all views.

Referring to the drawings in detail, and particularly to the form shown in Figs. 1, 2, and 3, 10 indicates the outer cutter and 11 the inner cutter of a dry-shaver of the general type shown and described in the application of H. Landsiedel S. N. 123,162, filed January 30, 1937.

The present invention relates solely to the manufacture of inner cutters having a cross-sectional shape of substantially anchor form. The cutter illustrated in Figs. 1, 2, and 3 is made by taking a long bar of extruded stock of anchor form (Fig. 10) and cutting, grinding or otherwise forming thereon cutting teeth. As seen in these figures, a web 14 rises from a curved base 13 and is slightly mushroomed at its top. In this top portion, the teeth or cutter bars 12 are formed having cutting edges 15. After these cutter bars are formed on the bar of stock this bar is cut into suitable lengths, hardened and ground to size. A driving recess 17 and such other recesses as may be required may be formed in the base 13 at any desired point in the manufacture of the cutter.

In Fig. 4 the cutter bars 12 have been modified by grinding them to hexagonal shape as at 15', according to the invention disclosed in my co-pending application S. N. 172,341 filed November 2, 1937.

In Figs. 5—9, inclusive, is disclosed an inner cutter which is formed by passing the blank between three rotating dies as shown in Figs. 11 and 12.

Two of the dies are identical in shape, each being formed of a disc 25, the periphery of which is provided with teeth or dies 28 adapted to form the teeth 18 of the cutter bar. The discs 25 are fastened to their respective drive shafts by screws 27. The dies 28 are disposed in groups equal in number to the teeth in a cutter. Mounted above the point of contact of the two discs 25, and rotating at right angles thereto, is a third roller 26, which is provided with a groove or die 30 into which the excess metal is forced, thereby forming the web 19 as shown in Fig. 5.

After the stock has been passed through the dies and been formed, it is cut to the required length to form an inner cutter. Following this the cutter is hardened and then ground to form

the cutter shown in cross section in Fig. 9. This grinding action also insures that the edges of the teeth or bars 18 will be sufficiently keen to cut hair.

- 5 It will therefore be seen that I have devised a simple, efficient and economical method of constructing inner cutters for dry-shavers of the type specified and while variations in the method might be resorted to without departing from the spirit of my invention, I do not limit myself to the specific method claimed nor to anything less than the whole of my invention as herein disclosed and hereinafter claimed.

10 What I claim as new, and desire to secure by Letters Patent, is:

1. The method of forming cutters for dry-shavers which consists in rolling teeth in a bar of stock while leaving the teeth joined by a thin web, then hardening, and then grinding away the web so as to free the ends of the teeth.

2. The method of forming cutters for dry-shavers which consists in rolling oppositely disposed rows of teeth in a bar of stock while leaving the outer ends of the teeth joined by a thin web, then hardening, and then grinding away the web so as to free end ends of the teeth.

3. The method of forming cutters for dry-shavers which consists in rolling oppositely disposed rows of teeth in a bar of stock while leav-

ing the outer ends of the teeth joined by a thin web, then hardening, then grinding away the web so as to free the ends of the teeth, and also grinding said teeth into an hexagonal shape.

4. The method of forming cutters for dry-shavers which consists in rolling a plurality of oppositely spaced teeth in a bar of stock extruded into anchor shape, leaving a reduced web between the teeth and a thin web joining the teeth on top, then hardening, and then grinding away the web that joins the ends of the teeth.

5. The method of forming cutters for dry-shavers which consists in rolling a plurality of oppositely spaced teeth in a bar of stock extruded into anchor shape, leaving a reduced web between the teeth and a thin supporting web joining the upper ends of the teeth, then hardening, and then completely grinding away the web that joins the ends of the teeth.

6. The method of forming cutters for dry-shavers which consists in rolling a plurality of oppositely spaced teeth in a bar of stock extruded into anchor shape, leaving a reduced web between the teeth and a thin web disposed on top of the teeth and joining the ends thereof, then hardening, and thereafter completely grinding away the latter web.

RUSSELL E. BENNER.