July 8, 1930. C. H. HUMPHRIES 1,770,157

CUTTING IMPLEMENT

Filed June 23, 1927

Fig. 1.

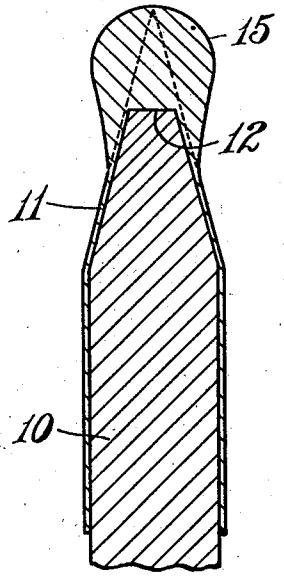
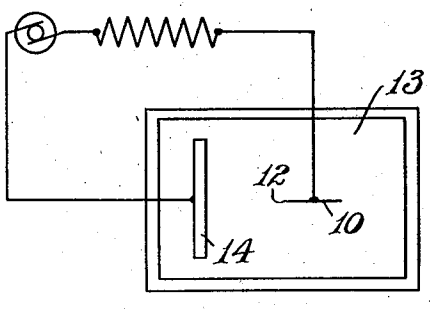


Fig. 2.



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UNITED STATES PATENT OFFICE

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CUTTING IMPLEMENT

Application filed June 23, 1927. Serial No. 201,001.

The object of my invention is to provide an improved cutting implement, of the razor type, of such character that its cutting edge will be more stable than present implements. For instance, the present standard safety razor blades are made of high carbon steel about 0.008″ thick and the edge is equally bevelled on each face to produce a cutting edge having a thickness of approximately 0.005″. If an attempt is made to produce a thinner cutting edge the material lacks sufficient rigidity to stand up (hold its edge) and therefore dulls very quickly, and the object of my invention is to provide a cutting blade of this type upon which a thinner, but more rigid, and consequently longer lived, cutting edge may be produced.

A further object of my invention is to provide an improved method of producing cutting implements.

The accompanying drawing illustrates my invention. Fig. 1 is a cross section greatly magnified, illustrating my improvement. Fig. 2 a diagram illustrating the method of production.

In the drawings 10 indicates the main body of the readily flexible blade to be provided with my improved cutting edge. Body 10 should be preferably formed of an acceptable and usual material and shape for the desired implement. For instance if a "safety" razor blade is desired it should preferably be of material and shape such as is now generally acceptable, the edge at which the cutting edge is to be formed being conveniently beveled, as indicated at 11, to the angle which has been found by long experience to be most efficient. Instead of being brought to a cutting edge, however, it is left with substantial, non-cutting width, as indicated at 12.

It has long been well known that chromium is much harder and more rigid than steel and that it has heretofore been proposed to plate the cutting edges of steel tools, such as chisels, with chromium, and no great difficulty has been experienced in satisfactorily anchoring the chromium plate upon such cutting edges (of chisels and the like) because the edge is comparatively blunt and laterally rigid, and it has therefore been possible to prepare the main body of the tool with a sharpened edge and to then apply the chromium plate and thereafter sharpen, by grinding etc., this plated edge.

When an attempt is made to follow the same procedure with a readily flexed blade, like a safety razor blade, however, the chromium erected upon the blade edge lacks sufficient anchorage upon the blade and, so far as I know, no one prior to my present invention, has succeeded in producing by commercially practicable methods or means, a razor blade having a substantial chromium cutting edge.

I have discovered that the problem is solved in the following manner:

The readily flexible blade 10 of high carbon steel of a usual thickness of say 0.008″ is beveled on both faces at its edge, as indicated at 11, at the angles which have heretofore been found, by long experience, to afford the most substantial support for the cutting edge while permitting, at the same time, the reduction of the cutting edge to an effective, as well as an efficient, thinness— say 0.005″. Such an edge, however, will not form an efficient base for a chromium edge. I, therefore, either square the edge up, or so stop the formation of the bevels 11, as that there will be formed a blunt edge 12 of say about 0.002″ in width.

The razor blade thus formed, and then prepared in a well known manner for chromium plating bath 13 with its edge 12 facing the anode 14 and subjected to a chromium plating operation, such, for instance, as is outlined in my Patent #1,545,196 with a current intensity of say from 1 to 1½ amperes per square inch.

This plating operation will result in building up a round edge body 15 of chromium upon the surface 12 and adjacent faces 11 the plating operation being continued long enough to furnish sufficient body so that by a grinding operation, the surplus may be removed to the dotted line, thus leaving a sharpened body of chromium erected upon and firmly adhering to the surface 12.

The blunt edge 12 might, of course, be wider than 0.002 and might even closely ap-

proximate the thickness of the blade, but in that case a quantity of chromium much greater than that is necessary for stability is required, thereby involving not only an unnecessary expense for chromium but requiring more time, and consequently more expense, for electrically depositing the chromium.

The cutting edge of an implement thus formed is exceedingly hard, very stable, and not subject to deterioration in the presence of moisture as is the case with steel cutters.

It will, of course, be understood that, if a similar cutting edge of electrodeposited metal other than chromium, is desired a proper change of bath will give the desired result, it being well known that various of the very hard and rarer metals possessing qualities for cutting edges, similar to the qualities of chromium, may be electrically deposited upon materials suitable for the main bodies of cutting implements. For instance, the alloy of cobalt and chromium mentioned in the Peffer and Pierce Patent #1,465,173 or electrolytic tungsten, will prove satisfactory.

By "blunt" edge I mean an edge laterally undistorted and say not substantially less than 0.002″ wide.

I claim as my invention:

1. The process of producing a readily flexible razor blade which comprises (*a*) taking a thin flexible steel blade with a blunt edge flanked by oppositely set beveled faces, (*b*) placing said blade in a chromium plating bath with the blunt edge directed toward the anode, (*c*) electrically depositing chromium upon said edge to form a rib of sufficient width to permit the formation of a cutting edge thereof, and (*d*) reducing said chromium rib to a cutting edge by oppositely beveling the same substantially parallel with the bevels of the main body of the blade.

2. The process of producing a readily flexible razor blade which comprises (*a*) taking a thin flexible steel blade with a blunt edge, (*b*) placing said blade in a chromium plating bath with the blunt edge directed toward the anode, (*c*) electrically depositing chromium upon said edge to form a rib of sufficient width to permit the formation of a cutting edge thereof, and (*d*) reducing said chromium rib to a cutting edge.

3. As an article of manufacture, a flexible razor blade consisting of a main body of thin flexible steel beveled on its opposite faces at one edge but with said edge blunt, and a cutting wedge of chromium which has been electrolytically deposited upon said blunt edge and subsequently reduced to a cutting edge.

In witness whereof I, CHAD H. HUMPHRIES, have hereunto set my hand at Indianapolis, Indiana, this 21st day of June, A. D. one thousand nine hundred and twenty-seven.

CHAD H. HUMPHRIES.