

GOVERNMENT OF INDIA : THE PATENT OFFICE, 214, LOWER CIRCULAR ROAD, CALCUTTA-17.

Specification No. 98148. Application No. 98148 dated 27th February 1965. Complete specification left on 22nd November 1965. (Application accepted 17th August 1966.)

Index at acceptance—51D[LXVI(2)], 153[XLIII(3)].

IMPROVEMENTS IN AND RELATING TO A DEVICE FOR THE SHARPENING OF RAZOR BLADES.

PROVISIONAL SPECIFICATION.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, RAJI MARG, NEW DELHI-1, INDIA, AN INDIAN REGISTERED BODY INCORPORATED UNDER THE REGISTRATION OF SOCIETIES ACT (ACT XXI OF 1860).

The following specification describes the nature of this invention.

This is an invention by

(1) DR. MICHAEL ANGELO VINCENT DEVA-NATHAN, Scientist (Citizen of Ceylon), Central Electrochemical Research Institute Karaikudi 3;

(2) SHRI VANNIYUR KRISHNASAMY VENKATESAN, Scientist (Citizen of India) Central Electrochemical Research Institute Karaikudi 3;

(3) SHRI SRINIVASAN SARANGAPANI, (Citizen of India), Senior Laboratory Ass tant, Central Electrochemical Research Institute Karaikudi 3

This invention relates to improvements in or relating to a DEVICE FOR SHARPENING RAZOR BLADES.

Hitherto it has been proposed to USE MECHANICAL METHODS OR SHARPENING.

This is open to the objection that MECHANICAL SHARPENING DOES NOT REPRODUCE THE ORIGINAL SHARP EDGE.

The object of this invention is to obviate these disadvantages by EMPLOYING AN ELECTROCHEMICAL PROCESS.

To these ends, the invention broadly consists in AN ARRANGEMENT FOR ANODICALLY ELECTROPOLISHING USED BLADES. The apparatus broadly consists of carbon cathodes separated by a suitable electropolishing bath (e.g., a solution of phosphoric acid and chromic acid in water) by a suitable absorbing medium (e.g., woollen or glass cloth) and contacting the edge of the blade which is made anodic with respect to the former by means of a suitable low tension d.c. power supply, for example a battery, a dry cell or any such equivalent operated from electric mains.

Two small pieces of cloth soaked in the electropolishing bath given above are placed on both the carbon cathodes (4) (Ref. Figure I and II). The used blade is placed on the kit such that its edges come into contact with the medium and the centre portion of the blade which passes through the metal rods (2) and comes into contact with the metal plate (1). After about a minute, the blade is taken out and wiped. The process is repeated for the other side and the blade is then washed and dried.

The following typical examples are given to illustrate the invention.

EXAMPLE I.

Figures I to III show the elevation, endview and plan respectively of the apparatus for sharpening of double edged blades. (1) represents metal plates, g. stainless steel and (2) denotes metal rods (made of stainless steel or brass). The metal rod and the

plate keep the blade in position and also give electrical contact. The C. S. K. screws (3) made of brass or stainless steel hold the carbon cathodes on either side of the metal plate and rod, as well as one of the metal plate (6) holding the battery (7). The carbon cathodes and the metal rod (2) and plate (1) are mounted on a plastic base (5). A resistor of about 150 ohms. is connected between the battery and the metal plate (6) which gives electrical contact to the carbon cathodes (4).

EXAMPLE II.

The apparatus used for sharpening single edged blades is represented in Figures IA to IIIA.

The construction of this apparatus is same as the one described above for double edged blades except that only one carbon cathode is used instead of two.

- 1A Metal plate
- 2A Metal rods
- 3A C. S. K. screws
- 4A Carbon cathode
- 5A Plastic
- 6A Metal plate
- 7A Battery
- 8A Resistance

The following are among the main advantages of invention :

1. A blade thus polished has an edge which is superior to mechanically polished ones in sharpness.

2. All forms of mechanically polished edges contain microscopic grooves caused by the polishing machines. This causes a certain amount of skin irritation. Electrochemically polished ones has a smooth mirror-like surface which results in a smooth shaving.

3. The number of times electrochemical sharpening can be carried out is over ten, thereby this device enhances the useful life of the blade by that amount.

4. The operation of polishing with the device described is very simple, requires a few drops of solution each time and the power requirements are negligible. For example one standard dry cell can be used for more than 200 hours of polishing.

R. BHASKAR PAI,

Scientist,

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH.

Dated this 9th day of February 1965.

COMPLETE SPECIFICATION.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH RAJI MARG, NEW DELHI-1, INDIA, AN INDIAN REGISTERED BODY INCORPORATED UNDER THE REGISTRATION OF SOCIETIES ACT (ACT XXI OF 1860).

The following specification particularly describes and ascertain the nature of this invention and the manner in which it is to be performed.

This is an invention by

1. DR. MICHAEL ANGELO VINCENT DEVANATHAN (Citizen of Ceylon), Scientist, Central Electrochemical Research Institute Karaikudi 3 (Madras State);

2. SHRI VANNIYUR KRISHNASAMY VENKATESAN (Citizen of India), Scientist, Central Electrochemical Research Institute Karaikudi 3 (Madras State);

3. SHRI SRINIVASAN SARANGAPANI (Citizen of India), Senior Laboratory Assistant, Central Electrochemical Research Institute Karaikudi 3 (Madras State).

The invention relates to the design of a hommokit for sharpening of used razor blades and a solution to be used along with the kit.

Price : TWO RUPEES.

It has been hitherto customary to use mechanical grinders like glass hones, emery strap etc for sharpening used razor blades

The drawbacks in the above processes are that it is not possible to get a good edge

The main object of the invention is to get a sharp and smooth edge with an used blade by a simple process and increase the useful life of a blade (i.e., number of shaves given by a blade).

An electrochemical method is employed in improving the edge. Here the blade is electropolished so as to get an improved edge

So far electropolishing has not been applied to sharpening of razor blades. By electropolishing, it is possible to get superior edge in the sense that we avoid the microprojections or burrs caused by mechanical grinding. These burrs cause irritation during shaving. But the electropolished edge is free of these burrs and hence it gives smooth shaving. The useful life of the blade is increased by 10 times

The invented device for sharpening razor blades comprises carbon, stainless steel or lead cathodes separated by a suitable electropolishing bath (e.g., a solution of phosphoric acid and chromic acid in water) which contacts the edge of the blade which is made anodic with respect to the former by means of a suitable low tension d.c. power supply, viz., a battery, a dry cell or any such equivalent operated from electric mains. In case stainless steel or lead cathodes are used, two dry cells (connected in series) are to be used

This device is very simple to operate and sharpening process is very quick—only 20 seconds for each blade

Figures I to III of the accompanying drawing show the elevation, endview and plan respectively of the apparatus for sharpening double edged blades

1 PVC, plastic or polystyrene piece with two grooves on either side

2 Graphite or stainless steel or lead cathodes pressed into the end grooves in (1)

3 Metallic strip connecting the two cathodes to a dry cell (10) in series with a suitable resistor (10 to 20 ohms) (6)

The C S K screws (4) made of chrome plated brass or iron or stainless steel hold the metal strip (5) and the metal plate holding the battery (7) (8) is an insulator mounted with a metallic spring (9). The insulator avoids shorting and the spring serves as electrical contact

Single edged blades. The apparatus used for sharpening single edged blades is represented in Figures IA to IIIA. The construction of the apparatus is same as the one described above for double edged blades, except that only one carbon cathode (stainless steel or lead) is used instead of two

1A PVC, plastic or polystyrene strip with two grooves only

2A Graphite or stainless steel strip

3A Metallic strip

4A CSK screws

5A Metal strip

6A Resistor

7A Metal plate

8A Insulator

9A Spring

10A Dry cell

A few drops of the solution described elsewhere are to be put in the two small grooves in the graphite (black strips). The blade is to be placed over the metal strip and pressed with finger for ten seconds. The blade may be removed and the other side of it should also be polished as above. Then the sharpened blade is to be washed and may be used or stored. It is important that the back side of the battery contacts the spring. It is recommended to polish 5 or six blades at a stretch. After use, the black strips of the kit are also to be washed

The following are among the main advantages of the invention

(a) A blade thus polished has an edge which is superior to mechanically polished ones in sharpness

(b) All forms of mechanically polished edges contain microscopic grooves caused by the polishing machines. This causes a certain amount of skin irritation. Electrochemically polished ones has a smooth mirror-like surface which results in a smooth shaving

(c) The number of times electrochemical sharpening can be carried out is over ten, thereby this device enhances the useful life of the blade by that amount

(d) The operation of polishing with the device described is very simple, requires a few drops of solution each time and the power requirements are negligible. For example, one standard dry cell can be used for sharpening more than 12,000 blades

We claim.

1 A device for sharpening razor blades which comprises carbon, stainless steel or lead cathodes separated by a suitable electropolishing bath (e.g., a solution of phosphoric acid and chromic acid in water) contacting the edge of the blade which is made anodic with respect to the former by means of a suitable low tension d.c. power supply, e.g., a battery, a dry cell or such other equivalent operated from electric mains

2 A process for sharpening razor blades by employing the apparatus claimed in Claim 1 which comprises placing the blade in the electropolishing bath on the carbon cathodes such that its edges come into contact with the medium and the centre portion of the blade which passes through the metal rods (4) and comes into contact with the metal strip (5), after about 10 seconds the blade is taken out and wiped

3 A process as claimed in Claim 2 wherein the said process is repeated for the other side and the blade is then washed and dried

4 A device for sharpening razor blades substantially as hereinbefore described.

R. BHASKAR PAI,

Patents Officer,

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Dated this 10th day of November 1965.

COMPLETE SPECIFICATION

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

No OF SHEETS:-2

No. 98148

SHEET No. :- 1

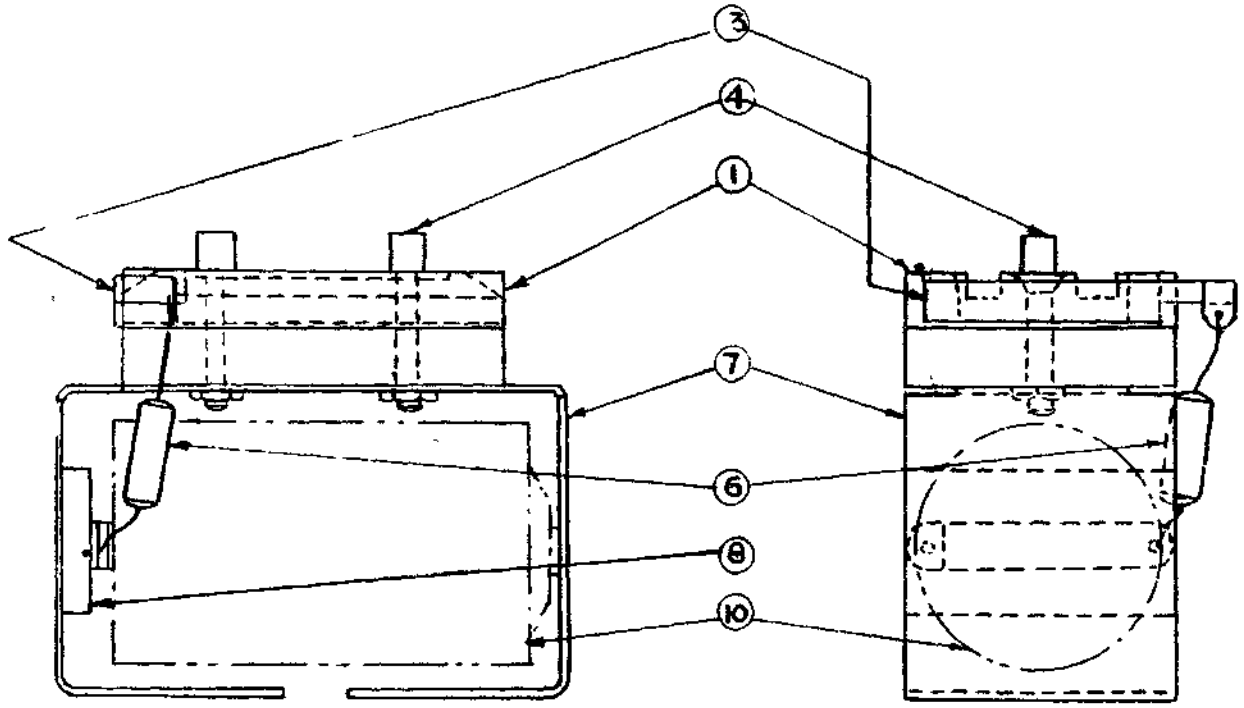


FIG. I

FIG. II

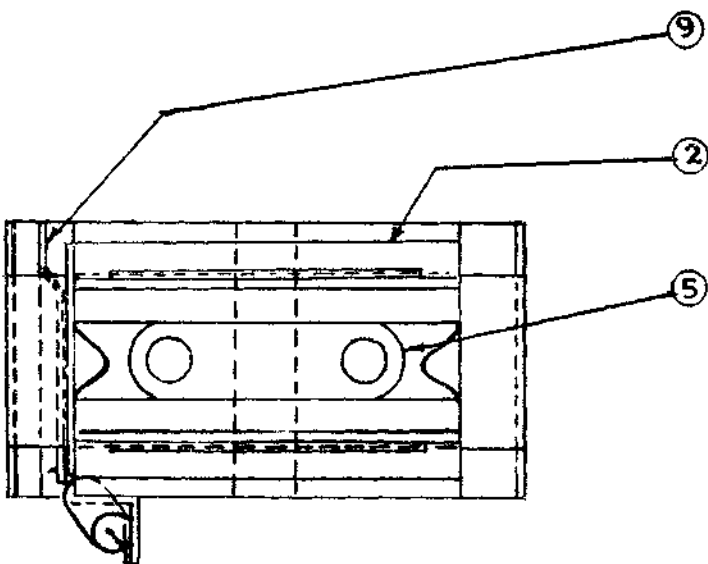


FIG. III

R B Pai

(R.B. PAI)
PATENTS OFFICER
C.S.I.R.

No 15146

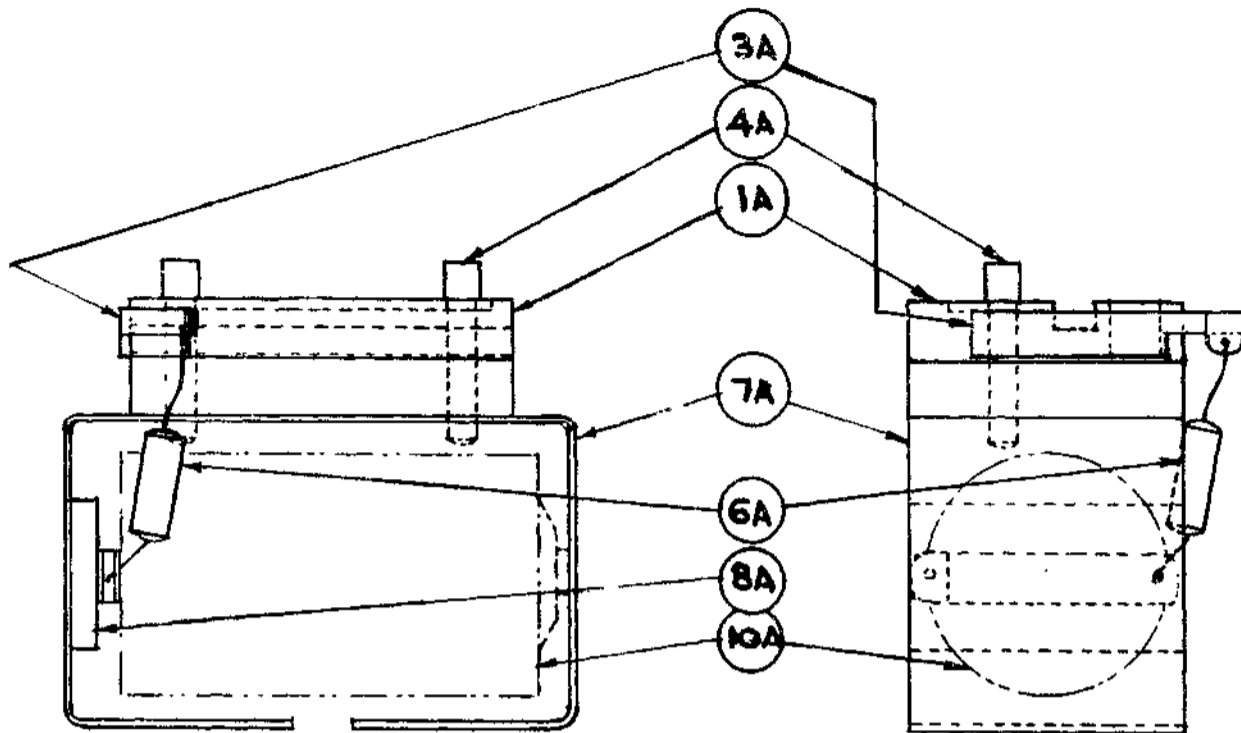


FIG. IA

FIG. II A

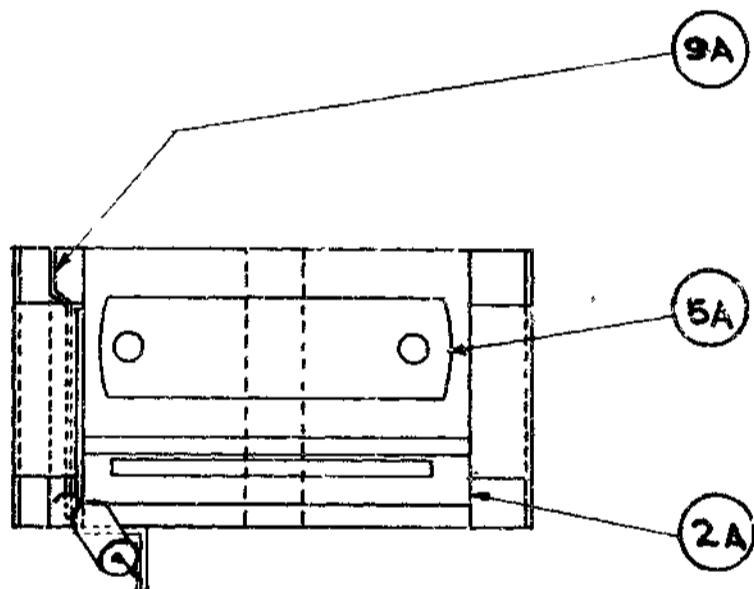


FIG. III A

R.B. Pai
(R.B. PAI)
PATENTS OFFICER,
C.S.I.R.