Nov. 18, 1958 G. M. FERGUSON 2,860,537

TWEEZERS

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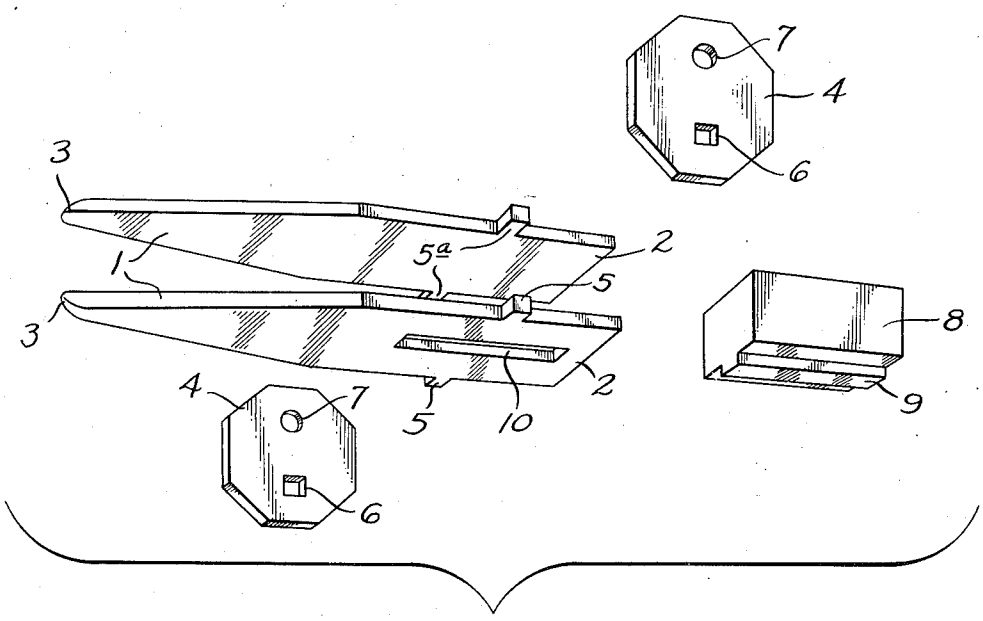


Fig. 1.

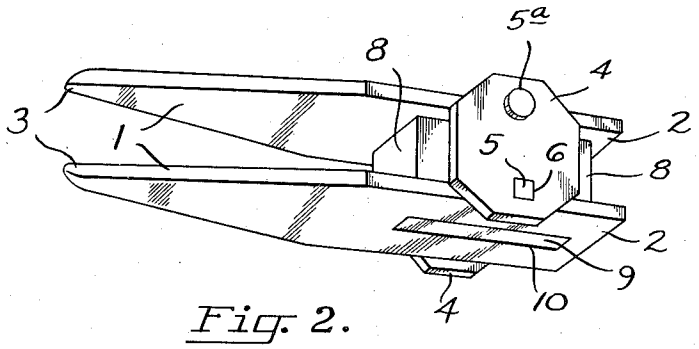


Fig. 2.

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TWEEZERS

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4 Claims. (Cl. 81—43)

My invention relates to tweezers which are used to grip small articles, and they have many different forms and uses. Principally, they are toilet articles for removing splinters or hair. They also have industrial uses such as jeweler's and watchmaker's tweezers.

The principal object of my invention is to provide a pair of tweezers comprising a pair of opposed, elongated, spaced, co-operating blades which are normally held spaced apart usually in substantial parallelism with each other. They are usually biased to open position.

Another object of my invention is to provide inexpensive tweezers in which the blades and the metal parts may be made separate from the bias material. It is desirable that such blades and other metallic joining parts be plated so as to improve their appearance and inhibit oxidation. I preferably provide a rubbery material to provide said bias and it is thus desirable that said rubbery material be inserted after the tweezer blades and other joining parts have been plated.

A more specific object of my invention is to provide tweezers of this character in which said block of rubbery material may be easily and quickly slipped into position and locked against inadvertent dislodgment. Also such construction permits the ready replacement of said bias material if said material becomes distorted or fatigued.

My present invention is to improve the general art disclosed in my two previous United States patents, one patented November 26, 1946, No. 2,411,825, and another patented December 10, 1946, United States Patent No. 2,412,255. Both of these patents are entitled "Tweezers."

The details of my invention are hereinafter described with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of the separate parts of tweezers embodying my invention shown in exploded fashion; and

Fig. 2 is a perspective view of said tweezers as they appear when the parts are assembled.

Tweezers embodying my invention comprise a pair of relatively stiff blades **1**, each having a butt end **2** and a tapered gripping end or tip **3**. They are pivotally joined together adjacent the butt end. One manner of joining them is through a pair of links **4**, one of said pair of links lying at one side of the blade and the other lying at the opposite side. Said blades are preferably stampings and are of substantially identical peripheral outline. Extending laterally from each side of each blade is a stake **5** which is preferably square in cross-section. Said stakes are substantially longer than the thickness of the links with which they are joined so that they can be riveted over to secure said links in position as is illustrated in Fig. 2.

Each link is provided with one square hole **6** and one round hole **7**. Each square hole is of such size as to have a slidable fit with the stake which it engages, thus to inhibit relative rotation therewith. Each round hole has a diameter equal to the diagonal dimension of the stake with which it is secured. Thus each of the

corners has a bearing fit with said hole so as to permit rotation of the stake in said round hole after the end of such stake is riveted over as is illustrated in Fig. 2. As shown in said figure, the upper blade is rotatably mounted between the pairs of links and the lower blade is fixed to said links. Said links thus constitute pairs of upstanding flanges fixed to the lower blade and constituting rotary mounts for the upper blade.

In practice, said parts are thus joined together and are thereafter plated and otherwise finished. Said finished and joined blades then have a block of rubbery material **8** arranged intermediate the opposed faces of said blades as is illustrated in Fig. 2. Said block has a width slightly less than the width of the blades so as to lie within the peripheral margins of said blades and a thickness which causes said blades to extend substantially parallel with each other as is illustrated in Fig. 2. To this end, the block of material is rectangular, and the opposed faces thereof are parallel with each other. If it is desired that said tweezer blades have a position of rest, out of parallelism with each other, this may be done by making the faces of said block wedge-shaped, and thus the blades will be held at rest at a corresponding angle.

Upon one or both opposed faces of said block of material is formed a tongue or protuberance **9**, and upon one or both of said blades a corresponding recess **10** is formed. Said recess preferably has an area corresponding to that of the tongue or protuberance so that when the block is forced endwise between the blades, said tongue or protuberance will fit within said recess and fill it so as to prevent lateral movement of said block. In the drawings, I have shown said tongue or protuberance as elongated and extending substantially the full length of the block. I have found that, in most cases, it is necessary to have such tongue or protuberance upon one face only, and it is this structure that I have illustrated.

I have illustrated said protuberance as extending the full length of the block, and thus said blocks may be cut from extruded sections of rubbery material of generally T-shaped conformation. When I use the word "rubbery" material, I intend this to mean rubber or synthetic rubber or any similar elastic material which may be deformed to be forced between said two blades, thereafter to tend to resume its undeformed state and to space said blades apart in the absence of external pressure. This permits the blades to be moved into gripping position with respect to each other when external digital pressure is applied, as when they are used.

I preferably make the blades and links of mild steel and thereafter to plate them with cadmium or nickel or other similar plating material.

The block is arranged between the blades so that it extends fore and aft of said elongated blades and lie astraddle an axis extending centrally of the pair of aligned pivot stakes *5a*. This arrangement permits the biasing block of rubbery material to hold the blades in desired angular alignment with each other whether they are rocked either direction about the pivot stakes. Said tweezers are operated in the usual manner by applying digital pressure between their tips and the pivotal joint securing them one with the other.

I claim:

1. Tweezers comprising a pair of opposed elongated spaced co-operating blades one end of each blade terminating in a gripping tip member, pivot means joining said blades adjacent their other ends, and an elastic element lying intermediate said blades adjacent the pivot means joining said blades, said elastic element comprising an elongated block of rubbery material having plane opposed faces and extending in both directions along said

blades beyond said pivot means, said elastic element spacing said blades out of contact with each other in a predetermined rest position for the blades, said elastic element tending to bias the blades into the predetermined rest position for the blades.

2. Tweezers comprising a pair of opposed elongated spaced co-operating blades one end of each blade terminating in a gripping tip member, pivot means joining said blades adjacent their other ends, an elastic element lying intermediate said blades adjacent the pivot means joining said blades, said elastic element comprising an elongated block of rubbery material having plane opposed faces and a thickness corresponding to the spacing of said blades when said blades extend in substantial parallelism with each other, at least one of said faces having a protuberance extending laterally from the face of said block, and a recess in the blade toward which said protuberance extends, said recess being complementary in outline with the peripheral outline of said protuberance.

3. Tweezers comprising a pair of opposed elongated spaced co-operating blades one end of each blade terminating in a gripping tip member, pivot means joining said blades adjacent their other ends, and an elastic element lying intermediate said blades adjacent the pivot means joining said blades, said elastic element comprising an elongated block of rubbery material having plane opposed faces and a thickness corresponding to the spacing of said blades when said blades extend in substantial parallelism with each other, said elongated block lying within the peripheral margins of said blades and extending in both directions along said blades beyond said pivot means, thereby tending to bias the blades into substantial parallelism with each other.

4. The tweezers of claim 1 wherein said pivot means comprises a pair of opposed links extending between and interconnecting opposite lateral sides of the blades, at least one of which is joined at one end by a stake connection with one blade and joined at its other end by a pivot connection with the other blade.

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