

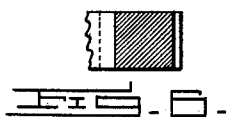
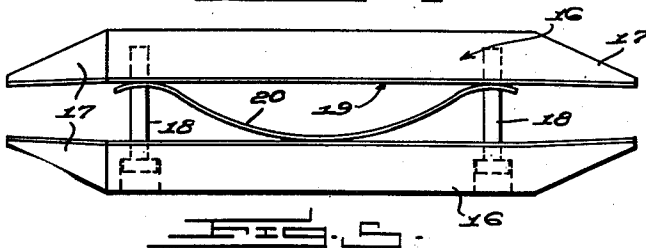
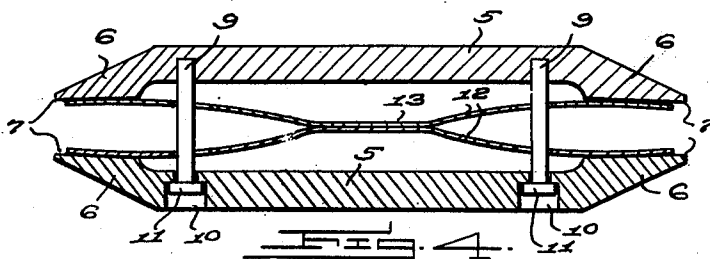
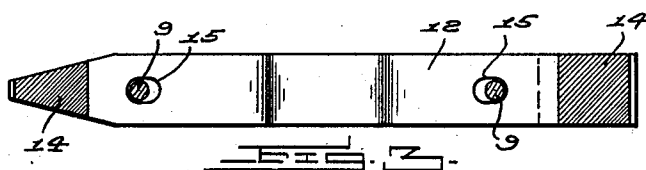
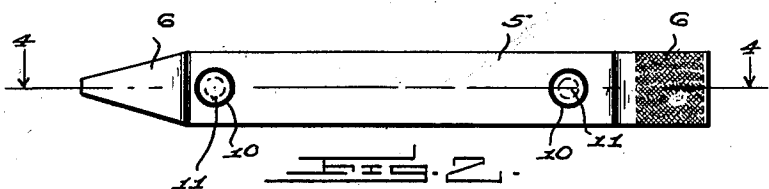
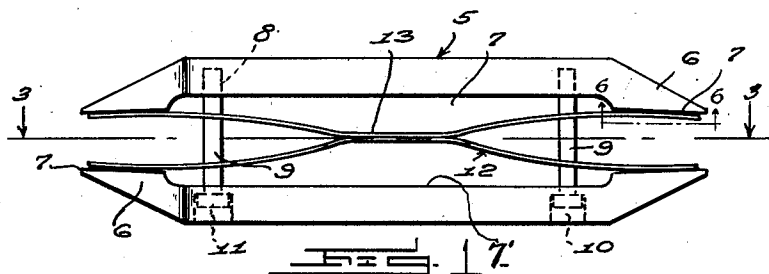
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E. MacG. DARLING

2,334,252

TWEEZER

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Inventor

ERLE MACGREGOR DARLING,

By

Clarence A. O'Brien

Attorney

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TWEEZERS

Erle MacGregor Darling, Plymouth, Ind.

Substituted for abandoned application Serial No. 325,079, March 20, 1940. This application August 3, 1943, Serial No. 497,257

4 Claims. (Cl. 81-43)

This invention relates to new and useful improvements in tweezers, the present application being a substitution for abandoned application Serial No. 325,079, filed March 20, 1940, and which was allowed May 20, 1941, the original application becoming abandoned for failure to pay the Government final fee within the time prescribed by law.

The primary object of the invention is the provision of an efficient and inexpensive device of this character which will provide in one unit a double-ended device, both ends thereof having utility by presenting a pair of gripping jaws, either pair of said jaws may be conveniently used due to the construction of the device and in various positions or at various angles to the object to be gripped thereby.

With these and other objects in view, the invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which:

Figure 1 is a side elevation illustrating tweezers constructed in accordance with my invention.

Figure 2 is a plan view illustrating the device.

Figure 3 is a sectional view taken on the line 3-3 of Figure 1.

Figure 4 is a sectional view taken on the line 4-4 of Figure 2.

Figure 5 is a side elevation illustrating a modification of this invention.

Figure 6 is a fragmentary sectional view taken on the line 6-6 of Figure 1.

Referring in detail to the drawing, the numeral 5 indicates a pair of parallel bars each of elongated formation and having the end portions thereof cut-away or beveled to form jaws 6 each having a flat face 7 formed at a slight angle of approximately two degrees. The major portion of each bar is cut-away, as shown at 7' to reduce the size of the major portion over that of the original stock from which the bar and its end portions or jaws are formed from.

One of the bars adjacent the jaws is provided with sockets 8 in which are mounted pins 9. The pins have a frictional fit with the walls of the sockets to prevent accidental displacement therefrom. The other bar is provided with openings 10 through which the pins 9 extend. The pins are headed, as illustrated at 11, with sufficient clearance to permit the latter-named bar to slide

freely on the pins with a slight pivotal action thereon.

The pins 9 slidably connect the bars 5 in parallel relation and permit said bars to have a limited pivotal movement. When the bars are assembled, as shown in Figure 1, the flat faces 7 of the jaws 6 are arranged in opposed relation.

Leaf springs 12 are arranged between the bars 5 and have bearing contact with each other for a limited distance, as shown at 13, and then diverge from each other and rest upon the flat faces of the jaws 6. The end portions of the springs form gripping faces for the jaws and have formed thereon ribs or serrations 14. The ribs or serrations of one jaw extend at right angles to the serrations or ribs of the companion jaw to facilitate the gripping of an object by the device. The right angle arrangement of the ribs of companion jaws is illustrated by dotted lines in Figure 2.

Pressure placed upon the bars adjacent either of the pins will bring the jaws located closest to the pin receiving the pressure in gripping relation to each other. Therefore it will be seen that tweezers constructed in accordance with the foregoing will have gripping jaws at the ends thereof and that either pair of the jaws can be readily brought into gripping relation by simply applying pressure upon the bars adjacent to the jaws that it is desired to bring into gripping position.

The springs 12 have slots 15 through which the pins 9 extend. Said slots will permit the springs to elongate when pressure is applied onto the bars for the purpose of bringing the jaws into gripping relation.

Referring to the modified form of the invention shown in Figure 5, it consists of parallel bars 16 and jaws 17. The bars 16 are slidably connected by pins 18. The bars and pins are constructed similar to the bars 5 and pins 9. In this form of the invention wear plates 19 are secured to the opposing faces of the bars and jaws and a leaf spring 20 of the bowed type bears against one of the wear plates at its medial portion while the ends of the spring bear against the other wear plate. The ends of the spring are bifurcated to straddle the pins 18.

It is to be understood that the bars of either form of the invention may be constructed of any material suitable for the purpose and it is desirable that the springs be constructed of a high grade steel. Further it will be seen that the springs have a double utility in that they normally urge the bars apart and also provide gripping faces for the jaws in the form of the inven-

tion shown in Figures 1 to 4. Further, it will be seen that sufficient clearance is provided between the openings in one of the bars and the heads of the pins to give tolerance that permits the two jaws or companion jaws to come together in such a manner that the pressure is equalized on the object being gripped and also that the object may be gripped from the corners as well as at the sides of the jaws without damage, stress or strain being transmitted to any part of the device.

It is believed that the foregoing description, when taken in connection with the drawing will fully set forth the construction and advantages of this invention to those skilled in the art to which such a device relates, so that further detailed description will not be required.

Having described the invention, what is claimed as new is:

1. Tweezers comprising bars arranged in parallel relation and each having end portions shaped to form tapered jaws whereby the jaws at the ends of said bars may coact in pairs to grip an object, pins secured to one of said bars, the other of said bars having openings to slidably receive said pins with tolerance to permit the bars to have a limited pivotal movement with respect to each other, said pins including heads for limiting the separation of the bars, and spring means acting on said bars.

2. Tweezers comprising bars arranged in parallel relation and each having end portions shaped to form tapered jaws whereby the jaws at the ends of said bars may coact in pairs to grip an object, pins secured to one of said bars, the other of said bars having openings to slidably receive said pins with tolerance to permit the bars to have a limited pivotal movement with respect to each other, said pins including heads for limiting the separation of the bars, leaf springs

arranged between said bars with bearing contact with each other and including diverging portions lying on said jaws to present gripping faces to the jaws.

3. Tweezers comprising bars arranged in parallel relation and each having end portions shaped to form tapered jaws whereby the jaws at the ends of said bars may coact in pairs to grip an object, pins secured to one of said bars, the other of said bars having openings to slidably receive said pins with tolerance to permit the bars to have a limited pivotal movement with respect to each other, said pins including heads for limiting the separation of the bars, leaf springs arranged between said bars with bearing contact with each other and including diverging portions lying on said jaws to present gripping faces to the jaws, said springs having ribbed faces opposite the jaws with the ribs of one spring arranged at right angles to the ribs of the other spring.

4. Tweezers comprising bars arranged in parallel relation and each having end portions shaped to form tapered jaws whereby the jaws at the ends of said bars may coact in pairs to grip an object, pins secured to one of said bars, the other of said bars having openings to slidably receive said pins with tolerance to permit the bars to have limited pivotal movement with respect to each other, said pins including heads for limiting the separation of the bars, leaf springs arranged between said bars with bearing contact with each other and including diverging portions lying on said jaws to present gripping faces to the jaws, said springs having ribbed faces opposite the jaws with the ribs of one spring arranged at right angles to the ribs of the other spring, said springs having slots to slidably receive the pins.

ERLE MACGREGOR DARLING.