

March 3, 1964

T. LAMB
HANDLES

3,122,774

Filed Aug. 8, 1961

2 Sheets-Sheet 1

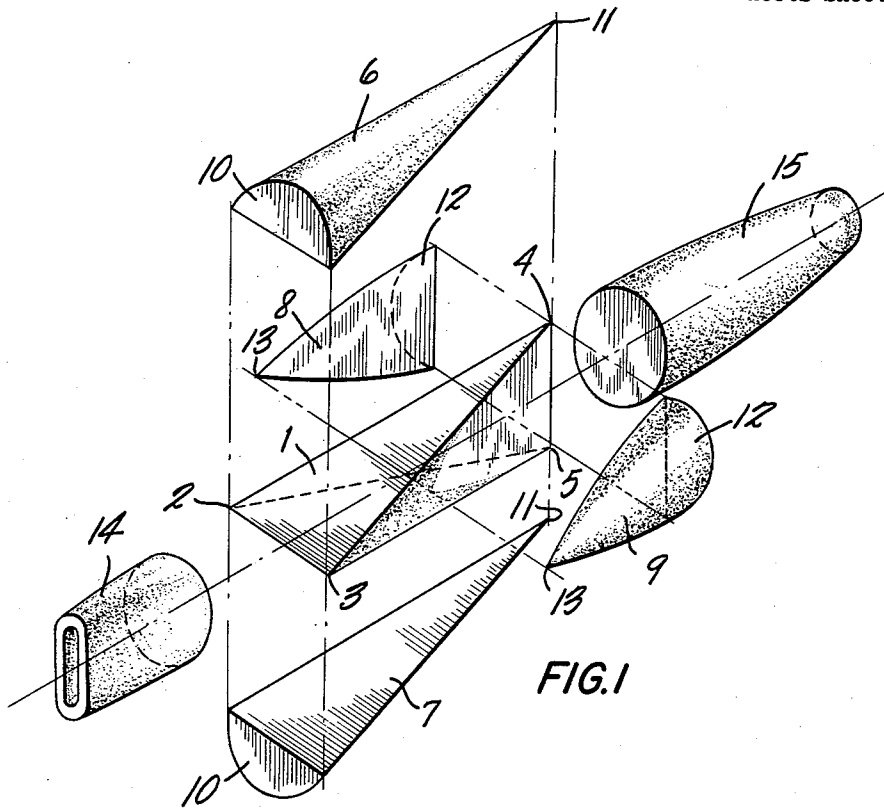


FIG. 1

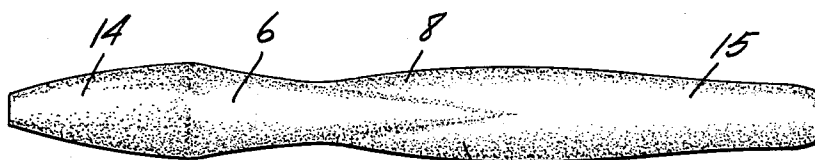


FIG. 2

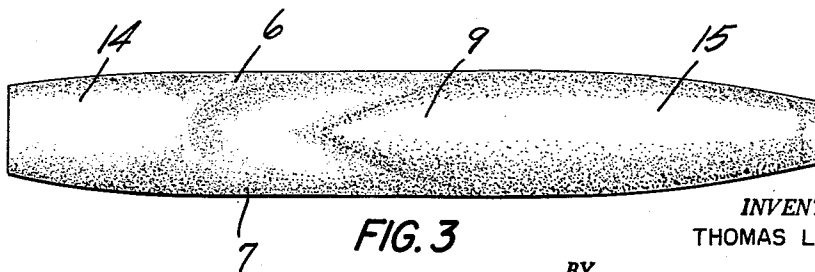


FIG. 3

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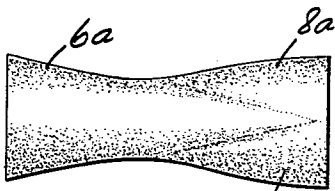


FIG. 4

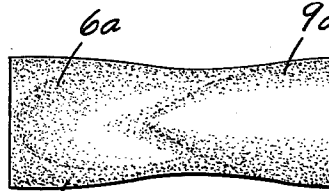


FIG. 5

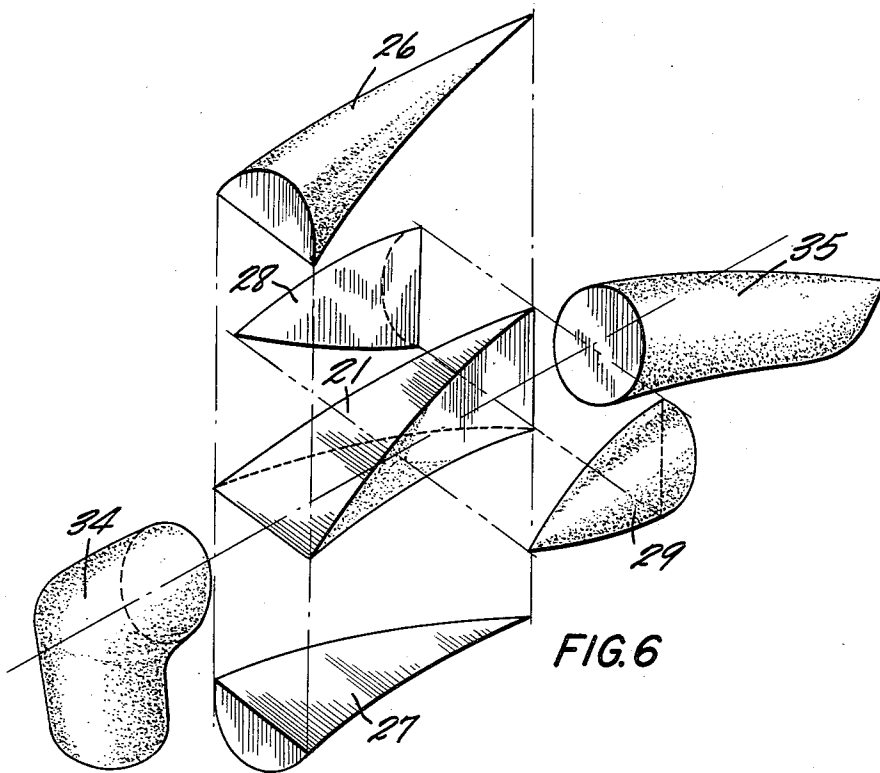


FIG. 6

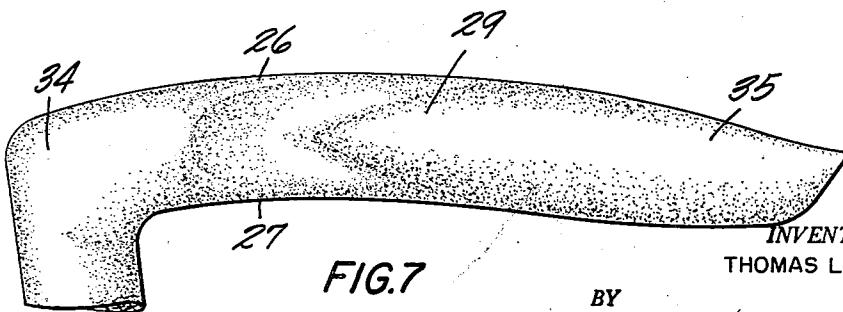


FIG. 7

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Filed Aug. 8, 1961, Ser. No. 130,169
7 Claims. (Cl. 16-110)

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This invention relates to handles.

It is an object of the invention to provide an all purpose handle which, when grasped by the human hand, may be used in various relationships to perform a variety of hand operations such as lifting, pushing, pulling, twisting, turning and combinations of such operations, and which enables the hand to perform such operations comfortably, efficiently and with a minimum of fatigue.

Other objects and advantages of the invention will appear hereinafter.

A preferred embodiment of the invention selected for purposes of illustration is shown in the accompanying drawings, in which

FIGURE 1 is an exploded perspective view of a handle embodying my invention.

FIGURE 2 is a top plan view of the handle.

FIGURE 3 is a side elevation.

FIGURES 4 and 5 are a top plan view and side elevation, respectively, of a modified form of handle.

FIGURES 6 and 7 are an exploded perspective view and a side elevation, respectively, of another modified form of handle.

Referring to the drawings, the essential features of the invention have been illustrated in FIG. 1 by splitting the handle into a plurality of pieces, shown in exploded form. The same handle, with the pieces assembled or formed integrally is shown in FIGS. 2 and 3.

As shown in the exploded view of FIG. 1, the handle comprises a tetrahedron 1, the faces of which are four isosceles triangles which are bounded by edges joining the apices of the isosceles triangles. Thus the four apices 2, 3, 4, 5 of the triangles are joined by edges which form a pair of isosceles triangles 2-4-3 and 2-5-3 having a common base 2-3, and an additional pair of isosceles triangles 4-2-5 and 4-3-5 having a common base 4-5. The legs of the triangles are substantially longer than their bases, and the apices of the pairs of triangles point in opposite directions. Thus, the apices of triangles 2-4-3 and 2-5-3 point in one direction, while the apices of triangles 4-3-5 and 4-2-5 point in the opposite direction. Also, the apices of each of the pairs of triangles are spaced apart a distance equal to the length of the common base of the other pair of triangles. For example, the apices 2 and 3 of the pair of triangles 4-2-5 and 4-3-5 are spaced apart by the length of the base common 2-3 of the other pair of triangles 2-4-3 and 2-5-3.

Each of the triangular surfaces of the tetrahedron 1 is covered, in whole or in part, by a conic member which is essentially a portion of a cone or conoid formed by taking a longitudinal section therethrough. Thus, for example, the conic members 6 and 7 are portions of cones, while members 8 and 9 are portions of conoids. In the embodiment illustrated, the conic members 6 and 7 are portions of cones each having a base 10, the diameter of which is approximately equal to the length of the base 2-3 of the pair of triangles 2-4-3 and 2-5-3. The height of each conic members from the base 10 to the apex 11 is substantially equal to the height of the triangles 2-4-3 and 2-5-3 from the base to the apex, so that the flat faces of the cones sections are triangles of the same size and shape as the pair of triangles 2-4-3 and 2-5-3.

On the other hand, in the embodiment illustrated, the conic members 8 and 9 are portions of conoids, and while

the diameter of the base 12 of each member is approximately equal to the length of the base 4-5 of the pair of triangles 4-2-5 and 4-3-5, the height of each of the conic members from the base to the apex 13 is substantially less than the height of the triangles 4-2-5 and 4-3-5 from the base to the apex. Hence, the flat faces of the conic members are of less area than that of the said triangles and they each have curved edges extending from the apex 13 to the base 12.

When the members 1, 6, 7, 8 and 9 are assembled as shown in FIGS. 2 and 3, the exposed surfaces form gripping surfaces for the hand, and particularly for the thumb, forefinger and middle finger of the hand. The hand grip portion of the handle above described constitutes the novel features of the invention, but if desired, the handle may be extended at either or both ends by appropriately shaped members adapted for connection to an article to be manipulated, and adapted, if desired, to provide additional gripping surfaces for engagement by the third and fourth fingers and by the heel of the hand. Typical extensions 14 and 15 are illustrated in FIGS. 1, 2 and 3, the extension 14 at the front end of the handle being adapted to receive the end of a member to be manipulated such as a tool, a knife blade or a shaft, for example. The extension 15 at the rear end of the handle provides additional gripping surfaces. The surfaces of the extensions may be shaped as desired, but are formed to merge smoothly into the adjacent surfaces of the handle.

While the conic members 6 and 7 of the preferred embodiment are portions of cones, while the conic members 8 and 9 are portions of conoids, it will be understood that members 6 and 7 may be sections of conoids, or members 8 and 9 may be sections of cones. Preferably, however, the members of each pair, such as the pair 6 and 7, or the pair 8 and 9, will be similar. Preferably, also, the height of the members of one pair, such as the pair 8 and 9, from base to apex, will be shorter than the height of the other pair, such as the pair 6 and 7. Preferably, also, the shorter pair will be located at the rear of the handle with the apex pointed toward the front, while the longer pair will be located at the front of the handle with the apex pointed toward the rear.

It will be understood that the exposed surfaces of each of the members 6, 7, 8 and 9 may be modified in order to fair into and merge smoothly with the exposed surface of the next adjacent member and with the exposed surface of the tetrahedron 1, or in order to conform to design requirements for specific purposes or uses. One example of a typical modification is illustrated in FIGS. 4 and 5 in which the surface contours of each of the conic members 6a, 7a, 8a and 9a have been modified to fair into and merge smoothly with the surfaces of the next adjacent member.

A different type of modification is illustrated in FIGS. 6 and 7. The handles of FIGS. 1 to 5 are intended primarily for uses in which the handle is to be rotated, as for example in the use of a screw driver, or for other uses in which a straight handle is required, such as tennis racquets, golf clubs, and fishing rods. In many cases, however, handles having a slightly curved longitudinal axis are required or are desirable, particularly when such handles are used for pushing, pulling or lifting operations. Such handles are frequently required for flatiron handles, door handles, electric tool handles, luggage handles and the like.

In FIGS. 6 and 7, I have illustrated the manner in which the invention may be modified to satisfy such requirements, merely by slightly curving the longitudinal axes of the tetrahedron 21 and of the conic members 26, 27, 28 and 29, as shown in the exploded view of FIG. 6. In FIGS. 6 and 7 are also illustrated typical extensions 34

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and 35 of such handle as might be suitable for use as a flatiron handle, for example.

It will be understood that the invention may be variously modified and embodied within the scope of the subjoined claims.

I claim as my invention:

1. A handle having a hand grip portion, said hand grip portion comprising a tetrahedron the faces of which are four isosceles triangles which are bounded by edges joining the apices of the triangles, the legs of the triangles being substantially longer than their bases, said triangles comprising two pairs in which the triangles of each pair have a common base and in which the apices of the triangles of one pair point in the opposite direction from the apices of the triangles of the other pair, the apices of the pairs of triangles being spaced apart a distance equal to the length of the common base of the other pair, each of the triangular surfaces being covered, at least in part, by a conic member having an exposed conic surface forming a gripping surface for a portion of the hand.

2. A handle as claimed in claim 1 in which certain of said conic members comprise a portion of a cone formed by taking a longitudinal section therethrough.

3. A handle as claimed in claim 1 in which certain of said conic members comprise a portion of a conoid formed by taking a longitudinal section therethrough.

4. A handle as claimed in claim 1 in which certain of said conic members comprise a portion of a cone formed

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by taking a longitudinal section therethrough and certain other of said conic members comprise a portion of a conoid formed by taking a longitudinal section therethrough.

5. A handle as claimed in claim 1 in which the height from base to apex of certain of said conic members is less than the height from base to apex of the triangles at least partially covered thereby, and in which a portion of said triangles is exposed as a gripping surface for a portion of the hand.

6. A handle as claimed in claim 1 in which certain of said conic members comprise a portion of a cone formed by taking a longitudinal section therethrough and certain other of said conic members comprise a portion of a conoid formed by taking a longitudinal section therethrough, and in which the height from base to apex of said conoid portions is less than the height from base to apex of the triangles at least partially covered thereby, and in which a portion of said triangles is exposed as a gripping surface for a portion of the hand.

7. A handle as claimed in claim 1 in which the longitudinal axis of said tetrahedron is curved slightly.

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