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(54) Improvements in or relating to paddles.

(57) In a kayak or canoe paddle, the paddle handle includes a handgrip 24 the longitudinal axis of which is inclined to the longitudinal axes of the tubular handle portions 30, 31 to which it is connected. The handgrip 24 is separately preformed from the rest of the handle, for example is injection moulded from plastics, and is provided at its end with spigots 28, 29 which engage within the ends of the tubular handle portions and are secured by adhesive and/or rivets. The handgrip 24 may be moulded in two separate parts which are bonded together along a longitudinal plane.

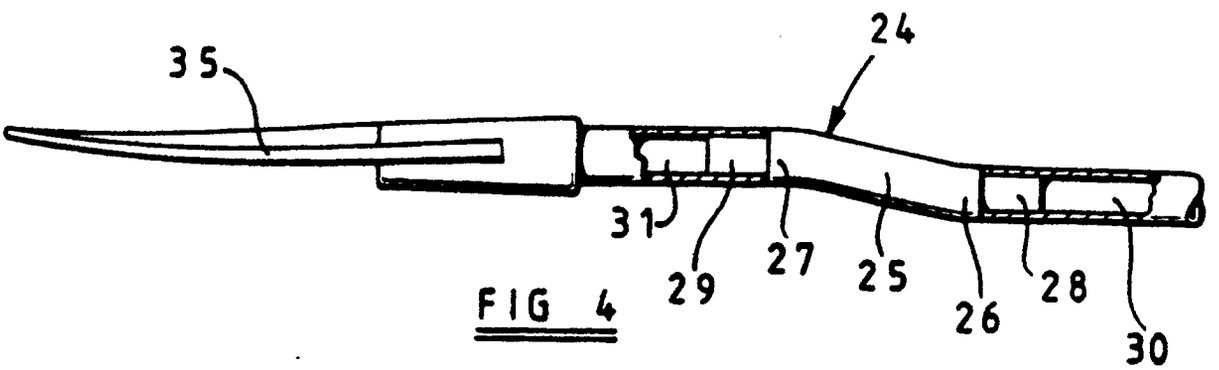

FIG 4

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The invention relates to paddles and is particularly applicable to two bladed kayak paddles, although it may also be applied to single bladed paddles.

When using a two bladed kayak paddle, the blade should ideally be dipped into the water at an angle which is as near vertical as possible. However, since the handle of the paddle is gripped at two spaced locations by the user's two hands the user cannot, without considerable stretching, dip each blade into the water completely vertically. It is also generally accepted that maximum power for propulsion is obtained if the user's hands are placed on the handle so that each blade enters the water to a depth in which it is completely covered and in which the blade moves through the water in a direction parallel, but backwards, with respect to the intended direction of travel of the canoe. Control is difficult to achieve in accordance with these parameters using a conventional paddle.

During movement of the paddle through the water, the user's wrist angles change as attempt is made to achieve the desired orientation and path of movement of the blade. As the wrist angles change, the transmission of power from the arm muscles changes. Using a conventional paddle, where the handle is a plain straight bar, when the user's wrists are in a position to achieve the required orientation and path of movement of the blade, they are not in the best position to achieve optimum transmission of power from the arm muscles to the paddle. Conversely, if the wrists are held in a position to achieve the optimum transmission of power, then the blade will not follow the optimum path of movement through the water. There are a number of other considerations, such as feathering the blade to reduce wind resistance when the blade is taken out of the water, which the user must also take into account.

In an improved type of paddle, the operating handle is provided with two handgrips spaced apart at opposite ends of an intermediate portion, the axis of each handgrip being inclined to the longitudinal axis of the intermediate portion, and one of the two handgrips, as viewed axially of the intermediate portion, being angularly offset with respect to the other. Similarly, in an improved single bladed paddle, such as may be used in a canoe or raft, the end of the handle opposite to the single blade is provided with a conventional T-shaped handle, but an inclined handgrip is provided nearer the single blade, the handgrip being angularly offset with respect to the T-shaped handgrip, as viewed axially of the handle. The provision of angled and offset handgrips allows optimum transmission of power from the muscles to the paddle, while at the same time allowing the optimum orientation and path of movement of the blade through the water. The present invention provides an advantageous form of construction for such paddles.

According to the invention there is provided an elongate paddle handle adapted to have a paddle blade mounted on at least one end thereof, the handle including two handgrips spaced apart along the length thereof, at least one of said handgrips comprising an elongate element which interconnects the adjacent ends of two longitudinally spaced portions of the handle and is inclined at an angle thereto, said handgrip element being preformed separately from at least one of said handle portions and having means for connecting it to the end of said handle portion.

Said handgrip element may be preformed separately from both of said two longitudinally spaced handle portions, and provided at each end thereof with means for connecting it to the ends of said handle portions respectively.

Alternatively said handgrip element may be integral with one of said handle portions and separately preformed from, and connected to, the other handle portion.

Said connecting means may comprise a spigot, at an end of the handgrip element, which is secured within a corresponding socket in the end of the adjacent handle portion. For example, each handle portion may be tubular, the spigot being secured within the open end thereof.

Preferably the spigot is inclined at an angle to a main portion of the handgrip element so as to extend substantially coaxially with the handle portion to which it is connected.

In an alternative arrangement the connecting means comprise a socket, at an end of the handgrip element, within which is received and secured the end of the adjacent handle portion.

In any of the above arrangements the handgrip element may be formed from plastics material. For example, it may be injection moulded.

The handgrip element may be formed in two separately preformed elongate parts which are bonded together along a longitudinally extending surface or surfaces thereof.

The handle portions may be formed from any suitable material, such as metal alloy, glass fibre or carbon fibre material.

The connecting means may be secured to the end of the adjacent handle portion by an adhesive, or by mechanical fixing means, or by a combination thereof.

In the case where the paddle is to be two bladed, having a paddle blade mounted on each end thereof, the handle may comprise a central handle portion connected by two spaced inclined handgrip elements to two opposite end handle portions respectively.

In the case where the paddle is to be a single

blade paddle, having a paddle blade mounted on only one end thereof, one of said handgrip elements may comprise a transverse T-bar mounted on the end of the handle opposite to said single blade, said inclined handgrip element being located nearer the blade. The T-bar may also be connected to the rest of the handle by an inclined portion so as to be offset with respect to the main part of the handle.

The invention includes within its scope a paddle comprising a handle of any of the forms referred to above with a paddle blade mounted on one or both ends thereof.

One advantage of the form of construction according to the invention is that the handle, or the entire paddle, may be provided as a kit of parts.

Accordingly, the invention includes within its scope a kit of parts for use in constructing a paddle, the kit of parts including at least two elongate handle portions and at least one separately preformed elongate handgrip element having at at least one end thereof means for connecting it to an end of one of said handle portions in such manner that, when so connected, the handgrip element is inclined at an angle to said handle portion.

Where the kit of parts is for constructing a two bladed paddle, it may include a central elongate handle portion and two shorter end handle portions, and two separately preformed elongate handgrip elements each having at each end thereof means for connecting it to ends of the central handle portion and one of said end handle portions respectively in such manner than when so connected each handgrip is inclined at an angle to said handle portions.

The handgrip elements may also be supplied singly or in pairs so that the purchaser may construct a paddle handle assembly using elongate handle parts of his own choice. Accordingly, therefore, the invention also includes within its scope a handgrip element, for use in the construction of a paddle, comprising an elongate main part having, at opposite ends thereof, end portions extending at an angle to the main part and each end portion being adapted for connection, in use, to the end of an elongate handle portion.

The following is more detailed description of specific embodiments of the invention, by way of example, reference being made to the accompanying drawings in which:

Figure 1 is a perspective view of a two bladed kayak paddle of a type to which the invention is applicable,

Figure 2 is a similar view of a similar paddle suitable for left-hand feathering,

Figure 3 is a perspective view of a single bladed canoe paddle,

Figure 4 is a part-sectional view, on an enlarged scale, of one end of a single bladed or two bladed paddle showing a method of construction according to the invention,

Figures 5 and 6 are similar views to Figure 4, showing alternative methods of construction, and

Figure 7 is a perspective exploded view showing a method of construction of a handgrip.

Referring to Figure 1, there is shown a two bladed kayak paddle comprising a central handle 10 on which are mounted blades 11 and 12 respectively.

The handle 10 comprises a central straight intermediate portion 13, opposite ends of which are connected by angled handgrips 14 and 15 to end handle portions 16 and 17 which carry the blades 11 and 12 respectively. The end portions 16 and 17 are parallel to the intermediate portion 13 but are offset therefrom by virtue of the angle of inclination of the handgrips 14 and 15.

The two angled handgrips 14 and 15 do not lie in the same plane but are angularly offset with respect to one another as viewed axially of the handle 10. Each handgrip may be inclined at up to 45° to the axis of the intermediate portion 13 and the two handgrips may be angularly offset with respect to one another by an angle of substantially 11°, as viewed axially. However, the invention is not limited to these particular angles and the angle of inclination in particular may be significantly less than 45° and may, for example, also be about 11°. This inclination and offset of the handgrips enables the paddle to be deployed in a manner which not only transmits the maximum power from the user's muscles to the blade, but also enables the blade to be held and traversed through the water in the optimum orientation.

The paddle of Figure 1 is configured to be suitable for "right-hand feathering". For "left-hand feathering" the relative orientations of the handgrips, and of the handgrips and blades, requires to be different, and a suitable configuration for this purpose is shown in Figure 2.

Figure 3 shows the principle applied to a single bladed canoe paddles In this case the handle 18 comprises a main straight portion 19 which is connected by an angled handgrip 20 to an end portion 21 on which the blade 22 is mounted. Mounted on the opposite end of the handle 18 to the blade 22 is a generally T-shaped end handgrip 23.

The handgrip 20 is inclined to the main handle portion 19 and end portion 21. Also, it does not lie in the same plane as the T-bar 23 but is offset angularly with respect to the T-bar as viewed axially of the handle, for example by about 11°.

The T-bar 23 may also be connected to the main straight portion 19 of the handle by a short inclined portion (not shown). This portion is preferably inclined in generally the opposite direction to

the handgrip 20 so as at least partly to compensate for the offset of the handgrip, and restore the T-bar to a position where it is in line with, or more nearly in line with, the blade 22.

In paddles of the kind shown in Figures 1, 2 and 3 the blades 11, 12 or 22 are normally separately preformed plastics mouldings formed with sockets into which the ends of the handle 10 or 18 are secured. The handles themselves are usually formed from tubular metal alloy. Each handle may be formed in one piece, in which case it is bent from a single length of tubing, using a jig, or the handle may be fabricated from lengths of tubing welded together.

Both such methods of construction are comparatively costly and difficulty may be met in achieving accurately the required angular orientation of the handgrips. In the case where the handle is bent from a single length of tubing, it will normally require to be bent on a fixed jig if the handles are to be produced in quantity. The jig will predetermine both the angles of inclination and offset of the handgrips and if variations in such angles of inclination and offset are required, a new jig will require to be made for each different set of parameters. Also, there is no scope for slight adjustment of the orientation of the handgrips to suit a particular user. Similar limitations apply in the case where the different sections of the handle are formed from separate lengths of tubing which are subsequently welded together. Using such methods of construction, it is also apparent that the handle also can only be made from materials which may be bent or welded.

According to the present invention, the angled handgrips of paddles of the above kind comprise elements which are separately preformed and are provided at their ends with connecting means whereby the handgrip elements may be secured to the ends of separately formed handle elements. Arrangements according to the invention are shown, by way of example, in Figures 4, 5, 6 and 7.

Referring to Figure 4, each angled handgrip is provided by a separate handgrip element 24 comprising an elongate main part 25 having at opposite ends thereof short angled end parts 26, 27 from which project smaller diameter spigots 28 and 29 respectively. The handgrip element 24 may conveniently be injection moulded from plastics material although other methods of manufacture and materials are possible. The remainder of the handle comprises tubular elements 30, 31 of circular cross-section. The elements 30 and 31 may be formed from metal alloy, glass fibre or carbon fibre materials.

The tubular handle elements will normally be of circular external and internal cross-section and the handgrip element 24 may also be of circular cross-section of substantially equal diameter to the external diameter of the tubes 30, 31. However, the elongate part 25 of the handgrip element may be otherwise contoured to provided a comfortable grip for the user. For example, it may be oval in cross-section.

The spigots 28 and 29 are of such diameter as to fit snugly within the ends of the tubes 30 and 31 respectively. The spigots may be secured within the ends of the tubes by any suitable method. For example, they may be secured by an adhesive, such as an epoxy resin adhesive. Alternatively or additionally, pins or rivets (not shown) may pass through the walls of the tubing and the spigots to secure them together.

Figure 4 shows the preferred form of construction, but alternative possible constructions are shown in Figures 5 and 6. In Figure 5 the handgrip element 32 is formed at its ends with tubular sockets 33, 34 into which are received and secured the ends of the tubular handle elements 30 and 31 respectively. Again the tubular elements may be secured within the sockets by adhesive, pins or rivets or combinations thereof. In the case where the handgrip elements 24, 32, and the tubular handle elements, are formed from metal, the components could be brazed, soldered or welded together.

In the arrangements of Figures 4 and 5 the paddle blades, indicated at 35, are separately preformed and secured to the end portions 31 of the handle in the conventional manner, at the required angular orientation with respect to the handgrips. In the alternative form of construction shown in Figure 6, the tubular end portion 36 of the handle is integrally formed with the paddle blade 35 instead of being separately formed and secured within a socket in the blade. The handgrip element, indicated at 37 in Figure 6, is still separately preformed according to the present invention and has connecting means (not shown in Figure 6) securing it to the end of the tubular handle portion 36 and the main handle portion 30 by any of the means covered by the invention.

Alternatively, the short tubular end portion 36 of the handle may be integrally formed with the handgrip element 37, instead of being integrally formed with the blade, and in this case the end of the handle portion 36 is received and secured within a socket in the blade 35 in the normal way.

As previously mentioned, the handgrips may be formed from plastics, for example by injection moulding. However, if each handgrip is injection moulded in one piece it will normally require to be substantially solid in order to provide the necessary smooth continuous outer surface. Not only may it be difficult to mould such a substantial component

with the required accuracy, it may also be expensive due to the large body of plastics material required. Also, the weight of the handgrip may be excessive.

Accordingly, as shown in Figure 7, the handgrip, for example of the kind indicated at 25 in Figure 4, may be moulded from two hollow parts 26 and 27 which are subsequently bonded together to form the complete handgrip. The two halves of the handgrip may be bonded together by an adhesive or by heat welding. Not only are the halves of the handgrip then easier to mould than the entire item, they also allow the completed handgrip to be hollow and thus more economical in plastics material as well as being lighter.

The two halves 26 and 27 may be identical since two such identical halves can be fitted together face-to-face by reversing one part. Each part may be formed with suitable locating projections and apertures (not shown) so located as to mate with corresponding apertures and projections on an identical part.

The complete paddle, including the blades, may be assembled in the factory and supplied as a finished unit. However, just the handle assembly itself may be made and sold, so that the purchaser may fit blades of his own choice.

Alternatively, each handle assembly may be supplied as a kit of parts to be assembled by the purchaser. For example, in the case of a two bladed paddle handle, the purchaser is supplied with the parts 13, 14, 15, 16 and 17, these parts being of any of the forms according to the present invention, and may assemble them himself. The handgrip elements and tubular elements may be suitably marked to indicate the required relative orientations of the handgrips with respect to the tubular elements. However, self-assembly by the purchaser also allows the possibility of the user adjusting the angular offset between the handgrips, as viewed axially of the handle, to suit particular requirements.

Since suitable tubing for the straight parts of the handles is readily available, the preformed handgrips, such as 24 and 32, may be supplied by themselves so that the purchaser may supply the other parts required for the paddle and assemble the paddle himself.

Claims

1. An elongate paddle handle (10) adapted to have a paddle blade mounted on at least one end thereof, the handle including two handgrips (14, 15) spaced apart along the length thereof, at least one of said handgrips comprising an elongate element (24, Figure 4) which interconnects the adjacent ends of two longitudinally spaced portions (30, 31) of the handle and is inclined at an angle thereto, characterised in that said handgrip element (24) is preformed separately from at least one of said handle portions (30, 31) and has means (28, 29) for connecting it to the end of said handle portion.

2. An elongate paddle handle according to Claim 1, characterised in that said handgrip element (24) is preformed separately from both of said two longitudinally spaced handle portions (30, 31) and is provided at each end thereof with means (28, 29) for connecting it to the ends of said handle portions (30, 31) respectively.

3. An elongate paddle handle according to Claim 1 or Claim 2, characterised in that said connecting means comprise a spigot (28, 29), at an end of the handgrip element (24), which is secured within a corresponding socket in the end of the adjacent, handle portion (30, 31).

4. An elongate paddle handle according to Claim 3, wherein each handle portion (30, 31) is tubular and the spigot is secured within the open end thereof.

5. An elongate paddle handle according to any of Claims 1 to 4, characterised in that the handgrip element (24) is formed from plastics material.

6. An elongate paddle handle according to Claim 5, characterised in that the handgrip element (24) is formed in two separately preformed elongate parts (26, 27, Figure 7) which are bonded together along a longitudinally extending surface or surfaces thereof.

7. An elongate paddle handle according to any of Claims 1 to 6, characterised in that the handle comprises a central handle portion (13) connected by two spaced inclined handgrip elements (14, 15) to two opposite end handle portions (16, 17) respectively.

8. An elongate paddle handle according to any of Claims 1 to 7, characterised in that one of said handgrip elements comprises a transverse T-bar (23, Figure 3) mounted on the end of the handle opposite to a single blade (22), said inclined handgrip element (20) being located nearer the blade.

9. A kit of parts for use in constructing a paddle, the kit of parts including at least two elongate handle portions (30, 31) and at least one separately preformed elongate handgrip element (24) having at least one end thereof means (28, 29) for connecting it to an end of one of said handle portions in such manner that, when so connected, the handgrip element (24) is inclined at an angle to said handle portion.

10. A handgrip element (24), for use in the construction of a paddle, comprising an elongate main part (25) having, at opposite ends thereof, end portions (26, 27, 28, 29) extending at an angle to the main part (25) and each end portion being adapted for connection, in use, to the end of an

elongate handle portion (30, 31).

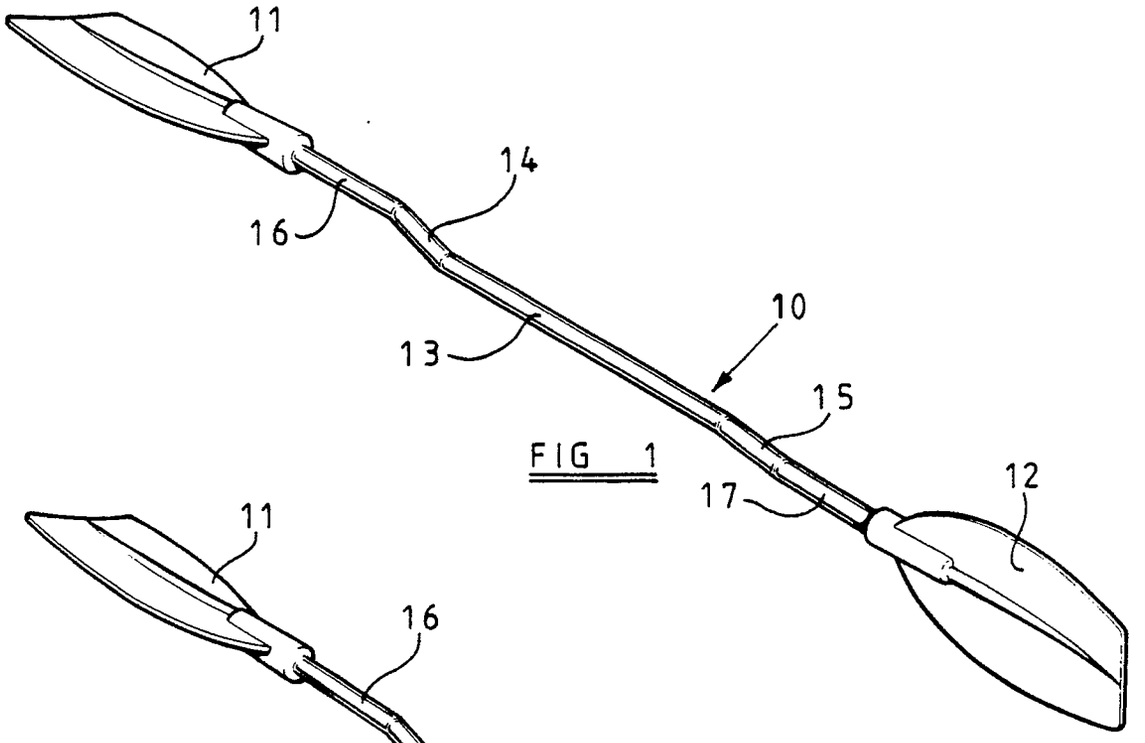

FIG 1

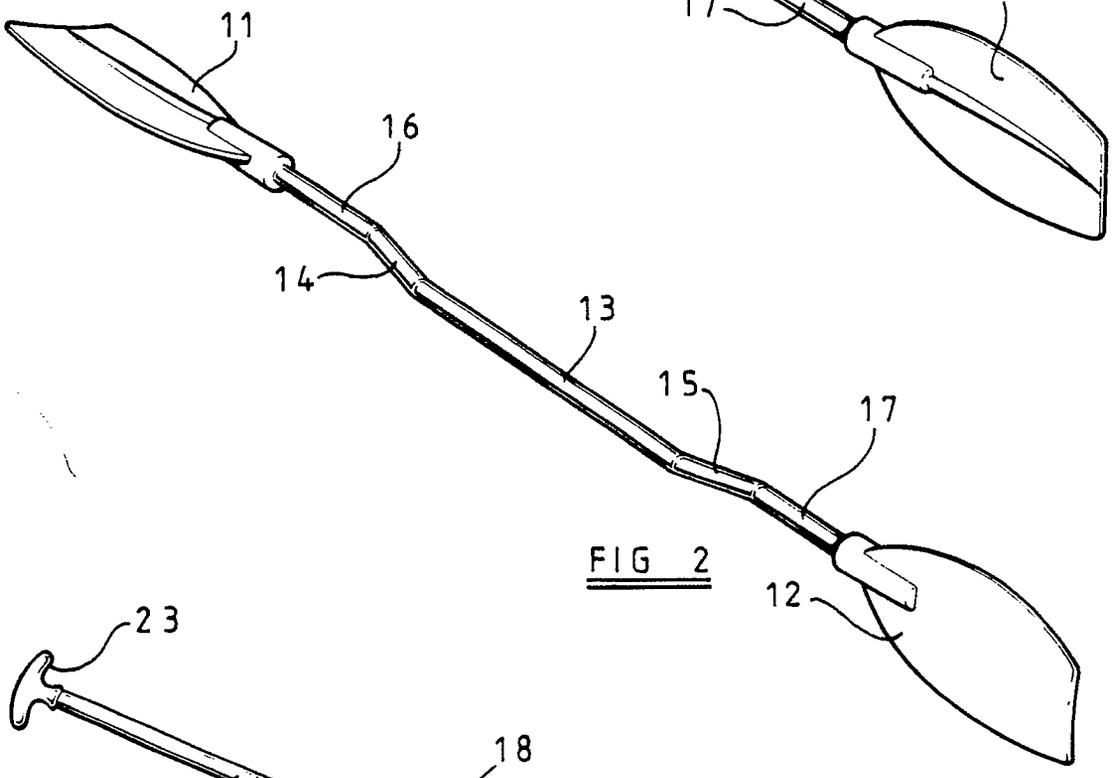

FIG 2

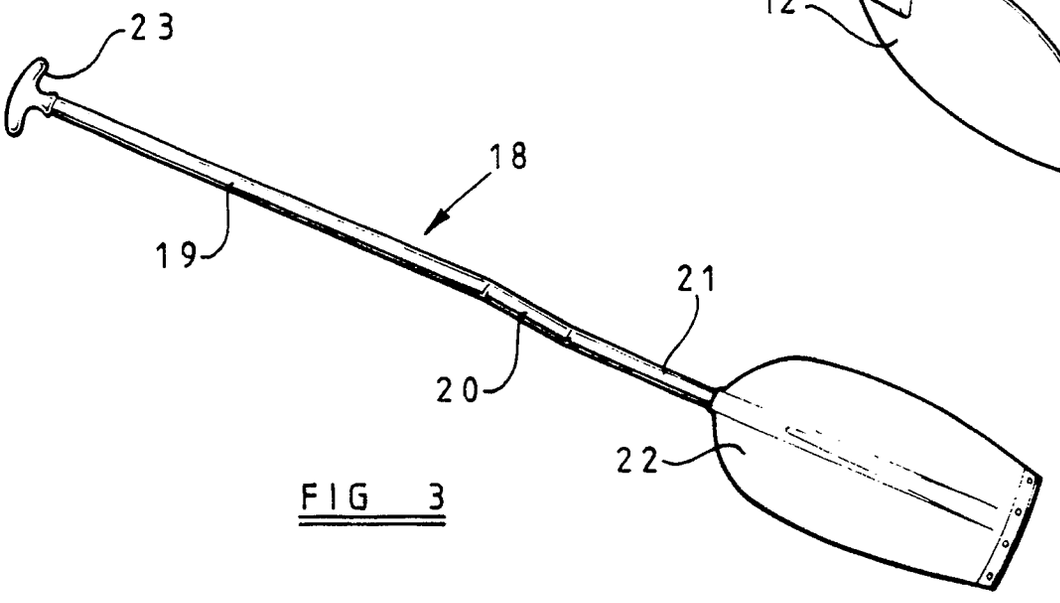

FIG 3

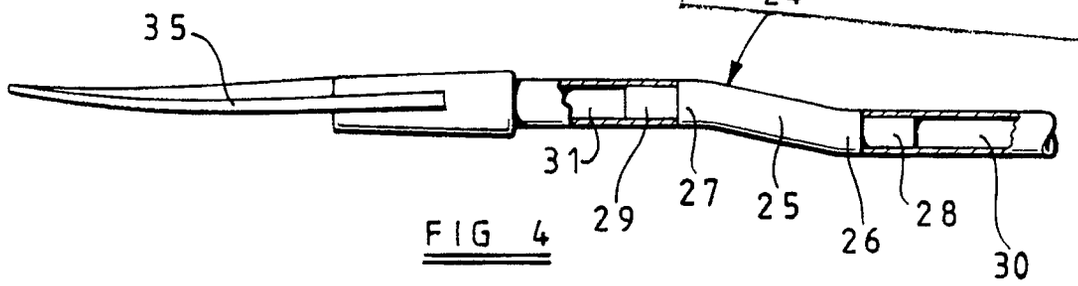

FIG 4

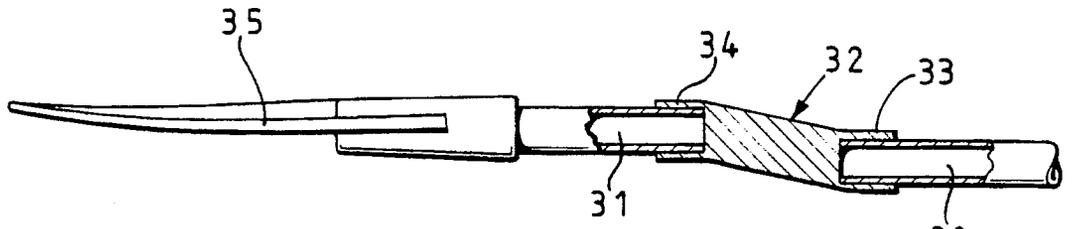

FIG 5

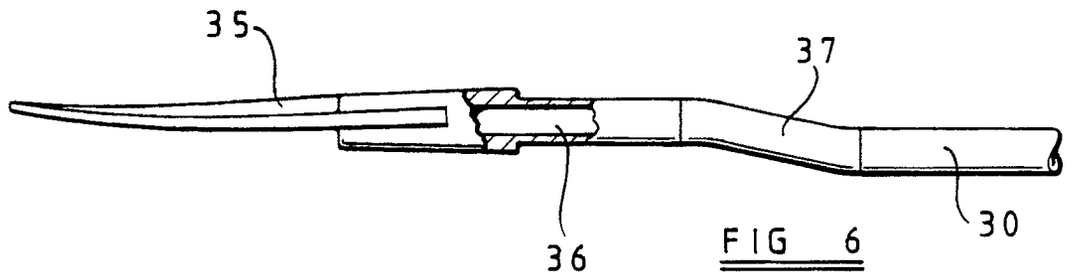

FIG 6

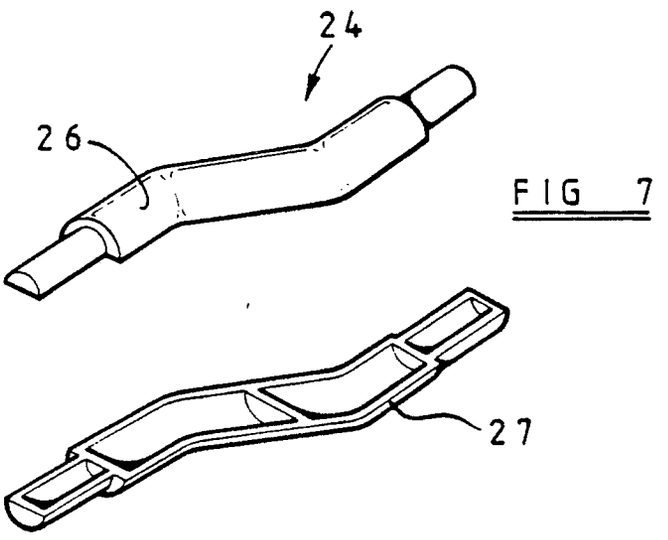

FIG 7

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 30 8222

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	US-A-4 673 361 (HARVEY) * The whole document * ---	1-10	B 63 H 16/04
Y	FR-A-2 548 547 (SITGER) * Figures 4,5 * ---	1-10	
X	US-A-2 913 727 (SMITH) * Figures 1,2,4,5 * ---	1,2,7,9	
X	US-A-2 367 222 (KURTZ) * Figures 2,8,9; column 2, lines 39-48 * ---	1,2	
A	US-A-4 303 402 (GOODING) * Abstract; figures 1-3 * -----	3,5,8	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 63 H
B 21 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19-10-1990	HUNT A.E.

CATEGORY OF CITED DOCUMENTS

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