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(54) A SAILBOARD

(71) We, MISTRAL WINDSURFING AG, A Swiss Company, of CH-8303 Nürensdorf-Zürich, Switzerland, do hereby declare the invention, for which we pray that a Patent
 5 may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to a sailboard or
 10 windsurfer (hereinafter referred to simply as a sailboard) having an unstayed rig, which sailboard is of the kind comprising a mast connected via a universal joint to a surfboard having a retractable keel, the
 15 sail being attached between the mast and nocks of a boom used for the retention and adjustment of the mast and sail, a lower bolt-rope of the sail extending from the nocks at an inclination downwards to the mast, and the boom being fixed to the mast
 20 above the neck of the sail. In principle, sailboards of this kind have been known for many years. ("Popular Science", August 1965, Pages 138-141, and US Patent No.
 25 3 487 800).

Normally, sailboards of the kind specified are sailed by one person with one sail. So-called tandem surfers, which are about twice as long as a single sailboard, are also
 30 known and are controlled with two sails by two persons standing one behind the other. However, these tandem surfers are about 7 to 8 m in length and therefore very clumsy for transportation. Moreover,
 35 the prior art tandem surfers are not nearly suited to all possible kinds of wind surfing. As a rule the prior art sailboards are made of foamed plastics with a hard outer skin. Sailboards made of wood also form part
 40 of the prior art.

It is an object of the invention to provide an improved sailboard so as to eliminate problems of transportation and handling and to enable a tandem surfer affording
 45 new sporting possibilities to be formed

from identical sailboards by very simple means.

Accordingly, the present invention provides a sailboard having an unstayed rig, which sailboard comprises a mast connect-
 50 ed via a universal joint to a surfboard having a retractable keel, the sail being attached between the mast and nocks of a boom used for the retention and adjustment of the mast and sail, a lower bolt-rope of the
 55 sail extending from the nocks at an inclination downwards to the mast, and the boom being fixed to the mast above the neck of the sail, in which sailboard said surfboard is provided with a coupling por-
 60 tion having a coupling member for reception by the coupling portion of a similar surfboard and for coupling to said similar surfboard to form a composite sailboard.

In one particularly preferred embodiment
 65 of the invention the coupling portion is so disposed on the stern of the surfboard that two surfboards can be coupled stern to stern. This more particularly affords the advantage that the sailboard can optionally
 70 be sailed as an individual board while at the same time offering the possibility of forming a tandem sailboard by coupling two separate sailboards, an additional advantage being that the resulting tandem
 75 sailboard has two bow tips. Consequently, unlike conventional sailing boats, no tack is required to change direction, the tandem sailboard constructed according to the invention merely changing its sailing direction
 80 instead.

Due to the considerable length of a tandem sailboard made up of two sailboards in accordance with the invention, advantageously the coupling portion is so con-
 85 structed as to have a limited resilience. Preferably, the coupling member is made of a tough resilient material.

In a possible alternative embodiment the coupling portion can be formed by one or
 90

more flexible members.

According to another alternative, the coupling member comprises springs pressing the ends of the surfboards against one another.

According to another preferred feature, the ends of the surfboards are made of the tough resilient material and can be interconnected via attaching means, and the ends of the surfboards are formed with a central slot which forms the keel box for the resulting tandem sailboard when the surfboards are interconnected.

In a further embodiment of the invention, the coupling member has a cross-section corresponding to the cross-section of the surfboard and at least partially contains the keel box of the tandem sailboard when formed.

In order that the invention may be readily understood, embodiments thereof will now be described, by way of example, with reference to the accompanying drawings, wherein:

FIGURE 1 is a diagrammatic side elevation of two sailboards embodying the invention coupled together;

FIGURE 2 is a side elevation of one of the sailboards illustrated in Figure 1;

FIGURE 3 is a diagrammatic illustration of a coupling member;

FIGURE 4 is a detailed side elevation of a single sailboard;

FIGURE 5 is a side elevation of a first embodiment of the bow of a single sailboard;

FIGURE 6 is a section, taken on the line VI-VI in Figure 5;

FIGURE 7 is a diagrammatic partially sectioned side elevation of a further embodiment of the bow of a single sailboard;

FIGURE 8 is a sectional side elevation of the stern of a single sailboard with the coupling portion and a stern extension coupled thereto;

FIGURE 9 is a plan view of the surfboard of a sailboard embodying the invention;

FIGURE 10 is a diagrammatic longitudinal sectional view of a surfboard, showing advantageous details of a sailboard embodying the invention;

FIGURE 11 is a perspective, partially sectioned side elevation of a connection for the universal joint of a mast foot;

FIGURE 12 is a sectional view of a further embodiment of the coupling portion of a sailboard;

FIGURE 13 is a view like Figure 12 of a further embodiment of the coupling portion;

FIGURE 14 is a view like Figure 12 of a further embodiment of the coupling portion;

FIGURE 15 is a plan view of another

embodiment of the coupling portion;

FIGURE 16 is a side elevation of a further embodiment of the coupling portion;

FIGURE 17 is a sectional view of a variant embodiment of a coupling portion;

FIGURES 18 and 19 are sectional plan views and side elevations respectively of details of another embodiment of the coupling portion;

FIGURE 20 is a perspective view of another embodiment of the coupling portion;

FIGURE 21 shows another way of coupling the two surfboard ends;

FIGURE 22 shows another embodiment of a coupling portion;

FIGURE 23 is a sectional view of the bow area of a sailboard with a bow attachment;

FIGURE 24 is a lateral sectional view of a coupling portion with a retractable keel mounted therein; and

FIGURE 25 is a section taken along the line XXVI-XXVI in Figure 25.

Figure 1 shows two identical sailboards 1, 2 coupled to one another stern to stern to form a tandem sailboard. The basic components of a single sailboard are illustrated diagrammatically in Figure 2. A sailboard of this kind consists of a surfboard 3 and sail 4. The sail 4 is attached to a mast 5 on which a boom 6 is so fixed above the neck of the sail that the lower bolt-rope 7 of the sail 4 extends from the nocks of the boom 6 at an inclination downwards to the mast. As in the prior art embodiments of sailboards, the boom 6 takes the form of a double forked boom (wishbone), so that the boom 6 can be seized and adjusted from both sides of the sail. The mast 5 is connected to the surfboard 3 by a universal joint 8, so that the mast can be moved freely in every direction, while nevertheless the connection between the mast and the surfboard remains preserved. The surfboard 3 also has a keel box 9 receiving a keel 10. Also disposed on the stern of the surfboard 3 is a fin 11 which can be hinged upwardly in the preferred embodiment of the invention. The joint 8 is connected to a member 12 which forms the mast foot and is received by connections 13 provided in the surfboard.

The surfboard 3 diagrammatically illustrated in Figures 1-3 also has in the bow region another keel device which can take the form of a rib 14 (Figure 1) or a hinged retractable fin 15 (Figure 2).

Figure 3 is a diagrammatic view of the basic construction of a coupling member of tough resilient material. The coupling member 16 has a keel box 17 which at least partially receives the keel 18 of a tandem sailboard formed by connecting two individual sailboards with the member 16. As

shown in Figure 2, a recess 19 can also be provided at the stern of each individual surfboard 3 to enable the keel 18 to be inserted and at the same time ensure lateral stability when the sailboards 1, 2 are coupled to one another.

A stepped zone 20 of the surfboard 3 shown in Figure 2 is called the coupling portion and is used for the reception and attachment of the coupling member 16.

Figure 4 is a side elevation showing further details of a sailboard of the kind described hereinbefore; the embodiment illustrated in Figure 4 has a cover portion 21 over the coupling zone 20 in case a sailboard of this kind is used individually.

Figures 5 and 6 show in further detail a first embodiment of a keel device provided at the bow of a sailboard embodying the invention and in this case taking the form of a rib or keel portion 14.

Figure 7 shows a variant embodiment of a surfboard 3 on which the keel device takes the form of a hinged retractable fin 15.

When two sailboards 1, 2 are coupled to one another, the rib 14 or fin 15 performs the function of the fin 11 of an individual sailboard, since it ensures extra lateral guidance of the tandem sailboard formed. Since the tandem sailboard formed by two sailboards embodying the invention can be sailed both forward and in reverse, the embodiment illustrated in Figures 5 and 6 seems especially advantageous, since no separate adjustment has to be made. Since moreover sailboards of this kind very easily start to skin over the water, the bow rising out of the water, the fin on the bows is no hindrance whatever either during forward sailing or when an individual sailboard is used.

Figure 8 is a sectional side elevation of the stern zone of a sailboard 1 showing the stern fin 11 in the upwardly hinged position, as when the sailboards 1, 2 are sailed coupled to one another. For use as an individual sailboard, coupled on in the coupling zone 20 of the surfboard 3 is a stern extension 22 which, for example, has pins engaging by a press fit in bores 23, 24 in the stern of the surfboard 3. Figure 8 also shows in chain lines the cover portion 21 of the coupling zone 20 in the embodiment illustrated in Figure 4, which can be similarly connected to the surfboard 3.

Figure 9 is a plan view of a sailboard embodying the invention, showing the position of the various connections 13 for the foot 12 of the mast 5. The connections comprise two connections 13, 13' which are disposed one behind the other forward of the keel box 9 and enable the mast foot to adopt various positions during individual surfing, to achieve optimum trim. Disposed

aft of the keel box 9 is a further connection 13'' which receives the mast foot 12 when two sailboards are coupled to one another and during use as a tandem sailboard with two rigs. A further connection 13''' is provided adjacent the coupling portion 20, so that two surfboards 3 coupled to one another can be sailed by one person using a single rig.

Figure 10 is a diagrammatic sectional side elevation showing how the surfboard, usually made of plastics, may have a comparatively hard, impact-resistant shell 25 enclosing foamed plastics 26 inside. Figure 10 further shows a cover 27 by means of which the keel box 9 of the individual sailboard 3 can be closed from below, when two sailboards are coupled to one another to form a tandem surfer.

Figure 11 shows details of the construction of the connections 13 for receiving the mast foot 12.

Figure 12 is a sectional view showing two surfboards 3 connected stern to stern by means of a coupling member 16. The coupling member 16 is connected to the surfboards 3 via screws 28, 29 or the like and partly forms the keel box 17 for a tandem sailboard, the keel 18 of the tandem sailboard in this case being also guided through recesses 19 in the coupling zone 20 of the interconnected surfboards.

Figure 13 is a sectional view similar to Figure 12, but taken in a different sectional plane, the difference from the embodiment illustrated in Figure 12 being that the keel box 17 is completely formed in the coupling member 16.

In the embodiment illustrated in Figure 14 the coupling member is formed by a dovetailed shaped member which slots into corresponding mortices in the coupling zones 20 of the surfboards 3 to connect the zones 20 positively to one another. The coupling member 16 is inserted from the side of the surfboards 3 and again partly forms the keel box 17 of the tandem sailboard.

In the embodiment of which a plan view is shown in Figure 15, the coupling member 16 again takes the form of a member which interconnects positively the coupling zones 20 of the surfboards 3 but which in this case is inserted from above into the coupling zones 20 of the surfboards 3 and contains the whole of the keel box 17 for the keel 18 of the tandem sailboard.

Figure 16 is a side elevation of an articulated coupling member 16 built up of members 30 coupled together with provision for limited relative movement, the coupling member 3 being fixed via screws or similar attaching means to the coupling zones 20 of the surfboards 3.

It should be pointed out that due to the

considerable length of the tandem sailboard formed by two sailboards, in all the embodiments of the coupling member there must be a certain resilience at the connecting place, to prevent the completed tandem sailboard from breaking apart. To this end the coupling member 16 is either made of a tough resilient material or formed directly as a flexible member, as in the embodiment illustrated in Figure 16.

Figure 17 illustrates an embodiment of the coupling member 16 in which resilience is ensured by two springs 31 which press the stems of the sailboards 3 against one another and are received in recesses 32 in the coupling zone 20 of the surfboards. Also provided on the stems of the surfboards 3 are respective strips 33 of a tough resilient material which enable the surfboards 3 to move against one another without damage. In the embodiment illustrated the springs 31 bear against metal plates 34 and press the two surfboards 3 against one another with a pressure such that movement of the surfboards apart takes place only under considerable loadings.

Figures 18 and 19 show details of a possible way of connecting the coupling members 16 by means of screws or other attaching means; the embodiment illustrated in Figures 18 and 19 is advantageous, since the foamed core 26 of such surfboards is normally too weak to take the required stress due to the considerable overall length in the embodiment illustrated the screwed connections 35, 36 or the like for the connecting means to the coupling members 16 are formed in a middle plate 37 and are connected via tie-rods 38, 39 and plates 40 on the one hand to the foamed core 26 and on the other to the hard outer shell 25 of the surfboard 3. The tie-rods 38, 39 and the plates 40 are preferably made of aluminium. However, it is particularly important to ensure a satisfactory connection between the plates 40 and the hard outer shell 25, so that the loads occurring are transmitted to the most stable zone of the surfboard 3.

Figure 20 is a perspective view of a coupling member 16 such as can, for instance, be connected to the surfboards of Figure 9 to couple two such surfboards to one another. The coupling member 16 shown in Figure 20, whose cross-section corresponds to the cross-section of the surfboard 3, has two steps 41 which extend over its width and whose dimensions correspond to the stepping of the surfboard 3 in the zone of the coupling portion 20. On its upper surface the coupling member 16 shown in Figure 20 has a depression 42 which forms the access to bores or apertures 43, 44 by means of which the coupling

member 16 is connected via attaching means (not shown) to the coupling portion 20 of the surfboards 3. Disposed in the bottom of the depression 42 is the keel box 17 for the keel 18 of the completed tandem sailboard. In this embodiment the keel 18 of the tandem sailboard preferably has an enlarged head zone whose dimensions substantially correspond to the dimensions of the depression 42, so that a smooth surface is again produced when the keel is inserted. Instead of the enlarged head zone, a cover plate (not shown) can be inserted in the depression 42, the cover plate having a slot corresponding to the keel box 17, so that the keel 18 can be partly or completely retracted to correspond to the sailing conditions.

Figure 21 shows a further variant of the connection between two sailboards to form a tandem sailboard. As illustrated, in this case the majority of the keel box 17 is formed by the slots 19 in the coupling portion 20 of the surfboards 3. In this embodiment the coupling member 16 is constructed in two parts, each part, which is made of a tough resilient material to limit the mobility of this zone, is disposed on one side of the keel box 17. Each of the two components of the coupling member 16 comprises one or two plates of the tough resilient material, into which screws 45 are cast or which are attached in some other way. Disposed in the coupling portion 20 of the surfboards 3 at a distance from the rear edge are vertical depressions 46 having bores in the rear wall corresponding to the screws 45. To couple two surfboards 3 together, the projecting ends of the screws 45 are inserted on both sides through the bores in the rear wall of the apertures 46 and secured from the direction of the apertures 46 by nuts or the like, so that the result again is a flexible connection. Alternatively, the two plates of tough resilient material on both sides of the keel box 17 can form a component of the surfboard 3, so that all that has to be done is to insert the screws 45 to couple two surfboards 3 to one another.

The embodiment illustrated in Figure 22 differs from that illustrated in Figure 21 by the feature that the construction of the coupling member 16 described in relation to the Figure 21 embodiment is disposed in the stepping at the stern of the surfboard. In the embodiment illustrated in Figure 22 the coupling member 16 is then completed by an insert member 47 which fills the space formed by the two steps at the stern of the surfboards 3 and contributes towards the security of the connection. The insert member 47 can be connected to the two surfboards 3 via a simple pin connection with a clamp fit. To this end the coupling

portion 20 of the surfboards 3 are formed with corresponding sleeve-like depressions 48 in which preferably pins 49, constructed in the form of slotted sleeves, of the insert 5 member 47 engage.

Figure 23 is another diagrammatic sectioned side elevation of a surfboard 3 with a wave-breaking bow attachment 51, which can be advantageous due to the high speeds 10 which tandem sailboards can reach.

Figure 24 illustrates an embodiment of the coupling member 16 in which the keel 18 for the tandem sailboard is a component of the coupling member 16 and is mounted 15 with provision for pivoting in both directions in the keel box 17. As a result, for each selected direction of sailing of the tandem sailboard the keel 18 can be pivoted into the optimum, slightly backwardly 20 inclined position, and this can be done from the top of the coupling member 16.

Since the tandem sailboard can be sailed in both directions — i.e., forward and in reverse — advantageously the keel 18 is 25 profiled on both sides for both sailing directions, as shown in Figure 25.

For the sake of completeness it should be pointed out that the completed tandem sailboard made up of two sailboards 1, 2 30 can also have extra connections 13 for mast feet 12, so that the tandem sailboard can be sailed if necessary with 3 or even 4 rigs.

WHAT WE CLAIM IS:

35 1. A sailboard having an unstayed rig, which sailboard comprises a mast connected via a universal joint to a surfboard having a retractable keel, the sail being attached between the mast and nocks of a 40 boom used for the retention and adjustment of the mast and sail, a lower bolt-rope of the sail extending from the nocks at an inclination downwards to the mast, and the boom being fixed to the mast above 45 the neck of the sail, in which sailboard said surfboard is provided with a coupling portion having a coupling member for reception by the coupling portion of a similar surfboard for coupling to said similar surf- 50 board to form a composite sailboard.

2. A sailboard according to claim 1, wherein the coupling portion is disposed at the stern of the surfboard for coupling said surfboard to said similar surfboard stern 55 to stern to form a tandem sailboard.

3. A sailboard according to claim 1 or 2, wherein said coupling member has a limited resilience.

4. A sailboard according to claim 3, 60 wherein said coupling member is made of

a tough resilient material.

5. A sailboard according to claim 3, wherein said coupling member comprises a plurality of articulated members.

6. A sailboard according to claim 2, 65 wherein said coupling member comprises springs for resiliently pressing the sterns of said surfboards against one another.

7. A sailboard according to claim 2, 70 wherein a stern portion of said surfboard is made of tough resilient material for coupling to the stern of said similar surfboard by attaching means, the stern of said surfboard being formed with a central longitudinally extending slot forming with 75 a corresponding slot of said similar surfboard a keel box of the resulting tandem sailboard when the surfboards are coupled together.

8. A sailboard according to claim 2, 80 wherein said coupling member has a cross-section corresponding to the cross-section of said surfboard and at least partially contains the keel box for a tandem sailboard formed by said surfboard and said similar 85 surfboard.

9. A sailboard according to any preceding claim, wherein said coupling member is attached to said surfboard by fastening 90 means.

10. A sailboard according to any one of claims 1 to 8, wherein said coupling member is shaped for interlocking engagement with a complementary portion of said surf- 95 board.

11. A sailboard according to any preceding claim, wherein said surfboard has at least two connections for said universal joint, one of said connections being located forward of the keel box of said surfboard 100 and another aft of said keel box.

12. A sailboard according to claim 11, wherein a further connection for said universal joint is provided on said surfboard 105 or said coupling member.

13. A sailboard according to any preceding claim, wherein a keel-like device is provided on said surfboard at the bow thereof

14. A sailboard according to claim 13, 110 wherein said keel-like device is a rib moulded on said surfboard.

15. A sailboard according to claim 13, wherein said keel-like device is a hinged, retractable fin. 115

16. A sailboard according to any preceding claim, wherein a hinged retractable fin is provided at the stern of the surfboard.

17. A sailboard according to any preceding claim, wherein a covering or ex- 120

tension member is provided for mounting on the coupling portion of said surfboard when the sailboard is used as a single sailboard.

5 18. A sailboard according to any preceding claim, wherein a wave-breaking bow attachment is coupled to the bow of the surfboard.

10 19. A sailboard as claimed in claim 2, or any one of claims 3 to 18 when appendant to claim 2, including a keel for the tandem sailboard, said keel being pivotable and being profiled for use in forward and reverse sailing.

20. A sailboard substantially as herein- 15
before described with reference to the accompanying drawings.

FORRESTER, KETLEY & CO.,
Chartered Patent Agents,
Forrester House,
52 Bounds Green Road,
London N11 2EY.
and also at
Rutland House,
148 Edmund Street,
Birmingham B3 2LD.
Agents for the Applicants.

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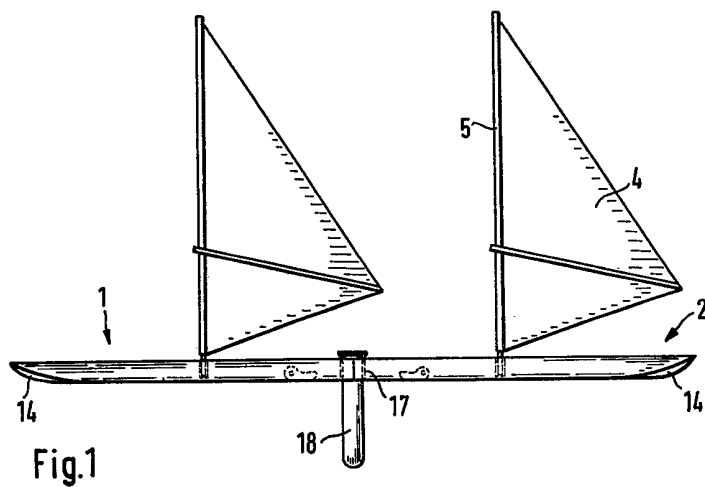


Fig.1



Fig.3

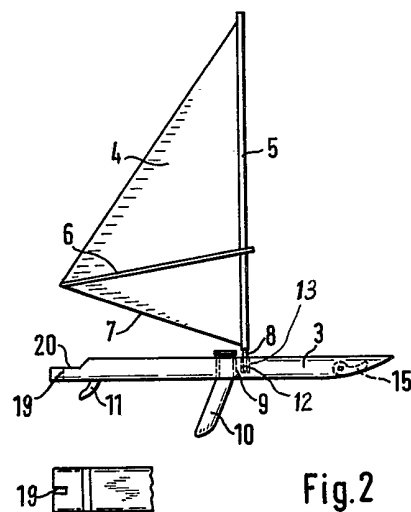
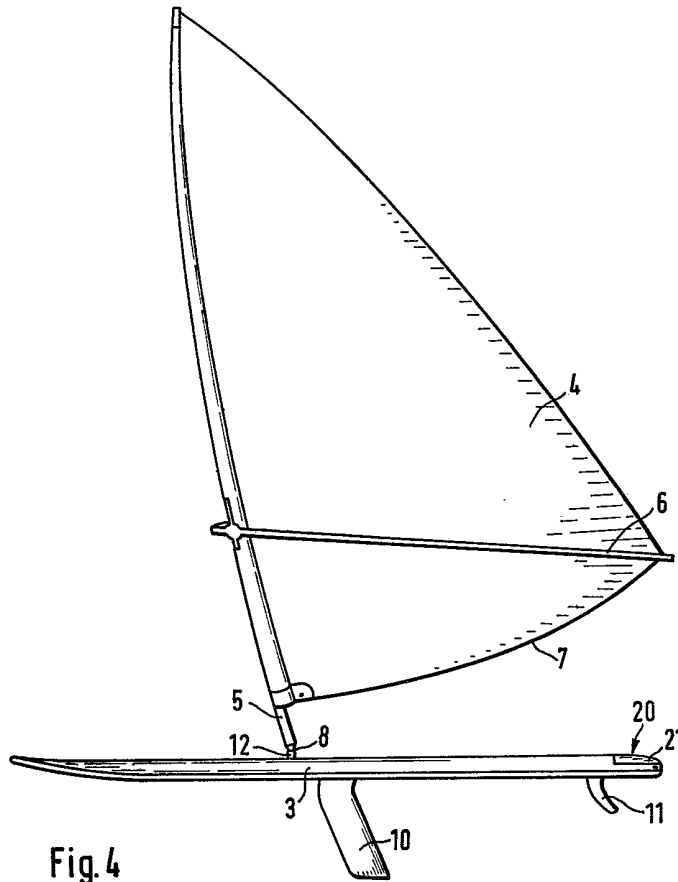


Fig.2



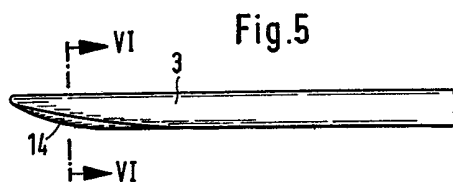


Fig. 5

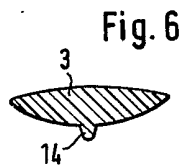


Fig. 6

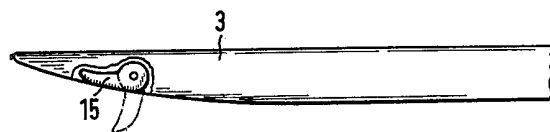


Fig. 7

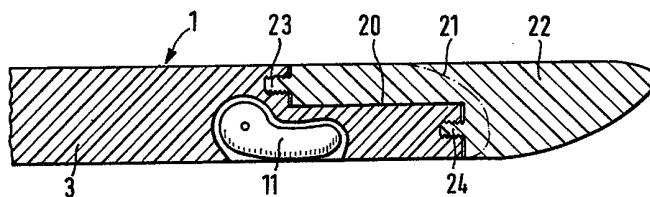


Fig. 8

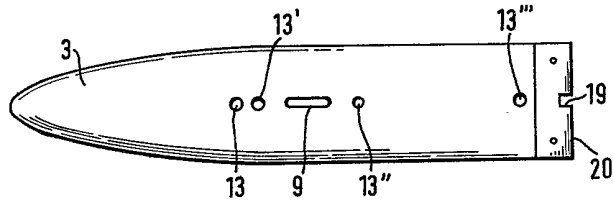


Fig. 9

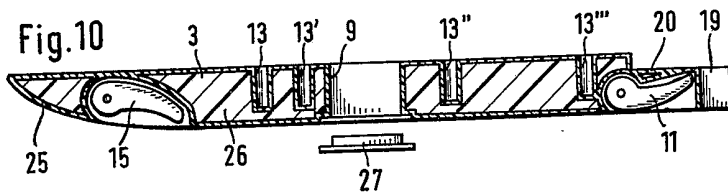


Fig.11

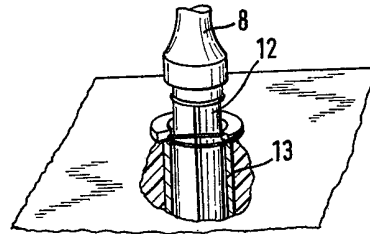


Fig.12

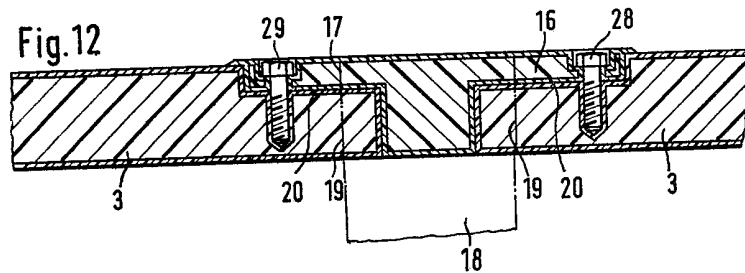
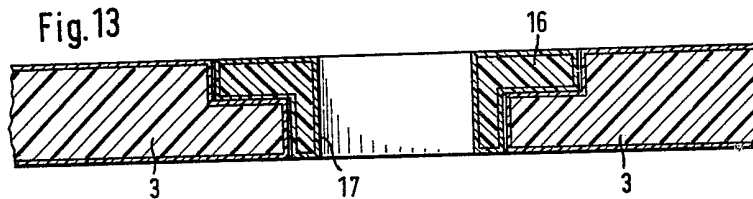
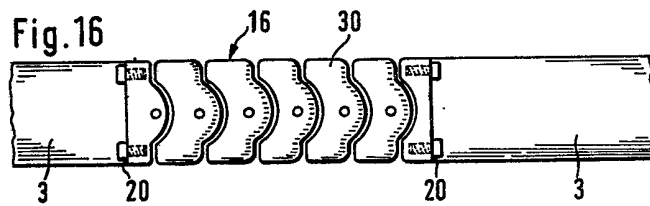
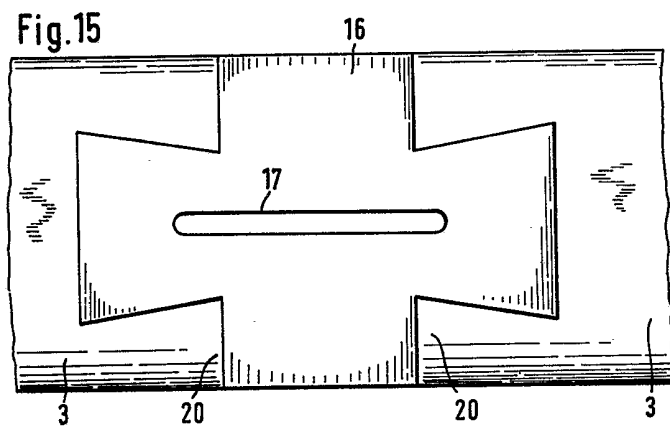
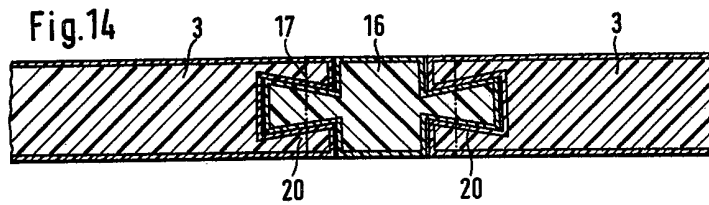


Fig.13





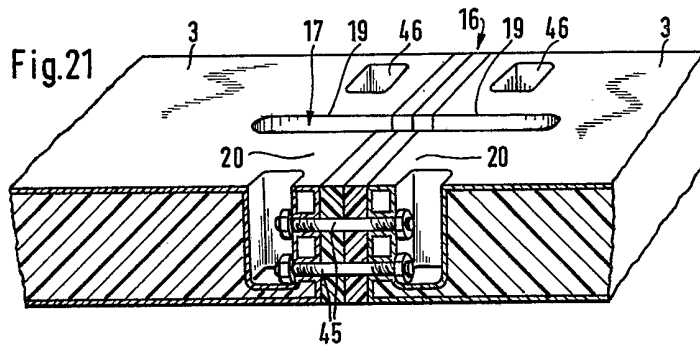
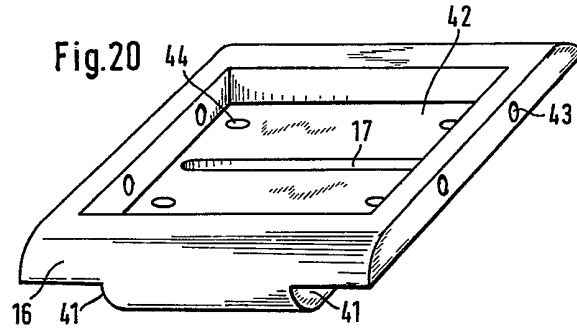


Fig.22

