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Declarations under Rule 4.17:

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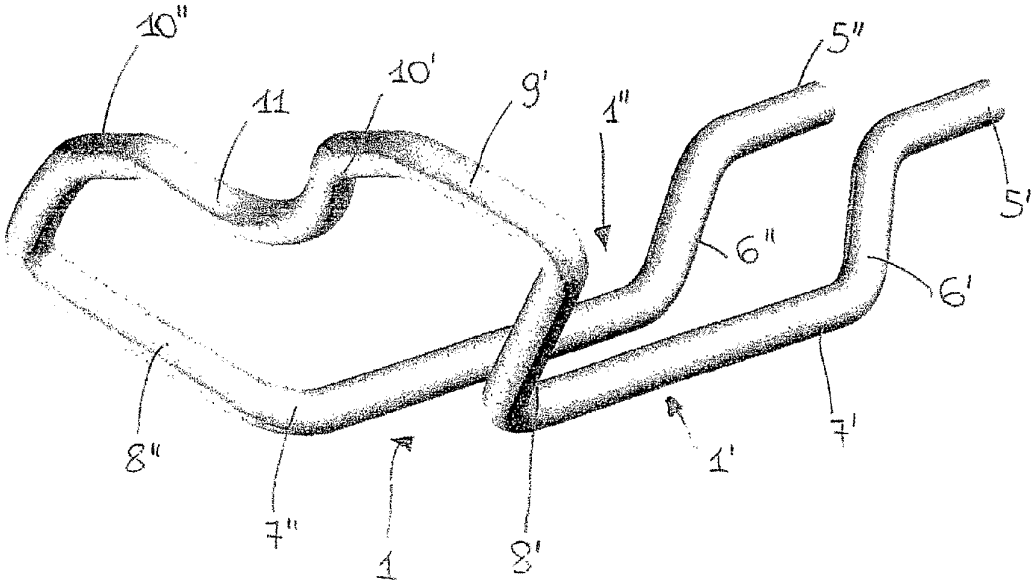
(54) Title: SUPPORT RAIL FOR A BICYCLE SADDLE SHELL



(57) Abstract: The invention relates to a support rail for a bicycle saddle shell of the type that presents two portions (1', 1") perfectly symmetrical in relation to the longitudinal plane of symmetry of the saddle. Thanks to its particular shape, both professional and touring cyclists are able to find the saddle always in the same position as previously set before use, even after several stresses due to intense and prolonged saddle use.

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LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Title: Support rail for a bicycle saddle shell.

The present invention relates, in general terms, to a support rail for the shell of the saddle for a bicycle and to a bicycle saddle shell which includes such a support rail.

It is known that bicycle saddles, and in particular those used for road racing, for both professional athletes as well as amateur bikers, and also those used for mountain bike riding, have a rail as a support element for the shell of said saddles.

Said rails perform a dual function in guaranteeing the structural solidity of the shell, permitting the fixing of the saddle to the seat post positioned on the top of the tube that is located at the centre part of the bicycle frame.

In fact, a wide variety of these rails is available on the market, but none of them is able to guarantee efficient and stable saddle fixation.

In fact, practically speaking, especially when saddles are used for professional racing, or under conditions where the thrust is sufficiently strong, and especially in the case of heavier athletes, it can occur that the saddle shell is detached partially from the fixations that connect it to the rail and, in this manner, it is slightly moved from the correct riding position in which it has been set with precision before the saddle has been used.

In practice, the user finds himself with a saddle that is not positioned in perfect symmetry with the longitudinal axis of the bicycle, and/or that however is not precisely positioned the way the user meant to adjust it at the beginning of the race.

The present invention seeks to provide a support rail of the aforesaid type while eliminating the problems described above, in that it must be able to guarantee a stable positioning of the saddle shell even after hard and intense use of the saddle in question. Furthermore, said rail must be particularly simple as far as its construction

is concerned, and must not present, in particular, any complications either for its production or use.

In accordance with one aspect of the present invention, therefore, there is provided a support rail for a bicycle saddle shell which includes two symmetrical portions in relation to a longitudinal plane of symmetry of said saddle, wherein both of said symmetrical portions include a first end section arranged in a substantially horizontal manner in relation to its normal position after it has been mounted on said saddle, said sections continuing to form sections which slope slightly, which continue to further sections arranged in a substantially horizontal manner, or slanted upwards for a maximum angle of 5°, the total of the aforesaid sections being configured to create a substantially S-shaped structure with a considerably lengthened section, wherein the end of these sections continue with further straight sections which slope outwards and then reciprocally converge towards the centre line of the saddle, the structure then continuing to the uppermost part of the two previous sections with two further sections turning in an inward direction, thus forming with the two previous sections a substantially L-shaped structure, the ends of the two previous sections of the structure being continued with two short straight sections which are united reciprocally by a single semi-circular structure, whose lower vertex is positioned at the longitudinal centre line of the saddle.

In accordance with yet another aspect of the present invention there is provided a bicycle saddle shell for use with a support rail according to any one of the preceding claims wherein said shell being at the rear part of the lower surface thereof, includes two prismatic structures having a substantially trapezoidal perimeter, each one of said structures including a channel on its surface, inside which is adapted to be housed most of said sections of said rail, and wherein each of said prismatic structures includes is a cover plate adapted to be positioned over said sections of said rail enclosing them between said cover plates and said prismatic structures, each of said cover plates having a plurality of holes in which self-threading screws, screwable into the shell, are adapted to be inserted, thus determining the stable fixation of said cover plates, and therefore said rail, to said shell underneath.

The present invention will now be illustrated in detail and described with reference to a particular and preferred embodiment, provided as an example, but not to be considered limiting in any manner, with the help of the enclosed drawings wherein:

Figure 1 shows a perspective view of the front part of a saddle including the rail according to the finding;

Figures 2 and 3 show respectively, a perspective and top plane view of a saddle using the rail according to the finding;

Figures 4 and 5 show bottom plane views of a saddle shell of the type adapted for use with the rail according to the finding, respectively with and without the aforesaid rail;

Figure 6 shows a rear view of a saddle shell using the rail according to the finding;

Figure 7 shows an overall view of the rail according to the finding;

Figure 7a shows an overall view of an alternative version of the rail according to the finding;

Figure 8 shows a view of an accessory that permits the fixation of the rail according to the finding, to the relative saddle shell;

Figure 9 shows a vertical section view of a male human body in a seated position on the saddle according to the finding, divided into four quadrants conventionally used to identify the human body.

Figure 1 shows the rail according to the finding, in a manner that is *per se* known, under a saddle 2

for a bicycle, of the type normally used for road use, whether for racing or touring, as well as for mountain bikes.

The presence of this rail provides structural solidity for the saddle as well as permitting the fixation by means of a clamp 3, of a type *per se* known, to the seat post 4, which in turn is inserted into the centre tube generally present in the bicycle frame.

In particular, as shown in figures 2 and 3, the rail according to the finding can be used in combination with a saddle shell of the type described in patent application n° VI2003A000020 by the same Applicant.

As can be seen in detail in figure 7, the rail 1 is realised in a single element in a material which must be at the same time, resistant and elastic, in particular in stainless steel, aluminium alloy, special alloy, etc.

Figure 7a shows a possible alternative configuration of the rail according to the finding, particularly suitable for touring bicycle saddles.

The configuration of said rail is such that it is composed of two portions (1' and 1" respectively) that are perfectly symmetrical in relation to the

longitudinal and vertical plane of symmetry of the saddle.

As far as the specific configuration is concerned, both portions 1′ and 1″ of the rail present a first end section 5′ and 5″, arranged in a basically horizontal manner, in relation to its normal position after it has been mounted on the saddle, said sections then continue to form sections 6′ and 6″, which slope slightly, to continue forming sections 7′ and 7″, arranged in a basically horizontal manner, or slanted upwards for a maximum angle of 5°.

The total section formed by 5′, 6′, 7′ (and naturally also 5″, 6″, 7″) are configured to create a structure with a basically S-shaped contour with a considerably lengthened section.

At the end of these sections, the rail continues with two further straight sections 8′, 8″, which slope outwards and then reciprocally converge towards the centre line of the device.

The structure then continues to the uppermost part of the two previous sections with two further sections 9′, 9″, this time turning in an inward direction, thus forming with the two previous sections a basically L-shaped configuration. At the end of the two previous sections the structure continues with two short straight sections 10′, 10″

which are united reciprocally by a single semi-circular structure 11, whose lower vertex is positioned exactly on the longitudinal centre line of the device.

By attentively examining figure 4 closely, it can be seen that the end straight line sections 5′ and 5″ of the rail are inserted in a manner *per se* known, into two corresponding pockets 12 present in the lower surface of the shell 13 of the saddle.

Vice versa, the rear part of the device is fixed to the shell in a particularly innovative manner, and will now be described in detail also with reference to figure 5.

In fact, when examined closely, these figures show that at the rear part of the lower surface of the shell 13 there are two prismatic structures 14′, 14″, with a basically trapezoidal perimeter. The sides of these trapezia are approximately 1.5 to 2 cm long.

Practically speaking, as shown in figure 4, the major part of section portions 9′ and 10′ (as well as 9″ and 10″) of the rail is set on said prismatic structures in channels 15′, 15″ present on their surface.

In order to maintain the corresponding sections of the rail solidly anchored in position, two cover

plate elements 16', 16" (fig. 8) are destined to be positioned over the sections of the rail enclosing them between the cover plates and the prismatic structures.

Each one of the said cover plates presents a plurality of holes 17', 17" (for example, four in number for each cover plate as shown in the figures) for the insertion of self-threading screws 19', 19", that can be screwed into the shell thus fixing the cover plates and the rail onto the shell underneath, in a stable manner.

Figures 6 and 8 show the at the two cover plates 16', 16" can be reciprocally connected by a small bridge plate 18 which, after the cover plates have been mounted in their respective seats, can be attached to the rear of the shell in a manner similar to an identification or number plate. This small bridge plate could be printed with the saddle manufacturer's logo, or with other distinctive marking, patterns etc.

Advantageously, the transversal section of the rail will be in circular form with a diameter of approximately 7mm.

The total length of the said rail will be approximately 16-20 cm.

Tests performed on the saddle have demonstrated that by adopting the aforesaid rail and its particular fixing devices to the shell, cyclists, whether for professional or touring use, always find the saddle in the same position previously set before use, even in the case of considerable stress caused by intense and prolonged use.

Furthermore, by means of the use of the rails according to the finding, the four quadrants of the human body, right and left, upper and lower (fig. 9) always remain stable and in correct axis with the saddle during any type of pedalling action, even intense or excessive, thus permitting all muscles and vital functions to interact in a uniform manner. In particular said fig. 9 shows the K axis of the saddle, the imaginary x-y line parallel to the road plane, which corresponds with the stable support of the human body by the saddle; references v, z, j, and w indicate respectively the penis, testicles, pubic symphysis and coccyx. Lastly, y', y" and x', x" indicate the four quadrants that conventionally divide the human body.

Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

The reference to any prior art in this specification is not, and should not be taken as, an acknowledgement or any form or suggestion that the prior art forms part of the common general knowledge in Australia.

Finally, it is to be understood that the aforegoing description refers merely to preferred embodiments of the invention and that variations and modifications will be possible thereto without departing from the spirit and scope of the invention, the ambit of which is to be determined from the following claims.

The claims defining the invention are as follows:

1. A support rail for a bicycle saddle shell which includes two symmetrical portions in relation to a longitudinal plane of symmetry of said saddle, wherein both of said symmetrical portions include a first end section arranged in a substantially horizontal manner in relation to its normal position after it has been mounted on said saddle, said sections continuing to form sections which slope slightly, which continue to further sections arranged in a substantially horizontal manner, or slanted upwards for a maximum angle of 5°, the total of the aforesaid sections being configured to create a substantially S-shaped structure with a considerably lengthened section, wherein the end of these sections continue with further straight sections which slope outwards and then reciprocally converge towards the centre line of the saddle, the structure then continuing to the uppermost part of the two previous sections with two further sections turning in an inward direction, thus forming with the two previous sections a substantially L-shaped structure, the ends of the two previous sections of the structure being continued with two short straight sections which are united reciprocally by a single semi-circular structure, whose lower vertex is positioned at the longitudinal centre line of the saddle.

2. The rail according to claim 1, having a total length of from 16 to 20 cm.

3. The rail according to claim 1 or claim 2, including a transversal section in circular form having a diameter of approximately 7 mm.

4. A bicycle saddle shell for use with a support rail according to any one of the preceding claims, wherein said shell, being at the rear part of the lower surface thereof, includes two prismatic structures having a substantially trapezoidal perimeter, each one of said structures including a channel on its surface, inside which is adapted to be housed most of said sections of said rail, and wherein each of said prismatic structures includes a cover plate adapted to be positioned over said sections of said rail enclosing them between said cover plates and said prismatic structures, each of said cover plates having a plurality of holes in which self-

threading screws, screwable into the shell, are adapted to be inserted, thus determining the stable fixation of said cover plates, and therefore said rail, to said shell underneath.

5. The saddle shell according to claim 4, wherein the length of the sides of said prismatic structures is from 1.5 to 2 cm.

6. The bicycle saddle shell according to claim 4 or claim 5 wherein said two cover plates are reciprocally connected by a small bridge plate which, after said cover plates have been mounted in their respective seats, is positioned on the rear of said shell in a manner similar to an identification or number plate.

7. A support rail for a bicycle saddle shell, substantially as described herein with reference to the accompanying drawings.

8. A bicycle saddle shell as claimed in claim 4, substantially a described herein with reference to the accompanying drawings.

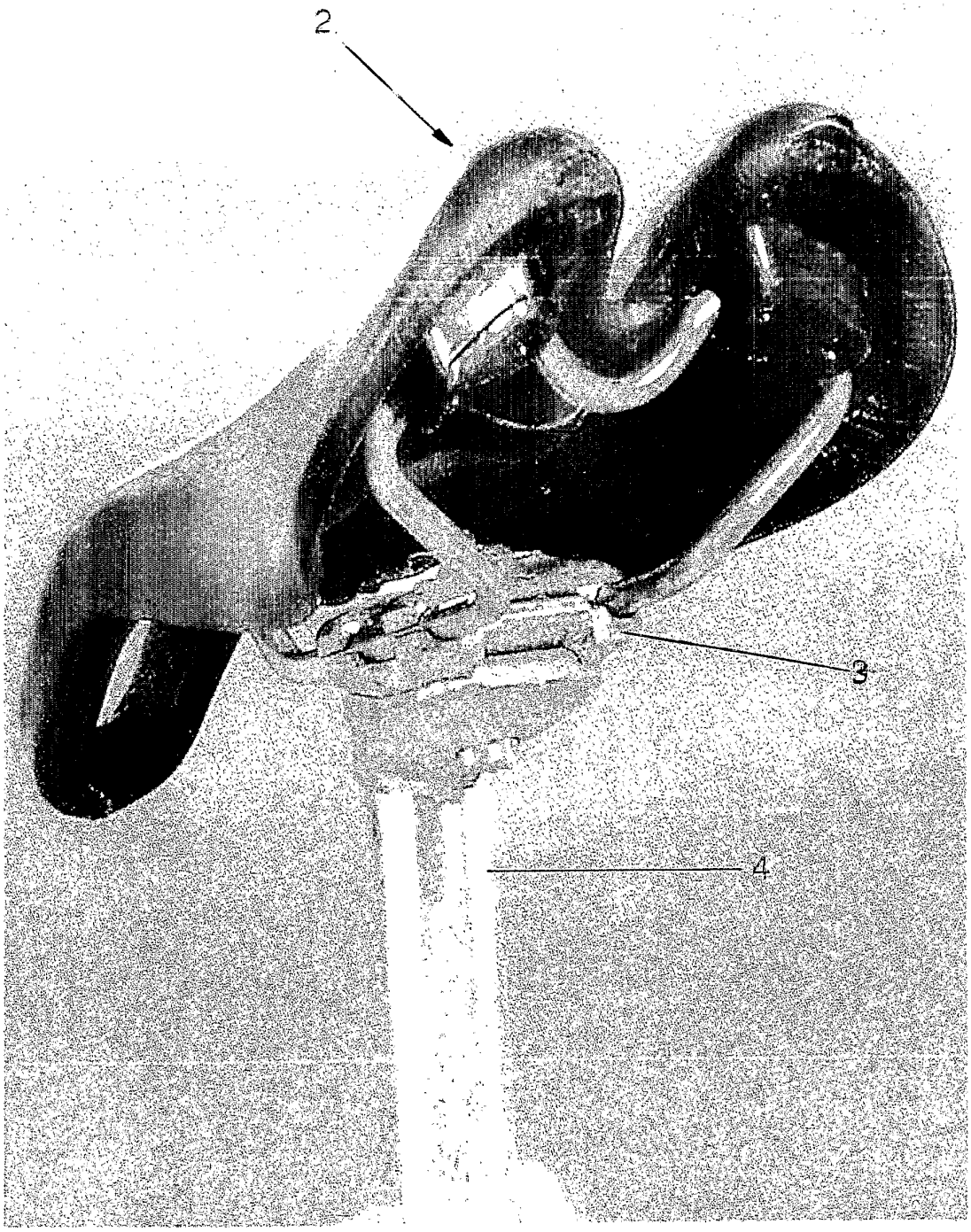

FIG. 1

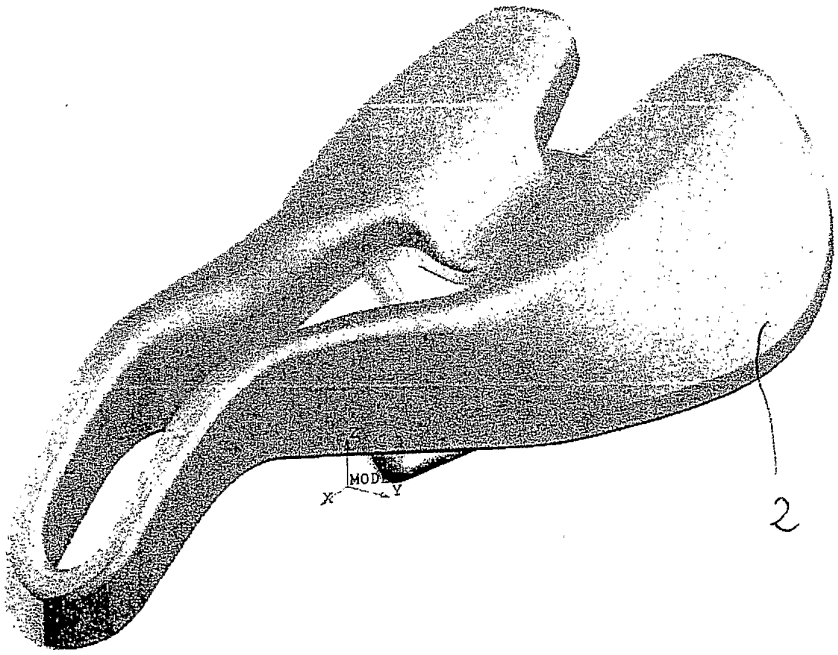

FIG. 2

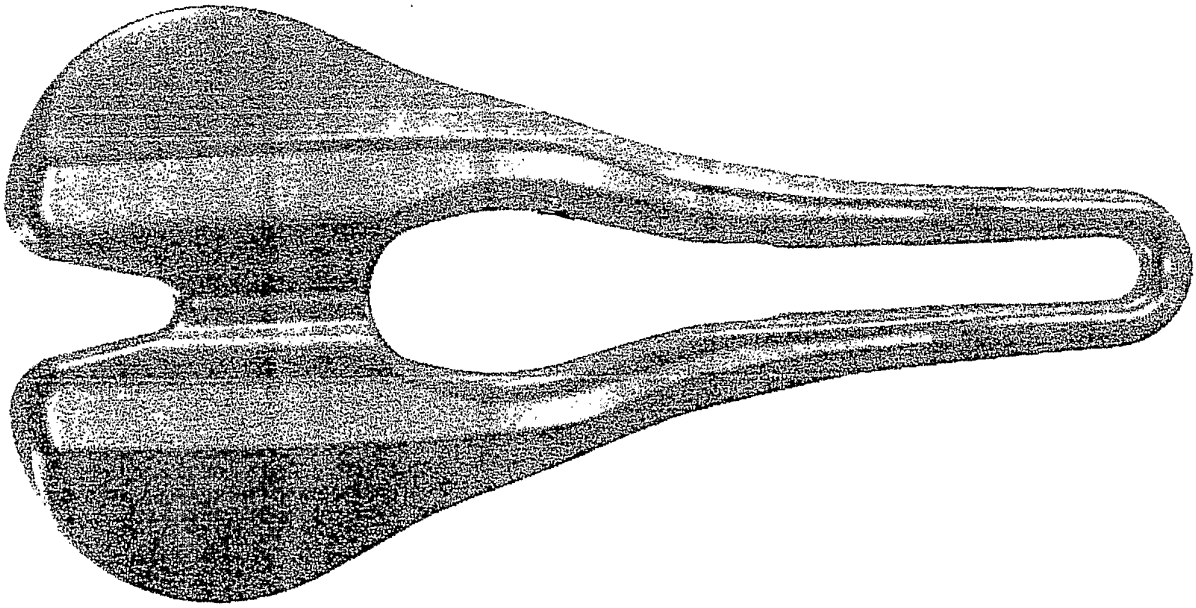

FIG. 3

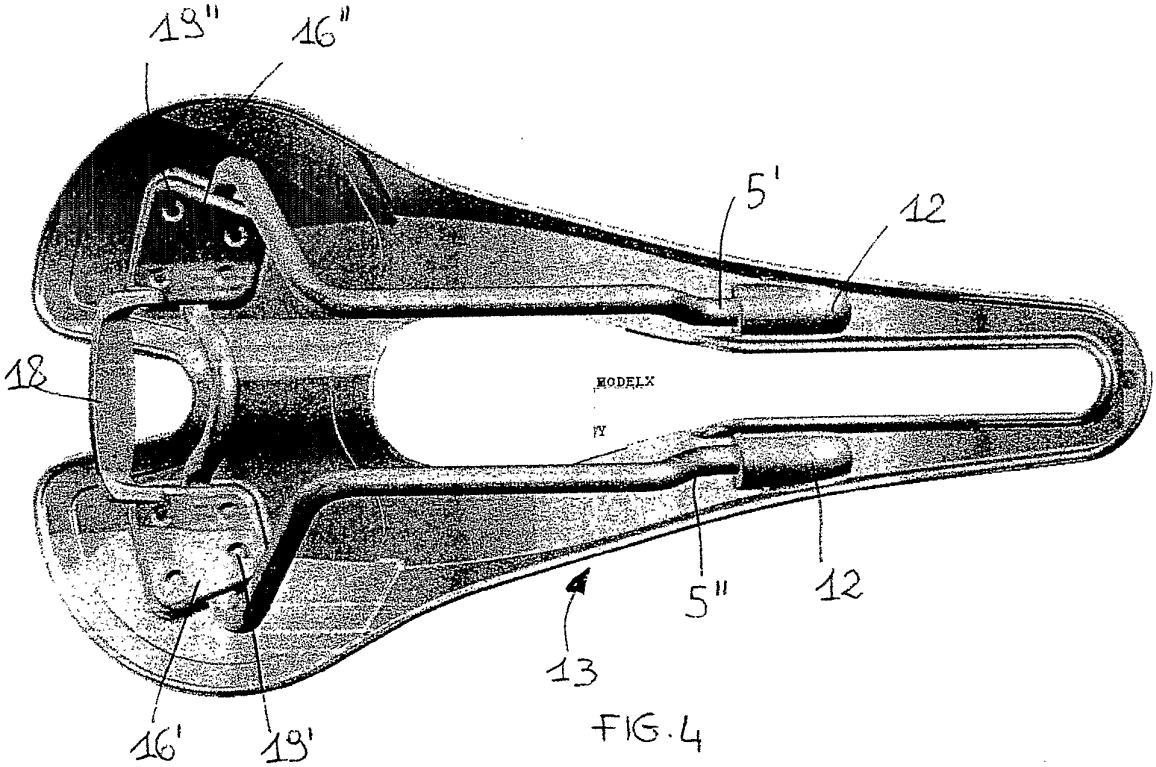

FIG.4

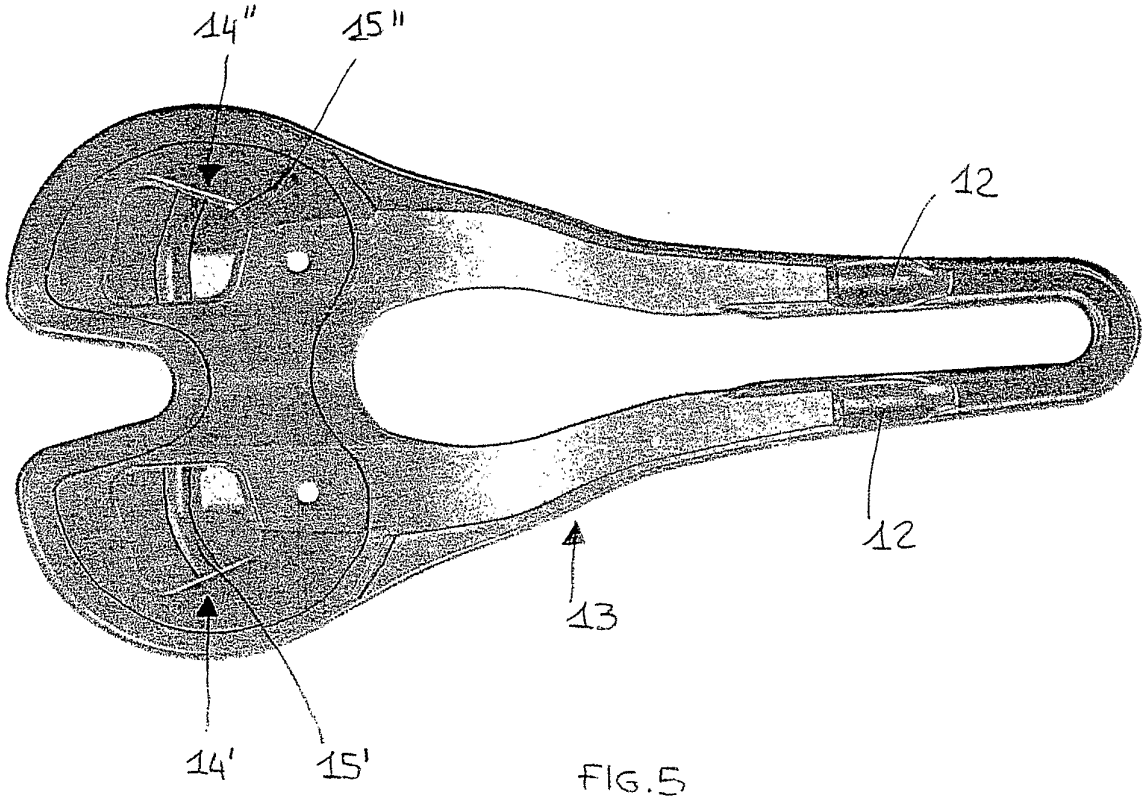

FIG.5

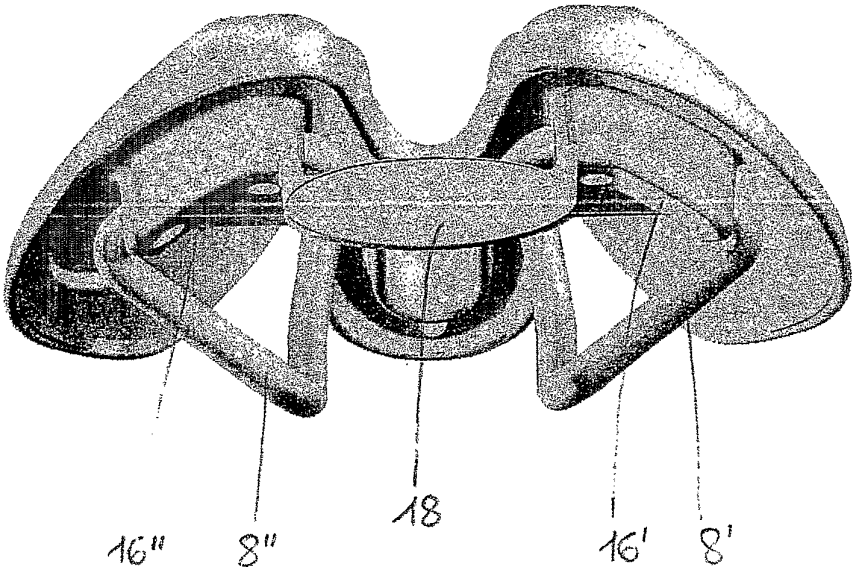

FIG. 6

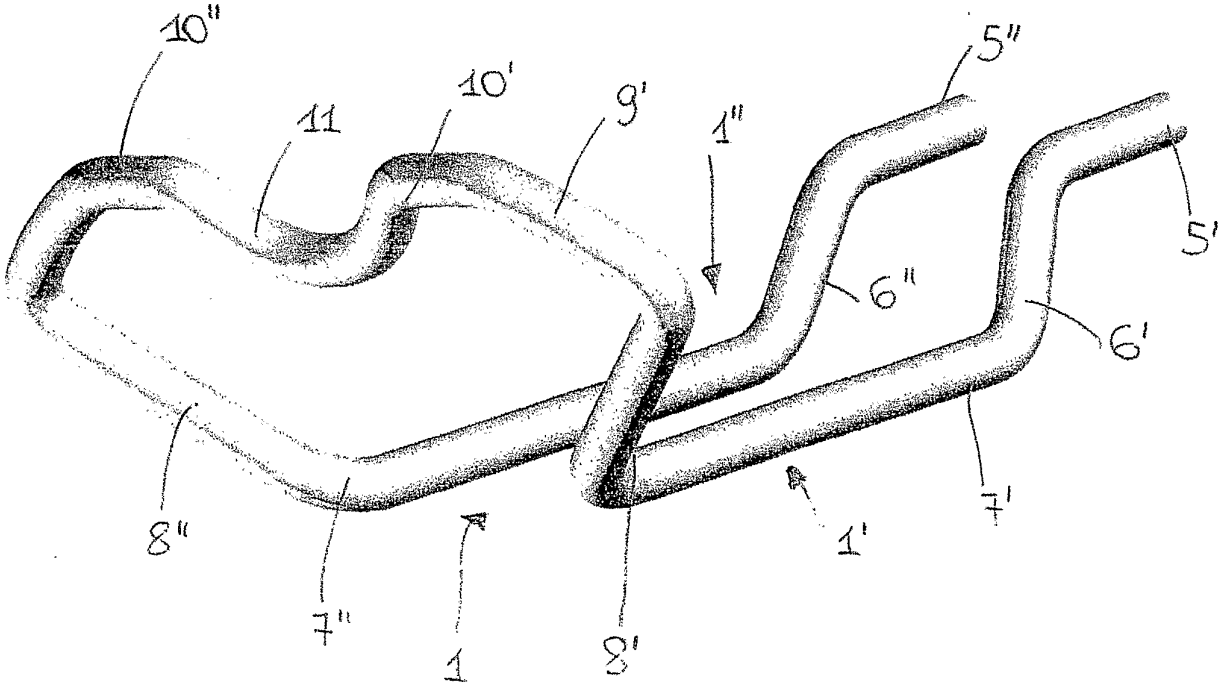

FIG. 7

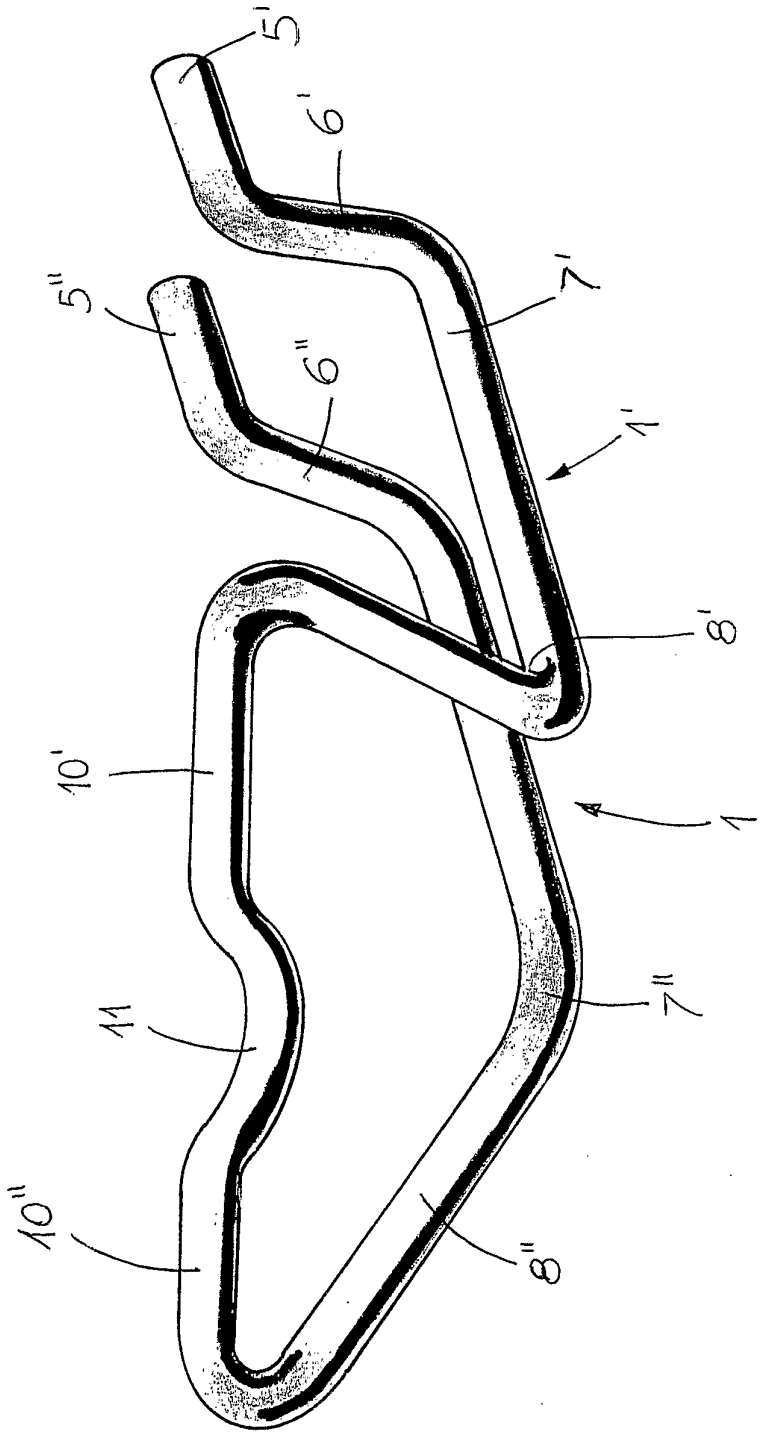

FIG. 7A

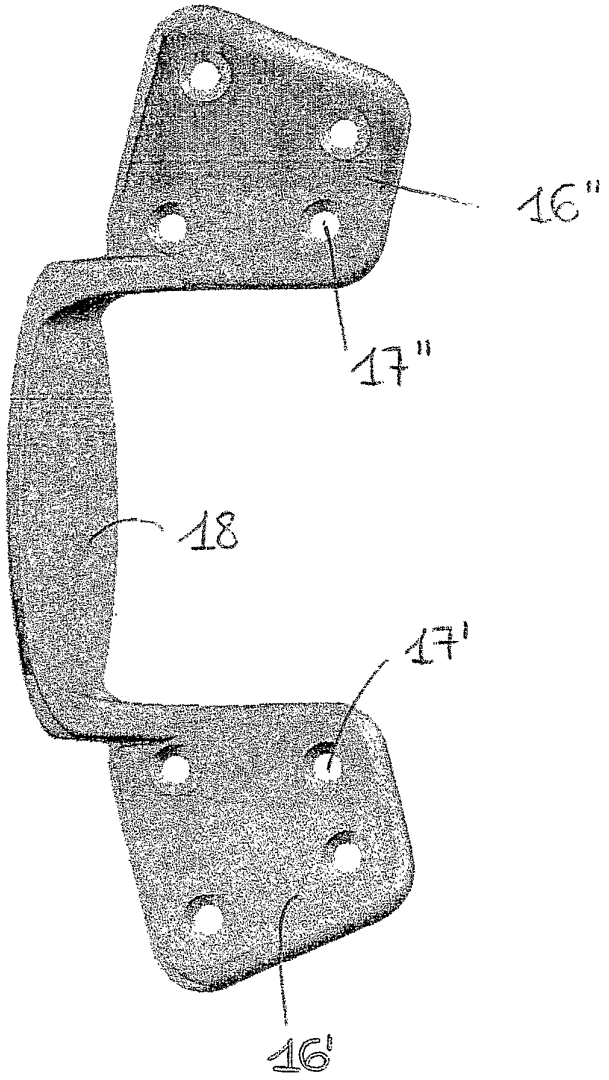

FIG. 8

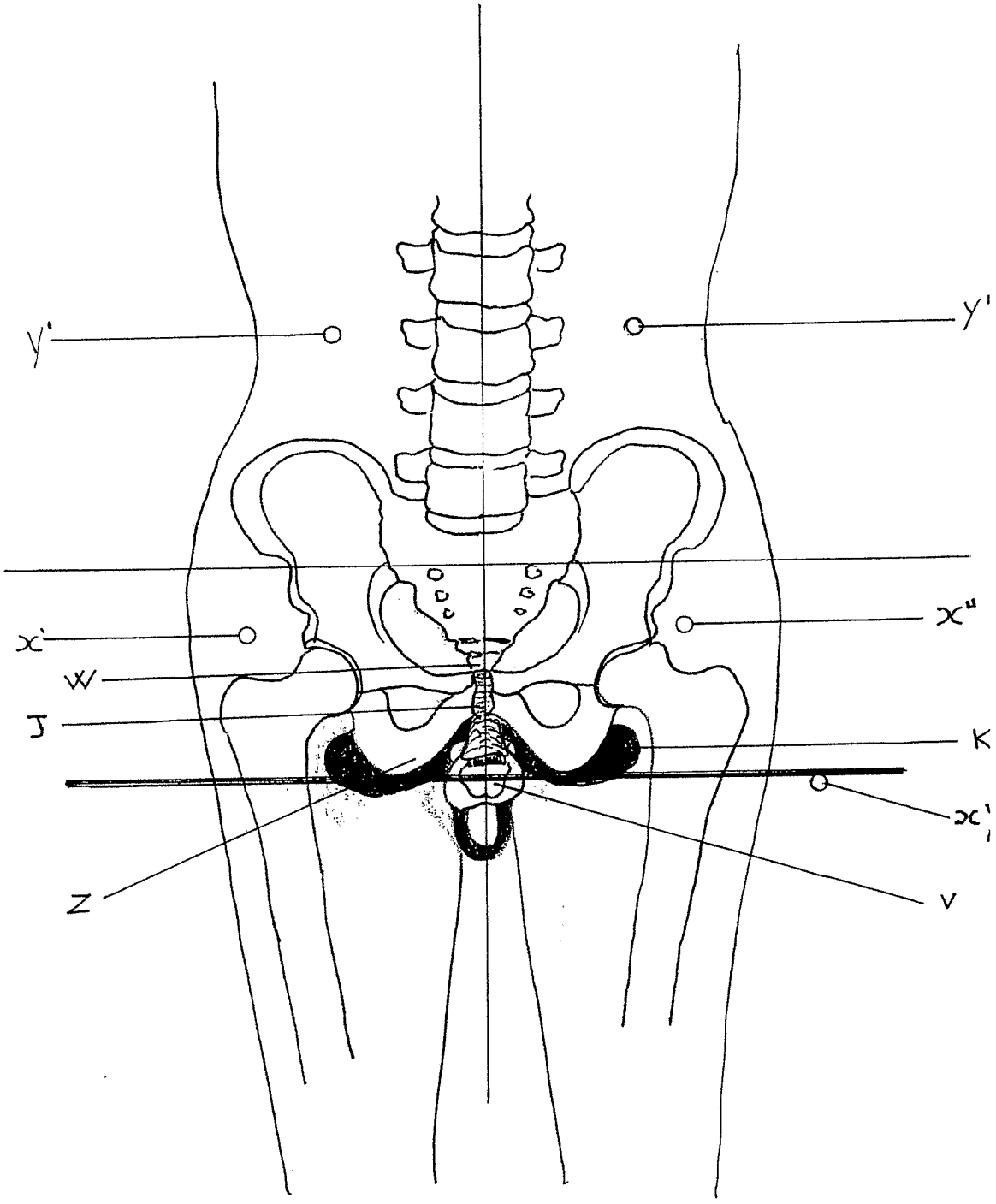

FIG. 9