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(54) **Safety belt for riders on horseback**

(57) Safety device for keeping a rider fastened to the saddle of a horse and allowing his natural movement, comprising two winders/unwinders (21, 22) of safety belts fastened to the saddle. The end parts of said safety belts are fastened to a band (30) tied around the rider's waist and provided with a quick claspng/releasing device (31) and with an emergency device (40) for auto-

matic release of said band, which is controlled by at least one sensor (50) which is fastened to the saddle and/or to the rider's back. Said sensor emits a signal suitable for allowing the immediate opening of said emergency device when the horse inclines its back beyond a certain predetermined angle with respect to the horizontal for a predetermined time period and/or when the rider inclines his back beyond predetermined angles.

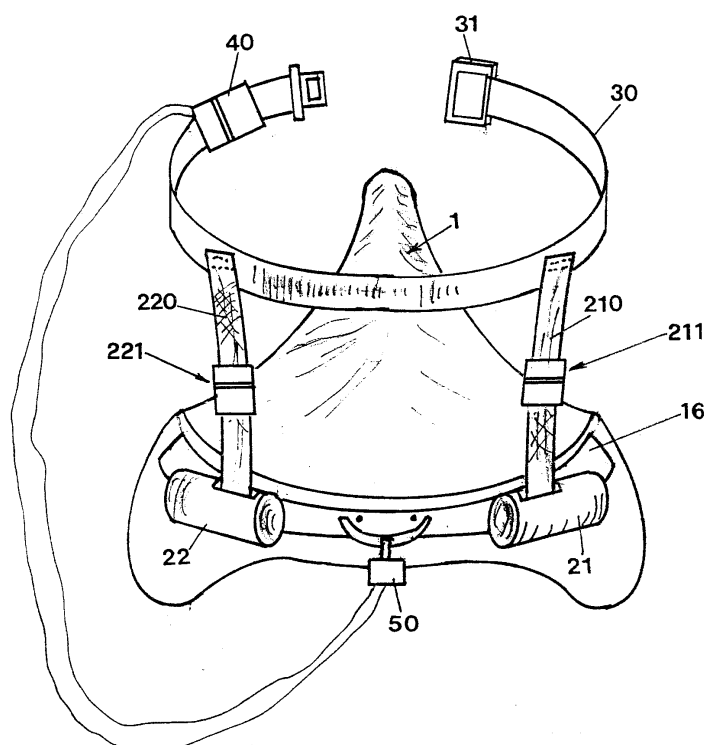


FIG.2

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Description

[0001] The present invention relates to a safety device for keeping a rider secured to a horse saddle during the ride.

[0002] The invention is particularly useful for people who wish to learn to ride without risking possible falls, or for those who can ride, but want to avoid the risk of possible falls.

[0003] The invention is also particularly useful for those who want to ride but are afraid of possible falls in mounting a horse.

[0004] Solutions providing safety devices for keeping the rider connected to the horse in a safe way, which at the same time allow a fast release of the safety device belt if the horse falls or anyway in case of dangerous situations wherein the rider must abandon the horse, are not known to the applicant.

[0005] Therefore, an object of the present invention is to provide a safety device which ensures a safe fastening of the rider to the horse saddle, but, at the same time, is allowed to open and leave the rider free in case of emergency.

[0006] Another object to be obtained is to keep the rider connected to the saddle in a flexible way, so as to allow natural movements of the rider during the ride.

[0007] Another object to be obtained is that the device connected to the horse saddle give no trouble to the horse itself and therefore no problems of adaptation of the horse to the device.

[0008] Moreover, it is an object that the device be easy to use and ready to engage and disengage according to the specific requirements and needs.

[0009] It is also an object that the device according to the invention be very easily connected to the saddle or disconnected therefrom.

[0010] These and other objects, which will be better pointed out in the following, are achieved by means of a safety device for keeping a rider fastened to the horse saddle that, in agreement with content of the first claim, is characterised in that it contains:

- two winders/unwinders of safety belts, fastened at the back of the saddle in a position substantially symmetrical with respect to the saddle vertical median plane, the end parts of said safety belts being fastened to :
- a band tied around the rider's waist, said band being provided with a quick clasp/releasing device and with an emergency device for automatic opening of said band, said emergency device being controlled by at least one sensor which is fastened to the saddle and/or to the rider's back and which emits a signal suitable for allowing the immediate opening of said emergency device when the horse inclines its back beyond a certain predetermined angle with respect to the horizontal and/or when the rider inclines his back beyond predetermined angles.

[0011] According to a particular embodiment of the invention, the support of the winders of the safety belts, which are connected to the band tied around the rider's waist, is fastened to the saddle cantle, in English saddles, both by virtue of its shape, which is complementary to that of the cantle and therefore can be easily coupled to it, and because it is fastened by threaded pins which are part of the saddle and protrude from it or are directly connected to the saddle.

[0012] According to another embodiment of the invention, the winding/unwinding devices of the safety belts, especially in Western saddles, are fastened to the saddle frame by means of supports made directly in the frame or anyway fastened to it.

[0013] By carrying out the device, particular attention was paid to the automatic release of the device in case of danger, for example when the horse falls or dangerously vacillates from the horizontal, so that it is necessary to unbind the rider from the saddle and let him jump out from the horse back, so avoiding the consequences of the horse's fall.

[0014] In fact, the main object of the device of the invention is to keep the rider mounted in normal riding conditions, at a trot or gallop, allowing anyway the natural classic movements of the rider with respect to the horse saddle.

[0015] Further features and peculiarities of the invention will be better pointed out in the description of preferred embodiments of the invention, given as nonlimiting examples and shown in the annexed tables, wherein:

- figure 1 shows a rider on horseback, with the device of the invention;
- figure 2 shows the device of the invention applied to the saddle and seen from behind;
- figure 3 shows the device of the invention to be applied to a normal saddle;
- figure 4 is a top view of a part of the support of the invention, wherein also the emergency device is shown;
- figures 5, 6 and 7 show the mounting sequence for connecting the safety device to a saddle and to a horse not shown in the figures;
- figure 8 shows in section a way in which the device of the invention is connected to the saddle;
- figures 9 to 13 show an example of the emergency device in the various working phases;
- figure 14 shows one embodiment of the invention suitable for Western saddles;
- figure 15 schematically shows the box containing the switch and the power source of the emergency device provided by the invention.

[0016] With reference to the mentioned figures, it can be appreciated that a saddle, generally indicated with 1, is mounted on a horse 2, shown in fig.1, by means of usual connections, like girth 3.

[0017] In saddle 1, as it can be better appreciated from figure 6, various portions of the saddle itself can be seen, which are respectively called "cattle", as indicated in 11, which is in fact the saddle seat, the front portion called also "pommel", portion 13 called also "flap" and portion 14 called "small flap".

[0018] In figures 2 and 5 the safety device of the invention is shown to be formed of a rigid support 20 which is substantially shaped as an arch and reproduces the shape of the edge 110 of cattle 11. Two winders 21 and 22 are provided at the ends of said support, containing safety belts of known kind, such as those for cars, indicated with 210 and 220. The final part of said belts is connected, by means of quick clasping/releasing devices 221 and 211, to the main band or belt 30 which is tied around the rider's waist and closes by means of the safety-catch 31, of the kind used in aeroplanes.

[0019] Therefore, by means of said quick clasping devices 221 and 211, it is possible to replace belt 30, by adjusting it to the rider's size without replacing the whole safety device of the invention.

[0020] As it can be appreciated in figure 2, band 30 shows also an emergency device, generally indicated with 40, which will be described in the following and is intended for opening the band if the horse falls or inclines in a dangerous way with respect to the horizontal.

[0021] Emergency device 40 is supplied by a power source formed by batteries 51 contained in a box 50, also containing a switch 52, such as a mercury or a gravity switch or equivalent, which changes its state according to the inclination with respect to the horizontal of the box containing it.

[0022] According to a preferred embodiment of the invention, support 20 of the safety device is connected to cattle 11 of saddle 1 both by the coupling of groove 23 to edge 110 of cattle 11, and by the connection made by a metal band which in figure 8 is generally indicated with 4 and in figures 3 and 9 is formed of two parts 41 and 42, connected by screws, not shown in the drawing, passing through corresponding couples of holes 44. Obviously, in that case the length of metal band 4 can be adjusted so that the final part 45 can rest directly on the saddle front, while the other part ends with two threaded pins 46 and 47 (see figure 7) which are inserted in corresponding holes made on support 20.

[0023] As it can be appreciated in figure 8, metal strip 4, formed of two parts 41 and 42, is housed in the notch of the saddle which is facing the horse back. While the front 45 rests on saddle pommel 12, the other end of strip 4 is connected to support 20 through threaded pin 49, so that said support couples groove 23 with protrusion 17, provided in the lower portion of the saddle cattle. An example of the emergency device connected to band 30 which is tied around the rider's waist, is shown in figures 9 to 13.

[0024] With reference to figure 9, the emergency device, generally indicated with 40, is formed of a hook 41 connected to portion 30a of band 30, which ties the rider's

waist, and of a mechanical assembly 42 connected to the other band portion 30b. Hook 41 is provided with a tooth 410 which, as it will be explained, is connected to a corresponding tooth provided on mechanical assembly 42. Mechanical assembly 42 houses an electromagnet 60 which is provided at one end with a shaft 61 and with a support ending with two U-shaped protrusions 420 comprising a profiled plate 43 which is free to rotate around pin 430. Plate 43 is provided with a square 44 that, as it can be appreciated from figure 11, serves as a catch for plate 43 when the emergency device is loaded and ready to function. In fact, as it can be appreciated from figure 11, when shaft 61 protrudes from electromagnet 60, square 44 prevents plate 43 from turning over in the way shown in figure 9, as a consequence of the push of spring 48. Spring 48, which can be seen only partially in figure 11, is provided with two ends, one end 481 visible in figure 9 and another end 482 visible in figure 12. Retainer 47, which belongs to plate 43, works on end 482 of the spring by compressing it when plate 43 is loaded and positioned as shown in figures 11 and 12. In this conformation hook 41 is already engaged with tooth 46 of cam 45 which is integral with plate 43. It appears that, when electromagnet 60 is de-energised because of opening of the switch provided in box 50, due to the horse or the rider exceeding a certain inclination, electromagnet shaft 61 withdraws and sets square 44 free, so that spring 48 is allowed to act on retainer 47 belonging to plate 43 and turn it over, as it can be seen in figures 9 and 10. The immediate consequence is that hook 41 disengages from tooth 46 belonging to cam 45.

[0025] On the contrary, when the electromagnet is energised and shaft 61 protrudes, hook 41 can not get free from cam 45, also because retainer 49, which can be seen both in figure 13 and in the prospective view of figure 10, prevents hook 41 from moving horizontally.

[0026] Basically, hook 41 can only follow the turning over of plate 43 and therefore get free from engagement with said plate.

[0027] As mentioned before, the disengagement of hook 41 from mechanical assembly 42 takes place when the horse inclines its back beyond a certain angle, for example due to falls. Box 50 can also be positioned on the rider's back and not on the saddle. In this way, also if the rider's back is sharply inclined due to a loss of balance or to any other reason, the switch intervenes and hook 41 opens.

[0028] Obviously, other embodiments of the just illustrated emergency device can be realised, since only one of the possible embodiments of such an emergency device has been described.

[0029] The feed switch of electromagnet 60, which is contained in box 50, can be a mercury switch or a gravity switch. Any switch will have to be provided with sensors which are sensitive to the horizontal position and that, beyond a certain inclination, change the state of the switch by passing from conduction to the interruption of the electric circuit.

[0030] Obviously, choosing in the implementing step an electromagnet of the kind which is normally energised and whose protruding shaft de-energises with the passage of current, is perfectly equivalent for the device of the invention. In such a case, the switch will have to act in the opposite way, that is, allowing the passage of current when a certain inclination of horse or rider is exceeded, the withdrawal of electromagnet shaft resulting in both cases.

[0031] In figure 14 a different embodiment of the safety device of the invention is shown, which in this case is connected to a saddle of the so-called Western kind. In figure 14 the generally wooden saddle frame is shown, and it is evident that in that case winders 21 and 22 are fastened to frame 80 of this Western saddle, each by means of supporting plates indicated with 28 and 29, belonging to a metal strip 81 housed underneath frame 80.

[0032] It is apparent that, in such a way, the device of the invention is absolutely safe, because it allows also the possibility of a release in emergency conditions which are not foreseeable by the rider, or at least not quickly enough to operate the hand release of catch 31.

Claims

1. Safety device for keeping a rider fastened to the saddle of a horse, characterised in that it is provided with:
 - two winders/unwinders (21, 22) of safety belts fastened at the back of the saddle in a substantially symmetrical position with respect to the vertical median plane of said saddle, the end parts of said safety belts being fastened to :
 - a band (30) tied around the rider's waist, said band being provided with a quick clasping/releasing device (31) and with an emergency device (40) for automatic opening of said band, said emergency device being controlled by at least one sensor, fastened to the saddle and/or to the rider's back and emitting a signal suitable for allowing the immediate opening of said emergency device when the horse inclines its back beyond a certain predetermined angle with respect to the horizontal and/or when the rider inclines his back beyond predetermined angles.
2. Device according to claim 1, characterised in that said winders/unwinders are connected to the saddle by means of support plates (28, 29) belonging to the saddle frame or connected to it.
3. Device according to claim 1, characterised in that said winders/unwinders (21, 22) are connected to the saddle by means of a support (20) which is rigidly

connected to the substantially arch-shaped edge (110) of saddle cantle (11).

4. Device according to claim 3, characterised in that said support (20) is connected to the edge (110) of the saddle cantle by means of a protruding pin (47) at the edge of said cantle.
5. Device according to claim 3, characterised in that said threaded pin (47), whereof said support (20) is fastened, is rigidly fixed to a metal strip (4) which is positioned under the saddle, in the notch facing the horse backbone, said strip having the curve end portion (45) at the saddle pommel so as to prevent any movement of said strip with respect to the saddle.
6. Device according to claim 5, characterised in that said metal strip (4) is formed of two partially superimposable, longitudinal parts (41, 42) provided with a plurality of holes (44) fastened by means of screws.
7. Device according to claim 1, characterised in that said emergency device (40) is provided with a hook (41) co-operating with a mechanical assembly (42), said mechanical assembly being provided with an electromagnet (60) powered by batteries (51) by means of a switch (52), batteries and switch being contained in a box (50) provided on the saddle and/or on the rider's back, said electromagnet (60) being provided with a shaft (61) which, by being withdrawn, allows said hook to be disconnected from said mechanical assembly only when said switch (52) changes its state because of the inclination of the box whereinto said switch is contained.
8. Device according to claim 7, characterised in that said mechanical assembly comprises a plate (43) rotatably connected to a support of said assembly, said plate (43) comprising a cam (45) with a tooth (46) co-operating with the corresponding tooth (410) of said hook (41) and a square (44) suitable for interfering with the end of said shaft (61) of the electromagnet (61) when said hook (41) is coupled with said cam (45).
9. Device according to claim 8, characterised in that said plate (43), when said cam (45) is connected with said hook (41), compresses a spring (48) by means of a retainer (47) belonging to said plate so that it causes a quick detachment of the hook (41) when the shaft (61) of the electromagnet (60) withdraws.
10. Device according to claim 8, characterised in that said hook (41), when connected to said cam (45), is prevented from translating with respect to said

mechanical assembly (42) by one protrusion (49) belonging to said mechanical assembly and contrasting with said hook.

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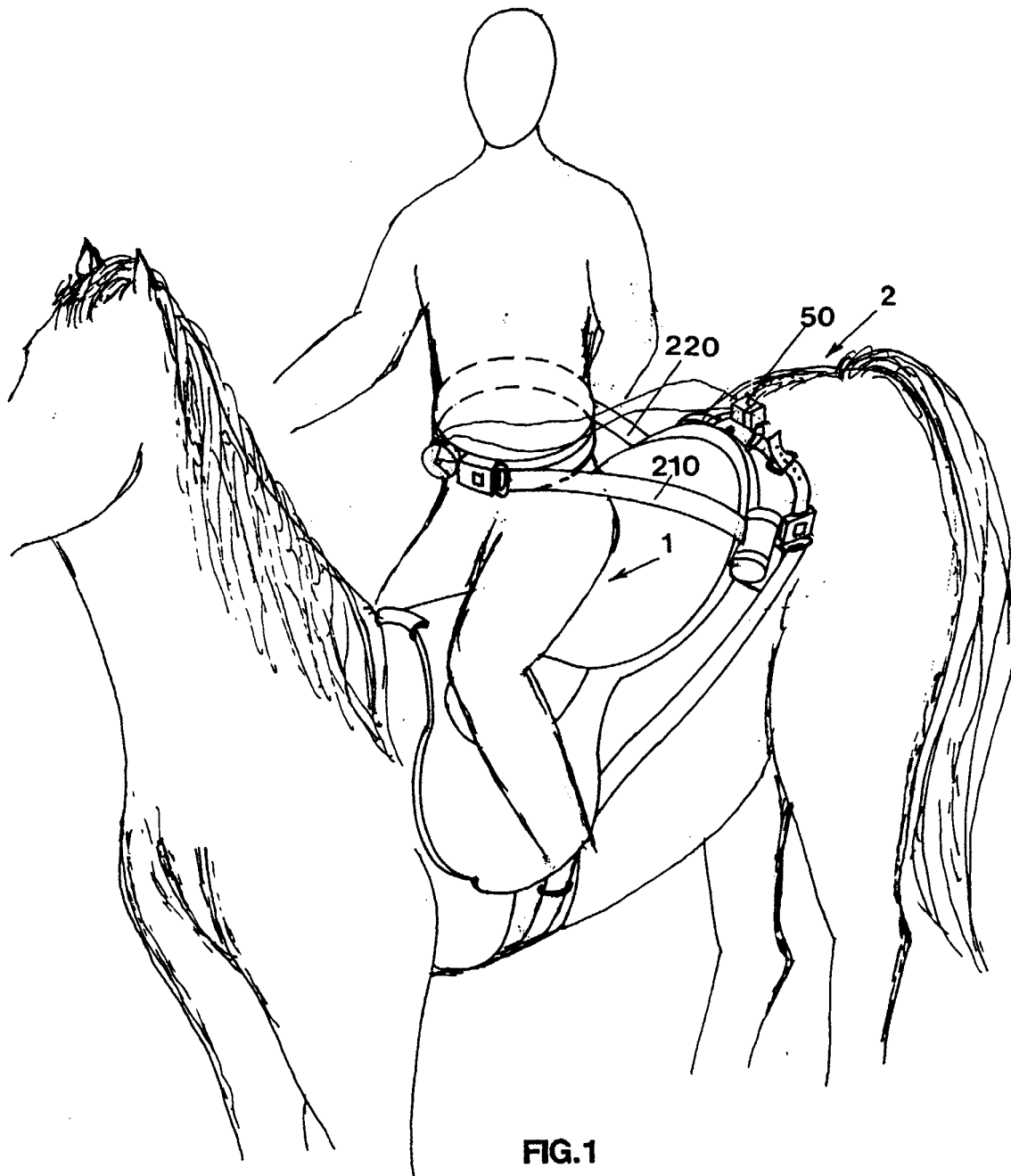
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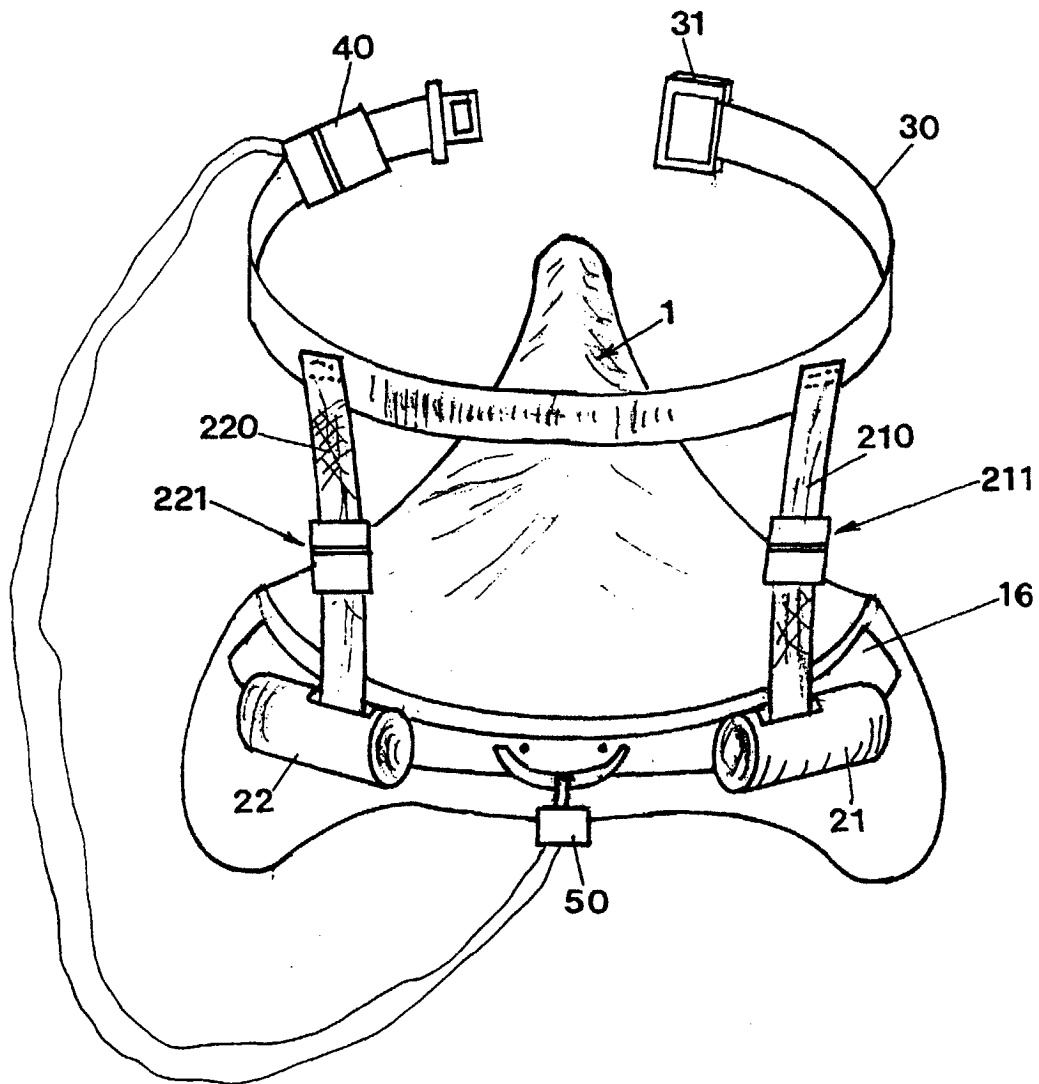
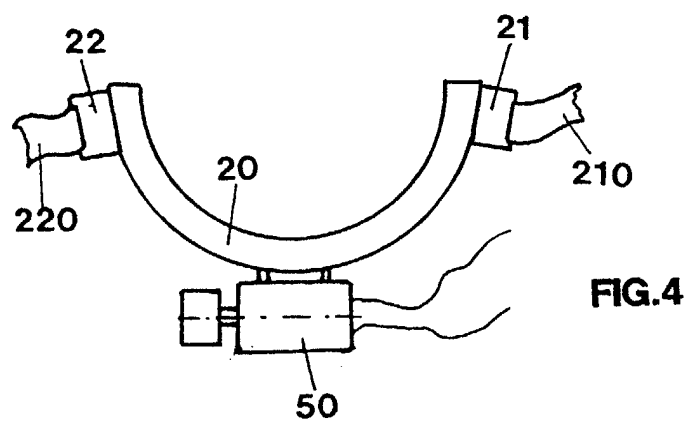
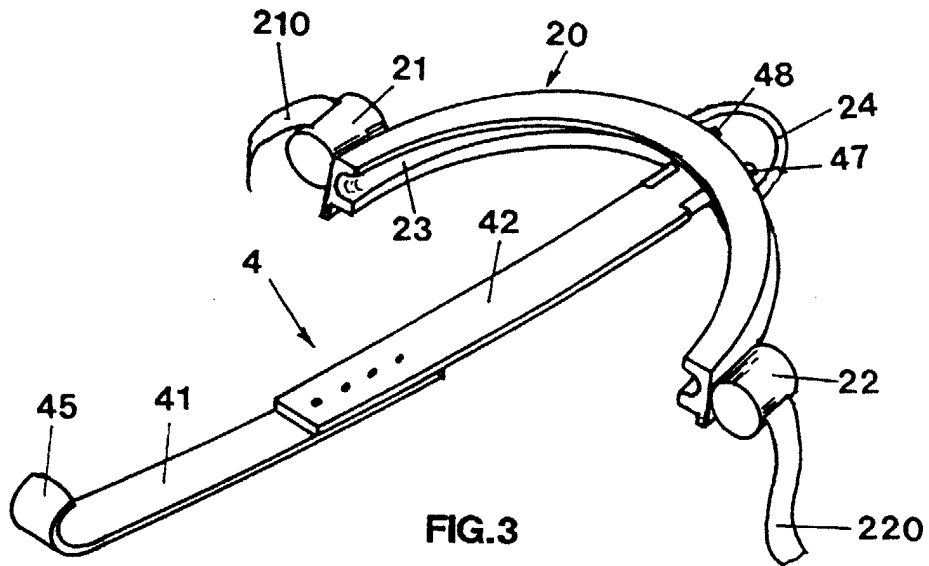
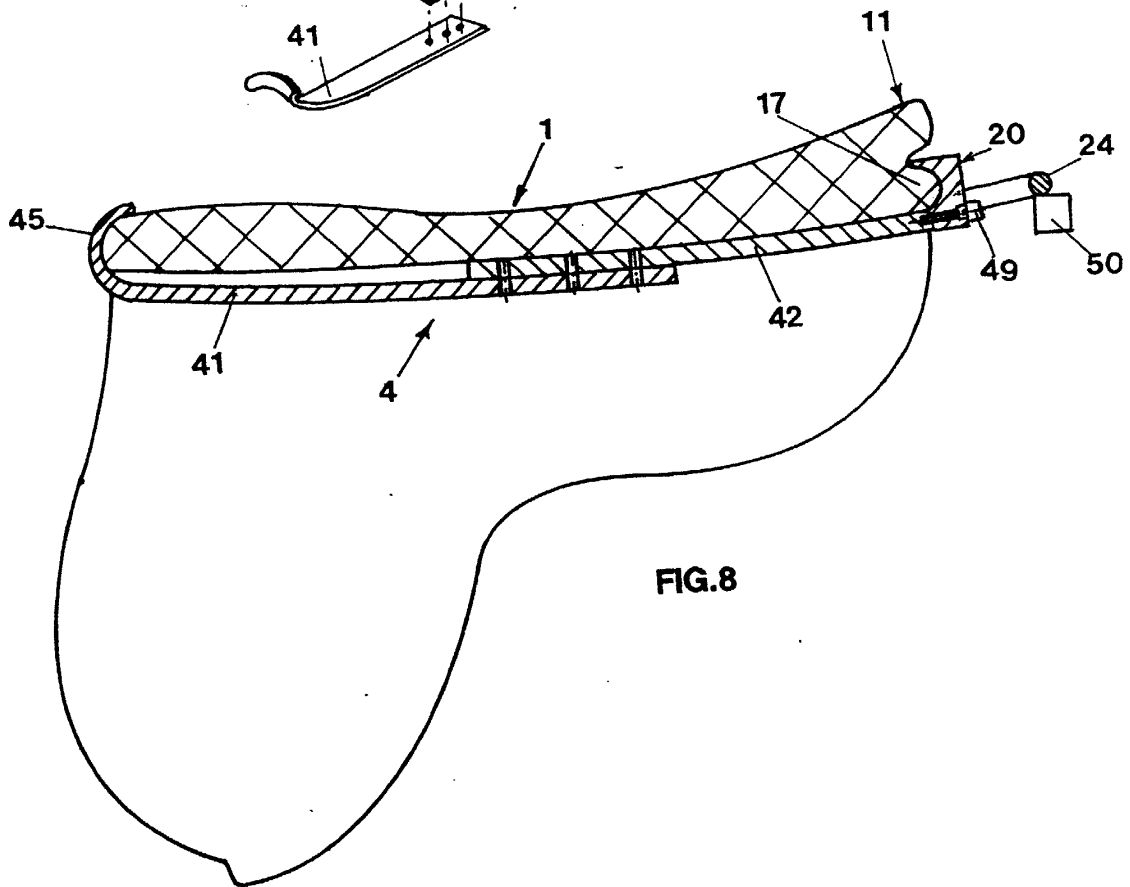
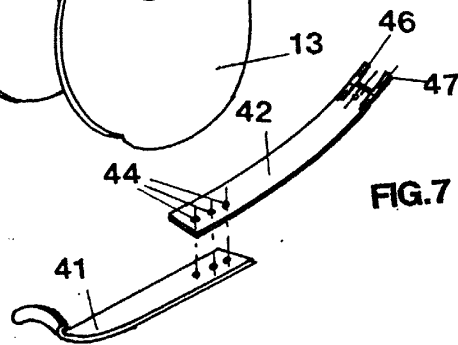
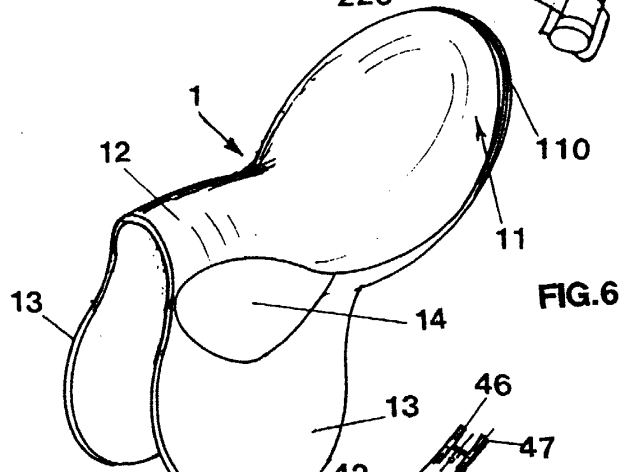
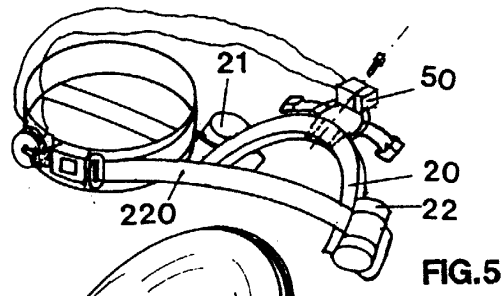


FIG.2





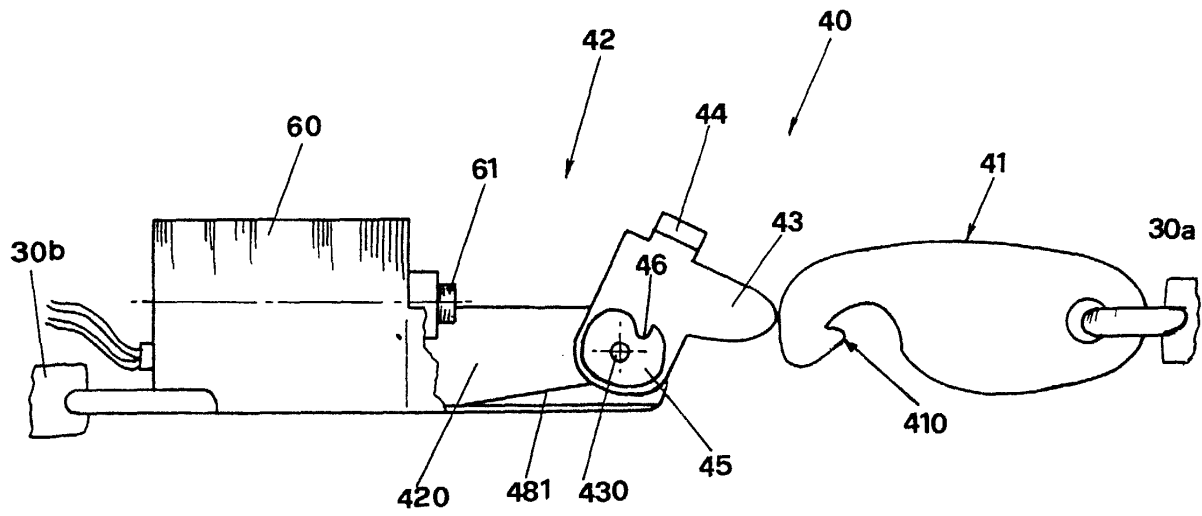


FIG. 9

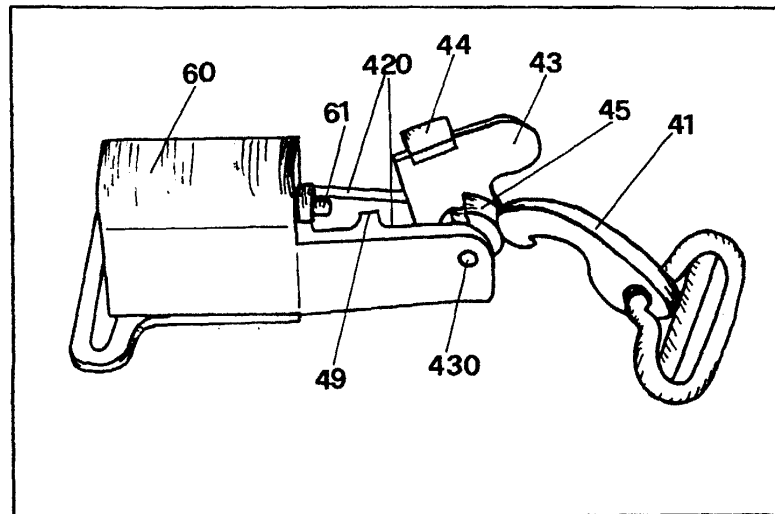


FIG. 10

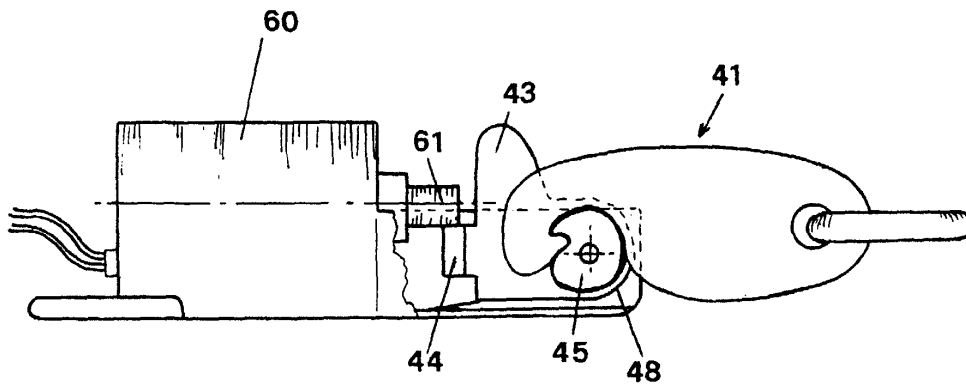


FIG. 11

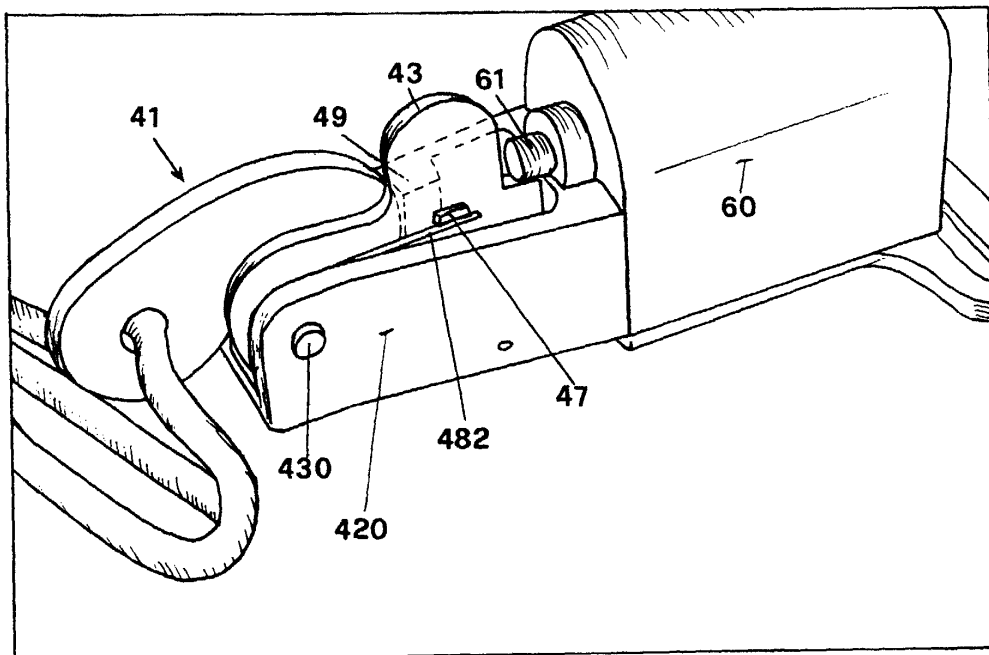


FIG. 12

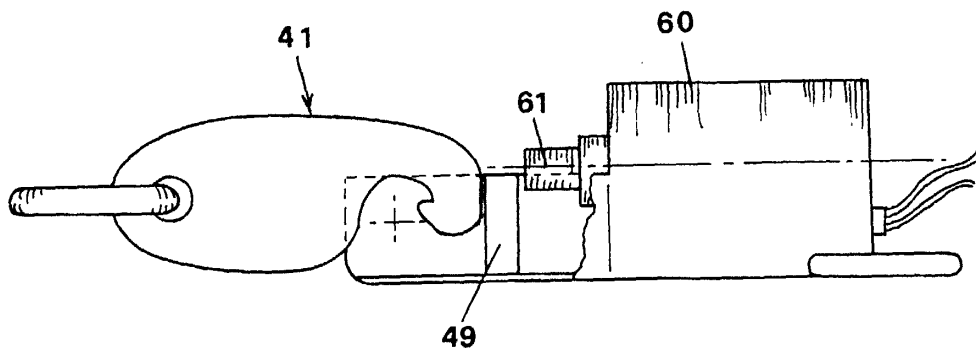


FIG. 13

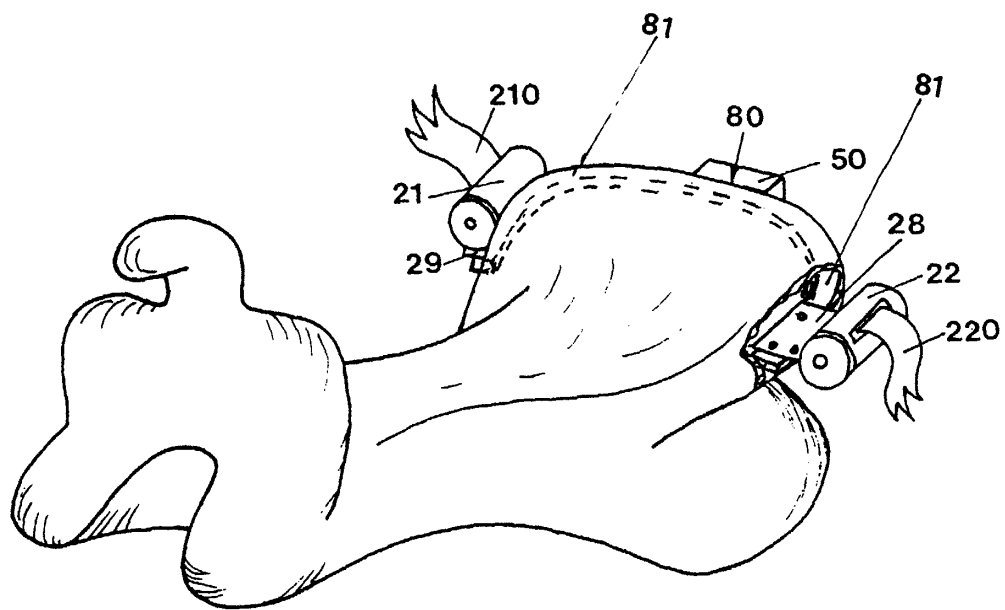


FIG. 14

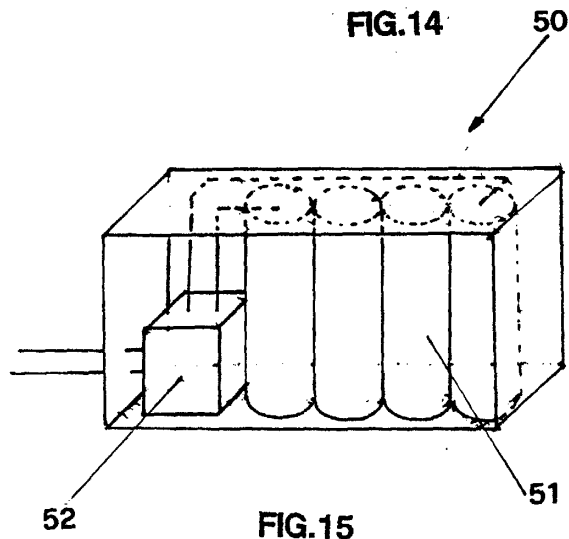


FIG. 15



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 99 83 0387

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.6)
P,A	EP 0 860 397 A (BOHN PETER) 26 August 1998 (1998-08-26) * column 2, line 39 - line 49 * * column 8, line 2 - line 39 * * figures * ---	1	B68C1/14
A	US 5 735 109 A (KOJIMA KIMBERLY) 7 April 1998 (1998-04-07) * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B68C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 October 1999	Examiner Martin, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 99 83 0387

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14-10-1999

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