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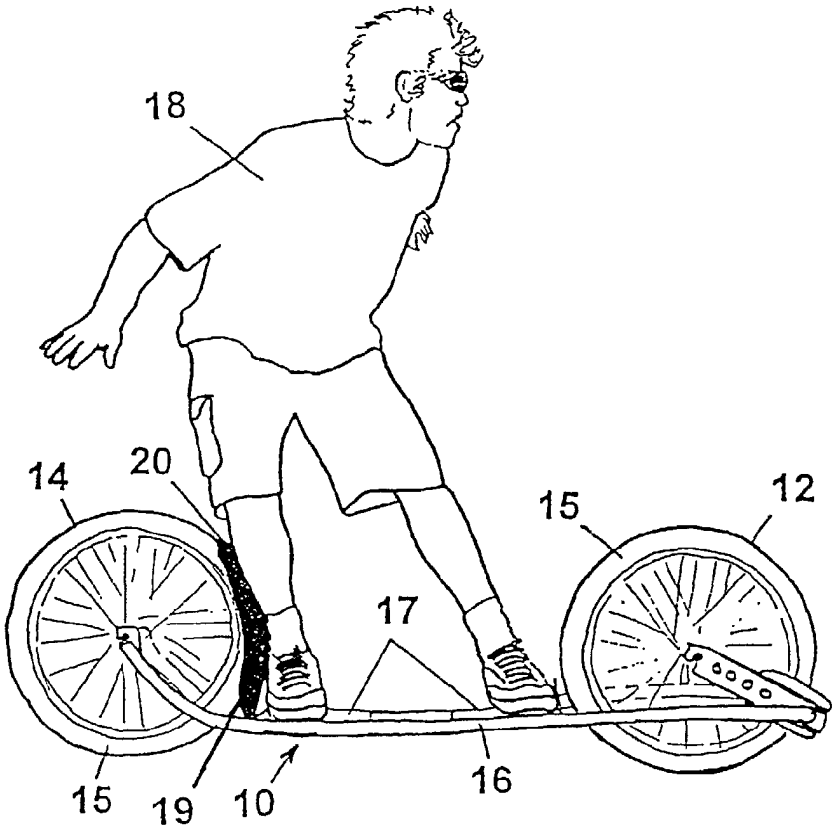
(54) Title: AN ALL-TERRAIN BOARD WITH LEG OPERATED BRAKE



(57) Abstract: An all-terrain board (10, 50) ridden by a rider (18) standing on the board (10, 50) is provided with a braking member which can be engaged by a leg of the rider (18) and moved into braking engagement with a wheel (14, 52). The braking engagement may be directly onto a tyre (15) of the wheel (14). Alternatively, the braking engagement may be indirectly onto a wheel (52) through a linkage connecting the brake (60) to a brake mechanism (74) acting on a rim (56) of the wheel (52).

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patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

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

AN ALL-TERRAIN BOARD WITH LEG OPERATED BRAKE

DESCRIPTION

The present invention relates to an all-terrain board.

FIELD OF THE INVENTION

The present invention is applicable in general to all-terrain boards arranged to be ridden by a rider standing on a board member such as skate boards, mountain boards, grass boards and similar devices which may have two, three or four wheels.

Braking systems for all-terrain boards have been described previously such as in International Patent Application No. PCT/AU98/01007.

However, there is a need for a braking system for all-terrain boards which enables braking to be effected in a way which is safe, convenient, effective, reliable and predictable.

The present invention provides an all-terrain board having a braking system which, at least in part, provides safe, convenient, effective, reliable and predictable braking under a range of conditions.

SUMMARY OF THE INVENTION

In accordance with one aspect of the present invention there is provided an all-terrain board arranged to be ridden by a rider standing on a board member, which comprises a

wheel means and a brake means having a braking member arranged to be engaged by a leg of a rider so as to apply braking force to the wheel means of the board.

In one embodiment of the present invention, the braking member may be arranged to act directly on a wheel of the board. In particular, the braking member may be arranged to act on a tyre of the wheel to impart braking force to the wheel.

In another embodiment of the present invention the braking member may act indirectly on a wheel of the board. In particular, the braking member may be arranged to cause a braking device to act on a rim of the wheel to impart braking force to the wheel

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a side elevation of an all-terrain board in accordance with a first embodiment of the present invention;

Figure 2 is a view similar to Figure 1 showing a brake means being applied by a rider;

Figure 3 is a view of a rear portion of the all-terrain board of Figure 1 to an enlarged scale;

Figure 4 is a view similar to Figure 3 showing a brake means being applied;

Figure 5 is a side elevation of part of a rear portion of an all-terrain vehicle according to a second embodiment of the present invention showing a brake means;

Figure 6 is a side elevation similar to Figure 5 showing the brake means being applied to a wheel rim;

Figure 7 is a plan view of the second embodiment of Figure 5; and

Figure 8 is a plan view similar to Figure 7 showing the brake means being applied to a wheel rim.

DESCRIPTION OF THE INVENTION

In Figures 1 to 4 of the accompanying drawings, there is shown an all-terrain board 10 including a leading wheel 12, a rear wheel 14 and a frame 16 interconnecting the wheels 12 and 14. Each wheel 12 and 14 is provided with a tyre 15. Further, a board member 17 is mounted on the frame 16 between the wheels 12 and 14. The board 10 is provided with a brake means 19.

As shown in Figures 1 and 2 the all-terrain vehicle 10 is arranged to be ridden by a rider 18 standing on the board member 17.

As can best be seen in Figures 3 and 4 an upright braking member 20 of the brake means 19 extends upwardly from the frame 16. The braking member 20 is connected to the frame 16 of the board 10 about a transverse pivotal mounting 22 (see Figures 3 and 4). Further, the braking member 20 has a concave shape facing the tyre 15 of the rear wheel 14. Preferably, internally of the concave shape the brake member 20 is provided with a brake contact surface 24 which is formed of material having suitable wear and friction properties to withstand the pressure and temperature of braking against the tyre. Preferably, spring means (not shown) is provided to return the braking member 20 to the non-engaged position shown in Figure 3 when no force is applied to the braking member 20.

In use, the rider 18 rides the all-terrain board 10 in the manner shown in Figure 1. However, if the rider 18 decides to reduce the speed of the all-terrain board 10 when in motion he simply has to lean backward as shown in Figure 2. This prevents a rider 18 from being thrown forward when braking and is a natural, safe stance for a rider to maintain when an all-terrain board is slowing down. However, as can be seen in Figure 2, the arrangement of the present invention enables the rider 18 to apply pressure to the braking member 20 by means of the calf of his rearwardly disposed leg. This causes the braking member 20 to contact the tyre 15 of the rear wheel 14 by means of the brake contact surface 24. As a result a braking force is applied to the rear wheel 14 and the all-terrain board 10 is caused to slow down. The braking member 20 may be made of steel, aluminium, plastics material or composite material whilst the braking contact surface 24 may be formed of rubber, metal, composite material or suitable plastics material able to withstand the heat, pressure and friction created by braking against the tyre 15. In this regard, relatively low coefficient of friction plastic materials have been found to offer suitable performance for low cost.

In Figures 5 to 8 there is shown a portion of a rear part of an all-terrain vehicle 50 which is similar to that shown in Figures 1 to 4.

The vehicle 50 has a rear wheel 52 mounted on a frame 54. The wheel 52 has a rim 56 having a tyre 58 extending thereabout. The vehicle 50 is provided with a brake means 59.

A braking member 60 of the brake means 59 is mounted to the frame 54 by means of a transverse pivotal mounting 62. Further, as can best be seen in Figures 5 and 6, an upright plate member 64 is fixedly mounted to the frame 54 just in front of the mounting 62 of the braking member 60.

The plate member 64 has an aperture (not shown) therein through which projects a flexible cable 66. The cable 66 has a nipple 68 mounted at outer end thereof adjacent to

the plate member 64. The nipple 68 is larger than the aperture in the plate member 64 so that the outer end of the cable 66 cannot pass through the aperture.

The cable 66 then passes through a conduit 70 which may include a length adjustment means 72.

As can be seen in Figures 7 and 8, the cable 66 is connected to a bicycle type V-brake 74. The V-brake 74 has a pair of arms 76 pivotally mounted on pivot points 78 and extending forwardly thereof. The conduit 70 is connected to a leading end of a first arm 76 via a swivel cage 82 pivoting off a leading end of one arm 76. The cable 66 exits the conduit 70 at one end of the cage 82 and extends across to a cable clamping screw 84 at a leading end of the other arm 76. Further, forwardly of but adjacent to the pivot points 78 each arm 76 is provided with a brake pad 80.

As can be seen in the drawings, in operation, a rider as shown in Figure 2, applies pressure to the braking member 60 by means of the calf of a rearwardly disposed leg and pivots the braking member 60 about the pivot 62 so as to move the braking member 60 away from the nipple 68 and therefore shorten the effective length of the cable 66 between the leading ends of the arms 76. This causes these leading ends to be drawn towards each other about the pivot points 78 and therefore causes the brake pads 80 to engage with the rim 56. This action applies braking force to the wheel 52 and therefore slows down the all-terrain vehicle 50 when it is in motion.

Each pair of brake arms 76 incorporates internal spring means for returning the arms 76 to the position shown in figure 7 when braking is no longer required and pressure ceases to be applied to the braking member 60.

V Brakes have been used as the example to describe the braking means. However, it is important to note that the principle of a rider leaning against a calf operated lever to activate a cable or hydraulic operated brake also applies to other types of braking mechanisms such as disk brakes and hub brakes.

Modifications and variations such as would be apparent to a skilled addressee are deemed within the scope of the present invention.

CLAIMS

1. An all-terrain board arranged to be ridden by a rider standing on a board member characterised in that it comprises a wheel means and a brake means having a braking member arranged to be engaged and moved by a leg of a rider so as to apply braking force to the wheel means of the board.

2. An all-terrain board according to Claim 1, characterised in that the braking member is arranged to be engaged by a calf of the rider.

3. An all-terrain board according to Claims 1 or 2, characterised in that the board has a leading wheel means and a rear wheel means and the braking member is arranged to engage with the rear wheel means.

4. An all-terrain board according to any one of the preceding Claims, characterised in that the braking member is arranged to act directly on a wheel of the board.

5. An all-terrain vehicle according to claim 4, characterised in that the braking member is a pivotally mounted upright member which is normally biased away from the wheel but can be pivoted into engagement with the wheel by contact with the leg of the rider.

6. An all-terrain board according to any one of Claims 1 to 3, characterised in that the braking member acts indirectly on a wheel of the board.

7. An all-terrain board according to Claim 6, characterised in that the braking member acts indirectly on a rim of the wheel of the board.

8. An all-terrain board according to Claim 6 or 7, characterised in that the braking member is a pivotally mounted upright member which is normally biased away from the

wheel but which can be pivoted into engagement with the wheel by contact with the leg of the rider.

9. An all-terrain board according to Claim 8, characterised in that a fixed upright plate is disposed adjacent to but forwardly of the braking member, and a flexible cable means is anchored on the fixed upright plate, the cable means is operationally connected to the braking member so that as the braking member is moved the cable means causes braking force to be applied to the wheel.

10. An all-terrain vehicle according to Claim 9, characterised in that the cable is operationally connected to a brake having opposed brake pad members and movable arms, the movable arms being moved by the cable means upon movement of the brake member so that the brake pads engage with the wheel and apply braking force thereto.

FIGURE 1

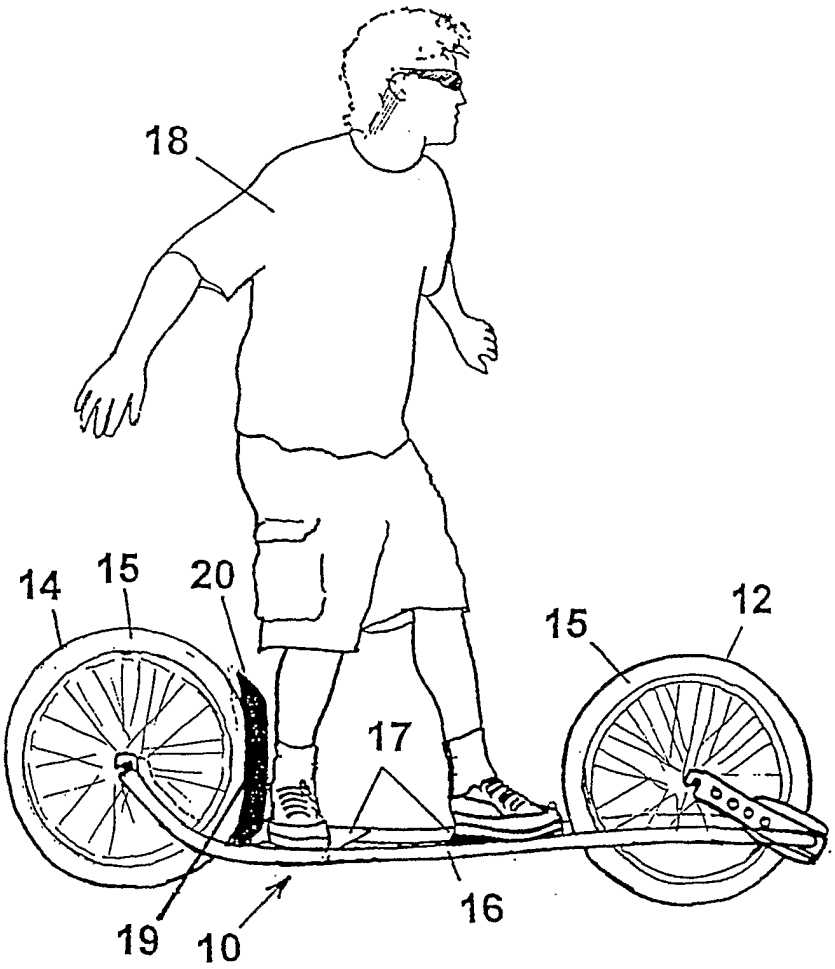


FIGURE 2

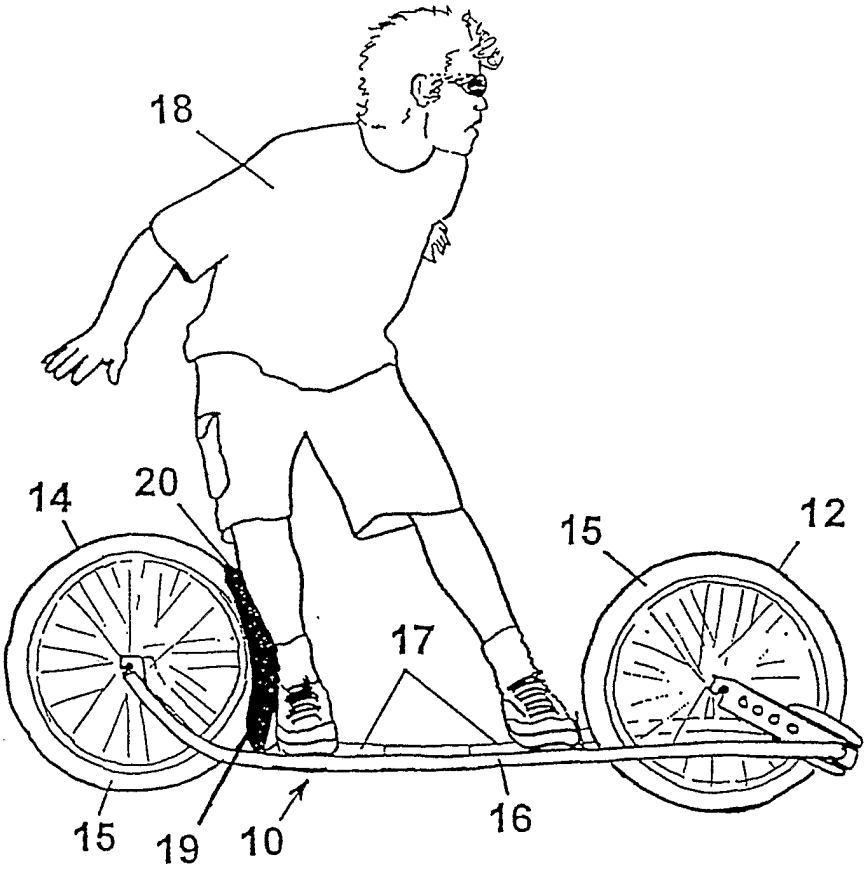


FIGURE 3

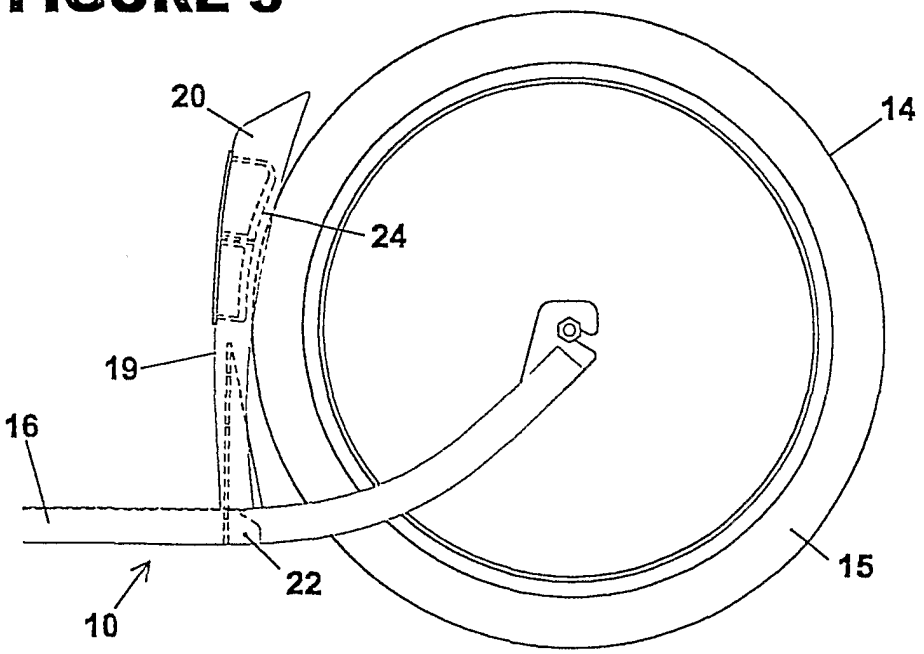


FIGURE 4

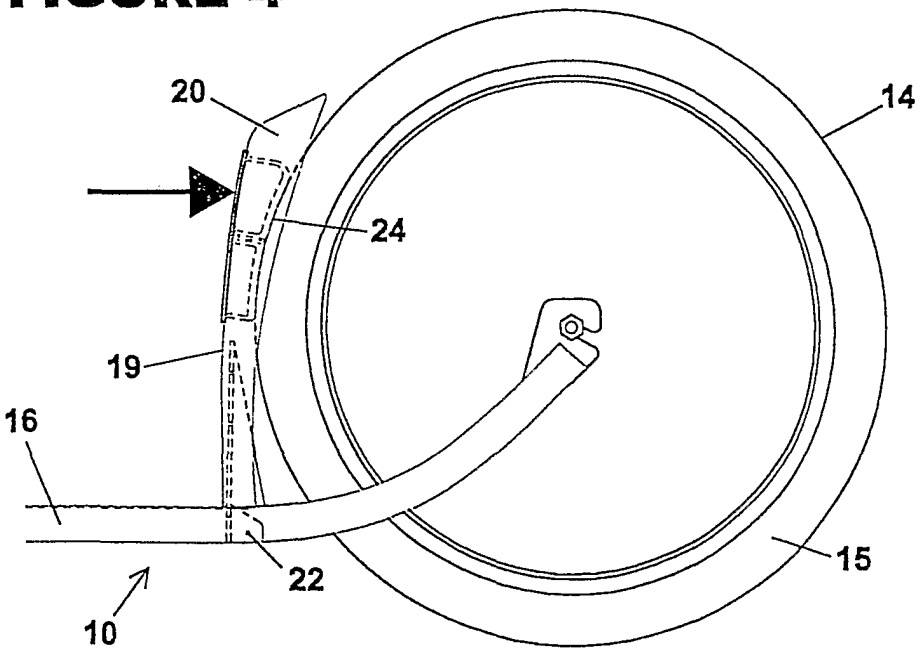


FIGURE 5

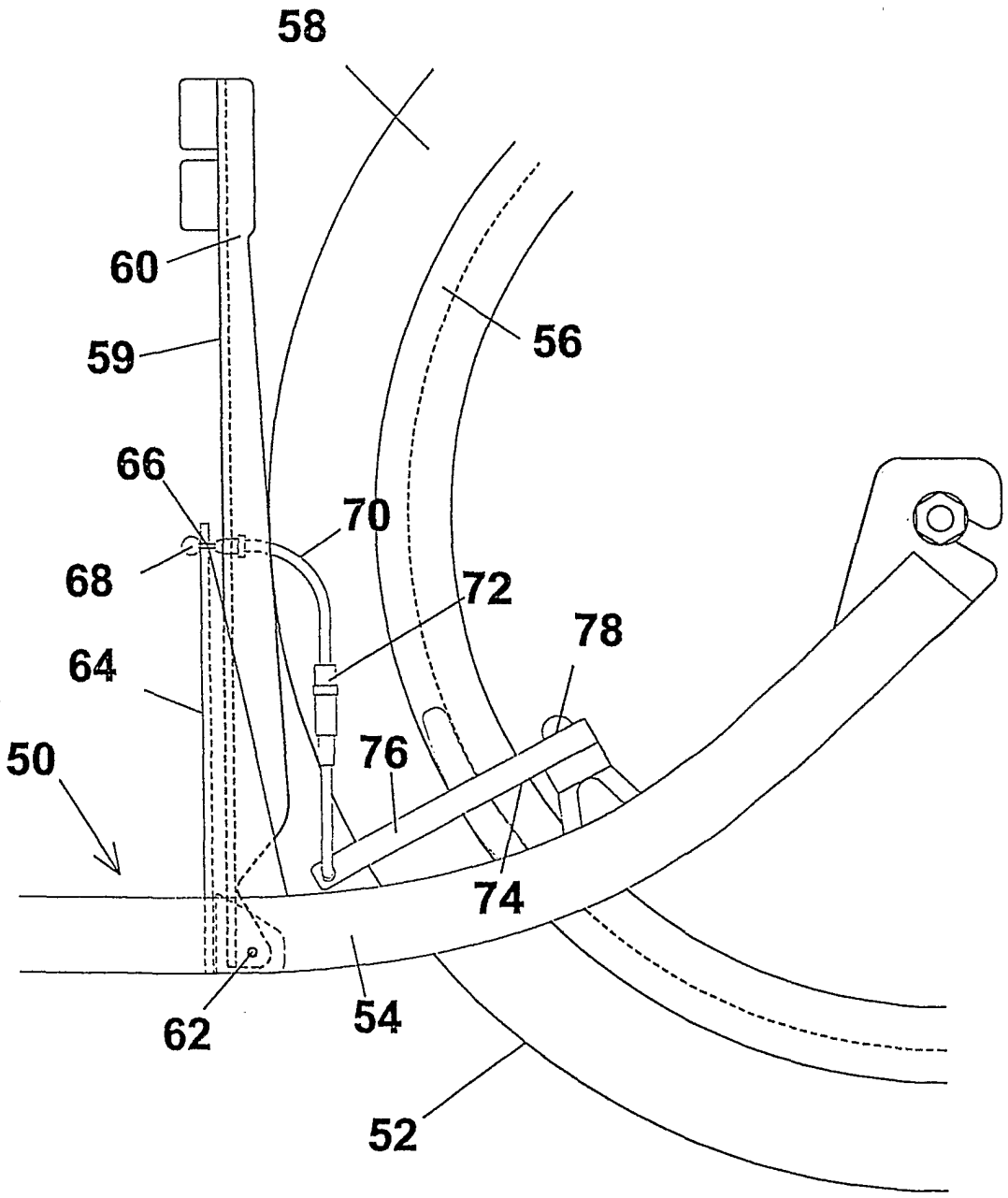


FIGURE 6

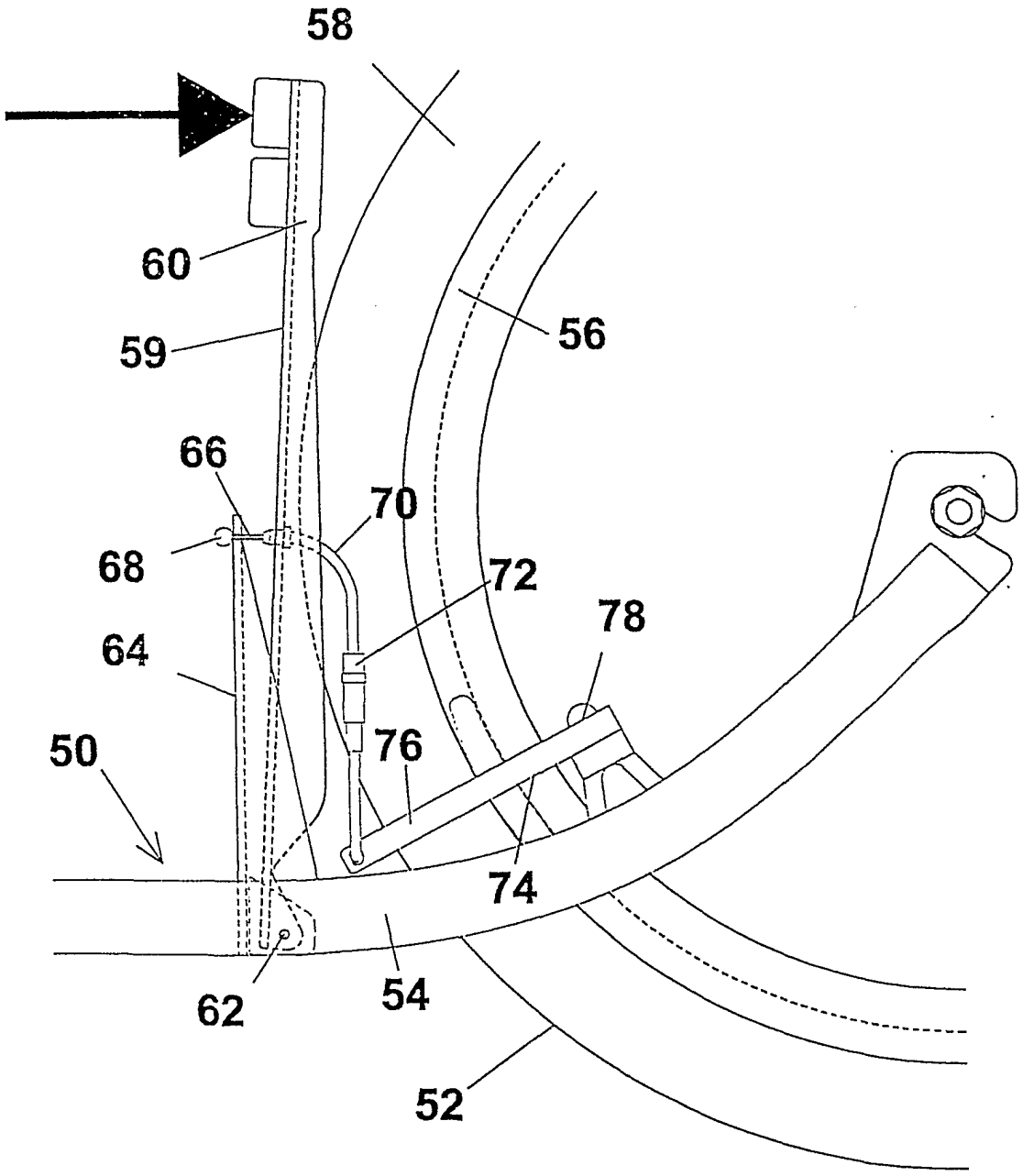


FIGURE 7

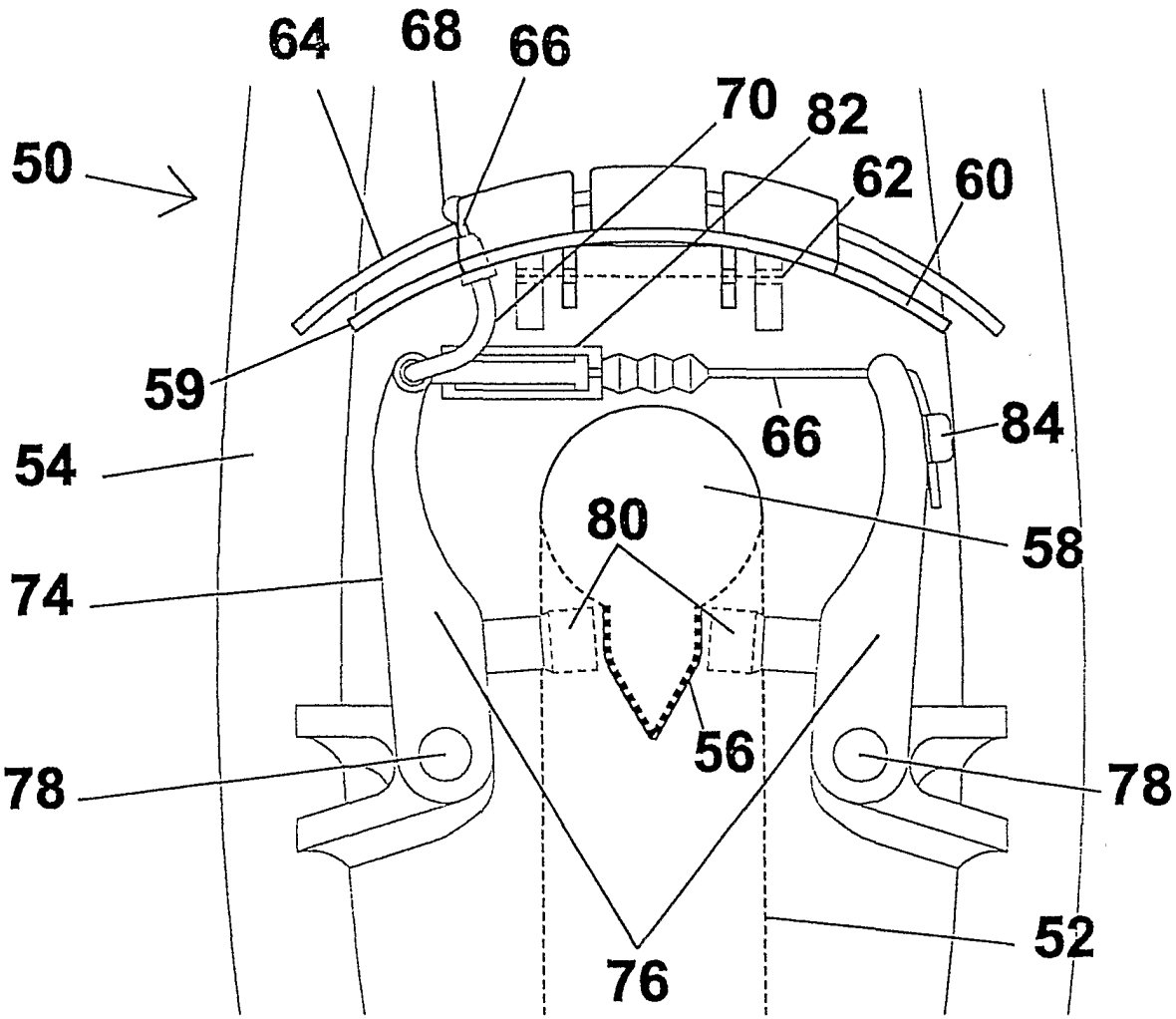
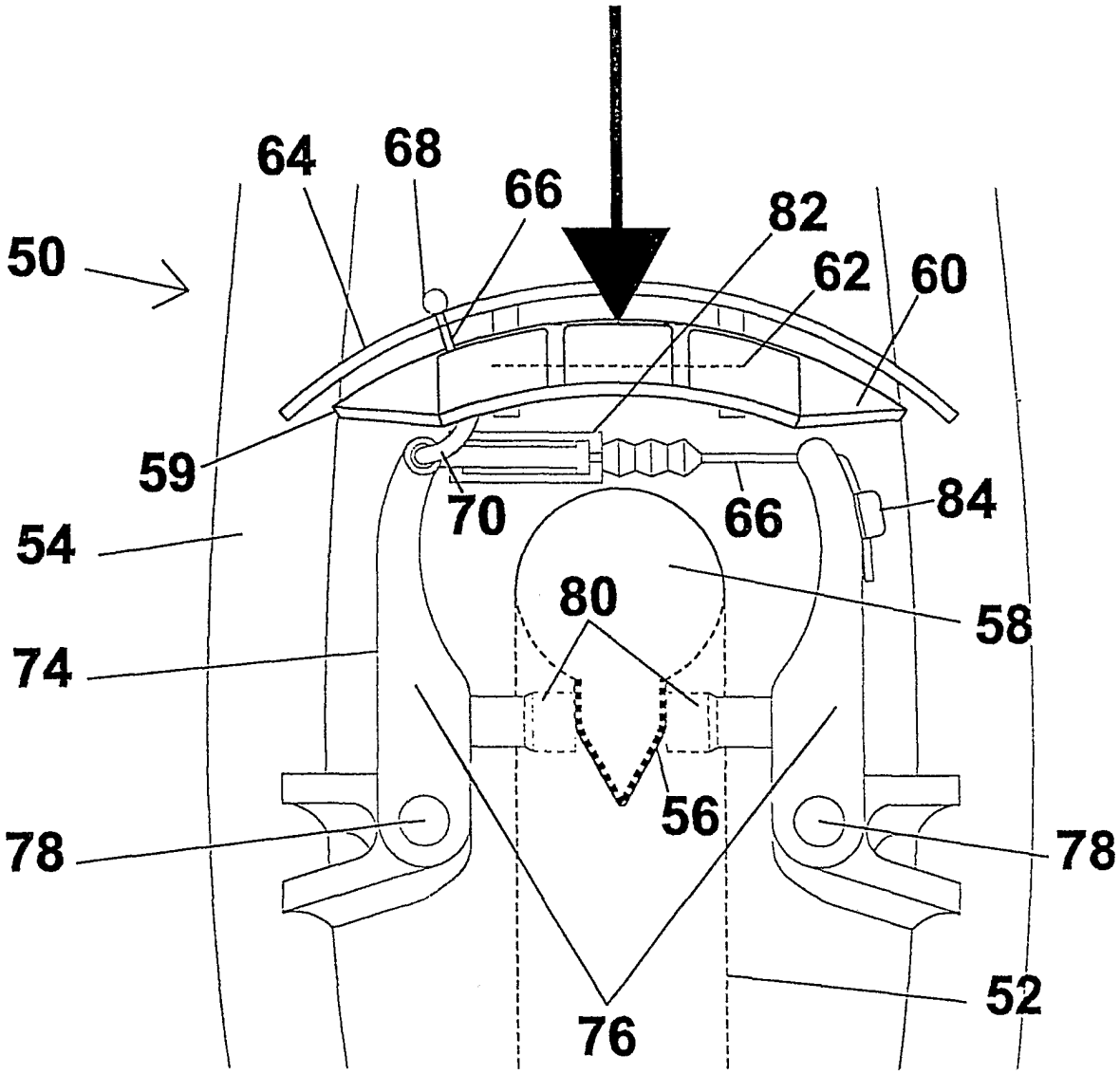


FIGURE 8



INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU01/00866

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: A63C 17/14, 17/06, B62L 1/02, 1/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

REFER ELECTRONIC DATA BASE CONSULTED BELOW

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

AU: IPC A63C 17/00, 17/01, 17/06, 17/14

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI IPC A63C 17/00, 17/01, 17/06, 17/14, B62L 1/-, 3/-, B60T 1/00, 1/02, 1/04, 1/06 & keywords: BOARD, SCOOTER, BRAKE, LEG, CALF, CYCLE and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 00/53276 A (ROSSO) 14 September 2000 See whole document	1-3, 6-8
X	AU 84429/75 A (ANDORSEN et al) 10 March 1977 See whole document	1-8
Y	See whole document	1, 9, 10
Y	WO 99/34886 A (DESIGN SCIENCE PTY LTD) 15 July 1999 See whole document - prior art skateboard cited in the present specification	1

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 September 2001	25 SEPTEMBER 2001
Name and mailing address of the ISA/AU	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU01/00866

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 891921 A2 (SHIMANO INC.) 20 January 1999 See whole document - Calliper operated brake	9, 10

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU01/00866

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
WO	200053276	AU	200025684				
AU	84429/75	NONE					
WO	9934886	AU	17435/99	EP	1042039		
EP	891921	PL	327528	SK	948/98	US	5894913

END OF ANNEX