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EUROPEAN PATENT APPLICATION

21 Application number: **88830217.1**

22 Date of filing: **18.05.88**

51 Int. Cl.4: **A 43 C 11/14**
A 44 B 11/10
// A43B5/04

30 Priority: **19.06.87 IT 2182387**

43 Date of publication of application:
22.02.89 Bulletin 89/08

84 Designated Contracting States:
AT BE CH DE ES FR GB GR LI LU NL SE

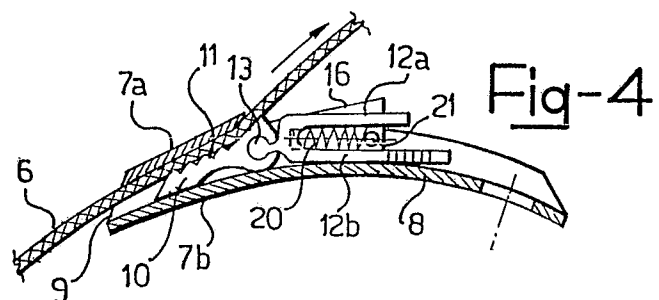
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54 **A quick self-locking fastening device for ski boots and the like.**

57 A fastening device for ski boots wherein a tape or strape (6) operated by a tension-adjusting lever is engaged through a tape leader (7) in which it can be locked by means of a wedge slider (10) guided for movement within the leader (7) and being operable manually.



Description

This invention relates to a quick fastening device for ski boots and the like.

It is a known fact that to practice skiing proficiently, the closest possible fit should be provided between the skier's foot and the boot, for any possibility for looseness here is bound to reflect adversely on skier's performance.

This condition, which becomes imperative in downhill skiing, is pressed by that it is through the boot that movements of the foot are transferred to the ski to direct and control it.

Hence the importance of a ski boot fastening system, which is primarily designed to ensure the above condition.

Fastening devices designed to meet such a demand are also required to feature fine adjustment of the boot fastening tension and "storage" of the adjustment for as long as the skier wishes.

Whilst from the standpoint of the amount of tensile force developed and quick fastening ability current commercially available devices are quite satisfactory, they are less so from the standpoint of their ability to provide for fine adjustment of that tension in a convenient manner. In fact, with prior fastening devices, adjustment is made dependent on multiple hooks engageable by a ring subjected to the action of a tensioner assembly, or on serrated straps adapted to be engaged by barb or pawl-like locking arrangements. Even when accurately made, such devices can only afford stepwise or fixed incremental adjustment and may, therefore, fail to meet the demand for close adjustment.

Additional drawbacks of prior devices are the size of some of their components, which break the smooth profile of the ski boot, and, not least important, their manufacturing and assembling costs.

It is the primary object of this invention to provide a quick fastening device for ski boots, which has such constructional and operational features as to obviate the above-noted drawbacks exhibited by similar prior devices.

This and other objects to become apparent hereinafter are achieved by a quick fastening device comprising a tensioner assembly of the lever-actuated type and being characterized in that it comprises a flexible tape having one end attached to said tensioner assembly and the other end free, a leader for said tape having an inlet and two opposed walls converging toward said inlet, a substantially plate-like wedge slider fitting movably within said leader and tapering toward the inlet thereof, and an actuator member for operating said slider manually.

The invention features and advantages will be more clearly understood from the following detailed description of an embodiment thereof with reference to the accompanying illustrative drawings, where:

Figure 1 shows schematically and in perspective a ski boot incorporating a quick fastening device according to the invention;

Figure 2 is a perspective detail view of the

same fastening device as shown in Figure 1;

Figure 3 shows an enlarged scale, exploded perspective view of construction details of a component of the aforesaid fastening device;

Figures 4 and 5 are longitudinal section views of same detail as shown in Figure 2, at two different operational stages thereof;

Figure 6 shows in perspective another application of the fastening device according to the invention; and

Figure 7 shows schematically in section a detail of the fastening device according to the invention.

With reference to the drawing views, the numeral 1 designates comprehensively a ski boot having a fastening arrangement which comprises by way of example two identical fastening devices according to the invention, both generally indicated at 2.

Each of these devices comprises a tensioner assembly 3 to a conventional design including a lever 4 pivoted to the juxtaposed wings of a base 5 whereby the lever is secured on the shell of the boot 1. A flexible tape 6 has one end attached in a conventional manner, not illustrated, to said lever 4 at an intermediate location thereon, and the other end free.

A leader 7 for said flexible tape 6 is affixed to or otherwise formed on a base 8 whereby said leader is secured conventionally on the shell of the boot 1. This leader 7 has an inlet 9 and two opposed walls 7a, 7b (the wall 7b consists in this instance of a portion of the base 8 of said leader) arranged to converge toward said inlet 9. More specifically, and in accordance with a preferred embodiment, the wall 7a of the leader 7 has an inclination angle different from and steeper than the inclination angle of the wall 7b to the longitudinal axis of the leader.

A slider 10 (Figure 3), substantially configured as a wedge plate, is mounted slidably in the leader 7, wherein it is positioned with its taper facing the inlet thereof. Advantageously, the back 10a of said slider 10, facing the wall 7a of the leader 7, is formed with a substantially sawtooth serration 11.

The slider 10 is associated in swivel connection with the front end of a manually operated slider actuation member 12 to which it is substantially aligned. In particular, this slider actuation member 12 (Figure 3) is provided forwardly with a cylindrical lug 13 extending transversely of the slider direction of movement and engaging in a corresponding cylindrical seat 14 which is formed transversely in the trailing end 10b of the slider 10. The swivel connection of said lug 13 to its respective seat 14 is an axial sliding fit.

In the preferred embodiment of the invention, the member 12 for operating the slider 10 manually is comprised of an essentially U-shaped element having flat legs or wings 12a, 12b which lie parallel to the base 8 of the leader 7. This actuating member 12 is guided slidably between a pair of juxtaposed walls 15, 16 formed in continuation of the side walls of the

leader 7. A pair of lugs 18, 19 formed on the free ends of the bottom leg 12b of the actuating member 12 and bent toward the leader 7 provide a means of grasping said actuating member 12 to shift it in between said walls 15 and 16 in a guided manner.

A spring 20 is carried on a peg 21 supported on the juxtaposed guiding walls 16, 15 for said member 12 and extending between the legs 12a, 12b thereof, and biases the actuating member 12 constantly toward the leader 7.

In order to tighten this fastener with fine adjustment of its tension, one proceeds as follows.

After raising the lever 4 off its base 5, the grip means 18, 19 is grasped to move the assembly including the actuating member 12 and slider 10 backwards away from the inlet 9 of the leader 7, thus freeing the inlet and allowing the tape 6 through it. By grasping the free end of this tape projecting out of the leader 7, the tape is tensioned by hand; then, the slider 10 is released and allowed, under the bias of the spring 20, to engage the tape with its serration 10a, thus locking the tape within the leader 7.

The lever 4 is now operated to apply a tension force to the tape 6 which, the more it is tensioned the tighter is locked in the leader 7 by the slider 10, as is typical of a strangling effect.

Should the amount of the tension applied prove unsatisfactory (either too large or too small), it will be sufficient to again raise the lever 4, withdraw the slider 10 from the leader 7, and either pull or relax by hand the tape 6 to the desired tension value. On pushing the lever 4 back down, one will then check that the positioning of the tape 6 in the leader 7 is adequate to provide the desired fastening tension.

Note should be taken of that, once this desired amount of tension has been achieved, it is not lost unless the user selects to do so, and that the tension can be relaxed somewhat by just raising the lever 4.

It should be also noted that the provision of a tape 6 for cooperation with the self-locking device (leader 7, slider 10 and its respective actuating member 12) described in the foregoing affords fine adjustment of the fastening tension continuously through an indefinite number of positions.

Illustrated by Figure 6 is a particular, and in some cases advantageous, application of the fastening device according to the invention. In this application, the fastener is tightened in a crossed fashion over opposed flaps of the shell of a ski boot, with the tape 6 engaging it through plural deflecting members such as rings, small sheaves, and the like. Thus, with a single fastening device according to the invention a lacing is formed which, according to prior art approaches, would require no less than three or four conventional lacings.

Understandably, the invention as described with reference to Figures 1 to 6 is susceptible to technical alterations and modifications as dictated by contingent and specific applicational demands, which alteration and modification would fall within the broad scope of the appended claims. Thus, as an example, shown diagrammatically in Figure 7 is a possible different operational inter-relation of the leader 7 with the wedge slider 10 whereby said slider 10 is formed with a serration 11a on its face 10c

remote from the back 10a, said serration being arranged to face and effective to cooperate with the less steeply inclined wall 7b of the leader 7.

The fastening tape 6 would therefore go through the leader 7 in accordance with the arrangement shown in Figure 7, that is flat against the base 8. This may be advantageous from the standpoints of improved utility and aesthetic appeal.

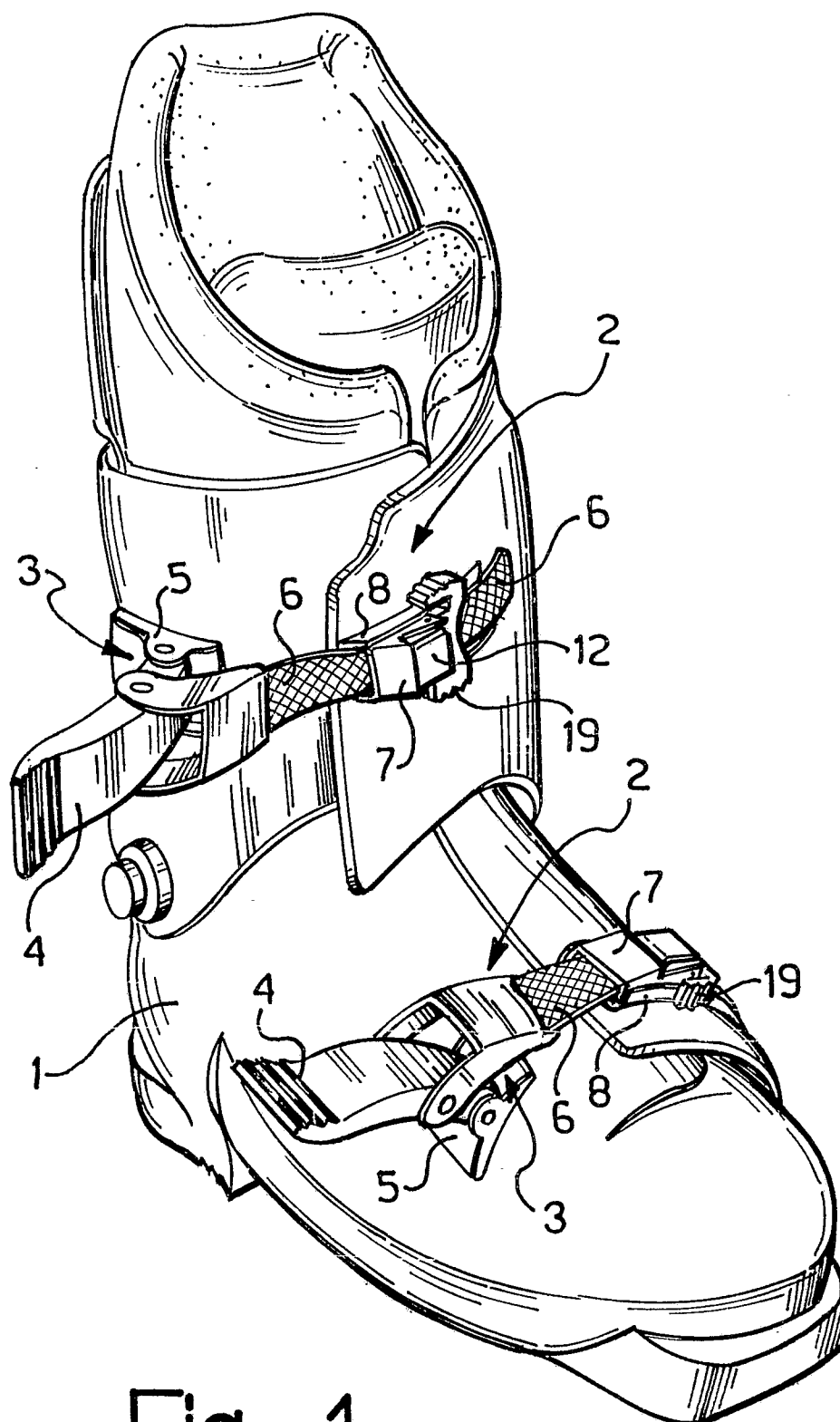
Claims

1. A quick fastening device for ski boots and the like, comprising a tensioner assembly (3,4) of the lever-actuated type, and characterized in that it comprises a flexible tape (6) having one end attached to said tensioner assembly (3,4) and the other end free, a leader (7) for said tape (6) having an inlet (9) and two opposed walls (7a,7b) converging toward said inlet (9), a substantially plate-like wedge slider (10) fitting movably within said leader (7) and tapering toward the inlet (9) thereof, and an actuator member (12) for operating said slider (10) manually.

2. A device according to Claim 1, characterized in that said slider (10) and its respective manual actuation member (12) are laid in substantial alignment to each other and are associated with each other swivel (13,14) fashion about a transverse axis to the direction of movement of the slider (10) in the leader (7).

3. A device according to Claim 3, characterized in that it further comprises a spring (20) constantly biasing said slider (10) in said leader (7) toward the inlet (9) of the latter.

4. A device according to Claim 4, characterized in that said slider (10) has a face (10a,10c) formed with a crosswise serration (11,11a) cooperating with one of said walls (7a,7b) of said leader (7) converging toward the inlet (9) of the latter.



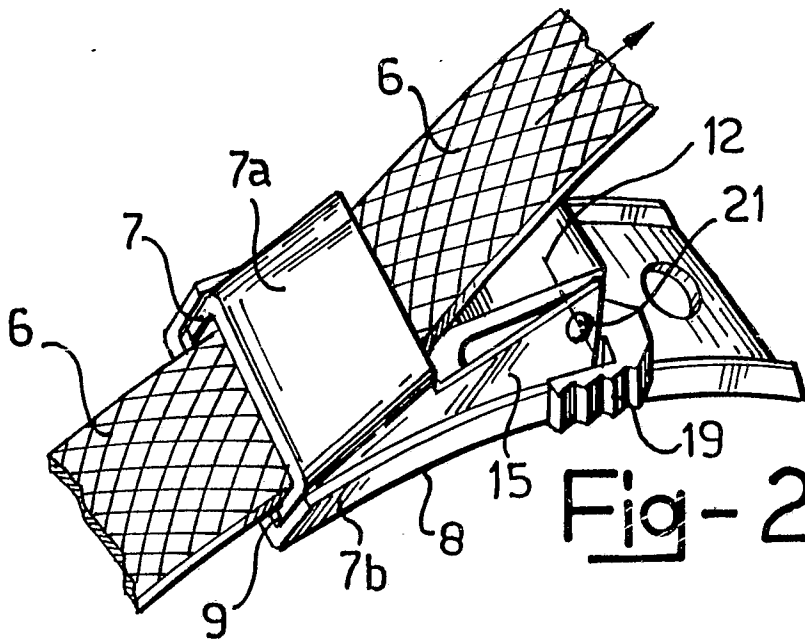


Fig-2

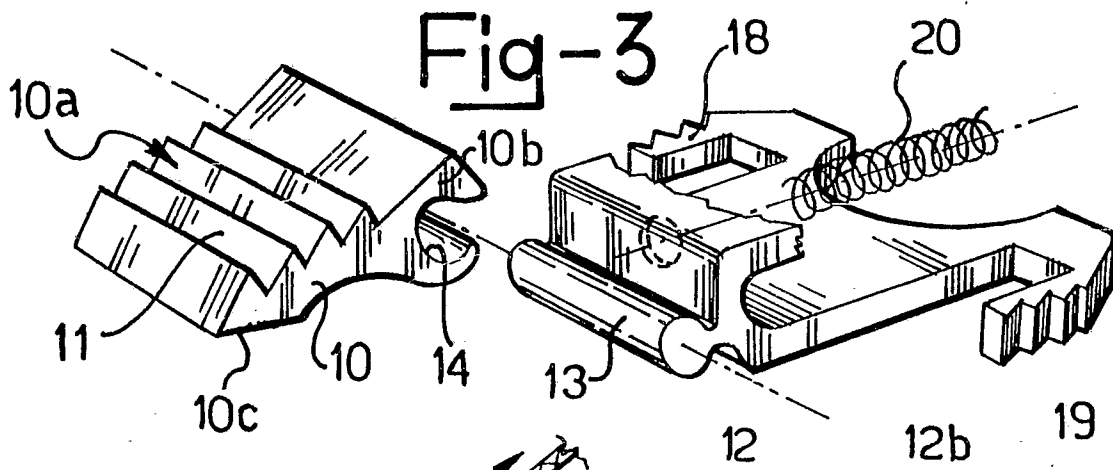


Fig-3

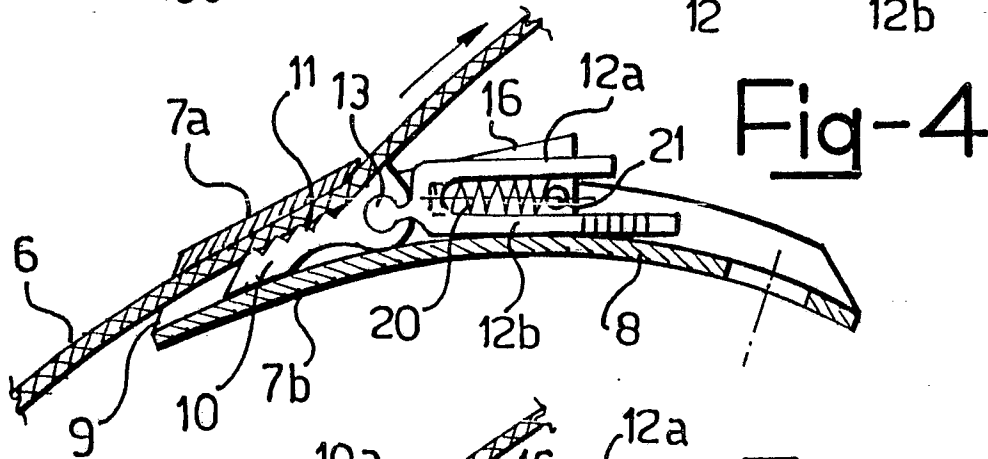


Fig-4

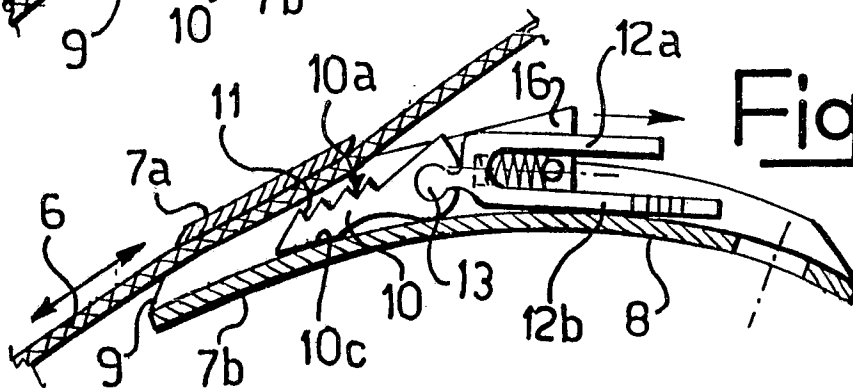


Fig-5

Fig-6

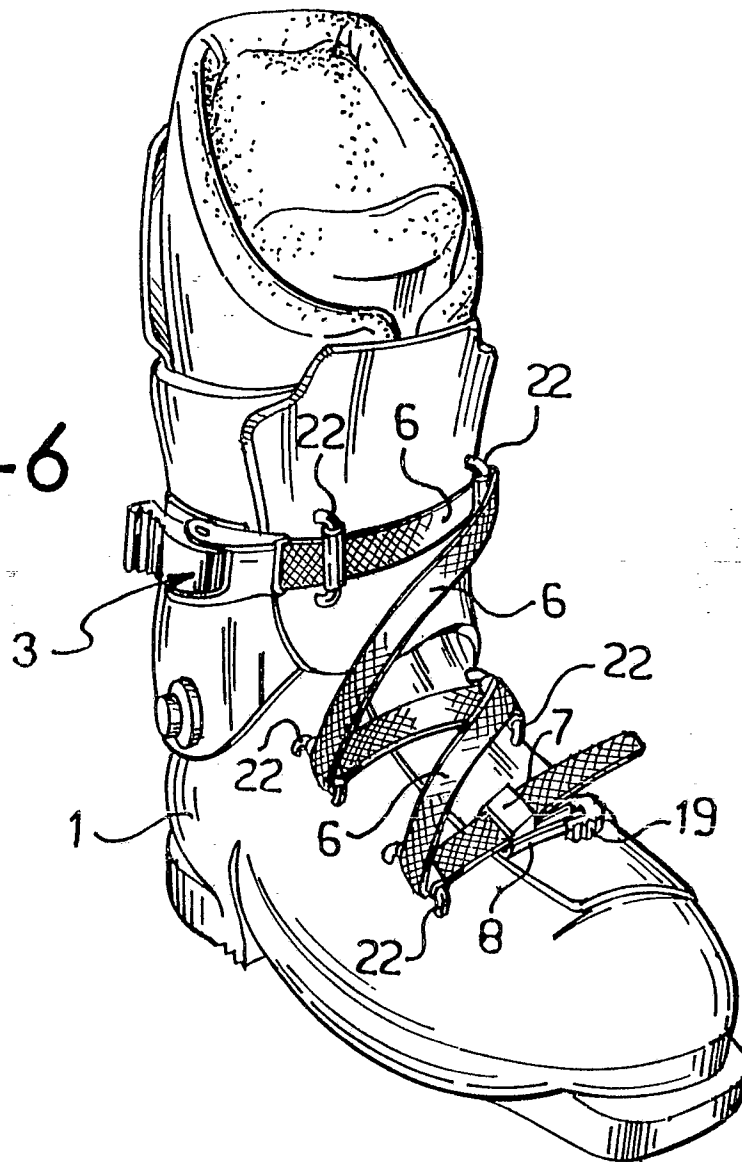
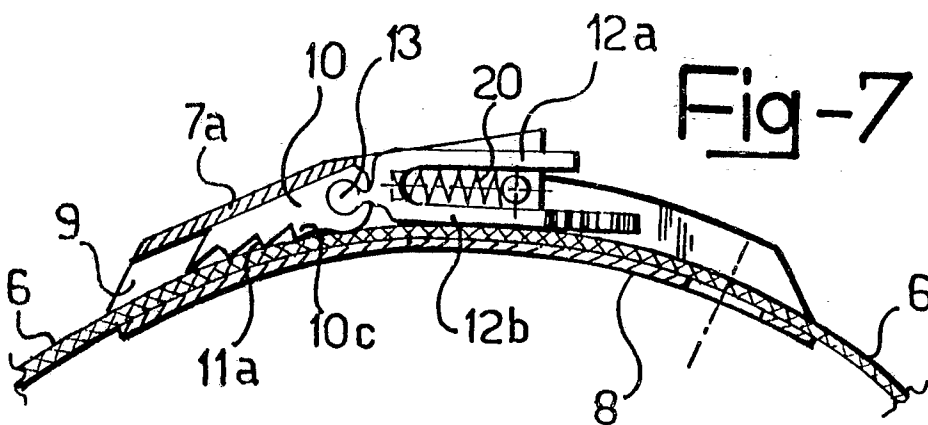


Fig-7





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. 4)
Y	FR-A-1 568 081 (CORNUDA) * Figure 1; pages 1,2 * ---	1,4	A 43 C 11/14 A 44 B 11/10 // A 43 B 5/04
Y	US-A-1 470 843 (JOHNSON) * Figures 1,2,4; page 1, lines 40-91 * ---	1,4	
A	CH-A- 419 691 (BAUMGARTNER) * Figures 2,3 * ---	3	
A	GB-A-1 546 759 (THOMAS WALKER) * Figures 1,2,4,5 * ---	1,4	
A	US-A-2 260 378 (HOFFLAND) * Figures 4-6 * ---	1,4	
A	FR-A- 561 217 (FAVROT) * Figures 1-3 * -----	1,3,4	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			A 44 B A 43 C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12-09-1988	Examiner VERMEESCH, P.J.C.C.
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			
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