(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 727 487 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.05.2014 Bulletin 2014/19

(51) Int Cl.:
A43B 3/00 *(2006.01)* ***A43B 23/07*** *(2006.01)*
A43B 7/32 *(2006.01)*

(21) Application number: **13191451.7**

(22) Date of filing: **04.11.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **06.11.2012 IT PD20120328**

(71) Applicant: **"Erredue" di Xodo Roberto**
35020 Brugine, Frazione Campagnola (PD) (IT)

(72) Inventor: **Xodo, Roberto**
35020 BRUGINE, Frazione CAMPAGNOLA PD (IT)

(74) Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners (IT)
Via Meravigli, 16
20123 Milano (IT)

(54) Safety lining for safety shoes

(57) A safety lining for safety shoes, particularly for lumberjacks' boots. The lining (10) is provided with an insert (11) for protecting the region comprised between the tibia and the tarsus of the foot, enclosed in a pocket (12). The insert (11) has a sandwich-like structure that comprises, in succession:

- at least one outer layer (19) for blocking the movement of a toothed chain of a chainsaw penetrating the boot (14),
- at least one cut-resistant inner layer (20), designed to make the chainsaw chain slip.

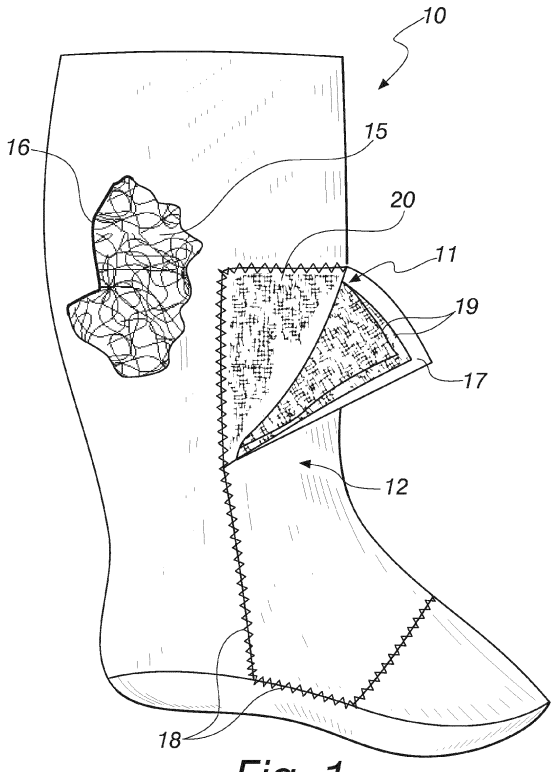

Fig. 1

EP 2 727 487 A1

Description

[0001] The present invention relates to a safety lining for safety shoes.

[0002] This type of shoe falls within the scope of individual protection devices adopted by those who, especially for work requirements, have to use devices that may cause serious injury to the individual, such as portable chainsaws.

[0003] In order to meet this need, nowadays there are safety boots on the market for lumberjacks, which are used to prevent physical injury to the operator in the event the moving toothed chain comes too close to the region of the leg that extends from the fibula to the tarsus of the foot, which is recognized as one of the regions most exposed to this hazardous situation.

[0004] Such products are often of the type of vulcanized rubber and they meet safety requirements thanks to an insert of material made of knitted fabric with a wide weft, positioned during the vulcanization on the boot at the aforementioned region and designed to wind its fibers around the teeth of the chain, which drags them toward the pinion thus jamming the chainsaw.

[0005] Although nowadays this type of boot is widely used in the field, it is not without drawbacks.

[0006] The most pressing of these is the problem of safety for the worker. These boots, in fact, are made by means of vulcanization by hand; therefore the final product is subject to the risk of having defects owing to human error in the assembly of the various parts during vulcanization. Such defects mean that protection can no longer be ensured.

[0007] In addition, the type of protection offered by these boots does not consist in a true impediment to cutting, but rather in the tendency to jam the movement of the toothed chain, without preventing its blades from penetrating the boot before the fibers winding around the teeth of the chain jam it completely.

[0008] It should also be kept in mind that, owing to the vulcanized rubber covering, the weight of the boot is not negligible and requires a great physical effort by the operator, thus causing fatigue which leads to an increase in the probability of an accident.

[0009] The aim of the present invention is to provide a safety lining for safety shoes, such as boots for lumberjacks, which is not limited to jamming the chain of the chainsaw, but which at the same time also prevents it from completely penetrating the boot and reaching the lower limbs of the operator.

[0010] Within this aim, an object of the invention is to obtain a product that ensures that the operator works under conditions of greater safety, even if the boot is not capable of completely jamming the toothed chain.

[0011] Another object is to give the product better comfort, thus limiting the risk of accidents at work owing to excessive fatigue of the operator.

[0012] This aim and these and other objects which will become more apparent hereinafter, are all achieved by a safety lining for safety shoes, particularly for lumberjack's boots, **characterized in that** it is provided with an insert for protecting the region comprised between the tibia and the tarsus of the foot, enclosed in a pocket, said insert having a sandwich-like structure that comprises in succession:

- at least one outer layer for blocking the movement of a toothed chain of a chainsaw penetrating said boot,
- at least one cut-resistant inner layer, designed to make said chainsaw chain slip.

[0013] Further characteristics and advantages of the invention will become more apparent from the description of a preferred, but not exclusive, embodiment of the lining according to the invention, which is illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 shows the lining according to the invention with the sandwich-like insert partially open in the manner of a fan,
Figure 2 shows a boot provided with the lining according to the invention.

[0014] With reference to the figures, the lining according to the invention, which is generally designated with the reference numeral 10 in Figure 1, is provided with an insert 11 for protecting the region comprised between the tibia and the tarsus of the foot, which is enclosed in a pocket 12.

[0015] The lining 10 is designed for safety shoes, particularly for lumberjack's boots, and is intended to be covered with an outer covering 13 that defines the final shape of the boot 14.

[0016] The boot 14 is shown in Figure 2, with an opening that shows the lining 10 with the pocket 12 in which the insert 11 is enclosed.

[0017] The lining 10 is also provided with an inner covering 15, which can be wool for a winter version of the product, like the one shown, or it can be made of other suitable materials that lend themselves best to the environment of use of the finished product.

[0018] In the embodiment shown, the lining 10 has a sheet 16 for covering the inner lining 15 (except in the part for the insert 11) which is made of plastic material and preferably of polyurethane of the thickness of a few tens of microns, for example thirty microns, which contributes to obtaining a product of reduced weight with respect to conventional vulcanized rubber boots.

[0019] On the covering sheet 16 it is possible to inject plastic material, preferably polyurethane of a thickness of a few millimeters, in order to obtain the outer covering 13 that defines the final shape of the boot 14.

[0020] To this end the covering sheet 16 is made of polyurethane or alternatively of a different material that preferably ensures adherence to the plastic material to

be injected in order to complete the manufacture of the boot 14.

[0021] At the insert 11, the pocket 12 that contains it is defined by an outer sheet 17, preferably of the same type as the previous covering sheet 16, and joined to the rest of the lining 10 by sewing and sealed at the perimeter 18 of the pocket 12 to close it. The outer sheet 17 can be sealed for example with a spreadable sealant or with heat-sealing carried out at the stitching.

[0022] The insert 11, as can clearly be seen in Figure 1 where it is partially open in the manner of a fan, has a sandwich-like structure that comprises, in succession:

- at least one outer layer 19 for blocking the movement of a toothed chain of a chainsaw penetrating the boot 14,
- at least one cut-resistant inner layer 20, designed to make the chainsaw chain slip.

[0023] In this embodiment, the two layers are interposed between the inner covering 15 and the outer sheet 17.

[0024] In particular, the insert 11 has two outer blocking layers 19 which are produced by two sheets of fabric that has cut- and tear-resistance characteristics, and the fibers of which are designed to wind around the teeth of the chain that drags them toward the pinion thus jamming the chain. The sheets of fabric are not sewn to the pocket 12, so as not to be coupled to it. Some fabrics that lend themselves to the purpose of jamming the chain in the manner described can comprise aramid fibers or other materials, such as for example a satin and kevlar fabric or a satin and polyethylene fiber fabric, and the number of outer blocking layers 19 depends on the type of material used for this purpose and on the level of certification of the product that is to be offered.

[0025] In the example shown, the insert 11 has two independent outer blocking layers 19; however, in an alternative embodiment, not shown, they can belong to a single folded sheet of fabric. Furthermore a single outer blocking layer 19 can be used or more than two, even optionally constituted by different fabrics with the same property of cut- and tear-resistance, each consisting of a single layer or folded in multiple layers.

[0026] The cut-resistant inner layer 20 comprises at least one sheet of fabric or non-woven fabric, conveniently sewn, substantially at the perimeter 18, to the surrounding part of the lining 10 provided by the inner covering 15 with the covering sheet 16. Such sheet of fabric, or non-woven fabric, contrasts the penetration of the chain by making it slip. In the example shown it is one sheet of fabric, preferably made of ceramized fibers; however it can be substituted by a non-woven fabric made of polyethylene fiber, or by a fabric intertwined with wires made of metallic material.

[0027] Only after sewing and subsequent sealing of the pocket 12 along the perimeter 18, the polyurethane, or other thermoplastic material, can be injected onto the lining 10 so as to define the outer covering 13 without incurring the risk that the injected material could penetrate through the stitching, reaching the outer blocking layer 19 and thus locking it in a fixed position inside the pocket 12.

[0028] The operation of the lining, according to the invention, is as follows.

[0029] If during use of the chainsaw the operator accidentally brings the chainsaw too close to the lower limbs, in particular to the region comprised between the tibia and the tarsus, the insert 11 will jam the movement of the chain and its progress toward the interior of the boot 14.

[0030] In particular, when the chain cuts the outer covering 13, it encounters the outer blocking layers 19 of the lining 10, and its fabric fibers wind around the teeth of the chain, which drags the fibers toward the pinion thus causing the jamming.

[0031] However, up until the effective and complete jamming of the chain, the latter would be capable of penetrating the lining 10 with its blades, if it were not obstructed by the cut-resistant inner layer 20. The task of the cut-resistant inner layer 20 is in fact to cause the chain to slip on its surface, thus preventing the blades from further approaching the leg of the operator.

[0032] It should be noted that if the outer blocking layers 19 should have defects that are such as to compromise its protective efficacy, the cut-resistant inner layer 20 would still obstruct the progress of the chain toward the interior of the boot 14.

[0033] It should also be noted that, since the lining 10 lends itself to being covered with directly injected polyurethane to make the outer covering 13, it is possible to obtain a product which is lighter than a conventional vulcanized rubber boot, with a perceptible increase in the level of comfort for the operator and the consequent reduction of the risks of accident owing to excessive fatigue at work.

[0034] In practice it has been found that the invention fully achieves the intended aim and object by providing a safety lining for safety shoes, particularly for lumberjack's boots, which is capable of ensuring a higher level of protection for the operator and at the same time greater comfort than the boots known today.

[0035] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0036] In practice the materials employed, provided they are compatible with the specific use, and the contingent dimensions and shapes, may be any according to requirements and to the state of the art.

[0037] The disclosures in Italian Patent Application No. PD2012A000328 from which this application claims priority are incorporated herein by reference.

[0038] Where technical features mentioned in any claim are followed by reference signs, such reference

signs have been inserted for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A safety lining (10) for safety shoes, particularly for lumberjacks' boots (14), **characterized in that** it is provided with an insert (11) for protecting the region comprised between the tibia and the tarsus of the foot, enclosed in a pocket (12), said insert (11) having a sandwich-like structure that comprises in succession:

   - at least one outer layer (19) for blocking the movement of a toothed chain of a chainsaw penetrating said boot (14),
   - at least one cut-resistant inner layer (20), designed to make said chainsaw chain slip.

2. The lining according to claim 1, **characterized in that** said at least one outer blocking layer (19) comprises at least one sheet of fabric that has cut- and tear-resistance characteristics and is not sewn to said pocket (12), its fibers being designed to wind around the teeth of the chainsaw chain.

3. The lining according to claim 2, **characterized in that** said sheet of fabric of said at least one outer blocking layer (19) is folded onto itself multiple times.

4. The lining according to claim 2, **characterized in that** said sheet of fabric of said at least one outer blocking layer (19) comprises aramid fibers.

5. The lining according to claim 2, **characterized in that** said sheet of fabric of said at least one outer blocking layer (19) comprises polyurethane fibers.

6. The lining according to claim 1, **characterized in that** said cut-resistant inner layer (20) comprises at least one sheet of fabric or non-woven fabric that is sewn, substantially at the perimeter (18) of said pocket (12), to the surrounding part of the lining (10) and contrasts the penetration of the chain by making it slip.

7. The lining according to claim 6, **characterized in that** said non-woven fabric of said cut-resistant inner layer (20) is made of polyethylene fiber.

8. The lining according to claim 6, **characterized in that** said fabric of said cut-resistant inner layer (20) is made of ceramized fibers.

9. The lining according to claim 1, **characterized in that** said pocket (12) is formed by an outer sheet (17) made of plastic material joined to the rest of said lining (10) by sewing and sealed at said perimeter (18) of said pocket (12).

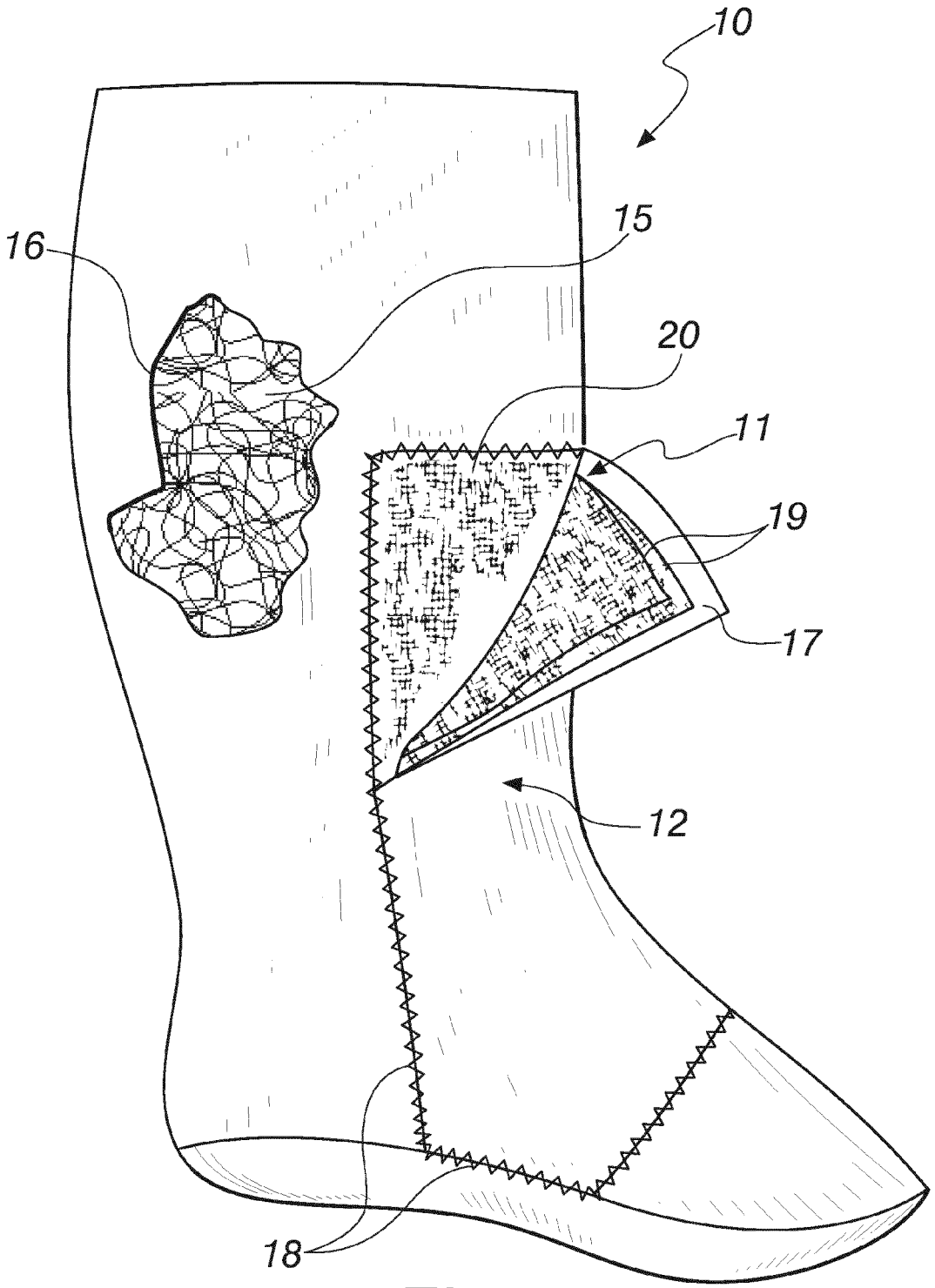

Fig. 1

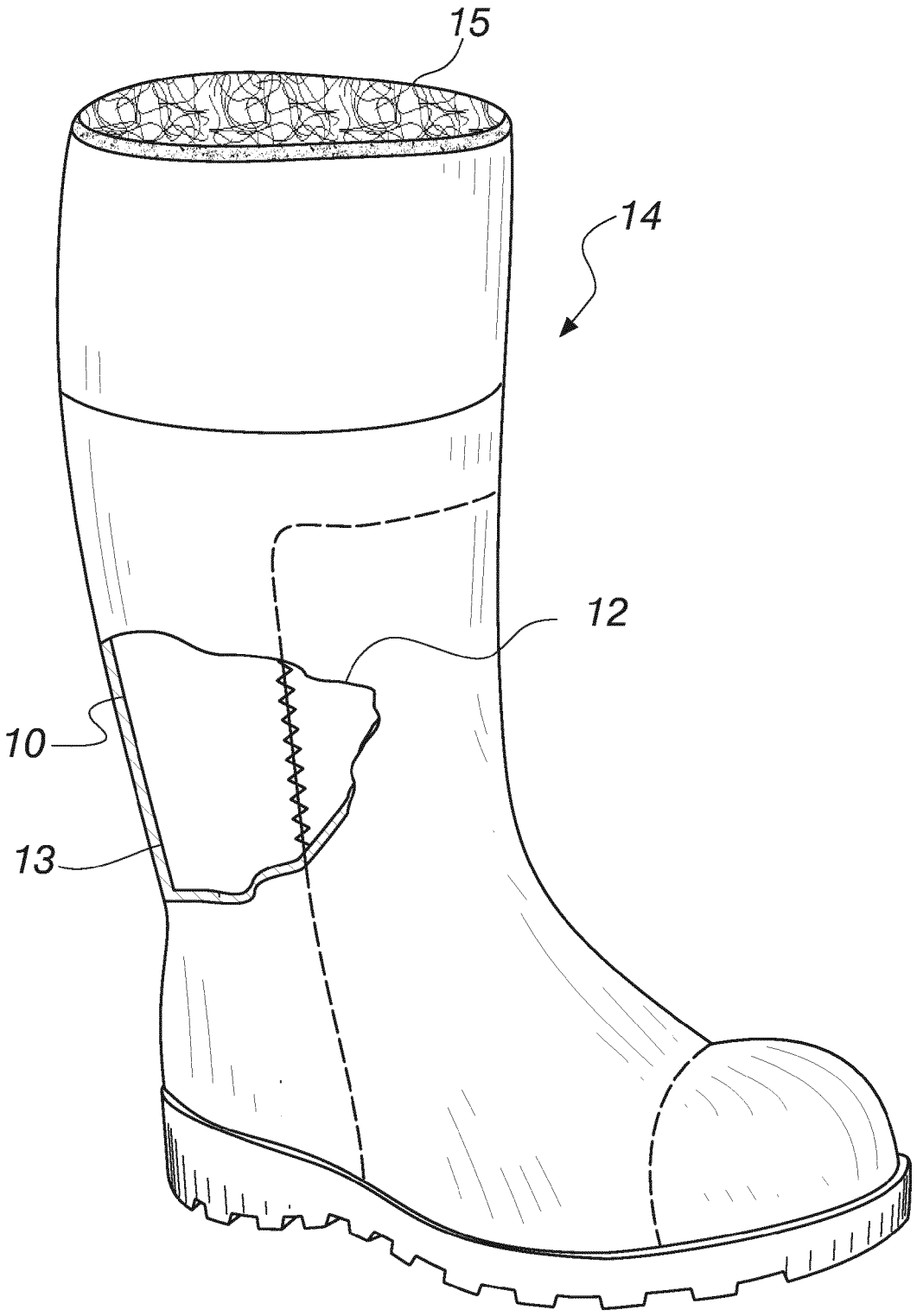

Fig. 2

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 13 19 1451

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 6 151 802 A (REYNOLDS ROBERT R [US]) 28 November 2000 (2000-11-28) * column 1, line 50 - column 6, line 13; figures 1-5 *	1-9	INV. A43B3/00 A43B23/07 A43B7/32
A	DE 195 20 272 A1 (PRIEBS GMBH & CO KG L [DE]) 5 December 1996 (1996-12-05) * column 2, line 5 - column 6, line 9; figures 1, 2 *	1-9	
A	US 2008/201987 A1 (BELL DOUGLAS W [CA]) 28 August 2008 (2008-08-28) * paragraph [0019] - paragraph [0066]; figures 1-6 *	1-9	
A	GB 2 232 869 A (GIFFARD NEWTON & SONS LIMITED [GB]) 2 January 1991 (1991-01-02) * pages 1-6; claims 1, 10; figures 1-3 *	1-9	
			TECHNICAL FIELDS SEARCHED (IPC) A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 January 2014	Oelschläger, Holger

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 ON EUROPEAN PATENT APPLICATION NO. EP 13 19 1451

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-01-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6151802 A	28-11-2000	NONE	
DE 19520272 A1	05-12-1996	NONE	
US 2008201987 A1	28-08-2008	NONE	
GB 2232869 A	02-01-1991	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- IT PD20120328 A **[0037]**