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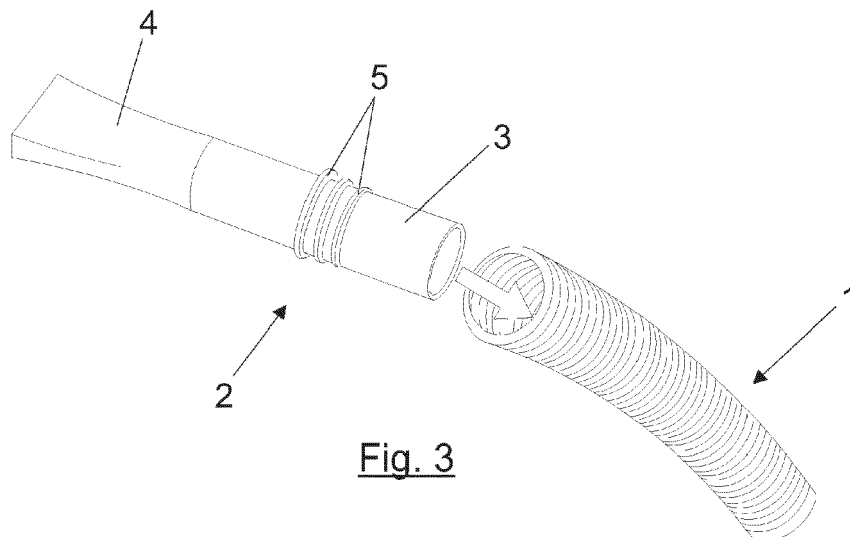
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(54) **SUCTION NOZZLE**

(57) The present invention relates to a suction nozzle, which has a first end (3) that can be adapted to a suction hose (1) and a second end (4) configured for

suctioning, wherein the first end (3) comprises adaptation means for adapting to different sizes, to be able to adapt to different sizes of the suction hoses (1).



Description

Field of the invention

[0001] The present invention belongs to the field of suction elements, specifically to suction devices for cleaning, and more specifically to suction devices used for cleaning the interior of vehicles located in car washes, washing stations, petrol stations and service stations.

Background of the invention

[0002] At present, all suction systems for the interior of vehicles located at petrol stations and service stations have a suction hose to which a fitting, in which a suction nozzle is incorporated, is assembled. Figure 1 shows a current suction system existing in the state of the art, which shows the essential elements thereof.

[0003] Thus, all hoses of the suction mechanisms have a fitting or adapter of different diameters, such as 20, 30, 32, 35, 40, 50 or 60 mm, to which the suction nozzle is connected, the diameter of which is adjusted to that of the fitting or adapter. The replacement of the nozzles is conditioned by this required size, such that each fitting needs a nozzle of a certain size, there being no universal fit nozzle. This condition tends to prolong the use of the nozzles for as long as possible and for the nozzles to be manufactured with the most durable material.

[0004] This prolonged use over time is unadvisable, since the nozzle is used on a large number of materials, and on many vehicles in the case of car washing, thus transmitting the dirt that may remain in the nozzle from one vehicle to another. In other words, the nozzles used in current suction hoses have a high transmission rate of contaminants, especially germs, from one vehicle to another.

[0005] Therefore, a simple, clean and safe suction system for vehicle interiors is desirable, avoiding the drawbacks of the earlier systems of the state of the art.

Description of the invention

[0006] The present invention solves the problems existing in the state of the art by means of a suction nozzle, which has a first end that can be adapted to a suction hose, of the type found in car washes, petrol stations and service stations, and a second end configured for suctioning vehicle interiors by means of the suction hose in the specific case of service stations and car washes, although it could be used for suctioning any other enclosure. This suction nozzle has adaptation means for adapting to different sizes, by means of which the suction nozzle can be adapted to different diameters of the suction hose, so it can be used in different service stations or washing stations that use different hoses with different diameters.

[0007] According to a particular embodiment of the invention, the adaptation means consist of the first end

having a frustoconical shape, with the smaller base that can adapt to the hose and the larger base connected to the second end of the suction nozzle, so that the sizes of the suction hoses used in car washes or service stations are included among the sizes of both bases. Therefore, different diameters of suction hoses can be coupled to the first end, fitting in the area of the first frustoconical end corresponding to the diameter of said hose.

[0008] According to another particular embodiment of the invention, to achieve adaptability to different diameters of suction hoses, the adaptation means have a plurality of annular stops of different diameters arranged along the length of the first end. The diameters of the different annular stops will coincide with the diameters of the suction hoses used in car washes or service stations, and they will be arranged in increasing order from the base that fits into the suction hose along the length of the first end. Therefore, different diameters of suction hoses can be coupled to the first end, each one of them fitting into the annular stop corresponding to the diameter of the hose.

[0009] To facilitate coupling to certain suction hoses which have threads, according to a particular embodiment of the invention, the first end is threaded.

[0010] According to a preferred embodiment of the invention, the suction nozzle will be made of biodegradable material, some non-limiting examples thereof being polylactic acid (PLA), polyvinyl alcohol (PVOH), polybutylene succinate (PBS), polyether sulphones (PES), polybutylene adipate terephthalate (PBAT), polycaprolactone (PCL), thermoplastic starch (TPS), and a combination thereof.

[0011] Thus, the present invention relates to a nozzle for connecting or assembling the fittings that are currently used as reducers or adapters to a suction hose, without the need for intermediate parts. This intermediate part between nozzle and hose is to be eliminated to provide ease to the user and for the user to have the option to choose whether they prefer a disposable and hygienic nozzle that is not offered by the market. Thus, this nozzle would be universal and can be adapted to all suction hose sizes. The user would have the option of purchasing this hygienic nozzle made of biodegradable material and be able to connect it to any hose size that is found on the market, especially at service stations or car washes, and then discard it as a hygienic measure, or choose to reuse the nozzles manufactured for each fitting.

[0012] According to different particular embodiments of the invention, the suction nozzle can have a rolled sheath fixed by means of fixing means to the first end, and it can be unrolled on the suction hose once the first end of the suction nozzle has been adapted to the suction hose to cover said suction hose, thus preventing said suction hose from coming into contact the surface to be suctioned.

[0013] In this way, the sheath will be removed from the hose together with the suction nozzle and it will be disposed of with the same, leaving the suction hose com-

pletely clean and in perfect condition for the next use, without the risk of transmitting dirt and/or germs.

[0014] According to different embodiments, the fixing means for fixing the sheath to the suction nozzle can be clamps made of metal, plastic or any other material with sufficient strength, elastic means, adhesive means, which can include external adhesive means and self-adhesive means on the sheath itself, and a combination thereof.

[0015] Furthermore, according to different particular embodiments, the sheath can be made of different materials such as paper, cardboard, rubber, latex, plastic or fabric.

Brief description of the drawings

[0016] In order to make the invention more readily understandable, by way of illustration and not limitation, an embodiment of the invention that refers to a series of figures is described below.

Figure 1 shows a current suction system existing in the state of the art, showing the essential elements thereof.

Figure 2 shows an embodiment of a suction nozzle object of the present invention, and the coupling thereof to a suction hose.

Figure 3 shows another embodiment of a suction nozzle object of the present invention, and the coupling thereof to a suction hose.

Figure 4 shows a particular embodiment of a suction nozzle object of the present invention, coupled to a suction hose, showing the unrolled sheath along the suction hose.

Figure 5 shows a particular embodiment of a suction nozzle object of the present invention with the rolled sheath fixed therein, for coupling to a suction hose.

Figure 6 shows a particular embodiment of a suction nozzle object of the present invention with the rolled sheath fixed therein, for coupling to a suction hose.

[0017] These figures refer to a set of elements which are:

1. suction hose
2. suction nozzle
3. first end of the suction nozzle
4. second end of the suction nozzle
5. annular stops of the first end
6. sheath
7. means for fixing the sheath to the suction nozzle

Detailed description of the invention

[0018] The object of the present invention is a suction nozzle 2.

[0019] As can be seen in the figures, the suction nozzle 2 of the present invention has a first end 3 which can be

adapted to a suction hose 1, and a second end 4 configured for suctioning vehicle interiors by means of the suction hose 1 in the specific case of service stations and car washes, although it could be used for suctioning any other enclosure. This suction nozzle 2 has adaptation means for adapting to different sizes, by means of which the suction nozzle 2 can be adapted to different diameters of suction hoses 1, such that it can be used in different service stations or washing stations that use different suction hoses 1 with different diameters.

[0020] According to a particular embodiment of the invention shown in Figure 2, the adaptation means consist of the first end 3 having a frustoconical shape, with the frustoconical smaller base able to adapt to the suction hose 1 and the larger base connected to the second end 4 of the suction nozzle 2, such that the sizes of the suction hoses 1 used in car washes or service stations are included among the sizes of both bases. Therefore, different diameters of suction hoses 1 can be coupled to the first end 3, fitting in the area of the first frustoconical end 3 corresponding to the diameter of said hose 1. Simply, as shown in Figure 2, depending on the diameter of the suction hose 1, the first end 3 of the suction nozzle 2 will be inserted therein to a greater or lesser extent until reaching the stop diameter, and thus be fitted for suctioning.

[0021] According to another particular embodiment of the invention shown in Figure 3, to achieve adaptability to different diameters of suction hoses 1, the adaptation means have a plurality of annular stops 5 that have different diameters arranged along the length of the first end 3. The diameters of the different annular stops 5 will coincide with the diameters of the suction hoses 1 used in car washes or service stations, and they will be arranged in increasing order from the base that fits into the suction hose 1 along the length of the first end 3. Therefore, different diameters of suction hoses 1 can be coupled to the first end 3, each one of them fitting into the annular stop 5 corresponding to the diameter of the hose 1.

[0022] To facilitate coupling to certain threaded suction hoses 1, according to different particular embodiments of the invention, the first end 3 may be threaded.

[0023] According to a preferred embodiment of the invention, the suction nozzle 2 will be made of biodegradable material, some non-limiting examples thereof being polylactic acid (PLA), polyvinyl alcohol (PVOH), polybutylene succinate (PBS), polyether sulphones (PES), polybutylene adipate terephthalate (PBAT), polycaprolactone (PCL), thermoplastic starch (TPS), and a combination thereof.

[0024] Thus, the invention relates to a suction nozzle 2 for connecting or assembling the fittings that are currently used as reducers or adapters to a suction hose 1, without the need for intermediate parts. The user would have the option of purchasing this hygienic nozzle 2 made of biodegradable material and be able to connect it to the suction hoses 1 of the service stations or car washes,

and then discard it as a hygienic measure once the suctioning has been completed.

[0025] According to a preferred embodiment of the invention, the suction nozzle 2 further has a rolled sheath 6 fixed by means of fixing means 7 to the first end 3, and it can be unrolled once the first end 3 of the suction nozzle 2 has been adapted to the suction hose 1 to cover said suction hose 1, thus preventing the suction hose 1 from coming into contact with the surface to be suctioned, and thereby preventing dirt and/or germs from being transmitted from one surface to another. Figure 4 shows a particular embodiment of a suction nozzle object of the present invention, coupled to a suction hose, showing the unrolled sheath along the suction hose.

[0026] By means of this embodiment, once suctioning has been carried out, the sheath 6 will be removed from the hose 1 together with the suction nozzle 2 and it will be disposed of with the same, leaving the suction hose 1 completely clean and in perfect condition for the next use, without the risk of transmitting dirt and/or germs between different surfaces of different vehicles.

[0027] Figure 5 shows a particular embodiment of a suction nozzle 2 object of the present invention with the rolled sheath 6 fixed therein, for coupling to a suction hose 1. In this specific case, the sheath 6 is fixed to the first end 3 of the suction nozzle 2 with a frustoconical configuration for adapting to different sizes of the suction hose 1.

[0028] Figure 6 shows a different particular embodiment of a suction nozzle 2 with the rolled sheath 6 fixed to the first end 3, which has annular stops 5 of different diameters arranged along the length of said first end 3 for adapting to different sizes of the suction hose 1.

[0029] According to different embodiments, the fixing means 7 for fixing the sheath 6 to the first end 3 of the suction nozzle 2 can be clamps made of metal, plastic or any other material with sufficient strength, elastic means, adhesive means, which can include external adhesive means and self-adhesive means on the sheath 6 itself, and a combination thereof.

[0030] Furthermore, according to different particular embodiments, the sheath 6 can be made of different materials such as paper, cardboard, rubber, latex, plastic or fabric.

2. The suction nozzle according to claim 1, wherein the adaptation means consist of the first end (3) having a frustoconical shape.

5 3. The suction nozzle according to any of the preceding claims, wherein the adaptation means comprise a plurality of annular stops (5) of different diameters arranged along the length of the first end (3).

10 4. The suction nozzle according to any of the preceding claims, wherein the first end (3) is threaded.

5. The suction nozzle according to any of the preceding claims, which is made of biodegradable material.

15 6. The suction nozzle according to the preceding claim, wherein the biodegradable material is selected from polylactic acid (PLA), polyvinyl alcohol (PVOH), polybutylene succinate (PBS), polyether sulphones (PES), polybutylene adipate terephthalate (PBAT), polycaprolactone (PCL), thermoplastic starch (TPS), and a combination thereof.

25 7. The suction nozzle according to any of the preceding claims, which comprises a rolled sheath (6) fixed by means of fixing means (7) to the first end (3), and it can be unrolled on the suction hose (1) once the first end (3) of the suction nozzle (2) has been adapted to said suction hose (1).

30 8. The suction nozzle according to the preceding claim, wherein the fixing means (7) for fixing the sheath (6) to the suction nozzle (2) are selected from clamps, elastic means, adhesive means and a combination of the above.

35 9. The suction nozzle according to any of the preceding claims, wherein the sheath (6) is made of a material selected from paper, cardboard, rubber, latex, plastic and fabric.

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Claims

1. A suction nozzle, which comprises

- a first end (3) that can be adapted to a suction hose (1) and
- a second end (4) configured for suctioning,

the suction nozzle (2) **characterised in that** the first end (3) comprises adaptation means for adapting to different sizes.

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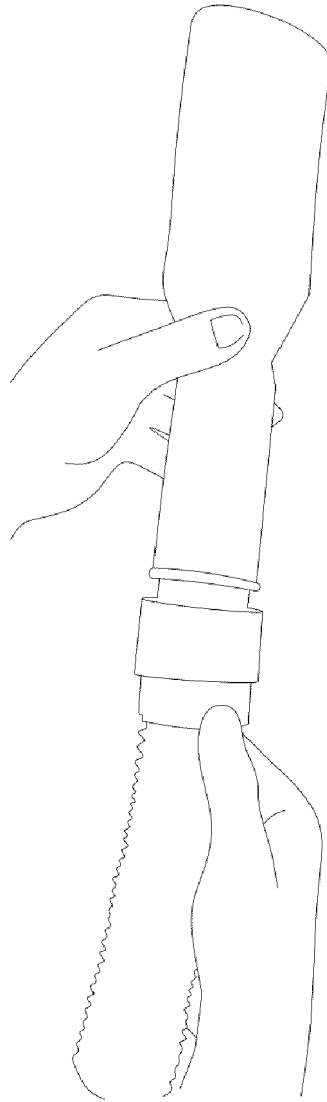
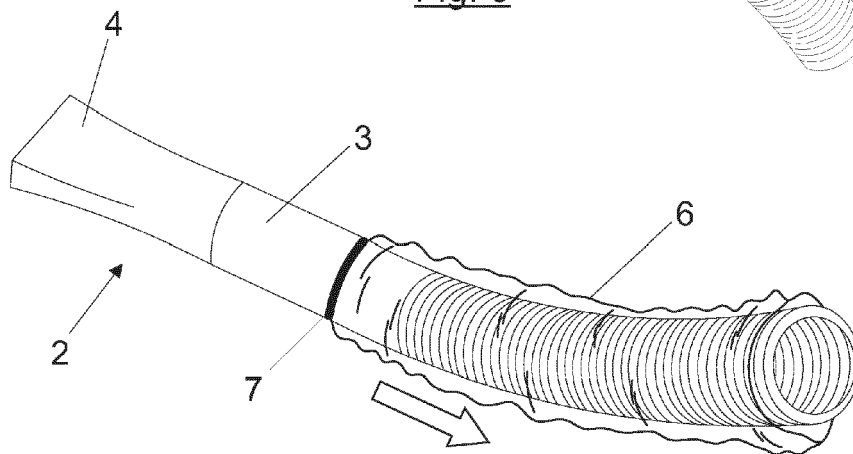
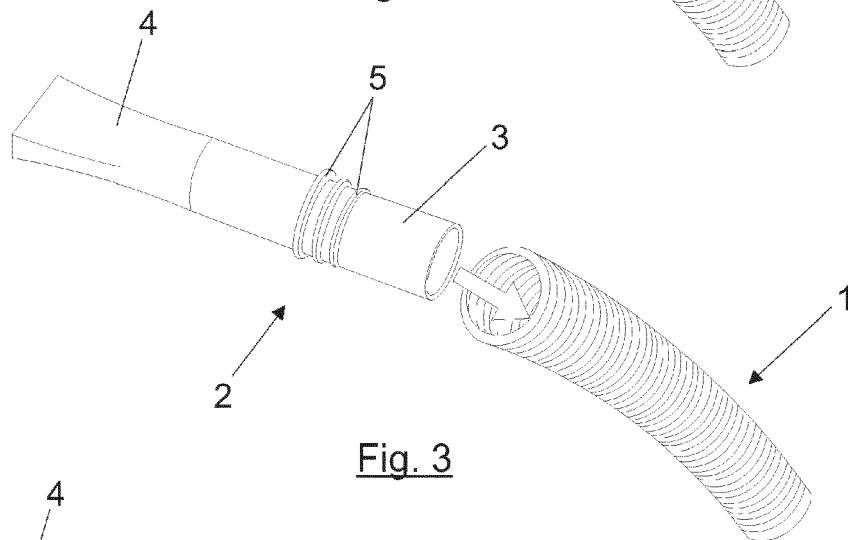
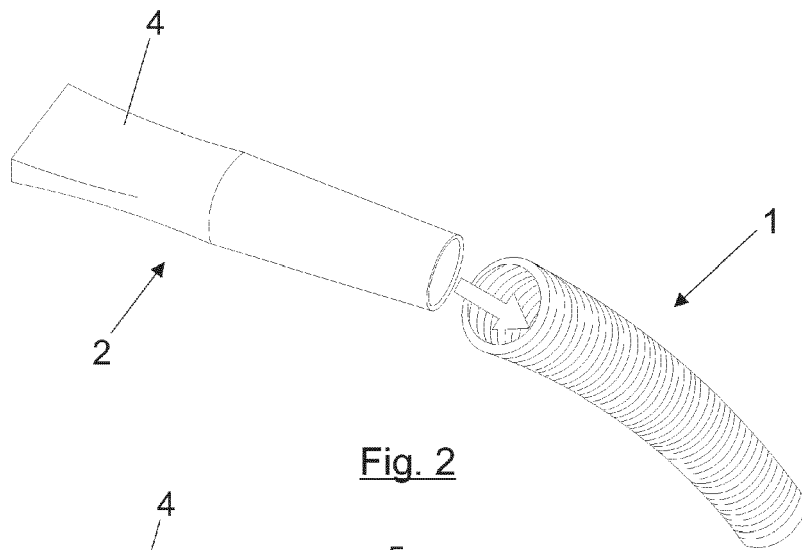
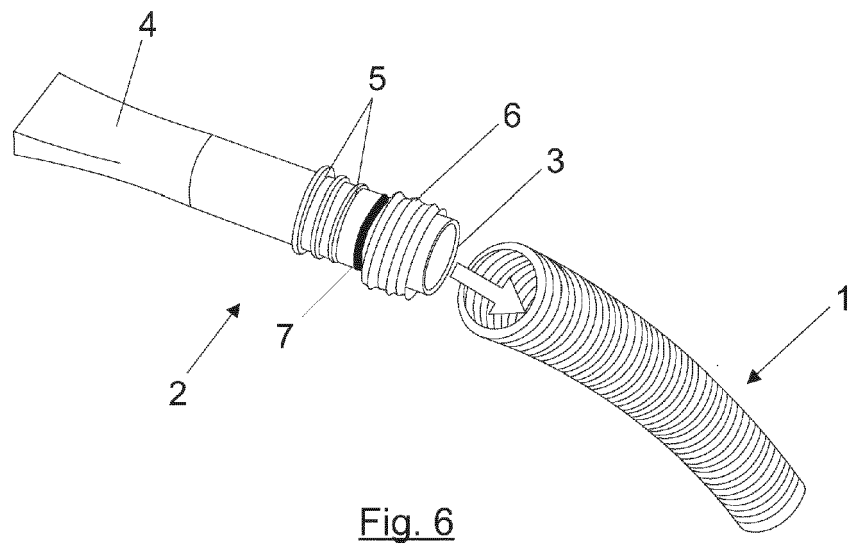
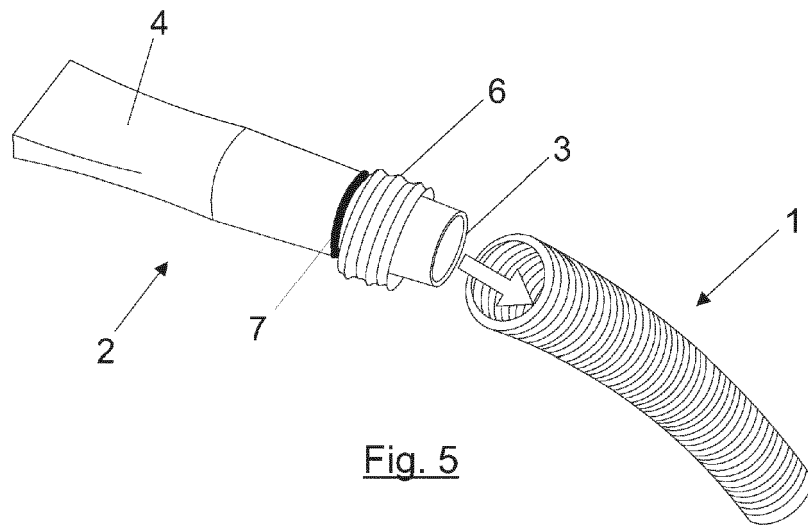


Fig. 1







EUROPEAN SEARCH REPORT

 Application Number
 EP 20 38 2994

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 20 2006 000366 U1 (REUSWIG DIRK [DE]; PEPAJ CHRISTIAN [DE]) 2 March 2006 (2006-03-02)	1-3	INV. A47L9/02 A47L9/24
Y	* paragraphs [0010], [0038]; claim 2;	5,6	
A	figures 1,2 *	7-9	
X	EP 1 062 902 A2 (STEFFGEN HELGA [DE]) 27 December 2000 (2000-12-27)	1,2,4	
Y	* paragraphs [0001], [0004], [0016],	5,6	
A	[0018]; figure 2 *	7-9	
X	US 2019/239708 A1 (CARTER DENNIS [US]) 8 August 2019 (2019-08-08)	1	
Y	* paragraphs [0026], [0027], [0032]; figure 1 *	5,6	
Y	DE 10 2009 022819 A1 (WESSEL WERK GMBH [DE]) 9 December 2010 (2010-12-09) * paragraph [0012] *		
			TECHNICAL FIELDS SEARCHED (IPC)
			A47L
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 16 April 2021	Examiner Lopez Vega, Javier
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			

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 EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 20 38 2994

5 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
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16-04-2021

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202006000366 U1	02-03-2006	NONE	
EP 1062902 A2	27-12-2000	NONE	
US 2019239708 A1	08-08-2019	US 2019239708 A1	08-08-2019
		US 2021015329 A1	21-01-2021
DE 102009022819 A1	09-12-2010	NONE	