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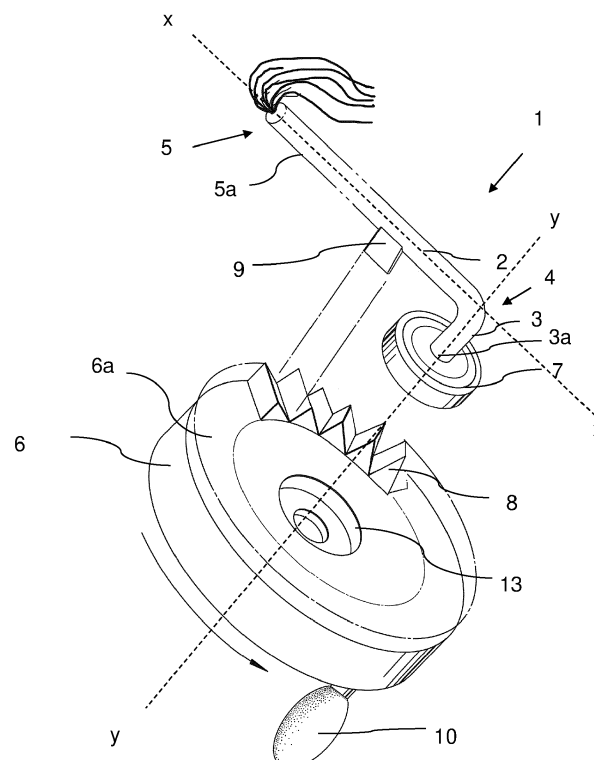
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(54) NOISE GENERATING DEVICE

(57) Disclosed herein is a device for generating noise. The device (1) comprises a handle (2) having an axle (3a), a disc (6) rotatably mounted to the axle (3a) and a plurality of projections (8) arranged around the disc

(6) configured to engage with a finger (9) mounted on the handle (2). The projections (8) and/or the finger (9) are resiliently deformable.

Figure 1



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Description

Field of the Invention

[0001] The present invention relates to devices for generating noise.

Background to the Invention

[0002] Conventional football rattles are used by spectators across the world. Their mechanism of action relies on the movement of a star-wheel and a resilient blade relative to one another. The handle of the football rattle has at one end the star wheel. Around the star wheel is rotationally mounted a resilient blade. As the rattle is swung about the head, a free end of the resilient blade strikes the successive teeth of the star wheel, with the parts being so arranged that the blade as it leaves one tooth falls sharply upon the next following tooth whereby a rattling sound is produced. This mechanism has been copied for example in GB154445 but the star wheel is rotated and the resilient blade is held substantially stationary. The end result is generally the same, which is the generation of a rattling sound. The problem with conventional football rattles however, is that they are dangerous to neighbours due to the device being swung about the head in order to generate the sound. Also there is no directional control of the sound being produced, so it can be annoying to spectators who are close by.

[0003] There has now been devised a device for generating noise which overcomes and/or substantially mitigates the above referenced and/or other disadvantages associated with the prior art.

Summary of the Invention

[0004] The invention provides a device for generating noise as set out in the claims. The device can be used as a football rattle, but has a number of other uses. Examples of other uses include but are not limited to a vehicle reversing warning device, a bird scarring device, or livestock calling device.

[0005] In the context of the invention examples of noise include but are not limited to a rattling or clacking sound generated by the device.

[0006] A gripping portion can include a part which is easy for the user to hold, grip or clasp using at least one of their hands in order to operate the device. It will be understood that the gripping portion must be formed dimensionally so as to be able to fit into at least one hand of the user.

[0007] The gripping portion may be a separate part but joined to the handle. Preferably the gripping portion is formed from the material of the handle (i.e. integral with the handle). This makes the device easy to manufacture, less expensive and stronger.

[0008] The axle may be a separate part but joined to the handle. Preferably the axle is formed from the mate-

rial of the handle (i.e. integral with the handle). This makes the device easy to manufacture, less expensive and stronger.

[0009] The fact that the axle and/or the gripping portion may be separate part but be joined to the handle means that different materials can be used for the various parts. An example of this might be steel for the axle, but moulded plastic for the remainder of the handle including the gripping portion. The steel has greater wear characteristics over plastic, so the device will function for a lot longer.

[0010] In use of the device the user holds the handle and rotates the disc relative to the handle. Rotation of the disc can be by the user rotating the disc directly. However, the disc preferably comprises an actuator positioned at or near the rim of the disc. The actuator may be a knob or button which the user can hold in order to turn the disc relative to the handle.

[0011] The invention is advantageous primarily because by having a disc rotatably mounted to the axle with the axis of rotation of the disc at right angles to the longitudinal axis of gripping portion of the handle, the options for how to generate the sounds the device produces are greatly increased over that of the prior art. Furthermore, there is the facility to vary significantly the number of projections on the disc, without changing its diameter resulting in a variation in volume produced by the device with the same speed of rotation of the disc.

[0012] The prior art relies on a star-wheel arranged to be rotated so that its teeth will in succession strike the free end of a resilient blade, with the parts being so arranged that the blade as it leaves one too falls sharply upon the next following tooth whereby a rattling sound is produced. The present invention provides a similar facility in that as the finger and the projections engage with one another either one of the projections or the finger are caused to deflect and as the finger or the projection leaves one projection or the finger, respectively, it strikes the neighbouring one projection or the finger, respectively, sharply to create a clacking sound. But what is clear is that the present invention provides the option for the either the finger or the projections to be resiliently deformable. This therefore means that the clacking sound and the mechanism described above can be derived from either the finger or the projections.

[0013] But it will be understood also, that the present invention has a further benefit. In use, as the finger or the projection leaves the one projection or the finger, respectively, it returns sharply to its non-deflected state. This in itself can creating a clacking sound which adds to the clacking sound as described above. Thus, the volume generated by the device is considerably greater than that which the prior art devices might produce.

[0014] The device is also advantageous because the noise can be generated by the user without physical risk to nearby people. This is important when the device is used as a football rattle. With conventional rattles the rattles are swung about the head and can put neighbour-

ing spectators at risk of being injured from the flailing rattle. The device of the present invention does not need to be swung violently for it to generate noise, and therefore does not put at risk neighbouring people.

[0015] When the finger is resiliently deformable, preferably the projections are rigid. The reason for this is that the rigid projections will deform the finger in a controllable manner and therefore it is easier to design and control the sound generated by the device. Similarly, when projections are resiliently deformable, preferably the finger is rigid. The reason for this is that the rigid finger will deform the projections in a more controllable manner and therefore it is easier to design and control the sound generated by the device. In circumstances when either the finger or the projections is/are rigid as described above, they may be moulded from the handle or disc respectively.

[0016] The finger and/or the projections may otherwise be manufactured from spring material in order that they are able to deflect and spring back to their original starting positions. Examples of suitable spring material include but are not limited to spring steel or other sprung metals or a resiliently deformable plastics material.

[0017] The device may comprise a housing which substantially encloses the disc. This has the benefit that in use when the disc is rotating, the majority of the disc it does not interfere with the user which would otherwise hinder motion. The housing may be horn or shell shaped. This has the benefit that the sound generated can be directed in particular direction and amplified in so doing. The housing may be formed from part of the handle or is an extension of the handle. In this manner the device is held in use from the housing and the disc is turned either directly or from the actuator described above.

[0018] Preferably the finger extends into the space between neighbouring projections unengaged by the projections. This has the benefit that the disc can be rotated both forward and backwards, in order to operate the device.

[0019] The device may be configured as a football rattle.

Brief Description of the Drawings

[0020] An embodiment of the device will now be described with reference to the figures in which

Figure 1 shows a perspective view of an embodiment of the device and

Figure 2 shows a cross sectional exploded view of the device as shown in figure 1.

Detailed Description of the Illustrated Embodiment

[0021] An embodiment of the device according to the invention is shown in Figure 1 where the device is generally designated 1. The device 1 comprises a handle 2 which has a cantilever portion 3 at one end 4. In the ex-

ample the handle is made from moulded plastic. The opposite end 5 of the handle 2 is moulded with gripping portions 5a so that it is easy for the user to hold and grip the device 1 in one hand. The exposed end of the cantilever portion 3 is formed into an axle 3a. A disc 6 is mounted to the axle 3a by way of a bearing 7. The bearing 7 has an outer part and an inner part which can rotate freely of one another. The outer part is screwed or otherwise bonded to the centre of the disc 6 and is embedded therein. The exposed end of the cantilever portion 3 which is formed into an axle 3a is mounted within the central part of the bearing 7. Thus the disc 6 is rotational mounted to the handle 2 in such a manner that the rotational axis (shown as y-y on figure 1) of the disc 6 (which is through the axle 3a) is at right angles to the longitudinal axis of the handle 2 (shown as x-x on figure 1), specifically the part of the handle 2 where the gripping portion 5a is located. The disc 6 is manufactured from moulded plastic. Other suitable materials for the disc 6 and/or the handle 2 include wood, metal or composite materials such as carbon fibre.

[0022] The disc 6 is a flat planar structure having two opposing faces 6a, 6b. On the face proximal the handle (face 6a) there are eighty projections 8 moulded into the face 6a. These projections 8 are positioned extend around the edge of the disc 6 at regular intervals. The projections 8 are triangular shaped and upstanding from the plane/face of the disc 6. The projections 8 are rigid and project towards the handle 2 enough so as to interfere with a finger 9 on the handle 2. The finger 9 is a piece of spring steel which is embedded into the mid part of the handle 2 and is upstanding from the handle 2 in the direction of the disc 6 and the projections 8. The length of the finger 9 and the height of the projections 8 is such that the finger 9 is forced to interfere with the projections 8 as the disc 6 rotates in use. The length of the finger 9 is therefore greater than the distance between the handle 2 and the tip of the projections 8.

[0023] On the opposite face 6b of the disc 6 to the protrusions 8 there is a knob 10 positioned at or near the edge of the disc 6. The knob 10 is intended as a turning means to enable the user the turn the disc 6 relative to the handle 2.

[0024] In use the user holds the handle 2 of the device 1 in one hand and turns the disc 6 using the knob 10 with their other hand. As the disc 6 rotates, the projections 8 are forced to ride over the finger 9. As each projection 8 interferes with the finger, the finger deflects and rides over the ridge of the respective projection. As the disc 6 continues to turn the finger 9 leaves the ridge of the respective projection 8 and springs back into its resting position creating a clacking sound. A clacking sound is also created by the action of the finger 9 hitting the neighbouring projection 8. Multiple clacking sounds are created in sequence as the disc 6 continues to be turned. The device thus creates a rattling noise. The speed of rotation dictates the volume of the sound created by the device and to some degree the tone. Thus, another benefit of

the invention is that the disc 6 can be rotated at differing speeds to produce differing sound volumes and noises. This is compared with the conventional football rattles which are swung around the head, and only work when the centrifugal force reaches a threshold amount. Thus with conventional rattles, there is only one speed of operation and therefore only one volume. If the conventional rattles are swung slowly around the head, there is insufficient force for the leaf spring to engage past the star wheel in the device.

[0025] The finger 9 is proportioned so that it extends into the space between neighbouring projections 8, but there is either a gap between the end of the finger 9 and the face 6a of the disc 6, or the finger 9 just touches the face 6a of the disc. That way, the finger extends into the space between neighbouring projections unengaged by the projections. Therefore when the disc 6 is rotated to the point where the finger is equidistant between the tips of neighbouring projections 8 the finger 9 is not deformed and lies unimpeded. This allows the device 1 to be used by turning the disc 6 either forwards (clockwise) or backwards (anticlockwise)

[0026] In another example of the invention there is provided a device substantially as described above, but the finger 9 is rigid, and the projections 8 are resiliently deformable. In such an example the finger 9 is made from a piece of non-deformable steel and the projections are made from spring steel embedded within the disc 6 at or near the circumference of the disc 6. As the disc rotates, the finger 9 forces the projections 8 to flex and spring back into their straight upstanding attitude as the finger 9 passes each successive projection 8. This creates a clacking sound. A clacking sound is also created by the impact of the next neighbouring projection 8 on the finger 9.

[0027] In another example of the invention there is provided a device substantially as described above, but both the projections 8 and the finger 9 are resiliently deformable. The finger 9 and the projections 8 are both made from spring steel and the clacking sounds are created as described above by the action of the fingers and the projections as they spring back to the resting position, and by the action of the finger 9 striking the neighbouring projection as the disc rotates and by the action of the projections 8 striking the finger as the disc rotates.

[0028] In all embodiments of the invention, the device 1 may be enclosed within a housing (not shown). To achieve this the handle part 2 is moulded into an enclosure which is able to almost completely encompass the remaining part of the handle 2, the cantilever 3 and the disc 6. Gaps in the enclosure are left open for the knob 10 to protrude through, so as to enable the user to turn the disc 6. The housing may also have a handle in order to enable holding of the device. The housing may also be fashioned into the shape of a shell or horn in order to direct the sound which the device generates in use in a particular direction.

[0029] Figure 2 shows an exploded view of the device

as shown in Figure 1. This shows the bearing 7 is isolation with an outer part 11 and an inner part 12 which can rotate relative one another. The bearing 7 is mounted within a recess 13 in the disc 6. The cantilever portion 3 of the handle 2 is then inserted into the inner part 12.

[0030] One other advantage of the device according to the invention is that it can be used either right or left handed. It also does not matter which way the disc is rotated in order for the sound to be generated.

Claims

1. A device for generating noise, the device (1) comprising a handle (2) having one end (5) comprising a gripping portion (5a) and an opposite end (4) comprising an axle (3a), the two ends (4,5) being separated by a right angle cantilever portion (3), a disc (6) rotatably mounted to the axle (3a) with the axis of rotation of the disc (6) at right angles to the longitudinal axis of gripping portion (5a) of the handle, wherein the disc has two opposing faces (6a, 6b) and has a plurality of projections (8) arranged circumferentially around the face (6a) of the disc (6) facing the gripping portion (5a) of the handle (2), the projections (8) being configured to engage with a finger (9) mounted on the gripping portion (5a) of the handle (2) and the projections (8) and/or the finger (9) being resiliently deformable.
2. A device according to claim 1, wherein the gripping portion (5a) is formed from the material of the handle (2).
3. A device according to claim 1 or claim 2, wherein the axle (3a) is formed from the material of the handle (2).
4. A device according to any preceding claim, wherein the disc (6) comprises an actuator (10) positioned at or near the rim of the disc (6).
5. A device according to any preceding claim, wherein the finger (9) and/or the projections (8) are manufactured from spring steel or a resiliently deformable plastics material in order that they are able to deflect and spring back to their original starting positions.
6. A device according to any preceding claim, comprising a housing which substantially encloses the disc (6).
7. A device according to claim 6, wherein the housing is horn or shell shaped.
8. A device according to claim 6 or 7, wherein the hous-

ing is formed from part of the handle (2) or is an extension of the handle (2).

9. A device according to any preceding claim, wherein the finger (9) extends into the space between neighbouring projections (8) unengaged by the projections (8). 5
10. A device according to any preceding claim configured as a football rattle. 10

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Figure 1

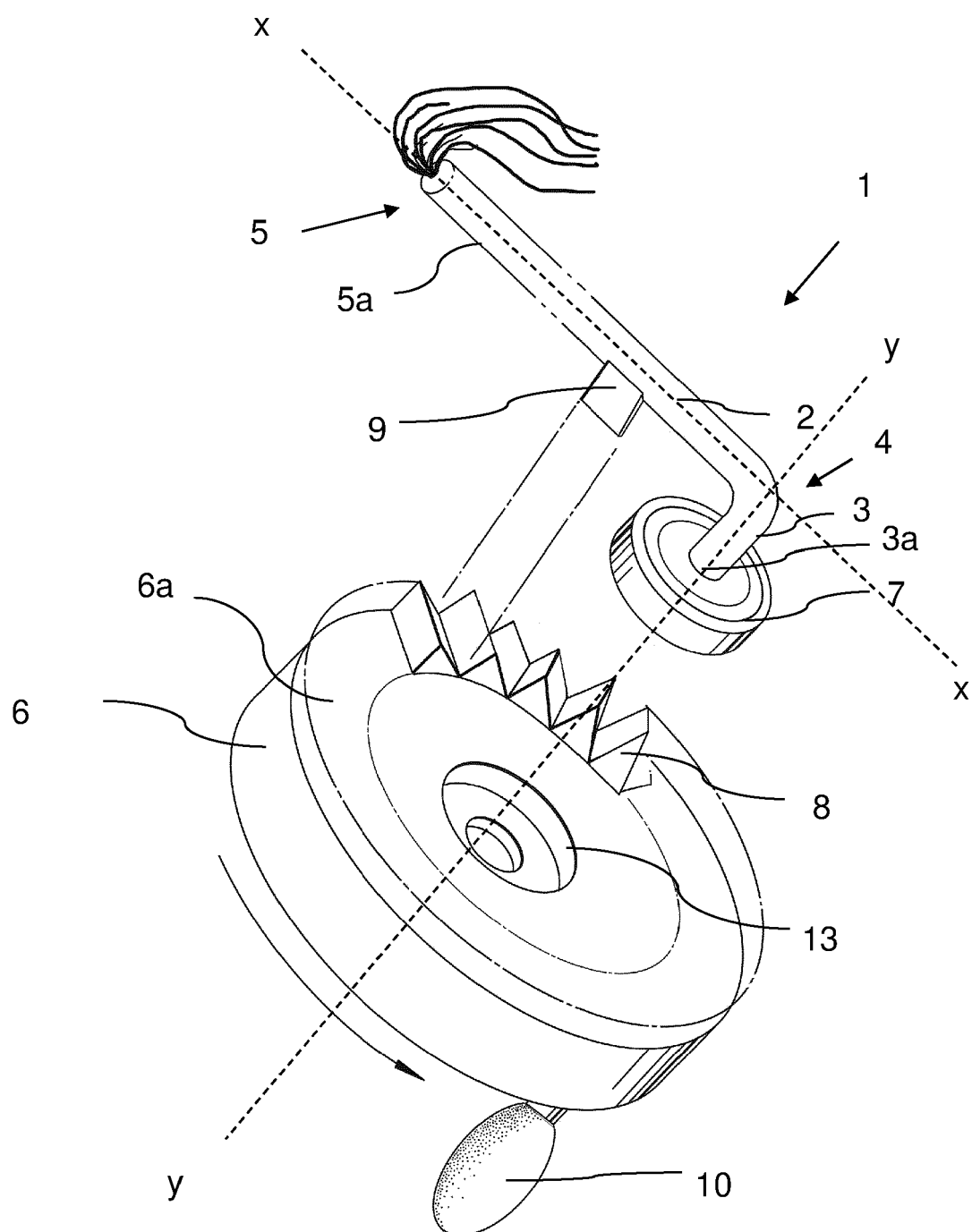
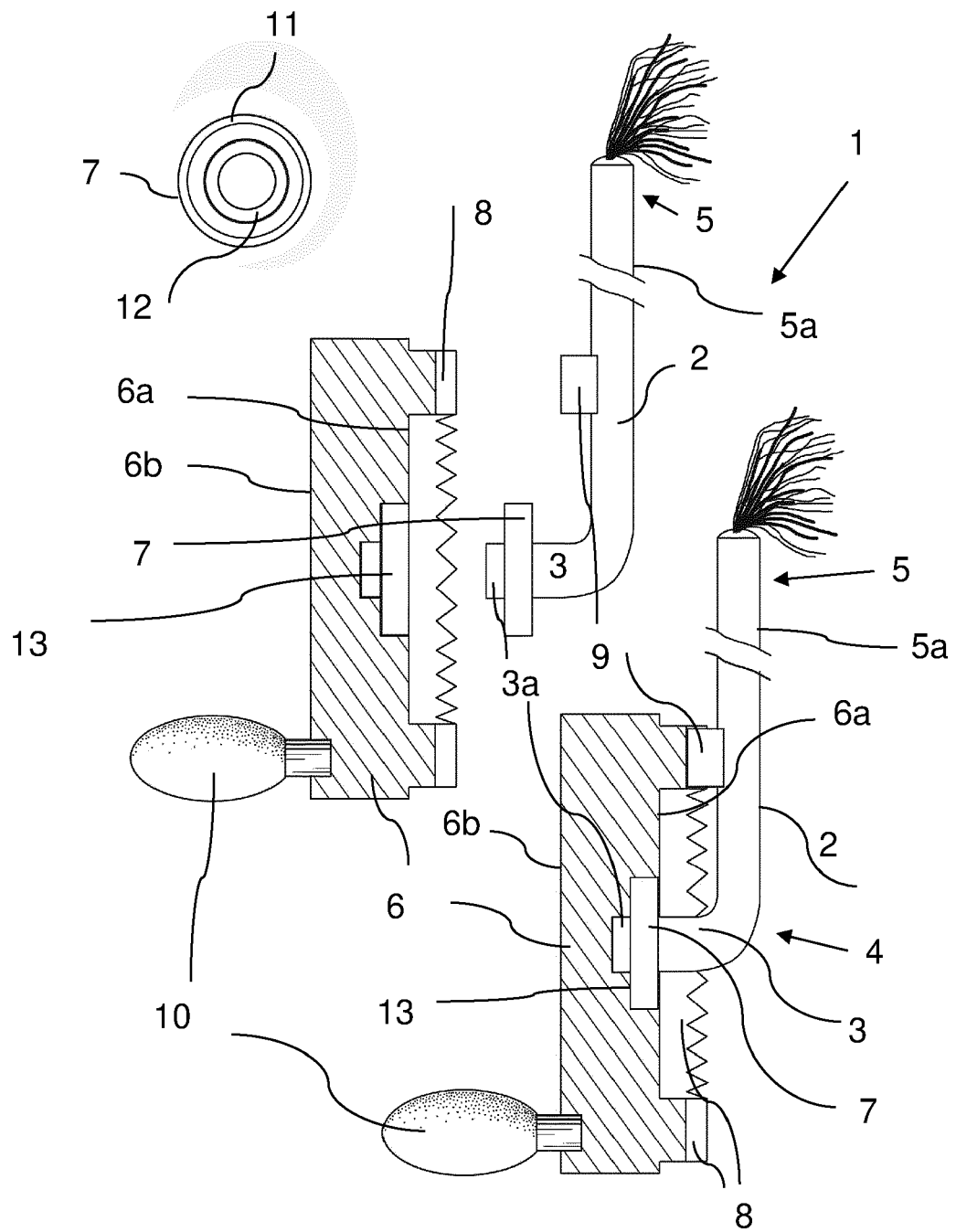


Figure 2





EUROPEAN SEARCH REPORT

Application Number
EP 20 17 1887

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DOCUMENTS CONSIDERED TO BE RELEVANT			
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 4 June 2020	Examiner Lucas, Peter
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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