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Parking token for fee-payment operation of a parking barrier

The invention relates to a parking token for fee-payment operation of a parking barrier according to the preamble of claim 1.

A round, flat parking token of that kind has a number of advantages as regards its handling, since not only can it be re-used for different users of a multi-storey car park or open-air car park, it can also be separated in a simple manner for the particular dispensing operation. Moreover, the rolling capability during transport of such a parking token to identification and communication stations can be exploited for handling of the parking operation.

It has proved to be a disadvantage therein that because of its continuous use the parking token is exposed to considerable wear and tear, which leads to erosion and abrasion of the parking token. Damage to the parking token, for example, as a result of individual areas bursting out or breaking off likewise leads to the rolling properties of the parking token being significantly impaired. Erosion or damage of the parking token also has an adverse effect on the operation of separating the parking tokens prior to issue to a car park customer, because separation of the parking tokens, which are generally stacked, by ejection of the lowermost parking token is made more difficult.

It is therefore the aim of the invention to provide a parking token for the fee-payment actuation of a parking barrier according to the preamble of claim 1, which has a long service life. A further aim consists

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in improving the properties of the parking token as regards separation.

That aim is achieved by the characterising clause of claim 1.

A parking token is provided which at its edge has a cladding ring which, in addition to its function as a protective ring, in dependence on its material properties is also able to improve the rolling capability of the parking token through its influence on the rolling behaviour thereof. Moreover, by means of the ring, the edge region of the parking token can undergo a contour change in order, if desired, to make working surfaces and/or sliding surfaces available for the separation operation.

The cladding ring preferably has a U-shaped cross-section with an extension on the obverse and an extension on the reverse, so that the ring covers over not only the circumferential face of the plastics piece but also a radial portion thereof. In addition, at its edge on the obverse and reverse the plastics piece may have circumferential recessed portions which the ring fills up, and in so doing aligns with the obverse and reverse of the plastics piece.

Over the ring, the edge region of the plastics piece can also be radially tapered or flared, thereby producing sliding and/or stop surfaces for separating and/or stacking devices acting laterally on the parking token.

Metals which have a greater hardness and a heavier weight than the plastics material used for the flat disc can be used, for example, as material for the

ring. Plastics which have a greater wear-resistance compared with the plastics for the flat disc, and/or which belong to the group of shock-absorbing plastics, for example, PUR foam, can likewise be used for the ring.

The ring can be secured in a suitable manner to the plastics piece; suitable methods include, inter alia, adhesion, crimping or other frictional connections.

Further constructions of the invention can be derived from the following description and the subsidiary claims.

The invention is explained in greater detail hereinafter with reference to the embodiments illustrated in the accompanying drawings.

- Fig. 1 shows diagrammatically a plan view of a first embodiment of a parking token,
- Fig. 2 shows diagrammatically a vertical section through the parking token shown in Fig. 1,
- Fig. 3 shows diagrammatically a vertical section through a second embodiment of a parking token,
- Fig. 4 shows diagrammatically a vertical section through a third embodiment of a parking token,
- Fig. 5 shows diagrammatically a vertical section through a fourth embodiment of a parking token,
- Fig. 6 shows diagrammatically a vertical section through a fifth embodiment of a parking token.



Fig. 1 and Fig. 2 show a first embodiment of a parking token for the fee-payment actuation of a parking barrier in the form of a round, flat piece of plastics material 1 which carries at its edge a circumferential ring 2. Integrated in the flat, round plastics piece 1 is an electronic component for repeated and position-independent storage and, if desired, processing of user-related parking data, such as, in particular, the entry and exit time.

The ring 2 is positioned in the manner of a capping on the plastics piece 1 and covers over the circumferential face 3 of the round plastics disc 1. For that purpose the ring 2 has a substantially U-shaped profile with an extension 4 on the obverse and an extension 5 on the reverse, each of which extensions extends over a radial portion of the edge region of the plastics disc 1. The radial extent of the covered-over portion of the plastics disc 1 is preferably less than 20% of the radius of the plastics disc 1.

As is clear from Fig. 2, the plastics disc 1 is of peg-like construction at its circumference, since the obverse and reverse each terminate at the edge in a respective recessed portion 6, 7, in which the ring 2 is located with its obverse and reverse extensions 4, 5. The dimensions of the recessed portions 6, 7 and of the obverse and reverse extensions 4, 5 of the ring are arranged to match one another, so that the ring 2 substitutes for the absent plastics material of the disc 1. The plastics disc 1 and the ring 2 then align with one another as regards the obverse and reverse, that is, the plastics disc 1 and the ring are joined with an interlock.



The plastics disc 1 consists of a first material, in particular, a thermoplastics material, for example, polyamide. The ring 2 consists of a second material having a different wear-resistance and/or resilience from the first material of the plastics disc 2¹. The ring 2 has a different wear-resistance when it consists, for example, of a metal, which the plastics disc 1 has flanged over it at its edge, as described above, or of a fibre-reinforced plastics material. The ring 2 has a different resilience when it consists, for example, of an elastomer, such as polyurethane.

The ring 2 is in that case permanently secured to the plastics disc 2¹, which can be effected, inter alia by adhesion, crimping or other frictional connections.

Figs 3 to 6 show further embodiments of a parking token, which differ from the described first embodiment only in respect of the shape of the ring 2 and/or the shape of the edge region of the plastics disc 1.

According to Fig. 3, the ring 2 is placed circumferentially on the edge of a plastics disc 1. The obverse and reverse extensions 4 and 5 of the ring 2 engage over a respective radial portion of the obverse and reverse of the plastics disc 1.

The same applies to the third and fourth embodiment shown in Figs 4 and 5; here, however, the thickness of the obverse and reverse extensions 4, 5 of the ring 2 is additionally tapered radially inwards (compare Fig. 4), or becomes larger (compare Fig. 5). The stacking and/or ejection behaviour of parking tokens arranged

¹ Presumably in error for 1 - translator.



one on top of the other is improved by such an edge shaping.

Fig. 6 shows a fifth embodiment, in which the plastics disc 1, corresponding to the first embodiment, is constructed with recessed portions 6, 7 at its edge for a seamless connection to the ring 2. The ring 2 here, however, has a radially outwardly tapering shape, since the obverse and reverse extensions 4, 5 have a chamfered contour which also gives the edge region of the plastics disc 1 its shape. The parking disc consisting of the plastics disc 1 with the ring 2 positioned thereon consequently has at its edge a circumferential portion that in cross-section is in the shape of a truncated cone. Such a parking token lying on its obverse or reverse then, as regards at least a part of its edge region, does not lie on a supporting surface and has sliding surfaces 8 for an action to be performed on the parking token.

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Patent Claims

1. A parking token for fee-payment operation of a parking barrier, in the form of a round, flat plastics piece having an integrated electronic component for user-related storage and, if desired, processing, of parking data, characterised in that the plastics piece (1) has at its edge, positioned in the manner of a capping thereon, a circumferential ring (2) of a material having a different wear-resistance and/or resilience from the round plastics piece (1).
2. A parking token according to claim 1, characterised in that the ring (2) has a U-shaped cross-section with an obverse extension (4) and a reverse extension (5) covering over an edge portion of the plastics piece (1).
3. A parking token according to claim 2, characterised in that the obverse and reverse extensions (4, 5) of the ring (2) align with the obverse and reverse of the plastics piece (1).
4. A parking token according to claim 1, characterised in that the obverse extension (4) and/or reverse extension (5) of the ring (2) have/has a wedge-shaped thickness that increases or decreases radially.
5. A parking token according to one of claims 1 to 4, characterised in that the ring (2) consists of sheet metal which is flanged over the plastics piece (1) at the circumference thereof.
6. A parking token according to one of claims 1 to 4, characterised in that the ring (2) consists of



resilient, shock-absorbing plastics material which sheathes the plastics piece (1) at the circumference thereof.

7. A parking token according to one of claims 1 to 6, characterised in that the round plastics piece (1) consists of a fibre-reinforced plastics material.

8. A parking token according to one of claims 1 to 7, characterised in that at its circumference the plastics piece (1) terminates in a radial taper by means of the ring (2).

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