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(71) Applicant: **De Molli, Daniele**
21018 Sesto Calende Varese (IT)

(72) Inventor: **De Molli, Daniele**
21018 Sesto Calende Varese (IT)

(74) Representative: **Serravalle, Marco**
Serravalle SAS
Via G. Matteotti, 21/23
26854 Cornegliano Laudense (LO) (IT)

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(54) **BIKER GARMENT COMPRISING A DEVICE TO INCREASE AIR RESISTANCE**

(57) The present invention is directed to a motorbike garment comprising at least a device to increase the rider's air resistance, when the motorbikes is not in aerodynamic folded position. Preferably the garment is a rider suit or a jacket or a pair of trousers.

Said device can be made of a membrane forming a sort of sail or parachute when the rider exits the folded position from behind the motorbike's fairing.

The invention is also directed to the use of said garment to ride a motorbike and to a method to ride a motorbike comprising the wearing of said garment.



Fig. 1

Description

[0001] . The present invention relates to a motorbike suit equipped with a braking aerodynamic device. In particular, the invention relates to the use of said suit to ride a motorbike, and to a method for riding a motorbike comprising the wearing of said suit during the ride.

[0002] . Several devices made to reduce air resistance, and thus to increase performances of racing or touring motorbikes, are known in the state of the art. Although said devices were originally present on motorbikes themselves, gradually the attention focused on rider's garment too, introducing for example a hump on rider's back, so to connect the helmet to rider's back and to reduce turbulences.

[0003] . WO 2012/052413 discloses a device to be applied on the internal portion of a rider's lower half leg, which device, while the rider spreads out the leg inwardly to the curve, increases the resistance to the airflow of the leg itself making curving easier.

[0004] . The present invention is directed to a device allowing the increase of motorbike brake efficacy by increasing rider's drag while braking. Further, the present invention is directed to a method of riding a motorbike, which method comprises to wear a motorbike jacket or suit comprising one or more devices which, once the rider exits the aerodynamic position inside motorbike's fairing, considerably increase drag of the whole motorbike-rider block. The invention is also directed to the use of a suit as above described for riding a motorbike.

[0005] . The device according to the invention is made by membranes which, when the rider is not in folded position and exits the aerodynamic protected zone of fairing, forms a sort of sail or parachute significantly increasing the resistance to the airflow (drag).

[0006] . It is important to note that, in motorbike races, overtakes take place almost entirely during braking phase. Thus, a device like the one of this invention, improving the braking performance of the whole motorbike - rider block, allows the rider to start braking a few meters later when compared to a rider wearing a conventional motorbike suit, thus facilitating the overtaking on other riders not equipped with the mentioned suit.

[0007] . In fact, drag force can be seen as the force produced by airflow opposing the motion of the body, which force is proportional to speed square and to a shape coefficient of the body. The presence of these membranes produces a significant increase of shape coefficient, increasing drag force on the body. This increase of drag produces a more pronounced motorbike deceleration, especially in the first phase of high speed braking, being drag force proportional to speed square.

[0008] . We can thus compare the device of the invention to a parachute, like the one used on certain type of machines (dragster) or on airplanes, which requires a very short stopping space. In the present case, this "parachute" is embedded on the motorbike suit or jacket and it is activated and de-activated by the rider bust, arms

and/or legs movement.

[0009] . In one embodiment the device consists of membranes placed between rider's forearm and hip and/or between rider's thigh and calf. As the rider rises from his folded position behind the motorbike windscreen and spread the knees, said membranes stretch out becoming sailcloth which create an impressive resistance effect to the air slowing down the motorbike and facilitating the brake.

[0010] . In another embodiment, said device consists of a bag placed on the back of suit or jacket, and of air inlets such that, when the rider rises from behind the windscreen, air penetrates from said air inlets, for example along the armpits, inflating the bag behind rider's back which become a sort of parachute.

[0011] . In order to reduce possible turbulences which can be created as the rider lays down in folded position, the device can also provide rubber bands or similar systems maintaining the membranes close to rider's body.

[0012] . Fig. 1 shows one embodiment of the invention. Still, it is important to notice that both position and length of membranes forming the sail can vary depending to the rider's riding style. Thus, it is foreseeable that the suit according to the invention will be produced in a variety of models that can best fit the different riding style.

[0013] . With reference to the membrane material composition, any natural or synthetic material can be used provided that it presents the required resistance and durability characteristics. In fact, membranes' material is subjected to forces increasing as the suit is used riding a motorbike able to reach high speeds.

[0014] . Parachutes were made of silk originally, more recently of polyamide. In a parachute resistance and lightness are essential, due the wide dimension of a parachute. In the present invention, membranes forming a deceleration sail have smaller dimension compared to a parachute, making the lightness requirement less important. On the contrary, it is important the resistance of the material to the repeated stress to which it is exposed, keeping in mind that during a MotoGP race a rider on average brakes more than 100 times and thus the membranes are exposed to the stress of the opening moment more than 100 times per race.

Claims

1. Motorbike garment comprising at least one device increasing the rider drag when the rider is not in folded aerodynamic position.
2. Garment according to claim 1, where said cloth is a suit, a jacket or a pair of trousers.
3. Garment according to claims 1-2, where said device is a membrane which, when the rider is not in folded position, forms a sort of sail or parachute.

4. The garment according to claims 1-3, where the device consists of membranes placed between the rider's forearm and hip and/or between the rider's thigh and calf. 5
5. The garment according to claims 1-3, where the device is a membrane placed on rider's back, which membrane inflating through the air penetrating the garment through air inlets close to armpits when the rider rises and exits the folded position. 10
6. Use of a garment according to claims 1-5 to ride a motorbike.
7. Method to ride a motorbike, said method comprising the wearing of a garment according to claims 1-5 while riding a motorbike. 15

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EUROPEAN SEARCH REPORT

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 11 February 2019	Examiner Monné, Eric
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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REFERENCES CITED IN THE DESCRIPTION

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