the collection chamber side. Said filter may comprise a surface layer of cellulose nanofibers or of PTFE (polytetrafluoroethylene).

The present document also relates in an example to a method for operating a system for collecting particles according to the above-mentioned embodiments, comprising:

- at least one collecting phase in which at least one flow of air is generated by at least one of the devices for generating a flow of air, from the chamber toward the external environment, through the first filter and/or the second filter, and
- at least one unclogging phase in which at least one flow of air is generated by at least one of the devices for generating a flow of air, from the external environment toward the chamber, through respectively the first filter or the second filter, in an unclogging operating mode.

If there is at least a first fan situated downstream of the first filter and at least a second fan situated downstream of the first filter, then:

- in the collecting phase, the first fan and the second fan may be started so as to discharge the air coming from the collection chamber toward the exterior, through the first filter and/or the second filter. The particles are then collected by the corresponding filter or filters;
- in the unclogging phase, only one of the fans may be started, for example the first fan, such that the air is sucked into the collection chamber through the second filter in such a manner that the particles are detached from the second filter and fall under the effect of gravity into the bottom of the collection chamber. It is then possible to unclog the first filter, by starting only the second fan, for example.

It will be noted that it is possible to carry out the unclogging phase by having both fans started, as long as one of the fans generates a greater negative pressure than the other fan, for example.

In such a case, the air comprising the particles and present in the collection chamber is not at risk of emerging through the suction pipe, since a negative pressure is generated in the collection chamber during the unclogging phase.

The unclogging phase may have a duration of between 5 seconds and 1 minute, for example, for each filter.

The duration of the unclogging phase may be shortened if the degree of unclogging of the filter has been reached.

The collecting phase may be performed in particular in the event of braking of the braking device.

The unclogging phase may be performed in particular when the disk of the braking device has stopped rotating.

When the vehicle is at a standstill, with the pads clamping onto the disk, the pneumatic resistance of the suction pipe increases.

This is advantageous since the flow rate of air sucked in through the suction pipe decreases while the flow rate of air sucked in through the filter that is to be unclogged increases.

Conversely, when the pads are unclamped from the disk, the pneumatic resistance of the suction pipe decreases.

This tends to increase the flow rate of air sucked in through the suction pipe. This higher flow rate of the air makes it possible to clean the pneumatic pipes by extracting a greater thickness of the dust deposited on the surface of the pipes.

In an aspect, the present disclosure refers to a system (1) for collecting particles (16) that is intended to be provided in braking means (2), comprising:

- at least one suction pipe (5) for sucking in particles (16);
- a collection chamber (8) into which the at least one suction pipe (5) opens, said collection chamber (8) being provided with at least one first filter (10) and with at least one second filter (12), each capable of filtering the particles (16) coming from the at least one suction pipe (5) and opening into the chamber (8);
- at least one first and one second airflow generating device (14, 15), which devices are configured to be controlled independently from one another and are capable of generating:
    - o at least one flow of air from an interior of the chamber (8) toward an exterior of the chamber (8), through the at least one first filter (10) and/or the at least one second filter (12), respectively, in a collecting operating mode, and/or

  at least one flow of air from the exterior of the chamber (8) toward the interior

of the chamber (8), through the at least one first filter (10) or the at least one second filter (12), respectively, in an unclogging operating mode.

In an aspect, the present disclosure refers to a method for operating a system (1) for collecting particles (16) according to the above aspect, the method comprising:

- at least one collecting phase in which at least one flow of air is generated by at least one of the airflow generating devices (14, 15), from the chamber (8) toward an external environment (9), through the at least one first filter (10) and/or the at least one second filter (12), and

at least one unclogging phase in which at least one flow of air is generated by at least one of the airflow generating devices (14, 15), from the external environment (9) toward the chamber (8), through the at least one first filter (10) or the at least one second filter (12), respectively, in an unclogging operating mode.

Brief description of the figures

Other features and advantages of the present disclosure will become apparent in the following detailed description, with reference to the appended drawings, in which:

[Fig. 1] is a schematic view of a particle collecting system according to the present document, provided in a braking device, said view illustrating in particular a particle collecting phase,

[Fig. 2] is a view corresponding to figure 1, illustrating an unclogging phase of a first filter of the collecting system,

[Fig. 3] is a view corresponding to figure 1, illustrating an unclogging phase of a second filter of the collecting system,

[Fig. 4] is a view corresponding to figure 1, illustrating a variant embodiment of the collecting system.

Detailed description of the disclosure

Figure 1 shows a particle collecting system 1 intended to be provided in a braking device 2.

CLAIMS

1. A system (1) for collecting particles (16) that is intended to be provided in braking means (2), comprising:

- at least one suction pipe (5) for sucking in particles (16);
- a collection chamber (8) into which the at least one suction pipe (5) opens, said collection chamber (8) being provided with at least one first filter (10) and with at least one second filter (12), each capable of filtering the particles (16) coming from the at least one suction pipe (5) and opening into the chamber (8);
- at least one first and one second airflow generating device (14, 15), which devices are configured to be controlled independently from one another and are capable of generating:
    - o at least one flow of air from an interior of the chamber (8) toward an exterior of the chamber (8), through the at least one first filter (10) and/or the at least one second filter (12), respectively, in a collecting operating mode, and/or
    - o at least one flow of air from the exterior of the chamber (8) toward the interior of the chamber (8), through the at least one first filter (10) or the at least one second filter (12), respectively, in an unclogging operating mode.

2. The system (1) as claimed in claim 1, wherein the at least one first and second airflow generating devices (14, 15) are situated, respectively, downstream of the at least one first filter (10) and the at least one second filter (12) with respect to the collection chamber (8).

3. The system (1) as claimed in claim 1, wherein at least one of the at least one first and second airflow generating devices is a fan (14, 15).

4. The system (1) as claimed in claim 1, further comprising a collection tray capable of collecting the particles (16) coming from the at least one first and second filters (10, 12) in the unclogging operating mode.

5. The system (1) as claimed in claim 1, further comprising sensors for estimating at least one of: the pressure drops and the degree of clogging, of the at least one first filter (10) and/or the second filter (12).

6. The system (1) as claimed in claim 5, wherein said sensors comprise at least one upstream pressure sensor and at least one downstream pressure sensor for at least one of said at least one first and second filters (10, 12).

7. The system (1) as claimed in claim 1, wherein a first discharge pipe (11) opening into the chamber (8) extends downstream of the at least one first filter (10), a second discharge pipe (13) opening into the chamber (8) extends downstream of the at least one second filter (12), a downstream end of the first discharge pipe (11) being connected to a downstream end of the second discharge pipe (13), both downstream ends being capable of opening into an external environment (9) and of being isolated from said external environment (9).

8. The system (1) as claimed in claim 1, wherein the at least one suction pipe (5) for sucking in the particles (16) comprises at least one solenoid valve.

9. A method for operating a system (1) for collecting particles (16) as claimed in any of claims 1 to 8, the method comprising:

- at least one collecting phase in which at least one flow of air is generated by at least one of the airflow generating devices (14, 15), from the chamber (8) toward an external environment (9), through the at least one first filter (10) and/or the at least one second filter (12), and
- at least one unclogging phase in which at least one flow of air is generated by at least one of the airflow generating devices (14, 15), from the external environment (9) toward the chamber (8), through the at least one first filter (10) or the at least one second filter (12), respectively, in an unclogging operating mode.