Research on New Cleaning Method of Automobile Air Conditioner

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Abstract. On the car air conditioning cleaning market at present there are some problem of cleaning method has been widely criticized, simple and convenient cleaning method, in particular, the so-called clean air conditioning is "only spray cleaner, no water washing", this will cause the pipeline internal dirt clean is not complete, easy to internal damage other parts of automobile air conditioning, affect the normal operation of the air conditioning, the remaining part of the chemical substances will also produce secondary pollution to the air inside the car, seriously affects people's health and safety.

1. Automobile Air Conditioning Cleaning Problems

The air conditioning system not only affects the driver's driving safety, but also plays a vital role in the health of every member in the car[1].

The current of air conditioning cleaning concept is still in the blocking online, but in fact the dirt of air conditioning and various kinds of bacteria (staphylococcus aureus, legionella, aspergillus, influenza viruses, etc.) hidden in the on the face of no hidden inside, if not regular cleaning, these pollutants will continuously through circulation flow into the car in the air, in such an environment for a long time, people will feel dizzy and sick, the body tired; And easy to catch a cold, bronchitis, tonsillitis, pneumonia, and other serious harm to our health[2].

While cleaning the car air conditioning is the most thorough way apart inside air conditioner parts cleaning individually, but for some prospective new car and maintenance to love the good vehicle air conditioning is far from reach need apart to clean thoroughly, using and dismantling air-conditioning unit cleaning method is not only expensive and time-consuming, laborious, also don't adapt to the high pace of life, the transport demand. As a result of the existence of these problems, a variety of cleaning devices were also born on the market, but these mixed products, quality and inconsistent, did not achieve the purpose of thoroughly cleaning air conditioning pipeline. For this reason, this paper carries on the design discussion in view of the present automobile air conditioning inlet pipe cleaning way, as far as possible to develop and design a portable automobile air conditioning inlet pipe cleaning device to break through the bottleneck in this field[3].

2. The Necessity of Designing New Automobile Air Conditioning Cleaning Device

According to the National Bureau of Statistics, by the first half of 2017, China's car PARC had exceeded 200 million, reaching 205 million and growing. Such a large number of car ownership has spawned a larger aftermarket, and car service has become the biggest "cake" in the aftermarket. However, car air conditioners have to be cleaned. Whether it is a traditional car or a new energy vehicle, experienced owners will find that when the air conditioner is turned on after a long period of not using the air conditioner, the air vent will blow out a musty smell, which is due to the dust
accumulated in the ventilation duct and various odor sources, which can easily cause respiratory diseases of the passengers[4].

Therefore, cleaning automobile air conditioning is a rigid demand[5].

According to the investigation and procurement in many aspects, the simple cleaning of the entire automobile air conditioner in the market has the disadvantage of "only spray detergent, no water cleaning", and there has never been a simple and portable way of washing air inlet pipe of air conditioner. This method of cleaning spray "cures the symptoms but not the root causes" and may cause secondary pollution due to the chemical composition of cleaning agent remaining in the air duct. Currently on the market is not a separate cleaning air conditioning water inlet pipe portable devices, research and development of this kind of simple and easy, portable water air intake pipe device is expected to can make up for the market blank, with comprehensive cleaning dust, the air duct to cleaner, more efficient, solved the existence "only spray cleaner, no water washing" shortcomings[6].

3. Research and Development Objectives and Technical Content

The purpose of the research and development is to provide a portable air conditioning inlet pipe cleaning device for automobile, so as to solve the problem of "only spray detergent, no water cleaning" proposed by the above technology, resulting in incomplete cleaning of the dirt inside the pipe, easy to cause damage to other parts of the automobile air conditioning, affecting the normal operation of the air conditioning.

Therefore, how to thoroughly clean the automobile air conditioning pipeline, so that the inner surface of the pipeline to restore its original state; After cleaning, a layer of chemical passivation film can be formed on the metal surface of the air conditioning pipeline to prevent or reduce the regeneration of dirt, so as to effectively protect and extend the normal work and life of the air conditioning system, which will be the purpose of our design[7].

To achieve the above objectives, the following technical solutions are provided in this design: A portable car air intake pipe cleaning device, including the barrel body, motor, fixed clasp and sprinkler head, described in the back of the barrel body set with a handle, and the front of the barrel body is installed into the wind window, as described in the bottom of the barrel body fitted with mobile wheel, and the top of the barrel body set into the mouth, and the side of the barrel body from top to bottom respectively fixed outlet and the discharging mouth, described in the motor installed in the top of the barrel body, and set a stirring rod on the bottom of the motor, as described in the interior of the barrel body set a baffle, and the top of the barrel body internal installation has high pressure fan, described the fixed button fixed on the side of the barrel body, And the interior of the fixing buckle is connected with each other through the fixing pipe and the connecting pipe. The top of the fixing pipe is installed with the sprayer and the side brush, and the water jet is installed on the top of the sprayer[8]. The physical picture of r&d is as follows:
The appended drawings show

FIG. 1 is a schematic diagram of the frontal structure of the utility model.

FIG. 2 is a schematic diagram of the side-view section structure of the utility model.

FIG. 3 is a schematic diagram of the enlarged structure at part A of the utility model.

Graph: 1, barrel body, 2, handle, 3, mobile wheel, 4, into the mouth, 5, outlet, 6, discharging mouth, 7, into the wind window, 8, motors, 9, stirring rod, and baffle 10, 11, and high pressure fan, 12, fixed clasp, 13, fixed tube, connecting pipe, 14, 15, spray, 16, brush, 17, sealing ring, 18, sprinkler head.

See figure 1-3, a portable car air intake pipe cleaning device, including body 1, handle 2, move round 3, into the material outlet mouth 4, 5, the discharging mouth 6, into the wind window 7, 8, stirring rod motor 9, baffle 10, high pressure fan 11, 12, 13 fixed tube fixed deduction, connecting pipe 14, 15, 16, brush seal 17 and 18, sprinkler head barrel body 1 set with a handle on the back of 2, and the front of the barrel body 1 installation into the wind window 7, barrel body 1 and baffle 10 to the integrated structure, and baffle 10 width equal to the inner width of the barrel body 1 baffle 10 barrel body 1 separated into two and a half, Will prevent water high pressure fan 11 and 1 at the bottom of the barrel body fitted with mobile wheel 3, and the top of the barrel body 1 set into the material mouth 4, and 1 on the side of the barrel body from top to bottom respectively fixed outlet 5 and the discharging mouth 6, 8 of the motor installed on the top of the barrel body 1, 8 and motor set with stir bar at the bottom of 9, stirring rod 9 set seven groups, and each group of stirring rod 9 for spacing distribution, can be cleaner and water mix, the interior of the barrel body 1 set of baffle 10, and the top of the barrel body 1 internal installation has 11 high-pressure blower, fixed clasp 12 fixed in the side of the barrel body 1,And internal by fixed tube fixed buckle 12 13 and 14 interconnected connecting pipe, fixed clasp 12 and 13 for the fixed tube CARDS close connection, and fixed tube for metal, 13 in don't need to clean up when the car air conditioning pipe, tube can be fixed within fixed buckle 12, 13 CARDS to receive, fixed spray 13 at the top of the pipe installation is 15, and spray limelight 15 sides set brush 16, brush around the spray the outer surface of the 15, 16 and spray limelight 15 and 16 brush to remove the installation structure, scrubbing brush 16, can thoroughly clean the pipe, brush 16 can be removed at the same time, Easy to replace the new brush 16, 18 installed sprinkler head at the top of the spray limelight 15, and the bottom of the sprinkler head 18 set sealing ring, 17, 18 and sprinkler head spray limelight 15 for the threaded connection, and the sealing ring of 17 and 18 for thermal spray head bonding, sealing ring which can effectively prevent leaks, 17 sprinkler head can be removed from the spray limelight 15, 18 to facilitate used interchangeably[9].

Working principle of the design equipment: In using the device, the first user by hand to push the device to the specified location, 2 baffle 10 barrel body 1 separated into two parts, then put the detergent and water into the barrel body through into the mouth 4 1 half of motor drives the stirring rod 8, 9, have multiple sets of stirring rod 9 set at the same time, can be cleaner water and stir well, and then connect the connecting pipe 14 on the discharging mouth 6, holding fixed tube 13 users, aim
the spray head 18 air conditioning pipe, sprinkler head between 18 and spray limelight 15 set 17, a
sealing ring which can effectively prevent leaks, plus brush 16 wash, can thoroughly clean the pipe,16
brush can be removed at the same time, easy to change the new brush 16, after cleaning, the
connecting pipe 14 from discharging mouth 6 disassembly, connected to the outlet on the 5, then put
the sprinkler head 18 removed from one end of the spray limelight 15, air from the ventilation window
7 into the barrel body 1, the other half of the high pressure fan blow out 11 strong wind pipe inside the
water, bubbles and dust can be all cleared, both convenient and efficient, without air conditioning duct
cleaning cars, can be fixed tube within fixed buckle 12, 13 CARDS to receive[10].

4. Conclusion
Maintenance and maintenance of automobile air conditioning need some technical, the research object
discussed in this paper has been authorized by the utility model patent.On the other hand, the design of
equipment and devices will continue to improve their own characteristics, to meet the development of
science and technology and the change of market demand, while constantly reform and innovation
service mode, adapt to the trend, better for China's automotive aftermarket to provide new innovative
services.

5. References
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