

Design of Intelligent Shower Head

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Abstract. With the rapid development of science and technology, shower heads have been widely used in People's Daily life. The function of existing shower head on the market is too single, and this kind of shower head is not intelligent enough. In this paper, an intelligent shower head is designed, the structure of the shower head includes main switch, body induction switch, waterproof solenoid valve, metal bellows, shower head and other parts. This shower head has many advantages, such as the human body can be induction automatic switch water flow in the main switch, the shower head can automatically spray shower gel in the bath, the problem of excessive water pressure is solved by the way of three-dimensional water spraying and so on. The function of shower head is introduced, the principle is analyzed and the market demand is explained. Finally, an intelligent shower head is designed, which can meet people's requirements for intelligent shower head.

Introduction

With the progress of The Times, the development of science and technology, people's living standards continue to improve, the use of shower head has been very common. Shower heads have been closely related to People's Daily life. However, the existing market function of the shower head is too simple, the operation of the shower head is not convenient, the design of the shower head is not intelligent enough. Existing shower head exists numerous inconvenience when bathing, if switch operation is not enough intelligence, when daub bath dew is inconvenient, the phenomenon that water pressure is too big exists when bathing.

Function of Shower Head

According to the use requirements and design principles of most people, this "intelligent shower head" has the following functions:

Automatic human body induction control [1]. Adopt the latest human body induction function, so that people go to the induction area of automatic boiling water, when the people leave the automatic water off, liberated the hands of people, there will be no bath control switch valve inconvenience problem.

On and off. Added the mobile phone control function, to achieve remote control of the mobile phone, in advance of the release of cold water pipe.

Decomposing water pressure. Three-dimensional water spraying, decomposing water pressure to solve the problem of excessive water pressure [2].

Automatic spray bath foam. Add the function of automatic rubbing and beating bath foam, reduce the bath time and solve the problem of applying blind corner.

Operating Principle of Shower Head

Connect to solenoid valve via a smart socket. Before bathing, the mobile phone can control the intelligent switch to start the solenoid valve to drain the cold water in the pipe. In order to avoid the waste of water resources, a tank is installed next to the shower head to store the cold water [3].

The human body induction switch is placed above the shower head. The human body induction switch is connected to the solenoid valve. When people shower, the human body induction switch signal is transferred to the solenoid valve switch to control the water switch. When the bathers walk under the shower head, the water will automatically open. The bathers take a step back and the water shuts itself off. This intelligent setting eliminates the need to use your hands to control the switch when taking a shower [4].

A conical funnel is placed at the top of the shower head, a proper amount of bath fluid is placed in the bath fluid bucket, and the slider is opened when bathing. The bath fluid will flow out with the water under the action of gravity.

At the outlet of the shower head, we modified it to break down the water pressure, so that 70% water +30% air can mix with each other through the air chamber of the device, so that the water can flow out of the outlet hole with a slight sense of rhythm. Bounce rhythm water makes skin produce up and down press press feeling, achieve massage function. The working principle diagram of shower nozzle is shown in figure 1 [5].

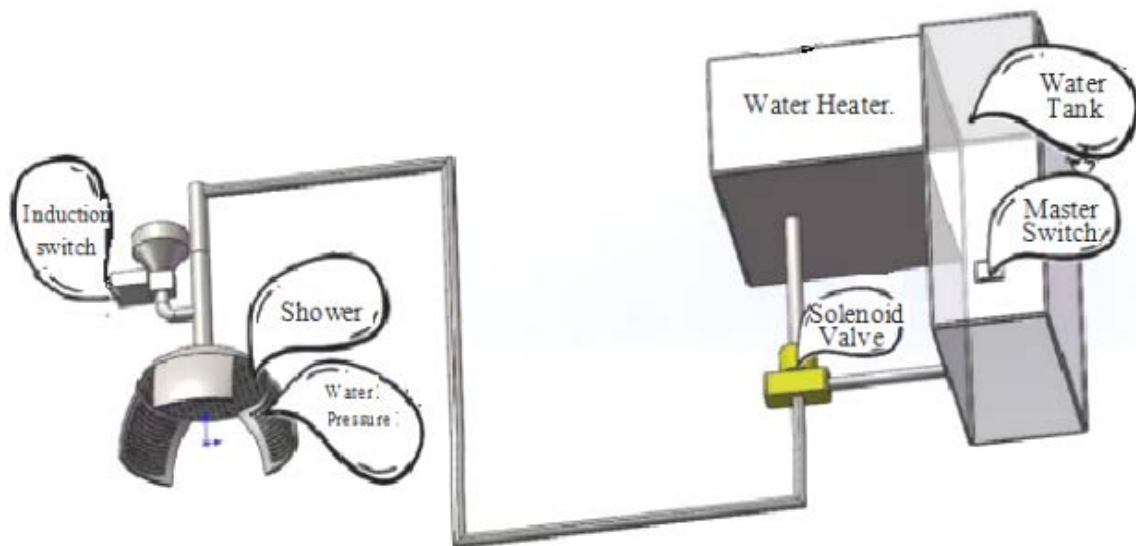


Figure 1. The working principle diagram of shower nozzle

Advantages of Shower Head

Creativity. Existing water head switch on the market are mostly manual switch, bath but there are a lot of cases, is not convenient to contact switch water valve, such as head apply shampoo is difficult to open your eyes, and so on and so forth, we head for the first time the human body sensor is used to as a switch liberated the people's hands, provides the more convenient [6].

Practicality. The intelligent shower head USES a three-dimensional design to break down the water pressure, allowing 70 percent of the water to mix with 30 percent of the air in the chamber of the device to allow the water to flow out of the outlet hole with a slight rhythm. Bounce rhythm water makes skin produce up and down press press feeling, achieve massage function.

Novelty. The human body induction switch is placed above the shower head. The human body induction switch is connected to the solenoid valve. When people shower, the human body induction

switch signal is transferred to the solenoid valve switch to control the water switch. When the bathers walk under the shower head, the water will automatically open. The bathers take a step back and the water shuts itself off. This intelligent setting eliminates the need to use your hands to control the switch when taking a shower [7].

Advanced. A lot of people don't turn off the shower head when applying bath liquid, which results in a lot of water being wasted. Moreover, due to the human body structure, there will be a lot of blind spots when applying bath liquid. Our intelligent shower head adds the function of automatic rubbing and beating bath foam, which can reduce the bathing time, solve the problem of applying blind corner, avoid the waste of water resources, and achieve the green environmental protection.

Competitive Advantage. Independent product research and development, with independent intellectual property rights (two utility model patents); Product function is rich, has produced a variety of physical functions; Advanced product performance, intelligent; The products are cost-effective and have the market promotion potential; The team is young, energetic and innovative.

Market Demand Analysis

According to the survey and the way of use, it can be divided into the following three types:

Portable shower head: the shower head can be held in the hand to use, bracket can be fixed.

Head type shower head: fixed in the head, do not have the lifting function, but can adjust the size of the amount of water [8].

Position type shower head: there are a variety of installation position and outlet Angle, cleaning and massage.

According to the way of outflow, it can be divided into:

General formula: suitable for simple and fast bath.

Massage: water concentration can be a column of water, a good massage effect.

Turbine: strong water, through the collision between the water flow to produce a fog effect [9].

These single shower function, there are all kinds of defects, but as people living standard rise, people use of shower requirement also gradually improve, so we shower nozzle according to the existing problems were summarized, improve, develop a shower head, with the function of a variety of in order to meet the using demand of the people [10].

According to the market survey, the problems in the use of existing shower heads in the market are generally shown in figure 2.

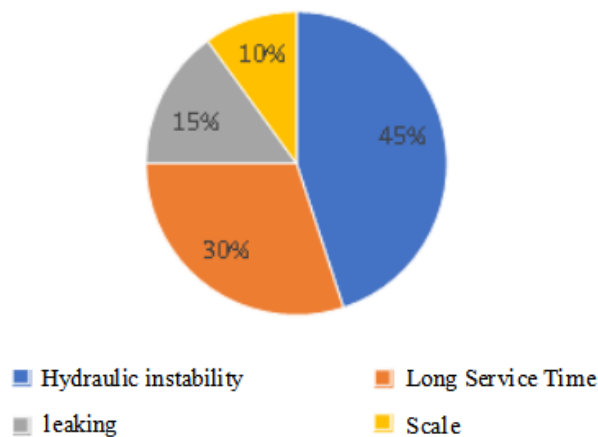


Figure 2. Head of the problems in use

According to the consumer response, the intelligent shower head design function is advanced, this shower head meets the needs of the public users. So the market potential of intelligent shower head is huge, the development space is broad.

Summary

With the rapid development of science and technology, shower heads have been widely used in People's Daily life. Intelligent products are quickly into people's lives. The function of existing shower head on the market is too single, and this kind of shower head is not intelligent enough. In this paper, an intelligent shower head is designed, the structure of the shower head includes main switch, body induction switch, waterproof solenoid valve, metal bellows, shower head and other parts. This shower head has many advantages, such as the human body can be induction automatic switch water flow in the main switch, the shower head can automatically spray shower gel in the bath, the problem of excessive water pressure is solved by the way of three-dimensional water spraying and so on. The function of shower head is introduced, the principle is analyzed and the market demand is explained. Finally, an intelligent shower head is designed, which can meet people's requirements for intelligent shower head.

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