

On the Invention of One Button Intelligent Floor Drain

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Abstract

In this paper, a type of intelligent floor products as an example, focusing on the hair and other debris caused by the blockage of the sewer design idea and research method, the current drain sewage present in most of the traditional manual cleaning methods, this method is not only convenient, inefficient and sometimes does not play the effect of sewage. A type of intelligent floor drain, the invention relates to a rotating blade device to the crushing mechanism of object. The intelligent floor drain convenient use, energy saving and environmental protection, successfully solve the difficult cleaning and easy to block or to clear the problem, therefore, we put forward a type of intelligent floor drain.

Keywords

One button intelligent floor drain; sewage discharge; cleaning.

1. INTRODUCTION

With the continuous development of smart home technology, the intelligent requirements of the market for home products are higher and higher. In China, especially in the field of pollution discharge, the technology is still relatively weak. At present, most of the floor drain pollution is cleaned by traditional manual methods, which is not only dirty and tired, but also easy to cause sewer blockage. At present, the market of floor drain products does not involve the function of intelligent cleaning with one button. Therefore, aiming at the pain point of this product, we have researched and invented the "one button intelligent floor drain". This product adopts mechanical structure, which is stable and convenient in use. It can not only solve the problem of cleaning up the drain pipe blockage, but also reduce the problem caused by manual dredging of the drain pipe blockage cost.

2. PRODUCT ANALYSIS

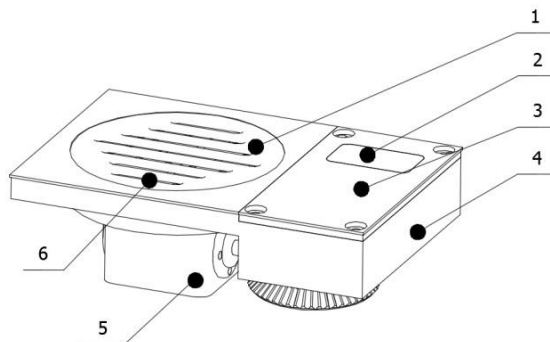


Figure 1. 1. First layer filter cover; 2. Reset button; 3. Upper cover; 4. Shell; 5. Box; 6. Filter screen;

The core point of the "one key type intelligent floor drain" of the product of the invention is to adopt the combination of reciprocating stroke block, transmission device, water and sewage guiding device, crushing device and deodorization function in the structure, so as to realize the effect of one key type automatic cleaning, cleaning, hair crushing, sewage discharge, etc. in the design of the deodorization structure, the water sealed structure is selected, which has stable structure, good sealing performance and drainage speed High speed and good effect.

2.1. Traditional Floor Drain Structure and Existing Problems

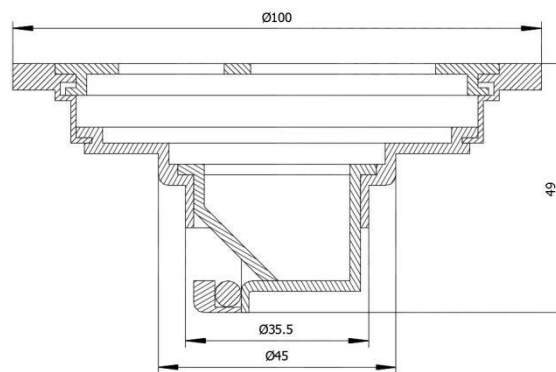


Figure 2.

Although the traditional floor drain has done a lot of design in deodorization, it still faces many problems in cleaning and blocking. The whole floor drain only relies on a screen cover to prevent hair and sundries from entering. Obviously, it will cause poor drainage, which needs to be cleaned by hand frequently. The whole process is dirty and troublesome. If the cleaning is not timely, it will also cause the problem of sewer blocking, increasing The cost caused by manual dredging of the drain pipe can not meet people's demand for high quality of modern life.

2.2. Put Forward the Design Scheme of One Key Intelligent Floor Drain

2.2. A design scheme of one key intelligent floor drain is proposed. The one key intelligent floor drain is flexibly clamped between the shell and the knife edge groove. The one key cleaning reset button is used to drive the rotating knife edge through the gear. The inner cavity of the shell is provided with water and dirt guiding devices. The guiding device is used to make the hair and other dirt fall into the rotating knife edge from the water inlet to crush the object. The inner cavity side of the shell is provided with There is a variable direction gear rotating mechanism, and a key type linkage is realized between the upper part of the variable direction gear rotating device and the inner cavity rotating rod of the shell through the cooperation between the inclined surfaces. The one key intelligent floor drain has simple structure, all of which are mechanically rotating, stable and convenient. The falling objects are smashed by various ways of gear engagement, with high rotation speed, fast smashing speed and smashing High efficiency, flush with water to clean and drain.

3. ONE KEY INTELLIGENT FLOOR DRAIN MECHANISM SCHEME

3.1. A Floor Drain Water and Sewage Guiding Device

The floor drain water and sewage guiding device includes a shell, a box is arranged below the left end of the shell, an upper cover is arranged above the right end of the shell, a reset button is arranged on the upper cover, a water guide plate is arranged on the inner cavity of the left end of the shell, a two-layer filter screen is arranged above the water guide plate, and a two-layer filter cover is arranged on the two-layer filter screen. The local leakage water and sewage guiding device has reasonable design and convenient installation. The setting of the first layer filter cover and the second layer filter screen can effectively filter hair, and prevent the entry of

rats and pests. It is not easy to block. The drainage is fast and the cleaning is convenient. The setting of the reset button can realize one key cleaning.

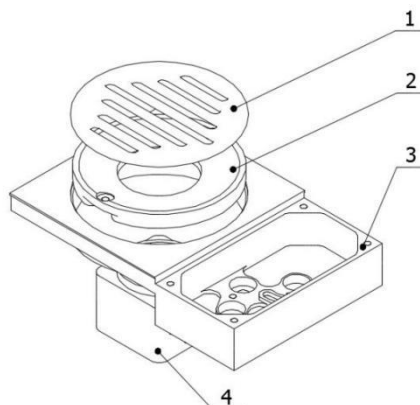


Figure 3. 1. Filter screen; 2. Water and sewage guide plate; 3. Shell; 4. Box;

3.2.A Reciprocating Stroke Drive Block

The reciprocating stroke drive block includes a shell, the inner wall of the upper end of the shell is provided with a limited shell, the movable rod is inserted in the limited shell, the upper end of the movable rod is provided with a reset button, the bottom of the shell is provided with a sleeve rod, the upper end of the sleeve rod is provided with a sleeve rod 2, the sleeve rod 2 is inserted in the through hole 1 of the rotary cylinder, the sleeve rod 1 is inserted in the through hole 2 of the gear Z6, the gear Z6 is fixedly connected with the rotary cylinder, and the rotary cylinder is fixedly connected with the gear Z6. The outer wall is provided with a spiral surface, the sleeve rod under the gear Z6 is sleeved with a return spring, the lower end of the return spring is fixed on the shell, and the upper end of the return spring is fixed on the bottom of the gear Z6. The reciprocating stroke drive block has reasonable structure and strong practicability. By pressing the reset button, the roller can press down the spiral surface, and the rotary cylinder can rotate, which is very convenient. After releasing the reset button, the rotary cylinder can be reset by the reset spring, which is very convenient.

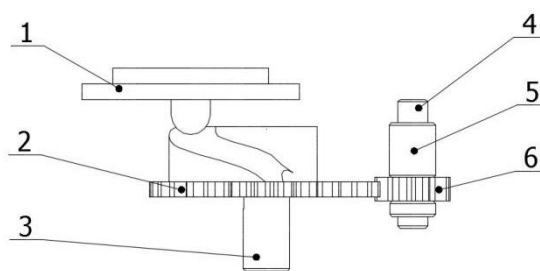


Figure 4. 1. Reset button; 2. Reciprocating stroke drive block; 3. Movable rod; 4. Set rod; 5. Rotary cylinder; 6. Gear Z6;

3.3.A Floor Drain Cutting and Grinding Device

3.3. A floor drain cutting and crushing device assembly for floor drain cutting and crushing device, including a shell, one side of the shell is provided with a water guide plate, the upper part of the water guide plate is provided with a filter cover and two filter screens, the two filter screens are located under the first filter cover, the lower part of the water guide plate is connected with a box, the other side of the shell is provided with an upper cover, the upper cover is provided with a reset button, and the lower part of the upper cover is provided with a reset button. There is a transmission structure on the square, a blade pin shaft is penetrated through the box, a blade is fixedly sleeved on the outside of the blade pin shaft, a blade edge is

arranged on one side of the blade, the blade edge and the blade cooperate with each other, one end of the blade pin shaft is connected with a small bevel gear, the design of the invention is reasonable, the structure is simple, all adopt mechanical rotation, stability and convenience, use various gear meshing ways to make it fall down The grinding speed of the object is higher, the grinding speed is faster, and the grinding efficiency is higher. The object is washed and cleaned with the water flow.

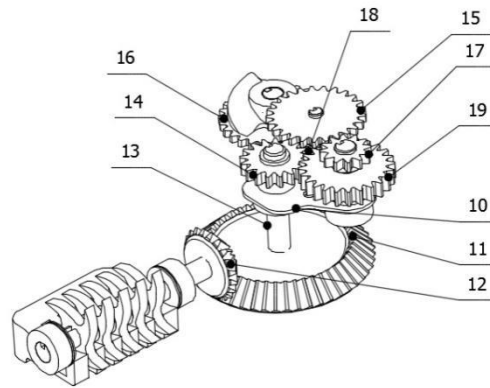


Figure 5. 10. Press plate; 11. First bevel gear; 12. Second bevel gear; 13. First pin shaft; 14. First gear; 15. Fourth gear; 16. Gear transmission mechanism; 17. Third gear; 18. Fifth gear; 19. Second gear;

3.4.A Cutting Blade

The structure of the cutting blade group includes the tool holder body and the blade group. The tool holder body is evenly provided with five cutting edges from front to back. The blade group is composed of five blades arranged from front to back. The blade is provided with four cutting edges, and the included angle between each cutting edge is 90 degrees. The blade group is located above the tool holder body, and the blades in the same direction on the blade group can rotate in the blade edge. The middle part of the blade group With blade pin. The structure of the cutting blade group can achieve the effect of cutting and crushing through the mutual coordination of the blade and the cutting edge. In the process of feeding, the blade will automatically draw the sundries into the cutting edge, and then realize the effect of four times cutting for one edge and sixteen times cutting for four edges. In the design, a total of five rows of blades are arranged, so that the cutting effect of 80 times of rotation can be achieved, and then through the blade, the debris will be cut It is discharged along with the water flow and the inertia of blade rotation.



Figure 6. 1. Cutting blade; 2. Blade pin; 3. Blade edge;

4. CONCLUSION

Taking the intelligent floor drain with one key as an example, this paper expounds the design idea and research and invention scheme of the drain blockage caused by the sundries such as hair, etc. through the analysis of a kind of floor drain water guiding and sewage guiding device, a reciprocating stroke driving block, a kind of ground drain cutting and crushing device and a kind of cutting blade, the design intention of each is clarified, and the difficulty and ease of cleaning are successfully solved. Block or unable to clean and other problems, and this product all uses the mechanical structure, when using stable, convenient, to meet people's demand for modern life of high quality.

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