

## Design of Baby Diaper Cleaner

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**Abstract:** The baby diaper cleaning machine includes a sink at the bottom, a washing table mounted on the top of the sink, and a washing table fixed together with the top cover; The drain valve is installed outside of the tank, and the diaper support frame is installed inside of the sink. The diaper is clamped through the diaper support frame and the diaper support frame clamping ring. The brush board is mounted on the scrub table. Both ends of the brush plate are placed in the first card slot inside the scrub table. The upper surface of the brush plate is fixed at the left end of the bearing and the connecting rod. The right end of the connecting rod is connected to the left end of the connecting rod through the bearing. The right end of the connecting rod is connected to the eccentric gear through the bearing. The pinion meshes externally with the eccentric gear, and the pinion is fixed on the output shaft of the motor; The handle is fixed on the upper surface of the upper cover, and the disinfectant lamp and battery box are installed on the lower surface of the upper cover. This product can not only obtain better washing effect, but also sterilize the diaper after washing. This product has the advantages of simple structure, saving water, electricity and other resources, green and environmental protection.

### 1. Research Background

With the liberalization of the two-child policy in China, parents warmly welcome the new baby at the same time, the newborn baby's diaper cleaning is one of the first issues to be considered. Young parents love their children hand and foot. The health of the baby is very important to the parents. In recent decades, many new products have appeared in order not to wash diapers, such as diaper, disposable diapers and so on. These new products have caused many negative effects on the health of the baby's skin, the waste of resources[1]. So the advantages of using a traditional diaper are more prominent. But for fast-paced, high-temperament young parents, in a clean, limited living space, the diaper cleaning has brought inconvenience to daily life. The existing small washing machines on the market can also clean diapers, but this is still the washing machine sanitary conditions are not ideal. Traditional washing machines can also be too bulky for a few diaper pieces [2]. This causes a lot of waste of resources such as volume, space, energy, etc. If in a clean room, such diaper is chosen to be washed by hand, not only the hands are cold, but more importantly, it is easy to get dirty in the washroom, clothes and hands in the cold winter [3].

### 2. Research Content

In order to overcome the above existing technical shortcomings, the purpose of the study is to provide a baby diaper cleaning machine, which has the advantages of compact size [4], simple structure, convenient operation and green environmental protection. In order to achieve the above purposes, the technical programmers adopted are as follows:

The baby diaper cleaning machine includes a sink 14 at the bottom, a washing table 18 mounted on the top of the sink, and a washing table fixed together with the top cover 1;

The water outlet valve 15 is externally installed in the water tank 14, and the diaper support frame 13 is internally installed.

The diaper support frame 13 and the diaper support frame clamping ring 12 are used to tighten the diaper [5].

Described the scrub brush board are installed on 18, 8 brush plate placed in the inside of the scrubbing machine 18 on both ends before and after the first card slot 7, 8 brush plate surfaces by 9 left end of the fixed bearing and connecting rod.

Connecting rod 9 right end through bearing connected to the left end of connecting rod 20, right end of the connecting rod through the bearing and eccentric gear connection [6].

The external gear eccentric gear 19 and small gear fixed on the output shaft of motor 16 of 17.

The upper surface of the upper cover 1 is fixedly provided with a handle 2.

The lower surface is provided with a disinfection lamp 21 and a battery box 6, and the left side is provided with a power switch 5.

The upper surface of the upper cover 1 is provided with a water injection port 3, and four corners of the upper surface are respectively provided with a screw hole 4.

The lower surface on the left side of the scrub table 18 is fixed with a card plate 10, and the upper surface on the left side of the sink 14 is provided with a second card groove 11, which is coordinated with the second card groove 11.

The battery box 6 is internally equipped with a battery to supply power switch 5, disinfection lamp 21 and motor 16.

### **3. Research Results**

The product studied in this project can clean a single diaper with child defecation, which can not only achieve better washing effect, but also sterilize the diaper after washing; Simple structure, small size, save water, electricity and other resources, green environmental protection. The structure diagram is shown in figure 1. The baby diaper cleaning machine includes a sink 14 at the bottom, a washing table 18 mounted on the top of the sink, and a washing table fixed together with the top cover 1. The water outlet valve 15 is externally installed in the water tank 14, and the diaper support frame 13 is internally installed. The diaper support frame 13 and the diaper support frame clamping ring 12 are used to tighten the diaper. Described the scrub brush board are installed on 18, 8 brush plate placed in the inside of the scrubbing machine 18 on both ends before and after the first card slot 7, 8 brush plate surfaces by 9 left end of the fixed bearing and connecting rod. Connecting rod 9 right end through bearing connected to the left end of connecting rod 20, right end of the connecting rod through the bearing and eccentric gear connection. The external gear eccentric gear 19 and small gear fixed on the output shaft of motor 16 of 17. The upper surface of the upper cover 1 is fixedly provided with a handle 2. The lower surface is provided with a disinfection lamp 21 and a battery box 6, and the left side is provided with a power switch 5. The upper surface of the upper cover 1 is provided with a water injection port 3, and four corners of the upper surface are respectively provided with a screw hole 4. The lower surface on the left side of the scrub table 18 is fixed with a card plate 10, and the upper surface on the left side of the sink 14 is provided with a second card groove 11, which is coordinated with the second card groove 11. The battery box 6 is internally equipped with a battery to supply power switch 5, disinfection lamp 21 and motor 16.

### **4. Principle of Work**

At ordinary times, scrub table 18 and upper cover 1 are fixed by screws [7]; When cleaning diapers with baby feces, first place the cleaning machine in the sink, then place the diapers to be washed on the diaper support frame 13, tighten the diaper to be washed by clamping ring 12 of the diaper support frame, and then place the clamping plate 10 in the second card slot 11 to achieve the fixation of the scrub table 18 and the sink 14. Fill water into the water tank 15 through the water injection port 3, and the water level fully covers the upper surface of the diaper to be washed; Press the power switch 5 for the first time, and the brush plate 8 moves horizontally along the first clip slot 7 under the action of the connecting rod mechanism. At this time, the soft wool under the brush plate 8 can be used to scrub the diaper [8]. After pressing the power switch 5 for the second time, the

disinfection lamp 21 can sterilize the diaper to be washed in the sink 14. After cleaning, open the drain valve 15 to discharge sewage.

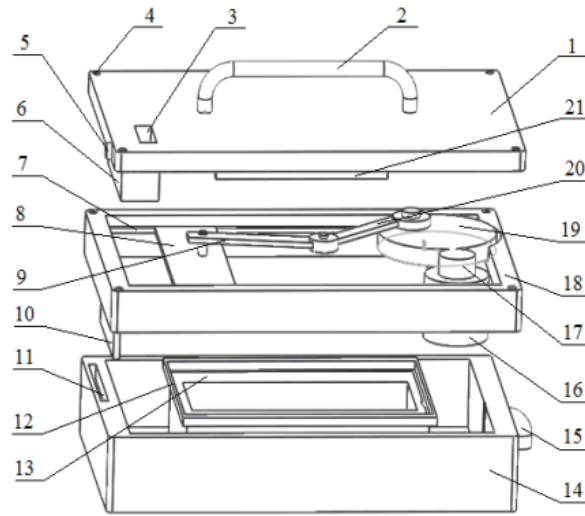


Fig.1 Structure Diagram

## 5. 3D Model Drawing

The composition of the work includes sink, scrub table, upper cover, drain valve, diaper support frame, diaper support frame clip ring, cleaning agent box, brush board, bearing, connecting rod, connecting rod, eccentric gear, pinion gear, motor, handle, disinfection lamp and battery box [9]. The three-dimensional model of the work is shown in figure 2.

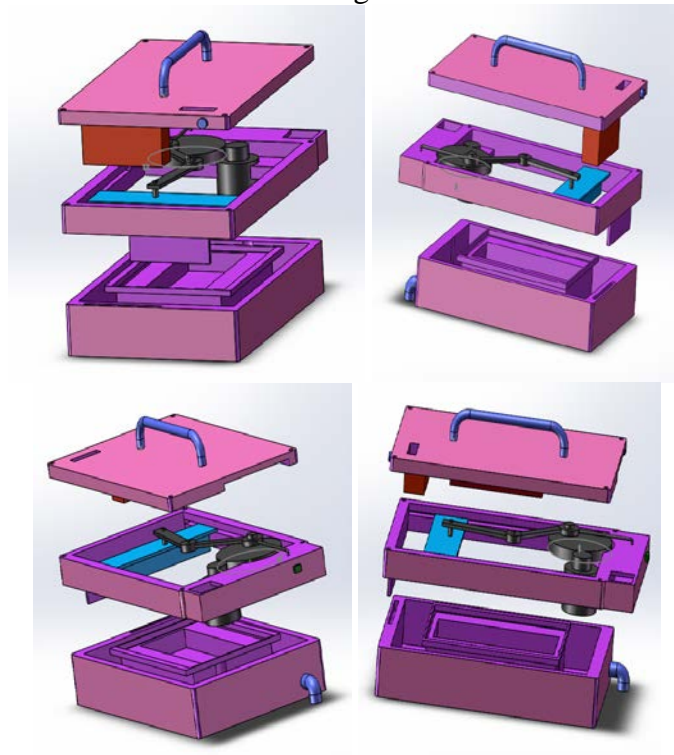


Fig.2. 3D Model Diagram

## 6. Innovative Work

The baby diaper cleaning machine includes a sink at the bottom, a washing table mounted on the top of the sink, and a washing table fixed together with the top cover; The drain valve is installed

outside of the tank, and the diaper support frame is installed inside of the sink. The diaper is clamped through the diaper support frame and the diaper support frame clamping ring. The brush board is mounted on the scrub table. Both ends of the brush plate are placed in the first card slot inside the scrub table. The upper surface of the brush plate is fixed at the left end of the bearing and the connecting rod. The right end of the connecting rod is connected to the left end of the connecting rod through the bearing. The right end of the connecting rod is connected to the eccentric gear through the bearing [10]. The pinion meshes externally with the eccentric gear, and the pinion is fixed on the output shaft of the motor; The handle is fixed on the upper surface of the upper cover, and the disinfectant lamp and battery box are installed on the lower surface of the upper cover. This product can not only obtain better washing effect, but also sterilize the diaper after washing. This product has the advantages of simple structure, saving water, electricity and other resources, green and environmental protection.

## 7. Conclusions

The invention relates to a development of a baby diaper cleaning machine, the product can clean a single diaper with child defecation, which can not only obtain better washing effect, but also sterilize and disinfect the diaper after washing. The baby diaper cleaning machine includes a sink at the bottom, a washing table mounted on the top of the sink, and a washing table fixed together with the top cover; The drain valve is installed outside of the tank, and the diaper support frame is installed inside of the sink. The diaper is clamped through the diaper support frame and the diaper support frame clamping ring. The brush board is mounted on the scrub table. Both ends of the brush plate are placed in the first card slot inside the scrub table. The upper surface of the brush plate is fixed at the left end of the bearing and the connecting rod. The right end of the connecting rod is connected to the left end of the connecting rod through the bearing. The right end of the connecting rod is connected to the eccentric gear through the bearing. The pinion meshes externally with the eccentric gear, and the pinion is fixed on the output shaft of the motor; The handle is fixed on the upper surface of the upper cover, and the disinfectant lamp and battery box are installed on the lower surface of the upper cover. This product can not only obtain better washing effect, but also sterilize the diaper after washing. This product has the advantages of simple structure, saving water, electricity and other resources, green and environmental protection. Simple structure, small size, save water, electricity and other resources, green environmental protection.

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