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Automatic Dispensing Pill Caddy for the Elderly

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Automatic Dispensing Pill Caddy for the Elderly

Motivation

The demographics for our customer base include those who are retirement age are in worse health compared with previous generations. More of them are living with chronic conditions such as high cholesterol, hypertension, diabetes, arthritis, and heart disease; all which require medication. The report also anticipates the number of people with dementia could nearly triple in the coming decades, thus requiring more assistance with daily activities.

Our product intends to enhance the quality of life of the older adult population by providing a pill dispenser that creates convenience with alerts/notifications, making the dosage easily accessible to those with cognitive and other impairments, and by helping these adults to live a healthier lifestyle all the while minimizing the stress involved and time needed to take their medication.

Market Analysis

The demographics for our customer base include those who are ages 65+, the elderly who have difficulty with memory, the elderly with multiple diseases/chronic conditions, and independent elder men and women without close supervision.

We will reach our most relevant market by selling our product individually and also by providing access to hospitals, insurance companies, and care providers. Our product will add value to our end user's life, is easily accessible for the elderly patients and can easily be changed impaired.

Device Design

Main Menu screen of the device. From here, the user can enter various sub menus, or go back to the time display.

Set Time menu where the user can set the current time to calibrate the device.

Pill containing ring inside the device, consisting of 35 individual containers for holding each dose.

Cross-sectional view showing the chute in which the pills will travel from the ring to the tray.

Software

Menu setup:

When the device is first powered, the user sees the Main Menu, which gives the user an option of entering a Set Time menu, a Set Alarms menu, or a Load Pills menu. The Set Time menu asks the user how many alarms per day they need, and then prompts them set each individual alarm time. If the user hits the back button on the Main Menu, then the display changes to display the time, as seen in the third LCD picture. This display is larger, bolder, and overall more visible to allow the user to see from some distance away.

Medication loading and Daily Usage:

At the start of the medication cycle, the pills are loaded dose by dose into the pill containment ring. The ring holds a maximum of 35 doses. The dose position will be indicated by a laminated key that maps the location for each slot clearly indicating the first day. A stepper motor will be used to move the wheel to each indicated dose.

When its time to take a dose, an audible alarm and flashing LEDs will alert the user. The user will then press the “release pills” button on the front of the device. This will control a servo motor that moves a flap and drops the dose from the compartment into the pill tray. The pill tray is removable for simplicity in which can easily be scooped out and taken at discretion.

Future Considerations

- Smartphone app for caregivers including alarm reminders geared towards patients with cognitive impairments
- Bluetooth controlled alarms, LEDs, and pill dispensing
- Database of missed doses
- Aesthetically blend appearance to look like a simple alarm clock
- Increased functionality of customizable alarms