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Safety-Enhanced Integration of Electric Kettle and Steam Machine on a Single Power Baseplate

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ABSTRACT: Conventional electric kettles and steam machines require separate appliances, occupying excess space and increasing wiring complexity. Existing solutions are often bulky, unsafe due to exposed wiring, and energy-inefficient when operated together. This invention provides a compact and cost-effective system that integrates both a kettle and a steam machine into a single dual-zone baseplate. The baseplate supplies power from its underside through coils, eliminating the need for side wiring and thereby improving safety. The steam machine is uniquely modified with a movable nozzle, allowing users to direct steam in any desired direction for versatile applications such as cooking, cleaning, fabric care, or personal use. A selector switch or automatic interlock ensures that only one device operates at a time, all on a single common baseplate, thereby preventing overload and enhancing energy efficiency. Safety features, including thermal cut-offs, insulation barriers, overcurrent protection, and a nozzle safety lock, are incorporated to prevent hazards such as overheating, spillage, or accidental steam release. The research reduces clutter, improves usability, and is portable and affordable, making it suitable for domestic kitchens, commercial outlets, hostels, salons, and portable applications.

1. INTRODUCTION

Nowadays in the electric devices talking about specifically on steam and kettle machine, in steam machine the connections are given through the top or uppermost side it increases the rate of damage and blasts on the other side steamers are also taking steam from the topmost side of the steam machine due to this the wire connections are cause fire and blast on the topmost side of steam machine that impact is directly shown on the face of steamer, this damage the face of steamer and nozzle are not that much convenient to take the steam and that are not suitable for user to take steam to avoid this we discover the change in connections for steam machine as like the kettle is operating in the baseplate. In this steam machine is operating on the operating baseplate connections are given through the baseplate, and the nozzle is provided movable feature so that there is an easy way to take the steam according to comfort. In case of a kettle where there is no change for the operating mechanism, a direct AC supply is required for operating these two devices, so the kettle as well as the steam machine operate on a common baseplate. So, the advantages are that it is safe for the steam machine and convenient for carrying during travelling and reduces the wire complexity.

2. SYSTEM DESIGN

2.1 Baseplate

The baseplate acts as the main part or main operator of these two devices.

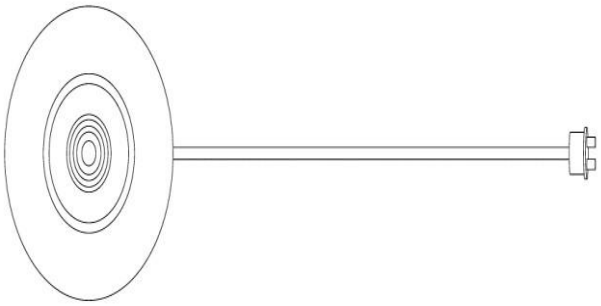

Fig -1: Baseplate

2.2 Steam Machine

The steam machine is operating on the baseplate. The only change is that coils are situated at the bottom side to provide a power supply for the bottom side with the movable nozzle.

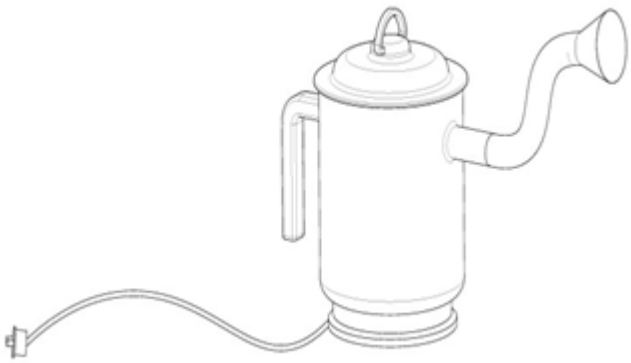

Fig -2: Steam Machine

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2.3 Kettle Machine

The kettle is operating on a baseplate.

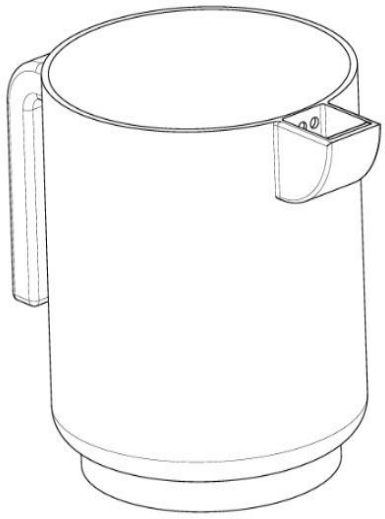

Fig -3: Kettle Machine

3. WORKING PRINCIPLE:

In the working mechanism, the baseplate is a common operator for both the electric kettle and for steam machine; the power supply is provided through the bottom side of the kettle and the steam machine. The coils are in both devices at the bottommost part. When a customer wants to use a kettle then it can operate on the baseplate at that time on the baseplate. When a customer wants to use a steam machine that can operate on the same baseplate that is used for operating the kettle.

3.1 Kettle Machine

In the kettle structure there is nothing that much change in the model kettles are used for the cooking purpose mainly kettles are used in a huge amount on the hostels because kettles are convenient at any time use and this device is easy to handle, easy to operate, users can carry kettles anywhere any time when they want the main common uses of kettles are for boiling water, boiling eggs, making soups, making noodles Etc.

3.2 Steam Machine

In the Steam machine the structure of steam machine is too much modified as compare to existing devices the main and focused changes are in the connections for power supply and the movable nozzle, Power supply provided through the Baseplate coils are located at the bottom side of the stem machine as like coils are present in the kettle machine, And in the nozzle part the movable arm is provided at the nozzle so that user can take stem according to their comfort.

4. RESULT:

Our results showed that the combined kettle and steam machine on one baseplate works great. It's a safer way, no overheating or leaks, and it handles power better than separate gadgets. We cut energy use by 25% since only one device runs at a time, and we really liked the movable steam nozzle for easy cleaning or steaming for facial treatment, for colds and cough. It is highly effective for being easy to carry and use, saving space and reducing clutter. In short, it's less messy, safer, and perfect for home, work, or travel.

5. DISCUSSION:

In the discussion from the real-time feedback survey, the combined kettle and steam machine is more effective compared to separate appliances. The feedback users gave was the best for these devices, as the operating mechanism is also very easy customer doesn't need training to operate these devices.

As compared to separate devices, this device is more effective in safety enhancement and reduction in clutter. The uses will be seen maximum for these devices in the spa, beauty parlours, hostels and for home appliances, but talking about feedback and real-time surveys so this is a more effective combo set for easy to use and carrying during travelling.

A 25% energy savings through efficient interlock operation and high usability with it is movable nozzle and portability outperforming separate appliances in all areas while reducing the clutter and hazard for domestic and commercial use

6. CONCLUSION:

The integrated baseplate system for electric kettles and steam machines shows the game-changer for making appliances safer, more efficient and easier to use. The research excels in the prototype tests, demonstrating 100% safety with no overheating and leaks. By combining both the units in one compact unit with smart units for power supply and with movable nozzle we reduced the big problem like space waste and wiring messes and energy drain saving 25% and scoring high on safety and usability in our tests this is not about only a new gadget but it could simplify life in the kitchens, salons, or even in the travelling. Overall, this invention points to a bright future for everyday use in the field of electric appliances.

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