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AUTOMATIC SAREE IROINING MACHINE

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ABSTRACT

AIM is a design that uses an innovative framework and motorized mechanisms to effectively iron saree by minimizing the difficulties in the task of ironing. It will able to iron saree within a time frame of maximum 60 seconds without any external help from the user except feeding the cloth. Here roller irons are used to increase the effectiveness and speed of ironing as well as reduce the overall time taken for one cloth. The cloth will be mounted on a stationary frame between the roller irons. The movement of these irons is based upon gerars mechanism governed by ONLY two motors. Provision for long clothes like sarees, bed-sheets etc. is also provided It will be very beneficial product for hospitals, railways, hotels, housing societies, textile mills and to the working population around the world.

Keyword: Automation, Iroining machine, Heat transfer control.

I. INTRODUCTION

Today in our modern world we have every new technology like washing machine for clothes, vacuum cleaners for cleaning, refrigerators for cooling and in some cases, even cooking machines also finding their way in our home. But from long time we do not have an Efficient Ironing Machine in our homes. The main reason why we do not have any ironing machine is the large variety of clothes that are used around the world. If we consider India only then also we have around thousands of variety of clothes that are worn from Kashmir to Kanyakumari and from Gujarat to Assam. The problem gets even bigger when the whole world is taken into account. We do have few Ironing Machines that are used in western countries in limited number of houses but still they are not very popular. The main reason is that they are not cheap, consume lot of electricity which is not good for a common man, also they are not light &portable enough so that it could be carried around like our household iron. So here we are trying to make an Automatic Ironing Machine that will be in the bounds of a common man in every aspect like- cost, weight, portability, ease of use, speed, electrical power consumption etc. One of the motives of designing this machine is to ease out the efforts needed in ironing. Also it will lead us one-step closer to smart homes, which is going to be the technology of the future. Unique design features: The unique setup of AIM is designed with the aim of having adaptability, portability, efficiency, simplicity and affordability.

Methodology

A. operation Study:

The saree will put on the holding mechanism and will be initially locked between the rollers. The steam will generated by the steaming with the help of water boilers. This steam will supplied to the saree for heating purpose and then the motor will provide a rolling action to rollers. Due to the applied pressure by rollers on the saree the saree will be pressed and become wrinkle free.

B. Literature review:

Ironing is use of a heated tool (an iron) to remove wrinkles from fabric. Thetraditional methods for ironing are hand held ironing, ironing machines. The heating is commonly done to a temperature of 180–220 °Celsius, depending on the fabric.

C. Setup Diagram:

Our experimental setup is going to be as shown in the schematic diagram below. We are making a saree ironing machine which is easier to operate, cost effective. The frame made of ½ inch Square tube. Rollers are made of mild steel with PVC material at inner diameter for smooth rotation of the rollers.

Rollers are connected by gear and driven by wiper motor. The total dimension of machine is 3ft x 3ft x 1ft. smaller than compared to industrial ironing machine. Can also be used for domestic purposes.

LITREATURE REVIEW

Ironing works by loosening the bonds between the long-chain polymer molecules in the fibres of the material. While the molecules are hot, the fibres are straightened by the weight of the iron, and they hold their new shape as they cool. Some fabrics, such as cotton, require the addition of water to loosen the intermolecular bonds. Many modern fabrics (developed in or after the mid-twentieth century) are advertised as needing little or no ironing. Permanent press clothing was developed to reduce the ironing necessary by combining wrinkle-resistant polyester with cotton. The first known use of heated metal to "iron" clothes is known to have occurred in China.[6]When the fabric is heated, the molecules are more easily reoriented. In the case of cotton fibers, which are derivatives of cellulose, the hydroxyl groups that crosslink the cellulose polymer chains are reformed at high temperatures, and become somewhat "locked in place" upon cooling the item. In permanent press pressed clothes, chemical agents such as dimethylol ethylene urea are added as crosslinking agents. Commonly used methods are as below

A. Hand held:

An "electric flatiron" was invented by US inventor Henry W. Seeley and patented on June 6, 1882. It weighed almost 15 pounds and took a long time to heat. The UK Electricity Association is reported to have said that an electric iron with a carbon arc appeared in France in 1880, but this is considered doubtful. This type of ironing I done in every house. This is the most common method used. In this method the cloth is placed on table and ironing is done by hand held press. This is little non convenient as lots of manual effort and time is required.

Figure 1- Hand Ironing Machine and ironing table

B.Ironing using machine:

A mangle or wringer is a mechanical laundry aid consisting of two rollers in a sturdy frame, connected by cogs and, in its home version, powered by a hand crank or electricity. While the appliance was originally used to wring water from wet laundry, today mangles are used to press or flatten sheets, tablecloths, kitchen towels, or clothing and other laundry. The *Oxford English Dictionary* dates the first use of the word in English from 1598, quoting John Florio who, in his 1598 dictionary, *A World of Words*, described "a kind of press to press buckram, fustian, or dyed linen cloth, to make it have a luster or gloss." The word comes from the Dutch *mangle*, from *mangelen* "to mangle", which in turn derives from the medieval Latin *mango* or *manga* which ultimately comes from the Greek *manganon*, meaning "axis" or "engine".[7] Some northern European countries used a table version for centuries, the device consisting of the rolling pin, a wood cylinder around which the damp cloth was wrapped, and the mangle board, a curved or flat length of wood which was used to roll and flatten the cloth. The oldest known model is a Norwegian mangle board, found near Bergen and dated 1444[8].

In the second half of the 19th century, commercial laundries began using steam-powered mangles or ironers. Gradually, the electric washing machine's spin cycle rendered this use of a mangle obsolete, and with it the need to wring out water from clothes mechanically. Box mangles were large and primarily intended for pressing laundry smooth; they were used by wealthy households, large commercial laundries, and self-employed "mangle women". Middle-class households and independent washerwomen used upright mangles for wringing water out of laundry, and in the later 19th century they were more widely used than early washing machines. The rollers were typically made of wood, or sometimes rubber.

The Steel Roll Mangle Co. of 108 Franklin Street, Chicago, Illinois offered a gas heated home mangle for pressing linens in 1902. In the 1930s electric mangles were developed and are still a feature of many laundry rooms. They consist of a rotating padded drum which revolves against a heating element which can be stationary, or can also be a rotating drum. Laundry is fed into the turning mangle and emerges flat and pressed on the other side. This process takes much less time than ironing with the usual iron and ironing board.

There were many electric rotary ironers on the American market including Solent, Thor, Iron rite and Apex. By the 1940s the list had grown to include Bendix, General Electric, Kenmore and Maytag.[9] By the 1950s home ironers or mangles as they came to be called were becoming popular time savers for the

homemaker.This method was introduced for overcoming the drawbacks of hand held ironing press. This machines are only effective with long clothes such as saree, bed sheets etc. The costing of this machine is very high.

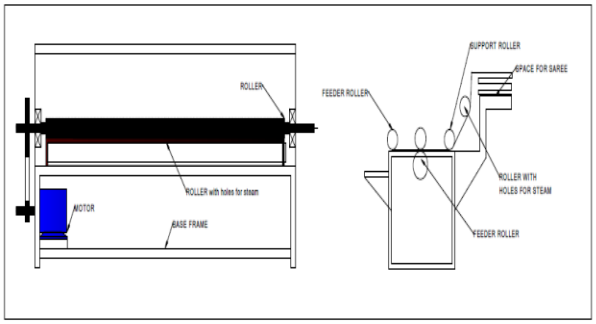
Figure 2.Rolling Press ironing machine

III. PROPOSED MODEL

Below is the schematic diagram for saree ironing machine.

AIM are:

- Cost (Maximum Rs-16000)
- Weight (Maximum 20 Kg)
- Ease of usage (No training required)
- Electric Power Consumption.(write the approximate power)
- Space (4.5'*2.5')
- Can iron different types of clothes used around the world.
- Speed: Maximum time taken to iron a cloth is 25-30 sec
- All parts should be separable and hence, portable



Components:

1) **Motor:** Used for driving the shafts in the machine. The output of the motor is given to the pulley and using a v belt it is transferred to the pulley attached to the spur gears. Spur gears further transmit the motion to the shafts.
2) **Rollers:** Two rolling shafts are used as roller with griping material on it so that the fabric dies not slip of the rollers. Another roller is used at the saree keeping space for smooth rolling down of saree.
3) **Steam unit and steam pipes:** It generated steam for heating of the fabric. The steam pipe carries the steam to the fabric. These pipes run parallel to the pressing rollers. There placement is just above the rollers.
4) **Square tube Frame:** This is used for the main base stand and saree holding on the top of rollers

Advantages:

- Less manufacturing cost
- Easy to use
- Simple construction
- No burning of fabric
- Less manual efforts
- Lighter in weight

IV. CONCLUSION

This machine has simple construction and ease of handling. The cost and weight is low compared to the machines available in market. This machine can be used for domestic as well by laundries.

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