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Liquid Filling Apparatus With Glass Detachment Mechanism

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Abstract : *A system developed for commercially distributing the liquid in desired volume comprises a structure to detach the cup from said bunch of glasses from hopper and filling the liquid in said detached cup by the spring return type pressure actuated nozzle which has been integrated with sensors for the input of hopper, plates (a&b) and pump which is connected to the nozzle.*
Keywords: *glass detachment, liquid filling, plastic glasses*

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I. Introduction

1.1 Problem Summary:

Volumetric filling machines fill the containers according to the volume of the substance needed to be filled in the containers. These machines are compatible with shaped bottles which are made of glass, PTE etc. But there are few disadvantages of these machines; the most important disadvantage of volumetric filling machines is that these machines cannot be used to fill the glasses. The glasses find their applications in the liquid serving at various public locations, it is important to develop a machine that can accurately fill the glasses with desired volume of liquid at desired quality.

1.2 Aim and objective of the project

Based on this realization, we are aiming to make that device which gives us sufficient amount of water as per the need of it by taking quality, price and quantity into consideration, this system is capable of fulfilling the needs of substantial number of consumers, also proposed system is integrated with the server which continuously monitoring the data which assures that our system is practically never runs out off the resources.

1.3 Previous Work:

As many available water and other liquid filling machine comprises a glass dispensing mechanism which use mainly gravity as a key force, as developed gravity force is higher than the surface traction(force / tension/ reaction force) the glass can be easily separated from its bunch. In present, the disposable plastic glasses which we are widely using cannot be separated from its bunch as surface reaction force is higher than gravity force applied on the glasses. So, our present invention contains specific glass separating mechanism for presently using plastic glasses.

II. Construction And Working

Here as shown in figure [1], the prospected structure comprises a glass detachment mechanism, liquid nozzle, pump and a glass hopper.

2.1 Working

As shown in figure [2], the cycle starts when someone presses the start button or gives the input to the machine here the input can be manual or virtually by using any devices. The said glass hopper comprises a bunch of glasses that allows to serve in terms of quantity, it can also have a sensor for monitoring and feedback purpose. Here when the input is given than it passes the input to the rollers, here said rollers are cylindrical elements on which the plucking material is bounded which stipulates the movement of hand plucking of a glass, the said roller material is of cohesive nature with the plastic glass material such as rubber, plastic etc, having a specific surface area increasing up to middle and then decreasing covering half of the roller as shown in figure, rollers are connected to the plates input, here the said plates are used for providing the support to the bunch of glass and helping to have minimum number of glasses at a time. when the system activates the plate b and plate a are in conjunction of roller position which yields the one glass at the end of one rotation, when the glass is at

the desired position down the infrared sensor senses it and it activates the rotary pump which is connected to nozzle, here proposed nozzle is of pressure actuated type, which is utilized to provide liquid at the center of the glass. The pump provides a specific volume of said liquid and then it automatically cutoff the cycle. Here the filled glass can have the input to put it in specific manner by using systems like conveyor belt. Suggested system may have a liquid processing system such as filtration system incorporated to work autonomously.

III. Figures

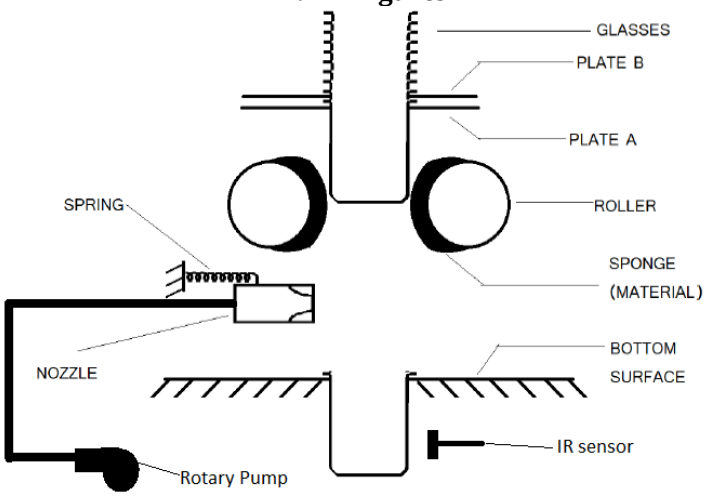

Figure [1]

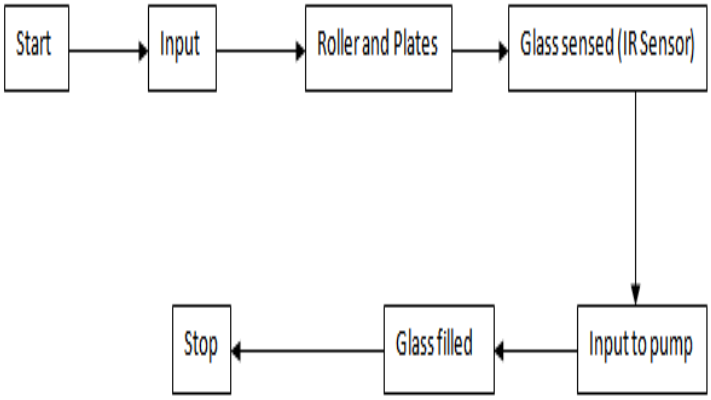

Figure [2]

IV. Conclusion

There are many problems currently out there with the usage of stored liquid business from economical perspective, there are many systems have been developed to solve said problem but eventually they failed to solve all of them. The proposed system having the mechanism to serve the said liquid in the glasses with the desired volume. As mentioned above the system serves to innumerous people with novel system of delivering the quality liquid. It gives not only the quality but also serves the need of people. We also admit it that there can be more integration to our suggested system.

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References

[1]. Asutkar, Sachin More(2013), "Automated bottle filling using microcontroller volume correction", International journal of engineering research and technology (IJERT). (vol 2, Issue 3, march-2013).

[2]. Rajesh G. Khatod, Chandrashekhar Sakhale(2012), "Design & Fabrication of liquid dispensing machine using automatic control for engg. Industry", International journal of innovative technology and exploring engineering (IJITEE). (Vol I, Issue 5, October 2012).

[3]. A.S.C.S. Sastry, K.N.H. Srinivas(2010), "An automated microcontroller based liquid mixing system", International journal on computer science and engineering. (Volume II, Issue 8, August 2010).
[4]. T. kalaiselvi, R. Praveena(2012), "plc based automatic bottle filling and capping system with user defined volume selection", International journal of emerging technology and advanced engineering. (Vol 2, Issue 8, August2012).

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