

Chicken Tractor

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Abstract—The main aim of this project is to develop a natural free ranging rearing system for chicken with automatic feeding and watering system. In the existing system the chickens are grown in a confined area in an artificial manner. We are proposing a movable on field coop, by which chickens are reared naturally in open field and secured from predators using an enclosure. Pests and weeds in the field are controlled naturally by chickens rather than by using pesticides separately. Also the natural waste from the chickens goes as manure to the agricultural field which eliminates the need of using artificial pesticides and fertilizers to the field. Chicken manure is rich in nitrogen. Nitrogen is vital nutrient need for tree growth. The amount of feed needed for the chicken reduces eventually. The soil is naturally tilted by chickens and manure is directly applied to trees. In addition to this, automatic feeding and watering to the chickens is done without the use of electric power. After two days the chicken tractor is moved on to a new area, by this weed and pest control over entire field can be achieved. Having more number of similar system people can get natural protein rich food and it will increase the income of farmers.

Key words: Chicken Tractor, Chicken Coop

I. INTRODUCTION

A chicken tractor is a movable chicken coop. Chicken tractors are a lightly built frame which one person can drag about the yard. It has wheels on both ends to make this easier. Chicken tractors are movable and also secure structures that allow chickens access sunlight and fresh air, while allowing them to forage and scratch the ground for food. Chicken tractors are mobile and are moved regularly to allow the bird's access to fresh forage. They are one of several humane and healthy alternatives to growing poultry in conventional confinement buildings.

The chicken tractor encloses of different areas in it. There are mainly three main areas in the chicken tractor. The chicken tractor is divided into three areas as it becomes easier for the chickens to feed on food, lay eggs and to move around inside the coop.

The living area is the place where the chicken lives. The chicken tractor has a incorporated living area within the coop. Usually the chickens resides inside the living area. Usually in the existiny system there is no separate living area provided for the chickens. Seperate living area is provided in the chicken tractor for the chickens to move freely and rest in it.

A. Feeding Area

The feeding area is the place where the chickens can feed easily and also have sufficient water whenever they need. The feeding area includes mechanism of automatic food feeding and automatic water feeding in it. This feeding area is provided separately inside the chicken tractor for the chickens to feed free and have sufficient water without wasting.

The food is provided in the separate food feeding box kept inside the feeding area. This feeding box works on the mechanism that it opens when a chicken climbs on the footboard provided on the front of the feeding box. The feed is placed inside the feeding box. Whenever the chicken gets upon the feeder board the lid opens and the chicken feeds the food present inside the box. Once the chicken gets down the feeder board the lid closes. By this way the food is prevented from getting wasted and also protect the food from getting destroyed from the surrounding environment.

B. Water Feeding

Next comes the automatic water feeding mechanism. In this the water to the chicken is provided in an automatic manner. This water feeding mechanism involves filling of water in the cups provided inside the coop depending on the amount of water present in the cup. Whenever the cup is full of water the cup is the down ward position. The water does not flow inside the cup when the cup is full. Whenever the cup is full of water the knob present in the front edge of the cup gets closed preventing the water from getting over flowed. As the chickens feed water the level of water level gets decreased. Automatically the know opens slowly leading to the filling of water in the cup. For this automatic filling of water the cup setup is fitted with the the external water tank with an float and a regulator.

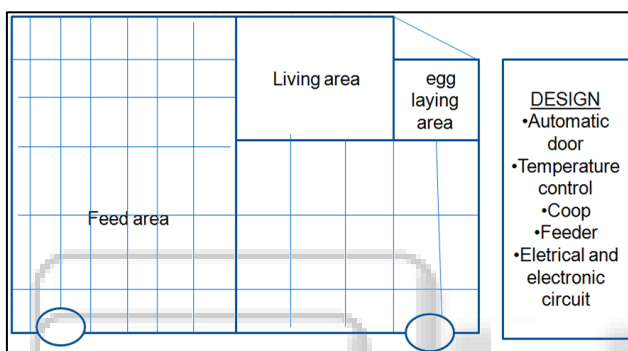
Inside the chicken tractor is the separate egg lying area. The egg laying area is the place where the chickens can lay egg. In the existing system there is no such separate egg lying area provided. This separate laying area helps preventing the egg from breaking and also helps in easy collection of eggs from the coop.

II. EXISTING SYSTEM

In the present system the chickens are grown in the open space where it needs a manual way of feeding, cleaning and watering of the chickens. Another way of growing chickens in the present day is by constructing coops where also the chickens are to be feeded, watered manually and regularly. There is also no separate living area, feeding area and egg laying area. In the present system all these three areas are provided in the same single place. Food is to be provided manually and it leads to wastage of food. In the same way the process of watering, providing water in the correct time and in required quantity is also a great challenge. Next comes the cleaning of the coop or chicken shelter. These coops or shelter are immovable or fixed in the same place and the wastes from the coop or shelter remains in the same place where the chickens are living. This requires regular cleaning of the coop as well as the surrounding area. Next drawback in the existing system comes the routine work of opening and closing of the coop doors for the chickens to move in and out of the coop. This requires an all-time manual work and a man power to open and close the coop doors on time. Also there is no

separate egg lying area for the chickens to lay eggs. As in the existing system the chickens lay eggs in the same living area, it leads to the wastage of eggs at times. It also becomes difficult for us to collect the eggs from different places. As chickens require some desired temperature to live there is no provision of maintaining temperature. The temperature inside the coop tends to remain same throughout the day irrespective of heavy rain or hot sunny climate. There is no provision of adjusting the temperature inside the coop according to the external surrounding temperature. These above said methods in the existing system has lead to many problems like wastage of food, insufficient water, breaking of eggs, difficulty in collecting eggs. Also at times it leads to death of the chickens due to improper and irregular cleaning. Spreading of diseases may also happen due to improper cleaning and maintenance.

III. BLOCK DIAGRAM



IV. PROPOSED SYSTEM

The main objective of the proposed system is to provide automatic natural poultry farming which reduces the use of manpower mainly in areas of agriculture where people feel it as an easy way

A. Automatic Door

The chicken coop usually consist of door that needs to be opened and closed manually for the chickens to move in and out of the coop. In the chicken tractor automatic door is provided. This automatic door opening system helps in opening of the door at the set time in the morning and automatic closing in the evening. This automatic opening and closing of door helps in safe and easy moving of chickens. This automatic opening and closing eliminates the need of man power and avoids the worry of closing the chicken coop at the right time to safeguard the chickens.

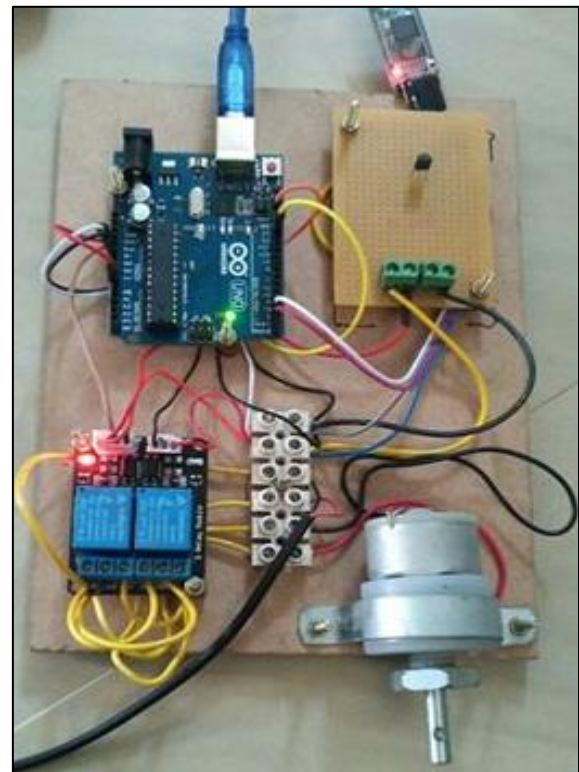


Fig. 1.1: Automatic Door Opening Hardware Design

B. Temperature Sensing

The temperature inside the coop is controlled by means of a temperature sensor. The temperature sensor senses the temperature inside the coop and controls the temperature accordingly. This helps to maintain a constant temperature inside the coop preventing the chickens from getting affected from temperature variations. Also the temperature inside the coop varies accordingly depending on the external environmental temperature. The presence of the temperature sensor helps preventing the chickens from the environmental changes like heavy rain and sunny hot day.

C. Outer Fencing Area

The field in which the chicken tractor is kept is fenced completely. The chickens can roam inside the fence. As this chicken tractor is kept inside the fence in an open agriculture field the waste from the chicken tractor is fed as the manure to the field. As this chicken tractor is movable it is easy to move from one place to another inside the fence. As the chickens move around the agricultural field inside the fence area they also feed on the grass present in the open field.

D. Food Feeding Mechanism

The automatic food feeding mechanism made up of wood. A chicken can open it by itself, stepping on the platform. When chicken stands on the platform the door opens. This mechanism helps in less wastage of food. In addition to this it also helps in preventing the food from pests. The chicken takes about three weeks to learn to use it



Fig. 2: Food Feeder

This system works on the mechanism that is mainly based on the weight of the chicken. The lid opens when the chicken climbs on the feeder board and gets closed once the chicken gets down of the feeder board. As this feeder box opens only when the chicken approaches it prevents the food from surrounding environment and prevent spreading of diseases.



Fig. 3: Opened Food Feeder

The figure shows how the food feeder lid opens when the chicken climbs on the feeder board. This method of feeding has an opening in the top where a large amount of food can be stored into the feeder box. By filling the feeder box with food the chickens can feed the food for longer duration as it does not gets wasted. As the weight of the feeder lid is also comparatively low, it will not lead to any injury or damage to the chicken when the lid of the food feeder unfortunately close. This closing may happen when another chicken comes to feed when already a chicken is feeding on the feeder box. By this way of food feeding mechanism the food in the feeder can be used for a longer number of days without getting spoiled as well as not getting wasted.

E. Water Feeding

In this mechanism the water gets filled in the cup according to the need of chicken. An external tank is provided with an float. The cup is connected to the external tank by means of pipe. Once the cup is fully filled with water the knob provided within the cup gets closed automatically. As the

water level decreases the knob releases slowly and fills the cup with water.



Fig. 4: Water feeder

V. CONCLUSION

This system is used for the automatic feeding and watering of chickens so that it reduces the manpower. By using these mechanisms there will be no wastage of food and water. As the food and water are provided inside the coop in separate area it prevents the wastage of food as well as prevents the food getting destroyed from pests as well.

As the waste from the chicken tractor goes as a manure to the agricultural field it becomes a benefit for the farmers as they need not provide any separate manure for the agricultural field.

Also as these chickens grow in open agriculture field it becomes a nutritious food to the people those who consume these chicken and chicken products.

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