Oct. 14, 1952 A. MOUTINHO 2,614,183

CLOCK TRAIN PERIODIC SWITCH

Filed June 28, 1950

Fig. 1

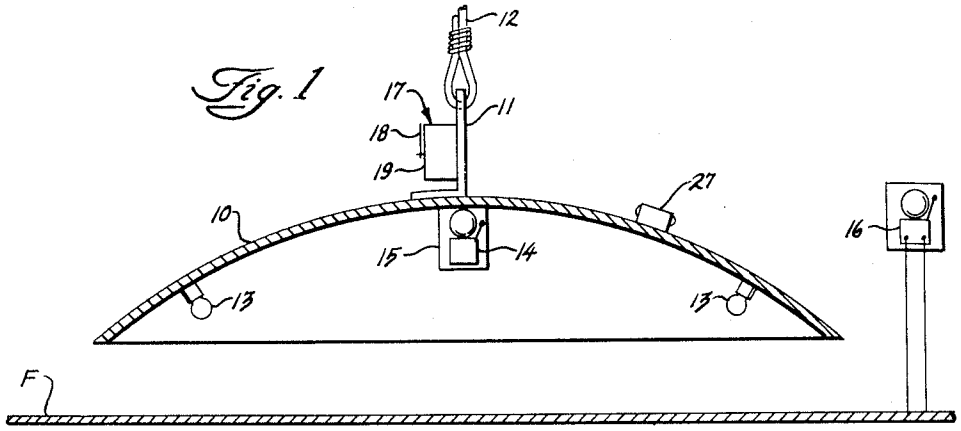


Fig. 2

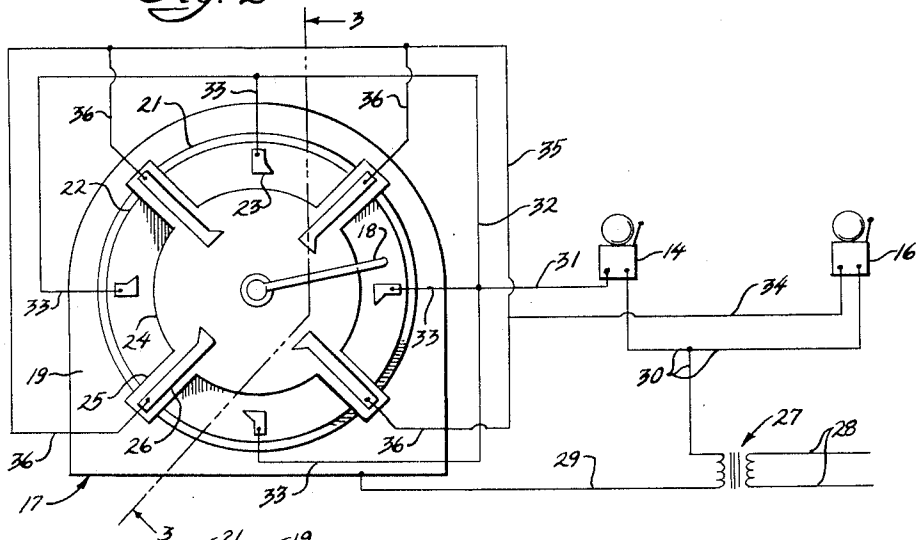


Fig. 3

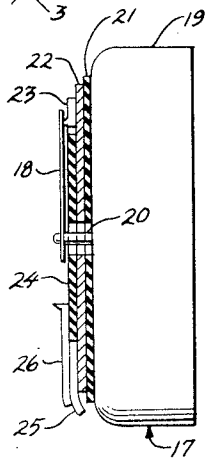
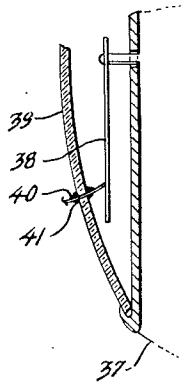


Fig. 4



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CLOCK TRAIN PERIODIC SWITCH

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1 Claim. (Cl. 200—37)

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This invention relates to brooders for young chickens and more particularly to a brooder having means which will counteract the natural tendency of the chickens to crowd together at one location under the canopy of the brooder, thus reducing the injury to and mortality of said chickens that would otherwise occur due to such crowding.

One object of this invention is to provide a brooder of the above nature which comprises means for audibly frightening the chickens at suitable intervals so that they will disperse before sufficient time has elapsed to permit excessive crowding to occur.

Another object of this invention is to provide a brooder of the above nature wherein the chicks will be periodically frightened and dispersed by an alarm bell mounted in a central position under the canopy of the brooder, said bell being actuated by the operation of an improved electric time switch.

Another object is to provide a brooder of the above nature having means for actuating a second alarm which may be located at a point outside the brooder canopy and any tendency for the chicks to become injured by crowding will be further reduced.

A further object is to provide a device of the above nature which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, and very efficient and durable in use.

With these and other objects in view, there have been illustrated on the accompanying drawing two forms in which the invention may conveniently be embodied in practice.

In the drawing,

Fig. 1 is a cross-sectional view of the improved brooder canopy showing the alarm bell, the time switch, and also a remote alarm bell located outside of said canopy.

Fig. 2 is a front view of the time switch showing diagrammatically the electrical connections of said switch to the alarms and to the source of current.

Fig. 3 is a side view of the time swtich, shown partly in section as seen from the line 3—3 of Fig. 2.

Fig. 4 is a fragmentary cross-sectional view showing a modified form of the time switch.

Referring now to the drawing, in which like references numerals denote corresponding parts throughout the several views, the numeral 10 indicates a circular brooder canopy which is concave in a downward direction and which is provided upon its upper surface with a central upstanding stem 11. The stem 11 is adapted to be connected to suitable means, such as a rope 12, for suspending the canopy 10 above a floor F at such a height that the chickens may pass inwardly beneath the lower edge of said canopy.

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The necessary warmth for the chickens beneath the canopy 10 is provided by suitable heating means which may, for example, comprise a plurality of electric lamps 13 mounted within said canopy and connected to a suitable source of current.

It is well known in the poultry industry that young chickens will, if unrestrained, congregate in crowds at one point beneath the brooder canopy in order to achieve a greater degree of warmth. This action of the chickens is undesirable, since it has been found that a considerable number of the chicks are injured or killed over a period of time because of the tendency of the chickens around the fringes of the group to push inwardly toward the center, thus exerting an excessive pressure upon the chickens at the center of the group which causes them to be squeezed or trampled. The chickens at the center of the group are thus frequently injured or killed, particularly those which are ailing, undersized, or less vigorous than the others.

In order to frighten the chickens and thus cause them to disperse at frequent regular intervals of time, the present invention contemplates the provision of an electrically operated alarm bell 14 mounted upon a bracket 15 depending from the inner central portion of the canopy 10.

Inasmuch as the chickens, when frightened by the bell 14, may tend to crowd together outside the canopy 10, provision is also made of a second auxiliary electrically operated alarm bell 16 which may be placed at a remote point.

The alarm bells 14 and 16 are adapted to be operated at alternate intervals by a time switch 17 mounted upon the central stem 11 of the canopy 10. The time switch 17 comprises a substantially flat-faced casing 19 having a rotating arm 18 mounted on a forwardly projecting central driving shaft 20 which is operated by suitable clockwork so as to rotate said arm across the face of the casing 19 once each hour.

Behind the arm 18, the face of the casing 19 is overlaid by a disk of insulating material 21, which in turn is overlaid by a metal disk 22 carrying a series of outwardly-pointed raised resilient contact lugs 23 adapted to be successively engaged by the arm 18. The lugs 23 are equidistantly spaced and located adjacent the pe-

riphery of said disk in concentric relationship to the shift 20.

The metal disk 22, in turn, is overlaid by an outer insulating disk 24 which is sufficiently small in diameter to lie within the contact lugs 23, but which is provided, with a series of outwardly projecting and equidistantly spaced radial arms 25 extending beyond the outer edge of the metal disk 22 between the contact lugs 23.

An additional series of relatively long contact lugs 26 is provided, each of said lugs being mounted upon one of the insulating arms 25 and having a raised resilient pointed inner end which is adapted to be engaged by the arm 18 as the latter rotates.

The disks 21, 22, and 24 are centrally apertured so as to permit free operation of the shaft 20, and also to avoid any electrical contact between the metal disk 22 and said shaft. The rotating arm 18 is electrically connected to the casing 19 through the shaft 20 and the clockwork within said casing.

As a means for supplying electric current for operating the alarm bells 14 and 16, provision is made of a transformer 26 mounted upon the canopy 10 and having a pair of primary supply wires 28 (Fig. 2) connected to a source of alternating current, as shown.

One terminal of the secondary of the transformer 27 is connected to the switch casing 19 by a conductor 29, while the other terminal of said secondary is connected to one terminal of each of the alarm bells 14 and 16 by a branched wire 30. The other terminal of the bell 14 is connected by a wire 31 to a wire 32 having a plurality of branches 33 individually connected to the short contact lugs 23.

Similarly, the alarm bell 16 is connected to each of the series of long contact lugs 26 by wires 34, 35 and a plurality of branches 36. Thus, it will be seen that the bells 14 and 16 will be operated alternately at equal intervals of time as the switch arm 18 sweeps across the contact lugs 23 and 26 in turn.

Second form

In the second form of the invention, the switch means for operating the alarm bells 14 and 16 is embodied in a clock 37 having a minute hand 38 which is protected by a concave crystal 39 of glass or other insulating material. A switch contact located in the path of the hand 38 is provided by a resilient wire element 40 inserted through an aperture in the crystal 39 and retained by cement 41, it being understood that this construction will be duplicated at all points in the crystal 39 where it is desired to have the hand 38 establish electrical contact, as said hand rotates across said crystal.

Operation

When the brooder is in use, the time switch 17 will swing the arm 18 across the contact lugs 23, 26, and cause the alarm bells to be sounded at the regular intervals.

During a greater part of the time, however, the bell 14 will be silent, and the chickens will gather beneath the canopy 10 where they will be warmed by the lamps. Before sufficient time has elapsed to permit excessive crowding of chickens in groups, the switch arm 18 will engage one of the contact lugs 23, thus completing a circuit through the bell 14 and ringing said bell for a short time until the arm 18 has passed the contact 23. The sound of the bell 14 will frighten the chickens and thus cause them to scatter.

The auxiliary bell 16 which is located outside the canopy will, after a suitable interval, be sounded by the engagement of the contact arm 18 with one of the contact arms 26.

It has been found in practice that the most efficient operation of the apparatus will be obtained if the bells 14 and 16 are rung alternately at 15 minute intervals, although it will be understood that the time switch 17 may be so constructed as to ring said bells at any other desired interval.

The modified switch contact construction shown in Fig. 4 will preferably be so arranged as to operate in the same manner as described above, and has the additional advantage that the switch contacts are protected by the clock crystal 39 from dirt and moisture which might otherwise have an adverse effect upon their operation.

While there have been disclosed in this specification two forms in which the invention may be embodied, it is to be understood that these forms are shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claim.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent, is:

In a time switch for actuating an audible alarm bell associated with a chicken brooder for periodically scattering chickens which may have gathered together in crowds, a circular casing, a motor-driven time-controlled metallic switch arm mounted for rotation in front of said casing, a convex circular glass crystal located in front of said casing and connected therewith for embracing said switch arm, said crystal having a resilient inwardly extending wire contact passing therethrough and cemented in an aperture therein adjacent the periphery thereof, the rear terminal of said contact being located in the path of the outer portion of said switch arm for successive engagement thereby at regular repeated intervals.

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