June 22, 1926. 1,589,830

S. AVILA

TRAP NEST CONSTRUCTION

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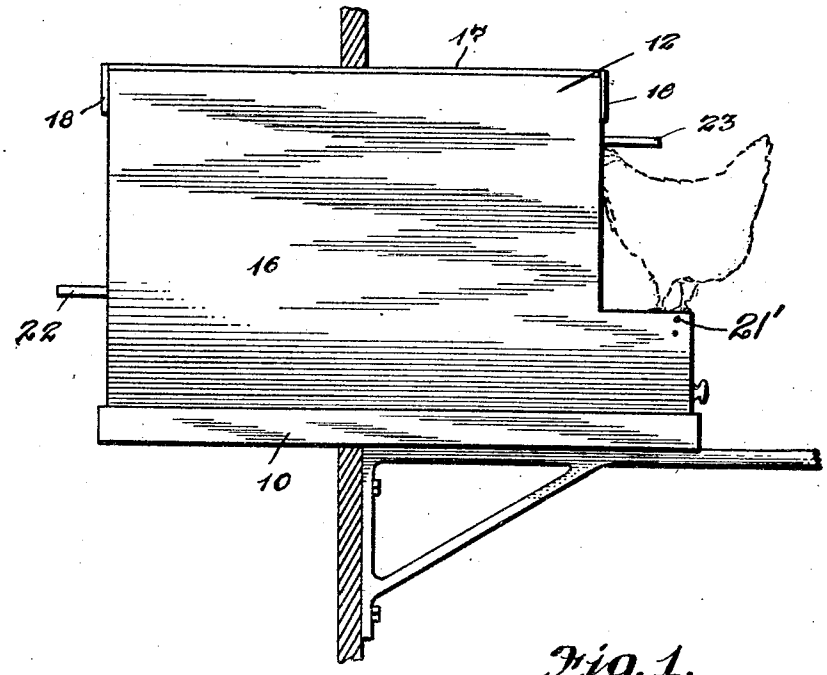


Fig. 1.

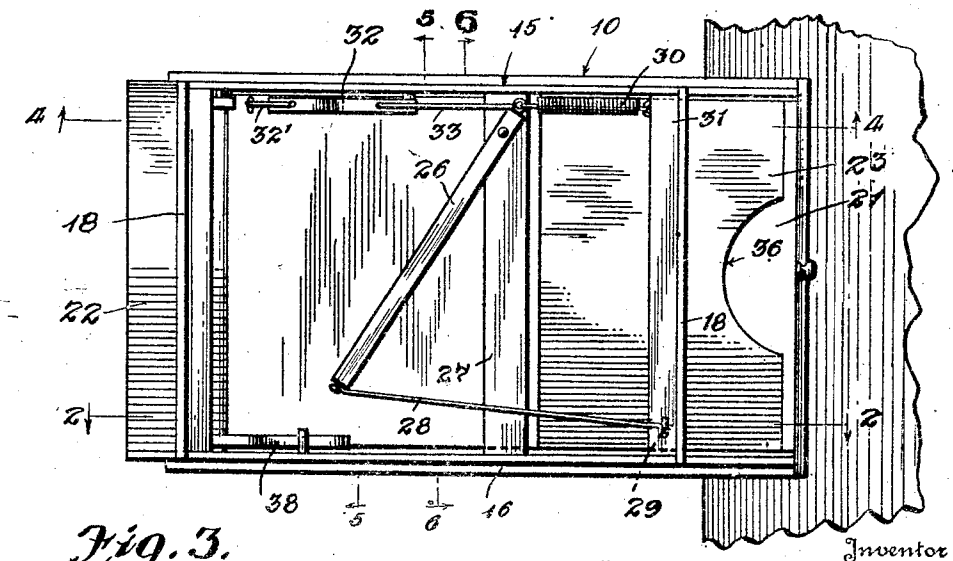


Fig. 3.

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Fig. 2.

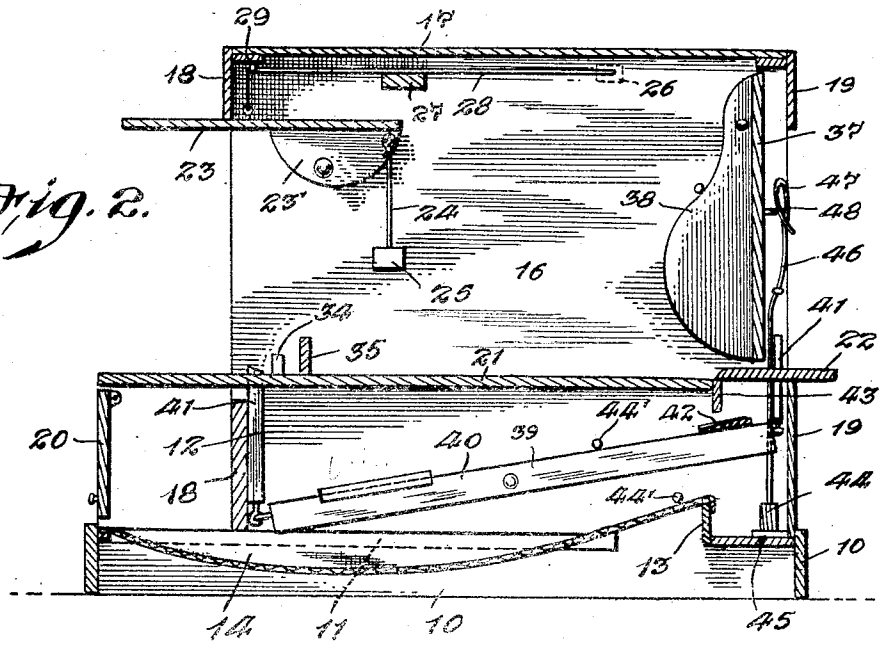
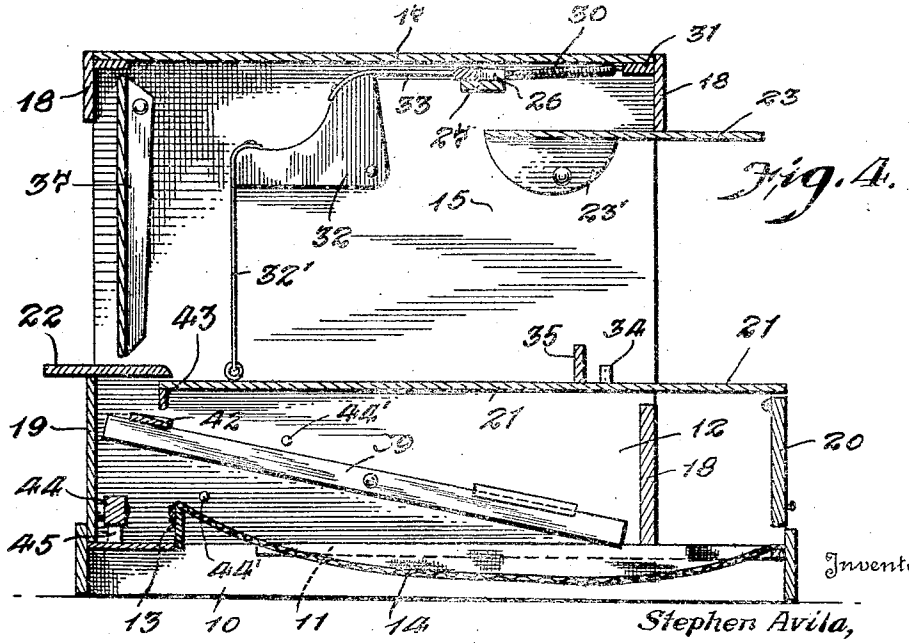


Fig. 4.



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Fig. 5.

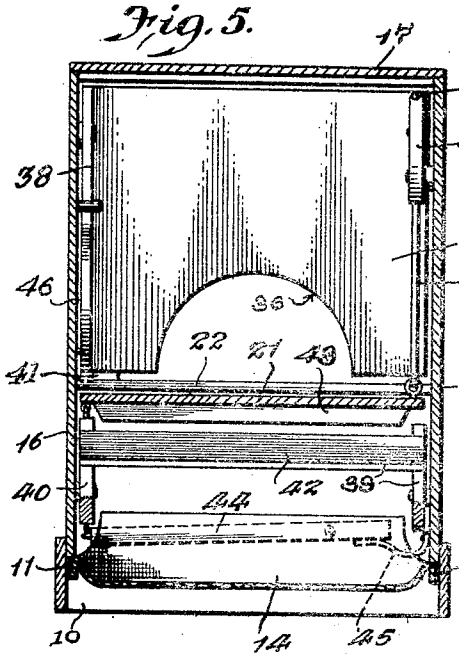
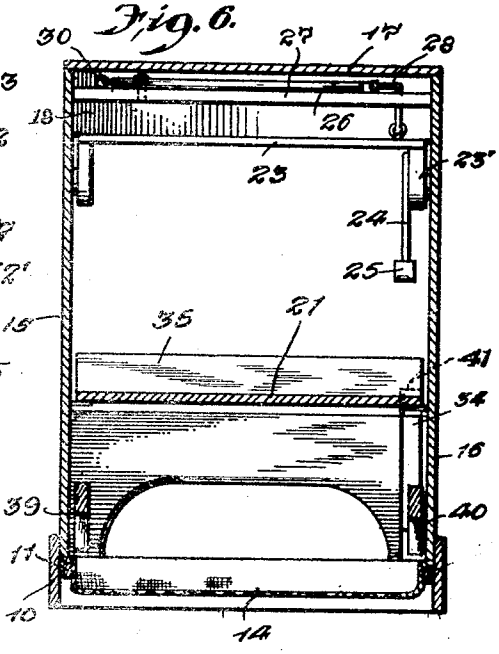


Fig. 6.



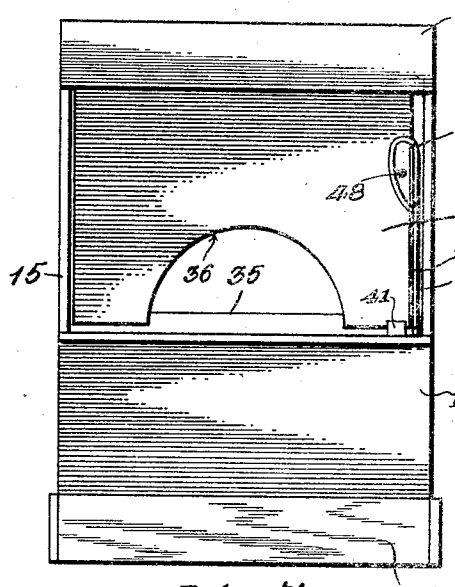


Fig. 7.

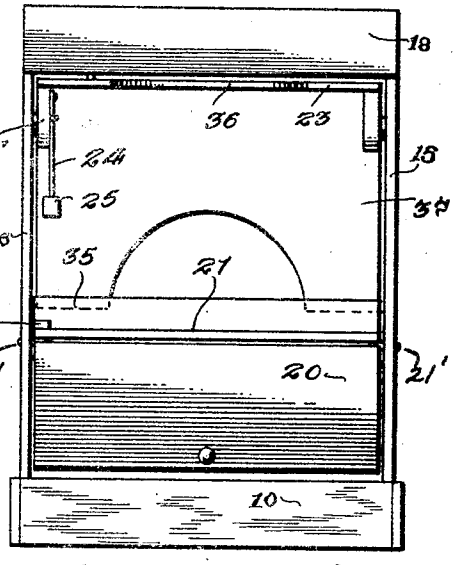


Fig. 8.

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Patented June 22, 1926. 1,589,830

UNITED STATES PATENT OFFICE.

STEPHEN AVILA, OF NEW BEDFORD, MASSACHUSETTS.

TRAP-NEST CONSTRUCTION.

Application filed June 20, 1924. Serial No. 721,227.

The invention has for an object to effect improvements in trap nests, particularly to the end that a satisfactory device of novel construction and low cost may be provided whereby hens which lay eggs may be separated from those which do not. It is a specific aim of the invention to provide a nest of this type which will readily admit fowls which feel disposed to sit upon a nest, which will permit the return of fowls therefrom without laying an egg in the nest, but will prevent such return after the laying of an egg and require exit from the nest in another direction. It is a purpose to provide a novel latch and door operating means especially an egg-operated latch device. It is also an aim to provide a novel fowl-operated door and resetting mechanism. It is an especial purpose to provide means to insure the device against movement from one stage of operation involved with the laying of an egg to another stage of operation without corresponding movement of the fowl concerned, whereby casual trapping of a fowl improperly will be avoided and correct operation of the apparatus assured.

Additional objects, advantages and features of invention reside in the construction, arrangement and combination of parts which will be understood more clearly from the following description and from the drawings, wherein,

Figure 1 is an elevational view of the device showing its relation to pens in which it is desired to segregate the nonlaying stock from the laying stock.

Figure 2 is a vertical sectional view of the device on the line 2—2 of Figure 3, in the direction of the arrow.

Figure 3 is a top view of the device with the cover removed.

Figure 4 is a longitudinal section on the line 4—4 of Figure 3.

Figure 5 is a cross sectional view on line 5—5 of Figure 3.

Figure 6 is a similar view on the line 6—6 of Figure 3.

Figure 7 is a rear elevation of the device.

Figure 8 is a front elevation of the device.

There is illustrated a nest which comprises a bottom and egg tray 10 having a flange 11 therearound upon the inner side, supporting a separate housing 12 snugly fitted within the tray. The tray is provided with an upstanding transverse flange 13 on the flange 11 at one end and a fabric 14 is secured to the upper edge of the flange 13, extending forwardly therefrom to the flange 11 at the forward end, the fabric being secured to the side flanges 11 also, so as to completely close the tray.

The housing comprises essentially right and left side pieces 15 and 16, a removable cover 17 and transverse connections 18 and 19 may be formed between the sides to hold them in fixed parallel relation, as found most convenient. Removal of the cover will enable access to the interior and to many of the operative elements. Both of the side elements 15 and 16 have longitudinal extensions at the lower front or entrance parts, between which there is pivoted an egg door 20, by which access to the tray may be obtained for manual removal of eggs therefrom. Pivoted at 21′ between the upper outer corners of these extensions there is a nest floor element 21 which extends nearly the full length of the housing, stopping short of the rear end 19 a distance sufficient to permit an egg to pass over its end edge into the tray 10 at times, as will be understood hereinafter. The front portion of the floor 21 lying between the beforementioned extensions of the sides serves as a ledge slightly without the body of the housing, upon which a fowl may readily step for entrance to the device. A shelf 22 is fixed between the sides 15 and 16 at the rear extending inwardly slightly over the floor 21 so as to form a stop therefor at the upper limit of its movement, the housing being closed across the end beneath this shelf by the cross piece 19. At the front upper part of the housing a trap door 23 is mounted in such manner as to swing downwardly into closed position by gravity. The door is formed with brackets or arms 23′ on its inner side, and its pivots are located at the extremities of these parts, so that the door is moved principally within the housing in its operation, and also to enable its ready counter-balancing. A counter-balance for the door is provided consisting of a wire 24 of malleable metal upon the extremity of which a suitable weight 25 is fixed. This counter-balance is so adjusted that the door will tend to close, but may be easily moved to open position. The door is operated by means of a lever 26 pivoted near one end upon a cross bar 27 fixed between the sides of the housing at the top, its longer arm being connected by a cord 28 to the front of

the door, passing over a pulley 29 located at the upper forward part of the housing. The shorter end of the lever opposite the cord is disposed closely adjacent the right hand side of the housing, as shown, and connected to this short end of the lever there is a tension spring 30, anchored to an adjacent cross piece 31 at the front of the housing, and of sufficient strength to maintain the door 23 in raised or open position. This spring is connected also to a bell crank lever 32 pivoted on the right hand side of the housing, having a rearwardly extending arm connected by a cord 32' to the rear part of the floor 21, and an upwardly extending arm with a grooved sector, to which a cord 33 is connected extending to the spring 30. The spring is also of sufficient strength to hold the floor 21 normally in raised position, as shown in Figure 3. It may be understood from this construction that when a fowl steps upon the floor 21 and passes through the door 23 the weight of the fowl will depress the floor against the action of the spring 30, and this will operate the lever 26, permitting the door 23 to fall into closed position by gravity stops 34 being provided on the sides of the housing to check the door in vertical position in its closing action. The floor 21 is provided with a baffle or cross piece 35, which is located immediately within the door 23 when closed. The door has a central arched opening 36 which is slightly higher than the baffle 35, the relation of these parts having an important effect in discouraging a hen from leaving the nest without laying if she is capable of laying an egg.

A swinging door 37 is pivoted between the sides of the housing at the rear end of the device, this door also having a small arched opening similar to the one 36 at the left hand side. The door has a plate 38 secured thereon, the lower edge of which forms a cam extending rearwardly and upwardly, its maximum radius being at the lower rear part immediately adjacent and flush with the lower edge of the door. A rocking frame 39 is pivoted on a transverse axis midway of the front and rear trap doors, one of the side bars 40 of which is pivoted on the left hand side of the housing, and at its respective ends is pivotally connected to latch bolts 41 vertically reciprocable, the forward one being projected upwardly in a suitable slot in the side of the floor 21, while the rear latch is projected through a similar notch in the shelf 22. The forward latch is located so as to pass upwardly just without the front trap door while the rear latch extends upwardly and outwardly of the lower part of the rear door, these latches being so proportioned that when one is in inoperative position the other will be projected upwardly and will prevent opening movement of the respective adjacent door. The rocking frame includes a transverse plate 42 at the rear part, which is movable vertically under rocking movement of the frame closely adjacent the rear end 19 of the device within the space under the shelf 22 adjacent the rear edge of the floor 21. The frame 39 is also weighted or balanced so that it tends to lie with the forward latch in lowered position and the plate 42 elevated. The rear end portion of the floor 21 has a dependent flange 43 by which, when an egg passes rearwardly from the edge of the floor onto the plate 42 the egg will be retained upon the plate 42 until the floor rises to initial position, provided the plate remains lowered. Stops 44' are provided to limit rocking movement of the frame 39 in respective directions which may consist simply of pins driven into the sides of the housing beneath and above the bar 40. The balancing of the frame 39 is such that its tendency to lie with the forward latch with-drawn will be overcome and its position reversed by the weight of an egg on the plate 42.

Owing to the fact that under some conditions the egg might escape from the plate 42 into the tray before the hen has entirely passed from the nest, means is provided for lifting the plate 42 at the time when the floor rises initially, to prevent dropping of the egg into the tray, and operative for this purpose until the fowl has left the nest and cannot return. For this purpose a lever 44 is pivoted upon the lower part of the rear end member 19, having a long arm extended toward the bar 40. The lever 44 is normally in horizontal position, its short end being adjacent the opposite side of the housing from the bar 40 and is engaged by a leaf spring 45 tending to hold the long end in lowered position. From the long end a link or other suitable element 46 is extended upwardly, slidably mounted on the side of the housing adjacent and without the door 37, and at its upper end this link is provided with a loop 47 located a distance from the door 37 and intermediately of the height of the door. On the door 37 there is provided a pin 48 which, just before such movement of the door as will permit a hen to step from the floor 21 onto the shelf 22, will engage the loop 47, raising the link 46 and lever 44 which latter engages and lifts the bar 40. As the door moves farther, this raises the egg plate 42 also, so that in case the floor rises, the egg will not drop into the tray at once. It also lowers the front latch 41 and raises the rear latch, the latter not interfering with closing movement of the rear door 37 subsequently. The connections are so proportioned that the plate 42 will remain raised as long as the door 37 rests upon the back of a departing hen. It will also be noted that under return movement of the door 37

to closed position, the egg plate 42 will be permitted to lower by weight of the egg resting thereon and the lever 44 will be lowered, but as soon as the egg clears the lower edge of the flange 43, it drops from the plate 42 into the tray 10 and the frame 39 returns the latches 41 to initial or set positions. The front door will have already moved to open position, but the rear door will still be open though closing and the cam plate will engage the rear latch pressing it downwardly as the door moves to closed position, after which the latches again return to initial and set position by action of the frame 39 preventing opening of the door 37 until the cycle is repeated.

In operation of the device a hen entering the nest at the front will, after passing inward a distance, depress the floor 21 against the action of the spring 30 and at the same time move the lever 26 so that the door 23 is permitted to drop to closed position. However, this door is not retained against opening at this time, but will be free to open unless an egg is laid, and in the event that a hen seeks to leave without laying an egg it can only escape through the door by which entry was gained, thus returning to the same pen from which it came.

Should the hen lay an egg, however, the latter will roll off the end of the floor 21 onto the plate 42 depressing the same, which reverses the positions of the latches 41 leaving the entry door 37 free to open and holding the door 23 against opening until the hen has passed into the pen in which it is desired to segregate laying hens. A hen in passing from the nest after laying an egg will press the door 37 outwardly and just before she is able to step upon the shelf 22 and relieve the floor 21 of her weight, the door pin 48 will engage the loop 47, raising the egg-plate 42 for the time being, so that when she leaves the floor 20 the egg will not be able to drop into the tray at once. This insures the device against casual trapping of a laying hen improperly, in case she should re-enter the nest after partially operating the door 37. Usually, the door 37 will drop abruptly as soon as the body of the hen clears the door, the fowl usually lowering her tail instinctively because of the door brushing her back. In this closing action of the door, the plate 42 is lowered by return of the lever 44, and the egg dropped from the plate onto the tray, permitting the movement of the latches 41 to initial or set position by reason of the weight of the frame 39, just before the door 37 is returned to fully closed position. But the cam plate 38 will ward the rear latch downwardly, raising the front latch for a moment, and as soon as the door has cleared the rear latch the latches will be returned again to initial position by the weighted frame 39. The front door 23 will have moved to open position on return of the latches when the egg drops from the plate 41, and will so remain until another hen enters the nest.

The arched opening in the doors it will be readily understood has the effect of inducing a hen to move centrally through the door by inserting her head through the opening. The baffle plate 35 has the effect of making it more awkward for a hen to return to the non-laying compartment through the door 22 than to enter from without. This will have the effect of causing a hen indifferent about remaining to lay an egg to have greater difficulty in leaving the nest than hens which have laid an egg, and thereby give greater opportunity or time for the laying of an egg to those hens which do not lay promptly.

What I claim:

1. In a trap nest of the character described, a housing having an entrance closure therefor, a floor movable in the housing, resilient means tending to hold the floor in initial raised position, yieldable to the weight of a fowl, said closure having a counter-balance and tending to close by gravity, and means connected to said resilient means whereby to hold the closure in open position, and connected to said floor operatively for release of the closure for closing movement by lowering of the floor.

2. In a device of the character described, a housing having an entrance, a door pivoted for movement to close the entrance and tending to so move by gravity, a horizontal lever pivoted upon the upper part of the housing, a resilient element connected with one end of the lever tending to hold it in initial position, and a connection between the other end of the lever and the door whereby the door will be yieldingly held in open position, and fowl operated means to move the lever against the action of the resilient element for release of the door.

3. In a device of the character described, a housing, a vertically movable floor therein, a bell crank lever having one arm connected to the floor and the other to a resilient element whereby the floor will be yieldingly held in raised position, a pivoted closure for the housing tending to swing to closed position by gravity, a horizontal lever having one end connected with the bell crank to be held yieldingly in initial position, and the other end connected to said pivoted closure to hold the latter in open position and movable by operation of the floor to permit closing of the said pivoted closure.

4. A closure controlling means for a nest of the character described, comprising a yieldingly supported nest floor adapted to

discharge an egg by gravity at one side, a vertically movable member adjacent the floor positioned to receive an egg therefrom, a rocking frame operable by said egg-receiving member, entrance and exit closures, latches therefor operatively connected with said frame, said frame being weighted to be normally in position with the exit latch in engaging position and the entrance latch in retracted position and means on the floor to retain an egg upon said egg-receiving element until rising of the floor, and yielding means tending to hold the floor in elevated position.

5. The structure set forth in claim 4 including means operatively connected with the exit closure to hold said egg receiving member in egg retaining relation with the floor under opening of the exit closure and movable by closing action of the exit closure to initial position, and resilient means tending to hold the last named means in initial position.

6. In a trap nest, a housing having an entrance opening and an exit opening for fowl, a yieldingly supported inclinable nest floor, an entrance closure tending to move to closed position, operative connections between the closure and floor by which the closure is held open by the floor while the latter is in upper position, a fowl-opened gravity-closed exit closure, a movable egg-receiving element operatively associated with the floor to receive an egg therefrom and tending to remain in initial position yieldable to the weight of an egg, mutually connected latch devices operable to alternatively latch the entrance and exit closures respectively in closed position and connected with the egg receiving element to latch the exit closure initially, and means to retain an egg in operative relation with said egg receiving element releasable by exit of a laying fowl from the nest.

7. The structure set forth in claim 6 including in the last named means, a flange on the floor interposed before the egg receiving element, said element being inclined for discharge of the egg toward the flange.

8. The structure set forth in claim 6 including in the last named means, a flange on the floor interposed before the egg receiving element, said element being inclined for discharge of an egg toward the flange, and means normally inoperative movable to engage and move the egg receiving element upwardly, means operable by the exit closure in the outer stage of its movement in opening to operate the last named means.

9. The structure set forth in claim 6 including in the last named means, a flange on the floor interposed before the egg receiving element, said element being inclined for discharge of the egg toward the flange, and means normally inoperative movable to engage and move the egg receiving element upwardly, means operable by the exit closure in the outer stage of its movement in opening to operate the last named means and means operative by the exit closure to maintain inoperative relation between the respective latch and this closure during closing movement of the latter.

In testimony whereof I affix my signature.

STEPHEN AVILA.