Oct. 20, 1942. M. H. CARPENTER 2,299,680

CLOSURE ATTACHMENT FOR HENS' NESTS

Filed July 8, 1941

Fig. 2.

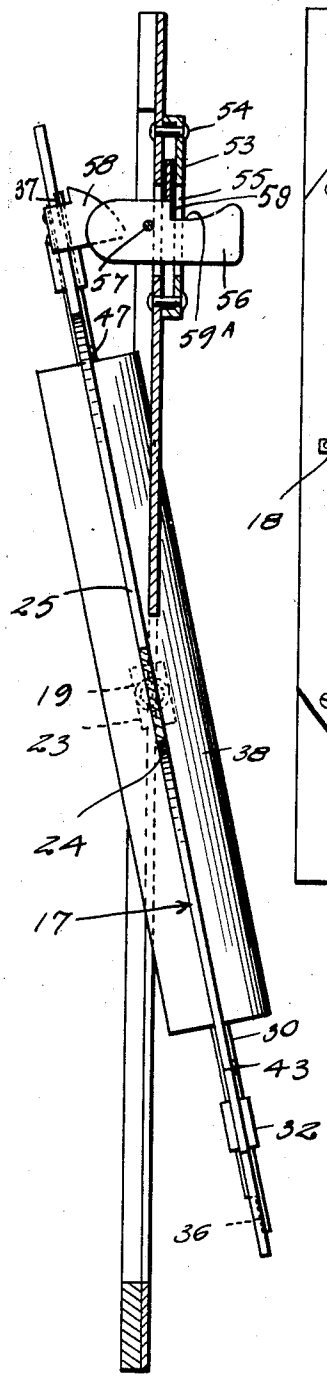


Fig. 1.

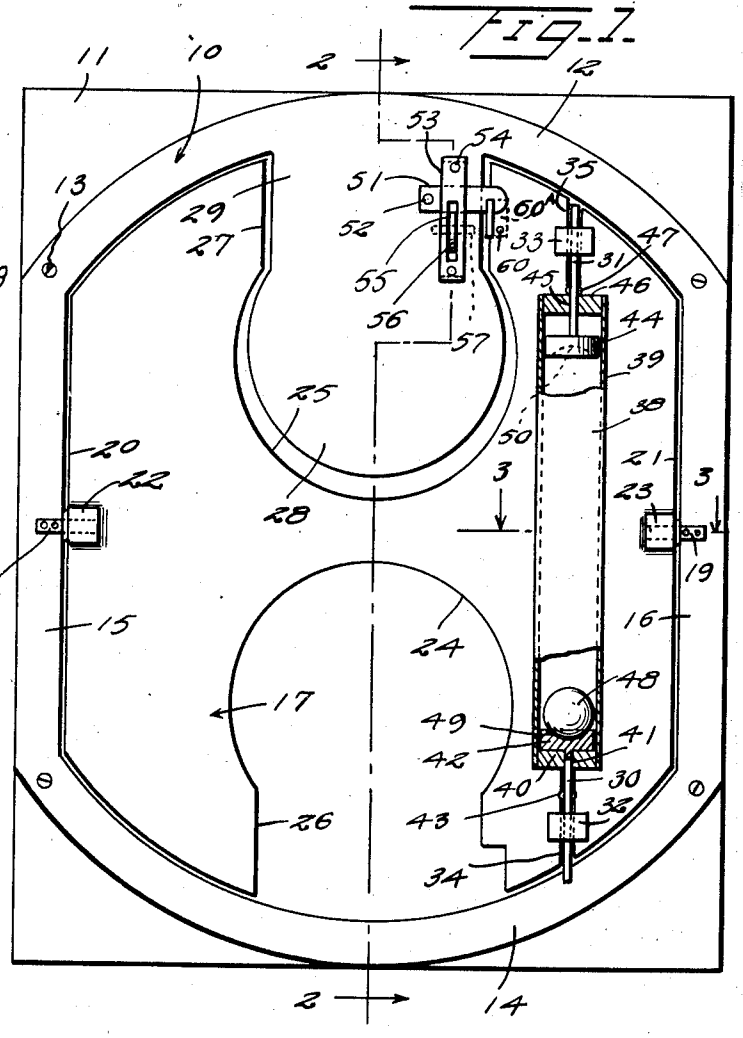
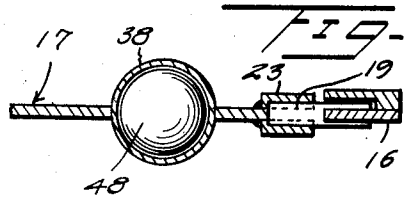


Fig. 3.



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CLOSURE ATTACHMENT FOR HENS' NESTS

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5 Claims. (Cl. 119—50)

This invention relates to closures, and more particularly to a closure for the nest of a fowl.

An object of this invention is to provide a rotating disc which is adapted to be mounted on the front of a hen's nest and which is operable by the hen initially entering the nest so that the hen may freely enter and leave the nest, but a second hen or other fowl will not be able to disturb the first hen and the second hen will not be able to enter the nest until after the first hen has left the nest.

Another object of this invention is to provide a rotating disc for a hen's nest which may be so constructed as to trap a hen in the nest, so that the quantity and quality of eggs laid by a particular hen may be readily determined.

A further object of this invention is to provide in a closure of this kind an improved means for automatically holding the closure against rotation movement in one direction while permitting initial free rotation thereof in the opposite direction, said means being so constructed and arranged that after the closure has been moved from its initial position the operation thereof is automatically reversed, so that the hen on the nest may freely leave and the reverse operation of the closure by the hen leaving the nest will restore the closure to its initial position allowing another hen to enter.

To the foregoing objects and to others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawing, wherein is shown an embodiment of this invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a detail front elevation partly in section of a revolving disc closure for a hen's nest constructed according to an embodiment of this invention,

Figure 2 is a vertical section taken on the lines 2—2 of Figure 1, but showing the closure in partly closed position, and

Figure 3 is a fragmentary sectional view taken on the line 3—3 of Figure 1.

Referring to the drawing, the numeral 10 designates generally a stationary frame structure which is adapted to be mounted on a front wall 11 of a nest structure. The frame 10 is adapted to be secured to the front wall 11 of the nest structure by means of fastening devices 13.

The frame structure 10 includes an upper arcuate frame member 12, a lower complementary arcuate frame member 14 and vertically disposed parallel frame members 15 and 16, which in the present instance are formed integrally with the upper and lower frame members 12 and 14.

An entrance closure member generally designated as 17 is mounted within the frame structure 10 for rotary movement, being mounted on a pair of opposed trunnions or stub shafts 18 and 19, which are fixedly secured to the vertical frame members 15 and 16 respectively. The outer portions of the stub shafts 18 and 19 are preferably bifurcated or slotted to engage on opposite sides of the frame members 15 and 16 and the stub shafts 18 and 19 may then be spot welded or otherwise fixedly secured to the frame members 15 and 16 with portions thereof extending inwardly of the frame members 15 and 16. The closure member 17 is provided on the opposite straight sides 20 and 21 thereof with a pair of bearing members 22 and 23, within which the stub shafts 18 and 19 are adapted to loosely engage, so that the closure 17 may freely revolve about a horizontal axis which extends substantially through the horizontal center of the closure 17.

The closure 17 is formed with a pair of diametrically opposed partly round or circular openings 24 and 25, which communicate respectively with relatively wide slots or cutouts 26 and 27 formed in the closure or plate 17. The openings including the partly round openings 24 and 25 and the outwardly opening slots or cutouts 26 and 27 respectively, form openings through which a hen or other fowl may project its head and upon pressure being applied to the closure 17 in the opening which is lowermost, by the fowl the closure 17 is adapted to be rotated in either one direction or the other through an arc of subtsantially 180°.

In order to provide a means whereby the fowl will not be able to project its head through the uppermost part I have provided a depending plate 28 which is substantially round in front elevation so as to engage with the partly round opening in the closure 17 which is uppermost. The partly round plate 28 is connected with the upper arcuate frame member 12 by means of a connecting member 29 which is formed with parallel vertical sides which are adapted to loosely engage between the straight sides 27 or 26 of the closure 17, depending upon which edge of the plate or closure 17 is uppermost.

In order to provide a means whereby the

closure 17 may be limited in its rotating movement to an arc of 180° and furthermore that the movement of the closure 17 may be accelerated after it has passed through an arc of 90°, I have provided a pair of oppositely disposed closure restraining members 30 and 31, which are slidably mounted in guide members 32 and 33 respectively carried by the plate or closure 17 at one side of the openings therein. The plate 17 is provided with an elongated slot 34 within which the restraining member 30 is adapted to loosely engage and the plate 17 is also provided with a second or opposed slot 35 opening through the opposite edge thereof, within which the restraining member 31 is adapted to loosely engage. The restraining member 30 is formed at its outer end portion with a cutout 36 within which the adjacent portion of the frame structure 10 is adapted to engage, so that when the restraining member 30 is in operative restraining position one face of the plate or closure 17 will be substantially flush with the adjacent face of the frame 10.

The other locking member 31 is also formed with a cutout 37 in its outer portion, which in the initial operative position of the closure 17 is adapted to engage against the inner face of the lower arcuate frame member 14 and hold the opposite face of the closure 17 substantially flush with the outer face of the frame 10.

An elongated cylindrical guide or cylinder 38 is fixedly mounted in a slot 39 formed in the closure 17, the cylinder 38 being disposed in axial alignment with the locking members 30 and 31 and with portions of the cylinder 38 extending outwardly from the opposite faces of the closure 17. The cylinder 38 is provided at one end thereof with a plug 40 having a centrally disposed opening 41 within which the restraining member 30 slidably engages. A plunger 42 is fixedly secured to the inner end of the restraining member 30 and is slidably mounted within the adjacent end of the cylinder 38. The restraining member 30 is formed outwardly of the plug or head 40 with a pair of opposed combined stop and guide members 43, which in the present instance are struck outwardly or laterally from the restraining member 30 and slidably engage against the adjacent face of the closure 17, so as to thereby hold the restraining member 30 against rotary movement while permitting free endwise movement of the restraining member 30. These opposed lugs 43 are positioned between the adjacent outer end of the plug 40 and the inner end portion of the bearing or guide member 32 so that the lugs 43 in addition to holding the restraining member 30 against rotary movement will provide a means for limiting the endwise movement of the restraining member 30.

The restraining member 31 has secured to the inner end thereof a plunger or piston 44, which is slidable through an opening 45 formed in the plug 46 fixedly mounted in the adjacent end of the plunger 38. The restraining member 31 is formed with a pair of opposed combined stop and guide members 47, which are struck laterally from the restraining member 31 and slidingly engage against the adjacent face of the closure 17, so as to hold the cutout 37 in the desired position with the adjacent flat face thereof in parallel relation to the opposite faces of the closure 17. The lugs 47 are positioned between the guide member 33 and the plug 46 so that the lugs 47 will limit the endwise movement of the restraining member 31 for a distance substantially equal to the space between the guide 33 and and the head or plug 46.

A restraining member operator 48 is movably mounted within the cylinder 38 and in the present instance is constructed in the form of a ball or sphere, which is slightly less in diameter than the inner diameter of the cylinder 38, so that the operator 48 may freely move along the length of the cylinder 38. Preferably the plunger 42 is formed with a concave seat 49 in its inner end within which the ball 48 is adapted to seat when the closure 17 is disposed with the restraining member 30 thereof lowermost. The plunger or piston 44 is also formed with a concave seat 50 in its inner end within which the ball 48 is adapted to seat when the closure 17 is in its initial position with the restraining member 31 thereof lowermost. The plunger and restraining member actuating ball or member 48 is adapted to gravitatingly move downwardly upon rotating of the closure 17 after the closure 17 passes through an arc of substantially 90°.

The operating member 48 upon movement from one end of the cylinder 38 to the other end thereof is adapted to accelerate the complete rotation of the closure 17 through an arc of 180°. Preferably the closure 17 is so formed as to be substantially balanced on the trunnions 18 and 19, so that the operator 48 will constitute the unbalancing means whereby either end of the closure 17 may be uppermost and whereby the closure 17 will automatically rotate from one position to another after the closure 17 passes through an arc of substantially more than 90°. Preferably the plungers or pistons 42 and 44 are formed of resilient material such as rubber or the like, so as to thereby cushion the movement or deaden the sound of the ball 48 when it strikes one of the plungers or pistons. The operator 48 in addition to overbalancing the closure 17 provides a positive means for effecting movement of the restraining member, which is moving to a lowermost position so that the cutout outer end of the lowermost restraining member may be projected outwardly beyond the outer curved edge of the closure 17.

In order to provide a means whereby a hen may be trapped within the nest structure 11, I have provided a latching means which includes a latching bolt 51 pivotally mounted on a pivot member 52. The latching member or bolt 51 is mounted on the frame extension 29, so that a portion of the bolt or latching member 51 will extend beyond the adjacent vertical edge of the extension 28 as shown in Figure 1. A substantially U-shaped guide member 53 is fixed by fastening devices 54 to the outer face of the extension 29 and engages loosely over the outer face of the bolt or latching member 51. The guide member 53 is formed with an elongated slot 55 which extends downwardly from the bolt or latching member 51 and a bolt operator 56 loosely engages in the slot 55 and is pivotally mounted on a pivot member 57 fixedly secured as by welding or the like to the inner face of the extension 29. The bolt operator 56 is preferably overbalanced so that the outer end portion thereof will swing downwardly and thus permit the bolt 51 to gravitatingly be disposed in a normal locking position.

A keeper 58 which is formed with a right angularly disposed base 60*a* is secured by fastening devices 60 to the closure member 17 adjacent one edge of the slotted portion 27 thereof. The keeper 58 is adapted to engage beneath the bolt

51 when the closure 17 is rotated to dispose the keeper 58 in an uppermost position and thereby lock the closure 17 against further rotary movement in either direction. It will be understood that the closure 17 in its initial position will be disposed with the keeper 58 thereof in a lowermost position, so that the cutout portion 25 and the slot 27 of the closure 17 will initially be disposed below the horizontal axis of the closure 17. The fowl will then project its head through the opening 25 and rotate the closure 17 in a clockwise direction, so as to bring the keeper 58 to an uppermost locking position for engagement with the locking bolt 51.

In the use and operation of this closure structure, the frame 10 is adapted to be mounted on the front side of the nest structure 11. In its initial position, that is, before a hen enters the nest, the closure 17 will be in a reverse position to that shown in Figures 1 and 2, wherein the opening 25 and the cutout 27 will be in a lowermost position. At this time the restraining member 31 will be in an extended position engaging against the inner face of the arcuate frame member 14 and the operator 48 will be seated in the seat 50 of the plunger 44. When a hen desires to enter the nest the hen will project its head through the opening 25 and when pressure is applied to the lower portion of the closure 17 by the entering hen, the closure 17 will rotate inwardly from its lower end so as to permit the hen to freely enter the nest. After the closure 17 passes through an arc substantially greater than ninety degrees, the operator 48 will roll along the length of the cylinder 38, thus overbalancing the opposite end of the closure 17 and effecting acceleration in the downward rotation of the opposite end of the closure.

When the operator 48 reaches the adjacent end of the cylinder 38, it will strike the plunger 42 and force the restraining member 30 outwardly to a restraining position. At the same time that the operator 48 is forcing the restraining member 30 outwardly to a restraining position. the restraining member 31 with the plunger 44 will move downwardly to a retracted position with respect to the restraining member 31, which is the position of the restraining member 31 in Figure 1.

Where the trapping means including the latching structure is mounted on the frame 10 and the closure 15 the upward and outward rotation of the end of the closure 17 bearing the keeper 58 will engage the latching bolt 51, which upon completion of the rotation of the closure 17 will gravitatingly move downwardly to a latched position with respect to the keeper 58. Thereafter, the hen will not be able to leave the nest until the latch operator 56 is raised, so as to release the latch member 51 from the keeper 58.

In the event, it is not desired to trap a hen by the locking structure hereinbefore described, the operator 56 may be raised sufficiently to permit the bolt 51 to drop in a notch or cutout 59a formed in the operator 56. The cutout 59a forms a shoulder 59 which bears against the rear side of the bolt 51 so as to hold the bolt 51 against upward movement under the action of the keeper 58. With the bolt 51 locked against pivotal movement by the operator the closure 17 will assume substantially the position shown in Figure 2 when the hen first enters the nest. The hen on the nest may freely leave by pushing the lower portion of the closure outwardly to thereby rotate the closure 17 to its original position, this latter position being the reverse of the position of the closure shown in Figure 2.

What I claim is:

1. A closure structure for attachment to a hen's nest comprising a stationary frame adapted to be fixed to the nest structure, a closure member for said frame, means mounting said closure member for vertical rotating movement in said frame, a pair of opposed restraining members for said closure member, means slidably mounting said restraining members on said closure member whereby one of said restraining members will move to a restraining position in engagement with said frame when said closure member is in a vertical position and the other restraining member will move in the same direction as the first mentioned restraining member to a position out of engagement with said frame to thereby restrain said closure member against rotating movement in one direction while permitting free rotation movement of said closure member in the opposite direction.

2. A closure structure for attachment to a hen's nest comprising a vertically disposed stationary frame adapted to be fixed to the nest structure, a normally vertical closure member for said frame, means mounting said member for rotation movement in said frame, said member having a pair of superposed openings extending through the opposite marginal edges thereof whereby a fowl may initially project its head into the nest structure, a depending plate carried by said frame and loosely engageable in an uppermost opening to thereby substantially close the uppermost opening, a pair of oppositely disposed superposed restraining members for said closure member, means slidably mounting said restraining members on said closure member, a cylinder disposed coaxial with said restraining members, a plunger carried by each restraining member and slidable in said cylinder, the lowermost one of said restraining members gravitatingly moving downwardly to an extended position relative to the closure member for engagement with a face of said frame to thereby hold said closure member against rotation movement in one direction and the other restraining member gravitatingly moving downwardly to a retracted and released position, and means in said cylinder gravitatingly movable to the lower end of the cylinder to thereby positively move the lower restraining member to a restraining position while simultaneously overbalancing said closure member and effecting an acceleration of the rotation thereof through an arc of 180°.

3. A closure structure for attachment to a hen's nest comprising a vertically disposed stationary frame adapted to be fixed to the nest structure, a normally vertical closure member for said frame, means mounting said member for rotation movement in said frame, said member having an opening through which a fowl may initially project its head into the nest structure, a pair of oppositely disposed superposed restraining members for said closure member, means slidably mounting said restraining members on said closure member, a cylinder disposed coaxial with said restraining members, a plunger carried by each restraining member and slidable in said cylinder, the lowermost one of said restraining members gravitatingly moving downwardly to an extended position relative to the closure member for engagement with a face of said frame to thereby hold said closure member against rotation movement in one direction and the other

restraining member gravitatingly moving downwardly to a retracted and released position, and means in said cylinder gravitatingly movable to the lower end of the cylinder to thereby positively move the lower restraining member to a restraining position while simultaneously overbalancing said closure member and effecting an acceleration of the rotation thereof through an arc of 180°.

4. A closure structure for attachment to a hen's nest comprising a vertically disposed stationary frame adapted to be fixed to the nest structure, a normally vertical closure member for said frame, means mounting said member for rotation movement in said frame, said member having an opening through which a fowl may initially project its head into the nest structure, a pair of oppositely disposed superposed restraining members for said closure member, means slidably mounting said restraining members on said closure member, a cylinder disposed coaxial with said restraining members, a plunger carried by each restraining member and slidable in said cylinder, the lowermost one of said restraining members gravitatingly moving downwardly to an extended position relative to the closure member for engagement with a face of said frame to thereby hold said closure member against rotation movement in one direction and the other restraining member gravitatingly moving downwardly to a retracted and released position, and a ball in said cylinder gravitatingly movable to the lower end of the cylinder to thereby positively move the lower restraining member to a restraining position while simultaneously overbalancing said closure member and effecting an acceleration of the rotation thereof through an arc of 180°.

5. A closure structure for attachment to a hen's nest comprising a vertically disposed stationary frame adapted to be fixed to the nest structure, a normally vertical closure member for said frame, means mounting said member for rotation movement in said frame, said member having an opening through which a fowl may initially project its head into the nest structure, a pair of oppositely disposed superposed restraining members for said closure member, means slidably mounting said restraining members on said closure member, means carried by said restraining member for holding a restraining member against rotation, a cylinder disposed coaxial with said restraining members, a plunger carried by each restraining member and slidable in said cylinder, the lowermost one of said restraining members gravitatingly moving downwardly to an extended position relative to the closure member for engagement with a face of said frame to thereby hold said closure member against rotation movement in one direction and the other restraining member gravitatingly moving downwardly to a retracted and released position, and means in said cylinder gravitatingly movable to the lower end of the cylinder to thereby positively move the lower restraining member to a restraining position while simultaneously overbalancing said closure member and effecting an acceleration of the rotation thereof through an arc of 180°.

MORTON H. CARPENTER.