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CHICK VACCINATION DEVICE

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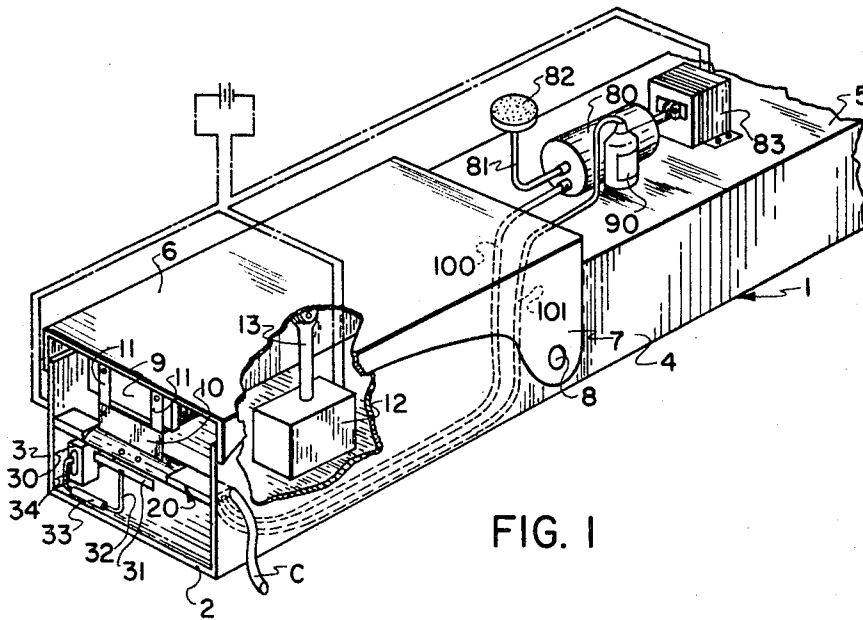


FIG. 1

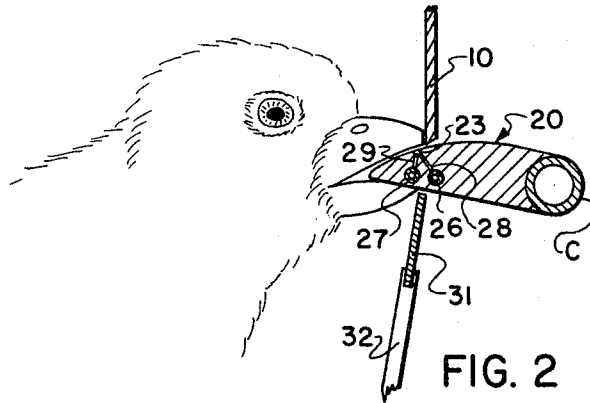
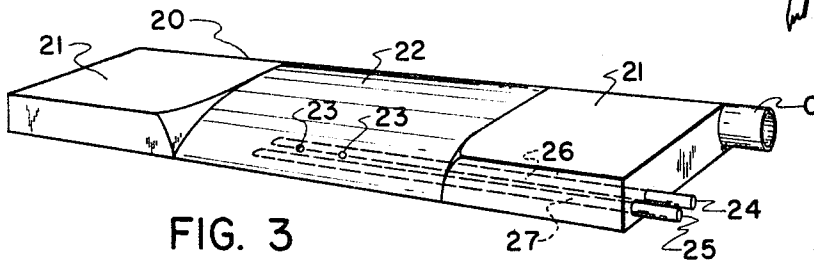


FIG. 2



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3 Claims

ABSTRACT OF THE DISCLOSURE

A chick vaccination method and apparatus wherein the upper half of a chick's beak is trimmed and vaccine is simultaneously injected into the oral cavity of the chick. The chick's beak is fitted about a stationary support, over an aperture of the support. The movement of the beak toward the support simultaneously actuates a vaccine aspirating device which expels vaccine from the aperture of the support and a heated guillotine which trims the point from the upper half of the chick's beak.

It has heretofore been conventional practice to vaccinate fowl for the prevention of disease by such means as eyedroppers and the like whereby the fowl is made to ingest the vaccine. Such procedures have been extremely unwieldy since each fowl must be manually and individually held with its beak open while simultaneously administering the vaccine and attempting to ensure that the vaccine becomes ingested by the fowl. The procedures have obviously been very time consuming and, additionally, frequent waste of expensive vaccine has occurred through slippage or overdosages due to the relatively crude measuring and administering instruments and procedures.

Summary of the invention

In accordance with the present invention, it is proposed to vaccinate fowl by forcing their beaks open and spraying a vaccine, preferably in aerosol form, into their oral cavities and sinuses. This novel procedure allows for greater ease in handling the fowl and administering the vaccine. The spray, and particularly the aerosol form, permits the fowl to more easily ingest the vaccine once administered. As a result, spilling of the expensive vaccine may be reduced and dosages may be accurately metered so as to provide only that quantity of vaccine which is actually necessary for the particular immunization.

Spraying the vaccine in accordance with the present invention may be accomplished by a number of conventional devices presently used to spray liquids since the vaccine is in liquid form. For example, containers having plunger-type cap and nozzle arrangements as are presently used in spraying window cleaning fluids, insect repellants, and the like, may be efficiently employed. A less elaborate arrangement might include a container having a simple aspirator bulb connected to a withdrawal tube and nozzle. On the other hand, a previously pressurized container of vaccine might also be effective.

While the present invention may be effectively and efficiently practiced using the above-described devices it is further proposed to provide a novel apparatus for vaccinating the fowl simultaneously while their beaks are being trimmed and/or cauterized. Briefly described, this apparatus is integrated with and becomes a part of a conventional beak trimming device of the type having a stationary beak support and a cooperating movable beak cutting blade. Specifically, the stationary beak support is provided with vaccine aspirator means connected to sources of air and vaccine whereby after the beak of the fowl has been appropriately mounted on the support and simultaneous with the trimming operation of the beak

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cutting blade a vaccine is sprayed into the oral cavity and sinuses of the fowl.

This novel apparatus combines the heretofore separate vaccination and beak trimming operations into a single step by embodying the vaccine spraying concept of the present invention.

The above description and in the description and claims to follow the term spraying is used to describe the method and means of administering the vaccine to the fowl. However, it is pointed out that the term spraying is intended to cover propelling a liquid in all forms ranging from a coherent liquid stream to minute droplets as in an aerosol.

These and other features and advantages of the present invention will be more apparent from the following detailed description and the accompanying drawings wherein the novel apparatus comprising one embodiment of the invention is illustrated.

Brief description of the drawing

FIG. 1 is an overall perspective view of the integrated vaccination and beak trimming apparatus;

FIG. 2 is a separate view of the stationary beak support;

FIG. 3 schematically depicts the operation of the present invention wherein the movable cutting blade, the stationary beak support and the trigger plate are shown in cross-section.

Description of the embodiment

As pointed out previously, the broad concept of the present invention provides a new method of vaccinating fowl which involves spraying the vaccine into the oral cavity and sinuses of the fowl. This method may be carried out by first placing the vaccine, in a liquid form, in some type of atomizer or spraying device which may be easily handled. Atomizers and spraying devices of this type are conventional as previously discussed and therefore further elaboration is believed unnecessary. The fowl is then manually picked up and its beak is forced open and maintained in that position. The vaccine atomizer or spraying device is then placed adjacent the open beak and the vaccine is sprayed into the oral cavity and sinuses of the fowl. Immediately thereafter the fowl may be released without any danger of the fowl not ingesting the vaccine since it tends to cling to the inner membranes and portions of the oral cavity and sinuses until it is substantially ingested. This is even more pronounced when a vaccine aerosol is employed since the vaccine is in finely divided droplets resembling a mist.

It is pointed out, however, that the vaccine atomizer or spraying device should be provided with a nozzle of appropriate size to confine the spray of vaccine as near as possible to the oral cavity for best results. Moreover, the atomizer or spraying device should be selected so as to provide substantially that quantity of vaccine in each spray which corresponds to the particular necessary dosage. The required dosages vary, of course, with the particular vaccine and other factors such as the size, age, and type of fowl to which it is administered. The specific dosage necessary in any particular situation may be obtained from the supplier or manufacturer of the vaccine.

In considering another embodiment of the present invention reference is made to FIG. 1 of the drawings wherein an overall apparatus for simultaneously vaccinating and trimming the beaks of fowl is shown. There is provided a housing 1 having a base wall 2, side walls 3 and 4 and a partial top wall 5 overlying the rear portion of the housing. A pivotal cover plate 6 overlies the front portion of the housing and supports a cutting blade 10 adjacent its front edge. The cover plate 6 is provided with oppositely positioned downwardly extending leg segments 7 along its rear side edges. Leg segments 7 lie outside of but adjacent to the side walls 3 and 4 and are pivotally

mounted thereon at their lower ends by means of pins 8 or the like. Preferably, the pivotal mountings have a resilient biasing means, such as springs, associated therewith and tending to maintain the cover plate 6 in substantially a horizontal relationship with respect to the base wall 2. Means of this type and their installation are well known in the art and therefore have not been illustrated.

Located on the base wall 2 and secured thereto beneath the cover plate 6 is a solenoid 12 which causes rod 13 to move in an intermittent reciprocal manner. The upper end of rod 13 is attached to the underside of the pivotal cover plate 6. When solenoid 12 is in a deactivated condition rod 13 fully extends upward from the solenoid whereby cover plate 6 is in a substantially horizontal position. Upon activation of solenoid 12, rod 13 retracts or is pulled downward by the solenoid and, in turn, causes cover plate 6 to pivot downward.

The forward edge of the cover plate 6 is provided with a lower extending flange 9 to which cutting blade supports 11 are fixedly secured. The beak cutting blade 10 is rigidly suspended at the lower end of these supports. As a result, the beak cutting blade 10 is provided with corresponding movements as the cover plate 6 is pivoted on its pivotal mounting.

The beak cutting blade 10 is preferably made from some hard material, such as steel, and is provided with a lower sharpened cutting edge. In addition, the blade 10 may also be provided with some heating means so that the beak of the fowl is also cauterized as the tip is trimmed therefrom. The heating means may be provided by a conventional induction unit.

Mounted between the side walls 3 and 4 and across the front portion of the housing 1 is a stationary beak support 20. This beak support may be permanently affixed to the side walls by some suitable means such as bolts or welding, or the sides may alternatively be provided with suitable brackets whereby the beak support may be removably mounted in the housing. In either event, it is essential that the beak support be mounted in a stationary position within the housing. Moreover, its relative position on the side walls must be such that as the cutting blade 10 moves in a downward direction it will operatively cooperate with the beak support to trim the tip of the fowl's beak which has previously been mounted on the support.

The beak support 20 is shown in more detail in FIG. 2 and comprises an essentially flat bar having a central beak receiving portion 22 and two end portions 21. In the beak receiving portion the upper side of the bar has been machined to form a convex arcuate surface gradually rising from the lower front edge to the upper rear edge of the bar. By having the beak receiving portion of the bar contoured in this manner the beaks of the fowl may be more easily mounted thereon.

Located in the beak receiving portion 22 and near the front edge of the plate are orifices 23. These orifices are conveniently located in such a manner that they will communicate with the oral cavities of the fowl whose beaks have been placed on the beak support for trimming. It should be understood that two orifices 23 are shown since it is usually contemplated that two fowl will simultaneously have their beaks trimmed. However, there may be only a single orifice or a greater plurality of orifices as desired.

The beak support 20 is provided with two longitudinal passageways 26 and 27 which communicate with the orifices 23 at their inner end portions by way of smaller passages 28 and 29, as shown in FIG. 3. The outer ends of the passageways 26 and 27 are provided with tubular extensions 24 and 25 for respectively connecting to air line 100 and vaccine line 101. The beak support 20 may also be provided with a large passage C wherein cooling fluid may be circulated to cool the support in the event

blade 10 is heated to cauterize the beak as well as trim the tip.

Air line 100 is also connected to a solenoid operated air pump 80 mounted on top wall 5 at the rear of housing 1. The air pump is provided with an intake line 81 having an air filter 82 mounted on its outer end. Check valves of conventional design are placed in communication with the intake line 81 and the exit line 100 internally of the pump. The check valves function to prevent air intake through line 100 and air exhaustion through line 81.

Solenoid 83 causes an internal piston in the air pump to intermittently reciprocate back and forth. When the piston moves forward air contained within the pump is caused to flow outward through air line 100 and eventually to orifice 23. The check valve in the intake line 81 prevents any outward flow of air through that line. Movement of the piston to the rear of the air pump causes air to flow through line 81 into the interior of the pump while the check valve in line 100 prevents air flow into the pump.

Vaccine line 101 is connected to a source of vaccine such as vaccine bottle 90. The vaccine bottle is provided with a conventional withdrawal tube extending downward into the bottle to a region adjacent the bottom. The withdrawal tube is also provided with a check valve at its lowermost end to prevent vaccine which has been drawn up into the tube from flowing back into the bottle.

In operation, actuation of solenoid 83 causes the piston solenoid in air pump 80 to move forward and air begins to flow through line 100, through passages 26 and 28 and out orifice 23. The resultant air flow through orifice 23 creates a vacuum in passage 29 thereby drawing the vaccine up into the orifice 23 and causes the vaccine to be aspirated and sprayed in atomized form therefrom.

While the above apparatus has been described in connection with aspirating and spraying a vaccine aerosol it should be understood that a jet of liquid vaccine, accurately metered, may also be emitted or sprayed from the orifices in the beak support.

As previously mentioned, the above described vaccinating system is operated in such a manner that the vaccine is sprayed into the oral cavity and sinuses of the fowl at the same time that the beaks of the fowl are trimmed. The manner in which this is accomplished is described hereinafter with respect to FIG. 1.

A single micro-switch 30 is positioned beneath the beak support 20 within the housing. This micro-switch along with solenoids 12 and 83 are electrically connected in series with a source of electrical power all of which is schematically depicted by the long dashed lines. By simply actuating the micro-switch after the beaks of the fowl have been appropriately mounted on beak support 20 both solenoids 12 and 83 are activated causing cutting blade 10 to operatively move into contact with the beak support to trim the tips of the beaks while vaccine is sprayed in the oral cavities and sinuses of the fowls.

While the micro-switch 30 may be manually operated to coordinate the vaccinating and beak trimming operations it is preferred to employ an automatic trip mechanism. This mechanism consists of a trigger plate 31 attached to one leg 32 of a U-shaped rod and positioned immediately below the beak support 20 corresponding to the beak receiving portion 22. The connecting segment of the U-shaped rod is rotatably journaled in a tubular member 33 which is secured to the base wall 2 of the housing. The opposite leg segment 34 of the U-shaped rod is operatively positioned adjacent the actuating mechanism of the microswitch 30. Upon inward deflection of the trigger plate the U-shaped rod rotates inward causing leg segment 34 to come into contact with and trip the actuator of the micro-switch.

The functioning of the trip mechanism is better illustrated in FIG. 3. As the beaks of the fowl are appropriately mounted on the beak support the lower beak portions cause the trigger plate 31 to deflect inward. This deflection

produces the above described movements in the trip mechanism and the micro-switch is actuated thus activating both solenoids 12 and 83. As previously described, these solenoids cause cutting blade 10 to trim the beaks while a vaccine is sprayed into the oral cavities and sinuses of the fowl.

The vaccine dosage may be easily controlled in the above described apparatus employing the aspirating technique by merely controlling the air flow to orifice 23. As a result the aspiration rate can be closely governed in accordance with the dosages recommended by the vaccine suppliers. The air flow is controlled by making suitable adjustments in the air pump 80 and the solenoids 83.

Thus having described the present invention it will be apparent to those skilled in the art that certain variations, modifications, and extensions may be made without departing from the spirit and scope hereof and it is only intended that the present invention be limited by the appended claims.

I claim:

1. Apparatus for treating fowl comprising a source of vaccine, support means for receiving the upper and lower halves of the open beak of at least one fowl on each side thereof, said support means limiting the outer end of the lower half of the beak to a predetermined position, vaccine spraying means operatively connected with said support means for spraying vaccine into the oral cavity of a fowl, and treating means responsive to the presence of the lower half of the beak of a fowl adjacent the support means for supplying vaccine from said source to said spraying means and for cutting only the upper half of the beak so as to reduce the length of the upper half of said beak to a length corresponding to the length of the lower half of the beak and actuating means positioned below said support means and responsive to the movement of the lower half of said beak below said support means for actuating said treating means.

2. A method of treating a fowl comprising the steps of: moving the beak of the fowl in a forward direction until the outer end of the lower half of the beak reaches a predetermined position, when said beak is open simultaneously spraying a vaccine into the open beak of the fowl and cutting only the upper half of the beak so as to reduce the length of the upper half

of said beak to a length corresponding to the length of the lower half of the beak as the beak is held open.

3. Apparatus for treating fowl comprising a source of vaccine, support means for receiving the upper and lower portions of the open beak of at least one fowl on each side thereof, vaccine spraying means operatively connected with said support means for spraying vaccine into the oral cavity of a fowl, said support means being constructed and dimensioned to slide between the upper and lower portions of the beak of a fowl whereby said beak is opened and maintained open, an orifice is defined in said support means and opens onto the surface thereof which slides between the upper and lower portions of a fowl's beak, a first passageway in said beak support communicating at one end with said orifice and at the other end with said source of vaccine, and a second passageway in said beak support communicating at one end with said orifice and at the other end with a means for flowing a fluid under pressure, said first and second passageways communicating with said orifice with their openings in closely adjacent relationship whereby said fluid under pressure passing into said orifice causes vaccine to be aspirated into said orifice, formed into an aerosol, and sprayed outward of the orifice, treating means for supplying vaccine from said source to said spraying means and for reducing the length of the upper portion of the beak of the fowl to a length corresponding to the length of the lower portion of the beak of the fowl, an actuating means positioned below said support means and responsive to the movement of the lower portion of the beak of the fowl below said support means for actuating said treating means.

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