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METHOD AND APPARATUS FOR VACCINATING AND DEBEAKING FOWL

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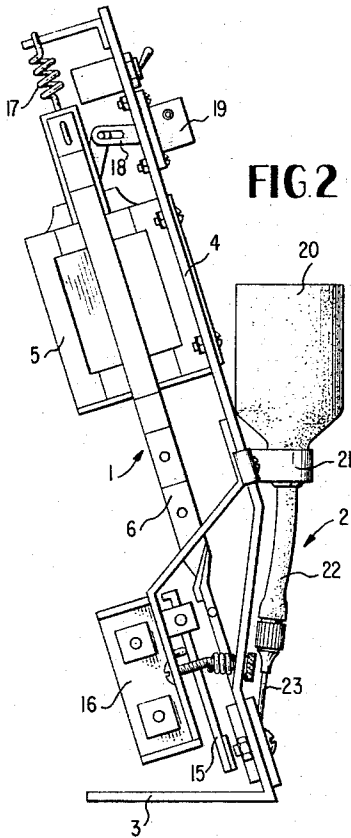


FIG 2

FIG 1

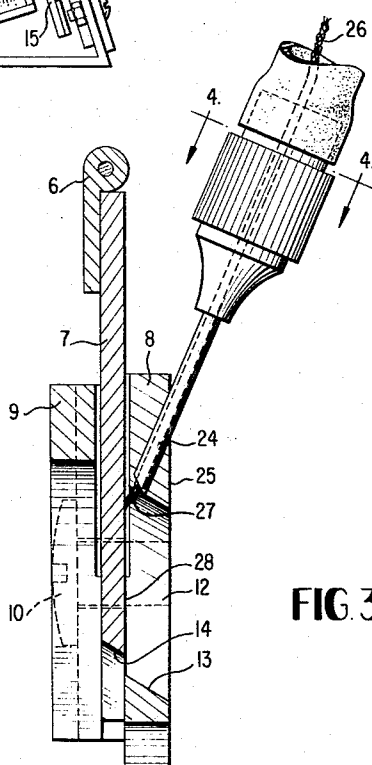
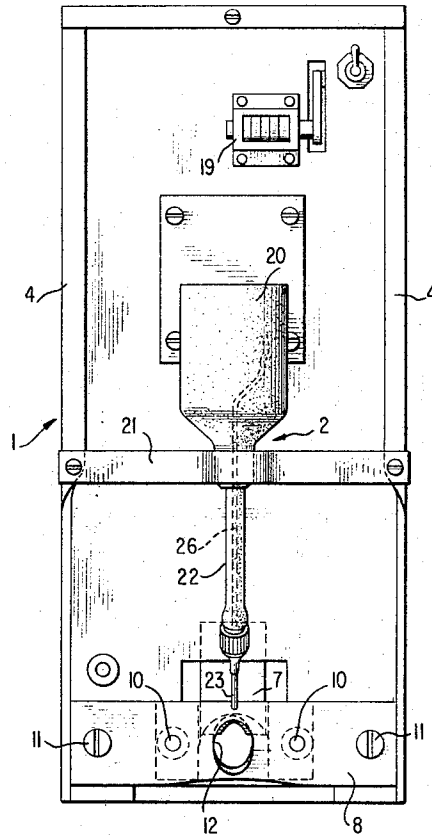


FIG 3

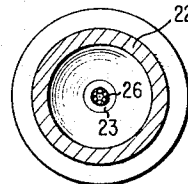


FIG 4

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**METHOD AND APPARATUS FOR VACCINATING
 AND DEBEAKING FOWL**
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 6 Claims. (Cl. 128-253)

This invention relates to the art of applying medication to fowl and, more particularly, to a method and apparatus for vaccinating fowl, such as baby chicks.

It has been estimated that approximately 40,000,000 baby chicks are hatched weekly in the United States. To endeavor to insure that as many as possible of these chicks grow to maturity and reach the market, it is common practice in the highly competitive poultry raising industry to vaccinate them against diseases such as pox, Newcastle disease, and bronchitis. The two most frequently practiced methods of vaccination have been by needle injection into the wing webbing or by dropping the vaccine into the bird's eyes or nostrils. Both methods require considerable handling of the birds and, since vaccination should be accomplished at an early age as possible, some injuries and deaths inevitably result because of the extreme fragility of the chicks at such an early age. Furthermore, the known methods are relatively laborious and time consuming, and involve wastage of vaccine.

Another method of immunizing fowl against diseases has been to place the immunizing agent in the drinking water. However, this method has not proven to be as effective as the two methods just described, and it suffers the further disadvantage that there is no practical way to determine which birds have been immunized.

It is therefore an object of the present invention to provide a new and improved method of vaccinating fowl which is economical and reliable as compared to presently known methods.

It is another object of the present invention to provide such a method in which handling of the fowl is minimized to reduce the possibility of injuries while the vaccination is being accomplished.

It is a further object of the present invention to provide such a method which substantially reduces the amount of vaccine required for effective vaccination.

It is still another object of the present invention to provide a new and improved apparatus for vaccinating fowl.

It is still another object of the present invention to provide such an apparatus which is semi-automatic in operation.

Briefly described, the method of the present invention consists of the steps of cutting the beak of the fowl, and applying the vaccine to the freshly cut surface before the blood has time to coagulate wherefore the vaccine enters the fowl's system through the beak cut. Since baby chicks, for example, are almost universally debeaked after they are hatched, a preferred practice of the method of the present invention is to apply the vaccine simultaneously with debeaking, e.g., to apply the vaccine to the freshly exposed cut surface on the beak stump.

A preferred apparatus according to the present invention includes means for debeaking the fowl, such as a baby chick, and means operatively associated with said debeaking means for consistently providing enough vaccine to the cutting element of the debeaking means wherefore the cutting element applies the vaccine to the cut surface of the beak as the cut is being made. A preferred apparatus for consistently applying enough vaccine to the cutting element of the debeaking means comprises a vaccine container, a flow tube extending from

the container, a wick located in the tube and having an end in contact with the cutting element of the debeaking means wherefore the cutter, in reciprocating to make successive cuts, wipes the wick end and is therefore kept coated with a sufficient amount of vaccine so that, when the cutting element cuts the beak, it rubs across the beak stump and transfers the vaccine to the freshly exposed cut surface.

Other objects and advantages of the present invention will become more apparent from the following detailed description taken in conjunction with the attached drawing in which:

FIG. 1 is a front elevation view of a preferred embodiment of an apparatus according to the present invention;

FIG. 2 is a side elevation view of the apparatus shown in FIG. 1;

FIG. 3 is an enlarged side view, partly in section, of a portion of the apparatus shown in FIGS. 1 and 2; and
 FIG. 4 is a sectional view taken on lines 4-4 of FIG. 3.

Referring to FIGS. 1 and 2, a preferred embodiment of apparatus according to the present invention includes means, indicated generally by the reference numeral 1, for debeaking fowl, and means, indicated generally by the reference numeral 2, for consistently applying vaccine to the cutting element (later described) of the debeaking means so that vaccination is accomplished as the fowl is debeaked. Debeaking means 1 includes a base 3 from which a frame 4 extends upwardly as shown in FIGS. 1 and 2. Frame 4 supports a solenoid 5 which includes a plunger 6 which terminates at its lower end in a cutting blade 7, see FIG. 3.

Blade 7 is slidably received between a stationary cutting blade plate 8 and a blade guide member 9, which is attached to plate 8 by any suitable means such as screws 10. Plate 8 is mounted on frame 4 by any suitable means, such as screws 11, and has a beak receiving opening 12 which includes a lower inclined cutting edge 13 adapted to cooperate with the lower inclined cutting edge 14 of movable cutting blade 7 in order to sever the tip portion of the beak of a fowl inserted into opening 12, as known to those skilled in the art.

In operation, and referring to a baby chick as an example of the fowl being debeaked, the beak of the chick is inserted into opening 12 until it depresses a lever 15, see FIG. 2, which closes a microswitch 16 to energize solenoid 5, electrical connections being omitted from the drawing for clarity since this portion of the apparatus is well known to those skilled in the art. When solenoid 5 is energized, plunger 6 descends, thus moving blade 7 downwardly, with cutting surfaces 13 and 14 cooperating to sever the tip portion of the beak which extends beyond the rear edge of surface 13. When the tip portion is thus severed, microswitch 16 releases, and plunger 6 is returned to its upper position by spring 17. Movement of solenoid plunger 6 actuates, through a linkage 18, a counting device 19 to provide a record of the number of chicks treated.

Further description of debeaking means 1 is deemed unnecessary since this part of the apparatus is not per se the present invention. Indeed, debeaking means 1 is an apparatus of the type described and shown in U.S. Patent No. 2,886,037 to which reference may be made for further details.

Referring now to vaccine supply means 2, this includes a vaccine containing vessel 20 of any suitable material and shape, which is supported with respect to frame 4 by bracket member 21. A hollow tube 22 extends downwardly from the neck portion of vessel or container 20, and terminates in a hollow needle member 23. The latter extends into a slanted hole 24 which

extends from the front side 25 of stationary plate 8 to opening 12, as shown in FIG. 3.

A wick member 26 extends from within container 20 downwardly through tube 22 and hollow needle 23, terminating in an exposed wick end or tip portion 27 located, see FIG. 3, so as to be contacted by front side 28 of movable cutting blade 7 as the latter moves up and down with respect to opening 12. The result is that, as blade 7 moves downwardly in its cutting operation, it rubs against tip portion 27 of wick 26, thus becoming coated with a thin coat of vaccine and, as the blade continues down, surface 28 rubs across the freshly cut surface of the beak stump, thus applying the vaccine to the raw surface as the debeaking is accomplished.

Dosage of the vaccine to the fowl can be controlled by varying the flow rate of the vaccine to blade 7. One way to accomplish this is to adjust the cross-sectional area of wick 26. Where the flow of vaccine is gravitational, as is the case of the apparatus illustrated in the drawing, increasing the area will decrease the flow rate. Conversely, when container 20 is mounted so that the flow of vaccine is by capillary action, increasing the cross-sectional area of the wick increases the flow rate.

Other ways of controlling the vaccine flow rate include varying the internal diameter of hollow needle 23, and varying the length of wick tip portion 7 which contacts blade surface 28.

From the foregoing detailed description, it will be seen that the present invention provides a method and apparatus whereby vaccination of fowl, baby chicks in particular, can be accomplished simultaneously with debeaking, thus eliminating the heretofore required extra step of vaccination after debeaking. Furthermore, the practice of the present invention results in less spillage or other waste of vaccine, virtually eliminates the 1% mortality rate which normally results from the extra handling of fragile chicks when applying vaccine according to previously known methods, and substantially reduces the amount of time and effort required for vaccination of the fowl. Indeed, a reduction of labor time in the range of from one to three hours per one thousand baby chicks has been effected where the vaccination was against pox. Since poultry, such as baby chicks, is also generally vaccinated against Newcastle disease and bronchitis, use of a combination vaccine in practicing the method of the present invention can result in a labor savings of from three to six hours per one thousand baby chicks. Furthermore the vaccination according to the method of the present invention has been found to be nearly 100% effective on baby chicks, and the amount of vaccine required to satisfactorily vaccinate a group of baby chicks was, by using the method of the present invention reduced appreciably as compared to previously known methods. This savings in vaccine is believed to result primarily from reduced spillage and more efficient method of application rather than in any decreased dosage per chick.

In using the terms vaccination or vaccine, it is to be understood that these include the terms immunization or immunizing agent, and particular vaccines are not described since these are commercially available and well known to those skilled in the art. Indeed, apparatus according to the present invention is capable of applying substances, other than those considered strictly as vaccines, which can be introduced effectively into the system of the fowl through the freshly cut surface of the beak stump. Also, while a preferred embodiment of apparatus according to the invention has been illustrated, it will be appreciated that modifications may be made without departing from the scope of the invention. Thus, as discussed previously, the flow of vaccine may be either gravitational or by capillary action. Hollow needle member 23 may be mounted directly on plate member 8, as shown in the drawing, or the assembly of the needle and plate may be an integral unit.

Accordingly, while I have described and illustrated a preferred embodiment of my invention, I wish it to be

understood that I do not intend to be restricted solely thereto, but that I do intend to cover all modifications thereof which would be apparent to one skilled in the art, and which come within the spirit and scope of my invention.

What is claimed is:

1. The method of vaccinating fowl comprising the steps of severing the tip portion of the beak from the rest of the beak, and simultaneously applying vaccine to the freshly exposed surface on the beak stump.

2. The method of vaccinating fowl comprising the steps of applying vaccine to a cutting blade, severing the tip portion of the beak from the rest of the beak with said blade, and applying the vaccine from the blade to the freshly cut surface of the beak stump as the blade cuts the beak.

3. Apparatus for vaccinating fowl comprising debeaking means including a reciprocating cutting blade and a stationary cutting member adjacent to and cooperable with the cutting blade and having a beak-receiving opening extending therethrough, said stationary cutting member being positioned so that the cutting blade passes over the opening during debeaking of a fowl, said stationary cutting member having means for delivering vaccine to the cutting blade for vaccinating the beak of a fowl during a debeaking operation.

4. An apparatus for vaccinating fowl comprising beak severing means including a cutting blade, vaccine containing means, and means for transferring vaccine from said vaccine containing means to said cutting blade as said blade severs the beak, said blade adapted to apply vaccine to the freshly cut surface of the beak stump as the beak is severed, said vaccine transfer means comprising a wick having one end in said vaccine containing means and its other end in position to be wiped by said blade as said blade moves to cut the beak.

5. An apparatus for vaccinating fowl comprising debeaking means including a reciprocating cutting blade and a stationary cutting blade plate having a beak receiving opening extending therethrough, said plate being positioned so that said cutting blade passes over said opening during debeaking of a fowl, and a flow tube mounted on said plate, said tube enclosing a wick having one end extending into said beak-receiving opening.

6. An apparatus for vaccinating fowl comprising debeaking means including a reciprocating cutting blade and a stationary cutting blade plate having a beak-receiving opening extending therethrough, said plate being positioned so that said cutting blade passes over said opening when a fowl is being debeaked, and said plate including a passage therethrough extending from one side of said plate into said beak-receiving opening, a vaccine supply means having a flow tube mounted in said plate passage, and a wick extending from said supply means through said flow tube and terminating in a free end extending into said beak-receiving opening a sufficient distance to contact the cutting blade when the latter passes over said opening.

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