

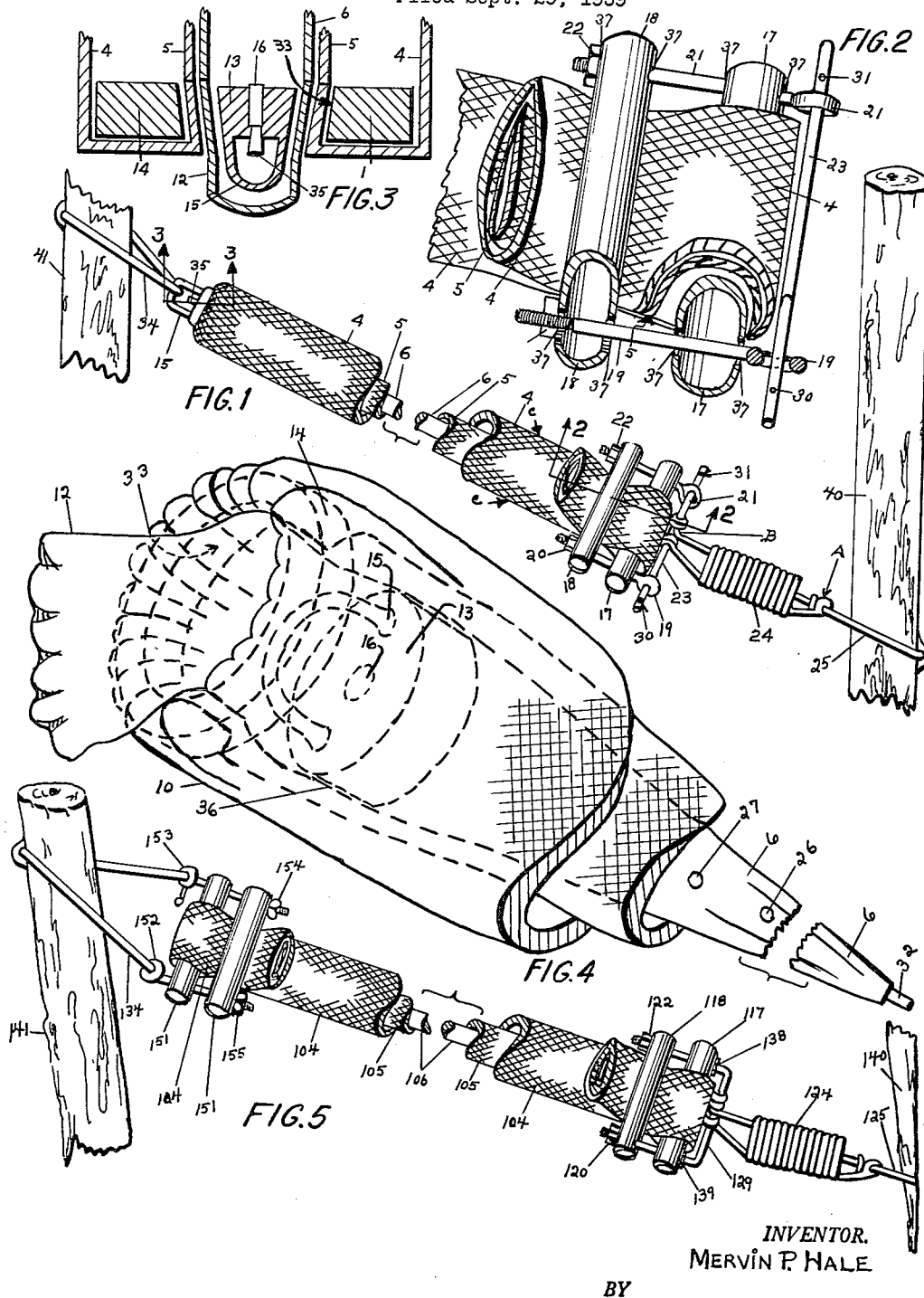
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AUTOMATIC LIVESTOCK INSECTICIDE APPLICATOR

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1

3,046,942 AUTOMATIC LIVESTOCK INSECTICIDE APPLICATOR

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6 Claims. (Cl. 119-157)

The invention relates generally to an automatic insecticide applicator for dispensing liquid or powder insecticides on animals.

Prior devices for the purpose of dispensing liquid insecticides have only provided costly, complicated mechanisms for automatically dispensing insecticides on livestock and do not conform to the body of an animal sufficiently to obtain a large rubbing area. Thus, they do not meet one of the requirements necessary to provide an effective device. Prior devices for purposes of dispensing dry powder insecticides have proven costly to develop, and consequently there are no devices available to meet the requirement.

The improved device of the present invention is small and compact, and is adaptable to dispense either liquid or dry powder insecticides, and provides a reservoir and an automatic applicator as one unit. It is ruggedly constructed and provides a safety feature preventing breakage when livestock exert a vigorous rubbing action thereagainst. All of these desirable objects are provided within the space formerly required by the old dip and soak types of livestock oilers.

One object of the invention is to provide a construction utilizing the tension of a spring to permit yielding of the applicator to the rubbing actions of various sized livestock and conforming to the external parts of said livestock.

Another object is to provide a liquid and dust impervious flexible reservoir, such as plastic or rubber, which is adapted to hold and dispense insecticides of liquid or powder through a predetermined number of bleeder holes predeterminedly spaced about the reservoir to a cloth tube or other tubular fabric which encases said reservoir; the cloth tube or tubular fabric being of such porosity as to retain and dispense liquids through capillary action and powders through a screening action.

Another object of my invention is to provide novel clamping ring and sealing plug constructions which are respectively tapered to sealingly interfit for a sliding wedge fit at the end openings of the tubular fabric and reservoir, and securely grip same, providing an annular reinforced opening through which the liquid or dust insecticides may be admitted into the reservoir and a novel means to secure one end of the applicator to a support.

A further object is to provide a mounting device of cylindrical tubes to sealingly retain and hold at least one end portion, if not both, of the tubular fabric, the cylindrical tubes being slidably disposed in parallel relation to each other on bolt members, such as eyebolts, which are inserted in holes drilled through said cylindrical tubes. The eyebolts provide a means for attaching a pin with retainer keys; the pin further providing a means for attaching a spring or elastic material in order to permit the applicator to more effectively contour to the livestock's body, thus affording a greater rubbing area.

Additional means such as a safety stop of rope is provided for connecting the applicator between two preferably vertical posts or shafts at any predetermined angle, preferably an inclined angle.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawing wherein like reference characters refer to the same or similar parts throughout the several views.

Referring to the drawing:

2

FIG. 1 is a perspective view of the improved device as positioned on the mounting posts for use.

FIG. 2 is an enlarged sectional view of the lower holding clamp on line 2-2 of FIG. 1.

FIG. 3 is an enlarged inverted sectional view as on line 3-3 of FIG. 1.

FIG. 4 is a perspective view of FIG. 3.

FIG. 5 is a view similar to FIG. 1 of a modification.

The extreme compactness and simplicity of the novel device are apparent from the fact that its parts comprise one or two clamp mounting means, a spring; absorbent cloth tube means; a flexible reservoir; and two rope mounting attachments. In FIG. 1 the holding clamp at the lower end may be cylindrical or tubular steel or other suitable material. The attachment at the upper end of the applicator may be made of steel or other suitable rigid material. The spring 24 is preferably steel cylindrically wound or conventional design of another suitable material. The cloth tubes 4 and 5 are preferably burlap or other suitable absorbent cloth or material adaptable to both liquids and a dry powder. The reservoir 6 is preferably an ordinary elongated flexible waterproof tube of plastic or other suitable material having one end 32 sealed and an open mouth 12 with hole 26 and hole 27, as shown in FIG. 4, located preferably toward the open end 12 of the tube in number as determined by the liquid or powder requirements which vary with the number of cattle using the applicator. As the livestock walk under the device the cloth tubes 4 and 5 and the flexible reservoir 6 are lifted from their annular position, as shown in FIG. 1, to a nearly horizontal position. The insecticide inside the reservoir 6 moves either by gravity, inertia or activated air when the livestock compress the device as they walk under it to rub, which compressing collapses the cloth tubes 4 and 5 and reservoir 6 and causes the insecticide to move to the top part of the device near the clamp shown in FIG. 1 to the bleeder holes 26 and 27 in FIG. 4 whereby the insecticide is permitted to issue therefrom into communication with said cloth tubes 4 and 5 for further communication and transfer to the livestock external parts. The mounting attachments 25 and 34 are preferably rope; however, other suitable materials may be used. The external conventional vertical shafts 40 and 41 in FIG. 1 and 140 and 141 in FIG. 5 may be ordinary wood posts mounted in the ground.

FIGS. 3 and 4 show the sealing plug 13 which has an outer annular surface tapered convergently on the order of 1° to 12°. Obviously the diameter of the plug 13 can be varied according to the size of the clamping tubes 4 and 5 and reservoir 6 which surround it, and the mounting sealing plug is preferably sized to fit standard plastic tubing. The mounting sealing plug 13 is held in place by the rope 34 through the mounting eye 15 while the spring 24 exerts pressure in the opposite direction. A filler hole 16 is made in the mounting sealing plug 13 and is provided with a sealing stopper 35 to allow easy access for filling the flexible reservoir 6 without disassembling through the annular reinforced filler hole 16. The clamping ring 14 interior surface 33 is tapered to match the outer periphery surface 36 of mounting sealing plug 13 to make a sliding wedge therewith. By forcing the mounting sealing plug 13 inwardly on the converging taper of clamping ring 14, which taper converges with respect to the mouth of the snug cloth tube 4 and cloth tube 5 and reservoir 6 between the two tapered surfaces, a tight seal is effected between clamping ring 14 and mounting sealing plug 13 with an available annular reinforced filler hole 16.

As shown in FIG. 1, the lower holding clamp constitutes tubes 17 and 18 which are mounted in their parallel positions through use of the eyebolts 19 and 21 through diametrically opposite holes with annular openings 37

3

in each cylindrical tube. Obviously, the diameter and length of tubes 17 and 18 can be varied according to the size of tubes 4 and 5 and reservoir 6 used. The cloth tubes 3 and 4, as shown in FIG. 2, are threaded under tube 17 and tube 18 and around and under tube 17 then under tube 18. It can be seen that if eyebolt 19 and eyebolt 21 and respective nuts 10 and 22 are tightened a clamping effect is obtained. It can further be seen that if the nuts 20 and 22 were not tightened down, the cloth tube when pulled at point C would draw tube 17 up against tube 18 thus causing a clamping action.

In FIG. 1, spring 24 is connected to the lower clamp through use of the pin 23 through the eyes of eyebolt 19 and eyebolt 21. The spring 24 is then secured permanently to mounting rope 25 at point A. Sufficient slack or excess amounts of mounting rope 25 are then left between point A and point B where the opposite end of mounting rope 25 is mounted or secured to pin 23 and this allows the spring to flex or stretch to a predetermined length of the rope but not overstretch and break the spring 24. Here the mounting rope 25 takes the shock when the spring 24 has reached its limits, this action permitting additional pressure to be exerted on the whole unit by the livestock and therefore providing a safety means to prevent breakage whereas if no spring 24 were provided the whole unit would take the initial shock and break. The spring 24 also resists back rubbing pressure which permits the device to conform to the shape of the livestock's external part being rubbed and give more rubbing area.

In FIG. 2 holes 30 and 31 are placed in pin 23 outside the eyebolt 19 and eyebolt 21 for use with conventional cotter keys or retaining pins to prevent slippage or loss of pin 23 from eyebolts 19 and 21.

In the modified form of the device shown in FIG. 5 the upper mounting clamp is the same as the lower mounting clamp shown in FIG. 1 with the exception that pin 23 is removed and rope 134 is mounted directly to the eyes of eyebolts 152 and 153. Tubes 150 and 151 are the same as tubes 117 and 118 of FIG. 5 and tubes 17 and 18 of FIG. 1 and FIG. 2. In FIG. 5, eyebolts 152 and 153 are the same as eyebolts 19 and 21 and FIG. 1 and FIG. 2. Tubes 104 and 105 in FIG. 5 and reservoir 106 are the same as tubes 4 and 5 and reservoir 6 of FIG. 1. Nuts 154 and 155 are the same as nuts 120 and 122 and nuts 20 and 22 of FIG. 2. Modified U-bolt 129 replaces eyebolts 19 and 21 indicated in FIGS. 1 and 2 with conventional type washers 138 and 139 to act as a stop for cylindrical tube 117.

What is claimed is:

1. In an automatic livestock insecticide applicator, the combination comprising:

support means;

an absorbent tubular fabric secured at an inclined angle between said support means and having an opening at the upper end of said inclined angle, said fabric being sufficiently porous and therefore adapted to retain and dispense insecticide when rubbed thereagainst by livestock;

a flexible reservoir encased within and extending substantially the length of said absorbent tubular fabric and having a fill opening at said opening of said tubular fabric;

said flexible reservoir having at least one bleeder hole spaced a predetermined distance from said fill opening and from a predetermined normally maintained level of insecticide so as to permit issuance of said insecticide from said reservoir into communication with said absorbent tubular fabric when said applicator is engaged by the vigorous rubbing action of said livestock.

2. In an automatic livestock insecticide applicator, the combination comprising:

support means;

an absorbent tubular fabric secured at an inclined angle between said support means and having openings at

4

the upper and lower ends of said inclined angle, said fabric being sufficiently porous and therefore adapted to retain and dispense insecticide when rubbed thereagainst by livestock;

a flexible reservoir encased within and extending substantially the length of said absorbent tubular fabric and having a fill opening at the opening at the upper end of said tubular fabric;

said flexible reservoir having at least one bleeder hole spaced a predetermined distance from said fill opening and from a predetermined normally maintained level of insecticide so as to permit issuance of said insecticide from said reservoir into communication with said absorbent tubular fabric when said applicator is engaged by the vigorous rubbing action of said livestock;

a clamp mounting means attached to the lower end of the tubular fabric and adapted to secure same to one of said support means;

said clamp mounting means constituting two cylindrical tubes extending transversely to the tubular fabric and slidably disposed in parallel relation to each other upon bolt member means and adapted to permit the lower end of said tubular fabric to be looped around both of said cylindrical tubes, then between said cylindrical tubes and said bolt members and ending between a looped portion of said fabric and one of said cylindrical tubes for clamping and sealing engagement of the tubular fabric and its lower opening.

3. In an article of manufacture, an automatic livestock insecticide applicator comprising:

a cloth tube means adapted to retain an insecticide and dispense same upon rubbing contact by livestock and having one end opening;

a flexible reservoir introduced in said cloth tube means through said end opening and having one open end through which it may be filled with said insecticide;

said flexible reservoir having a predetermined number of bleeder holes spaced from said open end and from a predetermined normally maintained level of insecticide and adapted to permit the issuance of said insecticide to said cloth tube means when pressure is exerted thereagainst by the rubbing action of said livestock;

and clamp mounting means attached to each end of said cloth tube means and adapted to secure each end, including the sealing of said open end of said flexible reservoir, between supports at any predetermined inclined angle with said open end of said reservoir uppermost.

4. In an article of manufacture, an automatic livestock insecticide applicator, comprising:

an absorbent tubular means adapted to retain and dispense insecticide upon rubbing contact by livestock and having one end adapted to be opened;

a flexible reservoir introduced in and extending the length of said absorbent tubular means and having an access opening at said opened end of said tubular means for receiving insecticide therethrough;

said flexible reservoir having at least one bleeder hole spaced from said access opening and from a predetermined normally maintained level of insecticide so as to permit issuance of said insecticide from said reservoir into communication with said absorbent tubular means when said applicator is engaged by the vigorous rubbing action of livestock;

and mounting means attached to each end of said applicator adapted to secure and support the latter between supports at any predetermined inclined angle with the access opening uppermost.

5. In an article of manufacture, an automatic livestock insecticide application, comprising:

an absorbent tubular means adapted to retain and dis-

5

- pense insecticide upon rubbing contact by livestock and having an open end;
- a clamping ring attached to said open end of said tubular means and having a tapered circumferential interior surface;
- a flexible reservoir encased in and extending substantially the length of said tubular means and passing outwardly through an opening;
- said flexible reservoir having at least one bleeder hole spaced from said opening and adapted to permit the issuance therefrom of said insecticide to said absorbent tubular means;
- and a sealing plug for insertion within said opening of said reservoir and having a tapered outer peripheral surface conforming to said tapered circumferential interior surface of said clamping ring and adapted for a sliding wedge fit with respect thereto, said sealing plug being provided with means through which the reservoir is adapted to be filled.
6. In an automatic livestock insecticide applicator resiliently secured to supports at an inclined angle, the improvements comprising:
- an absorbent tubular fabric attached to and extending between said supports and having an end near the top of said inclined angle adapted to be opened;
- a clamping ring attached to said opened end of said tubular fabric and having a tapered circumferential interior surface;

6

- a flexible reservoir encased within and extending substantially the length of said tubular fabric and passing through an opening;
- a sealing plug for insertion within said opening of said flexible reservoir and having a tapered outer peripheral surface conforming to said tapered circumferential interior surface of said clamping ring and adapted for a sliding wedge fit with respect thereto, said sealing plug having a filler hole through which the reservoir is adapted to be filled with said insecticide, and mounting means for attachment to one of said supports;
- said flexible reservoir having at least one bleeder hole spaced a predetermined distance from said opening and from a predetermined normally maintained level of insecticide so as to permit issuance of said insecticide from said reservoir into communication with said absorbent tubular fabric when said applicator is engaged by the vigorous rubbing action of said livestock.

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