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BALLING GUN

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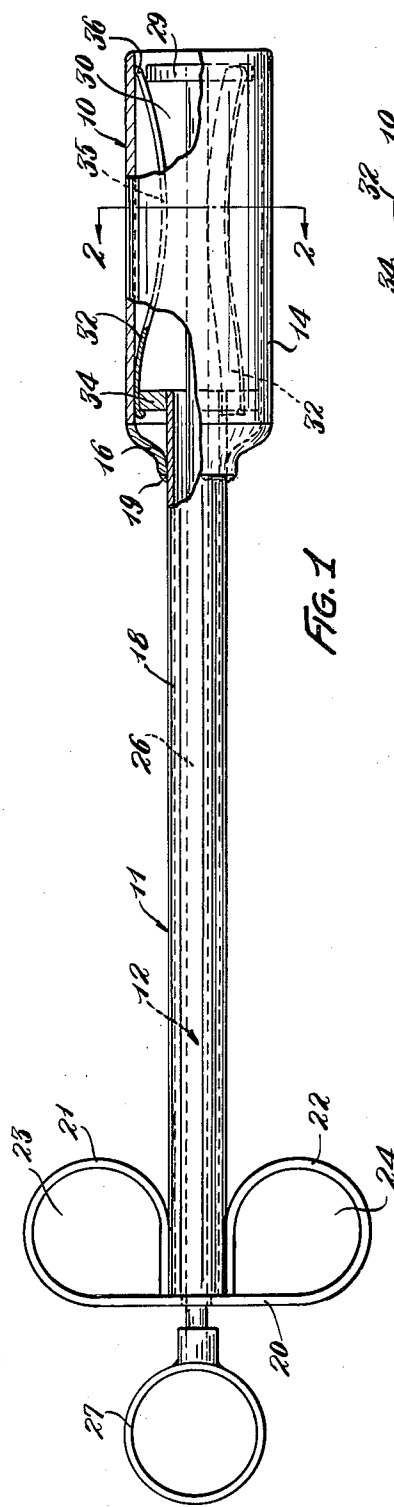


FIG. 1

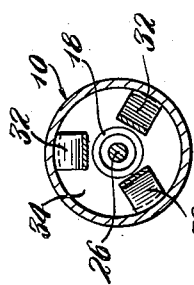


FIG. 2

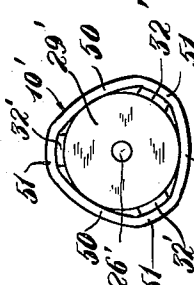


FIG. 4

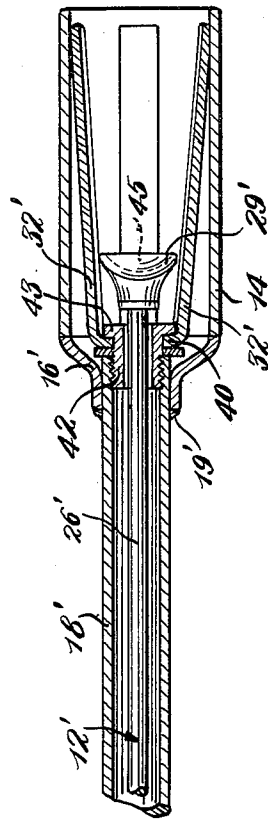


FIG. 3

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BALLING GUN

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3 Claims. (Cl. 128—217)

1

This invention pertains to the art of veterinarian tools and, more particularly, to a balling gun.

Balling guns are extensively used by veterinarians, farmers and other raisers of livestock and domestic animals for administering to such animals medicinal cartridges of one form or another containing vitamins or other curative medicines. Such tools generally comprises an open-ended cylinder adapted to receive the cartridges in the interior thereof, a long handle whereby the cylinder may be positioned into the throat of the animal and means for ejecting the cartridge from the cylinder into the animal's throat. Heretofore, the cartridges, if of a size appreciably smaller than the interior diameter of the open coil, often slipped out and fell to the ground or into the mouth of the animal during the process of forcing the animal's mouth open and inserting the cylinder thereinto. If the cartridges were made larger, then it became difficult to insert them into the cylinder; or if once inserted thereinto, it was quite likely they would become jammed whereby it was difficult to eject them into the throat of the animal. Additionally, once a person had acquired a balling gun, it was generally necessary that he continue to use only one make or brand of cartridge inasmuch as the diameter of the cartridges might vary from one manufacturer to the other. Thus, it oftentimes became necessary that the user own a number of balling guns having different sized cartridge-receiving chambers.

In view of the above, it is an object of the present invention to provide a new and improved balling gun which is simple in construction and economical to manufacture and which has means for receiveably maintaining the cartridge, whereby the cartridge may be easily inserted, firmly retained and yet easily ejected without jamming or the like.

Another object of the invention is the provision of a new and improved balling gun which is adapted to receive a maximum number of sizes of cartridges with the same ease and sureness of operation.

Still another object of the invention is the provision of a balling gun having a cartridge-receiving chamber, which chamber is provided with a plurality of inwardly-biased resilient members adapted to lightly but firmly and frictionally engage a cartridge inserted thereinto. Another object is to have the resilient members so disposed as to readily guide a cartridge into the chamber from the ejection end.

The invention resides in certain constructions and arrangements of parts, preferred embodi-

2

ments of which are described hereinafter in this specification and illustrated in the accompanying drawing which is a part hereof and wherein:

Figure 1 is a side elevational view, with portions broken away for clarity, of a balling gun embodying the present invention.

Figure 2 is a cross-sectional view of the balling gun shown in Figure 1 taken approximately on the line 2—2 thereof.

Figure 3 is a cross-sectional view of the cartridge-receiving chamber showing a modified construction from that of Figure 1, and

Figure 4 is an end view of a cartridge-receiving chamber showing a further modified form of construction.

Referring now to the drawings, Figure 1 shows a balling gun constructed in accordance with the principles of and embodying the present invention. The balling gun shown comprises a cartridge-receiving portion 10, an elongated handle 11 and a manually-operated discharge lever 12. The cartridge-receiving portion 10 comprises generally a cylindrical-shaped member 14 of metal open at the right-hand end, as viewed in the figures, and having a diameter and depth approximately large enough to receive the largest sized cartridge or capsule which, it is anticipated, the tool will be called upon to administer. The other or left-hand end of the cylinder 14 is closed by a generally conical-shaped, closure member 16 which forms a continuation of the left-hand end of the cylinder member 14 and serves to reduce the diameter to a size corresponding to that of an elongated hollow tube 18 which extends through an opening in the closure member 16 into the interior of the left end of the cylinder member 14. The tube 18 may be soldered or welded as at 19 to the closure member 16.

The handle 11 may be of any desired length necessary to allow the cartridge-receiving portion 10 to be positioned into the throat of the animal while, at the same time, allowing the hands of the operator to be clear of the animal's teeth. As shown, the tube 18 forms an axial extension of the cylinder member 14. It may, of course, be positioned radially elsewhere. The end of the tube 18, opposite from the cylinder member 14, has a finger member 20 fixed thereto, which finger member has a pair of reversely bent loops 21, 22 forming respectively finger-receiving openings 23, 24.

The discharge lever comprises an elongated push rod 26 disposed interiorly of and reciprocally in the tube 18. As shown, the left end of the push rod 26 extends beyond the tube 18 and has a ring-like member 27 fixed thereon, which ring-like

3

member is adapted to receive the thumb of the operator. The other or right-hand end of the push rod 26 extends beyond the right-hand end of the tube 18 and into the interior of the cylinder member 14. A flat circular plate 29 of a diameter somewhat less than the interior diameter of the cylinder member 14 is fixed to the right-hand end of the push rod 26. The length of the push rod 26 is preferably such that when moved the full distance to the right, the right-hand surface of the plate 29 will be substantially flush with the right-hand end of the cylinder member 14.

It will be appreciated from the foregoing description that the push rod 26 may be moved to the left or retracted so as to provide a relatively large opening 30 on the interior of the cylinder member 14 into which a cartridge or capsule, not shown, may be readily positioned and that by movement of the push rod 26 to the right, such cartridge or capsule can be readily ejected from the chamber 30.

The present invention contemplates means for frictionally engaging the sides of the cartridge or capsule whereby to prevent such cartridge or capsule from accidentally falling out of the chamber 30, as well as to provide for receiving a maximum variation in the sizes of the capsule or cartridge which may be accommodated within the chamber 30. In the embodiment of the invention shown in Figure 1, a plurality, in this case three, of cartridge-engaging members 32 are provided, each of which members comprises an elongated strip of thin resilient material circumferentially spaced around the inner wall of the cylinder member 14. The left-hand ends of the members 32 are suitably fixed in position by a ring-like member 34 disposed over the right-hand end of the tube 18 and with its outer edge bearing against the inner surfaces of the members 32 and pressing them against the inner surface of the cylinder member 14. The spring members 32 extend generally axially of the cylinder member 14 substantially to its right-hand end and are bowed radially inwardly intermediate the ends as at 35. The right-hand end 36 of each of the spring members is resiliently held in engagement with the interior surface of the cylinder member 14 by the bias of the spring member, but is otherwise free to move or slide axially whereby, if a cartridge or capsule is inserted in the chamber 30, the bowed-in portions 35 may freely flex outwardly to receive the capsule. It will be noted that the divergent spring members 32, adjacent the open end of the chamber 30, provide a guiding action for directing a cartridge into the chamber. The device is, thus, always ready to receive a new cartridge with a maximum of ease and speed.

In the embodiment of the invention shown in Figure 3, a different means of mounting the resilient members 32 of Figure 1 have been provided. In this embodiment, like parts are designated by the same number with a prime (') added. Thus, the resilient members 32' extend generally axially of and for substantially the full length of the cylinder member 14. Instead of being bowed, the members 32' taper slightly inwardly and their left-hand ends are each provided with a short, laterally extending portion 40. The right-hand end of the tube 18' is interiorly threaded for a short distance and an externally threaded sleeve 42 having a flange 43 on its right-hand end is threaded into the tube 18'. The portions 40 on the members 32', are clamped firmly between the flange 43 and the

4

end of the tube 18' by screwing the sleeve 42 in tight. Solder may be used at this point, if desired. Also in this embodiment of the invention, the plate 29' is somewhat reduced in diameter and has a concave recess 45 in its right-hand surface forming a cup into which an end of a capsule may be received.

In the embodiment of the invention shown in Figure 4, the cartridge-receiving portion 10' comprises a generally cylinder-like member having somewhat of a deformed, cross-sectional contour comprising three arcuate segments 50 of equal length joined at their ends by shorter arcuate segments 51 of a lesser radius of curvature as is clearly shown in the drawing. The arcuate sections 50 are spaced so as to just clear the maximum size cartridge desired to be handled and the segments 51 provide a clearance for the springs 32' as is clearly shown in the drawings. A maximum sized cartridge may be accommodated with a minimum sized cartridge-holding portion to be disposed into the throat of the animal.

Thus it will be seen that embodiments of the invention have been described which accomplish the objects of the invention heretofore enumerated and others; and that a balling gun has been provided which will accommodate the maximum number of sizes of cartridges or capsules and which will firmly prevent such capsules from accidentally dropping out of the tube while, at the same time, readily ejecting same at any time.

Having thus described the invention, the following is claimed:

1. A balling gun, an elongated hollow member open at one end to form a cartridge-receiving chamber and a handle comprising a hollow tube axially aligned with said chamber and extending thereto, a plurality of thin, spring-like elements positioned interiorly of said member and adapted to frictionally engage a cartridge when positioned in said member, and means on the end of said handle extending into said member for retaining said elements in position.

2. The combination of claim 1 wherein the end of said handle is threaded and the elements are held in clamping engagement therewith by a complementary threaded member.

3. The combination of claim 1 wherein the end of the handle extending into the chamber has a radial flange thereon positioning one end of the elements in engagement with the interior of said elongated hollow member.

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