April 21, 1925. 1,534,913

E. C. BUCK ET AL

SERUM EXTRACTOR

Filed Nov. 10, 1923

Fig. 4.

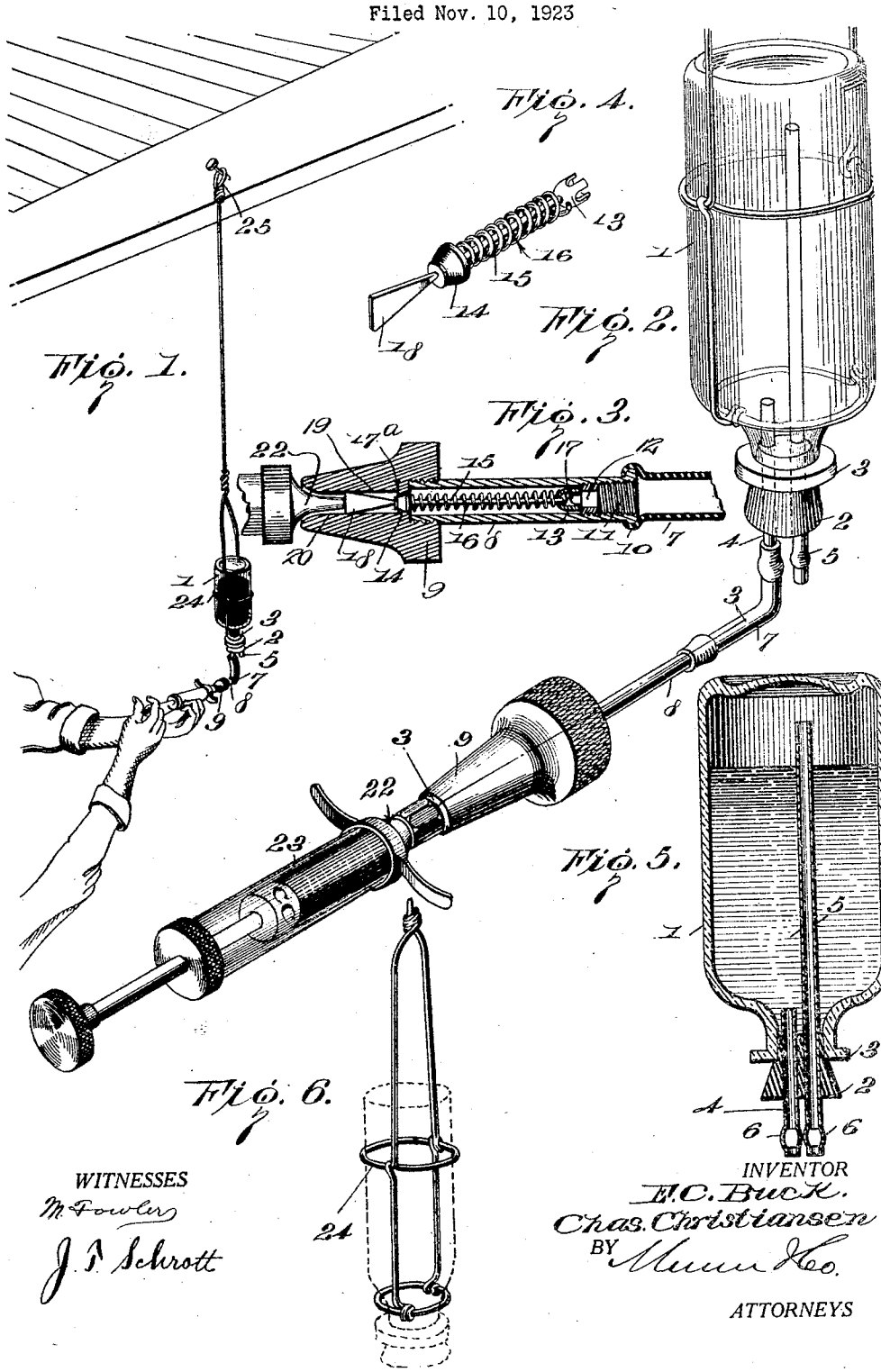



Fig. 2.

Fig. 1.

Fig. 3.

Fig. 5.

Fig. 6.

WITNESSES

M. Fowler

J. F. Schrott

INVENTOR

E. C. Buck.

Chas. Christiansen

BY Munn & Co.

ATTORNEYS

Patented Apr. 21, 1925. 1,534,913

# UNITED STATES PATENT OFFICE.

EUGENE C. BUCK AND CHARLES CHRISTIANSEN, OF HOWARD, SOUTH DAKOTA.

## SERUM EXTRACTOR.

Application filed November 10, 1923. Serial No. 674,006.

*To all whom it may concern:*

Be it known that we, EUGENE C. BUCK and CHARLES CHRISTIANSEN, citizens of the United States, and residents of Howard, in the county of Miner and State of South Dakota, have invented certain new and useful Improvements in Serum Extractors, of which the following is a specification.

Our invention relates to improvements in dispensing bottles for surgical purposes, and it consists of the constructions, arrangements and combinations herein described and claimed.

An object of the invention is to provide an attachment for bottles adapted primarily to contain serum for vaccinating hogs, the bottle being of such construction and arrangement that the serum may be extracted without the slightest possibility of dirt or other foreign matter entering the bottle to contaminate the fluid.

A further object of the invention is to provide a serum dispensing extractor which is adapted primarily to be used under conditions where there is ordinarily considerable dust, dirt, filth and odor but so constructed that the extraction of the fluid will not occasion the slightest possibility of setting up a septic condition within the bottle.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing in which,

Figure 1 is a perspective view illustrating the preferred mode of use of the dispensing extractor.

Figure 2 is a detail perspective view illustrating the main part of Figure 1 on a larger scale.

Figure 3 is a longitudinal section taken substantially on the line 3—3 of Figure 2, and illustrating the elements of the dispensing nozzle.

Figure 4 is a detail perspective view of the fluid valve.

Figure 5 is a detail section of the dispensing bottle in the position shown in Figure 1.

Figure 6 is a detail perspective view of the wire hanger by which the bottle is supported in an inverted position.

In carrying out our invention provision is made for the use of the bottle containing serum as shipped from the serum factory. These bottles are usually made of glass. They contain a suitably prepared serum to be used in the vaccination of hogs to render them immune from attacks of cholera. The fact that the specific purpose of the dispensing extractor is described in such detail is not to be taken as a limitation of the use thereof. Obviously the apparatus may be used for other purposes to which it may be adaptable, but the important purpose thereof, as herein disclosed, is that of an antiseptic vaccine dispenser.

A rubber stopper 2 is forced into the mouth 3 sufficiently tight to prevent seepage of the serum from the bottle when the same is inverted as in Figures 1 and 2. The stopper 2 carries a pair of tubes 4 and 5. The tube 4 is extremely short and the tube 5 is extremely long. The one terminates adjacent to the neck of the bottle, the other reaches to a place near the bottom. The serum is adapted to flow out of the short tube 4. Air enters the long tube 5 to replace the serum drawn out at the tube 4.

Each of the two tubes has an enlargement or bulge 6. Either is adapted to hold the rubber tubing 7 when applied. The rubber tubing is applied to the short tube 4 when the bottle 1 is used in the inverted position. The bottle may be used in an upright position, and in this event the tubing 7 is placed on the tube 5. When used in this manner the serum is drawn out of the tube 5, and air enters the bottle through the tube 4 to replace the serum drawn out.

The rubber tubing 7 carries a dispensing nozzle which is really a back check valve that prevents the flow of serum until wanted. The nozzle is composed of a sleeve 8 which screws into a head 9 at one end, and on the other end has a bead 10 from which the tubing 7 will not readily slip when applied. This same end of the sleeve is internally threaded at 11 to receive a collar 12 against which the cap 13 of the valve 14 rests. The valve 14 has an integral stem 15 that passes through the cap 13 and has an enlarged end 17 so that the cap will not slip off.

The reader will recognize in the valve 14 some similarity to the ordinary tire valve. A spring 16 on the stem 15 presses between the valve 14 and cap 13 so as to keep the valve in engagement with the seat $17^a$ in the head 9. There is a portion of the stem 15 that extends to the front of the valve 14. This portion is hammered out or otherwise flattened to provide a narrow blade 18. This

blade works in the bore 19 of the head 9, and being substantially the same in width as the bore is in diameter the blade furnishes a guide for the valve 14 when the latter is unseated. The entrance of the bore 19 is flared at 20.

Unseating of the valve 14 occurs when it is desired to withdraw some of the serum from bottle 1. This is done by inserting the end 22 of the syringe 23 into the bore 19 of the head 9. The end of the portion 22 engages the back edge of the blade 18 and unseats the valve 14. The bottle 1 is conveniently held by a wire holder 24 (Fig. 6) which is made to embrace both the body and neck of the bottle. The wire holder is sufficiently large to permit inserting the bottle into the loop that extends up from the two rings around the bottle. The wire continues on up (Fig. 1) where it is furnished with a loop end 25 which may be hung on a nail or other support.

The operation may be readily understood from the foregoing description. The dispensing apparatus may be used with the bottle 1 either in an upright or an inverted position. When used as shown in the drawing the rubber tubing 7 is fitted on the exposed end of the tube 4. The serum is then adapted to flow out of the tube 4, while air enters the bottle through the tube 5 to replace the serum that is drawn out.

Should the occasion so demand, the dispensing bottle may be used in the ordinary upright position. In this event the tubing 7 is fitted on the tube 5 so that the serum is drawn out of the tube 5 and the tube 4 functions to admit air to the bottle. The use of the bottle in the inverted position is preferable in that gravity assists in discharging the serum.

Upon desiring to extract some of the serum, the needle is first removed from the syringe and the end 22 is inserted in the head 9 as shown in Figure 3. The valve 14 is unseated by pressing in on the blade 18, and by the time that the valve is fully unseated the portion 22 of the syringe will make a tight joint with the rounded portion 20 of the head 9 so that none of the serum may leak out. The valve 14 will now be open and serum will flow through the sleeve 8 into the bore 19. As soon as the operator knows the valve to be unseated he pulls out on the plunger of the hypodermic syringe, the resulting suction drawing the serum into the barrel of the syringe. Upon withdrawing of the syringe the valve 14 closes instantly. In practice it will be necessary to hold the head 9 so that contact between the syringe 23 and flared end 20 of the bore may be made for the purpose stated.,

This manner of extracting the serum contributes much to the cleanliness of the operation of vaccinating hogs. This operation is usually done amid unclean surroundings, and if the operation is to be performed antiseptically great care must be taken that no impurities get into the bottle from which the serum is extracted. This problem is successfully met by the apparatus herein disclosed. When one bottle of serum has been emptied it is an easy matter to insert the stopper 2 into another bottle, place the latter in the wire holder 24 or the upright position and proceed with the extraction of the serum as before.

Filling the syringe directly from the bottle by the particular method shown prevents air from getting into the hypodermic syringe. It is very important that air be excluded from the syringe as it is quite impossible to make the proper injection or give the right amount of serum when air is present. Furthermore the presence of air is likely to cause leakage of serum from the place of injection thereby merely aggravating an already troublesome circumstance. With the use of this serum dispensing or extracting apparatus the work of the veterinary is greatly facilitated, all for the reasons already stressed.

While the construction and arrangement of the improved serum dispensing apparatus is that of a generally preferred form, obviously modifications and changes may be made without departing from the spirit of the invention or the scope of the claims.

We claim:

1. A fluid dispensing nozzle comprising a head having a bore formed into a valve seat and being flared, a sleeve carried by the head in continuation of the bore, a stem situated in the sleeve having a valve at one end and a cap loose upon the other end, the valve end of the stem extending into said bore to cause unseating of the valve upon introduction into and contact with said flared end of an instrument to be filled, a collar adjustably fitted into the end of the sleeve, and a spring on the stem pressing the cap against the collar and the valve against the seat.

2. A fluid dispensing nozzle comprising a head having a bore merging into a valve seat and terminating at a threaded opening at one end and being flared at the other end, a sleeve screwed into the threaded opening and terminating in a bead for holding a flexible tube to which the nozzle may be applied the bead end being internally threaded, a tubular collar adjustably fitted in said threaded end, a stem in the sleeve having a loose cap and a valve at opposite ends, a spring on the stem pressing the cap against the collar and the valve against the seat, and a flattened portion of the stem fitted in the nozzle bore for guidance of the valve.

EUGENE C. BUCK.
CHARLES CHRISTIANSEN.