

W. B. WESCOTT.
 TROCAR.
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1,333,745.

Patented Mar. 16, 1920.

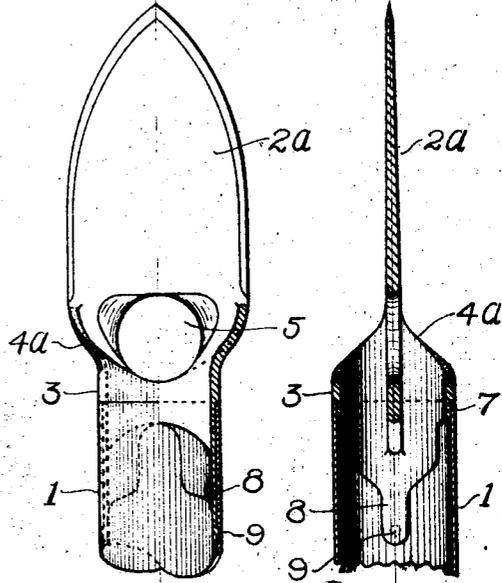
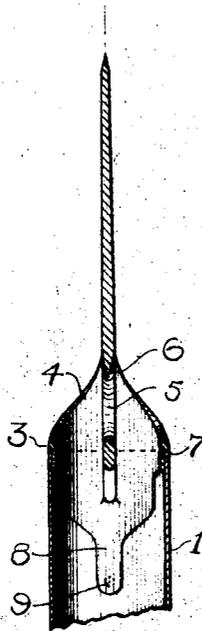
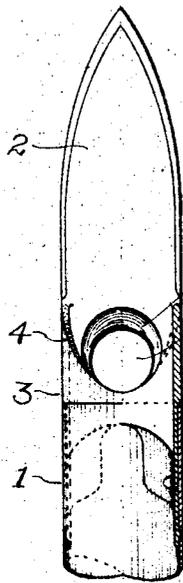
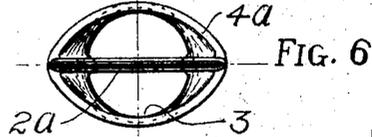
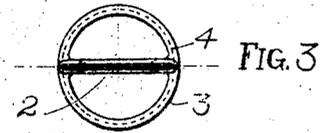


FIG. 1

FIG. 2

FIG. 4

FIG. 5

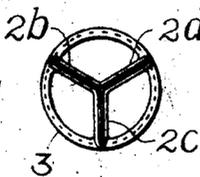
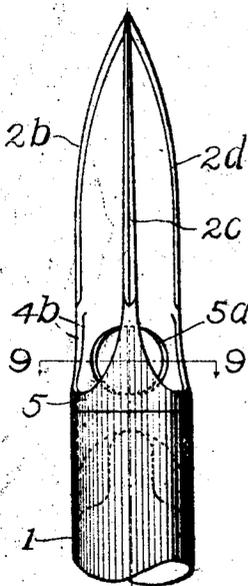


FIG. 8

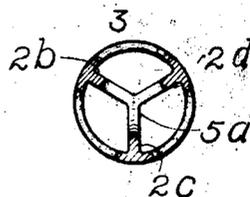


FIG. 9

FIG. 7

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TROCAR.

1,333,745.

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To all whom it may concern:

Be it known that I, WILLIAM BURTON WESCOTT, a citizen of the United States, and resident of Wellesley, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Trocars, of which the following is a specification.

This invention relates to a trocar for collecting blood from animals at the time of slaughter and consists in certain modifications of and improvements upon instruments of the character shown in my applications for Letters Patent of the United States, Serial Nos. 288,641, filed April 8, 1919, and 304,317, filed June 14, 1919, particularly in respect to the perforator or blade at the forward end of the cannula.

In the accompanying drawings which illustrate certain embodiments of the invention,—

Figure 1 is a side elevation, partly in section, of the forward end of the trocar;

Fig. 2 is a longitudinal central section taken at right angles to the plane of Fig. 1;

Fig. 3 is a top plan or end view;

Fig. 4 is a side elevation, partly in section, of the forward end of a modification;

Fig. 5 is a longitudinal central section taken at right angles to the plane of Fig. 4;

Fig. 6 is a top plan or end view of said modification;

Fig. 7 is a side elevation of another modification of the invention;

Fig. 8 is a top plan or end view of the modification shown in Fig. 7; and

Fig. 9 is a section line 9—9 of Fig. 7.

Referring first to the form shown in Figs. 1, 2 and 3, the tube or cannula is indicated at 1. This may be of any suitable and convenient length and may be provided with means for retaining the instrument in the wound such as shown in either of my aforesaid applications.

2 is an elongate perforator blade having a sharp tapered point and two sharp cutting edges. The blade 2 is carried by an annular member or collar 3, with which it may be made integral, or to which it may be otherwise fixed.

The annular member 3 is removably secured to the forward end of the cannula 1, and has forwardly tapering walls 4, the edges of which converge toward and grad-

ually merge into the sides of the blade 2 at each side of the aperture 5, formed through the base of the blade 2. The walls 4 serve to spread open the cut made by the blade and facilitate the entrance of the cannula into the cut, also to hold the walls of the cut from closing over the entrance into the cannula and preventing the free flow of blood therethrough, and also to brace and strengthen the blade where it is most weakened in the region of the aperture 5. The walls 4 form in effect continuations of the walls of the cannula.

It often happens when the instrument is inserted in the wound of the animal from which the blood is to be drawn that the blood pressure is wholly or mainly at one side of the blade in which case the effective opening into the cannula would be limited to the area of the cannula entrance at the pressure side of the blade if it were not for the aperture 5. The aperture 5, however, permits the flow of the blood from the pressure side of the blade through the aperture to the cannula entrance at the opposite side. Thus by making the aperture 5 of such size that combined with the area of the cannula entrance at either side of the blade its area is substantially as great as or greater than the total area of the cannula entrance, the effective opening into the cannula is substantially equal to the cross sectional area of the cannula notwithstanding the flow of blood is wholly or mainly at one side of the blade. When the blade is disposed diametrically of the cannula, as in the forms shown in Figs. 1 to 6 the area of the aperture 5 should be substantially equal to half the area of the cannula entrance.

The upper or outer edge of aperture 5 is preferably beveled or sharpened as indicated at 6 to prevent the same from catching in the walls of the cut when the instrument is withdrawn.

The annular member 3 has a shoulder fitting over the end of the cannula to form therewith a smooth continuous surface; and the annular member 3 is secured to the end of the cannula 1 by a pair of resilient fingers 8, which are made integral with 3 and extend into the bore of the cannula, and have projections 9 which snap into corresponding sockets in the walls of the can-

nula, thus rigidly but removably holding the blade in position so that it can be taken off for cleaning or sharpening the blade.

In the modification shown in Figs. 4, 5 and 6, the blade 2^a is substantially wider than the diameter of the cannula, and makes a longer cut or incision, which when spread open, is approximately equal to the circumference of the cannula. With this form of instrument the perforator may be inserted into the animal through the hide without previously cutting a slit preparatory to inserting the trocar. The hide is so tough and inelastic that the instrument shown in Figs. 1 to 3 could be inserted through the hide only with the greatest difficulty without first opening a slit large enough to receive the cannula. The blade shown in Fig. 4 however will form its own slit. In this form the tapering walls 4^a, which spread the wound and reinforce the blade, flare laterally to conform to the shape and width of the blade. In other respects the parts are substantially similar to those of the form first described.

In the modification shown in Figs. 7, 8 and 9 the perforator blade is formed of three parts 2^b, 2^c and 2^d arranged angularly and radially with respect to the axis of the cannula, thus making a cut or incision of three diverging lines, capable of being spread open to form a wound approximately equal to the circumference of the cannula. This form of instrument, like that shown in Figs. 4, 5 and 6, may be used to make its own incision through the hide without previously slitting the hide to admit the cannula. The edges of the blades in this form need not extend beyond the periphery of the cannula. The aperture 5^a is made through all three parts of the blade for the purpose already explained in connection with the aperture 5, and the tapering walls 4^b, corresponding to the tapering walls 4, are provided for each of the three parts. In other respects the construction of this form is substantially the same as already described with reference to the other forms.

I claim:

1. A trocar comprising a cannula, and a perforator blade secured to the forward end of the cannula, said blade having an aperture through its base adapted to permit the flow of blood from one side of the blade through the aperture to the opposite side of the cannula entrance.

2. A trocar comprising a cannula, and a perforator blade secured to the forward end of the cannula, said blade having an aperture through its base adapted to permit the flow of blood from either side of the blade through the aperture to the opposite side of the cannula entrance.

3. A trocar comprising a cannula, and a perforator blade secured to the forward end of the cannula, said blade having an aperture through its base substantially equal in area to half the area of the cannula entrance adapted to permit the flow of blood from either side of the blade through the aperture to the opposite side of the cannula entrance.

4. A trocar comprising a cannula, and a perforator blade secured to the forward end of the cannula, said blade having an aperture through its base adapted to permit the flow of blood from either side of the blade through the aperture to the opposite side of the cannula entrance, the area of said aperture combined with the area of the cannula entrance at one side of the blade being substantially as great as the total area of the cannula entrance.

5. A trocar comprising a cannula, a perforator blade having an aperture at its base, and an annular member carrying the perforator, said annular member having forwardly tapering walls merging into the blade at the sides of the aperture.

6. A trocar comprising a cannula, a perforator blade having an aperture at its base, an annular member carrying the perforator, and means to secure the annular member to the end of the cannula, said annular member having forwardly tapering walls merging into the blade at the sides of the aperture.

7. A trocar comprising a cannula, a perforator blade having an aperture at its base secured to the end of the cannula, and forwardly tapering walls at the end of the cannula merging into the blade at the sides of the aperture.

8. A trocar comprising a cannula, a perforator blade secured to the end of the cannula, and forwardly tapering walls at the end of the cannula merging into the sides of the blade.

9. A trocar comprising a cannula, and a perforator blade secured to the forward end of the cannula, the cannula entrance being open at each side of the blade, and the perforator blade being adapted to make an incision approximately equal, when spread open, to the circumference of the cannula.

10. A trocar comprising a cannula, and a perforator blade secured to the forward end of the cannula, said blade being wider than the diameter of the cannula to form an incision approximately equal, when spread open, to the circumference of the cannula, and the cannula entrance being open at each side of the blade.

Signed by me at Boston, Mass., this 29th day of July 1919.

WILLIAM BURTON WESCOTT.