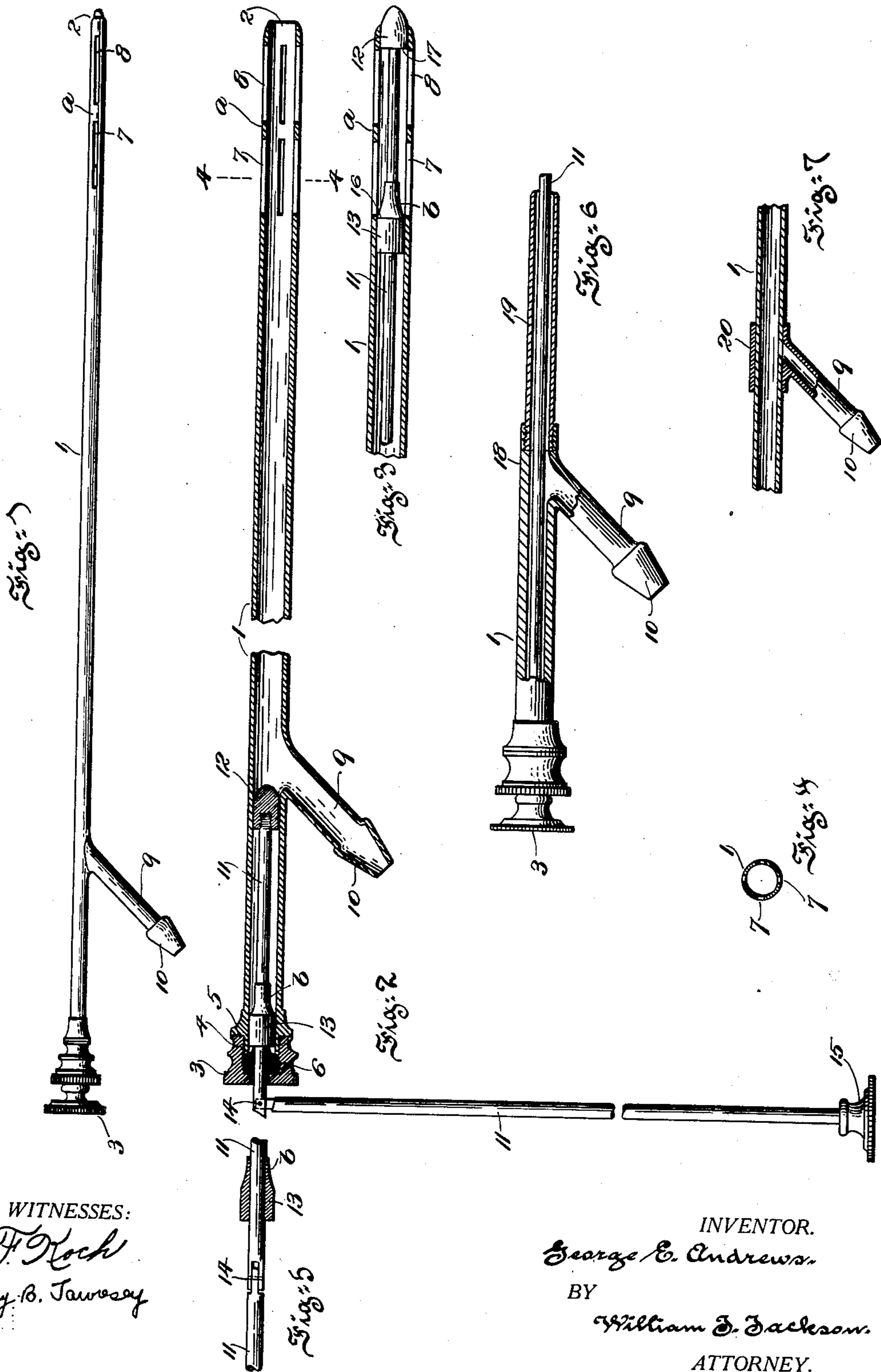


G. E. ANDREWS.
DRAINAGE TUBE.

APPLICATION FILED JAN. 20, 1909.

954,494.

Patented Apr. 12, 1910.



WITNESSES:

S. F. Koch
Henry B. Janssen

INVENTOR.

George E. Andrews.

BY

William J. Jackson.

ATTORNEY.

UNITED STATES PATENT OFFICE.

GEORGE E. ANDREWS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE UNITED STATES CHEMICAL COMPANY, A CORPORATION OF ILLINOIS.

DRAINAGE-TUBE.

954,494.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed January 20, 1909. Serial No. 473,362.

To all whom it may concern:

Be it known that I, GEORGE E. ANDREWS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Drainage-Tubes, of which the following is a specification.

This invention relates to surgical instruments and has particular reference to that class of instruments used for embalming purposes.

The principal object of the present invention is to provide a neat, durable, efficient and comparatively inexpensive drainage tube, calculated to facilitate the cleanly removal of blood corpuscles from a body being embalmed.

A further object of the invention is to provide a drainage tube that may be readily disassembled and assembled when cleansing and sterilizing the parts.

A still further object of the invention is to provide means whereby fibrin may be prevented from clogging the drainage tube parts.

Other objects of the invention relate to general details of construction and arrangement of parts.

The nature, characteristic features and scope of the invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof and in which:—

Figure 1, is a view in elevation illustrating a drainage tube of the invention. Fig. 2, is a view drawn to an enlarged scale, principally in central section and illustrating the position of the plunger to permit of the flowing of blood through the drainage tube. Fig. 3, is a view of one end of the drainage tube. Fig. 4, is a sectional view taken upon the line 4—4 of Fig. 2. Fig. 5, is a fragmentary view illustrating a detail of construction of the plunger. Fig. 6, is a view principally in section illustrating a slightly modified form of drainage tube, and Fig. 7, is a fragmentary view illustrating a further modified form of drainage tube.

In the drawings there is illustrated a generally elongated tube 1, having a passage therethrough. The end 2, is open and the other end is closed by means of a screw threaded cap 3, that engages the screw

threaded part 4, of the tube 1, and abuts against the shoulder 5, thereof. As clearly illustrated in Fig. 2, the interior of the cap 3, is provided with a rubber or other gasket 6. Adjacent to the open end 2, of the tube 1, there are provided in the walls of said tube a series of openings shown in the drawings as being slots 7 and 8, the said slots being separated from each other as at *a*, as clearly illustrated in Fig. 2. By separating the slots, as shown, the end of the tube 1, is possessed of more rigidity than were the slots continuous. Of course the slots may be arranged at an inclination or other openings may be made. These openings serve as a filter for blood corpuscles and like matter. Depending from and arranged at an inclination to the tube 1, is a discharge outlet shown as a tube 9, the end of which is provided with a generally bulb-like projection 10, adapted for the application of flexible tubing. Adapted to be reciprocated back and forth throughout the length of the tube 1, is a plunger shown as comprising a stem 11, one end of which is screw threaded for the reception of a generally bullet shaped head 12. Adjacent to the head 12, and fixed to the stem 11, is a shoulder 13, tapered as at *b*. Both the head and shoulder have a sliding fit with the interior and between the head and shoulder there is considerable space as shown. This space serves to provide means for accommodating the fibrin particles that may be cut in the reciprocating of the plunger. At the extreme forward stroke of the plunger, the members 12 and 13, assume the position illustrated in Fig. 3, and upon the opposite or reverse stroke of the plunger, assume the position illustrated in Fig. 2. The function of these parts will be described hereinafter.

As illustrated in Fig. 2, the stem 11, is shown as being constructed in two parts and hinged as at 14. This construction facilitates the operation of embalming for the reason that when the plunger is withdrawn to its fullest extent the stem 11, may be permitted to assume the position shown in Fig. 2, so as to be out of the way of the operator.

In practice the drainage tube is used as follows:—After the subject to be embalmed has been prepared for the injection, the drainage tube 1, is inserted in the well understood manner within the vein selected for draining the body of the subject, the plun-

ger being in the position shown in Fig. 1. In this connection the bullet like cap 12, serves to permit of the ready insertion of the drainage tube within a vein and further serves to prevent tearing of the vein as the tube is pushed for almost its entire length through said vein. It may be here remarked that when the drainage tube is inserted as described, the discharge tube 9, affords convenient means for attachment for certain tying strings used in the operation. The plunger is then withdrawn to its fullest extent or until the part 13, abuts against the gasket 6, and the part 15, of the stem 11, is permitted to assume the position shown in Fig. 2. In this position the blood corpuscles or particles will pass through the slots 7 and 8, and the open end 2, of the drainage tube and flow to and through the discharge tube 9, without passing beyond the part 12, as is clearly illustrated in Fig. 2. In this connection it may be remarked, that the blood corpuscles or particles contain to a certain degree, fibrins that are apt to clog the slots 7 and 8. By reciprocating the plunger back and forth a few times the edges 16 and 17, of the members 13 and 12, serve the purpose of cutting the fibrin thus relieving the said slots from any clogging, and permitting the fibrin thus cut to fall between the parts 13 and 12, and to be withdrawn from the drainage tube by way of the discharge tube 9.

Referring now to Fig. 6, the drainage tube is shown to comprise tubes 18 and 19, having screw threaded relation with each other, the part 18, carrying the discharge pipe 9. This construction serves to provide

means whereby the parts may be readily disassembled and assembled when cleansing or sterilizing the drainage tube.

In Fig. 7, the drainage tube 1, is shown as being provided with a sleeve 20, adapted to be fitted over the said tube 1, and having depending therefrom the discharge tube 9, of the invention. This construction is generally used upon instruments of small size and the sleeve 20 serves to form a convenient means of attachment for the discharge tube 9, and at the same time serves to reinforce the tube 1.

What I claim is:—

1. A drainage tube having an inlet opening and a discharge outlet, said tube being provided adjacent the said inlet with lateral openings, a plunger within the tube comprising a stem equipped at its working end with a pair of spaced members having cutting edges, said members afforded a sliding fit with the tube interior and adapted when reciprocated back and forth to relieve the lateral openings from fibrin clogging.

2. A device of the class recited comprising an elongated tube having a passage there-through one end of said tube having an inlet opening and having adjacent its other end an outlet branch said branch being separate and detachable from and independent of that portion of the tube having the inlet opening and a plunger for said tube.

In testimony whereof I hereunto sign my name this 11th day of January 1909.

GEORGE E. ANDREWS.

Witnesses:

WILLIAM J. JACKSON,
S. F. KOCH.