

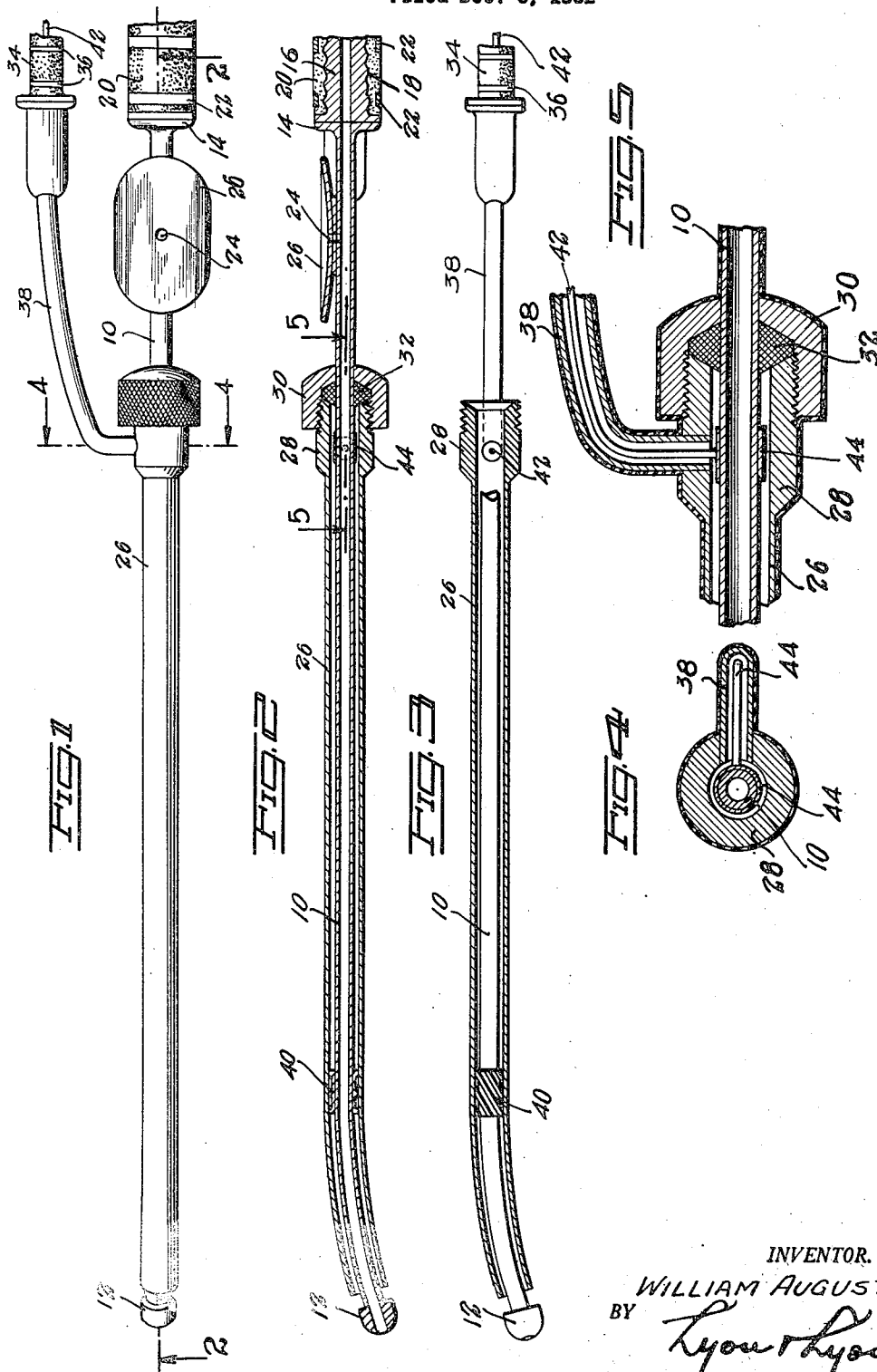
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GAS BLANKETED CLOTTING INSTRUMENT

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GAS BLANKETED CLOTTING INSTRUMENT

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4 Claims. (Cl. 128—303.17)

This invention relates to a clotting instrument.

It has been determined that blood can be coagulated by a high frequency current of given characteristics. Frequently such action takes place in an operating room wherein the air is charged with anesthetic. Since many anesthetics are explosive, there is considerable danger of an explosion from sparks caused by the current carrying instrument.

It is, therefore, an object of this invention to provide a high frequency current carrying member which is electrically insulated from the atmosphere.

It is a further object of this invention to provide means for enveloping the operative extremity of the clotting instrument in an inert gas to avoid possible explosion.

It is still a further object of this invention to provide a high frequency current carrying member which is insulated from the atmosphere and enveloped in an inert gas to avoid possible explosion.

Other objects and advantages will be readily apparent from the following description:

In the drawings:

Figure 1 is an elevation of a clotting instrument embodying this invention.

Figure 2 is a section taken along line 2—2 of Figure 1.

Figure 3 is a fragmentary view of the current carrying tube with the gas tube in section.

Figure 4 is a section taken along line 4—4 of Figure 1 with an insulating coating added.

Figure 5 is a section taken along line 5—5 of Figure 2 with an insulating coat added.

The clotting instrument is in this embodiment in the form of a tube 10 having an enlarged head of clotting tool 12 at one extremity. The other extremity has a flange 14 and a nipple 16. The nipple is corrugated as at 18 adapting same to telescopically receive the flexible tubing 20 which is secured thereon by bands 22, which tubing is of a suitable electrically non-conductive material.

The hollow tubing 20 is at its other extremity connected to a reduced pressure source such as a suitable vacuum pump so that air is drawn through the tube 10. An aperture 24 is provided in the tube 10 with a suitable curved finger plate 26 having a corresponding aperture therein attached to the tube 10. Thus when the aperture 24 is unobstructed no suction is created at the head 12, but when the thumb of the user covers the aperture 24 a suction is created at the head 12 so that excess blood can be siphoned through the instrument.

Surrounding the tube 10 adjacent the head bearing extremity is a gas tube 26 which has a threaded head 28 thereon. A knurled nut 30 screws onto the head and holds the gas tube in position. Suitable packing 32 is provided to prevent gas leakage.

Inert gas is directed to the gas tube 26 through a flexible electrically non-conductive tube 34. This tube at one extremity is connected to a suitable source of inert gas and the other extremity fits onto a nipple similar to nipple 16 and is secured by bands 36. The gas flow di-

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recting tube 38 directs flow from the tube 34 into gas tube 26.

Spiral teeth 40 are formed on the clotting tool tube 10 to insure that it remains centrally located in gas tube 26 and that flow of gas through the gas tube is unobstructed. The spiral fluting between teeth form gas channels and impart a rotary motion to the flowing gas insuring no voids in the gas blanket.

One lead from a high frequency current source is attached to the patient. The other lead is wire 42 which is inside of tube 34 so it is insulated from the atmosphere. This wire passes through gas flow directing tube 38 and is secured to the clotting tool tube 10 by means of sleeve 44.

The instrument with the exception of that portion of the clotting tool tube 10 within gas tube 26 is coated with an electrically non-conductive material, such as rubber or the like, to insulate same from the atmosphere avoiding the possibility of a spark causing an explosion. This insulation has not been illustrated in Figures 1, 2 and 3 to avoid complication of the drawings. Of course, the head 12 of the clotting tool is not insulated.

In operation, high frequency current is supplied to head 12 through wire 42 through suitable control means.

Inert gas is directed into gas tube 26 from tube 34 and is discharged at the extremity thereof in the form of an envelope encasing head 12 and eliminating it as a source of an explosion causing spark. The head 12 is first inserted into a blood pool and aperture 24 is sealed off so that the suction from a vacuum source through tube 20 will draw excess blood through tube 10. When the excess blood has been drained in this manner, the high frequency current source is energized causing the remaining blood to clot.

While what hereinbefore has been described is the preferred embodiment of this invention, it is readily apparent that alterations and modifications can be resorted to without departing from the scope of this invention, which alterations and modifications are intended to be within the scope of the following claims:

I claim:

1. An electrical clotting instrument of the type adapted to be connected to a source of high frequency current, a source of inert gas and a vacuum source, comprising: a hollow clotting instrument body carrying a clotting member at one extremity, a concentric gas directing member surrounding said hollow body and terminating short of said clotting member, means attached to said hollow body directing flow of inert gas from said source between said hollow body and said gas directing member, whereby said clotting member is enveloped in inert gas, means on the clotting instrument body adapted to attach said clotting instrument body to said current source, which means is surrounded by said gas flow directing means, and means on the clotting instrument body adapted to attach said hollow clotting instrument body to said vacuum source.

2. An electrical clotting instrument of the type adapted to be connected to a source of high frequency current, a source of inert gas and a vacuum source, comprising: a suction tube having a clotting tool on the end thereof, a gas tube concentric therewith and terminating before said clotting tool, means on said gas tube adapted to attach said gas tube to said source of inert gas, whereby gas flows through said tube and is discharged therefrom enveloping said clotting tool, means on said suction tube adapted to attach said suction tube to said vacuum source, and means on said suction tube adapted to attach said suction tube to said source of current.

3. An electrical clotting instrument of the type adapted to be connected to a source of high frequency current,

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a source of inert gas and a vacuum source, comprising: a suction tube having a clotting tool on the end thereof, a gas tube concentric therewith having an open end adjacent said clotting tool and a closed end before termination of said suction tube, a tube opening into said gas tube and adapted to be connected to said source of inert gas, a lead adapted to be attached to said current source inside said last mentioned tube connected to said suction tube, and means on the suction tube adapted to connect the suction tube to said vacuum source.

4. An electrical clotting instrument of the type adapted to be connected to a source of high frequency current, a source of inert gas and a vacuum source, comprising: a suction tube having a clotting tool on the end thereof, a gas tube concentric therewith having an open end adjacent said clotting tool and a closed end before termination of said suction tube, a tube opening into said

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gas tube and adapted to be connected to said source of inert gas, a lead adapted to be attached to said current source inside said last mentioned tube connected to said suction tube, means forming an aperture in said suction tube positioned outside of said gas tube, and means on the suction tube adapted to connect the suction tube to said vacuum source.

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