April 1, 1958 W. AUGUST 2,828,748

GAS BLANKETED ELECTRO-SURGICAL DEVICE

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FIG. 1.

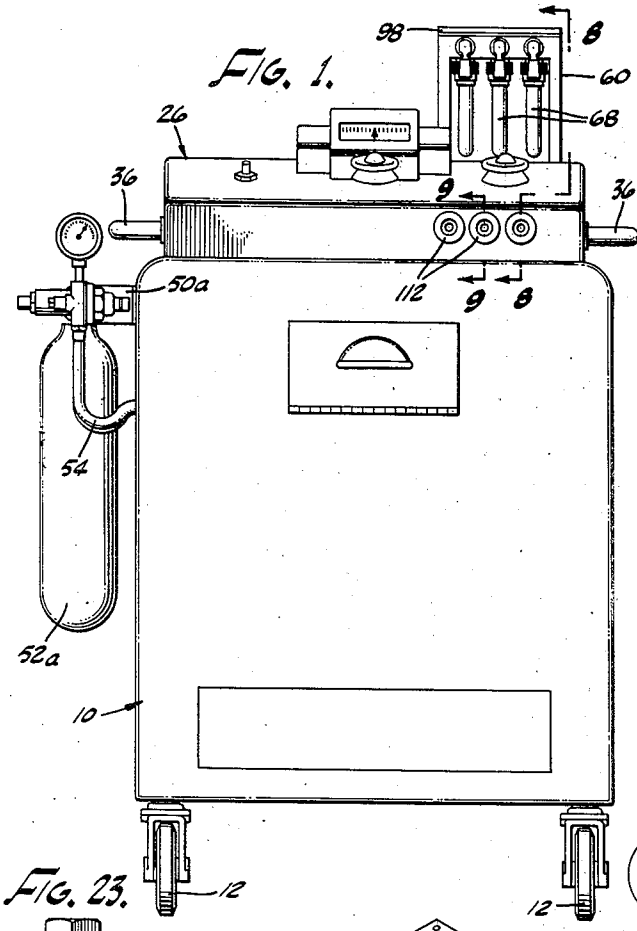


FIG. 2.

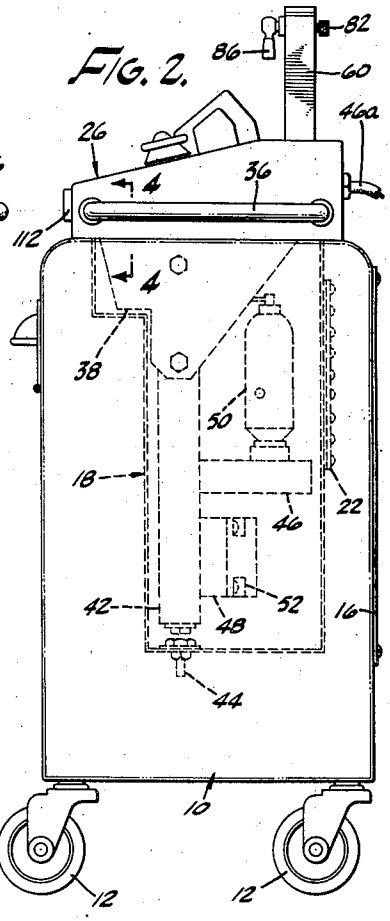


FIG. 23.

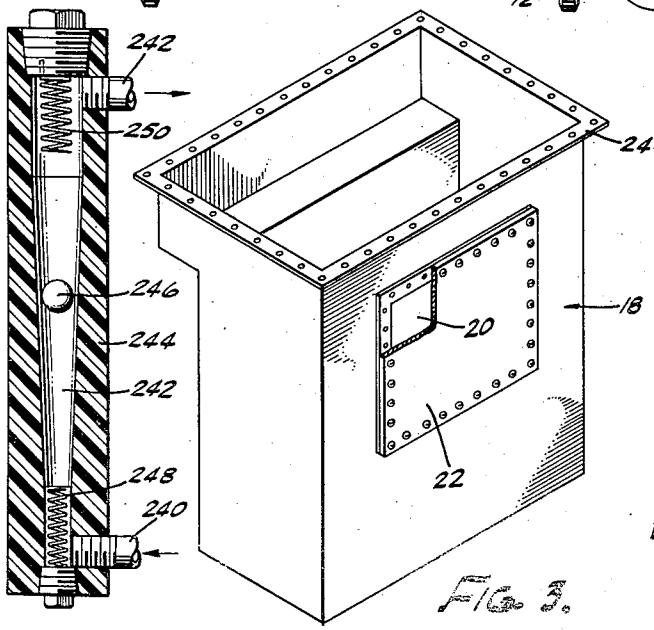
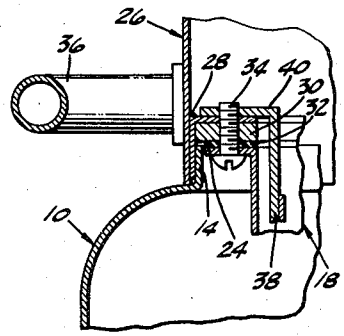


FIG. 3.

FIG. 4.



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GAS BLANKETED ELECTRO-SURGICAL DEVICE

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FIG. 5.

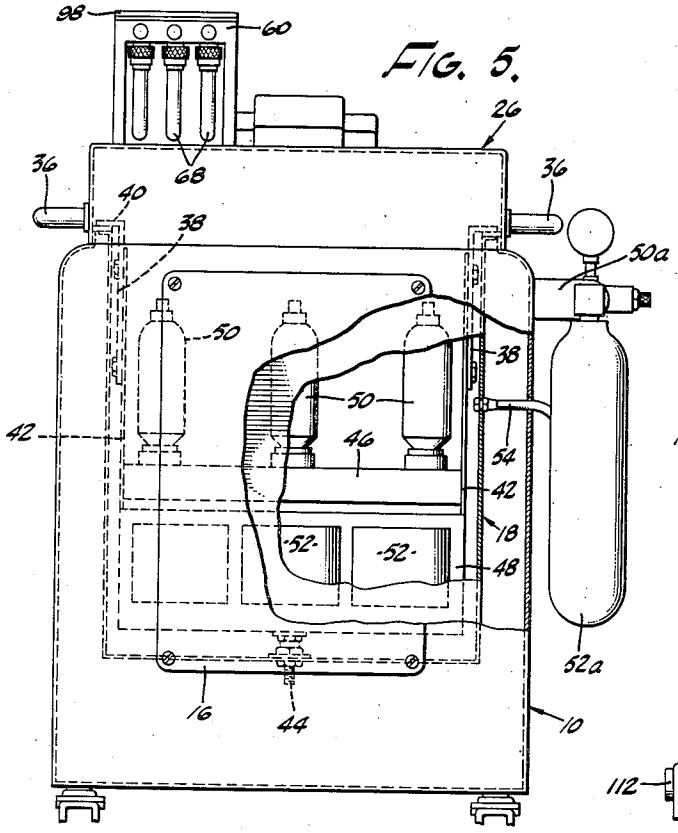


FIG. 7.

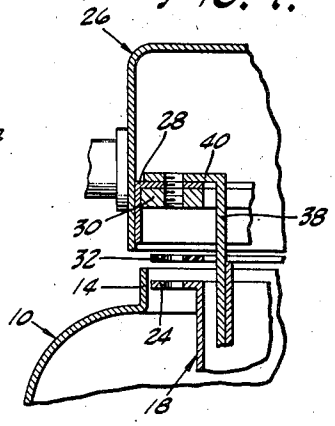


FIG. 6.

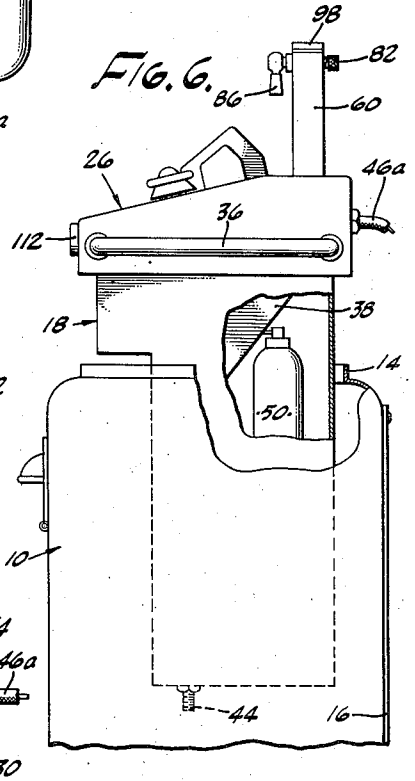


FIG. 9.

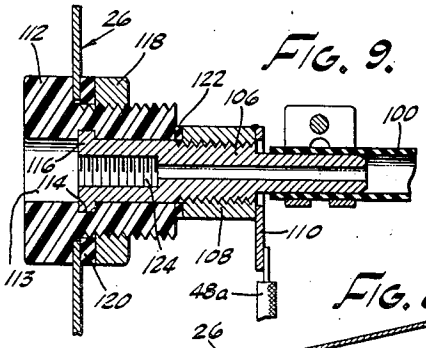


FIG. 8.

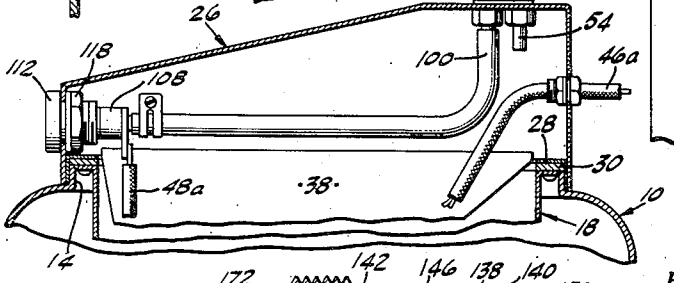
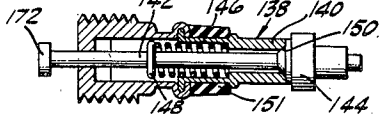


FIG. 21.



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GAS BLANKETED ELECTRO-SURGICAL DEVICE

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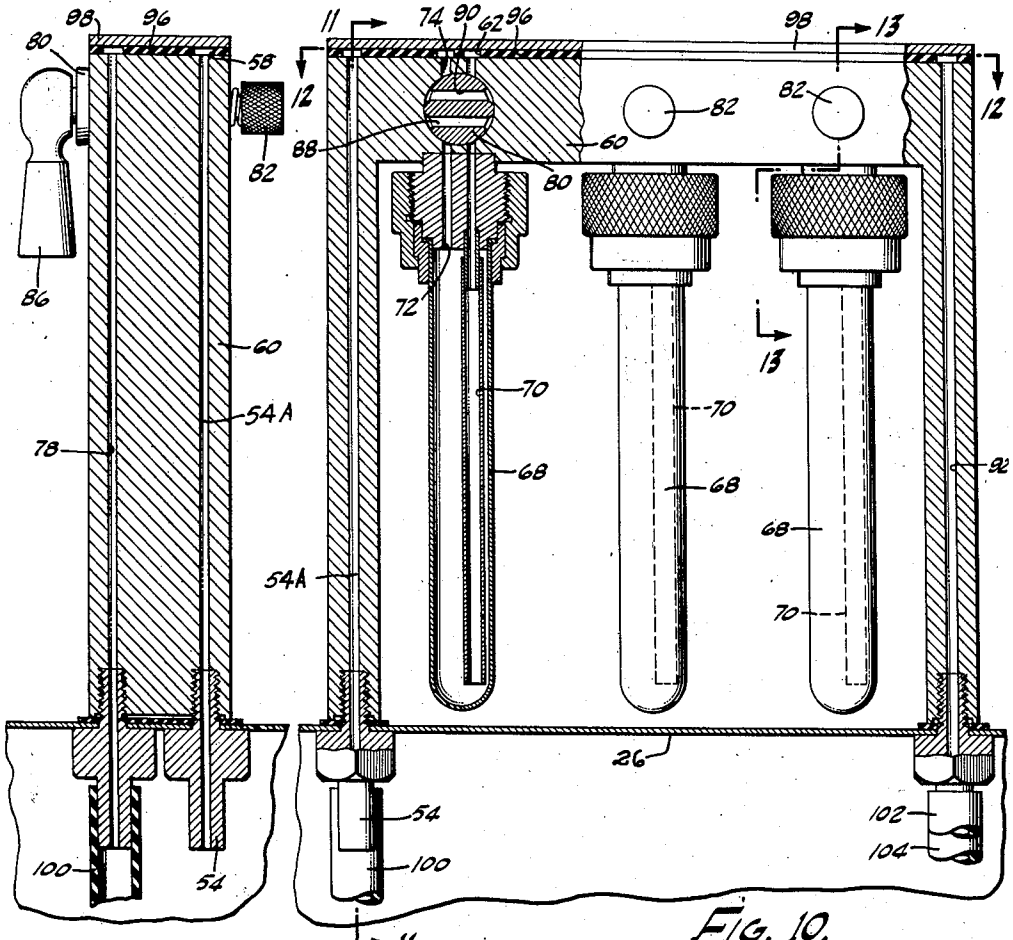

FIG. 11.

FIG. 10.

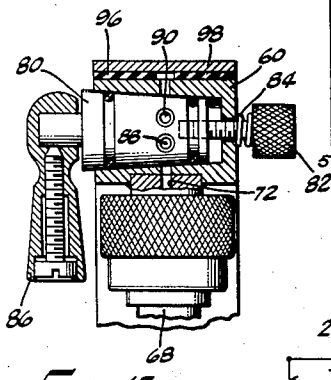

FIG. 13.

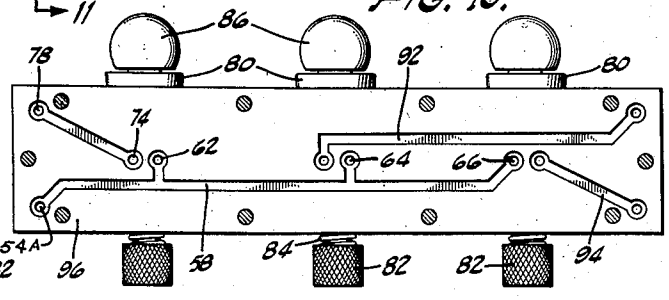

FIG. 12.

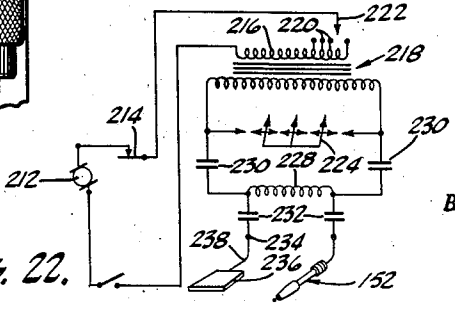

FIG. 22.

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FIG. 14.

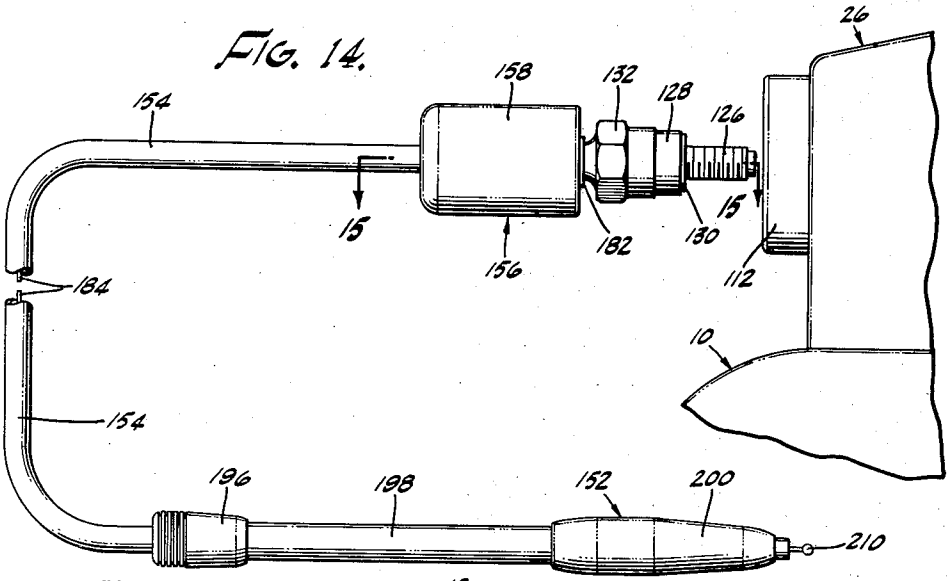


FIG. 15.

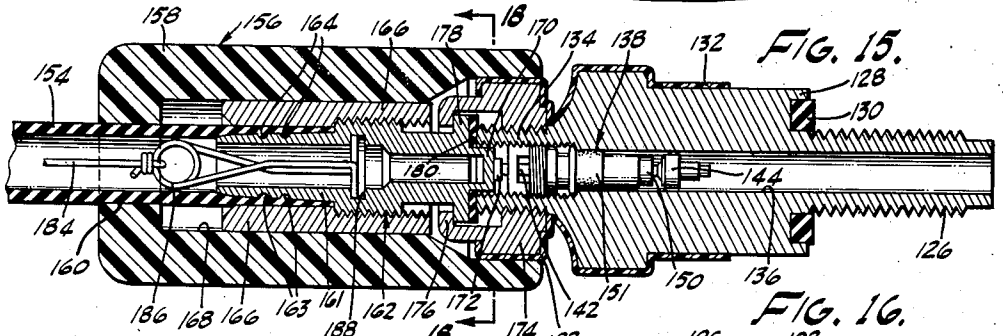


FIG. 16.

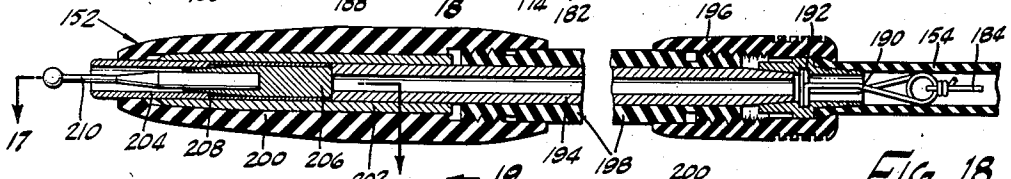


FIG. 17.

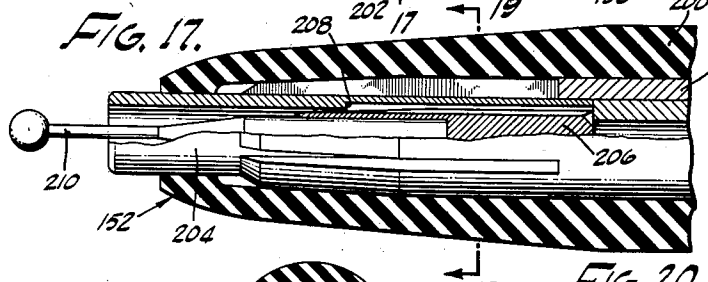


FIG. 18.

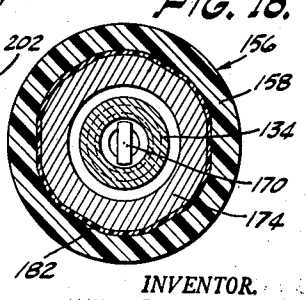


FIG. 19.

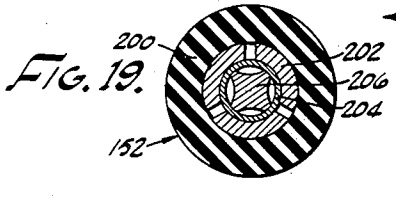
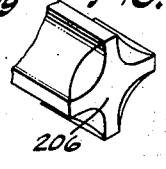


FIG. 20.



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United States Patent Office

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Patented Apr. 1, 1958

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GAS BLANKETED ELECTRO-SURGICAL DEVICE

William August, Arcadia, Calif., assignor to The Birtcher Corporation, Los Angeles, Calif., a corporation of California

Application March 16, 1953, Serial No. 342,363

11 Claims. (Cl. 128—303.14)

This invention relates to an electro-surgical device, and more particularly to devices wherein the cutting action is produced in a large measure through energization of the instrument by a high frequency current.

It is an object of this invention to provide an electro-surgical instrument which may be safely employed in an explosive atmosphere created by the presence of an anesthetic in an operating room without danger of an explosion.

It is a further object of this invention to provide means for blanketing the source of high frequency current and all leads therefrom with inert gas to avoid explosion.

It is a further object of this invention to provide means for indicating the flow of such inert gas.

It is a further object of this invention to provide means for coupling a cutting device to a source of high frequency current without exposure to an explosive atmosphere.

Other objects and advantages of this invention will be readily apparent from the following description.

In the drawings:

Figure 1 is a front elevation of a device embodying this invention.

Figure 2 is a side elevation of the device.

Figure 3 is a perspective view of the high frequency current source housing.

Figure 4 is a section taken along line 4—4 of Figure 2.

Figure 5 is a rear elevation partially in section.

Figure 6 is a fragmentary side elevation partially in section.

Figure 7 is a section similar to Figure 4 with the upper housing removed.

Figure 8 is a section taken along line 8—8 of Figure 1.

Figure 9 is a section taken along line 9—9 of Figure 1.

Figure 10 is a frontal elevation partially in section of the gas flow indicating device.

Figure 11 is a section taken along line 11—11 of Figure 10.

Figure 12 is a section taken along line 12—12 of Figure 10.

Figure 13 is a section taken along line 13—13 of Figure 10.

Figure 14 is a perspective view of the cutting instrument coupling.

Figure 15 is a section taken along line 15—15 of Figure 14.

Figure 16 is a sectional view of the cutting instrument.

Figure 17 is a section taken along line 17—17 of Figure 16.

Figure 18 is a section taken along line 18—18 of Figure 15.

Figure 19 is a section taken along line 19—19 of Figure 17.

Figure 20 is a fragmentary view of the cutting tool holder.

Figure 21 is a sectional view of the outlet control valve.

Figure 22 is a wiring diagram of a suitable high frequency current source.

Figure 23 is a section of a modified form of flow indicating means.

A housing 10 is mounted upon wheels 12 which are pivotally secured thereto. The housing 10 terminates in an opening bordered by an upturned flange 14 (see Figures 4 and 7) and has a removable back plate 16 which is suitably bolted thereto closing off an opening in the rear of the housing.

Into the top opening of the housing the high frequency current source casing 18 is inserted. This casing is provided with a rear access opening 20 which is covered by a plate 22 bolted to the casing and forming a gas tight seal. The casing at its upper edge has a flange 24 formed thereon which at its outer periphery is substantially the same size as the periphery of the top opening in housing 10.

The upper or control panel housing 26 has welded thereto at its lower edge an angle iron 28 which forms an inwardly turned flange above the bottom edge of the control panel housing, which flange has the same contour as the top opening in housing 10. A spacing bar 30 is welded to angle iron 28 about the opening and a sealing gasket 32 fits between the spacing bar 30 and flange 24 when they are bolted together by screws 34 to form a gas tight seal therebetween.

The lower edge of the control panel housing projects downwardly until it contacts the housing 10 thereby providing a flush joint. Rails 36 are provided on either side of the control panel housing 26 whereby this housing, plus the high frequency current source casing 18, may be removed from the housing 10 for repair or replacement.

Also secured by bolts 34 to angle iron 28 is a pair of high frequency current source support brackets 38 which have an outwardly turned flange 40 at their upper edges. These brackets project downwardly inside the casing 18. Secured to the lower extremities of the brackets 38 are plates 42 which are bolted to the bottom of casing by bolts 44. These plates carry platforms upon which the high frequency current source is mounted. This current source may be of any suitable type well known to those skilled in the art, and platforms 46 and 48 are illustrated supporting tubes 50 and coils 52. Thus the whole high frequency current source is removable from housing 10 upon removal of casing 18 and is further removed from the casing 18 by loosening of bolts 44 and screws 34. The mounting of the component elements of the current source is suitably insulated from the platforms 46 and 48.

The electrical lead 46*a* (see Figure 8) passes through a gas tight connection in the housing 26 from a suitable source of power to the high frequency source while the lead 48*a* carries the high frequency current from the source as hereinafter will be described.

Mounted upon a suitable bracket 50*a* is gas bottle 52*a*. A hose 54 connects the bottle with the inside of the casing 18 through a suitable gas tight union. The bottle is charged with an inert gas which is thus directed into the casing 18 surrounding the high frequency current source with an inert atmosphere eliminating the possibility of explosion. The inert gas fills the casing 18 and upper housing 26. Three outlets are provided in this embodiment for the gas and current, only one of which will be described in detail although all or any number thereof may be in use at one time.

Referring particularly to Figures 10 through 13, the inert gas enters pipe 54 which leads above the housing to the gas flow indicating housing which includes port block 60 which has associated passages and indicating tube supports hereinafter described. The pipe 54 communicates with a port 78 which runs a substantial dis-

tance along the port block **60** and has three terminals **62**, **64** and **66**.

Associated with each terminal is a gas flow indicating tube **68** which is filled with a suitable liquid and has an inlet tube **70** directly below the associated terminal and an outlet port **72** which is directly below the terminal **74** of the port which leads to an outlet port **78**.

Flow from the port **58** through the tube **68** and hence to outlet port **78** is controlled by a petcock **80** which fits into a tapered hole in the port block **60**. The petcock is secured in the hole by screw **82** which is urged by spring **84** away from the block **60**. The petcock is rotated by a handle **86** and has a pair of parallel ports **88** and **90** which, when in a vertical position, register with ports **72** and **70** respectively, so that gas passes from the port **58** out the outlet port **78**.

The port block **60** is provided with other discharge ports **92** and **94** which are communicated through a flow indicating tube **68** to the port **58**, flow being controlled by petcocks similar to **80**.

The horizontal ports in port block **60** may be formed by being cut in a resilient gasket **96** which is held in proper alignment by cap **98**.

As gas flows through the flow indicating tubes, visible bubbles are formed in the tube thus providing a visual check to determine if gas is flowing to any of the three outlets.

Each outlet and operating instrument is identical so only one will be described. As seen in Figure 10, resilient tubes **100**, **102** and **104** telescopically receive the extremity of each of the discharge ports **78**, **92** and **94**. Each tube leads from the discharge port to an outlet.

Referring now to Figures 9 and 14 to 20, the tube **100** fits onto an outlet body **106** which is externally threaded to receive a bushing **108** which has secured thereto by soldering or otherwise a contact **110** to which one lead from the high frequency current source is attached. An insulating plug **112** made from non-conductive material fits into the opening formed in housing **10** for the outlet. This plug is provided with a bore **113** which receives the outlet body **106** and has an annular groove **114** which receives a flange **116** formed upon the outlet body. That portion of the insulating plug **112** outside the housing **26** is flanged and the portion inside is threaded so that nut **118**, when tightened on the plug, pulls the flanged extremity and resilient washer **120** against the wall of the housing **26** forming a gas tight seal. A resilient washer **122** is provided between the inner extremity of plug **112** and the bushing **108** to provide a gas tight fitting. Thus the gas is directed through bore **113** while the current flows into the outlet body which has a threaded bore **124** formed therein.

Into this bore **124** a threaded nipple **126** of valve containing member **128** is screwed. This member has an annular groove forming a seat for resilient washer **130** which bears against the outer surface of outlet body **106** and prevents leakage of gas. The bore **113** is sufficiently deep and of sufficient diameter to receive not only the threaded tail piece **126** but a portion of the larger body up to the termination of the insulation **132** which surrounds the valve housing member **120** and projects from the extremity of plug **112** to the threaded nipple **134** formed on the front of the valve housing member. This provides a gas tight and electrically insulated union between valve housing **128** and the outlet body **106** confining gas passage through bore **136** in the valve housing and confining electrical current flow to the housing **128**.

The bore **136** is threaded to receive a valve **138**, best seen in Figure 21. The valve has a housing **140** for a movable valve stem **142** which carries a valve head **144**. Spring **146** contacts flange **148** urging the valve stem to the left in Figure 21 causing the valve head **144** to bear against valve seat **150** formed on the extremity of the

valve body. A resilient sealing member **151** is carried by the valve body to form a gas seal with the walls of bore **136**. In this manner, gas will not flow from the outlet unless the valve stem is moved to depress the spring.

The operating instrument generally designated **152** (Figure 16) is connected to the outlet by means of a flexible tube **154** and coupling member generally designated **156** (Figure 15). The coupling member has a body **158**, of Bakelite or other similar non-conductive material, having an aperture **160** at one extremity to receive tube **154** which projects into the coupling member body **158**. The tube telescopically receives the tubular extremity **161** of the valve actuating member **162**, which extremity has two annular grooves **163** into which internal ridges **164** of the tube project to insure a tight gas proof fit. The valve actuating member is threaded externally and screws into a bushing **166** which in turn snugly fits into the bore **168** formed in the coupling member body **158**.

The valve actuating member **162** carries a blade **170** centrally located thereon at the extremity adjacent the valve **138**, which blade strikes the head **172** of the valve stem without obstructing flow of gas through bore **136**. A coupling member **174** screws onto the extremity **134** of the valve containing member **128** and has an inturned flange **176** which engages a flange **178** formed upon the valve actuating member so that screwing the coupling member on the valve containing member **128** draws the valve actuating blade **170** into engagement with head **172** and urges the valve stem **142** against spring **146**, thereby opening the valve **138** and permitting gas to flow through the hollow valve actuating member **162** and into the tube **154**.

A resilient washer **180** is carried by the valve actuating member at the extremity adjacent the valve housing member **128**, fitting between the extremity **134** of said member and the extremity of the valve actuating member **162**, forming a gas tight seal therebetween. Suitable insulation **182** surrounds the exposed portions of the metal coupling member **174** from the point of contact with insulation **132** on the valve carrying member **128** around the enlarged portion of said member and terminating inside said coupling member body **158**. In this manner, all metal parts such as valve carrying member **128**, coupling member **174**, valve actuating carrying member **162** and bushing **166** are insulated from exposure to the atmosphere. All of these parts are in electrical contact with one another and with the high frequency current source.

The tube **154** is of rubber or some similar non-conductive flexible material and houses the flexible current carrying wire **184**. This wire is connected to the valve actuating carrying member **162** by a spring **186** whose extremities are bent normal to the axis of the valve actuating carrying member **162** and project into an annular groove **188** formed therein.

At the opposite extremity, a similar spring **190** has its extremities projecting into a similar annular groove formed in wire coupling member **192**. This wire coupling member has a bore therein which is tapered to receive the tapered extremity of the tube **194**. A tail piece **196** has an inturned flange which is smaller than the large portion of the wire coupling member **192**. A tube body **198** carries the tube **194** therein and screws into tail piece **196**, drawing the tube into electrical contact with wire coupling member **192** and hence wire **154**.

The other extremity of the tube body **198** has screwed thereon a head piece **200** which carries therein a chuck **202** which telescopically receives the tube **194** in one extremity and has jaws which hold therein a tube **204**. The head piece **200** has a slightly tapered bore so that as it is screwed onto the tube body **198**, the jaws of chuck **202** close upon and hold the tube **204**.

A tool holding member **206** fits into tube **204** which

has a shoulder **208** beyond which the tube holding member **206** cannot pass. The cutting tool **210** fits into the tool holding member **206** and is braised or otherwise secured therein.

The tail piece **196**, tube body **198** and head piece **200** are all made of a non-conductive material so that none of the metal pieces is exposed to the atmosphere other than the cutting tool **210**. The cutting tool is in electrical contact with the wire **184** through wire coupling member **192**, tube **194** and tool holding member **206**. The inert gas passes through the tube **154** and tube **194** and around tool holding member **206** which has a plurality of channels formed therein as best seen in Figures 19 and 20 and is discharged from tube **204** in a blanket surrounding the cutting tool **210** shielding same from the explosive atmosphere which exists in the operating room.

A form of high frequency generator is shown in the schematic circuit diagram of Figure 22. Other forms of generators well known to those skilled in the art may be utilized.

A suitable source of power **212** is connected through an electro-magnetic switch **214** to the primary winding **216** of a step-up transformer generally designated **218**. This primary winding is provided with a plurality of voltage taps **220** which may selectively be contacted by a movable switch arm **222** permitting compensation for variations in the line voltage supplied by source **212**. A plurality of spark gaps **224** are connected for energization by the high-voltage secondary winding **226** of transformer **218**. High frequency oscillatory currents are induced in a resonant circuit comprising a high-frequency tuning coil **228** and capacitors **230**.

These high frequency currents are shown by way of illustration as being taken off through coupling capacitors **232**, one of these capacitors being connected to a ground terminal **234** with a suitable ground electrode **236** connected thereto by conductor **238**. The other capacitor is connected by lead **48** to the cutting instrument **152**. The ground electrode **236** is intended to complete the circuit to the body of the patient undergoing the operation.

The high frequency current source has lead **48***a* connecting same to the outlet body **106**. In operation inert gas is admitted through hose **54** into the casing **18** which houses the current source and thus insulates same from the atmosphere. The inert gas fills casing **18** and housing **26**. When one of the petcocks **80** is rotated to the position where the ports **88** and **90** are aligned with port **62** and tube **70**, the gas will flow from **26** up through **54***a* and through bubble indicating tube **68** and through one of the tubes **100**, **102** or **104** to the outlet body **106**. The gas passes through a suitable bore in the outlet body into bore **136** of valve housing member **128**. The valve **138** prevents further passage of the gas until the valve stem is moved to open the valve by coupling the cutting instrument coupling member **156** thereon. The gas passes through tube **154** and is discharged from the cutting instrument **152** in the form of a blanket of gas surrounding the cutting instrument **210**. The high frequency current is conducted by the outlet body and the coupling means to wire **184** to the cutting instrument and at all times is insulated from the atmosphere in the operating room which frequently contains an explosive atmosphere.

Illustrated in Figure 23 is an alternative form of gas flow indicating device wherein gas flows through tube **240** instead of pipe **54** and exits through tube **242** to an outlet in place of tubes **100**, **102** and **104**. A chamber **242** is formed of a suitable transparent body **244**. The chamber is tapered so that the velocity of gas passing therethrough will be reduced at the outlet. A steel ball **246** is inserted into the chamber, which ball will float therein while gas is flowing and will drop to the bottom of the chamber if the gas flow ceases. Springs **248** and **250** are provided at each extremity of the chamber to cushion the impact of the ball.

In this manner a visual indicator tells when gas flow is interrupted by the position of the ball **246** in chamber **242**.

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 and such alterations and modifications are intended to be included in the following claims.

I claim:

1. An electro-surgical device of the type utilizing a high frequency current source and a source of inert gas comprising: a housing, a casing containing said current source removably inserted into said housing, means directing inert gas from said gas source into said casing, a gas flow indicating housing communicating with said casing, an outlet body having a gas port therethrough, means forming an electrical and gas tight seal between said outlet body and one of said housings, means connecting said high frequency current source to said outlet body, visual gas flow indicating means on said gas flow indicating housing, and means directing gas flow through said gas flow indicating means prior to passage to said outlet.

2. An electro-surgical device of the type utilizing a high frequency current source and a source of inert gas comprising: a housing, a casing containing said current source removably inserted into said housing, means directing inert gas from said gas source into said casing, a gas flow indicating housing communicating with said casing, an outlet body having a gas port therethrough, means forming an electrical and gas tight seal between said outlet body and one of said housings, means connecting said high frequency current source to said outlet body, gas flow indicating means mounted on said gas flow indicating housing for visual inspection, ports leading from said gas flow indicating housing to said gas flow indicating means and from said gas flow indicating housing to said outlet, and a petcock controlling flow through said ports.

3. An electro-surgical device of the type utilizing a high frequency current source and a source of inert gas comprising: a housing, a casing containing said current source removably inserted into said housing, means directing inert gas from said gas source into said casing, a gas flow indicating housing communicating with said casing, an outlet body having a gas port therethrough, means forming an electrical and gas tight seal between said outlet body and one of said housings, means connecting said high frequency current source to said outlet body, visual gas flow indicating means on said gas flow indicating housing, means directing gas flow through said gas flow indicating means prior to passage to said outlet, normally closed valve means in said outlet body gas port responsive to a force applied thereon from outside said gas flow indicating housing to permit flow of gas therefrom.

4. An electro-surgical device of the type utilizing a high frequency current source and a source of inert gas comprising: a housing, a casing containing said current source removably inserted into said housing, means directing inert gas from said gas source into said casing, a gas flow indicating housing communicating with said casing, an outlet body having a gas port therethrough, means forming an electrical and gas tight seal between said outlet body and one of said housings, means connecting said high frequency current source to said outlet body, gas flow indicating means mounted on said gas flow indicating housing for visual inspection, ports leading from said gas flow indicating housing to said gas flow indicating means and from said gas flow indicating housing to said outlet, and a petcock controlling flow through said ports, normally closed valve means in said outlet body gas port responsive to a force applied thereon from outside said gas flow indicating housing to permit flow of gas therefrom.

5. An electro-surgical device of the type utilizing a

high frequency current source comprising: a housing, a casing containing said current source removably inserted into said housing, an inert gas source carried by said housing and supplying gas to the inside of said casing, a combined electrical and gas outlet from said housing, an electrically insulated cutting instrument attached to said outlet and having an exposed cutting tool, means electrically insulating the connection between said cutting instrument and said outlet, and means for directing gas through said outlet and said cutting instrument in the form of an envelope encasing said cutting tool.

6. An electro-surgical device of the type utilizing a high frequency current source and a source of inert gas comprising: a housing, a casing containing said current source removably inserted into said housing, means directing inert gas from said gas source into said casing, a gas flow indicating housing communicating with said casing, a combined electrical and gas outlet from said gas flow indicating housing, visual gas flow indicating means on said gas flow indicating housing, means directing gas flow from said casing through said gas flow indicating means prior to passage to said outlet, an electrically insulated cutting instrument attached to said outlet and having an exposed cutting tool, means electrically insulating the connection between said cutting instrument and said outlet, and means directing gas from said indicating means through said outlet and said cutting instrument in the form of an envelope encasing said cutting tool.

7. An electro-surgical device of the type utilizing a high frequency current source and a source of inert gas comprising: a housing, a casing containing said current source removably inserted into said housing, means directing inert gas from said gas source into said casing, a gas flow indicating housing communicating with said casing, an outlet body having a gas port therethrough, means forming an electrical and gas tight seal between said outlet body and said first mentioned housing, means connecting said high frequency current source to said outlet body, visual gas flow indicating means on said gas flow indicating housing, means directing gas flow from said casing through said gas flow indicating means prior to passage to said outlet, normally closed valve means attached to said outlet body in said gas port responsive to a force applied thereon from outside said gas flow indicating housing to permit flow of gas therefrom, an electrically insulated cutting instrument attached to said outlet and having an exposed cutting tool, means electrically insulating the connection between said cutting instrument and said outlet, and means directing gas through said outlet and said cutting instrument in the form of an envelope encasing said cutting tool.

8. An electro-surgical device of the type utilizing a high frequency current source comprising: a housing, a casing containing said current source removably inserted into said housing, an inert gas source carried by said housing and supplying gas to the inside of said casing, and a combined electrical and gas outlet from said housing, normally closed valve means in said outlet, a valve actuating member removably secured to said outlet and having a gas port therethrough, an electrically insulated cutting instrument having an exposed cutting tool, a flexible electrically insulated tube connecting said valve actuating member to said cutting instrument directing gas flow through said cutting instrument in the form of an envelope encasing said cutting tool, and means electrically insulating the connection between said valve actuating member, said outlet and said tube.

9. An electro-surgical device of the type utilizing a high frequency current source comprising: a housing, a casing containing said current source and removably inserted into said housing, an inert gas source carried by said housing and supplying gas to the inside of said casing, a combined electrical and gas outlet from said housing, visual gas flow indicating means mounted upon said housing to signal flow of gas from said outlet, normally closed valve means in said outlet, a valve actuating member removably secured to said outlet and having a gas port therethrough, an electrically insulated cutting instrument having an exposed cutting tool, a flexible electrically insulated tube connecting said valve actuating member to said cutting instrument directing gas flow through said cutting instrument in the form of an envelope encasing said cutting tool, and means electrically insulating the connection between said valve actuating member, said outlet and said tube.

10. An electro-surgical device of the type utilizing a high frequency current source and a source of inert gas comprising: a housing, a casing containing said current source removably inserted into said housing, means directing inert gas from said gas source into said casing, a gas flow indicating housing communicating with said casing, a combined electrical and gas outlet from said gas flow indicating housing, visual gas flow indicating means on said gas flow indicating housing, means directing gas flow from said casing through said gas flow indicating means prior to passage to said outlet, normally closed valve means attached to said outlet, a valve actuating member removably secured to said outlet and having a gas port therethrough, an electrically insulated cutting instrument having an exposed cutting tool, a flexible electrically insulated tube connecting said valve actuating member to said cutting instrument directing gas flow through said cutting instrument in the form of an envelope encasing said cutting tool, and means electrically insulating the connection between said valve actuating member, said outlet and said tube.

11. An electro-surgical device of the type utilizing a high frequency current source and a source of inert gas comprising: a housing, a casing containing said current source removably inserted into said housing, means directing inert gas from said gas source into said casing, a gas flow indicating housing communicating with said casing, an outlet body having a gas port therethrough, means forming an electrical and gas tight seal between said outlet body and one of said housings, means connecting said high frequency current source to said outlet body, normally closed valve means in said outlet, a valve actuating member removably secured to said outlet, and having a gas port therethrough, an electrically insulated cutting instrument having an exposed cutting tool, a flexible electrically insulated tube connecting said valve actuating member to said cutting instrument directing gas flow through said cutting instrument in the form of an envelope encasing said cutting tool, and means electrically insulating the connection between said valve actuating member, said outlet and said tube.

References Cited in the file of this patent

UNITED STATES PATENTS

1,686,027	Newbury	Oct. 2, 1928
2,618,267	Hanriot	Nov. 18, 1952
2,708,933	August	May 24, 1955

FOREIGN PATENTS

524,826	France	May 21, 1921