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(54) **LASER AUTOPSY AND CREMATION**

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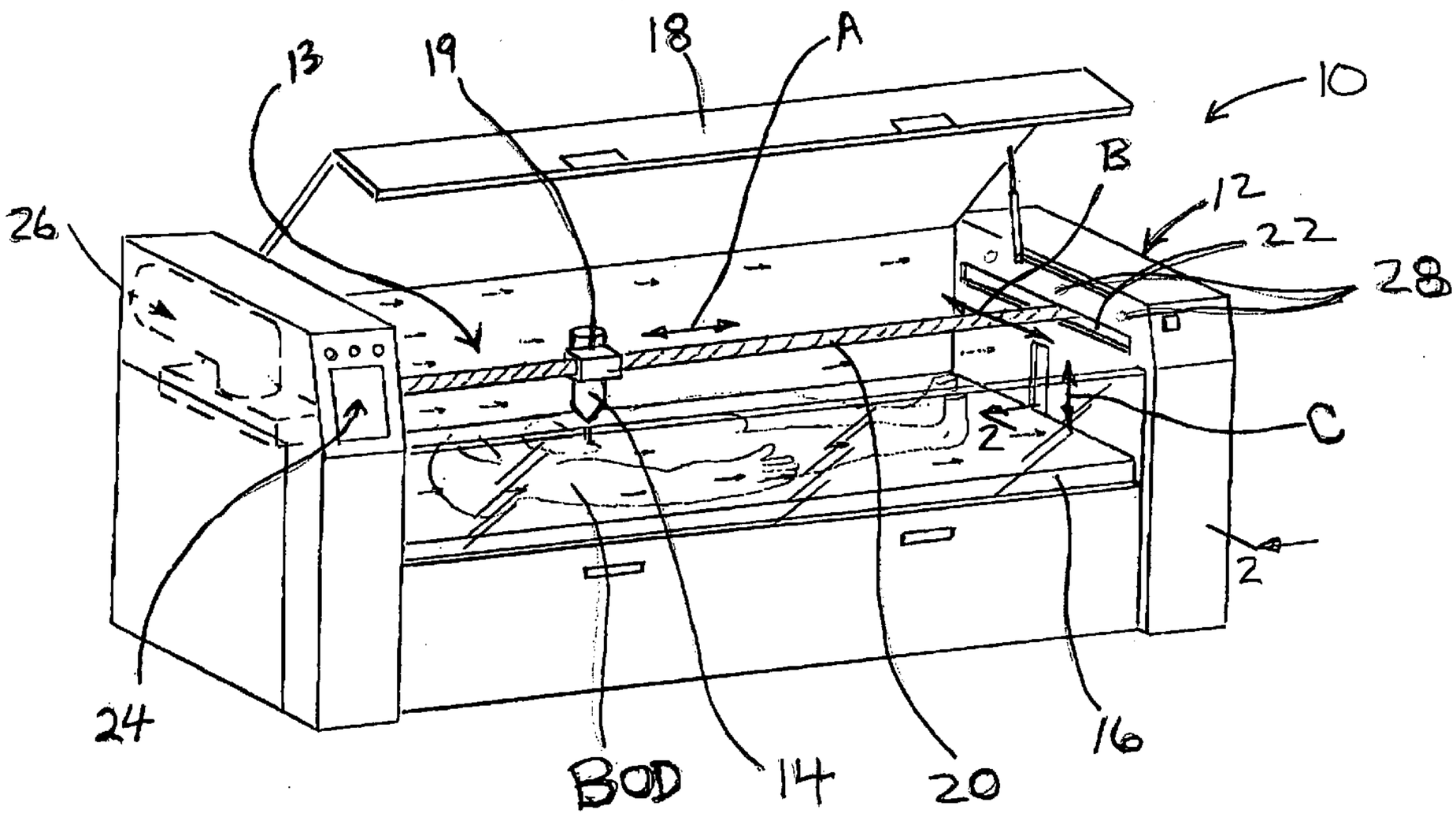
(57) **ABSTRACT**

Methods and devices for laser cremation and autopsy. One or more laser beams are used to destroy at least a substantial portion of the body of a deceased human or animal. The destruction of the body may occur in a section by section fashion. In embodiments used for cremation virtually all of the body, including soft tissue, body fluid and bone, is vaporized or destroyed. In embodiments used for autopsy, the internal organs and/or anatomical structures may be grossly examined and photographs or images may be made between some or all of the sections. Such photographs or images may be analyzed for evidence of cause of death and/or may be compared to normal parameters to ascertain whether abnormalities are present. The gas or vapor resulting from the laser destruction of the body may be filtered, heated to remove pathogens and/or may be analyzed to determine the presence or amount of certain chemical analytes.



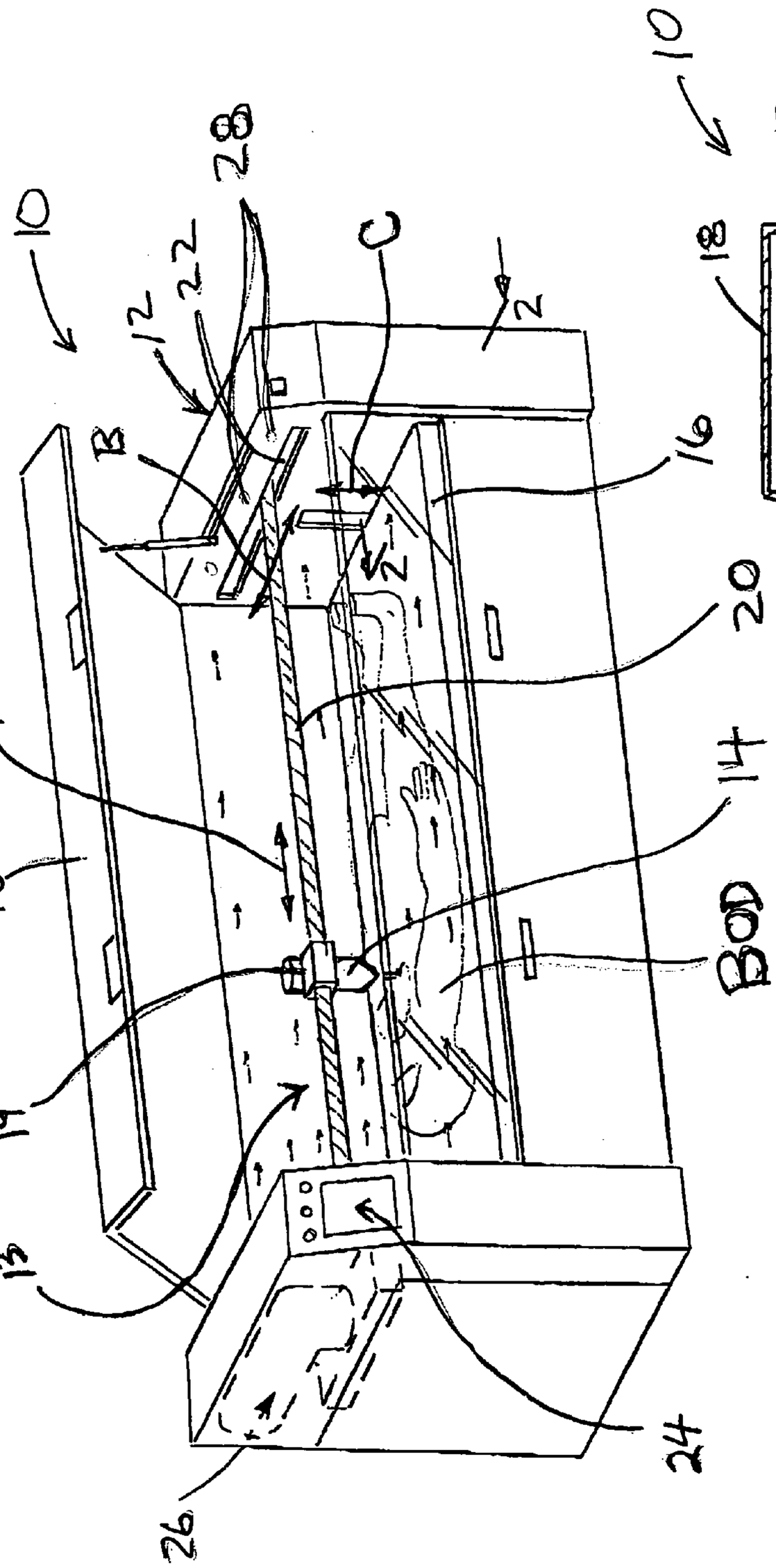


Fig. 1

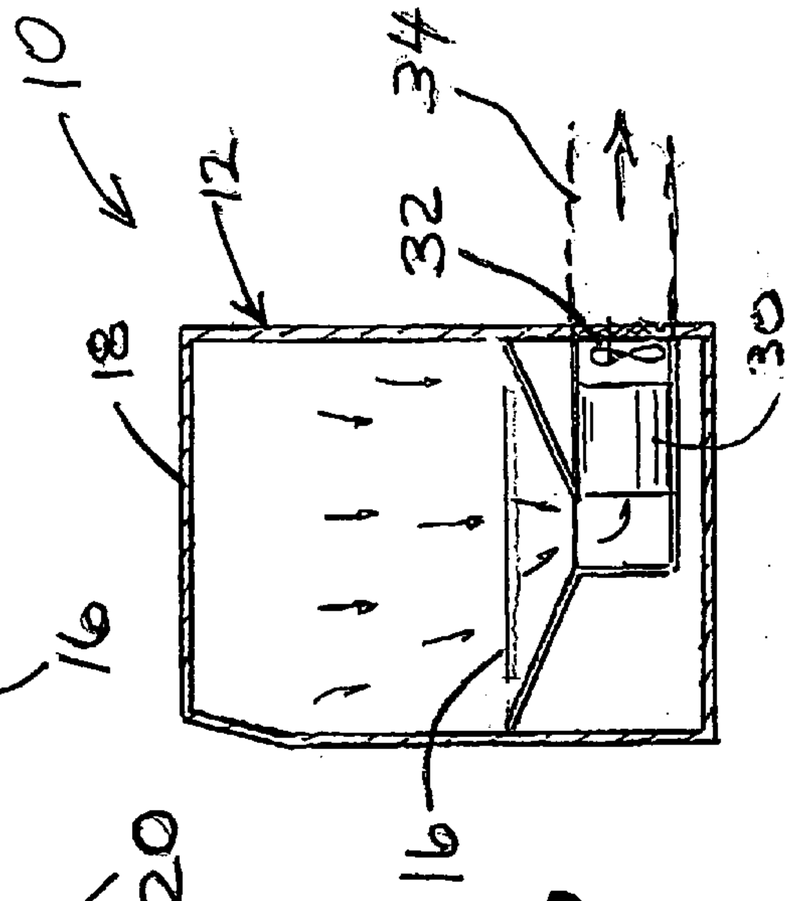


Fig. 2

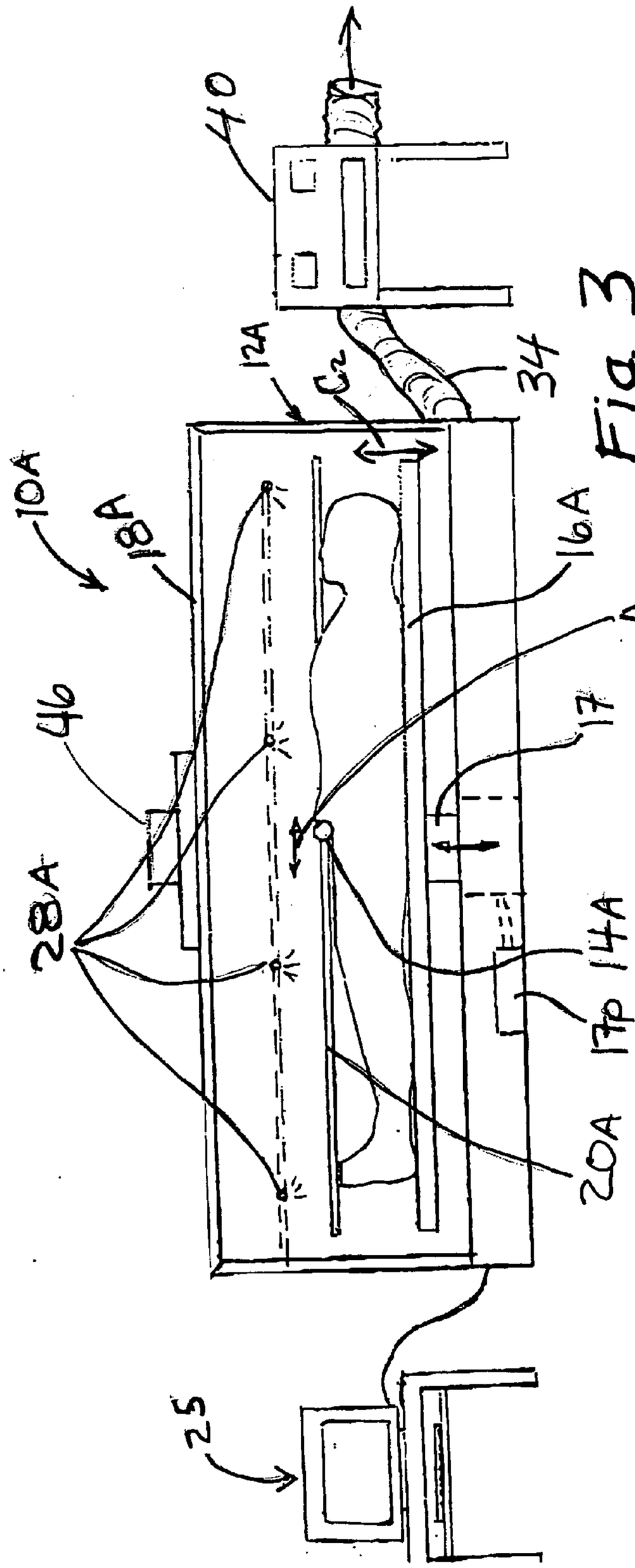

40
12A
C2
34
10A
18A
16A
A2
46
17
28A
17p
14A
20A
25

Fig 3

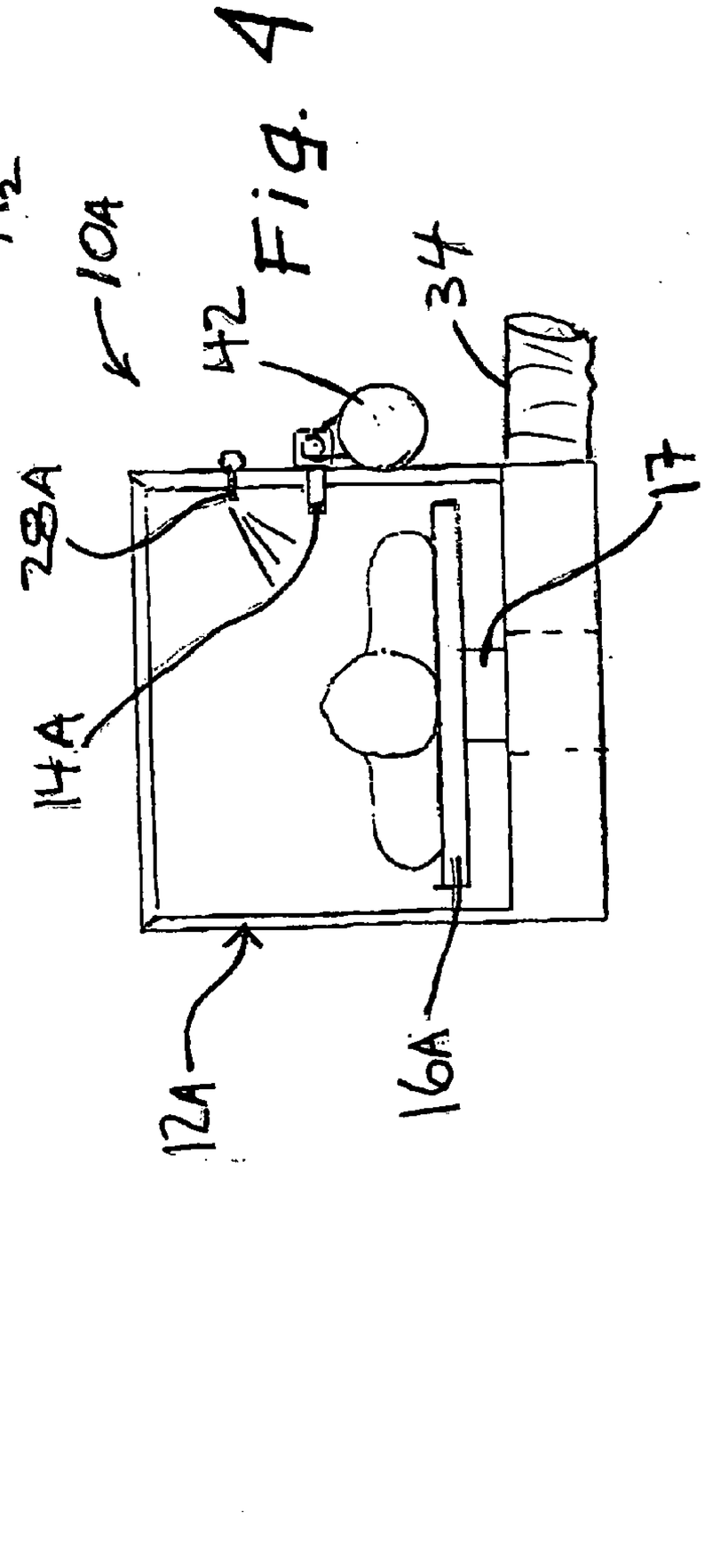

10A
42
34
28A
17
14A
12A
16A

Fig. 4

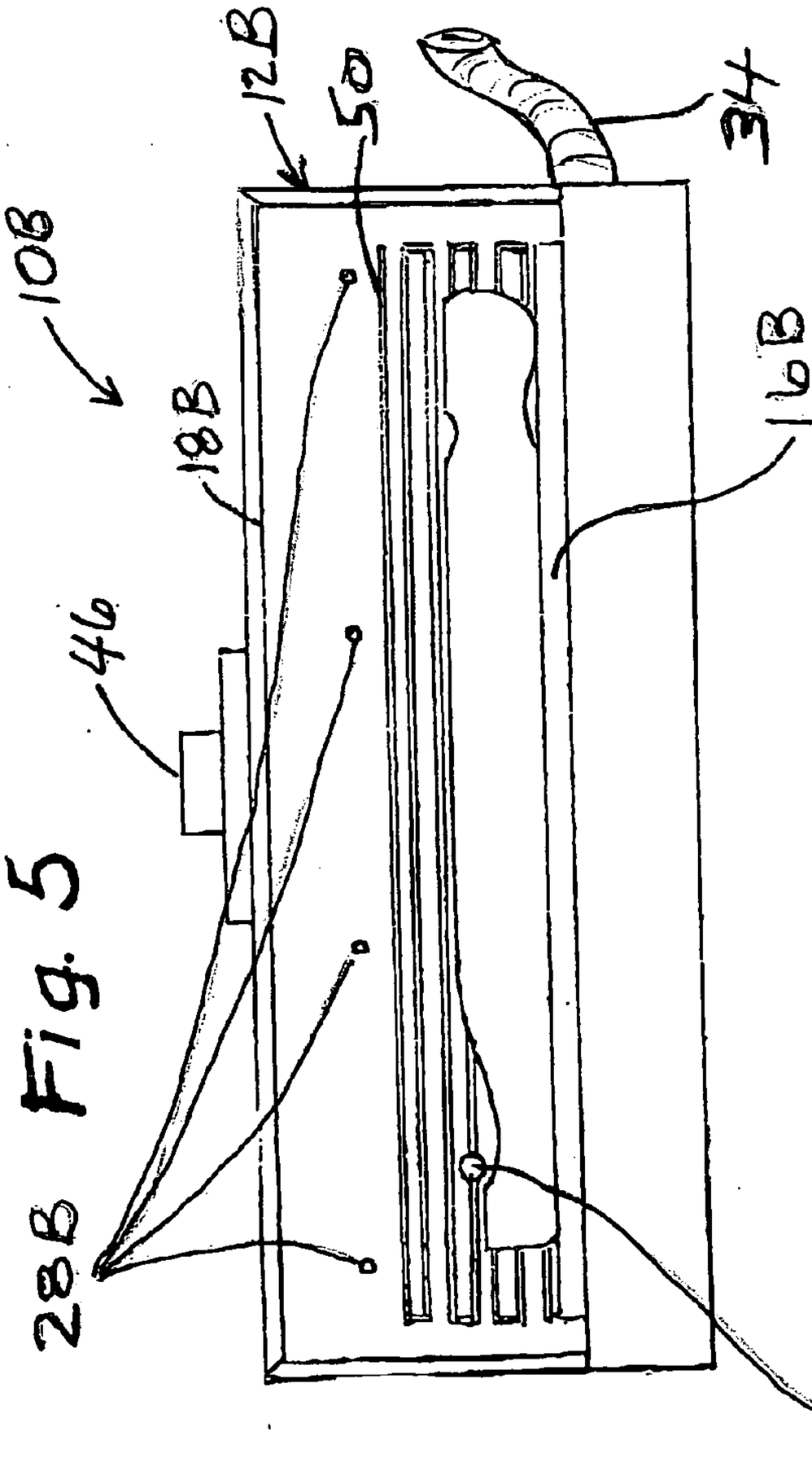


Fig. 5

Fig. 6

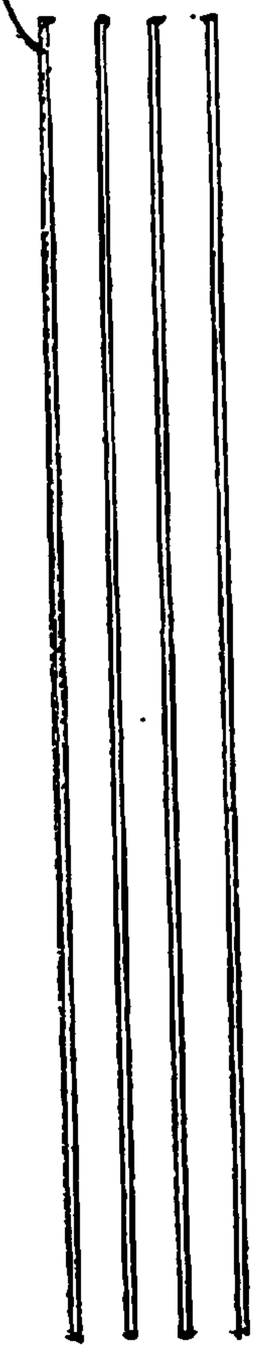


Fig. 7

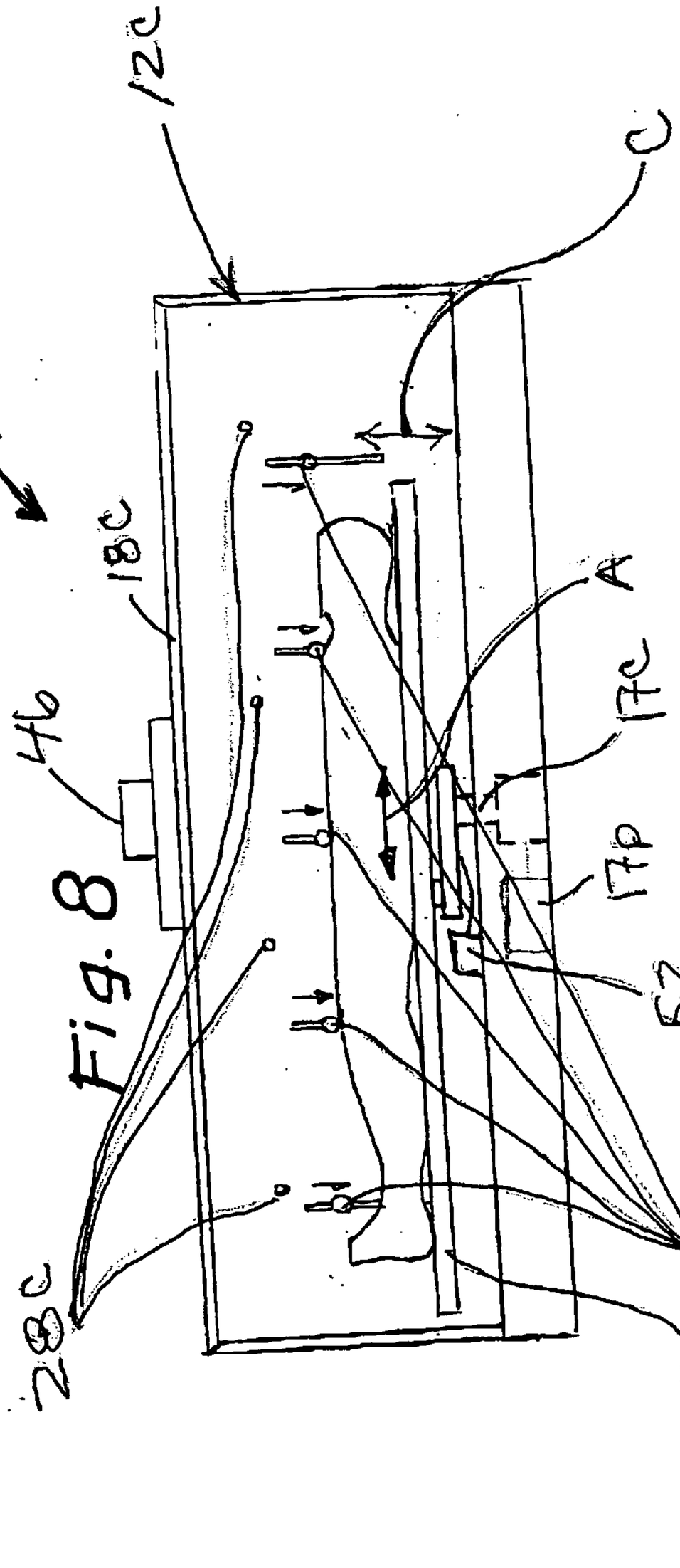


Fig. 8

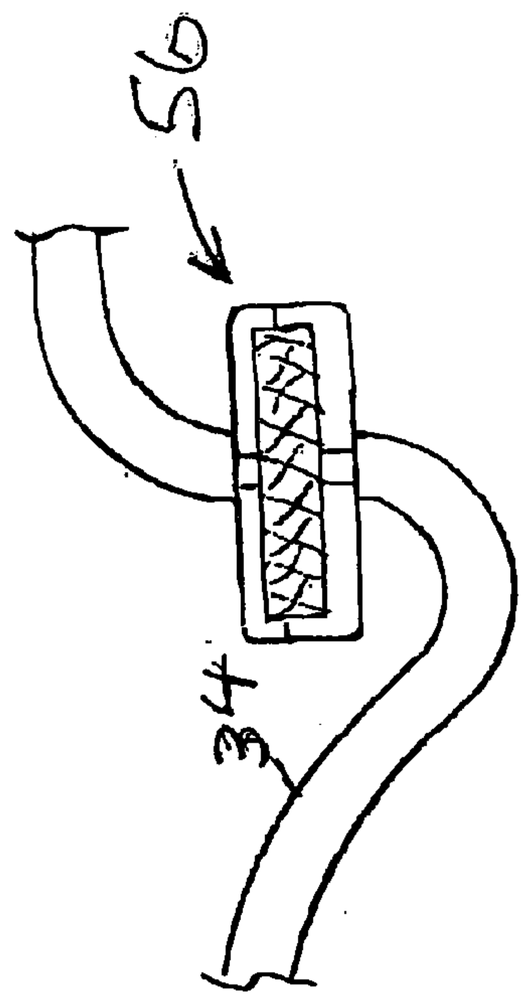


Fig 10

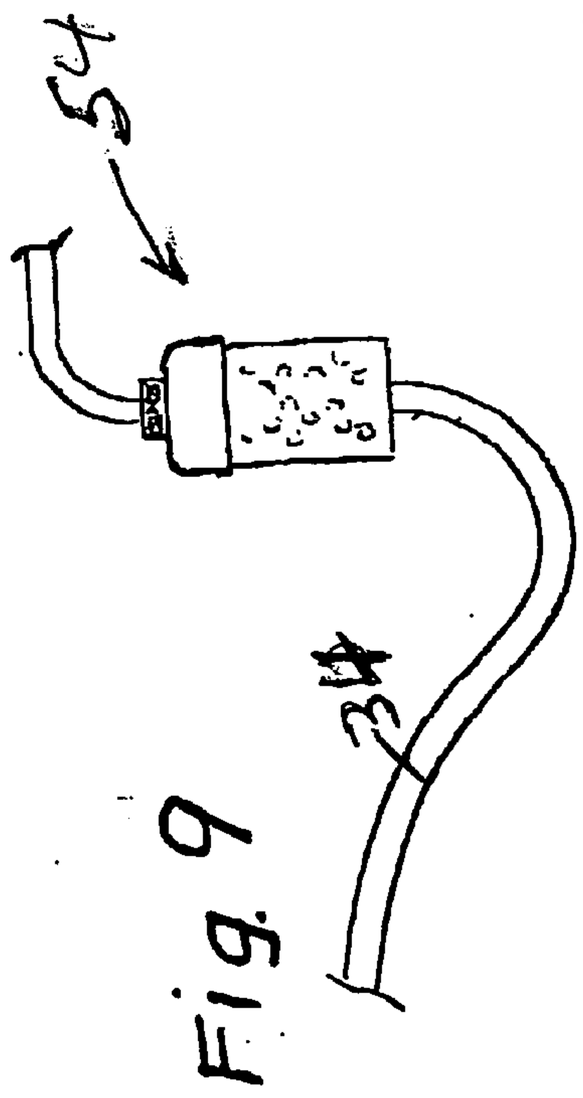


Fig. 9

LASER AUTOPSY AND CREMATION

FIELD OF THE INVENTION

[0001] The present invention relates generally to methods and devices for performing autopsies or cremating the bodies of human or animal subjects. More particularly, the present invention pertains to methods and devices wherein lasers are used to cremate or perform autopsies on deceased human or animal bodies.

BACKGROUND OF THE INVENTION

[0002] A. Cremation

[0003] Cremation is the second most common form of disposition of human remains in the United States, and may be even more common in certain other countries or regions of the world. Typically, prior to cremation, any sizable metal or mechanical mechanical devices, such as prosthetic joints, pacemakers and hearing aids, are removed from the body of the deceased. After the body has been prepared, it is placed in a combustible casket or container and the casket or container is then placed in a cremation furnace sometimes referred to as a cremator.

[0004] A cremator typically comprises an enclosed chamber having a burner and a hearth or slab upon which the body is placed. The burner is typically fired by combustible fuel, such as natural gas. Once the burner is actuated, the temperature within the chamber raises to about 1600-2000 degrees Fahrenheit (872-1092 degrees Celsius). This high heat causes thermal decomposition of all or most of the soft tissue of the body, leaving mostly bone fragments as solid remains. Contrary to common belief, little or no "ashes" are produced by cremation of the soft tissue. Depending on the particular cremator used, it may take between 80 to 120 minutes to cremate the body of an adult of average size. When the cremation is complete and the solid remains are cool, the solid remains are mechanically ground up into small particles and placed in an urn or container.

[0005] The emission of pollutants into the environment is a concern associated with the cremation process. To minimize the release of pollutants into the air, some cremators utilize a dual-stage method. In these dual stage cremators, the coffin or container holding the body is initially placed in a first chamber where it is heated by a primary burner in the presence of only a limited amount of air to cause reduction burning. Thereafter, the embers are transferred from the first chamber to an afterburner chamber. In the afterburner chamber, an afterburner heats the embers in the presence of more air (i.e., more oxygen) to cause oxidation burning to occur.

[0006] Some examples of prior art cremators are described in U.S. Pat. Nos. 6,474,251 (Vidallet et al.), 5,526,757 (Yang), 5,104,630 (Looker), 4,603,644 (Brookes) and 4,401,038 (Segrest), the entire disclosure of each such patent being expressly incorporated herein by reference.

[0007] An autopsy is an exam of the body of a person who has died. The purpose of an autopsy is to answer questions about the person's illness or the cause, mode or mechanism of death. In addition, autopsies provide valuable information that helps doctors save the lives of others. Autopsies are performed by specially trained physicians, called pathologists.

[0008] B. Autopsy

[0009] An autopsy is essentially an examination of the body of a person who has died for the purpose of answering questions about the person's illness or the cause of death. Autopsies can provide valuable information that helps doctors save the lives of others. In a typical autopsy, a pathologist initially performs and external examination of the body in an effort to find clues or evidence about the cause or circumstances of death. Next, the pathologist performs an internal examination wherein he or she makes incisions in the body and examines the internal organs. Specific organs are typically removed and weighed and samples of organ tissue are taken for subsequent microscopic examination. Samples or tissue and/or body fluids are also typically taken for chemical and/or toxicological analysis.

[0010] Various procedures and techniques have been established for performance of the internal examination portion of the autopsy. The procedure or technique used for the internal examination is unusually a variant of one of the four basic methods. Those four basic methods are a) Virchow's method wherein the organs are removed one by one and examined later on, b) Ghon's method wherein the organs are removed in anatomical or functionally related groups (i.e., an "en bloc" technique), c) Letulle's method wherein the contents of the thoracic and abdominal cavities are removed in whole (i.e., an "en masse" technique) and d) Rokitansky's technique wherein the organs are opened and examined in situ.

[0011] Using the traditional techniques, a routine autopsy may take approximately 2 to 4 hours to complete in the autopsy room. The microscopic, chemical and toxicological analysis may take several additional days. It is highly desirable for autopsies to be performed in ways that don't interfere with subsequent burial or cremation.

SUMMARY OF THE INVENTION

[0012] The present invention provides laser methods and apparatus for cremation and/or autopsy of human or animal bodies. When the invention is used for cremation, laser energy is applied to the body of the deceased in such a manner as to cremate the body. When the invention is used for autopsy, laser energy is applied to the body in such a manner as to expose desired anatomical structures (e.g. organs, joints, muscles, body cavities, etc.) so that those anatomical structures may be examined and/or photographed, or otherwise imaged or scanned (e.g. by multiphoton microscopy, fluorescence scanning, etc.)

[0013] In accordance with the present invention, there is provided a device for laser cremation or autopsy. Such device comprises a chamber wherein the body is placed and one or more laser emitting devices which cast laser beam(s) onto the body so as to vaporize or otherwise destroy the body. In some embodiments, the laser is capable of vaporizing or substantially destroying both soft tissue and bone such that substantially the entire body is reduced to a vapor or gaseous byproduct. A vapor, mist or atomized stream of non-combustible liquid, or gas(e.g., water, nitrogen) may be provided within the chamber to cool the process and facilitate laser vaporization, rather than burning or thermal degradation, of the soft tissue and/or bone. The laser(s) may be used so as to remove consecutive sections or slices of tissue. Any type of laser that is suitable for the purpose may be

used. In some embodiments, a plurality of lasers of differing types may be used concurrently or in consecutive stages to destroy different types of tissue. For example, each section or slice of the body may be vaporized or destroyed in a three stage procedure. In the first stage, a relatively low power laser such as a pulsed diode laser (e.g., Corona Model 532-75 diode-pumped Q-switched green laser; MFG Coherent, Inc., 5100 Patrick Henery Dr., Santa Clara, Calif. 95054) may be used to vaporize or destroy low density soft tissue such as skin, subcutaneous fat and associated body fluid. Thereafter, in the second stage a medium power laser such as a CO_2 laser (e.g., Model K500 Diamond CO_2 laser MFG Coherent, Inc., 5100 Patrick Henery Dr., Santa Clara, Calif. 95054) set on a moderate power setting may be used to vaporize or destroy moderately dense tissue such as muscle and ligament. Thereafter, the third stage may optionally be carried out using a high power laser such as a CO_2 laser (e.g., Model K500 Diamond CO_2 laser MFG Coherent, Inc., 5100 Patrick Henery Dr., Santa Clara, Calif. 95054) set on a high power setting to vaporize or destroy dense tissue and remaining tissue, such as bone. During all or at least some part(s) of the procedure, such as during each third stage of the above-summarized three-stage procedure, a suitable liquid vapor or mist (e.g., water mist) may be introduced into the chamber to facilitate laser vaporization of the bone or other tissue as opposed to laser induced carbonation or ash formation from the bone or other tissue. Preferably, the laser will raise the temperature of the tissue high enough (e.g., to at least about 275□F.) to kill any pathogens (e.g., microbes, viruses, microbial spores, prions, etc.) that may be present. Optionally, the vapor and/or gaseous discharge from the chamber may be passed through an afterburner wherein it is heated or burned so as to ensure complete destruction of tissue and any pathogens contained therein. Alternatively or additionally, the vapor and/or gaseous discharge from the chamber may be passed through a trap or filtering device wherein all or substantially all vapor or other residue(s) of the laser tissue destruction will be captured.

[0014] Further in accordance with the present invention, a photographic or imaging device for obtaining videotape, photographs or other images of the body may be mounted on or in or may be used in association with the laser device such that photographic or taped images of the body may be made during the procedure. When the invention is used to perform a full or partial autopsy, the laser(s) may remove sections or slices of body tissue and the photographic or imaging device may be used after each section or slice has been removed, or at desired intervals (e.g., every fifth slice or every one inch) to view and to assess (e.g., measure, determine coloration of, etc) the organs and anatomical structures of the body. In some embodiments, the photographs or images so obtained may be compared to normal photographs or images or data extracted form such photographs or images (e.g., measurements of the size of organs, determinations of the coloration of certain tissue) may be compared to photographs or images of normal anatomy and/or data relating to the normal anatomy (e.g., normal size range for organs, normal coloration of tissues, etc.) to screen for the presence of pathological conditions, deformities or disease states. In some embodiments, the photographic or image files may be generated in digital format or may be converted to digital format and then transmitted to a computer that is programmed to make the desired comparisons to the normal anatomy and/or data relating to the normal anatomy.

[0015] Still further in accordance with the invention, one or more detectors or analytical devices may be attached to the chamber to detect or perform quantitative or qualitative analysis of the vapor and/or gaseous discharge from the chamber. This aspect of the invention may be particularly useful in embodiments wherein the laser device is being used to perform a full or partial autopsy.

[0016] Still further in accordance with the invention, one or more of the above-summarized devices for laser cremation or autopsy may be positioned or mounted on or in a mobile platform or vehicle (e.g., a trailer, bus, bus-like vehicle, aircraft, boat, hover-craft, helicopter, etc.) such that the laser cremation and/or autopsy device(s) may be moved from location to location. Such embodiments of the invention may be useable for performing cremation and/or autopsies at remote or rural locations and/or at the scenes of disasters, epidemics or other situations where humans or animals have died. As described herein, the laser cremation and autopsy devices of the present invention are useable to conduct autopsies and/or cremations without the release of potentially toxic or pathogenic matter into the environment. Thus, these mobile embodiments of the invention may be particularly advantageous for performing autopsies and/or cremations of the bodies of humans or animals that are suspected to contain pathogenic matter or organisms (e.g., viruses, microbes, bacteria, spores, prions, etc.) or toxic materials (nerve gas, cyanide, carcinogens, mutagens, teratogenic substances, substances that are known to cause undesirable contamination of air, soil, ground water, or the environment). Additionally, because the laser autopsy and cremation devices of the present invention may be capable of cremating bodies more quickly than conventional crematory devices, their use may be particularly advantageous in situations where it is desired to rapidly cremate large numbers of human or animal bodies (e.g., at the scene of a disaster such as an earthquake or epidemic) and/or to rapidly cremate the bodies of large animals (e.g., cremation of herds of cattle exposed to Bovine Spongiform Encephalopathy or "Mad Cow Disease" or other large animal diseases).

[0017] Still further objects and aspects of the present invention will become apparent to those of skill in the art upon studying the accompanying drawings and upon reading and understanding the detailed description set forth herebelow.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] **FIG. 1** is a perspective view of a first embodiment of a laser cremation or autopsy device.

[0019] **FIG. 2** is a cross sectional view through line -**2**- of **FIG. 1**.

[0020] **FIG. 3** is a cut-away side view of a second embodiment of a laser cremation or autopsy device.

[0021] **FIG. 4** is a cut-away end view of the device of **FIG. 3**.

[0022] **FIG. 5** is a cut-away side view of a third embodiment of a laser cremation or autopsy device.

[0023] **FIG. 6** is a schematic diagram of an alternative laser guiding track useable in connection with the device of **FIG. 5**.

[0024] **FIG. 7** is a schematic diagram of alternative laser guiding tracks useable in connection with the device of **FIG. 5**.

[0025] **FIG. 8** is a cut-away side view of a fourth embodiment of a laser cremation or autopsy device.

[0026] **FIG. 9** is a schematic diagram of one embodiment of a device for filtering or cleaning air or gaseous discharge cremation or autopsy devices of this invention.

[0027] **FIG. 10** is a schematic diagram of another embodiment of a filtering or cleaning air or gaseous discharge from any of the cremation or autopsy devices of this invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0028] The following detailed description, and the drawings to which it refers, are provided for the purpose of describing and illustrating certain examples or embodiments of the invention only and are not intended to exhaustively describe or show all possible embodiments or examples of the invention.

[0029] Although exemplary embodiments of the invention have been shown and described, many changes, modifications and substitutions may be made by those having ordinary skill in the art without necessarily departing from the spirit and scope of this invention. Specifically, elements or attributes described in connection with one embodiment may also be used in connection with another embodiment provided that the inclusion or use of such element or attribute would not render the embodiment in which it is incorporated unuseable or otherwise undesirable for an intended application. Accordingly, all such additions, deletions, modifications and variations to the above-described embodiments are to be included within the scope of the following claims.

[0030] As those of skill in the art will appreciate, the devices and methods of the present invention may exist in various embodiments. Examples of certain embodiments are shown in accompanying **FIGS. 1-10**.

[0031] **FIGS. 1-2** depict a first embodiment of a laser cremation/autopsy device **10** comprising a housing **12** having an openable and closeable lid **18** and a laser emitting apparatus **14**. The body of the deceased BOD is placed inside the housing **12** upon a slab member **16**. The lid **18** is then closed such that a sealed chamber **13** is formed within the housing **18**. The laser emitting/targeting apparatus **14** is mounted on a carriage **19** that travels back and forth (in the longitudinal direction indicated by arrow A) on a rail member **20**. The carriage **19** may comprise an electric motor which propels it along the rail member **20** or alternatively may utilize any suitable type of drive or propulsion mechanism including a pulley system or a magnetic drive. The rail member **20** is suspended above the body BOD and below the closed lid **18**. The ends of rail member **20** are inserted into slots **22** at either end of the chamber **13**. The rail member **20** is propelled by a motor or other suitable drive system (not shown) such that it moves from side to side in the transverse direction (indicated by Arrow B). In some embodiments the slab member **16** may be mounted on a hydraulic cylinder or may be connected to any other suitable drive or propulsion means to additionally move the slab member **16** up and down in the vertical direction (as indicated by Arrow C).

[0032] The laser emitting apparatus **19** may comprise any suitable type of laser emitting apparatus, such as a CO_2 laser (e.g., Model K500 Diamond CO_2 laser MFG Coherent, Inc., 5100 Patrick Henery Dr., Santa Clara, Calif. 95054). The power of the laser emitting apparatus **14** may be adjustable in at least some embodiments of the invention. The width and depth of the area of vaporization will vary depending on the laser strength, focal depth, speed, rate of absorption of the targeted matter, etc. A diode laser beam used in this invention will typically have a width of about 3 mm and a CO_2 laser beam used in this invention will typically have a width of about 11 mm, although other beam widths are possible and may be useable in this invention. Vaporization depths of about 1-3 mm for diode lasers and about 3-6 mm for CO_2 lasers will be expected, depending on the speed of beam movement and the type/density/composition of the tissue being vaporized. The power of the laser beam, focal depth of the laser bean and/or the distance between the laser emitting apparatus and the upper surface of the body may be adjusted during the procedure to facilitate consistent vaporization of varying types of tissue. Typically, dense tissue such as ligament, muscle and bone will require more power or closer positioning of the laser emitting device than less dense tissue such as skin or subcutaneous fat and body fluids.

[0033] In the example of **FIG. 1**, the body BOD is in a supine position upon the slab **16** and the laser emitting/targeting apparatus **14** is directed downwardly such that the laser beam will strike the anterior surface of the body. In this manner, the laser beam will vaporize a quantity of tissue of a certain width and depth at each site where the laser beam strikes the body. The carriage **19** carries the laser emitting apparatus **14** back and forth along the rail member **20** thereby causing the laser beam to vaporize a linear swatch of tissue of a certain width and depth. In some embodiments, more than one longitudinal pass may be required to ablate or vaporize the desired longitudinal swatch of tissue. For example, a fist pass may be made with the laser emitting apparatus **14** at a first power setting to destroy tissues of low density (e.g, skin, subcutaneous fat, blood, etc.), a second pass may be made with the laser emitting apparatus at a higher power setting to destroy tissues of moderate density (e.g., muscle and tendon) and a third pass may be made with the laser emitting apparatus **14** at an even higher power setting to destroy the remaining tissue such as bone. Or, instead of using different power settings on a single laser emitting apparatus **14**, a number of different laser emitting apparatus may be used, one after another, to accomplish the desired vaporization of a linear swatch of tissue. After each linear swatch of tissue has been vaporized, the rail member **22** is moved in a transverse direction by an increment that is substantially equal to the width of the tissue swatch that was vaporized. This procedure is then repeated a number of times until a full transverse section of the body has been vaporized or otherwise removed by the laser. Thereafter, the slab member **16** may be raised by an incremental distance approximately equal to the depth of the transverse section that was removed (or alternatively the slab **16** may be maintained at the same height and the focal depth of the laser may be adjusted by such incremental amount) and then another transverse section may be removed by repeating the above-described coordinated movements of the laser emitting apparatus **14** and the track member **20**. However, in removal of the second transverse section of tissue, the track

member **20** may move in a direction opposite the direction in which it was moved during removal of the first section. For example, if the track member **20** was moved from front to back during vaporization of the first longitudinal section the track member **20** may be moved from back to front during the vaporization of the second longitudinal section. Thereafter, the entire procedure is repeated again and again to remove consecutive longitudinal sections of the body BOD until substantially all of the body BOD has been vaporized by the laser.

[**0034**] A programmable controller (e.g., a microprocessor or computer) may be used to coordinate and control the longitudinal movement of the carriage **19** and laser emitting apparatus **14** on the track member **20** (Arrow A), the incremental transverse movement of the track member **20** and the incremental upward movement (Arrow C) of the slab (or alternatively the corresponding adjustments of the focal depth of the laser) to accomplish the process in a controlled and automated manner.

[**0035**] In embodiments used for autopsy purposes, a visual examination of the organs and anatomical structures may be made after removal of each longitudinal section, or at different times during the procedure when desired anatomical structures are rendered visible. A camera or imaging device (not shown in **FIGS. 1 and 2**) may be used to photograph the organs or anatomical structures exposed at various times during this section by section procedure. Such photograph(s) or image(s) may be examined grossly for evidence of pathology or cause of death. Or, such photograph(s) or image(s) may be compared to standard photographs, images, data files or other normal parameters or indicators of pathology to ascertain whether certain anatomical features (e.g., organ size, coloration, etc.) are within or outside of normal ranges or whether indicia of certain pathologies is/are present. To facilitate such comparison, the photograph(s) or image(s) may be digitized or otherwise created, converted or stored in a computer readable format and then a computer (not shown in FIGS. **1** or **2**) may be programed and used to perform the desired comparison(s) to normal parameters.

[**0036**] Of course, in embodiments used for autopsy purposes, the laser emitting apparatus **14** may be paused and the lid **18** may be opened at one or more times during the laser vaporization procedure to allow the pathologist to obtain samples of tissue or body fluid for subsequent histological and or other analysis.

[**0037**] As shown in **FIG. 2**, the air and any vapor or gaseous byproduct of the laser procedure may be drawn or channeled out of the chamber **13** through an outflow conduit **34**. A propulsion device **32** such as a fan or pump may draw the air, vapor and other gas out of the chamber **13** and through the outflow conduit **34**. An afterburner **30** may be provided within or ahead of the outflow conduit **34** to heat or afterburn the air, vapor or gas that exits the chamber **13**. This afterburner will preferably heat the exiting air, vapor and gas to a temperature that is sufficiently high (e.g., at least about 275□ F.) to destroy any pathogens (e.g., microbes, viruses, prions, microbial spores, etc) that may be present. As shown in **FIG. 1**, an air intake duct **26** may be provided to allow air to enter the chamber **13** as the air, vapor and gas is removed from the chamber **13** thought the outflow conduit **34**. Also, one or more filters or traps may be placed on the outflow conduit **34** to filter or trap particles or chemical substances. Examples of some types of filters or traps useable with any embodiment of the invention are shown in **FIGS. 9 and 10**. In **FIG. 9 a** liquid filled canister **54** is attached to the outflow conduit **34** such that the air, vapor or gas exiting the chamber (before or after any optional afterburner **30**) will bubble through the liquid. A sintered metal disc or other apparatus may be used to atomize or divide the incoming stream of air, other gas and/or vapor such that relatively small bubbles will be created, thereby maximizing the area of interface between the air, gas and/or vapor and the liquid within the cannister. In **FIG. 10 a** housing **56** that contains filter paper, wadding or other filter material is mounted on the outflow conduit **34** such that the air, gas and/or vapor will pass through the filter material.

[**0038**] It will be appreciated that, although **FIGS. 1 and 2** show a system where longitudinal sections of tissue are vaporized or removed from the body in a section-by-section process, various other patterns of laser tissue vaporization or removal may be employed. For example, in some cases, the laser emitting apparatus **14** and/or the body BOD may be moved so as to effect removal of transverse, sagital or diagonal section of the body. In other embodiments, especially those used solely for cremation purposes, it may not be desired or necessary to vaporize or remove the tissue in a section-by-section or slice-by-slice fashion. Thus, in those situations, the laser emitting apparatus **14**, the laser beam itself and/or the body may be moved or adjusted in whatever manner is appropriate to effect the desired vaporization or ablation of substantially all of the body of the deceased.

[**0039**] During at least some portions of the procedure it may be desirable to introduce a liquid mist or vapor, such as a cool water mist, through outlets **28** and into the chamber **13** to facilitate vaporization as opposed to burning or ashing of the tissue. The use of such mist may be particularly desirable during portions of the procedure when the laser id being used to vaporize dense tissue such as bone.

[**0040**] In some embodiments of the invention, one or more laser autopsy and cremation device **10** and associated ducts, fans, filters, plumbing, etc. may be positioned on or in a mobile platform or vehicle (e.g., a trailer, bus, bus-like vehicle, aircraft, boat, hover-craft, helicopter, etc.) such that the laser cremation and/or autopsy device(s) and associated ducts, fans, filters, plumbing, etc., may be moved from location to location. For example, one or more of the laser autopsy and cremation devices **10** may be mounted in or on a truck trailer, ship or boat, amphibious vehicle, or aircraft (such as a C-140 or other aircraft commonly used by military and/or civil authorities or private entities). In some cases, where a source of electrical power is available at the location where the autopsy and/or cremation is to be conducted, the mobile platform or vehicle may be adapted for connection to such external source or electrical power for operation of the lasers as well as any vacuums, lights, cameras, analytical devices, etc. required for the particular autopsy and/or cremation procedures to be performed at the location. Alternatively, in situations where there is not an available source of electrical power at the location, one or more generators, solar collector panels, batteries and/or other portable sources of electrical power may be positioned on in the mobile platform or vehicles to provide the needed electrical power. These mobile embodiments of the invention may be moved to remote or rural locations and/or at the scenes of disasters,

epidemics or other situations where humans or animals have died. For example, a truck mounted laser crematory and autopsy device **10** of the present invention may be driven to funeral homes, coroners offices or other locations that are not equipped with on-site cremation or laser autopsy facilities and/or are not licensed to perform such procedures. As another non-limiting example, laser cremation and autopsy devices **10** of the present invention may be mounted in trucks, boats or aircraft and moved to the scene of an epidemic or other disaster where there are bodies of humans or animals suspected to contain pathogenic matter or organisms (e.g., viruses, microbes, bacteria, spores, prions, etc.) or toxic materials (nerve gas, cyanide, carcinogens, mutagens, teratogenic substances, substances that are known to cause undesirable contamination of air, soil, ground water, or the environment) and those bodies may be autopsied and/or cremated on site, with no need for transportation of the bodies to other locations and with minimal potential for environmental contamination and/or exposure of cremation and/or autopsy personnel to potentially pathogenic and/or toxic matter.

[0041] The invention has been described herein with reference to certain examples or embodiments and no attempt has been made to exhaustively describe all possible examples or embodiments. As those of skill in the art will recognize, various additions, deletions and modifications may be made to the specific examples and embodiments described herein without departing from the intended spirit and scope of the invention.

What is claimed is:

1. A method for performing laser cremation and/or autopsy of the body of a deceased human or animal, said method comprising the steps of:

A. applying laser energy to the body such that the laser substantially destroys at least a substantial portion of the body.

2. A method according to claim 1 wherein Step A comprises:

placing the body in proximity to a laser-emitting apparatus;

causing the laser-emitting apparatus to emit a laser beam such that the laser beam destroys at least a substantial portion of the body.

3. A method according to claim 1 wherein Step A comprises:

providing a laser apparatus which comprises a substantially enclosed chamber within which the body may be placed and laser apparatus useable to cast a tissue destroying laser beam on a body placed within the chamber;

placing the body within the substantially enclosed chamber; and,

using the laser apparatus to cast the laser beam on the body such that at least a substantial portion of the body is vaporized or otherwise destroyed by the laser beam.

4. A method according to claim 1 further comprising the step of:

B. collecting any solid, liquid or gaseous residue that remains following the laser destruction of at least a substantial portion of the body of Step A.

5. A method according to claim 4 wherein Step B comprises:

passing air and any vapor from the area adjacent the body through a collection apparatus for collection of said residue.

6. A method according to claim 1 wherein the laser comprises a CO_2 laser.

7. A method according to claim 1 wherein Step A comprises using the laser for section by section destruction of a substantial portion of the body.

8. A method according to claim 7 wherein the method is carried out for the purpose of autopsying at least a portion of interest of the body and wherein each section of the portion of interest of the body is less than approximately 5 cm thick.

9. A method according to claim 7 wherein the body is held substantially stationary and the laser beam is moved so as to cause section by section destruction of at least a substantial portion of the body.

10. A method according to claim 7 wherein the laser beam is held substantially stationary and the body is moved so as to cause section by section destruction of at least a substantial portion of the body.

11. A method according to claim 7 wherein both the body and the laser beam are moved so as to cause section by section destruction of at least a substantial portion of the body.

12. A method according to claim 1 further comprising the step of:

B. making a photograph or image or scan of the body.

13. A method according to claim 12 wherein the method is performed for the purpose of autopsy and wherein the photograph or image is used to determine the cause of death or presence of pathology within the body.

14. A method according to claim 13 wherein the method further comprises the step of:

C. comparing the photograph or image to normal parameters to determine whether the anatomical structures shown in the photograph or image are abnormal.

15. A method according to claim 14 wherein Step C is performed by i) providing a computer that is programed to compare the photograph or image to normal parameters, ii) converting the photograph or image to or storing the photograph or image in a computer-readable format , iii) transmitting the photograph or image in the computer-readable format to the computer and iv) using the computer to compare the photograph or image to the normal parameters to determine whether the anatomical structures shown in the photograph or image are abnormal.

16. A method according to claim 1 further comprising the step of:

B. passing air and any vapor from the area adjacent the body through an afterburner device.

17. A method according to claim 1 further comprising the step of:

B. passing air and any vapor from the area adjacent the body through a filtration device.

18. A method according to claim 1 further comprising the step of:

B. passing air and any vapor from the area adjacent the body through a liquid trap device.

19. A method according to Claim one wherein the laser used in Step A comprises a CO_2 laser.

20. A method according to claim 1 wherein Step A is carried out using a single laser.

21. A method according to claim 1 wherein a first portion of Step A is performed using a laser of a first power setting and a second portion of Step A is carried out using the laser on a second power setting.

22. A method according to claim 1 wherein Step A is carried out using a plurality of lasers.

23. A method according to claim 1 wherein Step A is carried out using at least two different types of lasers.

24. A method according to claim 23 wherein Sep A is carried out in section by section fashion and wherein each section of the body is substantially destroyed by a process which comprises a fist pass over that section of the body by a first laser beam and a second pass over that section of the body by a second laser beam.

25. A method according to claim 24 wherein the process by which each section of the body is substantially destroyed further comprises a third pass over that section of the body by a third laser beam.

26. A method according to claim 25 wherein the first pass is carried out using a pulsed diode laser, the second pass is carried out using a CO_2 laser on a first power setting and the third pass is carried out using a CO_2 laser on a second power setting that is higher than the first power setting.

27. A method according to claim 26 wherein the first pass substantially destroys at least any skin, subcutaneous fat and body fluids contained in that section, the second pass substantially destroys at least any muscle and ligaments contained in that section and the third pass substantially destroys any bone and remaining tissue contained in that section.

28. A laser device for cremation and/or autopsy of a human or animal body, said device comprising:

a housing which defines an enclosed chamber therewithin, said chamber being sized and configured such that the body may be positioned therein;

a laser emitting apparatus useable to cast a laser beam on the body such that at least a substantial portion of the body will be destroyed by the laser beam.

29. A device according to claim 28 further comprising apparatus for moving or targeting the laser beam relative to the body.

30. A device according to claim 29 wherein the apparatus for moving the laser beam comprises apparatus for moving the laser emitting apparatus such that the laser beam emitted from the laser emitting apparatus moves over at least a portion of the body.

31. A device according to claim 29 wherein the apparatus for moving the laser beam comprises a movable reflector which directs the laser beam such that the laser beam moves over at least a portion of the body.

32. A device according to claim 28 further comprising apparatus for moving the body relative to the laser beam.

33. A device according to claim 28 further comprising:

apparatus for moving the body; and,

apparatus for moving the laser beam.

34. A device according to claim 28 further comprising:

apparatus for removing vapor and gas from the chamber.

35. A device according to claim 29 further comprising:

apparatus for filtering any vapor or gas removed from the chamber.

36. A device according to claim 35 wherein the apparatus for filtering comprises:

a filter housing through which the vapor or gas is channeled; and,

a quantity of filter material positioned within the filter housing.

37. A device according to claim 35 wherein the apparatus for filtering comprises: a quantity of liquid through which the vapor or gas is bubbled.

38. A device according to claim 28 further comprising:

apparatus for obtaining a photograph or image, or scan of the body.

39. A device claim 38 wherein the apparatus for obtaining a photograph or image of the body is adapted to obtain a photograph or image that is useable to determine the cause of death or presence of pathology within the body.

40. A device according to claim 38 further comprising:

apparatus for comparing the photograph or image of the body to normal parameters to determine whether at least one anatomical structure shown in the photograph or image is abnormal.

41. A device according to claim 40 wherein Step C wherein the apparatus for comparing the photograph or image to normal parameters comprises:

a computer that is programed to compare the photograph or image to normal parameters.

42. A device according to claim 41 wherein the apparatus for comparing the photograph or image to normal parameters further comprises:

apparatus for converting the photograph or image to, or storing the photograph or image in, a computer-readable format; and,

apparatus for transmitting the photograph or image to the computer.

43. A device according to claim 41 wherein the computer is programmed to compare the photograph or image to the normal parameters to determine whether at least one anatomical structure shown in the photograph or image is abnormal.

44. A device according to claim 28 further comprising:

an afterburner apparatus through which gas or vapor from the chamber is channeled.

45. A device according to claim 44 wherein the afterburner apparatus is operative to heat the vapor or gas to a temperature that is sufficiently high to kill any pathogens that are contained in the vapor or gas.

46. A device according to claim 28 wherein the laser emitting device comprises a single laser emitting device.

47. A device according to claim 28 wherein the laser emitting apparatus is adapted to emit a laser beam of a first power to perform one portion of the cremation or autopsy procedure and to then emit a laser beam of a second power to perform a second portion of the cremation or autopsy procedure.

48. A device according to claim 28 wherein the laser emitting apparatus comprises a plurality of laser emitting apparatus.

49. A device according to claim 28 wherein the plurality of laser emitting apparatus comprise at least two different types of lasers.

50. A device according to claim 49 wherein the device is adapted to cause a first laser pass over each section of the body by a first laser beam and a second laser pass over each section of the body by a second laser beam.

51. A device according to claim 50 wherein the device is further adapted to cause a third laser pass over that section of the body by a third laser beam.

52. A device according to claim 51 wherein the first pass is carried out using a pulsed diode laser, the second pass is carried out using a CO_2 laser on a first power setting and the third pass is carried out using a CO_2 laser on a second power setting that is higher than the first power setting.

53. A device according to claim 26 wherein the lasers are adapted and powered such that, i) the first pass substantially destroys at least any skin, subcutaneous fat and body fluids contained in that section, ii) the second pass substantially destroys at least any muscle and ligaments contained in that section and iii) the third pass substantially destroys any bone and remaining tissue contained in that section.

54. A method according to claim 1 wherein Step A further comprises:

providing a laser autopsy and cremation device positioned on or in a mobile platform or vehicle;

moving the mobile platform or vehicle to a location where the body t be autopsied or cremated is located; and, thereafter,

using the autopsy and cremation device positioned on or in a mobile platform or vehicle to autopsy or cremate the body.

55. A device according to claim 28 wherein the laser device for cremation and/or autopsy is positioned on or in a mobile platform or vehicle.

56. A device according to claim 55 wherein the mobile platform or vehicle is selected from the group consisting of:

motor vehicles;

trucks;

trailers;

busses;

boats;

ships;

amphibious vehicles;

hovercraft;

aircraft;

airplanes; and

helicopters.

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