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- (71) Applicant: SERENITY DATA SERVICES, INC.  
[US/US]; P.O. Box 2823, Carbondale, IL 62902-2823 (US).
- (72) Inventor: CLARK, Kevin, P.; 512 West Oak Street, Carbondale, IL 62901 (US).
- (74) Agents: YALE, Guy, D. et al.; Alix, Yale & Ristas, LLP, 750 Main Street, Suite 1400, Hartford, CT 06103-2721 (US).
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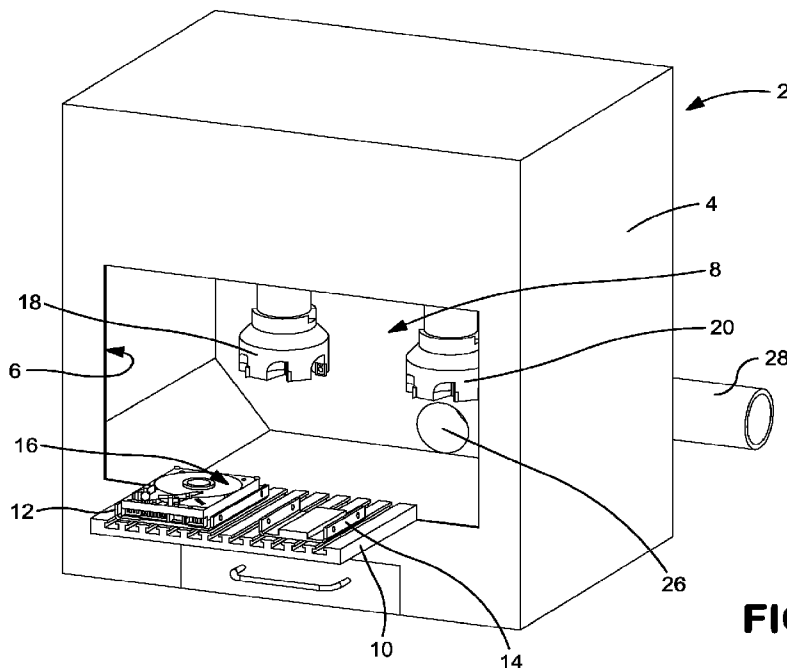
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(54) Title: HARD DRIVE DATA DESTROYING DEVICE



**FIG. 1**

(57) Abstract: Three systems for the destruction of the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives. One system utilizes a mill cutter with which the hard drive has relative motion in the direction of the axis of the mill cutter to destroy the data storage portion. A second system utilizes a laser to physically destroy the data storage portion. The third system utilizes a chemical solvent to chemically destroy the data storage portion.

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# ***HARD DRIVE DATA DESTROYING DEVICE***

## ***TECHNICAL FIELD***

**[0001]** This application relates generally to a device for destroying the data on a hard drive and more particularly, to a device for destroying the data on the data storage portion of a hard drive so that the data thereon is completely destroyed without having to physically destroy the entire hard drive.

## ***BACKGROUND***

**[0002]** Various types of data are stored on the hard drives of computers. Such data may include personal confidential information concerning individuals. This data may include their social security numbers, financial information, health information and private telephone numbers as examples. The hard drives are also used to store corporate information which may include proprietary information such as developing products, customer lists, and business plans. The government may store confidential information including highly classified information on the hard drives.

**[0003]** When it is desired to replace the computer, the data must be removed from the hard drive so that it cannot be misused by unscrupulous individuals. Merely erasing the data by using the computer commands is not sufficient as the data can be recaptured. This is true even if the hard drive is removed for upgrade purposes. However, even if the hard drive is removed, something must be done to destroy the data.

**[0004]** One way of ensuring that the data cannot be used or recovered from an unwanted hard drive is to completely destroy the hard drive. This has been accomplished in the past by completely shredding the entire hard drive. However, as the hard drive is encased in a metal, the complete destruction involves the shredding of a relatively large volume of metal that requires a lot of energy. It is thus desirable to have a process and apparatus for destroying the data on a hard drive that is more energy efficient.

**[0005]** An example of a hard drive data destroying device is shown in U.S. Patent Application No. 13/272,472, entitled Hard Drive Shredding Device, filed October 13,

2011 by Clark et al, the disclosure of which is incorporated herein by reference in its entirety.

### **SUMMARY**

**[0006]** According to one aspect of this disclosure, there is provided system for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives. The system comprises a rotatable milling cutter and a cradle for locating the electronic media storage device in a position to engage the milling cutter. The cutter and or the cradle is axially movable to permit the milling cutter engage and remove the data storage portion of the electronic media storage device while leaving at least a substantial portion of the remaining electronic media storage device intact.

**[0007]** According to another aspect, a system is provided for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives comprising a cutting chamber, a carriage for holding an electronic media storage device in said chamber, a rotatable milling cutter in said chamber for engaging into said storage device, and a non-rotatable center holding spear coaxial with said milling cutter and axially moveable into contact with said storage device to prevent rotation of the storage device while said milling cutter is engaging said device.

**[0008]** According to yet another aspect, there is provided a method for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives, comprising providing a rotatable milling cutter having an axis, providing a cradle for locating the electronic media storage device in a position to be engaged by said milling cutter, moving said cutter or said cradle in an axial direction and rotating said cutter about its axis to engage and remove the data storage portion of the electronic media storage device while leaving at least a substantial portion of the electronic media storage device intact.

**[0009]** According to a still further aspect, there is provided a system for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives that comprises a cutting chamber,

a laser for destroying the data storage portion, a cradle for holding an electronic media storage devices in said chamber, said cradle or said laser or both being movable to position the laser relative to the electronic media storage device so that the laser destroys the data storage portion of the electronic media storage device while leaving at least a substantial portion of the electronic media storage device intact.

**[0010]** According to a yet another aspect, a method is provided for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives comprising providing a laser, providing a cradle for locating the electronic media storage device in a position to be contacted by moving said laser and/or said cradle so that the laser destroys the data storage portion of the electronic media storage device while leaving at least a substantial portion of the remaining electronic media storage device intact.

**[0011]** According to a still further aspect, a chemical system for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives is provided which comprises comprising at least one pod for storing a chemical capable of eroding and stripping away the data storage portion of the electronic media electronic storage device, a hollow drill bit associated with each pod drivable into the cavity of the hard drive and a release mechanism of releasing said chemicals to flow through the drill bit into the cavity.

**[0012]** According to yet a still further aspect, there is provided a method for chemically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives, comprising providing a chemical in a pod capable of eroding and stripping away the data storage portion of the electronic media electronic storage device, driving a hollow drill bit into the cavity of the hard drive containing the data storage portion of electronic media electronic storage devices; and releasing the chemical to flow through the drill bit into the cavity.

### ***BRIEF DESCRIPTION OF THE DRAWINGS***

**[0013]** Fig. 1 is an isometric view of a hard disc drive (HDD) hard drive data destroyer in the loading position;

**[0014]** Fig. 1a is an isometric view of the HDD hard drive data destroyer of Fig. 1 showing the mounting of the cutters and table;

**[0015]** Fig. 2 is an isometric view of the hard drive data destroyer of Fig. 1 showing the vision verification;

**[0016]** Fig. 3 is an isometric view of the hard drive data destroyer of Fig. 1 showing the loading table positioned in the milling chamber;

**[0017]** Fig. 4 is an isometric view of the hard drive data destroyer of Fig. 1 showing the center spear of the milling cutter engaging the hard drive;

**[0018]** Fig. 5 is an isometric view of the hard drive data destroyer of Fig. 1 showing the milling cutter engaging the hard drive;

**[0019]** Fig. 6 is an isometric view of the hard drive data destroyer of Fig. 1 showing the hard drive destroyer after the milling cutter is disengaged from the hard drive;

**[0020]** Fig. 7 is an isometric view of the hard drive data destroyer of Fig. 1 showing the hard drive data destroyer after the destroying operation is completed;

**[0021]** Fig. 8 is an isometric view of the hard drive data destroyer for a solid state drive (SSD) hard drives showing the destroyer in the loading position;

**[0022]** Fig. 9 is an isometric view of the hard drive data destroyer of Fig. 8 showing the vision verification;

**[0023]** Fig. 10 is an isometric view of the hard drive data destroyer of Fig. 8 showing the loading table positioned in the body of the milling chamber;

**[0024]** Fig. 11 is an isometric view of the hard drive data destroyer of Fig. 8 showing the milling cutter engaging the hard drive;

**[0025]** Fig. 12 is an isometric view of the hard drive data destroyer of Fig. 8 showing the hard drive destroyer after the milling cutter is disengaged from the hard drive;

**[0026]** Fig. 13 is an isometric view of the hard drive data destroyer of Fig. 8 showing the hard drive data destroyer after the destroying operation is completed;

**[0027]** Fig. 14 is an isometric view of a laser HDD hard drive data destroyer in the loading position;

- [0028]** Fig. 15 is an isometric view of the laser hard drive data destroyer of Fig. 14 showing the vision verification;
- [0029]** Fig. 16 is an isometric view of the laser hard drive data destroyer of Fig. 14 showing the loading table positioned in the laser perforating chamber;
- [0030]** Fig. 17 is an isometric view of the laser hard drive data destroyer of Fig. 14 showing the laser acting on the hard drive;
- [0031]** Fig. 18 is an isometric view of the laser hard drive data destroyer of Fig. 14 after completion of the laser perforation process;
- [0032]** Fig. 19 is an isometric view of the laser hard drive data destroyer of Fig. 14 showing the laser hard drive data destroyer after the destroying operation is completed;
- [0033]** Fig. 20 is an isometric view of the laser hard drive data destroyer of Fig. 14 after completion of the laser perforation process;
- [0034]** Fig. 21 is an isometric view of the laser hard drive data destroyer of Fig. 20 showing the vision verification;
- [0035]** Fig. 22 is an isometric view of the laser hard drive data destroyer of Fig. 20 showing the loading table positioned in the body of the milling chamber;
- [0036]** Fig. 23 is an isometric view of the laser hard drive data destroyer of Fig. 20 showing the laser acting on the hard drive;
- [0037]** Fig. 24 is an isometric view of the laser hard drive data destroyer for SSD hard drives showing the destroyer in the loading position;
- [0038]** Fig. 25 is an isometric view of the laser hard drive data destroyer of Fig. 14 showing the laser hard drive data destroyer after the destroying operation is completed;
- [0039]** Fig. 26 is a block diagram of the milling process of Figs. 1-13;
- [0040]** Fig. 27 is a block diagram of the Fig. 33 laser process of Figs. 14-25;
- [0041]** Figs. 28a-28d are schematic plan views of an HDD and an SSD or an HDD drive before and after the application of the laser;
- [0042]** Fig. 29 is a schematic isometric view of a device for destroying hard drives using a spring-loaded chemical injecting system;

**[0043]** Fig. 30 is an isometric enlarged view of the radiator sub-assembly of the system of Fig. 29;

**[0044]** Fig. 31 is a isometric view of the cog sub-assembly of the system of Fig. 29;

**[0045]** Fig. 32 is an isometric view of the device of the injector pin sub-assembly of the system of Fig. 29;

**[0046]** Fig. 33 is an isometric view of the temperature control plate sub-assembly of the system of device of Fig. 29;

**[0047]** Fig. 34 is a isometric view of the system of Fig. 29 showing the injector pins released and the chemical flowing into an HHD hard drive;

**[0048]** Fig. 35 is a isometric view of the system of Fig. 29 showing the injector pins released and the chemical flowing into an SSD hard drive;

**[0049]** Fig. 36 is a schematic isometric view of a computer showing the placement of the system of Fig, 29 in the computer; and

**[0050]** Fig. 37 is a schematic isometric view of a chemical injecting system for use with laptops.

### ***DETAILED DESCRIPTION***

**[0051]** In general, the devices described herein can be used for destroying the data storage portion of media electronic storage devices such as HDD, HHD and SSD hard drives. The HDD (Hard Disc Drive) hard drive is essentially a metal platter with a magnetic coating. The coating stores the data. A read/write head on an arm accesses the data while the platters are spinning in a hard drive enclosure. In SSD (solid state drive) drives, instead of the magnetic coating on top of platters, the data is stored on interconnected flash memory chips or pods. The SSD drive has no moving parts. The HHD (hybrid hard drive) drive is a hybrid incorporating the HDD and the SSD principles. The various devices described herein can be used to destroy data on all three types of hard drives.

**[0052]** Referring to the drawings, Figs. 1 and 6 show a hard drive data destroyer 2 that may include a cabinet 4 having a frontal opening 6 opening into a front loading milling chamber 8 and having a door with a safety glass window (not shown) to enclose

the chamber 8. A horizontally moveable table 10 is moveable on suitable rails 15 and 17 as shown in Fig. 1a so that the table can be moved in and out of the cabinet 4 and moved in an X and Y direction to position the table within the cabinet 4.

**[0053]** The table 10 has two side by side cradles 12 and 14 for receiving and holding hard drives. The cradle 12 on the left is structured to receive and hold a larger 3.5 inch HDD 16 or SSD hard drive 18 and the cradle 14 on the right is structured to receive and hold a smaller 2.5 inch HDD or SSD hard drive as viewed in Figs.1 and 6.

**[0054]** Milling cutters 18 and 20 are mounted in suitable milling heads that may be mounted on a rail system in the cabinet 4 for movement along the x-y-z axis. These milling cutters 18 and 20 may be face mill cutters modified to include a center spear 22 as described below or any other suitable milling cutter that can remove material as it is advanced downwardly along its axis and pivoted with a center spear. The milling cutter 18 on the left is relatively large for use with the large hard drives. The milling cutter 20 on the right is relatively small for use with the smaller hard drives. Although two milling cutters are shown, it is possible that just one or more than two milling cutters could be utilized. The milling cutters 18 and 20 are mounted in suitable spindles 21 which are driven by a motor 23.

**[0055]** The milling cutters may also be of the trepanning cutting tool type modified to include the center spear 22 as described below. A trepanning cutting tool may be defined generally as a cutting tool in the form of a circular tube, having teeth at one end, the work piece or tube, or both are rotated and the tube is fed axially into a workpiece, leaving behind a grooved surface in the workpiece.

**[0056]** A center holding spear 22 (See Fig. 4) coaxial with each the milling cutters 18 and 20 is provided. Each holding spear 22 is moveable in a vertical direction relative to its associated cutter 18 or 20 to extend from the center of the cutter. The holding spear 22, while axially moveable, is non-rotatable and can be provided with projections 24 or other sharp edges on its distal end to engage the hub of a hard drive 16.

**[0057]** A vacuum port 26 in the back wall of the cabinet 4 communicates with the milling chamber 8 and is connected to an exhaust pipe 28 and a suitable vacuum

pump (not shown) to provide a vacuum system for removing debris from the milling chamber 8.

**[0058]** The 3.5 or 2.5 inch hard drive 16 is placed in a corresponding cradle 12 or 14 on the loading table 10 depending on its size. The larger 3.5 inch HDD or SSD hard drives are placed in the holding cradle 12 on the left as viewed in Figs. 1 and 6. The smaller 2.5 inch HDD or SSD hard drives are placed in the cradle 14 on the right. The placement of the hard drives corresponds with the size of the mill cutters 18 and 20 positioned within the milling chamber 8. The larger cutter 18, on the left, is used to destroy 3.5 inch HDD or SSD hard drives and the smaller cutter 20, on the right, is used to destroy 2.5 inch HDD or SSD hard drives.

**[0059]** The loading process can be done automatically by placing the respective hard drives 16 or 18 in a vertical “magazine” styled loading chassis, which indexes the hard drives into an empty cradle after the previous destroying operation has been completed.

**[0060]** Visual verification as shown in Figs. 2 and 9 may take place after the hard drives are loaded onto a cradle 12 or 14. The hard drive 16 or 18 is scanned by a suitable scanning system which may be mounted on the cabinet 4 with the scanning beam 30 directed to scan a hard drive positioned on a cradle 12 or 14 before the cradle 12 or 14 is moved into the chamber 8. The scanning system may include a barcode scanner and a visioning sensor/camera that will scan the bar code, brand, serial number and will identify the hard drive by height, length and width along with identifying where the platter hub is located in the case of HDD drives. The information from the scanning system is fed to a computer where the information is processed and store and used to activate the CNC system position the respective milling cutter with the type of hard drive identified in the cradle 12 or 14.

**[0061]** The computer includes a database of hard drives in the market place to quickly identify and sequence the hard drive with the appropriate milling process. When new hard drives are introduced to the hard drive shredder, the servo and visioning system makes the necessary adjustments to complete the milling process. Then the information is saved in the database for future recognition.

**[0062]** Once the hard drive 16 or 18 is placed in either the 3.5 or 2.5 inch holding chassis 12 or 14, and the computer has identified the specific type of hard drive, the loading table 10 is automatically activated and moves inside the body of the cabinet milling chamber 8 as shown in Figs. 3 and 10.

**[0063]** When the center hub 32 of the 3.5 or 2.5 inch HDD hard drive is located, the two-phase pneumatic milling head will first lower the center holding spear 22, which applies pressure to the center hub 32 preventing the hard drive platters from spinning during the milling process as shown in Fig. 4. The center holding spear 22 is not activated when destroying SSD hard drives.

**[0064]** The next phase of the HDD milling process consists of lowering the outer milling cutter 18 or 20 to the surface of the 3.5 or 2.5 inch hard drive as shown in Figs. 5 and 11. The blades of the face of the milling cutter penetrate the surface of the hard drive coring-out the platter(s) of the hard drive in the case of the HDD drives.

**[0065]** When SSD hard drives are being destroyed, the milling cutter 18 is swept across the surface of the 3.5 or 2.5 inch hard drive to destroy (face mill) the area where the information pods 34 are located. The mill cutter 18 may be swept in a side to side, front to back or a combination of such movements in a horizontal plane. Alternatively, the cradle 12 or 14 may be moved relative to the mill cutter 18 to provide the sweeping action. In either case, such action comprises a coring and surface milling operation.

**[0066]** The vacuum system is automatically activated during the milling process to collect the shards that are produced. The vacuum system draws the shards out of the milling chamber 8 through the exhaust port 26 and exhaust pipe 28 to an appropriate collection bin (not shown).

**[0067]** When the milling process for the HDD hard drives is completed the outer mill cutter 18 and center holding spear 20 retract from the surface of the hard drive as shown in Fig. 6. All that remains is the surrounding casing of the 3.5 or 2.5 inch hard drive and the center hub, which once held the information platter(s). The finished product resembles a donut.

**[0068]** When the SSD milling process for the SSD hard drives is completed as shown in Fig. 12, the mill cutter 18 is retracted from the surface of the hard drive and

returned to its start position. All that remains is the bottom casing of the 3.5 or 2.5 inch hard drive less the area where the information pods were located.

**[0069]** When the HDD or SSD hard drive milling cycle is complete, a respective hard drive 16 or 18 is automatically ejected from its holding cradle 12 or 14 into a collection bin 36 below the milling chamber 8 to cool as shown in Figs. 7 and 13. The loading table 10 with the empty holding cradles 12 and 14 exits the milling chamber 8 to begin the next milling cycle.

**[0070]** The milling process system is schematically shown in the block diagram shown in Fig. 26. The hard drive on the cradle is scanned for recognition by the scanning system which may include a barcode sensor and a visioning sensor/camera. The information scanned is fed to a computer, attached to or mounted in the cabinet, and which has a data base for storing information about the hard drives. The computer converts the information about the hard drive in the cradle to a form to send to the CNC machine which controls the movement of the system. The computer may include an Ethernet port for connection to the internet along with a power supply for operating the computer, software and peripheral attachments.

**[0071]** A plurality of individual hard drive destroyers 2 may be provided, each at a separate location such as individual kiosks. The computer provides a means for the individual destroyers 2 to communicate with each other and/or with a centralized data base.

**[0072]** Figs. 14-25 show a hard drive data destroyer 102 that utilizes a laser to destroy the drive. Figs. 14-19 show the laser hard drive data destroyer operating on a HDD hard drive 104 while Figs. 20-25 show the laser hard drive data destroyer operating on a SSD hard drive 106.

**[0073]** As shown in Figs. 14 and 20, the laser hard drive data destroyer may include a cabinet 108 having a front loading laser perforating chamber with a frontal opening and a door (not shown) to close the chamber 110. A horizontally moveable table 112 is moveable on suitable tracks for movement into and out of the chamber 110.

**[0074]** The table 112 has two side by side cradles 114 and 116 for receiving and holding hard drives. The cradle 114 on the left is structured to receive and hold a larger

3.5 inch HDD or SSD hard drive and the cradle 116 on the right is structured to receive and hold a smaller 2.5 inch HDD or SSD hard drive.

**[0075]** A 3.5 or 2.5 inch hard drive is placed in a corresponding cradle 114 or 116 on the loading table 112 depending on its size. The larger 3.5 inch HDD or SSD hard drives are placed in the holding cradle 114 on the left as viewed in Figs. 14 and 20. The smaller 2.5 inch HDD or SSD hard drives are placed in the cradle 116 on the right.

**[0076]** The loading process can be done automatically by placing the respective hard drives in a vertical “magazine” styled loading chassis, which indexes the hard drives into the empty hard drive holding chassis after the previous laser perforation cycle is complete.

**[0077]** A laser head 118 is mounted in the cabinet above the table 112. The laser head is moveable in the x-y-z direction to properly align with a hard drive in a cradle 112 or 116 when the table 112 with a hard drive is positioned in the chamber 110.

**[0078]** A vacuum port 120 in the back wall of the cabinet 108 communicates with the laser perforating chamber 110 and is connected to an exhaust pipe 122 and a suitable vacuum pump (not shown) to provide a vacuum system for removing debris from the perforating chamber 110.

**[0079]** Visual verification as shown in Figs. 15 and 21 may take place after the hard drives are loaded onto the cradle. The barcode on the hard drive 104 or 106 is scanned by scanner 124 positioned on the cabinet to scan the bar code on the hard drive. The scan activates a custom x-y-z servo and visioning system to properly position the laser head 118 with the type of hard drive identified in the holding cradle 114 or 116. A custom servo-visioning system may comprise a database of hard drives in the market place to quickly identify and sequence the hard drive with the appropriate laser perforation pattern. When new hard drives are introduced to the laser perforating system, the servo-visioning system makes the necessary adjustments to complete the laser perforating process. Then the information is saved in the database for future recognition.

**[0080]** Once the hard drive is placed in either the 3.5 or 2.5 inch holding cradle 114 or 116, and the servo-visioning system has identified the specific type of hard drive,

the loading table 112 is automatically activated and moves inside the laser perforating chamber 110, as shown in Figs. 16 and 22.

**[0081]** With the hard drive positioned in the laser perforating chamber 110, the laser head 118 then emits either a single or multiple laser beam(s) 128 in a pulsating manner, which bore through the outer casing of 3.5 or 2.5 inch HDD and SSD hard drive. The laser head 118 moves while the table 112 remains in a fixed position after it is introduced into the chamber. Alternatively, the table can move and the laser head can remain stationary. Based on the type of hard drive identified by the servo-visioning system, the laser system will emit a pulsating laser(s) that produce small round holes in a grid like pattern. The grid like patterns will correspond with the type of hard drive being destroyed, either a HDD 3.5 or 2.5 inch or SSD 3.5 or 2.5 inch drive.

**[0082]** As shown in Figs. 28a and 28b, which show schematically a HDD drive before and after the application of the laser respectively, the laser produces a round donut-shaped matrix 123 of small holes 125. Figs. 28c and 28d show schematically the before and after results of the laser on a SSD and a HDD drive wherein the matrix 127 of small holes 129 is rectangular.

**[0083]** In addition to destroying hard drives, the laser perforation process can also be configured to destroy other forms of electronic media storage devices ranging from back-up tapes and DVDs to SIM cards.

**[0084]** When the HDD laser perforation process is complete, as shown in Figs. 18 and 24, the exterior housing of the hard drive's surface is riddled with multiple holes that have penetrated the information platters of the hard drive in a grid like pattern that resembles a donut.

**[0085]** When the SSD laser perforation process is complete the exterior housing of the hard drive's surface is riddled with multiple holes that have penetrated the information pods of the hard drive in a rectangular grid like pattern.

**[0086]** The vacuum system, including the exhaust port 120 communicating with the interior of the perforating chamber 110 and the exhaust pipe 122 and vacuum pump (not shown) is automatically activated during the laser perforation process to collect metal fragments that are produced and convey them to a collection bin (not shown). When the HDD or SSD laser perforation cycle is complete, the respective hard drive is

automatically ejected from the holding chassis into the collection bin below the laser perforation chamber 110 to cool, as shown in Figs. 19 and 25. The loading table 112, with the empty holding cradles 114 and 116, exits the laser perforation chamber 110 to begin the next perforation cycle.

**[0087]** The laser process system is schematically shown in the block diagram shown in Fig. 27. The hard drive on the cradle is scanned for recognition by the scanning system which may include a barcode sensor and a visioning sensor/camera. The information scanned is fed to the computer which has a data base for storing information about the hard drives. The computer converts the information about the hard drive in the cradle to a form to send to the CNC machine which controls the movement of the system. The computer may include an Ethernet port for connection to the internet along with a power supply for operating the computer, software and peripheral attachments.

**[0088]** A plurality of individual laser hard drive destroyers 102 may be provided, each at a separate location such as individual kiosks. The computer provides a means for the individual destroyers 102 to communicate with each other and/or with a centralized data base.

**[0089]** In the case of both milling systems shown in Figs. 1-13 and the laser system shown in Figs. 14-25, the table 10 or 112 containing the hard drive may be moved rather than the miller cutter 18 or 20 or laser head 118, or a combination of movements.

**[0090]** Figs. 29-35 show a chemical hard drive data destroying system 202. The system administers chemicals to destroy information imbedded on electronic media storage devices, such as hard disc drives (HDD), solid state drives (SSD), and hybrid hard drives (HHD), rendering the stored information digitally and forensically irretrievable.

**[0091]** The system 202 utilizes chemicals such as hydrochloric acid (HCl), ammonium nitrate (AN), and a solvent like water (H<sub>2</sub>O) to erode and strip away the information imbedded on the platters and/or memory pods, circuit boards, contained within the body of the respective drives 203. An additional chemical such as polyurethane (PUR), polyol resin, or similar product, can be used as a foaming agent to

aid in the disbursement of the chemicals and confine the dispersions within the cavity of the hard drive. Other chemical solvents may be used as long as they are capable of destroying the data storage portion of the hard drives. The chemical solvent should be any suitable solvent capable of dissolving the coating of the platter(s) of an HDD drive along with a portion of the platters. In the case of SSD hard drive, the chemical solvent should be able to completely dissolve the information pods. The chemicals used in the destruction process are stored in self-contained pods 204 that are constructed of natural and composite materials.

**[0092]** The system 202 comprises several compartmentalized sub-assemblies: a radiator 206, a cog system 208, an injector pin system 210, and a temperature control plate 112, which includes a chemical sensor pad 214. The aftermarket hard drive destruction system 202 is positioned within the housing of the computer 216 customarily in the hard drive holding chassis; and mounted directly above the hard drive of the host computer as indicated in Fig. 36.

**[0093]** The sub-assemblies, which make-up the complete system, are stacked in descending order with the radiator 206 on top followed by the cog system 208, the injector pin system 210; and then the temperature control plate 112. However, the radiator can be placed in another vacant space within the computer housing to allow for more room in the hard drive holding chassis. Once installed, the system is interfaced with the motherboard of the host computer through appropriate connectors 218 that allows the system to be activated by a key board onsite, or through remote access using the Internet. The hard drive is connected to the motherboard through its own wiring system.

**[0094]** When the system is activated, the radiator 206 which works in conjunction with the temperature control plate 214 circulates radiator fluid through a closed loop system including tubing 220 connected between the radiator 206 and temperature control plate 214 to maintain an ambient temperature for the stored chemicals. In some instances, the radiator does not have to be used if the host computer is deployed in an environment where the ambient temperature is compatible with the system's chemicals. Rather than a radiator fluid being circulated, air may be circulated.

**[0095]** The cog system 208 houses the drive mechanism that simultaneously drives the injector pins in the form of four hollow drill bits 222 through the chemical pods 204 stored in the temperature control plate 212, and into the cavity of the hard drive. The depth of the penetration of the drill bits 222 is pre-calibrated to the specific type of hard drive installed in the computer 216.

**[0096]** The cog system 208 includes four toothed cog wheels 224 operably connected one to each of the four drill bits 222. A center cog wheel 226 drives the cog wheels 224 and is driven by drive motor 228. The drill bits 222 are held above the chemical pods 204 until the system is activated.

**[0097]** The injector pin system 210 consists of four chambers 230 each with a spring loaded plunger 234 that drives the chemicals stored inside the chemical pods 204 through the hollow shafts of the drill bit 222, and into the cavity of the hard drive. The plungers 234 are held in their raised or cocked position against the bias of the spring 235 by a release mechanism (not shown). The chambers 230 are an open ended cylinder with the open bottom end disposed in the frustoconical openings 235 in the temperature control plate 212 in which the chemical pods 204 are located, While the drawings show four chambers 230, additional chambers 210 can be used to aid in the disbursement of the chemical solvent. In the case of the smaller 2.5 inch laptop hard drives, as few as one chamber may be utilized.

**[0098]** An auxiliary air system, using carbon dioxide (CO<sub>2</sub>) cartridges or dedicated air line, can be integrated through the injector pin system 210 to assist with the chemical dispersion in the hard drive cavity. The injector pin system 210 can also be adapted to disburse chemicals that are stored outside the system, thus bypassing the use of chemical pods.

**[0099]** The temperature control plate 214 houses the second half of the radiator's closed loop system, which is connected with external tubing 220. The tubing 220 extends around the exterior of the cog system 202 and the injector pin system 218 and extends through the temperature control plate 214 around the frustoconical openings 235 as shown in Figure 33. The temperature control plate 214 also serves as the bottom portion of the four injector pin chambers 230, which house the four (4) conical

shaped chemical pods. Threaded connecting rods (not shown) are used to securely fasten the injector pin system to the temperature control plate.

**[00100]** A chemical sensor pad 232 is attached to the bottom of the temperature control plate 214. The chemical sensor pad 232 serves to detect the premature release of chemicals as a safety precaution. The chemical sensor pad 232 may be connected to the motherboard of the computer to provide a warning in the event of released chemicals.

**[00101]** With the system installed in the computer, the chemical system 202 is activated at the key board or from a remote location; both of which can be individually or collectively deactivated for additional security purposes. The drill bits 222 are activated and advanced against the hard drive 203 to pierce the body of the hard drive and enter the cavity in which the data storage portion is located. A release mechanism then releases the loaded spring(s) 235 which drives the plungers 234 downward against the chemical pods 204.

**[00102]** The process of releasing the plungers 234 forces the chemical solvent out of the chemical pod 204 through holes in the tubular drills bits 22 and forces the chemical solvent through the pointed tip 236 of the drill bits 222 into the cavity of the hard drives. A single or multi step "bore and inject" method can be used to introduce the chemical solvent into the body of the hard drive.

**[00103]** Once the drills bits 222 pierce the body of the hard drive, the chemical solvent 238 begins to disburse from the drill tip 236 throughout the internal cavity of the hard drive. In the case of an HDD hard drive 203a as shown in Fig. 34, the platter(s) within the HDD hard drive will still be spinning, which aids in the disbursement of the chemical solvent coating the information platter(s). A foaming agent in the chemical solvent 238 will further aid in the disbursement of the chemical solvent 238 and restrict the disbursement within the cavity of the hard drive 203a. The expanding nature of the foaming agent will also serve as a seal to restrict the chemical solvent 238 from spreading outside the inner casing of the hard drive. The information stored in the HDD hard drive 203a is completely destroyed, but the computer can be used again by installing a new hard drive.

**[00104]** In the case of SSD hard drives 203b as shown in Fig. 35, once the drill bits 222 pierce the body of the hard drive, the chemical solvent 238 begins to disburse throughout the internal cavity coating the information pods of the SSD hard drive 203b. A foaming agent may also be included in the chemical solvent to further aid in the disbursement of the chemical solvent and restrict the disbursement within the cavity of the hard drive. The information stored in the SSD hard drive 203b is completely destroyed, but the computer can be used again by installing a new hard drive.

**[00105]** Although the overall chemical destruction system is depicted for inside of the housing of a vertical computer, the sub-assemblies can be reconfigured to adapt to horizontal computer units with limited space above the hard drive.

**[00106]** Fig. 36 depicts the exterior of a smaller more compact spring loaded chemical data destroying system 300 for smaller 2.5 inch HDD and SSD hard drives such as used in laptops. As can be seen, the sub-assemblies are thinner than the counterparts previously described. Also, the chemical destruction system can be adapted to destroy other electronic media storage devices in smart phone, cell phones and tablets.

**[00107]** In the case of all three devices, the milling device, the laser device and the chemical device, the hard drives are processed with their covers remaining on. The covers have been shown removed in the drawings to differentiate the types of hard drives being processed. Additionally, the three devices may be designed for "desktop" use and utilize a standard 110 volt power source. However, more industrialized versions may utilize a 220 volt source. All three devices may be adapted to accommodate all types of electronic media storage devices.

**CLAIMS**

1. A system for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives comprising:

a rotatable milling cutter,

a cradle for locating the media electronic storage device in a positioned to engage the milling cutter, said cutter and or said cradle being axially movable to permit the milling cutter to engage and remove the data storage portion of the electronic media storage device while leaving at least a substantial portion of the remaining electronic media storage device intact.

2. The system of claim 1 further including an integrated computer containing a data base of various parameters of different types of hard drives available, an optical recognition system for determining the type of media electronic storage device being introduced in the system whereby the data base may be used to provide information to properly locate the cradle and milling cutter to destroy the data storage portion.

3. The system of claim 1 further including a cutting chamber in which the electronic media storage device is positioned for removal of the data storage portion and a vacuum system to remove the destroyed particles from the chamber.

4. The system of claim 1 further including a communications network and said computer includes a port for an external modem accessing an internal modem and Ethernet cable for sending information between one or more systems.

5. A system for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives comprising:

a cutting chamber,

a cradle for holding an electronic media storage device in said chamber,

a rotatable milling cutter in said chamber for engagement with the electronic media storage device to destroy the data storage portion, and

a non-rotatable center holding spear coaxial with said milling cutter and contactable with said storage device to prevent rotation of said storage device while said rotating milling cutter is engaging said device.

6. The system of claim 5 wherein there are two cradles and two milling cutters, each cradle having a milling cutter associated with it.

7. The system of claim 5 further including a scanning system to read information off of said storage device.

8. The system of claim 7 wherein said scanning system scans such information as the height, length, width and location of a center hub and bar code, manufacturer, model, and serial number.

9. The system of claim 7 wherein said information scanned is used to position said cradle and said milling cutter.

10. The system of claim 7 further including a computer having a storage capability for storing information about said storage devices.

11. The system of claim 5 further including a vacuum system to remove the destroyed particles produced by the cutting of the milling cutter from the chamber.

12. The system of claim 5 wherein when said storage device is a SSD hard drive, said mill cutter is advanced axially into said hard drive and swept across the surface to destroy the area containing the data storage portions.

13. The system of claim 5 wherein said electronic media storage device includes a hub from which the data storage portion extends and said non-rotatable center spear is

engageable with said hub of the electronic media storage device to prevent rotation of the hub and data storage portion when said milling cutter is engaging the data storage portion.

14. A method for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives, comprising:

providing a rotatable milling cutter having an axis,

providing a cradle for locating the electronic media storage device in a position to be engaged by said milling cutter,

moving said cutter or said carriage in an axial direction and rotating said cutter about its axis to engage and remove the data storage portion of the electronic media storage device while leaving at least a substantial portion of the electronic media storage device intact.

15. The method of claim 14 further including scanning the electronic media storage device to provide information regarding the type of electronic media storage device being introduced into the system, and using the information to properly position the electronic media storage device and cradle to remove the data storage portion.

16. The method of claim 15 further including storing the information regarding the electronic media storage device in a computer.

17. The method of claim 15 wherein a barcode reader is used to identify the type of electronic media storage device.

18. The method of claim 14 wherein said milling cutter and said cradle are contained in a single device and further including providing a wireless connection with the internet to send information between two or more devices.

19. The method of claim 14 further including, when said electronic media storage device is a hard drive that includes a hub from which the data storage portion extends, moving a non-rotatable central spear having an axis of movement coaxial with that of the milling cutter into engagement with the hub to hold said hub from rotating while said milling cutter removes the data storage portion around said hub.

20. The method of claim 14 wherein, when said electronic media storage device is a solid state drive or a hybrid hard drive, the milling cutter is advanced axially into the electronic media storage device and swept across the surface to destroy the area containing the data storage portions.

21. The method of claim 14 wherein said mill cutter and said cradle are contained in an individual device and further including providing a plurality of such devices at spaced locations and providing communication between the devices.

22. A system for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives comprising:

- a cutting chamber;

- a laser for destroying the data storage portion;

- a cradle for holding an electronic media storage device in said chamber, said cradle or said laser or both being movable to position the laser relative to the electronic media electronic storage device so that the laser destroys the data storage portion of the electronic media storage device while leaving at least a substantial portion of the electronic media storage device intact.

23. The system of claim 22 further including a computer for housing information concerning the type of hard drive and information for controlling the movement of the laser cradle or both.

24. The system of claim 22 wherein said laser utilizes a micro-drilling process that produces short and ultra-short pulses.

25. The system of claim 22 wherein said laser uses infrared, visible or ultra-violet laser applications.

26. The system of claim 22 wherein said laser cuts close patterned micro holes in the data storage portion of the electronic media electronic storage device.

27. The system of claim 22 wherein said electronic media electronic storage devices includes an outer casing and an internal data storage portion, and said laser produces a close knit hole pattern through the outer casing and the internal data storage portion rendering the stored information digitally and forensically irretrievable.

28. A method for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives, comprising:

providing a laser;

providing a cradle for locating the electronic media storage device in a position to be contacted by the laser; and

moving said laser and or said cradle so that the laser destroys the data storage portion of the electronic media storage device while leaving at least a substantial portion of the remaining electronic media storage device intact.

29. The method of claim 28 wherein said laser uses infrared, visible or ultra-violet laser applications.

30. The method of claim 29 wherein said laser cuts close patterned micro holes in the data storage portion of the electronic media storage device.

31. The method of claim 28 wherein said electronic media storage device includes an outer casing and an internal data storage portion, and said laser produces a close knit hole pattern through the outer casing and the internal data storage portion rendering the stored information digitally and forensically irretrievable.

32. A chemical system for chemically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives comprising:

at least one pod for storing a chemical capable of eroding and stripping away the data storage portion of the electronic media electronic storage device;

a hollow drill bit associated with each pod drivable into the cavity of the hard drive:

a release mechanism of releasing said chemicals to flow through her drill bit into the cavity.

33. The chemical system of claim 32 wherein said system is mounted in a computer.

34. The chemical system of claim 32 further including a cog system to drive the hollow drills.

35. The chemical system of claim 33 further including a radiator to maintain the chemicals at an ambient temperature.

36. The chemical system of claim 32 further including a chemical sensor for sensing any chemicals leaking from said system.

37. The chemical system of claim 32 wherein said chemical is selected from the group consisting of hydrochloric acid (HCl) and ammonium nitrate (AN) and a solvent.

38. A method for chemically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives, comprising:

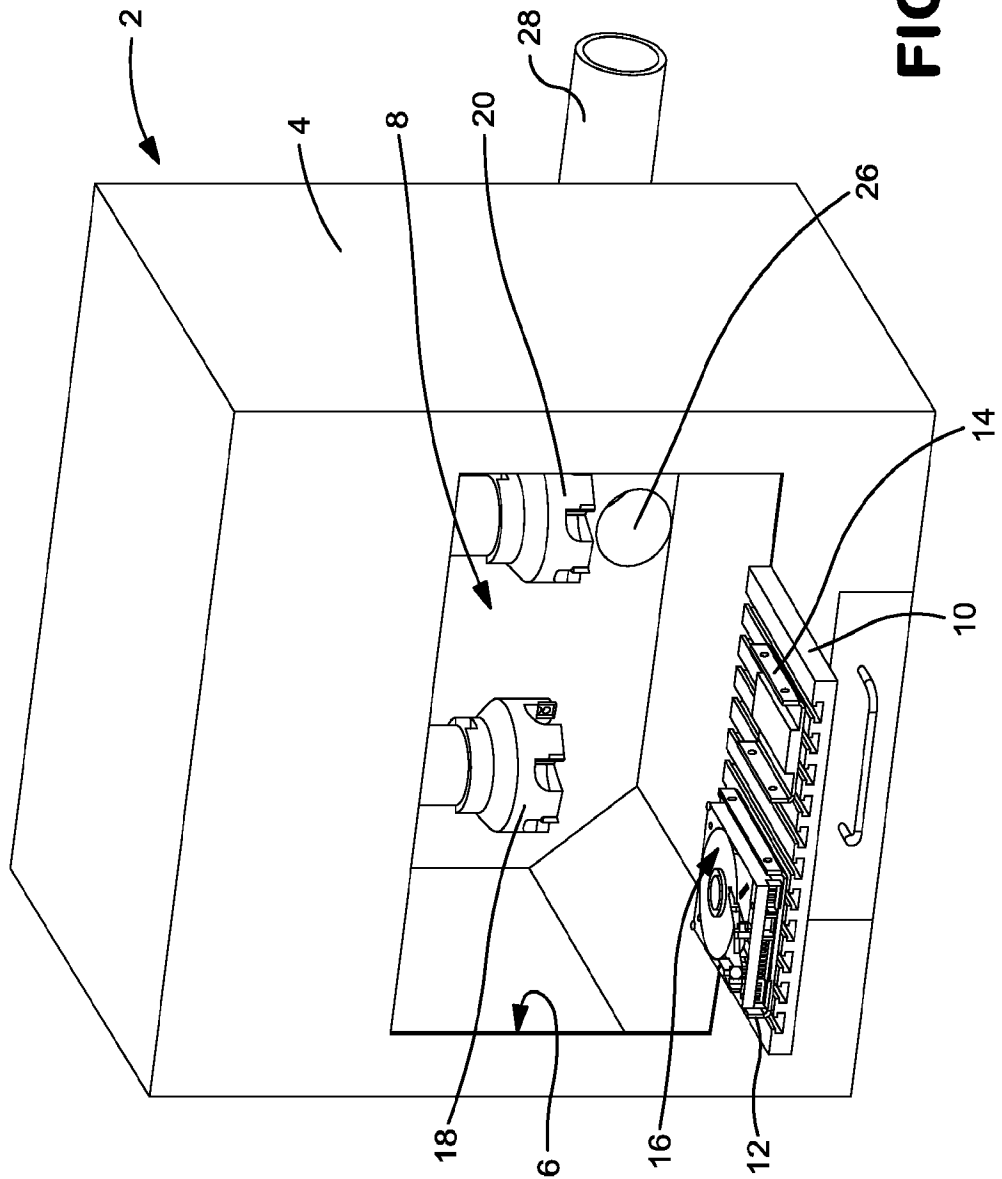
providing a chemical in a pod capable of eroding and stripping away the data storage portion of the electronic media electronic storage device;

driving a hollow drill bit into the cavity of the hard drive containing the data storage portion of electronic media electronic storage devices; and

releasing the chemical to flow through the drill bit into the cavity.

39. The method of claim 38 further including maintaining the chemicals at ambient temperature,

40. The method of claim 38 further including providing said system in a computer.



**FIG. 1**

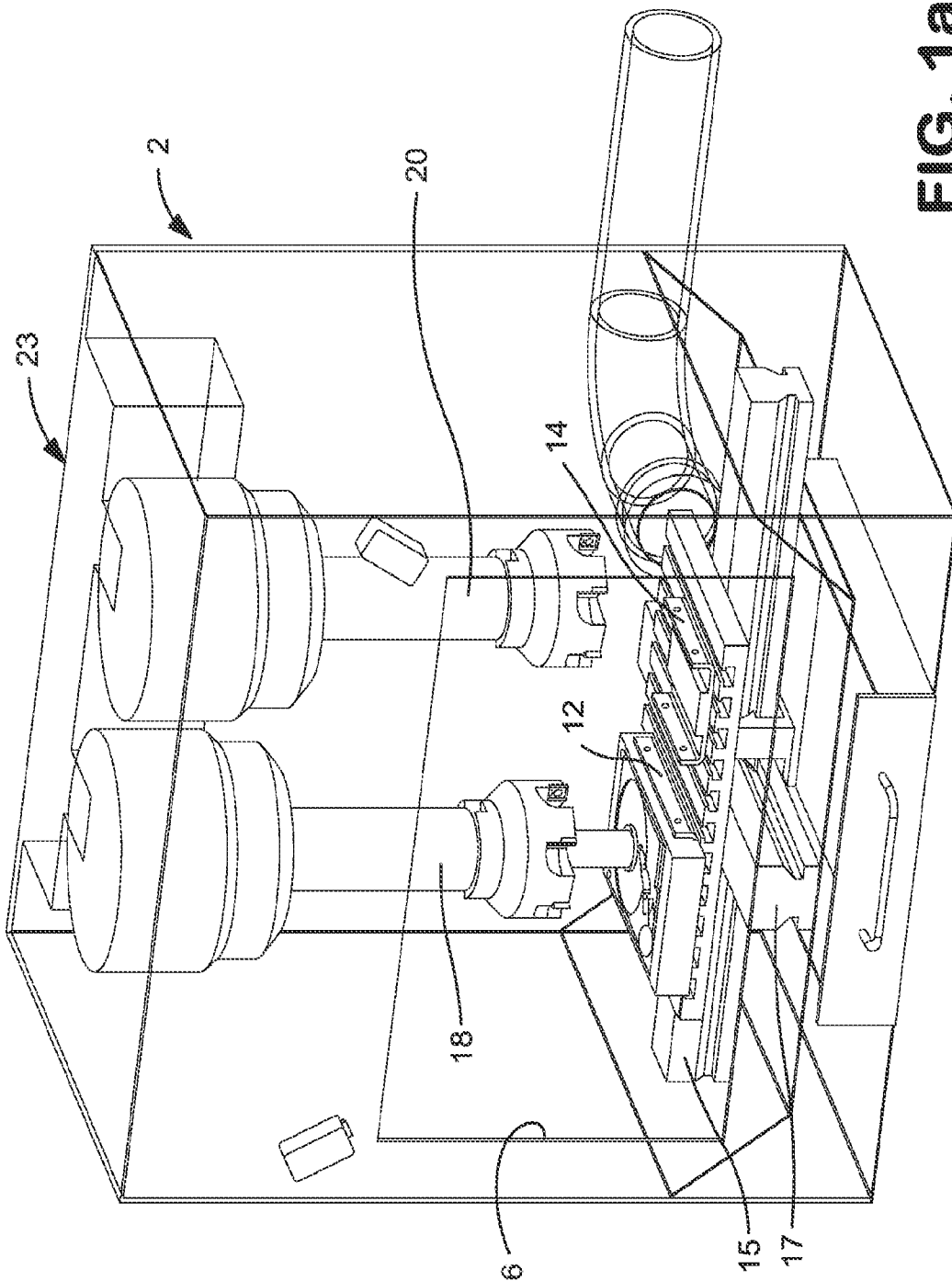
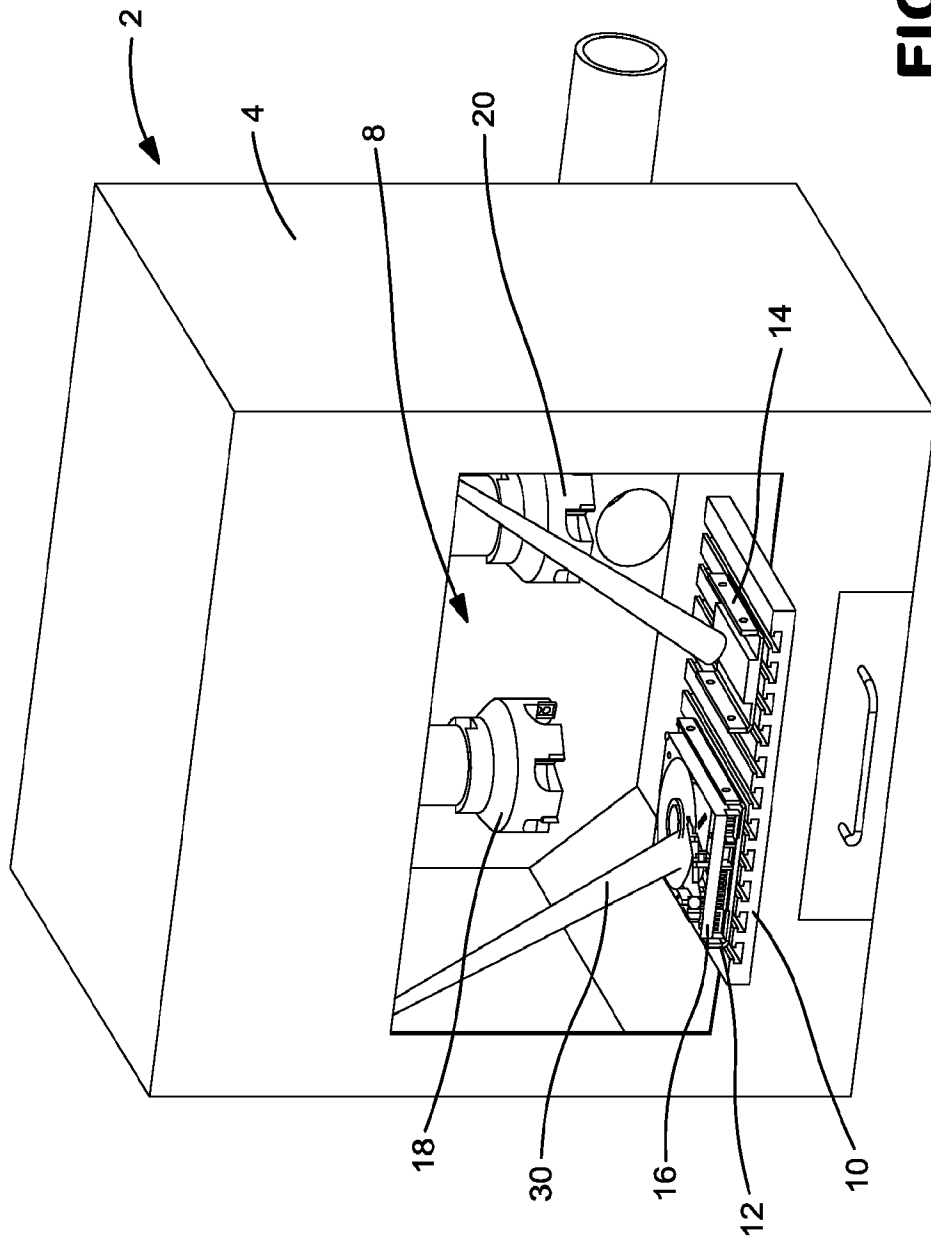
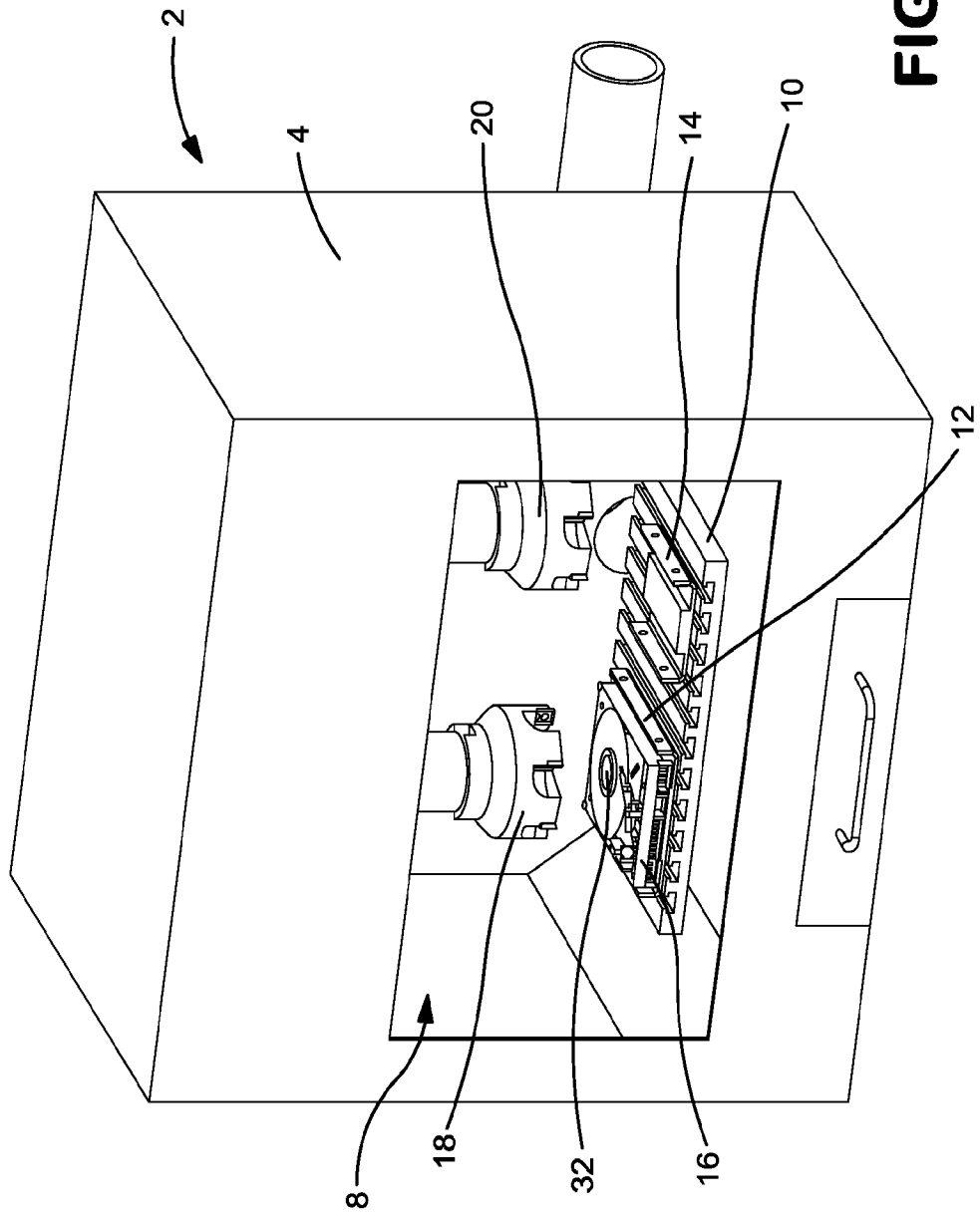


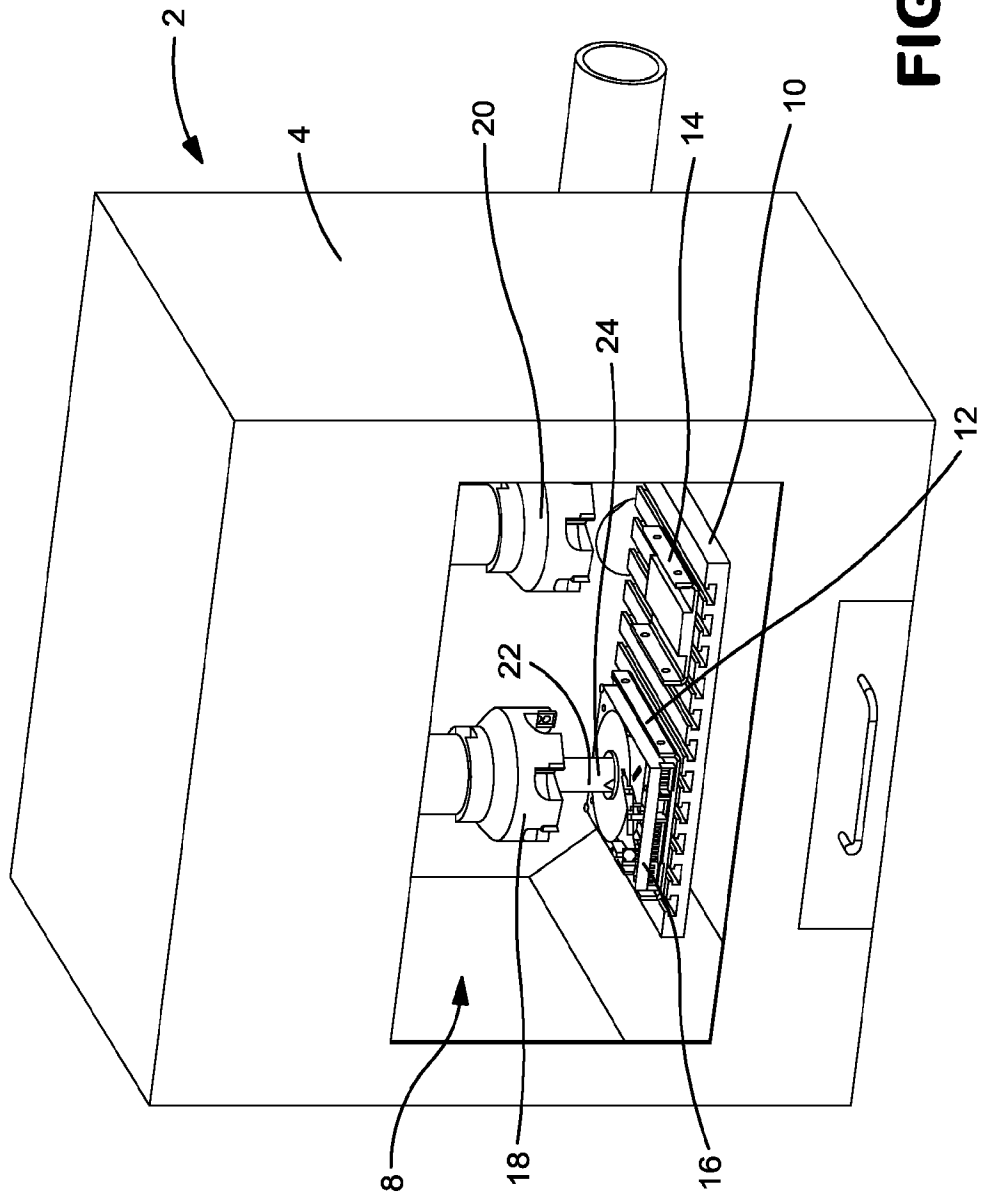
FIG. 1a



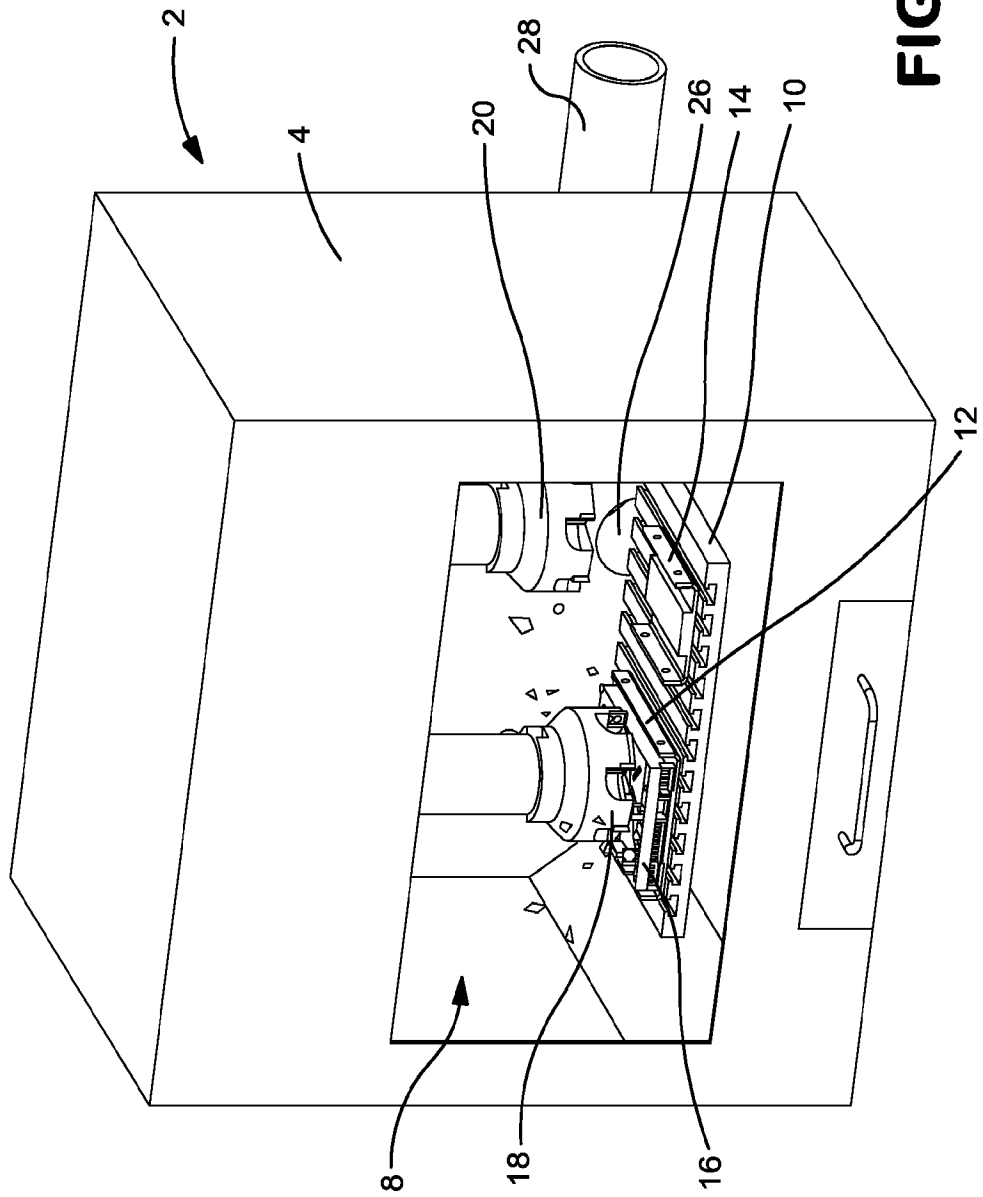
**FIG. 2**



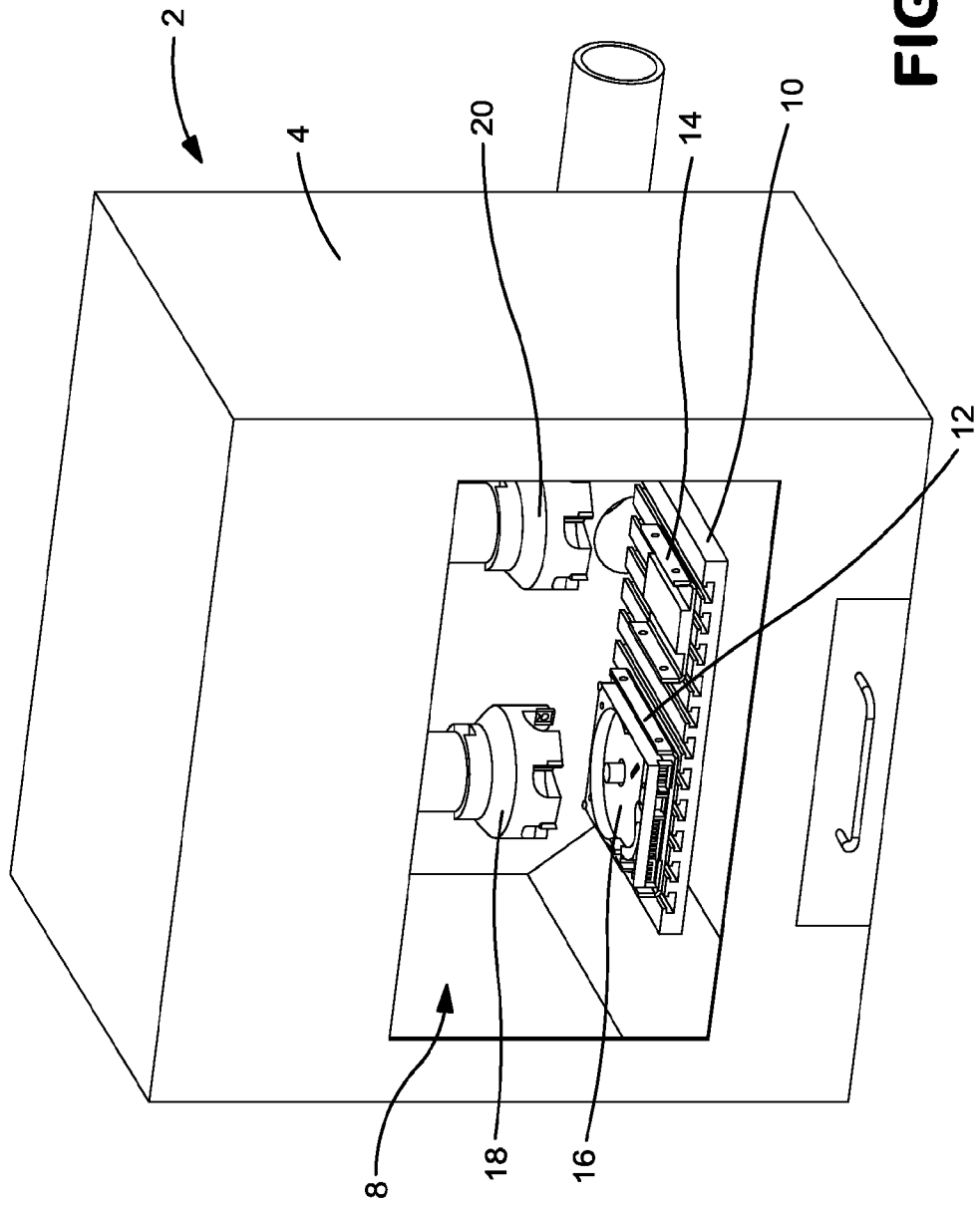
**FIG. 3**



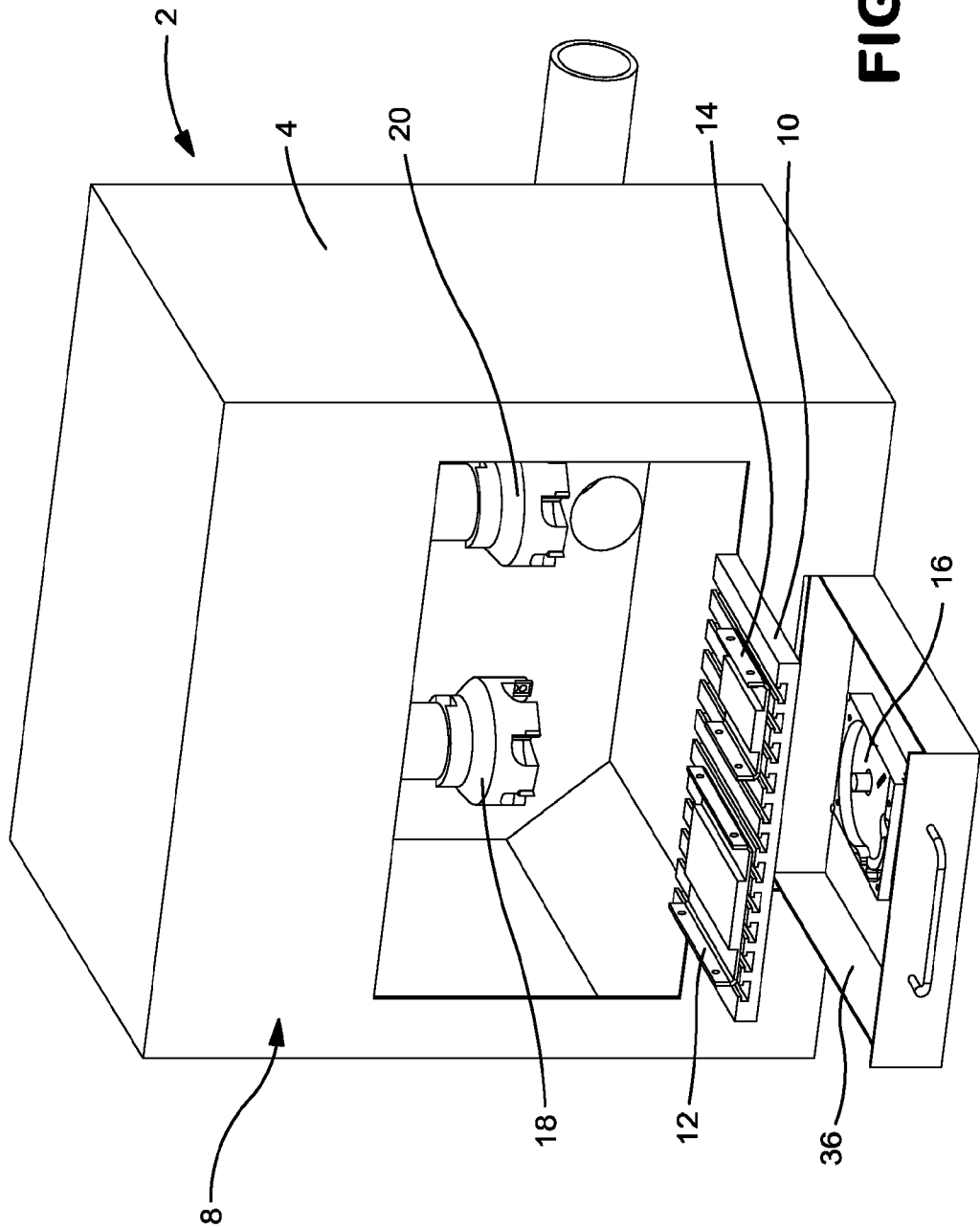
**FIG. 4**



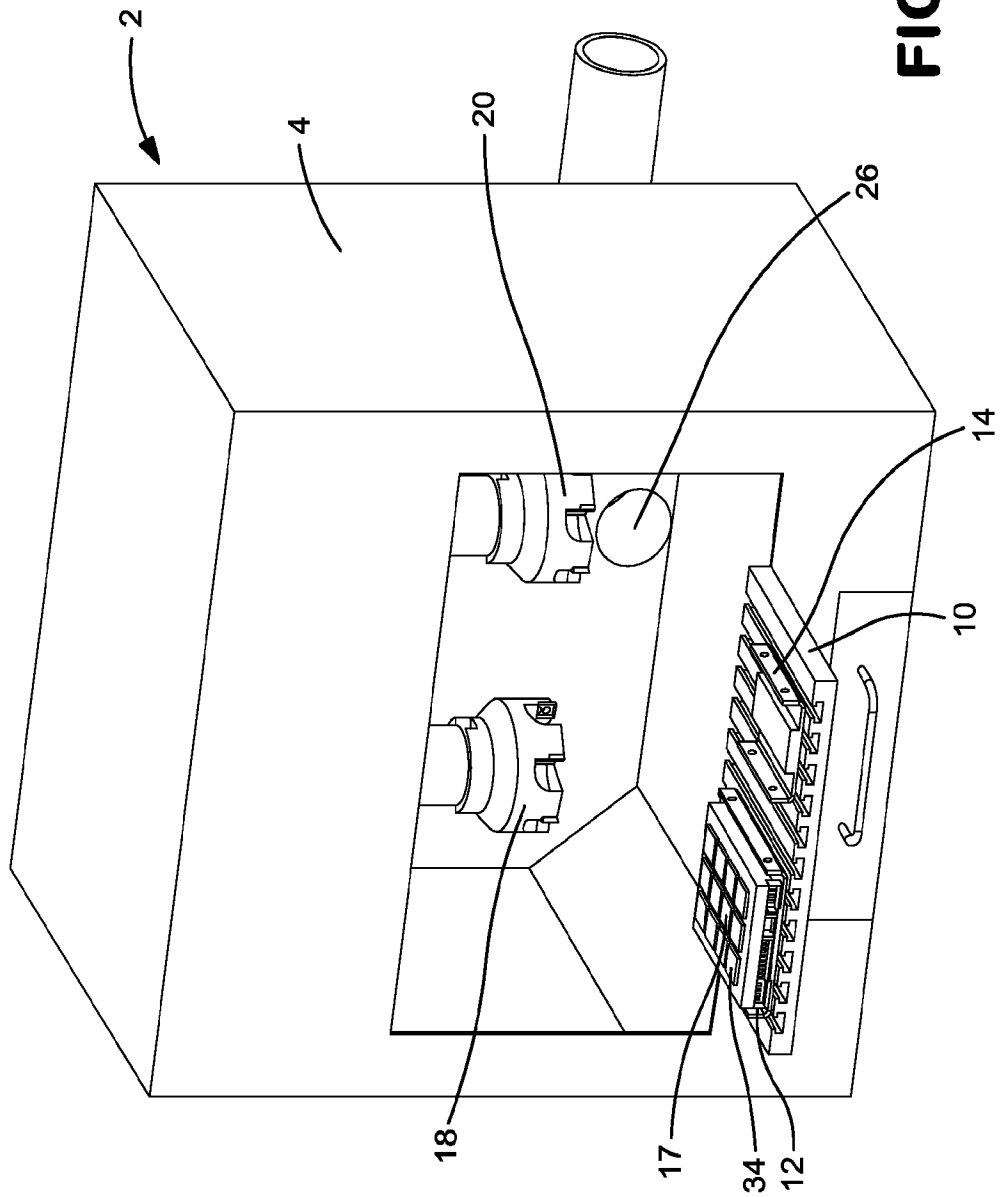
**FIG. 5**



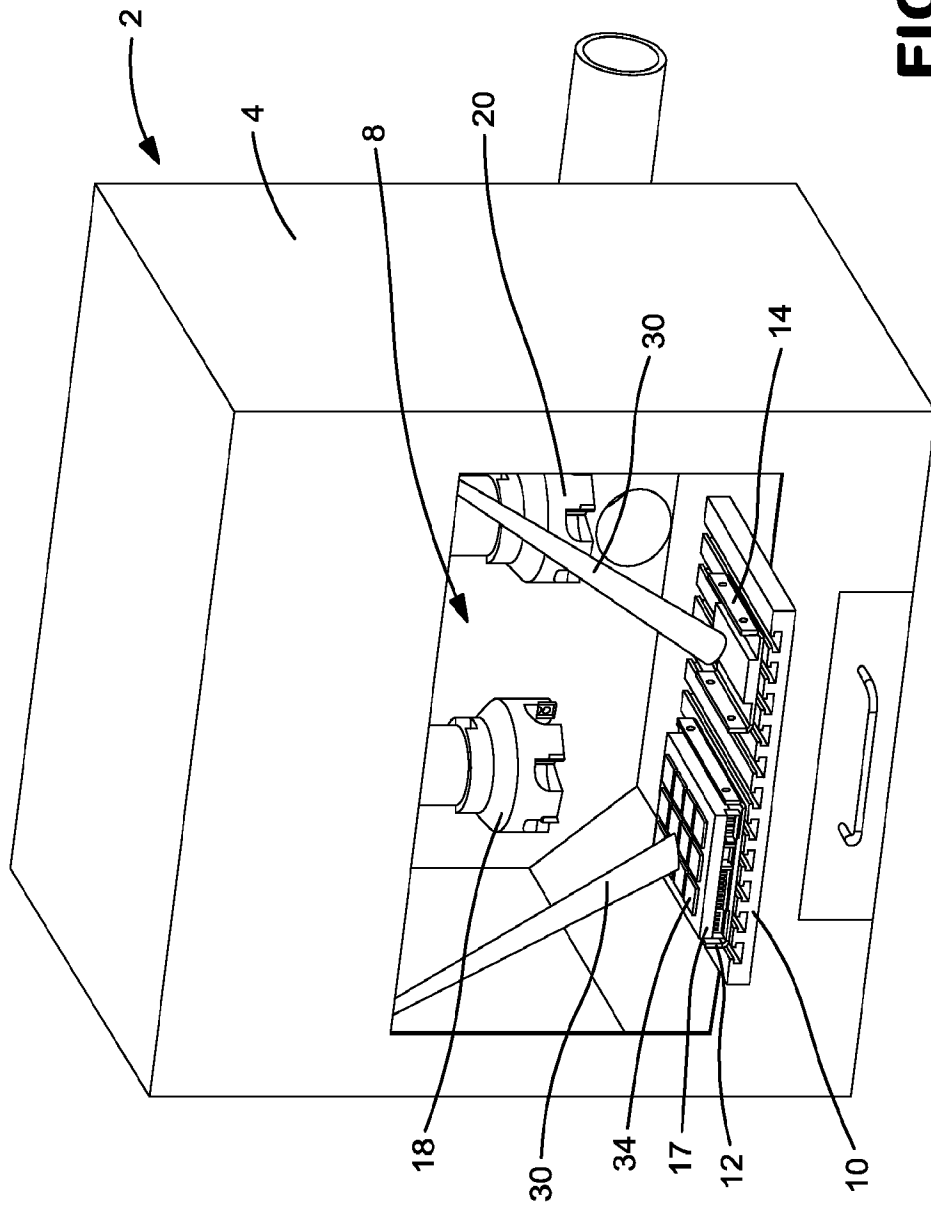
**FIG. 6**



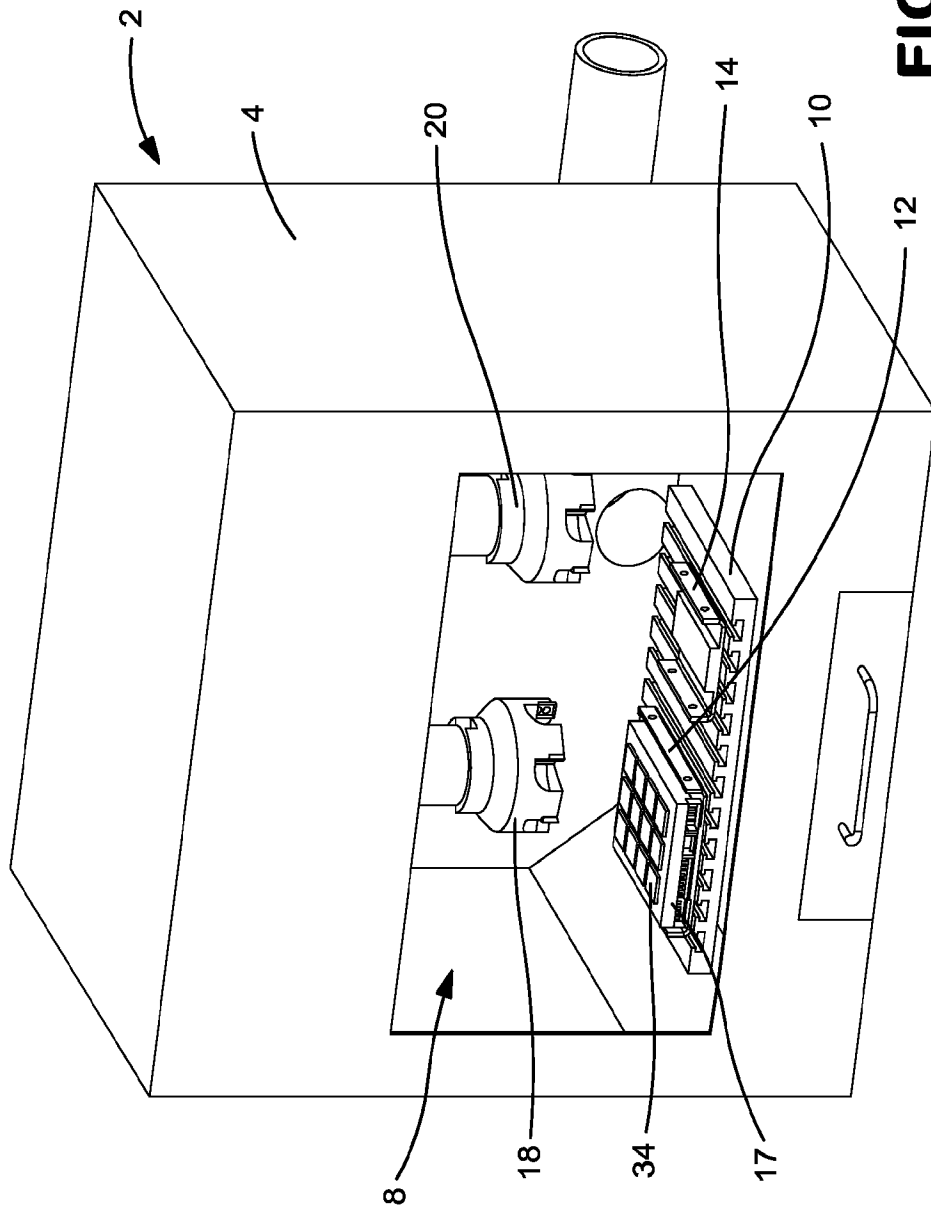
**FIG. 7**



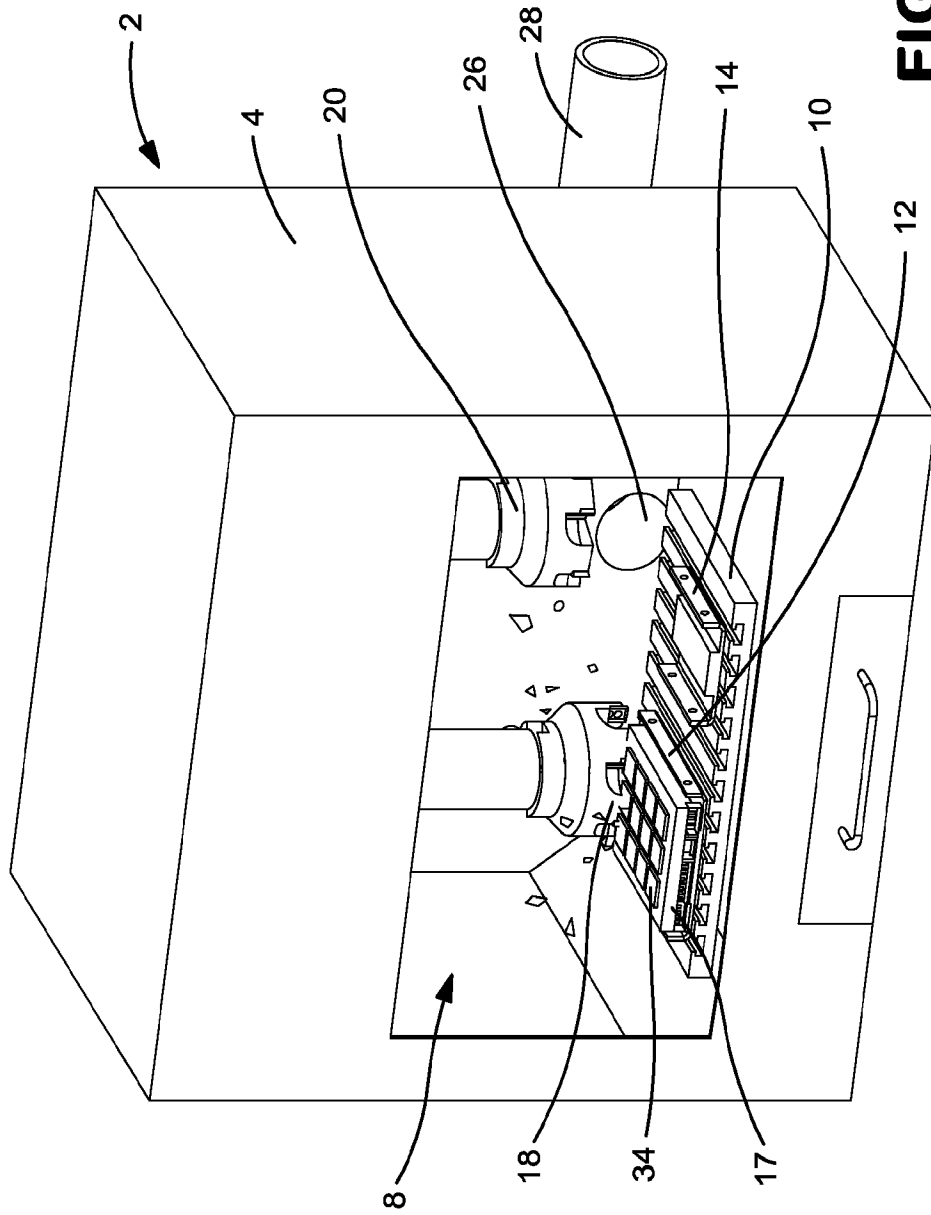
**FIG. 8**



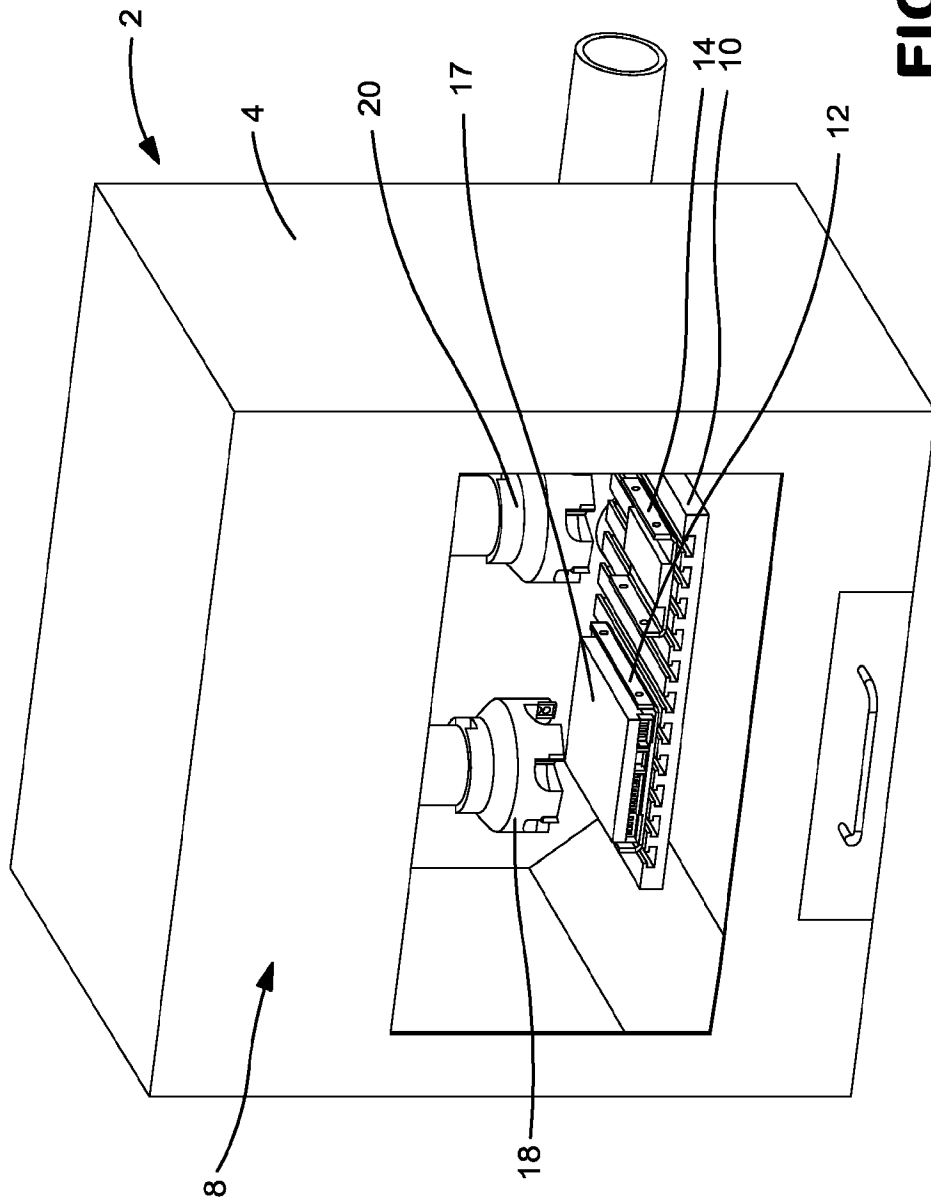
**FIG. 9**



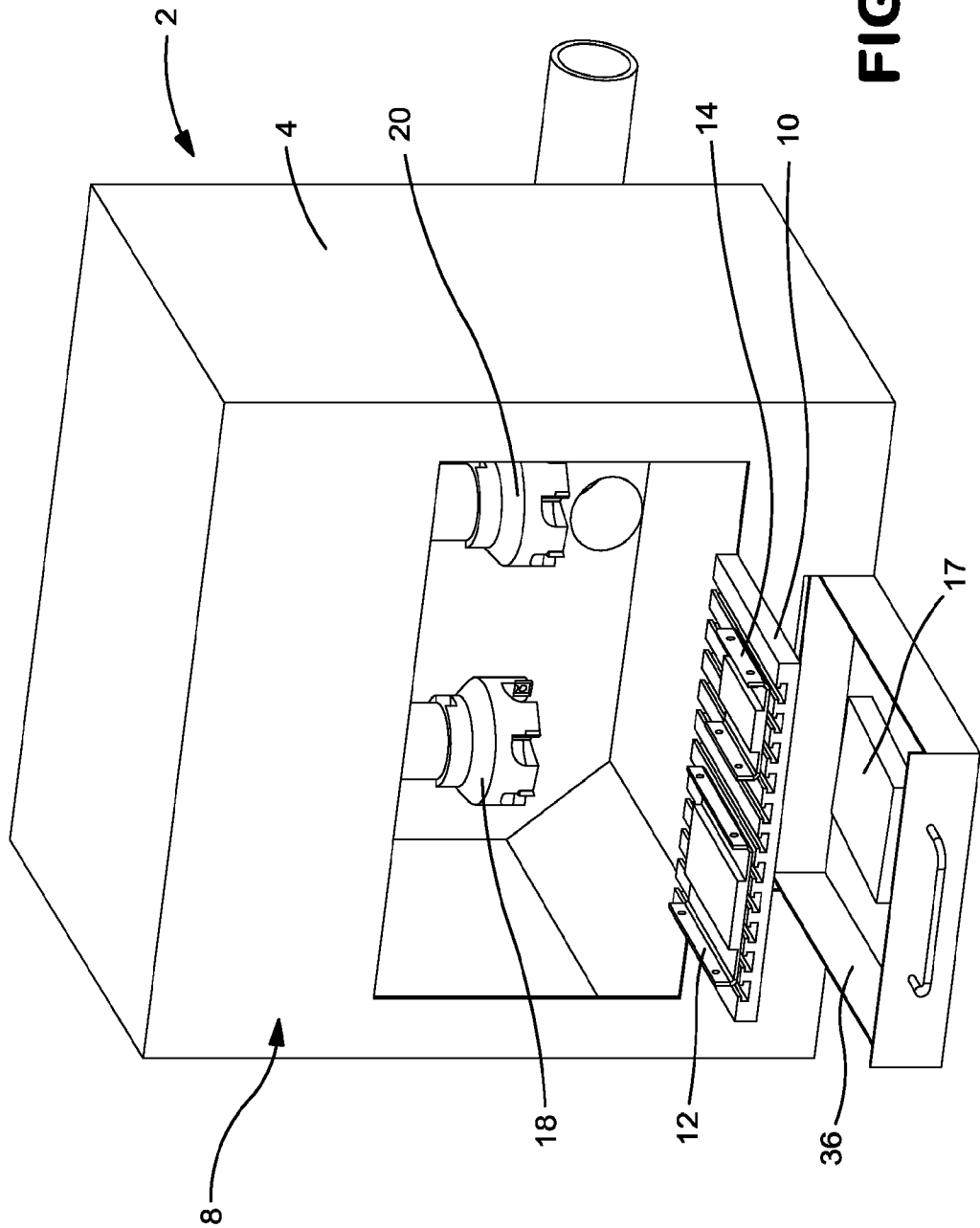
**FIG. 10**



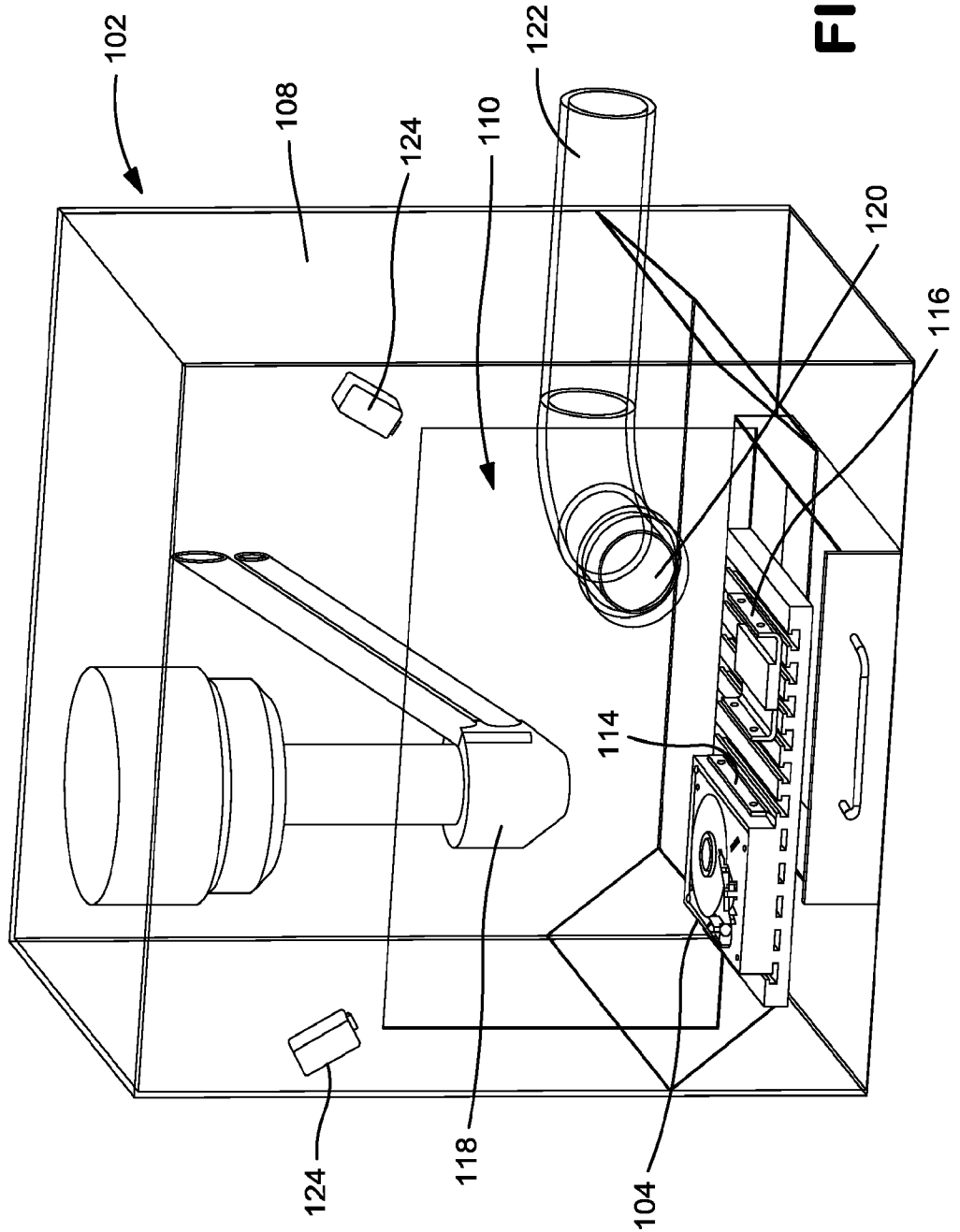
**FIG. 11**



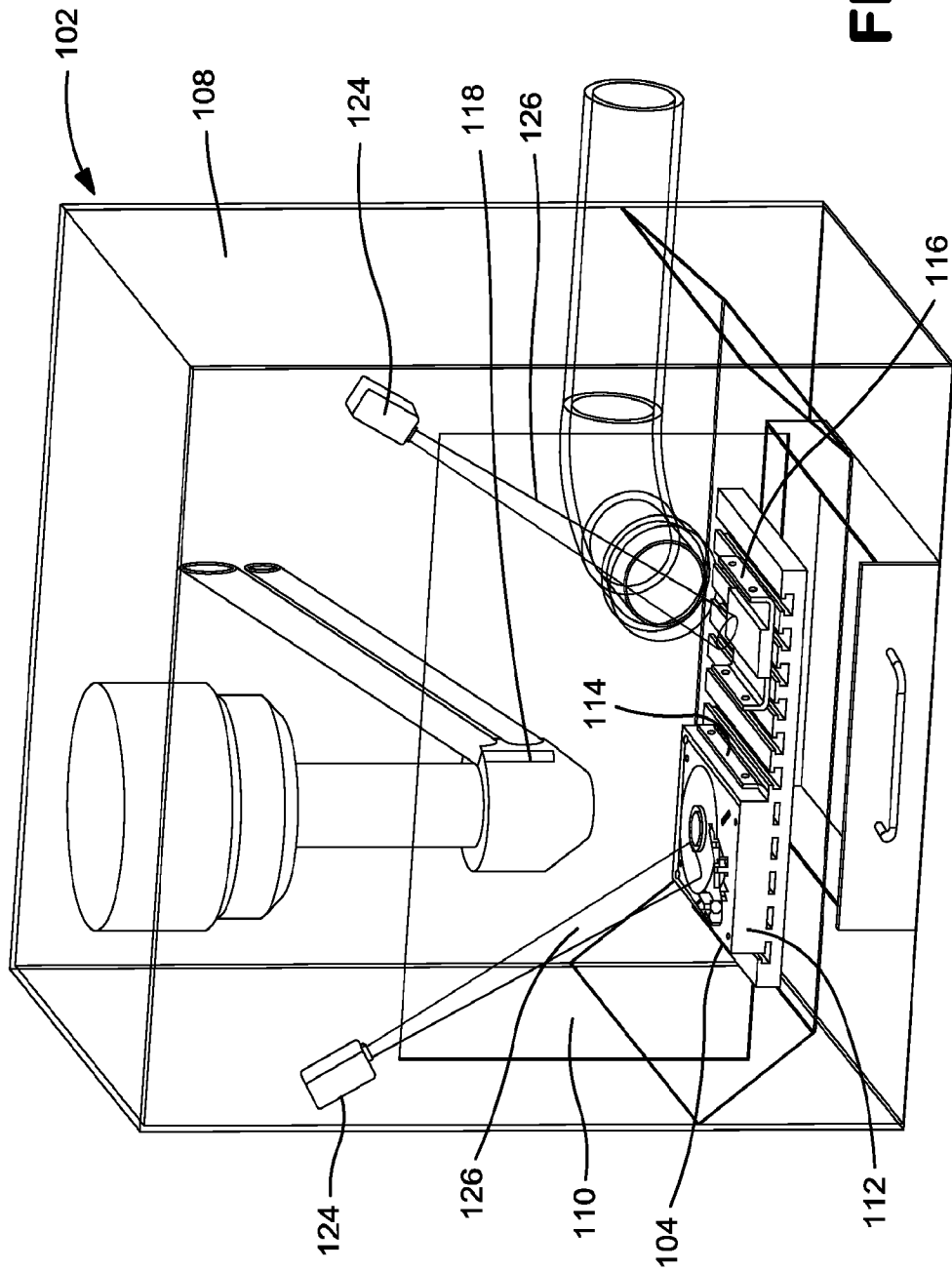
**FIG. 12**



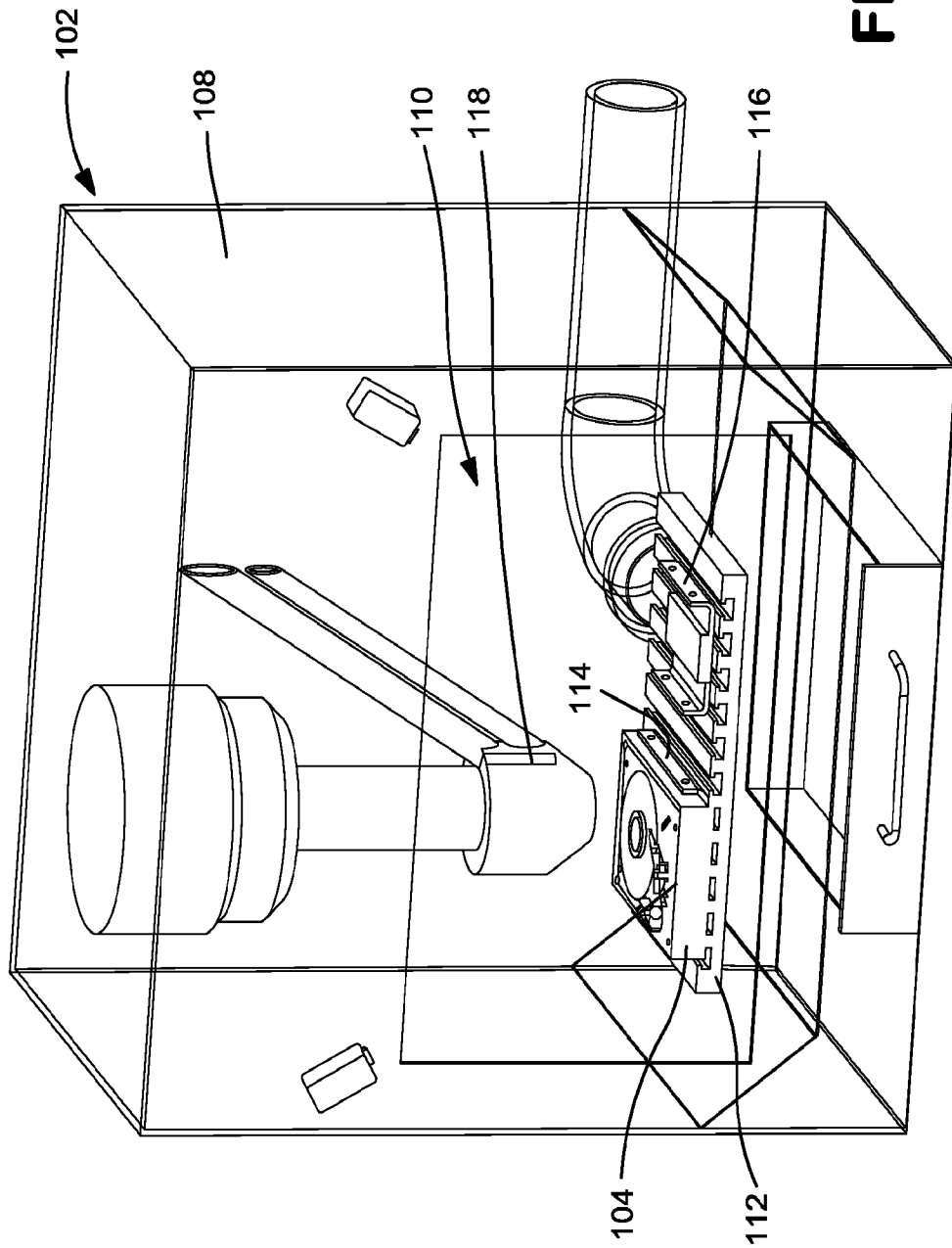
**FIG. 13**



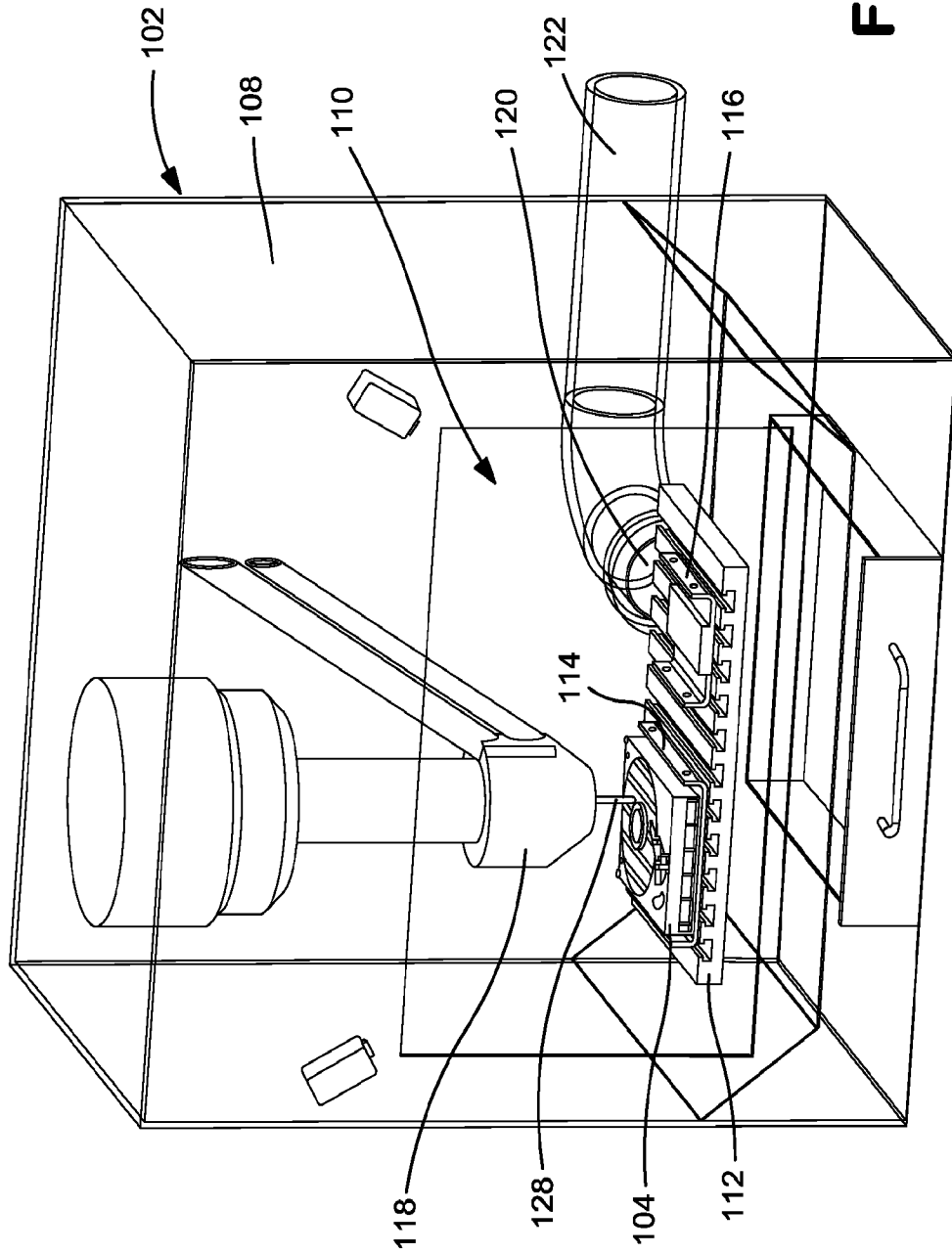
**FIG. 14**



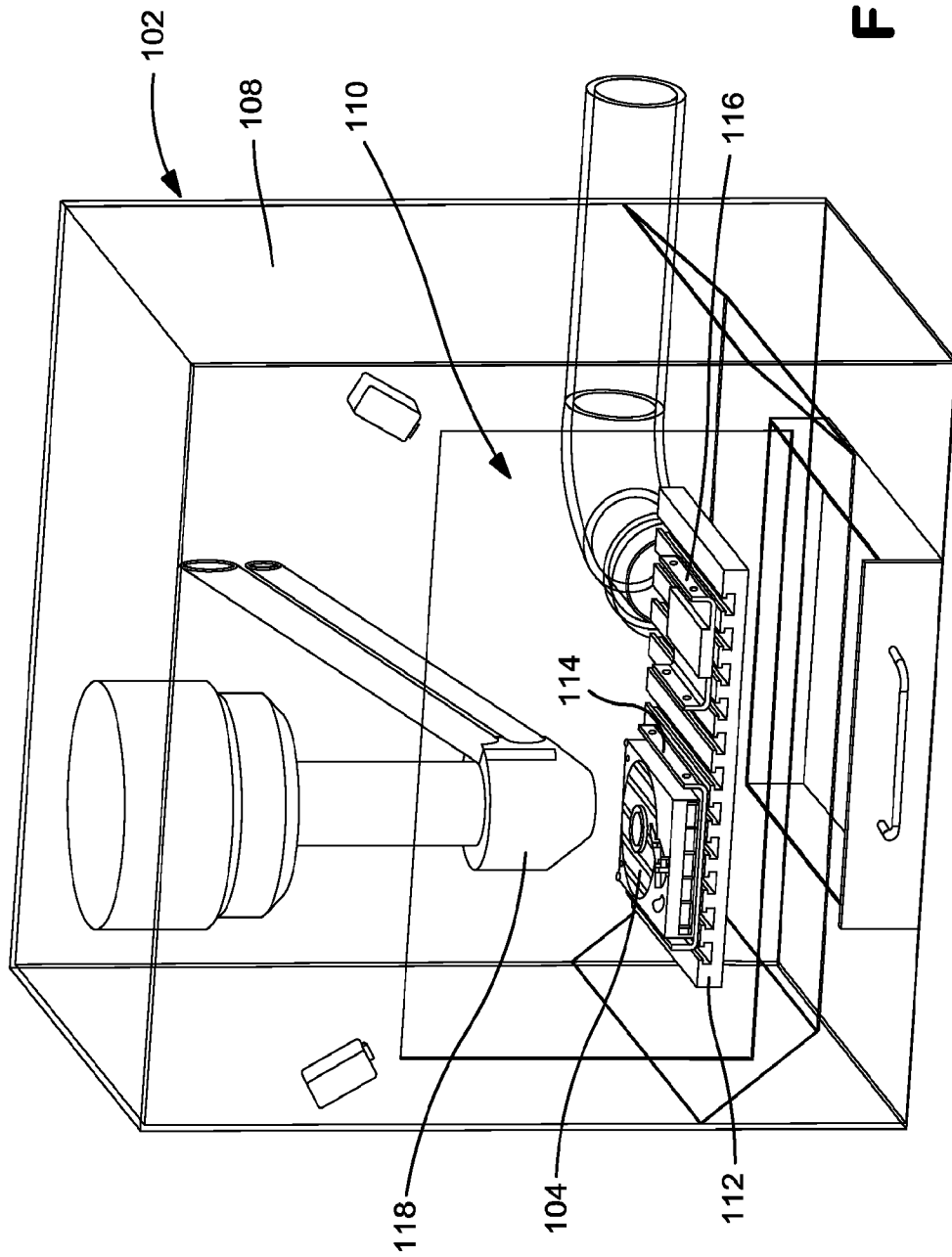
**FIG. 15**



**FIG. 16**

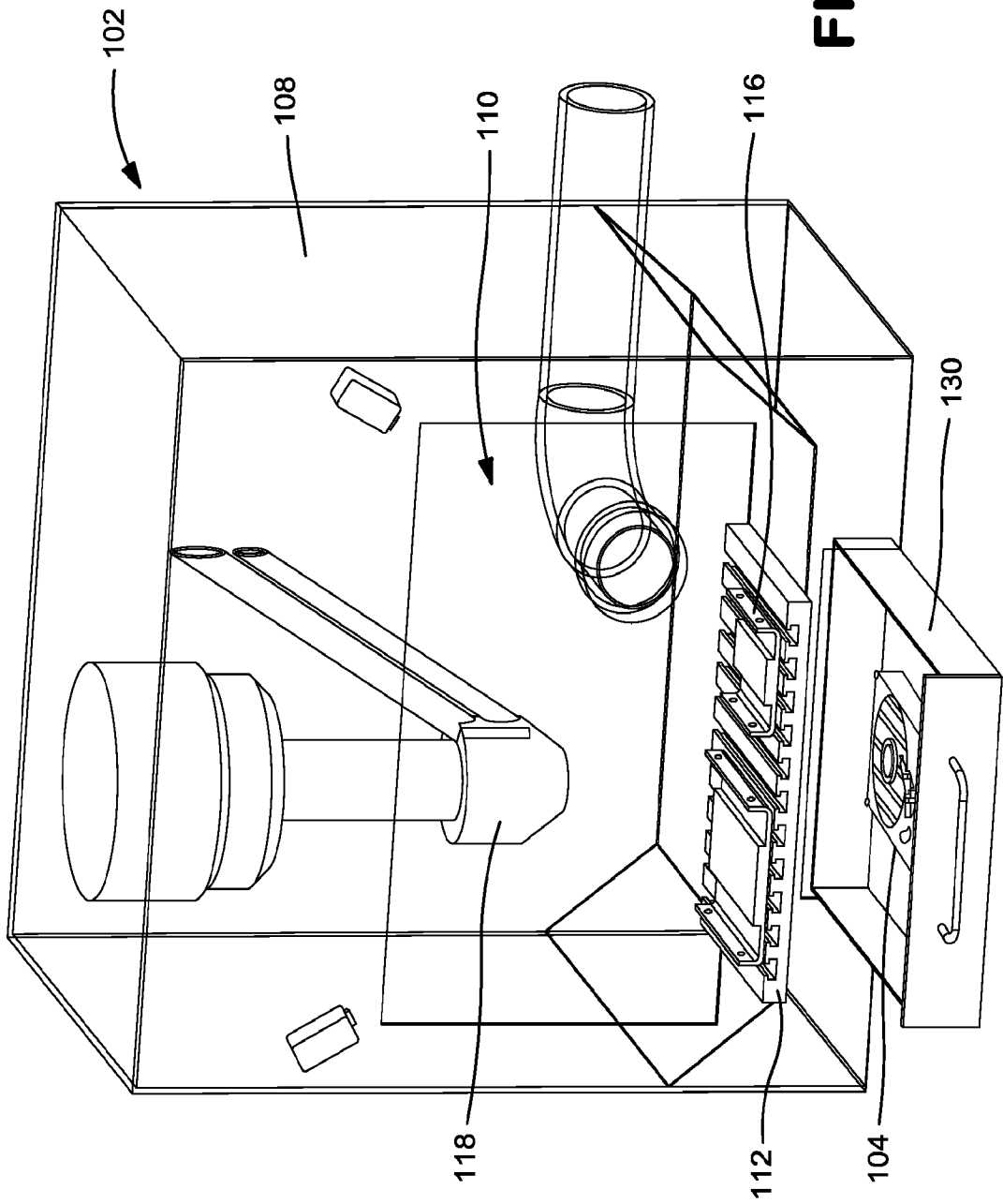


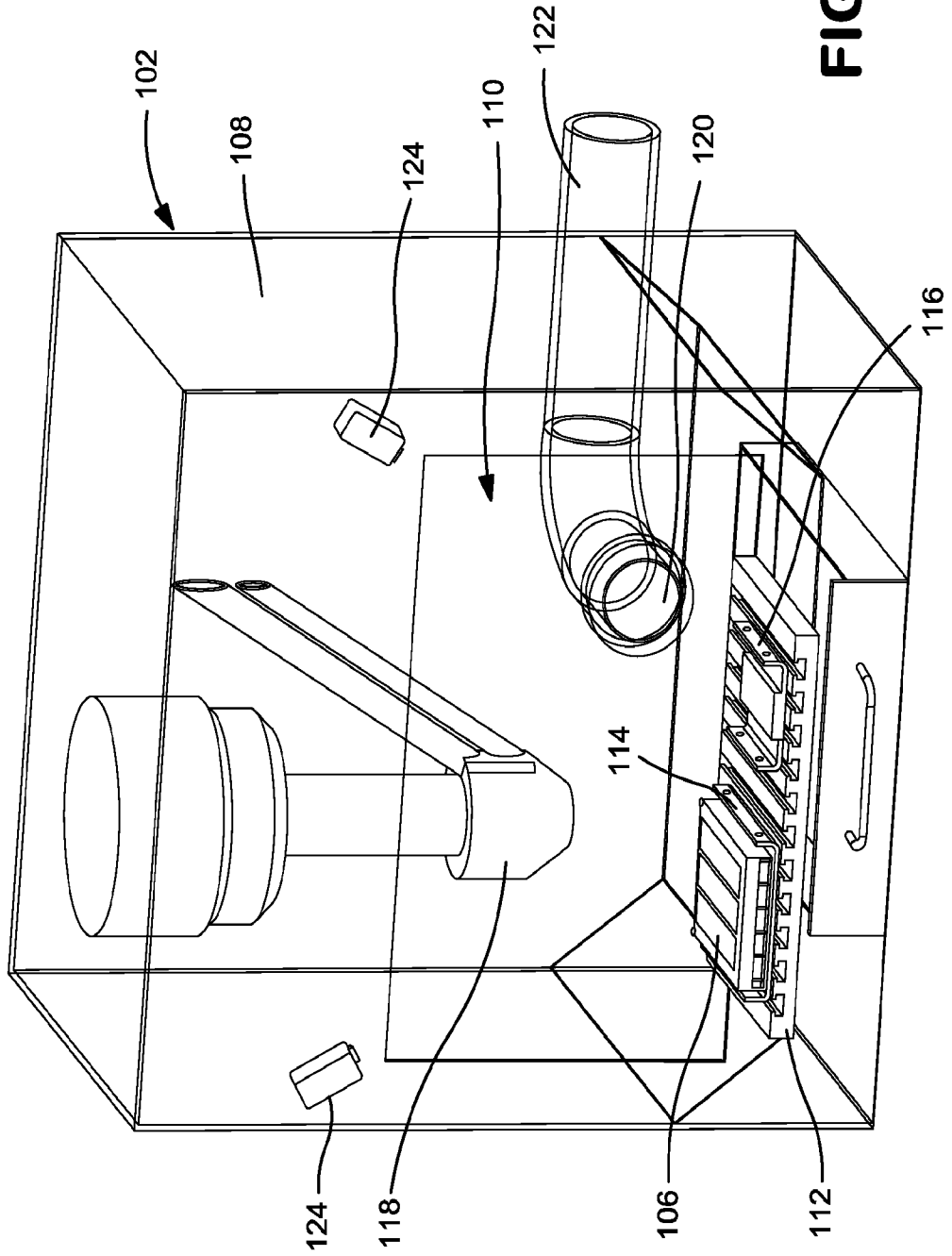
**FIG. 17**



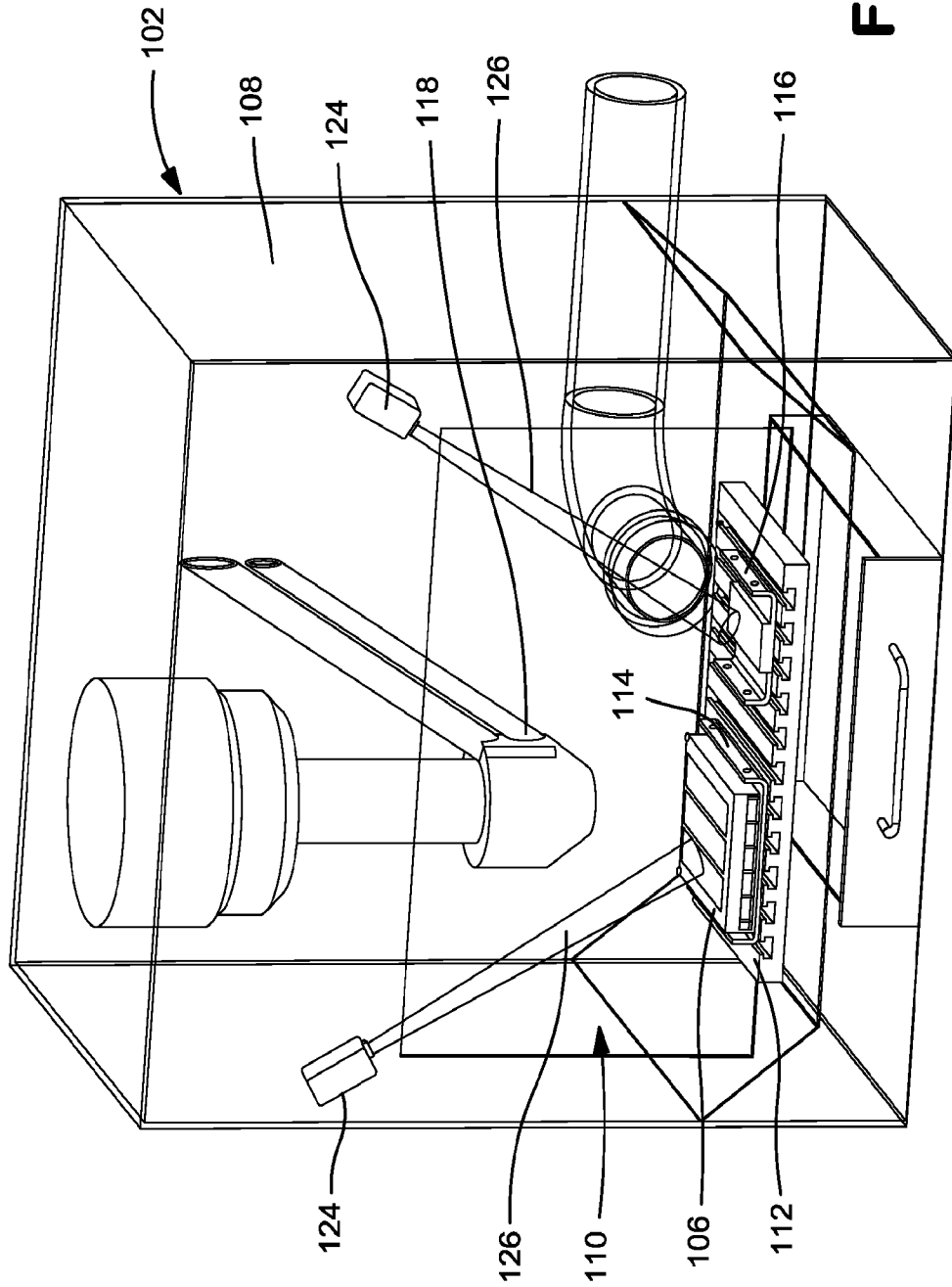
**FIG. 18**

**FIG. 19**

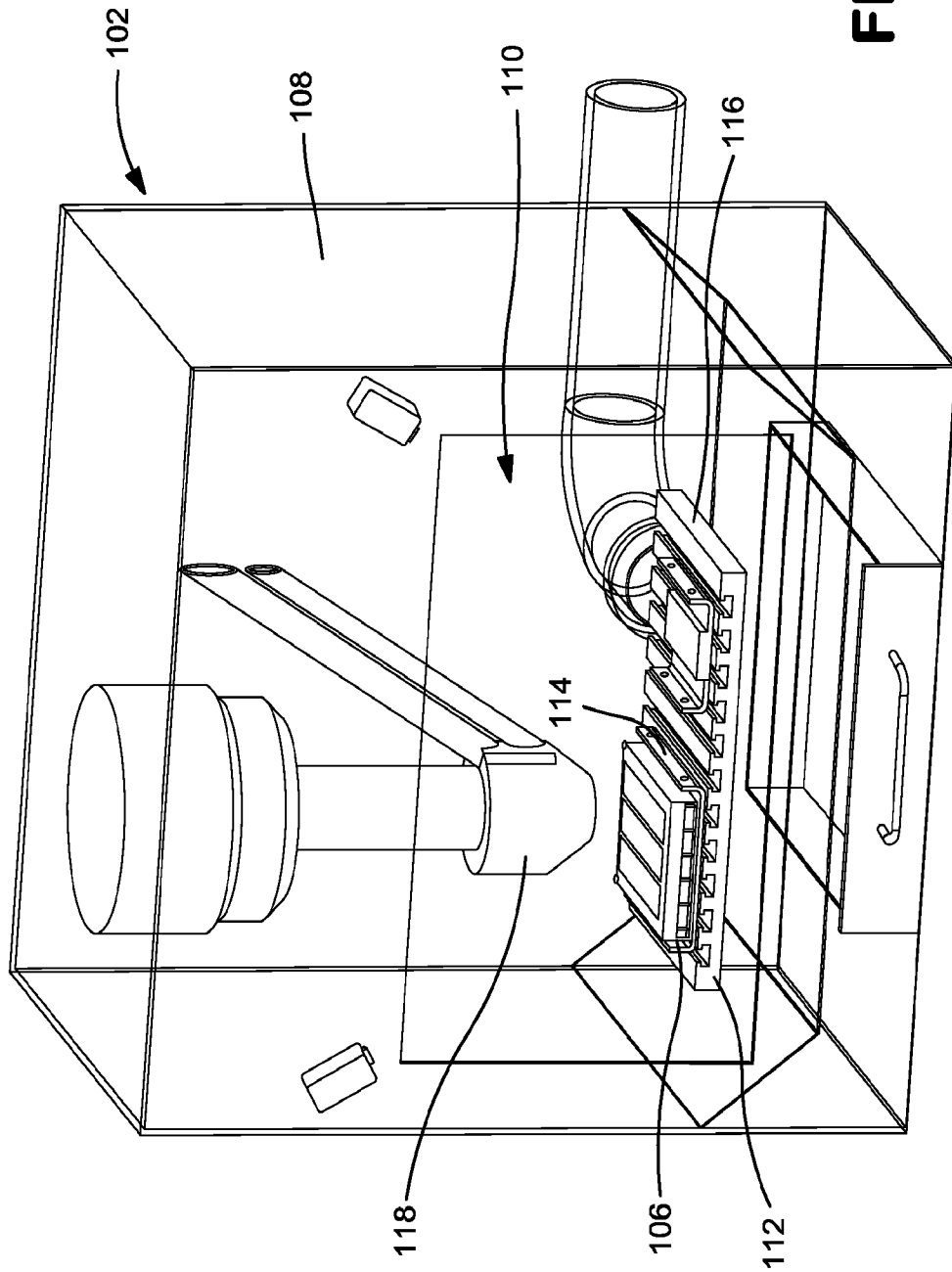




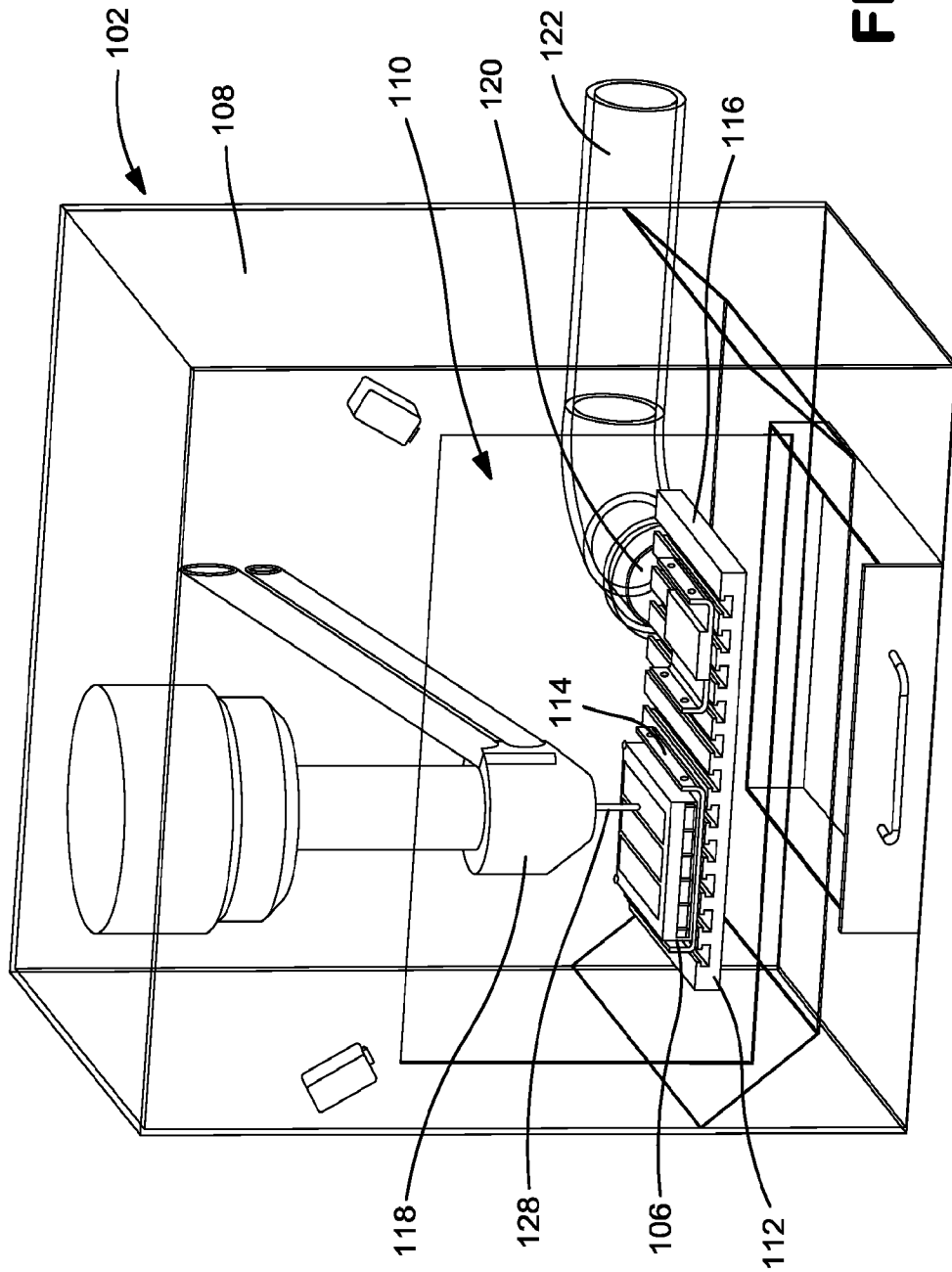
**FIG. 20**



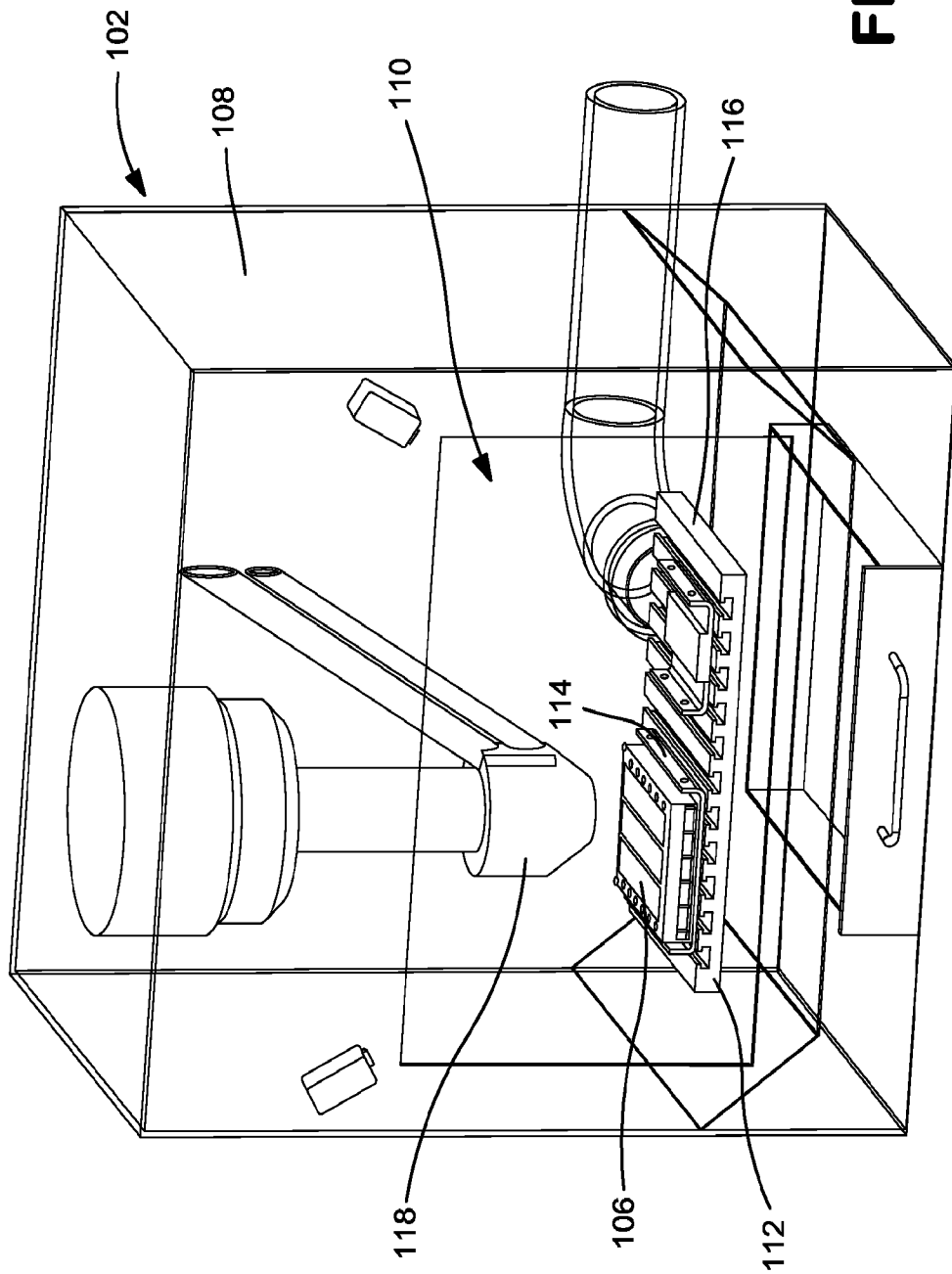
**FIG. 21**



**FIG. 22**

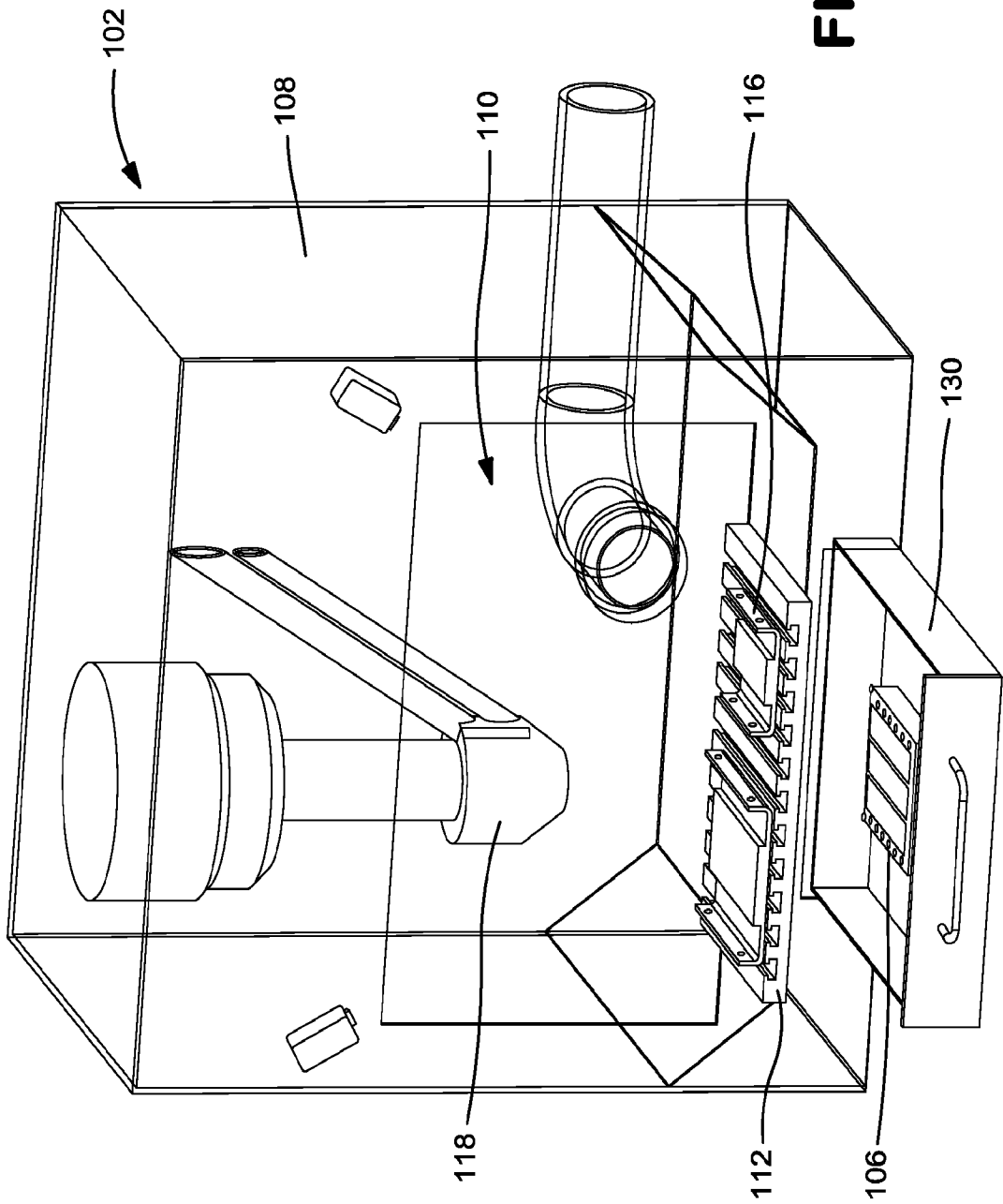


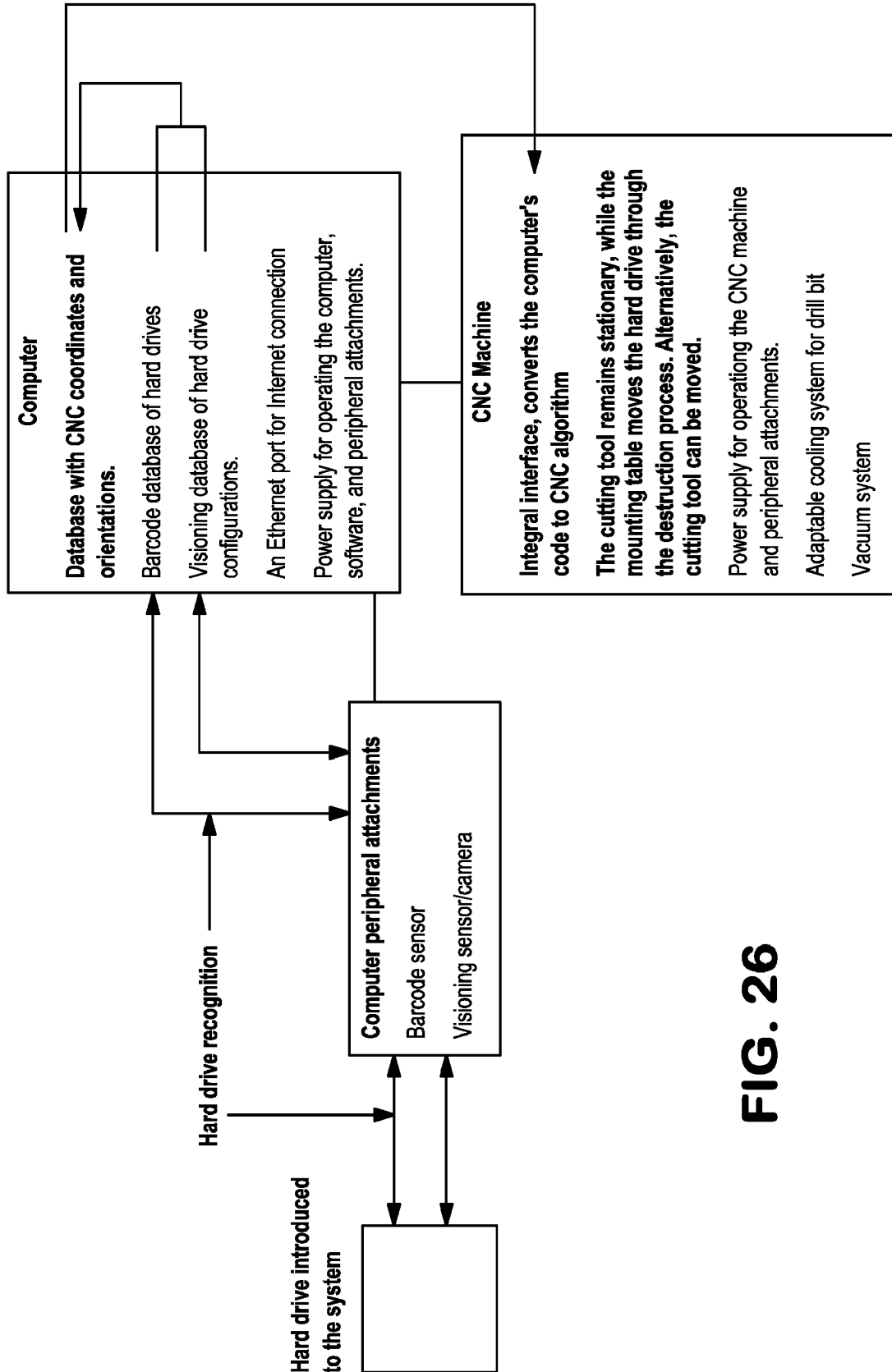
**FIG. 23**



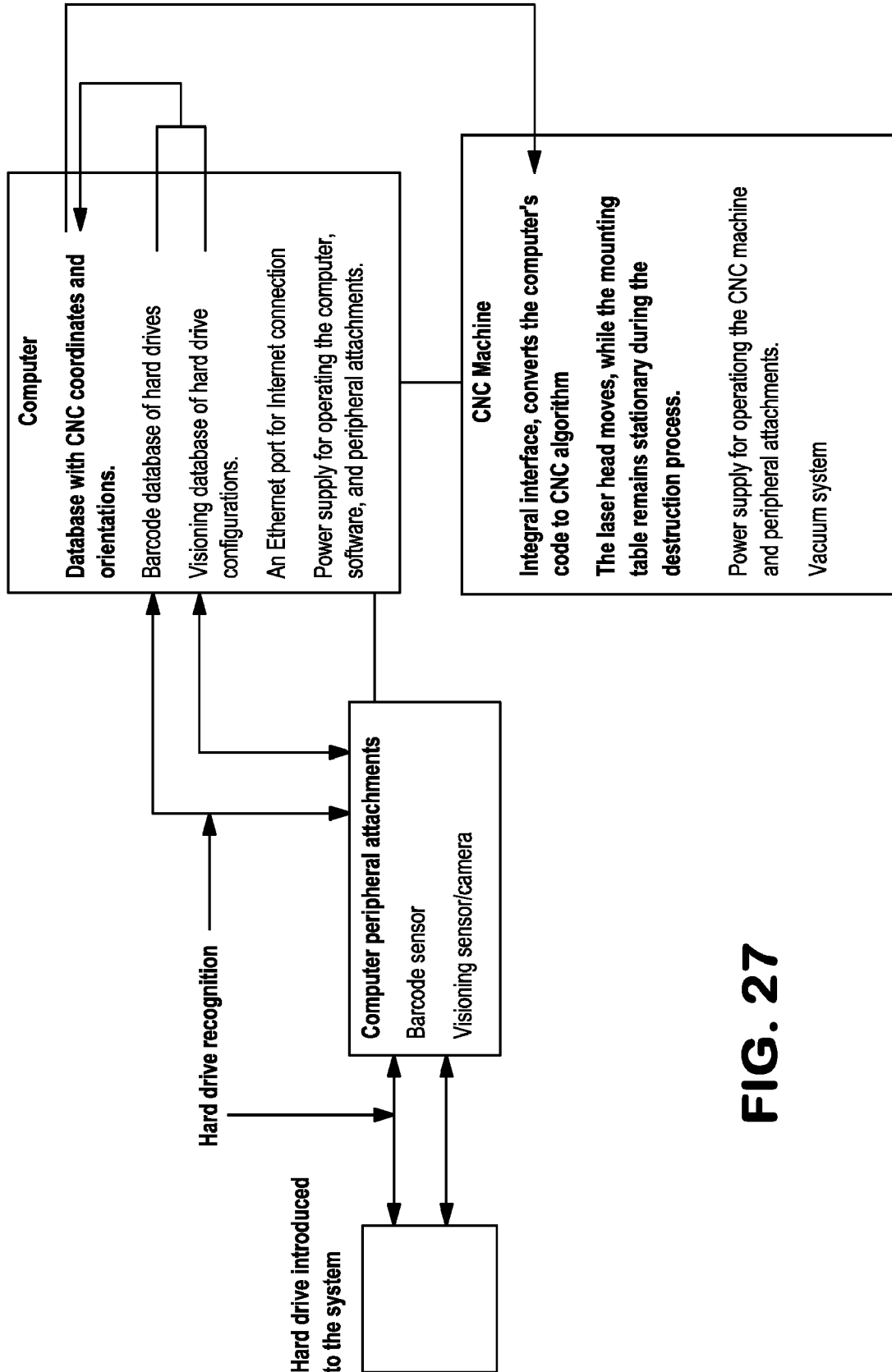
**FIG. 24**

**FIG. 25**

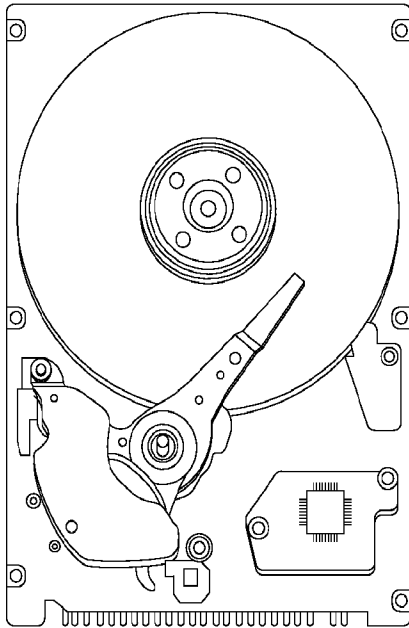




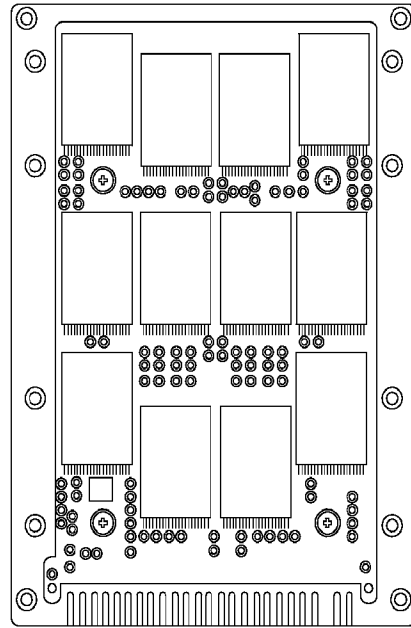
**FIG. 26**



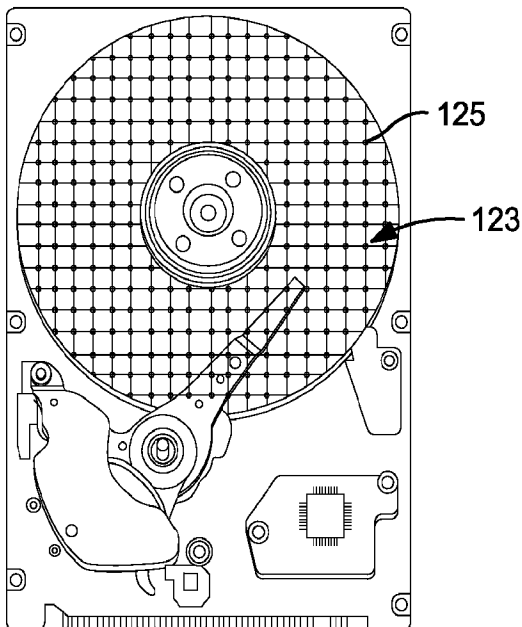
**FIG. 27**



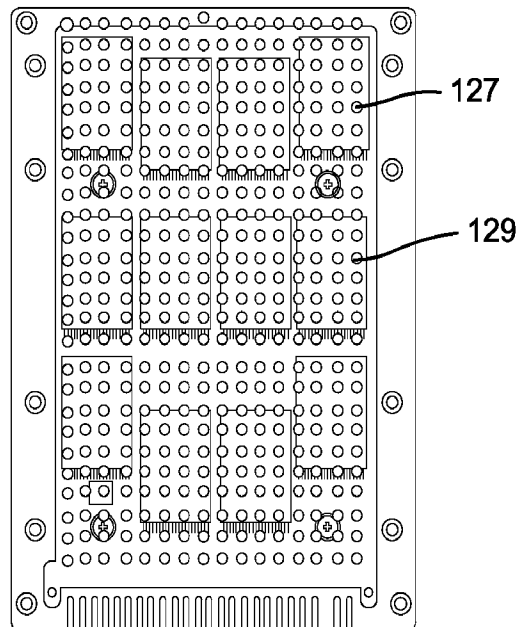
**FIG. 28a**



**FIG. 28c**



**FIG. 28b**



**FIG. 28d**

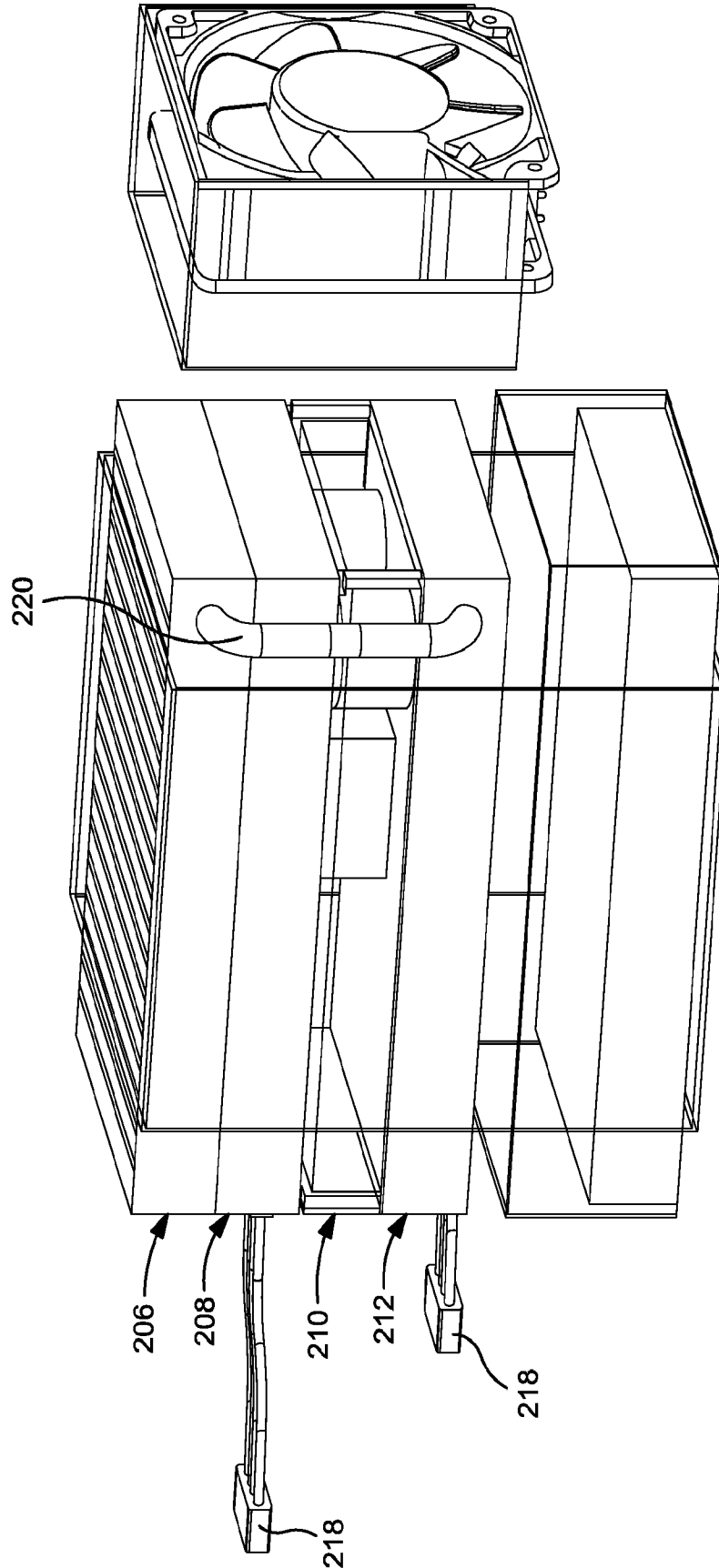
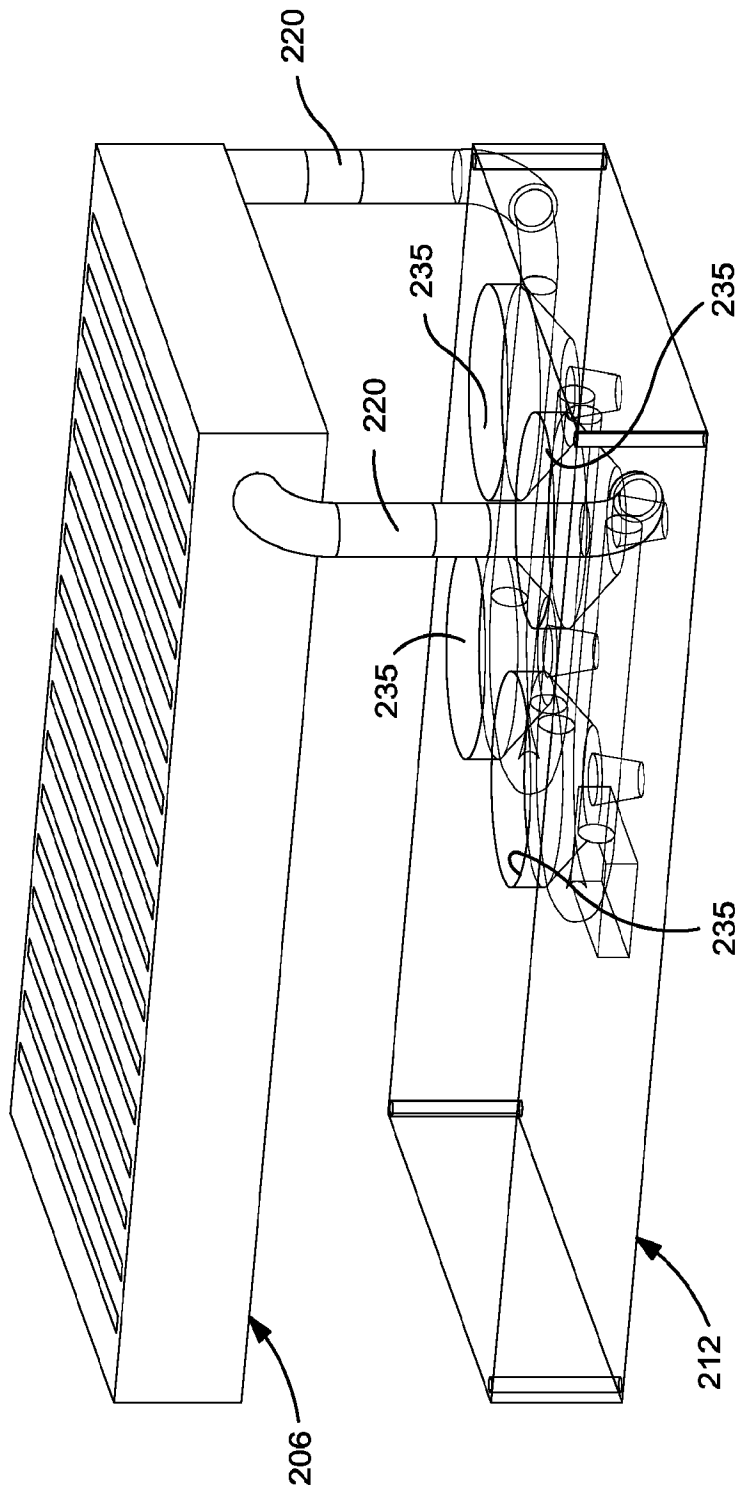
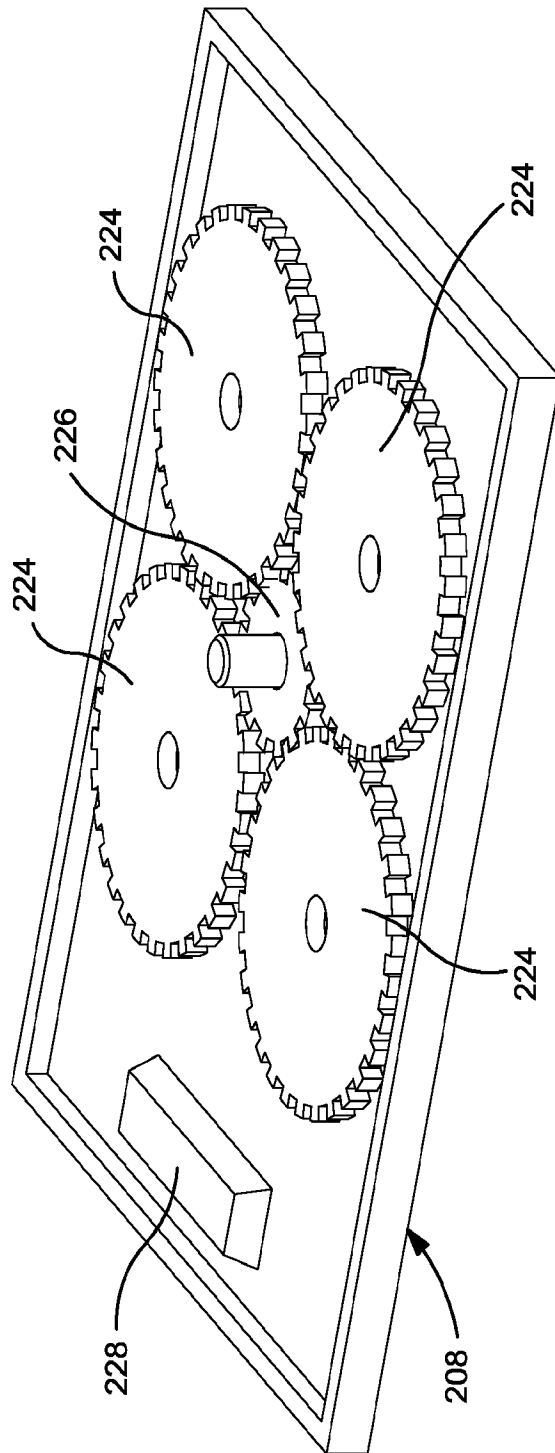


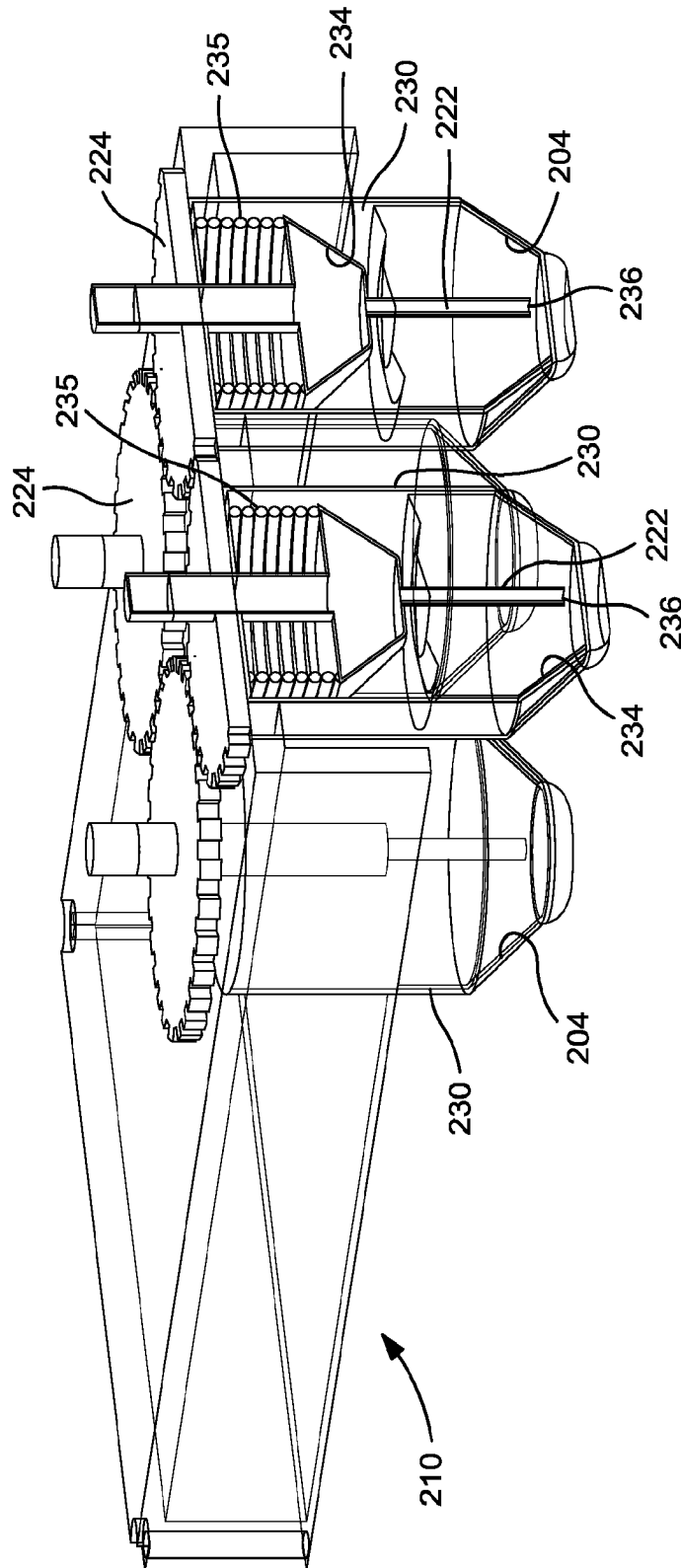
FIG. 29



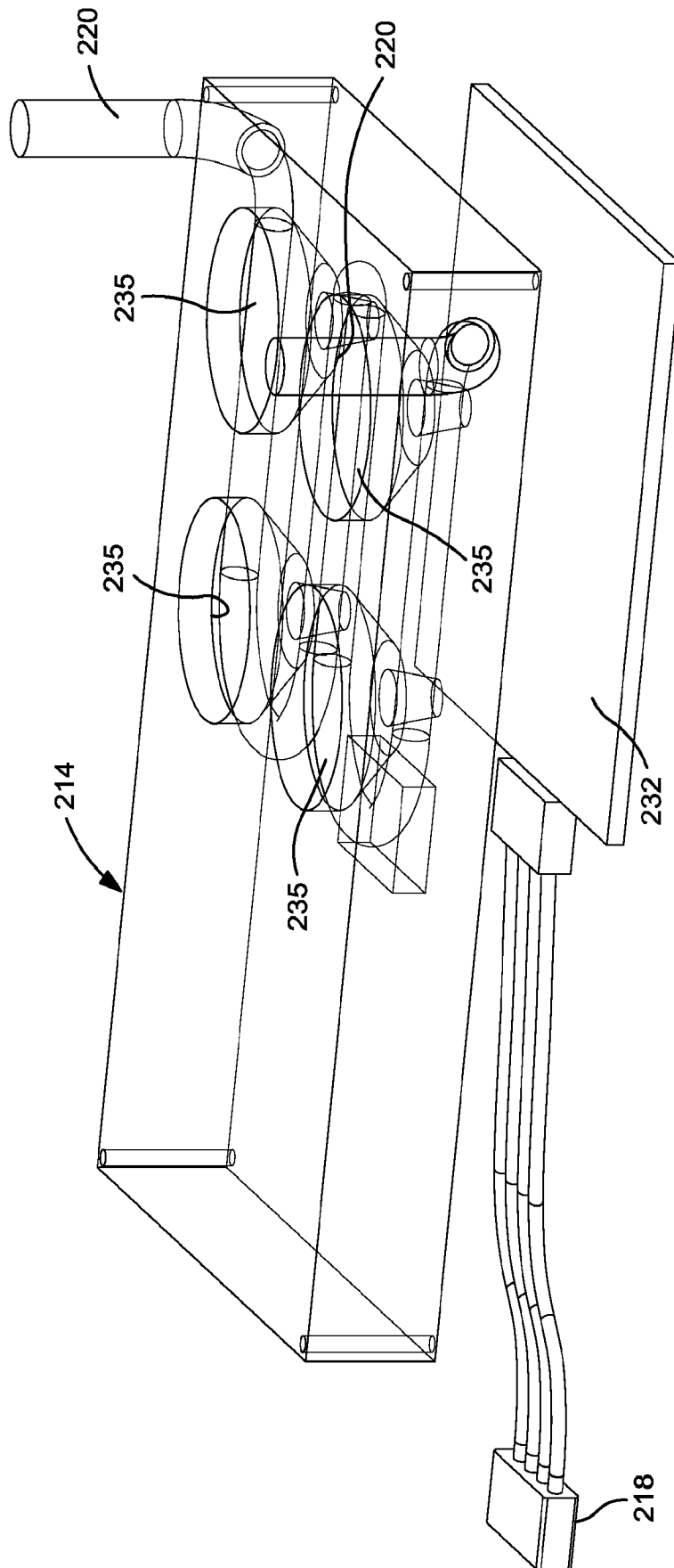
**FIG. 30**



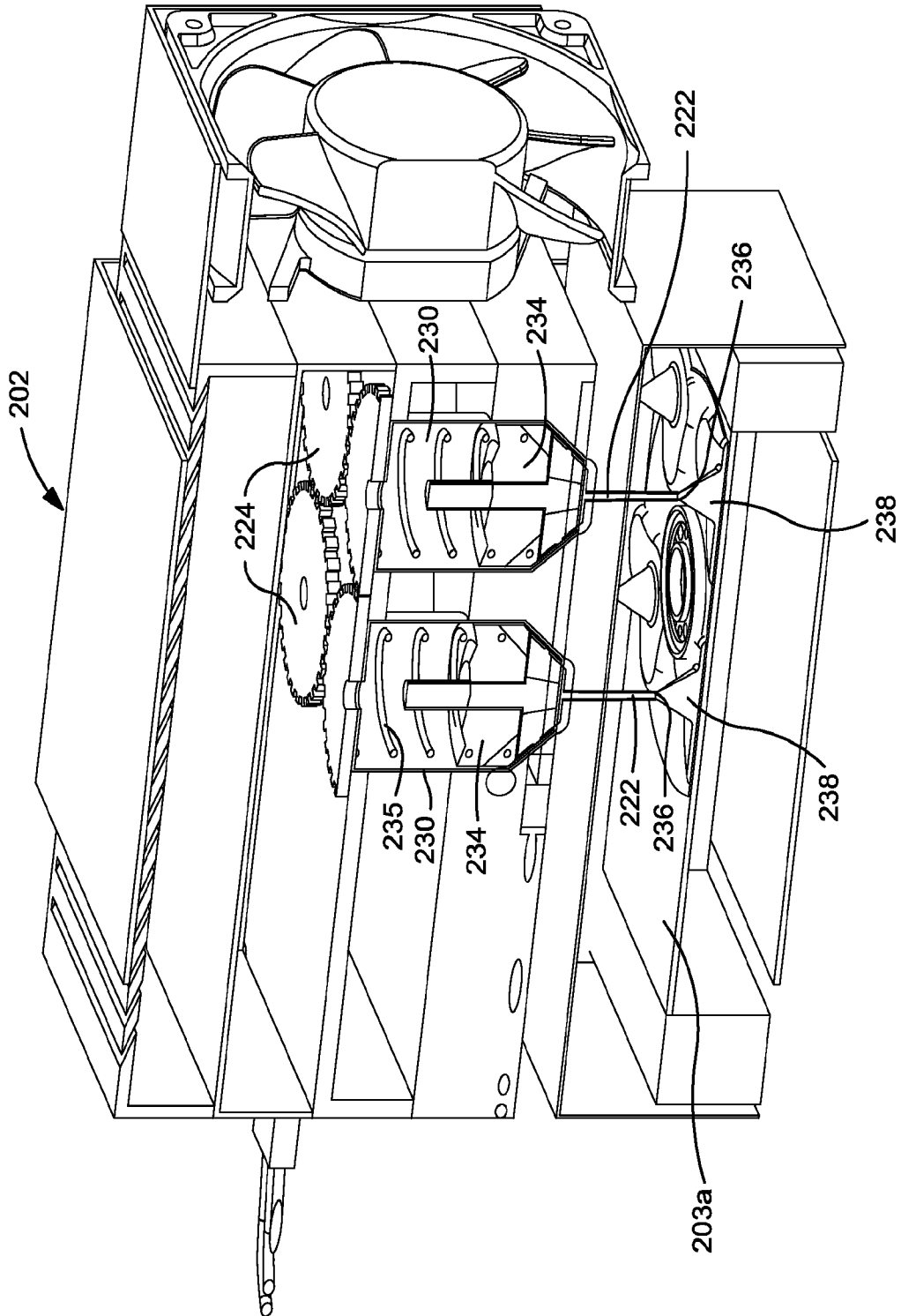
**FIG. 31**



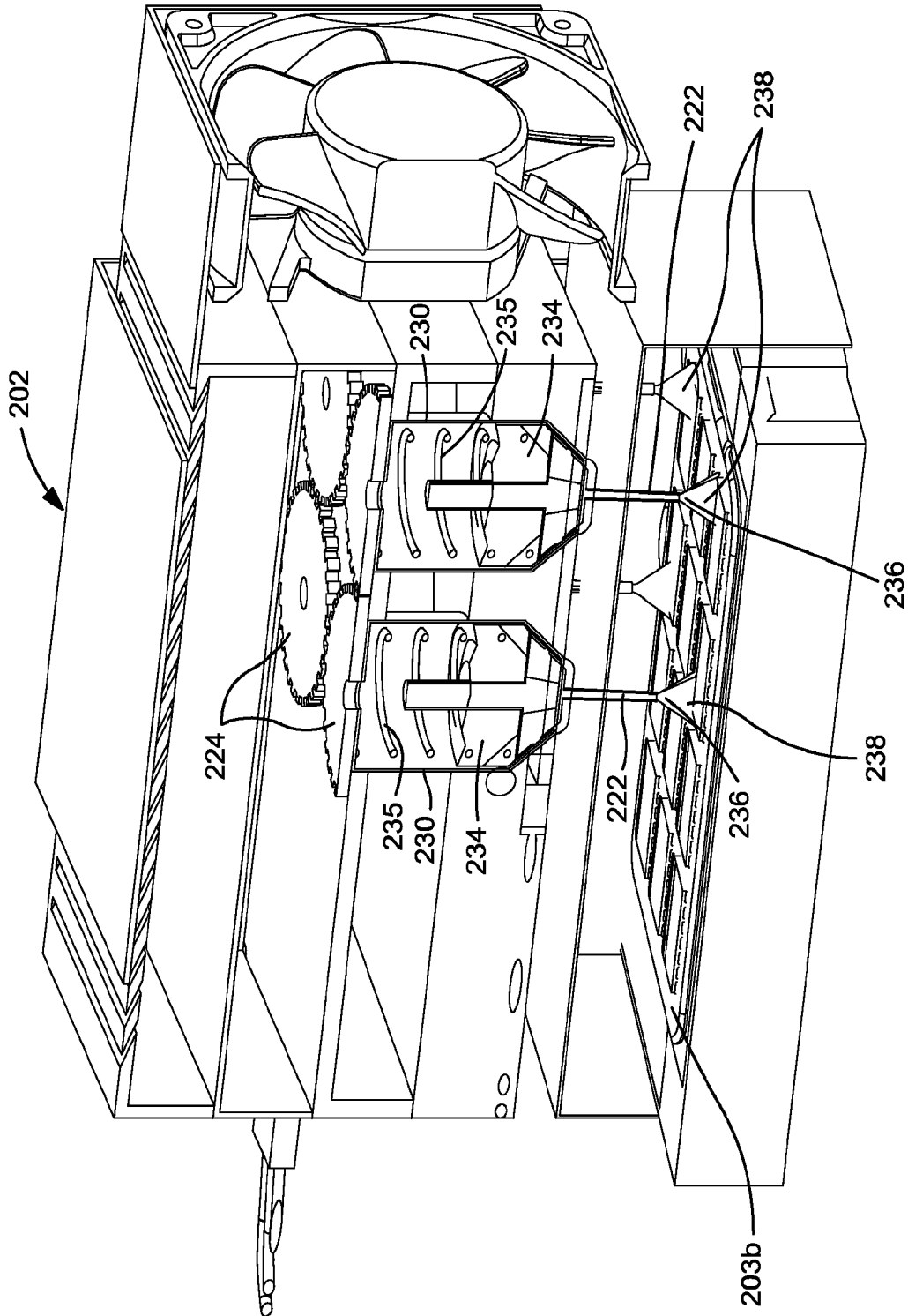
**FIG. 32**



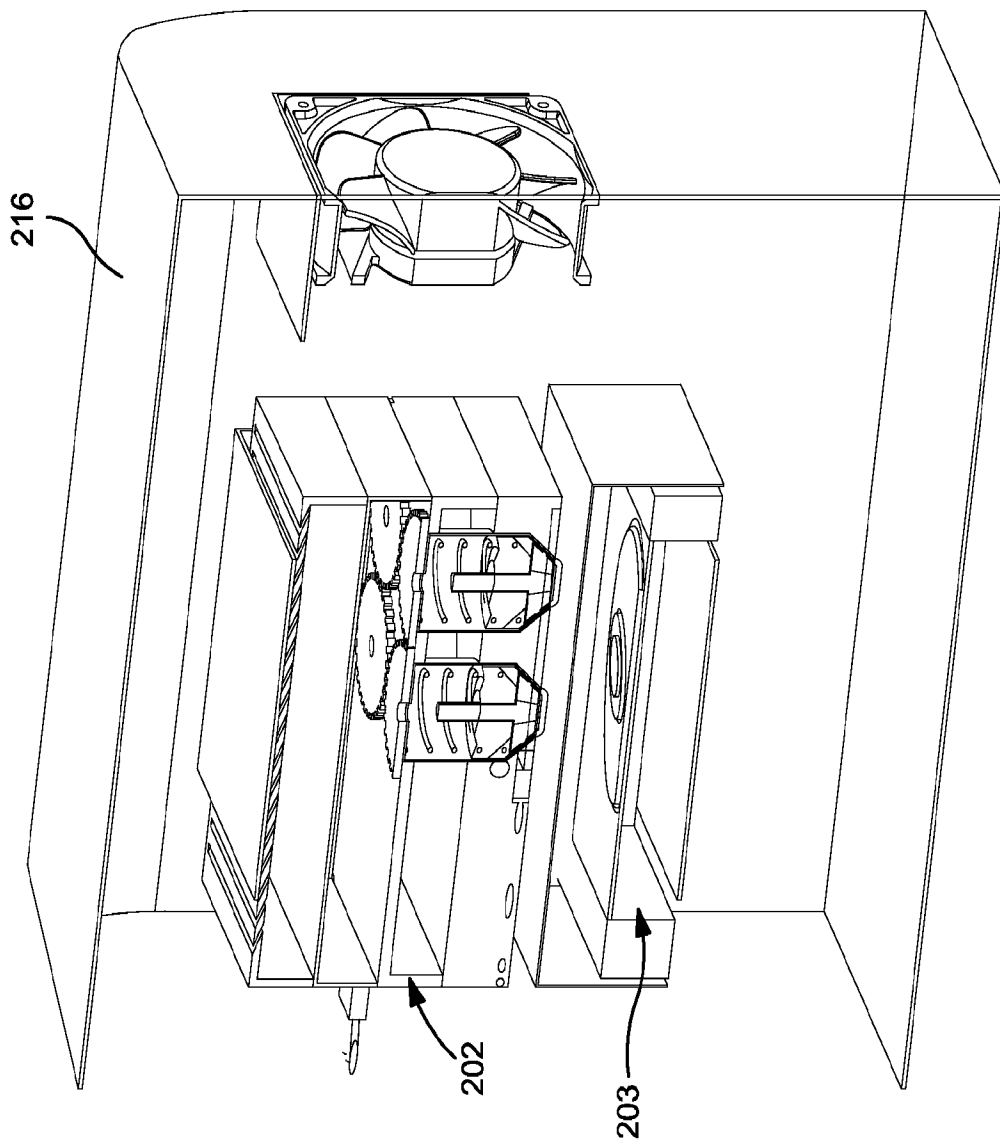
**FIG. 33**



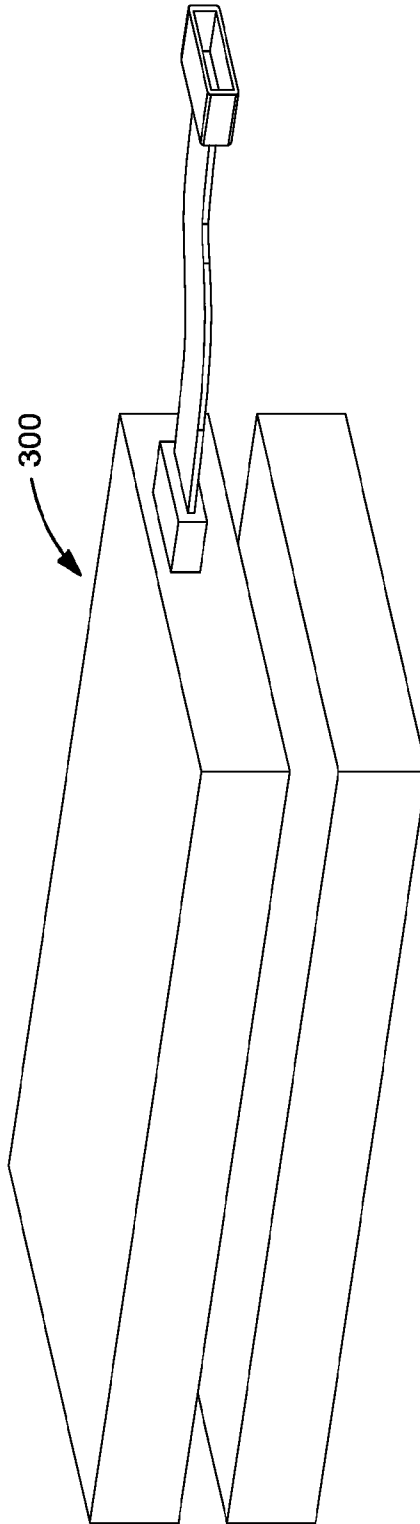
**FIG. 34**



**FIG. 35**



**FIG. 36**



**FIG. 37**

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US14/50523

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(8) - B02C 18/06; G06F 21/80 (2014.01)

CPC - B02C 18/06; G06F 21/80

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - B02C 18/06; G06F 21/80, 21/75 (2014.01)

CPC - B02C 18/06; G06F 21/80; 21/70; G11B 5/0245

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC); ProQuest; IEEE/IEEEXplore; Google/Google Scholar;

Keywords: harddrive, HDD, cut, shred, destroy, optical, recognition, scan, blade, mill

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	US 2012/0091237 A1 (CLARK, K et al.) 19 April 2012; Abstract; Paragraphs [0006], [0033], [0034], [0050]-[0052].	1, 3 ----- 4, 19
X ----- Y ----- A	US 6039637 A (HUTCHISON, R et al.) 21 March 2000; Abstract; Figure 6; Column 5, Lines 52-62; Column 6, Lines 2-4; Column 6, Lines 12-14; Column 6, Lines 47-58; Column 7, Lines 63-64; Column 8, Lines 5-6.	5, 6, 11, 13, 14 ----- 7-10, 18, 19, 21 ----- 12, 20
X ----- Y ----- A	US 5930217 A (KAYANUMA, K) 27 July 1999; Column 2, Lines 39-41; Column 2, Line 64; Column 15, Lines 14-15; Column 16, Lines 49-54; Column 18, Lines 42-49.	22, 25, 28, 29 ----- 23, 24 ----- 26, 27, 30, 31
X ----- Y	US 2006/0072244 A1 (RAPP, R) 06 April 2006; Abstract; Paragraphs [0009], [0012], [0023], [0024].	32, 38 ----- 33-37, 39, 40
Y	US 2010/0294865 A1 (WOZNY, S) 25 November 2010; Abstract; Paragraph [0020].	4, 23

Further documents are listed in the continuation of Box C.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

17 December 2014 (17.12.2014)

Date of mailing of the international search report

**06 JAN 2015**

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents  
P.O. Box 1450, Alexandria, Virginia 22313-1450  
Facsimile No: 571-273-3201

Authorized officer:

Shane Thomas

PCT Helpdesk: 571-272-4300  
PCT OSP: 571-272-7774

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US14/50523

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y ----- A	US 2009/0127341 A1 (FENG, X) 21 May 2009; Paragraphs [0019], [0021], [0038].	7-10 ----- 2, 4, 15-17
Y	US 2003/0213531 A1 (CONRY, P) 20 November 2003; Abstract; Paragraph [0012].	9
Y	US 2013/0124620 A1 (RESEARCH IN MOTION LIMITED) 16 May 2013; Paragraphs [0048], [0049], [0067].	18, 21
Y	US 2011/0069322 A1 (HOFFER, JR., J) 24 March 2011; Paragraph [0039].	23
Y ----- A	US 2011/0305250 A1 (CHANN, B et al.) 15 December 2011; Paragraphs [0019] and [0152].	24 ----- 30
Y	US 2004/0252628 A1 (DETZLER, R) 16 December 2004; Figure 2; Abstract; Paragraphs [0021], [0024], and [0046].	33, 35, 40
Y	US 4880065 A (MCDONALD, W et al.) 14 November 1989; Abstract; Column 2, Lines 28-30.	34
Y	WO 2012/137063 A2 (DYNAMIC MICRO SYSTEMS) 11 October 2012; Page 31, first full paragraph.	35, 39
Y	US 2004/0050420 A1 (HUANG, C et al.) 18 March 2004; Abstract; Paragraph [0018].	36
Y	US 2005/0257049 A1 (FARAG, I) 17 November 2005; Abstract; Paragraph [0011].	37
A	US 2012/0292415 A1.(WOZNY, S) 22 November 2012; Entire Document.	1-40

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US14/50523

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Group I: Claims 1-21; Group II: Claims 22-31; Group III: Claims 32-40

\*\*\*-Please see Supplemental Page-\*\*\*

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

- Remark on Protest**
- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
  - The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
  - No protest accompanied the payment of additional search fees.

\*\*\*-Continued from Box No. III - Observations where unity of invention is lacking-\*\*\*

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fee must be paid.

Group I: Claims 1-21 are directed toward a system for physically destroying a data storage portion of electronic media storage device using a rotatable milling cutter.

Group II: Claims 22-31 are directed toward a system for physically destroying a data storage portion of electronic media storage device using a laser.

Group III: Claims 32-40 are directed toward a chemical system for chemically destroying a data storage portion of electronic media storage device.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical features of Group I include a rotatable milling cutter, said cutter being axially movable to permit the milling cutter to engage and remove the data storage portion of the electronic media storage device, which are not present in Groups II-III.

The special technical features of Group II include a laser being movable to position the laser relative to the electronic media storage device for destroying the data storage portion, which are not present in Groups I and III.

The special technical features of Group III include at least one pod for storing a chemical capable of eroding and stripping away the data storage portion of an electronic media storage device; a hollow drill bit associated with each pod drivable into the cavity of the hard drive; and a release mechanism for releasing said chemicals to flow through the drill bit into the cavity, which are not present in Groups I-II.

The common technical feature shared by Groups I-III is a system and method for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives comprising: a cradle for holding an electronic media storage device in a chamber; and destroying a data storage portion of the electronic media storage device while leaving at least a substantial portion of the electronic media storage device intact.

However, these common features are previously disclosed by US 2006/0072244 A1 (RAPP). Rapp discloses a system and method for physically destroying the data storage portion of electronic media storage devices such as hard disc drives, solid state drives and hybrid hard drives (destroying disk drive media (portion) of a disk drive; Abstract) comprising: a cradle for holding an electronic media storage device in a chamber (an enclosure 14A/14B (cradle) contains the disk drive 13A/13B within a vacuum of air (chamber) surrounding the disk drive; Figure 4 and paragraphs [0018], [0025]); and destroying a data storage portion of the electronic media storage device (destroying disk drive media (portion) of a disk drive; Abstract and paragraph [0009]) while leaving at least a substantial portion of the electronic media storage device intact (once the enclosure is filled with a contaminate substance, the disk drive performance is degraded to be inoperable, thus maintaining the physical structure of the disk drive (intact); paragraphs [0009]-[0010]).

Since the common technical features are previously disclosed by the Rapp reference, these common features are not special and so Groups I-III lack unity.