

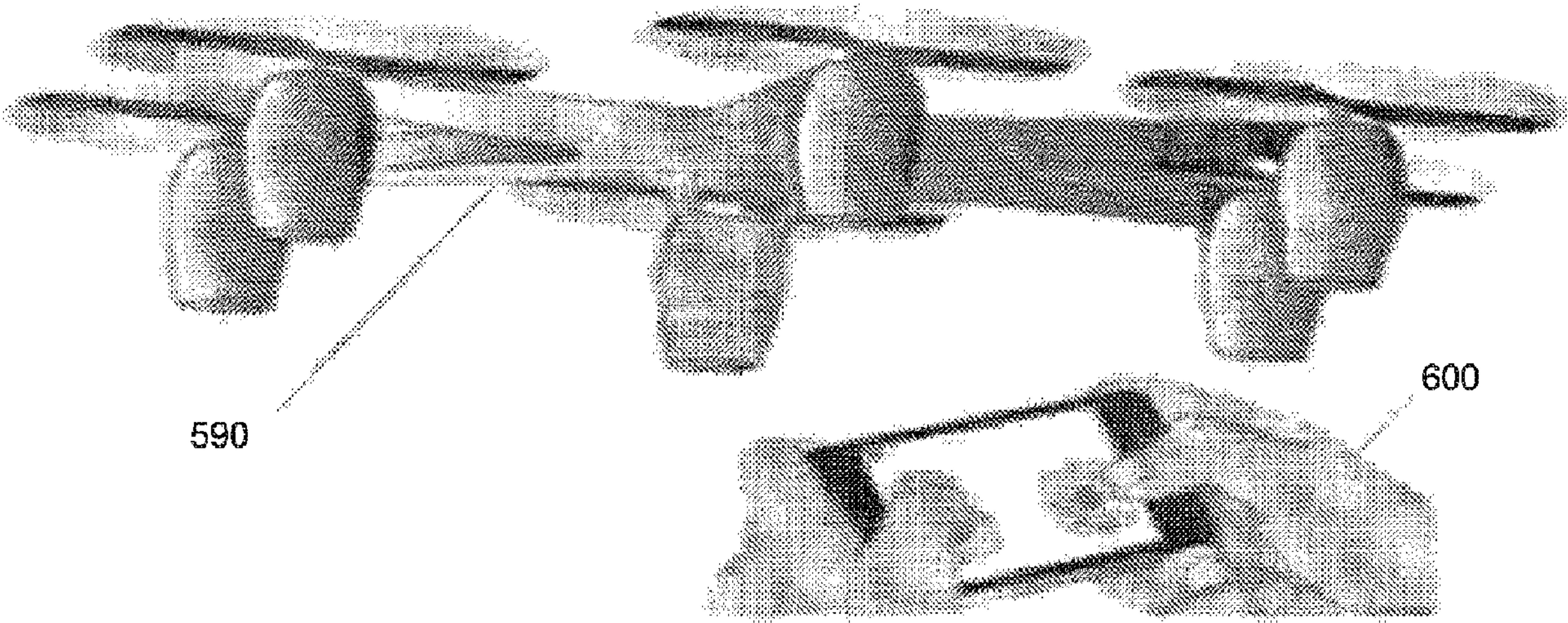


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(54) Titre : APPAREIL, SYSTEME ET PROCEDE DE MAINTENANCE DE PROPRIETE ROBOTIQUE INTERACTIVE ET AUTONOME INTELLIGENTE
(54) Title: SMART INTERACTIVE AND AUTONOMOUS ROBOTIC PROPERTY MAINTENANCE APPARATUS, SYSTEM AND METHOD

FIG. 12



(57) **Abrégé/Abstract:**
A system including a deployable barrier, a sensor to detect when to deploy the barrier and an activation device to deploy the barrier, wherein the barrier, sensor and activation device are connected a surface attached to a mobile device and the deployable barrier is deployed when the mobile device experiences an unexpected change in at least one of velocity, acceleration and moisture.

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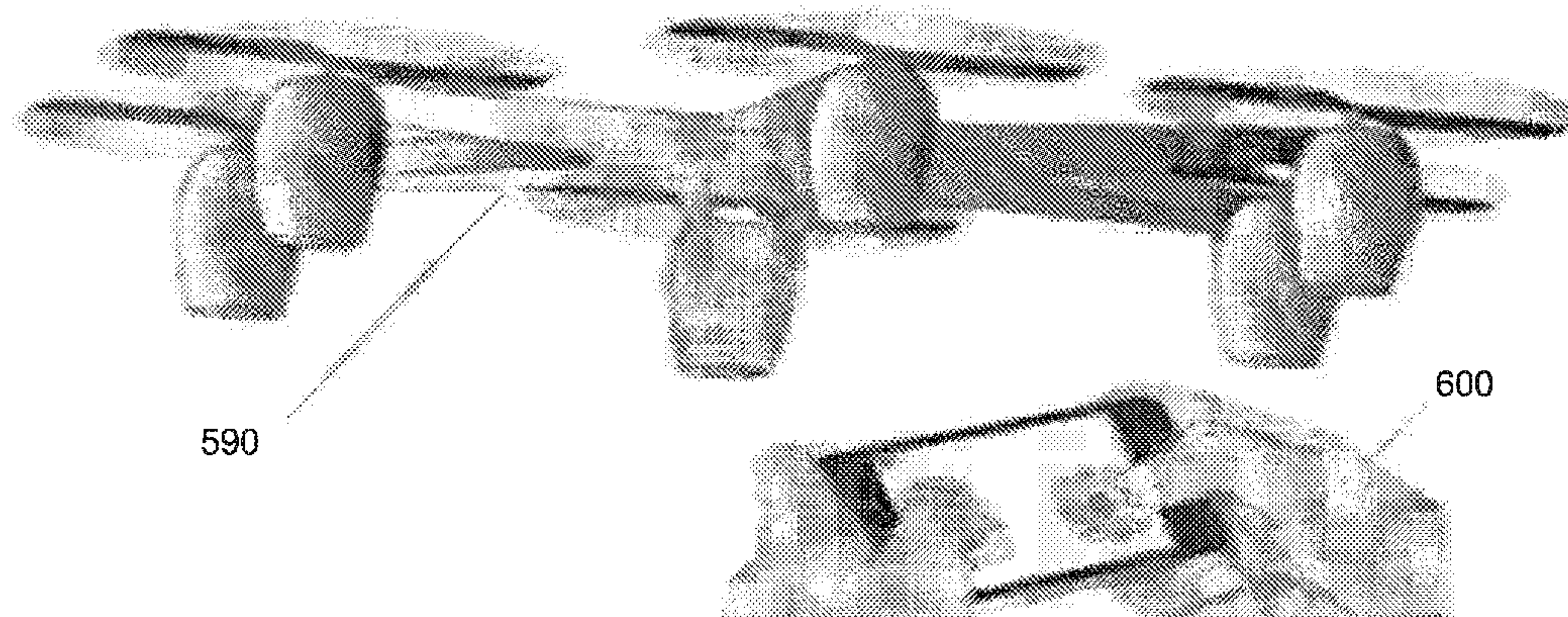
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FIG. 12



(57) Abstract: A system including a deployable barrier, a sensor to detect when to deploy the barrier and an activation device to deploy the barrier, wherein the barrier, sensor and activation device are connected a surface attached to a mobile device and the deployable barrier is deployed when the mobile device experiences an unexpected change in at least one of velocity, acceleration and moisture.

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SMART INTERACTIVE AND AUTONOMOUS ROBOTIC PROPERTY MAINTENANCE APPARATUS, SYSTEM AND METHOD

BACKGROUND

[0001] Embodiments relate to robotics and, more particularly, interactive and autonomous robotic property maintenance.

[0002] When a consumer purchases a property maintenance tool, such as, but not limited to, a pole saw, lawnmower, hedge trimmer, lawn edger, etc., the consumer is unaware of the complexities involved with manicuring or maintaining their property assets personally. When the consumer hires a lawn worker, the consumer is usually not fully aware whether a hired lawn worker has enough experience to trim the consumer's property assets to their desired state of exceptionally high quality. At home, the consumer must rely on their inexperience or limited available time to cut, clean, trim, or edge their property assets.

[0003] As shown in FIGS. 1 and 2, a user may utilize a pole saw, a manual pole saw and then an electric pole saw, in a dangerous manner in which a less than safe hold of the pole saw may occur due to a high angled position of a branch desired to be cut. As shown in FIG. 3, a user may attempt to use a pole saw tool to trim tree branches, but because of not having a clear line of sight, may be dangerously near utility power lines. This presents a serious risk to the health and well-being of the user as well as possibly causing a utility power blackout if the saw blade cuts the powerline.

[0004] With respects to a riding lawnmower, as shown in FIG. 4, an attachment with a grass trimmer that is manually operated by the user is possible. However, the rider may not be able to focus on both steering the lawnmower while also maneuvering the grass trimmer.

[0005] Maintainers of real property would benefit from having a way to better ascertain how to maintain real property where external "eyes" are available to view from perspectives that the user is not able to naturally view.

[0006] Additionally, mobile electronic devices, such as, but not limited to laptop computers, tablet computers, smart phones, etc. have increased in use. With their increased use, such as, but not limited to, as an information portal, when mobile a limitation of mobile electronic devices is that is battery life.

[0007] Another issue that users encounter is safety concerns. Safety concerns involve two primary areas. Physically protecting a mobile electronic device if the device is dropped or

has something dropped on it. As an example, a mobile electronic device may be accidentally dropped on to a solid surface or into a liquid. Likewise, either a solid object or a liquid may be dropped on the mobile electronic device. Similar issues exist with aerial drones.

[0008] Despite the alarming statistics on mobile device accidents, most people choose to purchase a phone and protective case and screen protector at the time of activation. The protective cases of today are usually manufactured plastic mostly produced from injection molded plastic with some having soft inner parts and having molded to fit and protect the mobile electronic devices. The largest use of cases is by common consumers wanting to protect their device investment in sporting or everyday use. In spite of this, all protective cases seem to resemble each other offering limited levels of proven protection. The cases available today present inadequate levels of protection from accidental damage events in every day or extreme activities. These cases fail to protect the screen from radiating shockwaves generated from a corner or elongated plane accidental drop causing the reverberation of the shock waves to splinter the phone or tablet touch screen or cause the inner workings of the hardware's integrity to be compromised resulting in adverse performance experiences by the user. Furthermore, they do not absorb the force of the device's collision in an optimal manner since both the case and the electronic device is made of an inelastic hard material. Even if the device is not visibly damaged, there may be severe internal damage to the electronic components. During extreme weather or in extreme climates where the temperature is either abnormally high in heat or low with cold, the electronic device can adopt an even more sensitive state of being resulting in cataclysmic internal damage despite no apparent damage to the existing cases being offered.

[0009] With respect to aerial drones, protective casing is not currently available.

[0010] The other safety concerns involves having a mobile electronic device stolen. Since the mobile electronic device is not secured to a particular location, possibilities exist for a user to inadvertently leave the mobile electronic device at a location, in public, where the user was using the mobile electronic device. Also, there are thieves who watch an owner of a mobile electronic device and wait for an opportunity to steal such a mobile electronic device.

[0011] Manufacturers and owners of mobile electronic devices and aerial drones would benefit from a system that not only protects mobile electronic devices from being lost, stolen or damaged, but with providing enhancements to the functionality of the mobile electronic devices.

SUMMARY

[0001] Embodiments relate to a system, apparatus and a method maintaining grounds of real property. The system comprises an aerial drone to handle and maneuver with a tool to trim natural growth on the grounds of the real property. The aerial drone comprises a deployable barrier, a sensor to detect when to deploy the barrier and an activation device to deploy the barrier, wherein the barrier, sensor and activation device are connected a surface attached to a mobile device and the deployable barrier is deployed when the mobile device experiences an unexpected change in at least one of velocity, acceleration and moisture.

[0002] Another system comprises a deployable barrier to protect an aerial drone when the aerial drone experiences an unexpected change in at least one of velocity, acceleration and moisture. The system also comprises a sensor to detect when the aerial drone experiences an unexpected change in at least one of velocity, acceleration, and moisture. The system also comprises an activation device that cause the deployable barrier to deploy from a stored location to provide protection to at least one of all and a specific section of the aerial drone.

[0003] The method comprises detecting, with a sensor, an unexpected change in at least one of velocity, acceleration and moisture of an aerial device. The method also comprises deploying, with an activation device, a deployable barrier, stored to a cover that is attached to at least a part of the aerial drone, to protect the aerial drone from damage.

[0004] The apparatus comprises a cutting apparatus to trim natural growth experienced on grounds of real property. The apparatus further comprises a plurality of sensors to acquire image data specific to an area of natural growth. The apparatus further comprises a sensor to collect data that is used by a processor to determine a trim pattern. The apparatus further comprises a display to view trimming.

[0005] Another method comprises mapping grounds of real property to be trimmed with an aerial drone. The method further comprising collecting data about the grounds based on a need or certain areas of the grounds. The method further comprising processing the collected data to determine a trimming pattern. The method further comprising operating the aerial drone with a cutting tool attached to autonomously perform the trimming based on the trimming pattern.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] A more particular description briefly stated above will be rendered by reference to specific embodiments thereof that are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments and are not therefore to be considered to be limiting of its scope, the embodiments will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

[0007] FIG. 1 illustrates a prior art image of a man attempting to cut a tree limb with a manual pole saw;

[0008] FIG. 2 illustrates a prior art image of a man attempting to saw a tree limb with an electric pole saw;

[0009] FIG. 3 illustrates a prior art illustration of a man attempting to trim tree limbs with utility power lines nearby;

[0010] FIG. 4 illustrates a prior art illustration of riding lawnmower and an attachment with a grass trimmer arrangement;

[0011] FIG 5 illustrates an electrically powered pole saw comprising embodiments disclosed here;

[0012] FIG. 6 illustrates a gas powered pole saw to cut a tree limb being used with embodiments disclosed herein;

[0013] FIG. 7 illustrates an image of a gas powered pole saw with the improved invention where cameras attached;.

[0014] FIG. 8 illustrates an image of a woman using an the interactive battery-operated pole saw with cameras attached;

[0015] As a non-limiting example, FIG. 9 is an illustration of a multi-functional powered interactive pole tool having an assortment of attachment options, multiple cameras, and mobile smart phone display device;

[0016] FIG. 10 is an image of an interactive pole attachment;

[0017] FIG. 11 is an image of a user having the interactive pole tool to clean house gutters;

[0018] FIG. 12 is an image of an alternative embodiment of the invention where the cutting head is powered by energy stored in a pump or spring loading action by user;

[0019] FIG. 13 is an illustration of an autonomously operated and mechanically driven screw driver, screw loading, and retrieving device;

[0020] FIG. 14 is an image of an autonomously operated electric, battery, or hybrid powered grass mower with autonomously operated multi-function line trimming, tree saw, spray applicator, seed fertilizer spreader, hydraulic scissor and edger tools attached onto a 360 degree rotational axis with a grass receptacle attached in rear;

[0021] FIG. 15 is an illustration of a grass and leaf vacuum attachment that gathers debris into net device to be autonomously bagged and discarded;

[0022] FIG. 16 is an image of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope and retractable control arm attached;

[0023] FIG. 17 is an image of an autonomously operated unmanned aerial vehicle drone with a gimbal gyroscope and an attached power saw for trimming tree limbs;

[0024] FIG. 18 is an image of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope and retractable control arm attached to a power hedge trimmer;

[0025] FIG. 19 is an image of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope and an attached power hedge trimmer;

[0026] FIG. 20 is an illustration of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope having cameras;

[0027] FIG. 21 is an illustration of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope cameras;

[0028] FIG. 22 is an illustration of a hovering and autonomously operated or remote controlled unmanned aerial vehicle;

[0029] FIG. 23 is an image of a lawn with superimposed grid pattern displayed based on predictive analytical engine;

[0030] FIG. 24 is an image with color coding after defect analysis of terrain was initiated using artificial intelligence algorithm interfaced with camera;

[0031] FIG. 29 is an image of the vanity designs that the invention can perform autonomously with the property asset;

[0032] FIG. 25 is an illustration of a vertical rotary docking station and charging station bays;

[0033] FIG. 26 is an illustration of a smart interactive multi-product loader grass solution loader carousel for weed killer, fertilizer;

[0034] FIG. 27 is an image of a powertrain switching system used in conjunction with a 360 degree axis for accessory functional tools;

[0035] FIG. 28 is an image of a smart grass trimmer head, with smart interactive multi-view camera system, smart proximity sensor, smart fluidic floating line feeding system;

[0036] FIG. 29 is an illustration of a fluidic floating line feeding system;

[0037] FIG. 30 is an image of a smart autonomous seed and wet and dry fertilizer spreader;

[0038] FIG. 31 is an illustration of a smart autonomous tire changer chassis apparatus;

[0039] FIG. 32 is an illustration of a front view of a trash can robot;

[0040] FIG. 33 is an illustration of the robotic trash can device using a retractable arm;

[0041] FIG. 34 is an illustration of a robotic trash can apparatus using magnetic levitation platform;

[0042] FIG. 35 is an illustration of a robotic trash can apparatus with a trash can being placed onto the top platform;

[0043] FIG. 36 is an illustration of a front view of the robotic trash can apparatus with trash can atop the platform;

[0044] FIG. 37 is an illustration of the robotic trash can mover in charging docking station;

[0045] FIG. 38 is an illustration of a power tool pole saw mobile device holder;

[0046] FIG. 39 is an illustration of a gun cylinder chamber housing the grouping of related sub tools;

[0047] FIG. 40 is an illustration of a cross sectional front view with sub mechanical tools/ application container loaded into the chambers;

[0048] FIG. 41 is a three dimensional (3D) rendering image of a peer to peer secure mesh network communication;

[0049] FIG. 42 is an image of a wet and dry rechargeable battery powered property maintenance treatment sprayer distribution water gun with trigger;

[0050] FIG. 43 is an image of a wet and dry pump action 1920 powered property maintenance treatment sprayer distribution water gun;

[0051] FIG. 44 is an image of a multi sprayer cylinder 1950 for having different types 1940 of single use treatment sprays pods;

[0052] FIG. 45 an illustration from prior art as part of the squirrel parachute;

[0053] FIG. 46 is an illustration of different accessories;

[0054] FIG. 47 is an illustration of the garbage bag loading system;

[0055] FIG. 48 is an illustration where a rake head attachment is used;

[0056] FIG. 49 is a process flow of preferred embodiment a method;

[0057] FIG. 50 is a process flow of an embodiment of a method;

[0058] FIG. 51 is a process flow of another method;

[0059] FIG. 52 is a process flow of an embodiment another method;

[0060] FIG. 53 shows an embodiment of a protective mobile device case partially deployed;

[0061] FIG. 54 shows an embodiment of the protective mobile device case fully deployed;

[0062] FIG. 55 shows another embodiment of a pouch arrangement deployed;

[0063] FIG. 56 shows another embodiment of the pouch arrangement deployed;

[0064] FIGS. 56-59 show other embodiments of the pouch arrangement;

[0065] FIG. 60 is an image drawing showing how kinetic energy force and torque analysis I applicable to sensor detection;

[0066] FIG. 61 is an image drawing showing an embodiment of the mobile device within a protective case;

[0067] FIG. 62 is an image drawing showing another embodiment of the mobile device within a protective case;

[0068] FIG. 63 shows an embodiment of a part of the inflatable protective barrier; ive barrier;

[0069] FIG. 64 is an image drawing showing an embodiment of a dual capsule of pressurized gas or air for used to initiate the inflatable protective encapsulation barrier;

[0070] FIG. 65 is a back view image drawing showing an alternative embodiment of a dual capsule of pressurized gas or air and a pre-deployed inflatable barrier;

[0071] FIG. 66 is a back view image drawing showing another embodiment;

[0072] FIG. 67 shows another embodiment of the capsule and pre-deployed inflatable protective barrier;

[0073] FIGS. 68-70 shows other embodiments of FIG. 15;

[0074] FIG. 71 shows a block diagram showing an embodiment of a gas propellant capsule;

[0075] FIG. 72 is an image drawing showing an embodiment of an electric charge that can have charge transference;

[0076] FIG. 73 is an image drawing showing an embodiment nanotubes or nanowires that enable the electric charge that can have charge transference;

[0077] FIG. 74 is an image drawing showing an embodiment of nanotubes or nanowires connectors;

[0078] FIG. 75 shows the nanowire connectors from a perspective view;

[0079] FIG. 76 is an image drawing showing an embodiment of inline nanotubes or nanowires connectors from a bottom view;

[0080] FIG. 77 is an image drawing showing an embodiment of the screen protector from a top view;

[0081] FIG. 78 shows an embodiment of a wireless charging battery bank file management device;

[0082] FIG. 79 shows an embodiment where the protective case has an expandable memory location;

[0083] FIG. 80 shows a block diagram illustrating an embodiment of external components that may be attached to the cover;

[0084] FIGS. 81 and 82 show other embodiments of components that may be included to enhance the mobile device;

[0085] FIG. 83 shows layers of the protective cover;

[0086] FIG. 84 shows an illustrative computing functionality that may be used to components on the additive manufacturing device; and

[0087] FIG. 85 shows a flowchart illustrating an embodiment of a method.

DETAILED DESCRIPTION

[0088] Embodiments are described herein with reference to the attached figures wherein like reference numerals are used throughout the figures to designate similar or equivalent elements. The figures are not drawn to scale and they are provided merely to illustrate aspects disclosed herein. Several disclosed aspects are described below with reference to non-limiting example applications for illustration. It should be understood that numerous specific details, relationships, and methods are set forth to provide a full understanding of the embodiments disclosed herein. One having ordinary skill in the relevant art, however, will readily recognize that the disclosed embodiments can be practiced without one or more of the specific details or with other methods. In other instances, well-known structures or operations are not shown in detail to avoid obscuring aspects disclosed herein. The embodiments are not limited by the illustrated ordering of acts or events, as some acts may occur in different orders and/or concurrently with other acts or events. Furthermore, not all illustrated acts or events are required to implement a methodology in accordance with the embodiments.

[0089] Notwithstanding that the numerical ranges and parameters setting forth the broad scope are approximations, the numerical values set forth in specific non-limiting examples are reported as precisely as possible. Any numerical value, however, inherently contains certain errors necessarily resulting from the standard deviation found in their respective testing measurements. Moreover, all ranges disclosed herein are to be understood to encompass any and all sub-ranges subsumed therein. For example, a range of "less than 10" can include any and all sub-ranges between (and including) the minimum value of zero and the maximum value of 10, that is, any and all sub-ranges having a minimum value of equal to or greater than zero and a maximum value of equal to or less than 10, e.g., 1 to 4.

[0090] Embodiments provided herein are for an interactive and autonomous robotic property maintenance tool that creates real time views of a targeted work area where maintenance design styles may be overlaid for various purposes, such as, but not limited to, trimming property assets to a desired state. The embodiments may provide visual angels for a surface area plane, and optical sensory digital imaging processing while trimming, cleaning or cutting property assets so that the user may be instructed on accuracy of cutting, trimming, or cleaning using the superimposed overlays. Additionally, an interactive augmented task actor or voice prompts may further be provided.

[0091] To assist in understanding the detail description associated with the figures, the following reference numbers are provided:

- [0092] 102 -- Start of the process using the camera apparatus
- [0093] 104 -- normal view decision gate
- [0094] 106 -- affirmative to normal view using image capture device
- [0095] 107 -- Negative to normal operation
- [0096] 108 -- turn on tool advanced features
- [0097] 118 -- Create software cutting profile
- [0098] 132 -- enable video camera view
- [0099] 136 -- select superimposed design guide
- [00100] 138 -- enable multi-camera image view
- [00101] 140 -- enable eye tracking
- [00102] 144 -- enable artificial intelligence algorithm
- [00103] 146 -- enable proximity sensors
- [00104] 148 -- enable autonomous camera armature
- [00105] 150 -- turn on tool
- [00106] 152 -- position trimming tool
- [00107] 154 -- establish cutting target
- [00108] 156 -- establish cutting angle
- [00109] 158 -- cut targeted area of property asset tree
- [00110] 160 -- end of process
- [00111] 165 -- start of smart interactive autonomous lawn mower process

[00112]	169 -- user guided decision gate
[00113]	167 - Negative to user guided operation
[00114]	175 -- lawn maintenance schedule initiated operation of lawnmower
[00115]	180 -- lawnmower autonomously sets cut guide
[00116]	183 -- mower autonomously sets cut guide as cutting occurs
[00117]	186 -- proximity sensors, cameras, laser targeting, line variance functions
[00118]	190 -- line trimmer, property trimmer functional accessory autonomously deploys
[00119]	211 -- successful property results after defect compare and contrast analysis s syste
[00120]	213 -- unsuccessful property results after defect compare and contrast anal ysis system
[00121]	495 -- top view camera on electric powered embodiment
[00122]	505 -- bottom view camera on electric powered embodiment
[00123]	515 -- electrical pole saw apparatus
[00124]	520 -- mobile device
[00125]	522 -- connection cable
[00126]	525 -- gas powered interactive pole saw
[00127]	535 -- top view camera on gas powered apparatus
[00128]	540 -- bottom view camera on gas powered apparatus
[00129]	550 -- gas powered pole saw apparatus
[00130]	560 -- mobile device
[00131]	565 -- display device attachment
[00132]	570 -- battery powered pole saw apparatus
[00133]	580 -- mobile device interactive interface
[00134]	590 -- unmanned aerial vehicle drone prior art
[00135]	600 -- aerial drone user controlled device
[00136]	610 -- microchip for enabling the property maintenance tool as a smart autonomous unmanned aerial vehicle drone apparatus
[00137]	620 -- retractable articulating support on attached to gimbal

- [00138] 630 – autonomous or remote controlled powered saw
- [00139] 640 – lower multi-point camera
- [00140] 660 – upper multi-point camera
- [00141] 670 – remote controlled or autonomous unmanned aerial vehicle drone
- [00142] 680 – camera
- [00143] 690 – upper multi-point camera
- [00144] 700 – lower multi-point camera
- [00145] 710 – powered saw
- [00146] 715 – remote or autonomously controlled unmanned aerial vehicle drone
- [00147] 720 – gimbal articulating gyroscope
- [00148] 730 – gimbal enabled elbow support arm
- [00149] 740 – retractable articulating support arm with power transfer
- [00150] 750 – lower multi-point camera
- [00151] 760 – upper multi-point camera
- [00152] 770 – powered hedge trimmer
- [00153] 780 – autonomously or remote controlled unmanned aerial vehicle drone
- [00154] 790 – directional camera
- [00155] 800 – hedge trimmer blade
- [00156] 810 – rotational 360 degree directional camera on electric or battery
powered mower
- [00157] 820 – 360 degree rotational axis for accessory functional tools on electric
or battery powered mower
- [00158] 830 – gimbal articulating gyroscope line trimmer support arm on electric
or battery powered mower
- [00159] 840 – line trimmer camera
- [00160] 850 – line trimmer proximity sensor on electric or battery powered mower
- [00161] 860 – smart autonomously opening grass discharge port on electric or
battery powered mower
- [00162] 870 – autonomous property edger
- [00163] 880 – rear smart autonomously opening grass discharge port

[00164]	890 -- rear grass catcher receptacle
[00165]	900 -- rear handle support locking mechanism on electrical or battery
powered mower	
[00166]	910 - rotational 360 degree directional camera on gas powered mower
[00167]	920 - gimbal articulating gyroscope property edger support arm on gas
powered mower	
[00168]	930 -- laser sensor line generator
[00169]	940 -- property edger camera
[00170]	950 -- gas powered autonomous property edger
[00171]	960 -- gimbal gyroscope on gas powered mower
[00172]	970 - 360 degree rotational axis for accessory functional tools on gas
powered mower	
[00173]	980 - rear handle support locking mechanism on gas powered mower
[00174]	990 -- line trimmer proximity sensor on gas powered mower
[00175]	1000 -- smart autonomous line trimmer on gas powered mower
[00176]	1010 - smart autonomously opening grass discharge port on gas powered
mower	
[00177]	1020 -- smart gutter cleaning accessory attachment with camera
[00178]	1030 -- interactive mobile device
[00179]	1040 -- pole tool with multi-functioning tool accessories
[00180]	1050 -- light bulb
[00181]	1060 -- smart light bulb changer accessory tool
[00182]	1070 -- smart light bulb changer accessory tool directional camera
[00183]	1080 -- bit driver
[00184]	1085 -- screw bit
[00185]	1090 -- screw
[00186]	1100 -- spring loader
[00187]	1110 -- screw feeder
[00188]	1120 -- support track
[00189]	1130 -- smart gutter cleaning accessory with camera cleaning gutter

[00190]	1140 – attachment with interactive smart phone
[00191]	1150 – interactive pole tool with interchangeable functional accessory
head	
[00192]	1160 – user
[00193]	1170 – house needing gutters, down sprout, etc cleaned with interactive
pole tool	
[00194]	1180 – drone rotor
[00195]	1190 – autonomous adjustable drone panels that tilt, span, and rotate for
trimming hedge or tree sides	
[00196]	1200 – drone cutting apparatus
[00197]	1210 – drone adjustable panel
[00198]	1220 – drone retractable panel or trimming hedges or tree tops
[00199]	1230 – drone support brackets for adjustable drone panels
[00200]	1240 – drone rotor engine
[00201]	1250 – drone cutting head
[00202]	1260 – hedge or tree being trimmed by drone
[00203]	1270 – drone rotor battery or fuel
[00204]	1280 – debris or leaves vacuum attachment
[00205]	1290 – mechanical debris or leaves vacuum bag receptacle
[00206]	1300 – property grid superimposed overlay using artificial intelligence
algorithm	
[00207]	1310 – property grid superimposed overlay with defect analysis algorithm
identifying terrain irregularities	
[00208]	1320 – user driven manual pumping mechanism to store energy to power
manual pole saw	
[00209]	1330 – bottom limiter point for initiating stored energy to
power property tool	
[00210]	1340 – top limiter point for initiating stored energy to power property tool
[00211]	1460 – autonomous grass trimmer
[00212]	1470 – smart interactive multi-view camera system

- [00213] 1480 – smart proximity /fusion sensor
- [00214] 1490 – smart fluidic line feeding system
- [00215] 1500 – smart fluidic floating line feeding system
- [00216] 1510 – floating flexible armature
- [00217] 1520 – floating flexible armature port
- [00218] 1530 – floating flexible armature line guide
- [00219] 1540 – smart autonomous seed and wet and dry fertilizer spreader
- [00220] 1550 – autonomous mesh relay network connected hopper loading system
- [00221] 1560 – testing equipment and sensors
- [00222] 1570 – applicator port
- [00223] 1580 – Fusion sensor (laser targeting system, camera, proximity sensor, gyroscope, wireless communication, etc.)
- [00224] 1590 – autonomous robotic lift jack
- [00225] 1600 _ Actuator robotic arm lifter
- [00226] 1610 _ motion control robotic system (wheels, inline track conveyor, Magnetic levitation)
- [00227] 1615 – Autonomous robotic tire chocks to place behind or in front of non-repair tires
- [00228] 1620 – Actuator support robotic guide arm and vehicle chassis locking mechanism
- [00229] 1630 – multi fusion sensor array
- [00230] 1640 – electromagnetic lift platform
- [00231] 1650 – actuator control robotic lift arm
- [00232] 1660 – robotic traction belt system
- [00233] 1670 – vacuum magnetic levitation space
- [00234] 1680 – autonomous trash can receptacle platform with inflatable option for stability control
- [00235] 1690 – trash can receptacle
- [00236] 1700 – autonomous trash can robot with Internet of things wireless internet, mesh network

- [00237] 1710 -- autonomous trash can robot charging station (solar, biological renewable energy, wireless transmission (electromagnetic, etc), power cord connected power source)
- [00238] 1720 -- power tool pole saw
- [00239] 1730 -- mobile device holder
- [00240] 1740 -- mobile device
- [00241] 1750 -- prior art gun munitions chamber
- [00242] 1760 -- multiple hand tool bit smart autonomous rotation and targeting system
- [00243] 1770 -- smart hand tool hex bit
- [00244] 1780 -- smart hand tool Philips bit
- [00245] 1790 -- mesh networked drone surveyor guidance device
- [00246] 1800 -- autonomous robotic lawnmower
- [00247] 1810 -- mesh networked drone surveyor guidance device
- [00248] 1820 -- software defined geo-fenced restriction line
- [00249] 1830 -- sealed yard maintenance application solution contents
- [00250] 1840 -- water hose connection opening
- [00251] 1850 -- trigger
- [00252] 1855 - pressure squirting, distribution control system for operations part section
- [00253] 1860 -- pump
- [00254] 1870 -- holding chamber
- [00255] 1880 -- fusion sensor and laser guiding system
- [00256] 1890 -- electromechanically operated yard applications maintenance distribution frame
- [00257] 1900 -- yard applications maintenance distribution frame locking mechanism
- [00258] 1905 -- battery compartment for battery operation
- [00259] 1910 -- application cartridge (i.e. wet or dry yard fertilizer, weed killer, wasp spray)

- [00260] 1920 – holding chamber front loading end section
- [00261] 1930 – holding chamber end section with locking mechanism
- [00262] 1940 – holding chamber tubes
- [00263] 1950 – holding chamber locking mechanism
- [00264] 1960 – holding chamber tube opening
- [00265] 1970 – user
- [00266] 1980 – leaf blower
- [00267] 1990 – support bar
- [00268] 2000 – Flying human squirrel membrane
- [00269] 2010 – robotic lifter support section viewed on users leg with no trash

bag receptacle system attachment

- [00270] 2020 – leaves refuse
- [00271] 2030 - stepper motor for moving bag receptacle
- [00272] 2040 – robotic lifter support section viewed on users leg with no trash

bag receptacle having a geometric shape with at least one actuator motor and design of receptacle accessories. Using a minimum of one stepper motor, the apparatus can lift or lower receptacle and the bag is tied with a new back deploying with the robotic lifters capable of going 360 degrees motion along the pivot support stick/bar support bar. Uses gyroscopes pulley system for balancing weight of bag based on the center position of the user .

[00273] 2050 – the robotic trash bag deployment system, a new trash bag deploys from the receptacle system controls the stepper motor for lifting/loading a new trash bag from a trash bag cartridge holding rolled pre-made on a elongated cylinder for easy motion or multi-layer heat joining system to create the bag that uses highly compressed airflow apparatus thrusting air into the bag cavity to further open the enlarged internal bag cavity as bag is under final assembly

- [00274] 2060 – web membrane connecting users legs for guiding leaves
- [00275] 2070 – accessory add-on foldable rake guiding leaves

[00276] FIG 5 (old. 8) is an image of an electrically powered pole saw comprising embodiments disclosed here. The saw has multiple cameras attached and connected to a display device such as a user's mobile phone with camera views displayed on the display device.

[00277] FIG. 6 is an image of a man using a gas powered pole saw to cut a tree limb using the embodiments with camera and phone displaying cameras' points of view.

[00278] FIG. 7 is an image of a gas powered pole saw with the improved embodiments where cameras attached to the saw display images within the point of view of cameras on the mobile smart phone or alternative display apparatus.

[00279] FIG. 8 is an image of a woman using the improved embodiments of the interactive battery-operated pole saw with cameras attached that transmit the point of view displays onto the attached mobile smart phone.

[00280] Alternatively, a pod canister and supply tube with a spray nozzle can be attached to a pole to allow the user to manually or the apparatus can autonomously apply a spray foam to retard disease, insect infestation, or bacteria growth where the tree was recently cut. The foam can arrangement of the apparatus may include an adapter to work with various existing containers of spray material as well. The camera or spray nozzle can be on a fixed position or rotate on an axis using ball bearings or alternative would be magnetic levitation, or some other method known to those educated in such areas.

[00281] As a non-limiting example, FIG. 9 is an illustration of a multi-functional powered interactive pole tool having an assortment of attachment options, multiple cameras, and mobile smart phone display device receiving transmitted camera images. As further illustrated in FIG. 10 interactive pole attachment may be used for removing and installing light bulbs with camera attachment for improved views of targeted camera view is available.

[00282] FIG. 11 is an image of a user having the interactive pole tool to clean house gutters with camera attached and images transmitted to smart mobile device provides for improved views to clean gutters more thoroughly.

[00283] FIG. 12 is an image of an alternative embodiment of the embodiments where the cutting head is powered by energy stored in a pump or spring loading action by user

[00284] The embodiments disclosed herein are not limited to performing activities that are at a distance from the user. As a non-limiting example, the embodiments may be used with tools that are used in close proximity to the user, but where the tool engagement may be difficult to see or reach. As a non-limiting example, FIG. 13 is an illustration of an

autonomously operated and mechanically driven screw driver, screw loading, and retrieving device

[00285] FIG. 14 is an image of an autonomously operated electric, battery, or hybrid powered grass mower with autonomously operated multi-function line trimming, tree saw, spray applicator, seed fertilizer spreader, hydraulic scissor and edger tools attached onto a 360 degree rotational axis with a grass receptacle attached in rear. Alternative embodiments may have a powertrain chassis scissor hydraulic lifting base to extend the range of the functional accessory tools operating on a rotational axis to allow for hedge or bush trimming tool to operate. In other alternative embodiments, the apparatus may identify dog feces/pee or cow/pig or other livestock excrement in the field of view and using frozen air spray or insert rods to probe and release super cold solution that is bio-degradable or otherwise to solidify the feces and then extend a boom to vacuum or scoop the feces into a disposable bag or trailer container that is either pre-loaded or automatically loaded and then deposited into a separate bin/area for discarding or composting.

[00286] FIG. 15 is an illustration of a grass and leaf vacuum attachment that gathers debris into net device to be autonomously bagged and discarded. This attachment may be attached to grass mower disclosed above.

[00287] For some property maintenance matters, having a tool extending from a user may not be sufficient. In an embodiment, the tool attached to a drone may be useful. FIG. 16 is an image of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope and retractable control arm attached to a power saw for cutting tree limbs.

[00288] FIG. 17 is an image of an autonomously operated unmanned aerial vehicle drone with a gimbal gyroscope and an attached power saw for trimming tree limbs

[00289] FIG. 18 is an image of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope and retractable control arm attached to a power hedge trimmer

[00290] FIG. 19 is an image of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope and an attached power hedge trimmer

[00291] FIG. 20 is an illustration of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope having cameras attached to trim property hedges or trees that is capable of using renewable solar, high altitude wind turbine energy receptors, ground connected power source

[00292] FIG. 21 is an illustration of an autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope cameras and having cutting panels capable of tilting, extending, retracting, or molding property hedges or trees with angled manipulation that is capable of using renewable solar, high altitude wind turbine energy receptors, ground connected power source

[00293] FIG. 22 is an illustration of a hovering and autonomously operated or remote controlled unmanned aerial vehicle drone with a gimbal gyroscope balanced cutting panels capable of tilting, extending, retracting, or molding property hedges or trees with angled manipulation

[00294] FIG. 23 is an image of a lawn with superimposed grid pattern displayed based on predictive analytical engine. The image may be taken with an aerial vehicle drone.

[00295] FIG. 24 is an image with color coding after defect analysis of terrain was initiated using artificial intelligence algorithm interfaced with camera.

[00296] The superimposed grid pattern is not limited to being applied to a lawn. A superimposed grid pattern may also be used with a vertical yard structure, such as, but not limited to a hedge or tree. Thus, FIG. 29 is an image of the vanity designs that the embodiments can perform autonomously with the property asset.

[00297] FIG. 25 is an illustration of a vertical rotary docking station and charging station bays. A grass compacter with optional compost or pellet function with grass clippings used as raw material, are also provided. Also include is an outside hose pipe and filtering system, outside rain water capturing system connection to house gutters using flexible hose and filtering system depositing filtered water into storage tank of varying sizes options. A hybrid solar electrical roof panel and AC connection to operate docking and charging are also disclosed. The apparatus may also have a varying size optional autonomous gas filling station as well as an exchangeable powertrain feature to use one or more powertrains to navigate and use one or more

modulated functional accessory bolt-on/snap-ons/attachable as part of the smart interactive and autonomous robotic property maintenance apparatus system method for property asset maintenance.

[00298] In addition, a mini carwash/high pressure air or water jet function may be enabled in an area 1400 where a blade, under carriage, engine and surface area of the apparatus is cleaned with residue and debris flushing to a storage area directly below the docking pod which is carried to the mulching module to make pellets for fertilizing house plants or dropped into compost tea container where organic fertilizer tea is made to fertilize property assets. An electric generator for recovery when power outage occurs may also be provided.

[00299] FIG. 26 is an illustration of a smart interactive multi-product loader grass solution loader carousel for weed killer, fertilizer. Its operation mimics the Kuereg® instant coffee, but instead of coffee various forms of lawn and garden solutions pesticide, insecticide, seed, feed, weed killer, ant killer, mole killer, etc. may be introduced.

[00300] FIG. 27 is an image of a powertrain switching system used in conjunction with a 360 degree axis for accessory functional tools. The system provides for seamlessly pass the tools by each other while operating to allow for various shapes and design configuration to be made. The arrangement provides for optimal operational control of autonomous apparatuses while using a gimbal and gyroscope for multi-directional movement and balancing, which can also be incorporated into robotic property maintenance system deployed within bathroom wall, ceiling, or similar or deployed within vehicle seat head rest, along back of seat or in automobile roof to cut, trim, fashion a user's property autonomously.

[00301] The system disclosed above may be applied to ground base maintenance tools also. For example, FIG. 28 is an image of a smart grass trimmer head, with smart interactive multi-view camera system, smart proximity sensor, smart fluidic floating line feeding system.

[00302] FIG. 29 is an illustration of a fluidic floating line feeding system with left and right floating handles with ports for fluidic line feeding process to overcome prior art where the line would stick and fail to feed upon manual tap feed action from a user. The system agitates the stored line so with advanced monitoring from smart camera automatically feeds additional line while trimmer is operational without the user have to take action using an

alternative ratcheting using gearing ratio to cycle and increase line feed or process to click up or down certain levels to release additional line correlating to the rotational cyclical count of the trimmer head which may be based on the Taylor Expansion formula

$$[00303] \quad e^x = 1 + x1! + x22! + x33! + \dots, -\infty < x < \infty.$$

[00304] In another non-limiting embodiment, the fluidic floating line feed apparatus may increase line length using an automatic mechanical feed process using the proximity sensor, pulley system, smart camera, and a microprocessor. In another non-limiting embodiment, the floating armature 1510 may have a line feed port 1530, has a mechanical roller apparatus with microgrooves providing or device providing friction to enable forward or reverse directional control of line feed to extend the length of the line used to trim property asset or to untangle line in storage compartment.

[00305] FIG. 30 is an image of a smart autonomous seed and wet and dry fertilizer spreader 1540. The bags of seed, fertilizer or other material may have a small radio frequency identification (RFID) chip QR code, bar code or similar multidimensional or color coded feature function that uses a receiver, reader or camera to initiate preprogrammed operational controls. The product containers may automatically lock into place 1550 so that with a user placing seed bag or bin into spreader device, the system will analyze the amount of product remaining and either reduce or increase the rate of disbursement. If there is a dead spot area in the lawn or an area identified as needing additional treatment, the system will add some growth enabler such as a spray liquid or foam solution to enhance the growing medium area in which the seed is being dispersed. In addition, at least one camera device along with an infrared thermal heat FLIR, soil, air, etc., testing equipment 1560 may analyze the field of view of the manicured areas and looks at the line variance to automatically set the spreader shoot 1570 range from 360 degree to 180 degree to 90 degree to 45 degree so any seed or feed product will be deposited onto an area of grass wherein the product is not spread onto sidewalk, tree root or hedge bush undercarriage or driveway areas. These functions may be implemented on an autonomous smart device, a user manually pushing or pulling being a mower, or a user wearing a strapped on manual device walking the targeted area where seed or fertilizer product needs to be spread. If the container of product is not emptied during the latest spreading effort, the smart device may automatically seal

the product container until the next time the product is used in conjunction with the spreader device.

[00306] FIG. 31 is an illustration of a smart autonomous tire changer chassis apparatus having a camera, targeting system, gyroscope, balancing sensor, stabilizing arms, tire jack with alternative embodiment of either electric - pumping action – balloons - hydraulic bottle or floor - pneumatic – in varying sizes portable Direct Current (DC) or oversized with autonomous rear tire chocks and jack stands which morph into modulated parts of the main smart autonomous tire changer chassis apparatus. The chocks or stands sensors may continuously send data status on the balancing, movement, or pressure etc., readings and where autonomous armature may extend using a targeting system and camera to remove the lug nuts using appropriate lug nut tools. Another non-limiting embodiment may be to enable oil filter and oil pan emptying as well. Both are portable so a user can place into car truck for roadside tire changes while traveling or as an exchangeable module housed within the charging pod station.

[00307] FIG. 32 is an illustration of a front view of a trash can robot capable of systematically moving a trash can receptacle from its storage location to the street area so municipal trash collectors can empty the unit into the garbage truck.

[00308] FIG. 33 is an illustration of the robotic trash can device using a retractable arm positioned on a gimbal and gyroscope to push the trash can to the street area having a Global Positioning Satellite (GPS) system and route optimization artificial intelligence (AI) system; a distance sensor; a balancing sensor; a tilt indicator sensor attached to the garbage can; a calendaring program to schedule pickup dates; a mobile, wearable, cloud, Internet interface, a weighted base to offset the weight of the refuse placed in the garbage can, a track system base or multi-wheeled base, a pulley system attached to a retractable arm with a claw device; automated return to base for charging feature, and a single or multi- positioned camera system.

[00309] FIG. 34 is an illustration of a robotic trash can apparatus using magnetic levitation platform and arm to hover the trash can above the device while relocating the trash can to street level and return the unit to its storage location having the GPS system and route optimization AI system; a distance sensor; a balancing sensor; a tilt indicator sensor attached to the garbage can; a calendaring program to schedule pickup dates; a mobile, wearable, cloud, internet interface, a weighted base to offset the weight of the refuse placed in the garbage can, a

track system base or multi-wheeled base, a pulley system attached to a retractable arm with a claw device capable of attaching to a support bar and lifting trash can as necessary; automated return to base for charging feature, a single or multi- positioned camera system, voice command automated attendant, user profile management, face recognition, voice response system, solar powered system, solar or electrically connected trash compactor system, theft deterrent system, alarm, modulated system repairs, or modulated operational device and method as part of a home care system with interchangeable base or functional apparatuses, capable of allowing user to place trash receptacle container such as a recycling bin on the top platform of the robotic device to deposit on the side curb for emptying, and using a grappling claw retractable arm or magnetic levitation or toting method and return the trash bin to the users designated location upon being emptied; pulley, clasp apparatus, and control arm apparatus and system to gradually place garbage can on the inside street area adjacent to the sidewalk curb from atop the sidewalk area; weighted counter measure to control the maneuverability and balancing of the garbage can while being positioned by the robotic device, a retractable arm used as a buttress to allow the pulley, clasp apparatus, control arm apparatus and system to restore the garbage can to an upright position should it lose balance when emptying or due to weather, or mischievous behavior so that the garbage can be restored to the storage area.

[00310] FIG. 35 is an illustration of a robotic trash can apparatus with a trash can being placed onto the top platform capable of revolving 360 degrees for relocating trash can having the GPS system and route optimization AI system; a distance sensor; line variance sensor, height variance sensor, a balancing sensor; a tilt indicator sensor attached to the garbage can; a calendaring program to schedule pickup dates; a mobile, wearable, cloud, internet interface, a weighted base to offset the weight of the refuse placed in the garbage can, a track system base or multi-wheeled base, a pulley system attached to a retractable arm with a claw device; automated return to base for charging feature, a single or multi- positioned camera system, using WIFI, WIFI Direct, Internet, Bluetooth, RFID, or any wireless connection protocol type to transmit and communication between devices, apparatus, to drive methods within a built-in mesh network for continuous communication with each device or apparatus being a mesh network node using omni-directional omni-route optimization relay protocol methods.

[00311] FIG. 36 is an illustration of a front view of the robotic trash can apparatus with trash can atop the platform.

[00312] FIG. 37 is an illustration of the robotic trash can mover in charging docking station.

[00313] FIG. 38 is an illustration of a power tool pole saw mobile device holder.

[00314] FIG. 39 slots is an illustration of prior art side view of the gun cylinder chamber housing the grouping of related sub tools.

[00315] FIG. 40 is an illustration of the improved embodiment cross sectional front view with sub mechanical tools/ application container loaded into the chambers.

[00316] FIG. 41 is an 3D rendering image of the current embodiment, and how the peer to peer secure mesh network apparatuses communicate with each other so the drone 1790 sends real time data feeds to the autonomous lawnmower 1800. Various property maintenance devices are able to work cohesively as one based on owner restricted geo-location geo-fencing 1820 communicates with drones 1810 that scan the area continuously.

[00317] FIG. 42 is an image of the new embodiment of a wet and dry rechargeable battery 1860 powered property maintenance treatment sprayer distribution water gun with trigger 1870 like apparatus with changeable nozzle 1850 how the improved embodiment uses similar drive train apparatus to power the interchangeable cylinder chambers with status window 1840 and exchangeable single use prefilled treatment pods snap into place 1830 holding wet or dry pesticide, herbicide, insecticide, fertilizer.

[00318] FIG. 43 is an image of a wet and dry pump action 1920 powered property maintenance treatment sprayer distribution water gun like apparatus with changeable nozzle 1880. Single use treatment pods 1910 may be load in the gun sprayer rear with trigger 1930. In another non-limiting embodiment, the treatment pods may be cartridges loaded in the bottom or front and the treatment sprayer can either premixed 1890, prefilled mixture or a smaller size concentrate that the user adds water to the hopper tank to mix before distribution.

[00319] FIG. 44 is an image of a multi sprayer cylinder 1950 for having different types 1940 of single use treatment sprays pods 1970 on affected property maintenance for one stop dial up the treatment you need for weeds, insects, wasps, spiders, fertilizers 1960.

[00320] FIG. 45 an illustration from prior art as part of the squirrel parachute having the membrane connecting two members to create air flow resistance.

[00321] FIG. 46 is an illustration different accessories could be connected such as leaf blower, garbage bag loading system, etc.

[00322] FIG. 47 is an illustration of the garbage bag loading system that Include so that the user can place support bars into ground so when user pivots to the left or right depending on dominate side, the trash bag system will lower to the ground so leaves may be raked down path into trash receptacle system's trash bag. When user pivots back towards receptacle pivot stick the bag slightly raises to provide assistance so that the strain or lift load the user has to compensate for is greatly reduced therefor allowing easier lifting of the bag grass leaves contents could include a automated linear robotic compressor that has movement similar to centipede connective sections can self-assembly an arm to compress bag contents also allowing the arm to press against for compression leverage While the user is raking leaves into the first garbage bag loading system (#2040) receptacle with optional second receptacle on opposite side capable of using kinetic energy as user walked or (rechargeable) battery or power cord to help power unit.

[00323] FIG. 48 is an illustration where a rake head attachment is used.

[00324] FIG. 49 is a process flow of preferred embodiment using normal operation and advanced interactive operational view with optional features of the present method and system comprising an image capture device, video display device, and features such as image stabilization sensor software, property overlay layers, image processing, profile setup actions. If not normal operation, at 104, the advancements disclosed herein, at 108 may be utilized. A profile is created, at 118. This includes enabling the camera to operate, at 132. A superimposed overlay guide is provided, at 136. Multiple camera views are taken, at 138. Eye tracking is enabled, at 140. The AI disclosed herein is enabled, at 144. Proximity sensor is enabled, as disclosed herein, at 146. The autonomous camera armature is enabled to provide for movement of the camera based on movement of the apparatus, at 148. This information is provided to the position of the tool, at 152.

[00325] FIG. 50 is a process flow of alternative embodiment using a image capture device integrated with an electric, battery or gas powered lawnmower operated with autonomous

artificially intelligent engine and microprocessor for capturing targeted lawn maintenance area with embodiments comprising of autonomously operated line trimmer, lawn edger, hedge trimmer tools housed on a 360 degree rotational axis interfaced with system software also comprising of image processing system features software, image filtering, artificial intelligence, proximity sensor, laser targeting and guidance system, lighting and auto focus featured mobile application.

[00326] FIG. 51 is a process flow of an alternative embodiment where the system and method uses microchips, camera, laser scanning, and property grid pattern isolation to identify any anomalies or defects outside of the preferred property asset maintenance state; thereby creating smart appliances, that automatically allow for control of the operational functions to cut, trim, or edge tool apparatus to maintain property asset.

[00327] FIG. 52 is a process flow of an alternative embodiment where the system and method uses microchips; thereby creating smart appliances that automatically allow for control of the operational functions of an embodiment property asset tool apparatus.

[00328] As discussed above, an image capture device (ICD) is provided. The ICD may comprise at least one sensor and one input component for detecting and recording images, a processor, a memory, a transmitter/receiver, and optionally, a hard wired electrical feed or rechargeable battery, having at least an indicator light for denoting camera activities. A microchip may be hard wired within the tool's electrical circuitry. The ICD may be interfaced with an artificial intelligence system and a video display device (VDD).

[00329] The apparatus may analyze one or more property portraits for presenting preprogrammed commands to a central processing unit to process the user's property selection. After which, a comparison between one layered image is compared with a subsequent image captured and processed to include a superimposed design overlay. The apparatus may be activated to apply property asset maintenance, with the mechanical system being controlled by an optical sensor processing images based on the design overlay, thereby applying property asset maintenance.

[00330] Image acquisition refers to the taking of digital images of multiple views of the object of interest. In the processing step, the constituent images collected in the image acquisition step are selected and further processed to form an interactive sequence which allows

for the interactive view of the object. Furthermore, during the Processing phase, the entire sequence is compressed. In the Storage and Caching Step, the resulting sequence is sent to a storage memory. In the Transmission and viewing step, a Viewer (user) may request a particular interactive sequence, for example, by selecting a particular image within an album of available captured files, which initiates the software system for performing property asset maintenance, checking of view, decompression and interactive rendering of the sequence on the end-users display device, which could be any one of a variety of devices, including a hand-held device, smart glasses, augmented reality, wearables using a variety of transmission methods such as Bluetooth, electrical Ethernet adapter, DLNA, WIFI, Internet connected, mesh network, RF, USB, HDMI, coaxial, streaming to name a few that those skilled in the art know the full scope of transmission options.

[00331] The system processing flow can be broken into four main phases: Image Acquisition, Processing Storage, Transmission and Viewing. For the preferred embodiments where the ICD includes a digital video camera (DVC) having a lens and corresponding camera components is provided. The camera may further include a computer chip providing for capabilities of performing video compression within the ICD itself. The ICD as a wireless digital video camera may be capable of capturing video within its range with an accompanying video display device (VDD) as a still capture frame shot and/or compressing the captured video into a data stream in the form of a mobile device, television monitor, computer or display unit. In the case of video, the images are adjustable to capture at different sizes, different frame rates, multi-display of images, display system information, and combination thereof.

[00332] The VDDs are capable of running software for managing input images from at least one wireless or wired ICD associated with or corresponding to a particular VDD device after software installation and initiation. The VDD device is programmable for wireless communication with image capture device, including both transmitting data, settings, controlling instructions and receiving input captured from the ICD, like images, video, audio, temperature, chemical presence, and the like to perform property asset maintenance

[00333] Thus, the VDD device may be capable of receiving wireless data from the wireless image capture device(s), indicating that the ICD is active, recording data and storing data, searching through recorded data, transmitting data and instructions to the ICD, adjusting

ICD settings or controls, communicating with the system software to send and receive data, and other functions, depending upon the specifications of the system setup.

[00334] The ICD further includes at least one microchip that makes the device an intelligent appliance, permitting functions to be performed by the ICD itself without requiring software installation onto the VDD, including but not limited to sensor and input controls, such as camera digital zoom, pan left and right, tilt up and down; image or video brightness, contrast, saturation, image stabilization and recognition, resolution, size, motion and audio detection settings, multi-view image display, recording settings, communication with other ICDs; and video compression. Other software-based functions capable of being performed by the VDD include sending text message, sending still image, sending email or other communication to a user on a remote communications device.

[00335] The user may select one of the "known property assets" or may create a new "property asset" with an associated set of "profile" data in the image classification database. This database includes an appearance list for each of the "known property assets" containing one or more identities and a table of image classes associated with each such property asset identity. Multiple identities can be associated with each property asset because assets typically change their state in seasonal shifts. Examples of such instances of varying appearance may be handling a property asset with/without falling leaves; with/without falling tree branches, etc. In addition, there may be a chronological description where the progress over time which may manifest in changes in length, thickness or lack thereof, etc. Within each property asset class is preferably grouped as a set of similar identity prints which are associated with that property asset class for that asset to maintain property asset based on a superimposed preferred state that is also selected.

[00336] The database module may also access additional information on individual images, including image metadata, camera metadata, global image parameters, color dataset of information, etc., which may assist in categorization and search of images. If the user selects a "known identity", then if this new identity print is sufficiently close to one of the property asset classes for that identity, it will be preferably added to that identity class. Otherwise, in "manual" or "learning" mode the user may be shown a typical image representative of each property asset class and asked which identity class the identity print should be added to, or if they wish to

create a new identity class for that property asset. In "auto" mode, a new identity class will be created by the workflow module for that property asset.

[00337] A system for optical section imaging may be provided. The system may include a camera for recording a plurality of input images of an imaging surface; a grid using object geospatial positioning system. Also may be included is an optical sensor virtual lamp for shining light at the grid to project a grid pattern onto the imaging surface so that each of the input images may include a corresponding grid pattern at a corresponding angle. An actuator may be provided for shifting the grid between each input image recordation so that the grid patterns of at least two of the plurality of input images are at different phase angles. A processor may be configured to: calculate, for each of the plurality of input images, the image's grid pattern angle; generate a first output image by calculating for each pixel of the first output image a value in accordance with a corresponding pixel value of each of the plurality of input images and the calculated angles; and generate a second output image by removing an object included in the first output image, wherein the object is removed one of: by (a): determining a contribution of the object to image intensity values of the first output image; and subtracting the contribution from the image intensity values; and by (b): applying an image transformation to the first output image to obtain transformation data; deleting a predetermined portion of a transformation image representing the transformation data, the transformation data being modified by the deletion of the predetermined portion; and generating a non-transformation superimposed overlay image based on the modified transformation data while using artificial intelligence along with superimposed overlays for automatic operational control of property asset maintenance tool or functional autonomous accessory line trimmer, property edger, etc.

[00338] A computer-readable medium having stored thereon instructions adapted to be executed by a processor, the instructions which, when executed, cause the processor to perform an image generation method, the image generation method comprising: generating a first output image based on a plurality of input images; determining a contribution of an object to image intensity values of the first output image by determining values of a horizontal and a vertical direction; generating a second output superimposed 704 overlay image based on the first output image, the second output image being the same as the first output image less the object, including subtracting the contribution from the image intensity values, the subtraction including:

determining values of the equation by plugging pixel area.

[00339] What is needed, therefore, is an inspection technique that is effective in locating pattern anomalies or defects in a single or a multi object image layer. The system by manual maneuver with user capturing an image of the plane(targeted positional point) and takes snapshot images and places them into a threaded connection interface (TCI) that with each passing snapshot a comparison of any changes or deltas occurs, through the central processing unit (cpu) and stores snapshots in a central memory storage; there in allowing for the placement of a selected superimposed design overlays by user upon property asset for the intelligent interactive image views processing task. A method consistent with the embodiments may further include comparing, using an artificial intelligence engine, the received property asset-specific information with the accessed data, as illustrated. Comparing may include determining the appropriateness of pieces of the accessed data for the property asset based on the property asset-specific information using predictive analysis and artificial intelligence within the instructional training guidance system used with the superimposed overlays to accurately maintaining property asset. "Artificial intelligence" is used herein to broadly describe any computationally intelligent training systems that combine knowledge, techniques, and methodologies. An AI engine may be any system configured to apply knowledge and that can adapt itself and learn to do better in changing environments. Thus, the AI engine may employ any one or combination of the following computational techniques: neural network, constraint program, fuzzy logic, classification, conventional artificial intelligence, symbolic manipulation, fuzzy set theory, evolutionary computation, cybernetics, data mining, approximate reasoning, derivative-free optimization, decision trees, or soft computing. Employing any computationally intelligent techniques, the AI engine may learn to adapt to unknown or changing environments for better performance when property asset maintenance apparatus is linked with the ICD, VDD, and using superimposed overlays. Thereby allowing the preferred embodiment of the present invention apparatus property asset tool being automatically controlled for better operational management while maintain property asset.

[00340] In an additional embodiment, the method may include comparing the potential defects of interest to the results generated by design rule checking performed on design pattern data of the object to determine if the defects of interest correlate to design rule checking (

DRC) critical points of differentiation between the output images displayed on VDD. In one such embodiment, the method may also include removing from the inspection data the defects that do not correlate with the critical points based on property asset being maintained using the superimposed overlay grid property asset preferred maintenance state patterns. In a similar manner, the method may include comparing the potential defects of interest to the results generated by optical rule checking (ORC) performed on design pattern data of the object. In general, steps described herein involving the use of VDD results may alternatively be performed using ORC results. Each of the embodiments of the method described above may include any other step(s) described herein such as using a predictive analytical 146 compare and contrast algorithm where the calculation of aerial or sequential camera pass capture view of image object pixels, color variation, etc in differing layers of superimposed overlay image to the original image are compared for accuracy to the original property design for improved instructional guidance training using artificial intelligence to further autonomously control the operational function of the property asset maintenance tool or autonomously control the functional accessory line trimmer, edger, etc tool to reach the desired maintenance state.

[00341] A storage medium, comprising program instructions executable on a computer system to perform a computer-implemented method for sorting defects in a design pattern of an object, wherein the computer-implemented method comprises: searching for defects of interest in inspection data using priority information and defect attributes associated with individual defects in combination with one or more characteristics of a region proximate the individual defects and one or more characteristics of the individual defects, wherein the inspection data is generated by comparing images of the property asset object to each other to detect the individual defects in the ideal asset maintenance state pattern of the property asset object, wherein the images that are compared to each other are generated for different values of a superimposed overlay design variable, wherein the images comprise at least one reference image and at least one modulated image, and wherein the priority information is derived from a relationship between the individual defects and their corresponding modulation levels of the property asset maintenance contoured state design variable; and assigning one or more identifiers to the defects of interest.

[00342] The overlay images may also be illustrated to the user in other manners. For example, the user interface may be configured to display any of the defects or just the sample images intermittently with reference images corresponding to the defect images. In this manner, the images may appear to highlight in the property asset maintenance video display device interface repeatedly one after the other. Such "highlighting" of the images be user analyzed and acted upon or autonomously performed by property asset maintenance tool to gain additional understanding of the differences between the image layers. In a similar manner, sample images of differently modulated configurations may be highlighted in the user interface, which may aid in user or property asset tools' system's understanding of trends of the defects historically so the compare and contrast analysis 224 for improved property asset maintenance.

[00343] The methods described herein may also include a number of other filtering or sorting functions. For example, the method may include comparing the defects of interest to inspection data generated by design rule checking (DRC) performed on design pattern data of the object layers to determine if the defects of interest correlate to DRC defects. In one such embodiment, the method may include removing from the inspection data the DRC defects that do not correlate with the defects of interest within the targeted property asset maintenance plane area. DRC could be a lenient based on tree, toy, sidewalk, or fence obstructions, or other source layer imperfections.

[00344] The present invention generally relates to computer-implemented methods for detecting and sorting defects in a design pattern of an object. Certain embodiments relate to a computer-implemented method that includes generating a composite reference image from two or more reference images and using the composite reference image for comparison with other sample images for defect detection. Interfaced with the AI engine, the multiple grid reference point positions and corresponding images may be used in order to generate an output image based on images corresponding to grid angles are the basis for the present invention method, system and apparatus property asset maintenance solution being used to accurately maintain a property asset based on the display views and superimposed overlay designs.

[00345] An imaging apparatus, comprising: a camera 906 for recording a plurality of input images; and a processor configured to: generate a first output image based on the plurality of input images; and remove an object from the first output image to generate a second output image; wherein, for the generation of the second output image, the processor is configured to: apply an image transformation in the form of a superimposed overlay property asset maintenance style in correlation to the first output image to obtain transmitted transformation data; delete a predetermined portion of a transform image representing the transform data 902 the transmitted transformed image data being modified by the deletion of the predetermined portion; and generate a non-transform image based on the modified transform data 802 embodied within the translucent superimposed overlay area 136. Furthermore, it will be appreciated that the camera 110 may transmit each image after its recording or may otherwise transmit them in a single batch transfer. An imaging apparatus, comprising: a camera for recording a plurality of input images; and a processor configured to: generate a first output image based on the plurality of input images; determine a contribution of an object to image intensity values of the first output image by determining values of variation in one of a horizontal and a vertical direction wherein the imaging apparatus 708, wherein the processor is configured to: determine a tilt of the superimposed 802 overlay pattern and autonomously controlled property asset tool operation or image stabilization 116 with respect to an imaging area of the at least one of the input images; rotate the transmitted image at least one of the input images to negate the tilt for proper orientation; for the software interfaced with the processor aligns the image captured by the ICD to maintain proper orientation using sensors for image pixel analysis

[00346] The processor may take various forms, including a personal computer system, mainframe computer system, cloud, workstation, network appliance, Internet appliance, personal digital assistant ("PDA"), smart phone 1008, smart eye wear, wearables, augmented and multi-dimensional display system or other processor enabled device. In general, the term "computer system" may be broadly defined to encompass any device having one or more processors, which executes instructions from a memory medium. In addition, the processor may include a processor as described here within incorporate

d by reference above, which are particularly suitable for handling a relatively large amount of image data substantially simultaneously.

[00347] Consistent with the imaging invention to determine the current health status of a viewable plan area for suggesting property asset maintenance fertilizer, weed killer, pesticide, etc products, an alternative embodiment of the imaging device, being a system, method, and apparatus that includes identifying, using a scanner machine or mobile imaging device ; embodied as a stand alone property asset maintenance lawnmower, edger, trimmer unit or part of a multi-functional device; wherein device allows for a user to guide the tool or autonomously operated property asset maintenance tool to operate using scanning or image capturing processing of property asset area, and using predictive analytics for identifying matching property asset maintenance promotional products based on the scanned or image processed health rating of the property asset's conditional state. Additionally, the system can send promotional coupons in digital form to a users mobile device using sms text messaging. Alternatively, the system can send promotional product coupons to a users online profile for loading property asset maintenance digital coupons on mobile device memory; property asset maintenance digital coupons placed on a stored value card or credit card; or property asset maintenance coupon offers sent to users home address of record. In an alternative example embodiment of the present invention, the use of a mobile device having an image capture scanning device interfaced to a processor with OCR system capable of capturing the retail receipt to initiate the promotional product coupon being sent to user's mobile device for loading onto a devices memory and associated profile account.

[00348] Furthermore; for removal of an object area from an optical sectioning output image in an alternative example embodiment of the present invention, the system and method may remove a section of an image representing image transform data of the output image that is at a predetermined location of the transform image, i.e., a portion of the image transform data that forms the portion of the transform image that is at the predetermined location may be removed.

[00349] Embodiments of the present invention relate to an apparatus, computer system, and method for generating an image via optical sectioning by determining angles of a grid pattern projected successively onto an object to be imaged for guidance of customized property asset maintenance designs using superimposed overlays.

[00350] In an alternative embodiment, the processor may cause the camera to record a single set of images of an object having a substantially uniform surface to determine the trimmer and the property tool angles of the images caused by movement of the property grid. The processor may save the determined trimmer angles in a memory. Alternatively, if the object to be imaged has a uniform surface or includes substantial detail so that substantial data may be obtained from an image of the object, the processor may determine the optimum image trimmer angles from images of the object to be imaged, without previous imaging of another object that is inserted into the camera's line of sight solely for determining image property tool angles. Additionally in the present invention system and method, image and video analytics data is automatically sent to the invention system application.

[00351] The program instructions may be implemented in any of various ways, including procedure-based techniques, component-based techniques, and object-oriented techniques, among others. For example, the program instructions may be implemented using Matlab, Visual Basic, ActiveX controls, C, C++ objects, C#, JavaBeans, Microsoft Foundation Classes ("MFC"), or other technologies or methodologies, as desired.

[00352] Program instructions implementing methods such as those described herein may be transmitted over or stored on the carrier medium. The carrier medium may be a transmission medium such as a wire, cable, or wireless transmission link, or a signal traveling along such a wire, cable, or link. The carrier medium may also be a storage medium such as a read-only memory, a random access memory, a magnetic or optical disk, or a magnetic tape.

[00353] In this inventions preferred embodiment, the property asset maintenance tool 708 including a housing and where ICD is enclosed within a portion of housing disposed topside of property asset tool directly adjacent bladeset in a fixed position relative to moving blade and defining a flow path for property asset

maintenance for capturing images of maintained property asset away in targeted property asset maintenance area using the present invention's proximity sensor 138 software system.

[00354] A method for automatic identification of variances in property asset regions is disclosed. The method comprises the steps of: identifying edges from an original image which includes property grass regions; storing a direction and length of the lines which form each edge; searching a line bundle in which lines of a same direction are gathered; establishing a color of the line bundle as a particular; performing line tracing to identify lines having connections to the line bundle and having the property asset color; and establishing pixels on the identified lines as the property asset region, and applying a superimposed overlay maintenance pattern for property asset preferred state.

[00355] Embodiments provide an improved virtual image viewing and panning system. In this system part of a panoramic image is represented in a detailed image, the location of which is shown in an improved map image visible on a VDD. It is much easier for the user or artificial intelligent system accompanying the autonomously functional property asset maintenance tool to understand direction with trailing directional arrows without any prior knowledge of the physical location of the panoramic image. The detailed image and the map image are never out of sync because any change in the detailed image is immediately reflected in the grid mapping image thereto, and any change in the map image is immediately reflected in the detailed image.

[00356] A system and method for displaying 3D data are presented. The method involves transforming a 2D image converting image into a 3D display for maintaining property asset preferred state with the 3D display region divided into two or more display subregions, and assigning a set of display rules to each display subregion.

[00357] A substrate sensor system is provided. The system comprises an optical sensor housed within the invention that uses a processor to separate the property asset from the surrounding paved areas or such property assets as a tree base area indicating the distance distinctly measured between the two objects; reporting to invention system aligned with preferred property asset guide for improved property asset maintenance.

[00358] A method of digital image processing using face detection for achieving a desired spatial parameter is disclosed. The method comprises (a) identifying a group of pixels that correspond to a property asset within a main digital image; (b) generating in-camera, capturing or otherwise obtaining in-camera a collection of one or more images including rendering property asset viewed on VDD or stored in artificially intelligent processing engine within an autonomously operated property asset maintenance tool; (c) tracking property asset within collection of one or more captured images using ICD; (d) identifying one or more sub-groups of pixels that correspond to one or more property asset features of the targeted maintenance area, identifying of group or sub-groups of pixels, or both, being based on the tracking of the property asset within collection of one or more images; (e) determining initial values of one or more parameters of pixels of the one or more sub-groups of pixels; (f) determining an initial spatial parameter of the property asset within the main digital image based on the initial values; (g) determining adjusted values of pixels within the digital image for adjusting the main digital image based on a comparison of the initial and desired spatial parameters; (h) generating an adjusted version of the digital image including adjusted values of pixels; (i) storing, displacing, transmitting, transferring, printing, uploading or downloading the adjusted version of the digital image, or a further processed version, or combinations thereof, and (j) automatically retrieving stored property asset maintenance profile from storage memory with last superimposed overlay design for maintaining property asset populated.

[00359] A user may apply a particular angle of axis for the property asset tool relative to the targeted property asset maintenance plane area of the property asset area, either using a substantially corresponding angle to the property asset to be maintained while holding the property asset maintenance tool in either hands by means of rotating the blade assembly to a preferred position, apart as discussed above. One of these positions of the blade assembly is suitable for use in the right hand, and the other position is suitable for use in the left hand when using the hedge or tree limb maintenance tool embodiment of the property asset maintenance tool. A user may use the invention tool to maintain property assets on one side of the property asset with the blade assembly rotated to one position, then rotate the blade assembly to the other

position, grasp the property asset with the other hand, then maintain the property asset on the other side of the property asset while using the ICD and VDD for accurate maintenance. In either hand, the property asset maintenance tool's bladeset is positionable at the angle of attack. Regardless of the rotated position of the bladeset, the configuration of the teeth is such that the property asset maintenance tool may be repeatedly passed through the property asset area in a natural tool action without creating sharply defined "swaths" in the property asset, while using image stabilization to control orientation and vibration of ICD such as not to negatively affect the image being transmitted to the VDD.

[00360] The present invention relates generally to property asset maintenance devices having a bladeset including a moving blade reciprocating relative to a stationary blade and a drive system for powering the bladeset, and more specifically to pole saws, hedge trimmers, lawn edgers, and lawnmowers used for cutting property asset areas. However, those skilled in the art would be aware that the scope of this present invention could also be applied to other areas such as ice sculptures and lawn trimming, snow removal, skin care, property care, property property tools, or the like.

[00361] Furthermore, those skilled in the art will recognize the scope of the present invention can be used with other property asset maintenance tools Fig. 13 such as aerial drones, lawnmowers, hedge trimmers, gutter and downspout cleaners, property edgers, property vacuums, property leaf blowers,

[00362] The embodiments discussed herein are illustrative of the present invention. As these embodiments of the present invention are described with reference to illustrations, various modifications or adaptations of the methods and or specific structures described may become apparent to those skilled in the art. All such modifications, adaptations, or variations that rely upon the teachings of the present invention, and through which these teachings have advanced the art, are considered to be within the spirit and scope of the present invention. Hence, these descriptions and drawings should not be considered in a limiting sense, as it is understood that the present invention is in no way limited to only the embodiments illustrated.

[00363] Embodiments disclosed herein may also use a predictive analytical analysis process of optically determining a change in property asset for comparing current state

to future state's accuracy based on the superimposed design overlay to guide the user in order to achieve a desired property asset state. According to the present invention, operational control of a property maintenance asset tool using artificial intelligence neural network processing, and superimposed design styles overlays for cutting, trimming, or cleaning is embodied, which will allow a sensor to convert image processing to instruct the apparatus controller to operate further allowing the invention to automatically be controlled using microchip 610 embedded processor in order to achieve a desired property asset state. More specifically, this invention relates to the use of various embodiments of property maintenance tools, such as but not limited to autonomous lawnmowers having autonomously functioning line trimmer and edger property tools attached to a 360° degree rotational axis gyroscope gimbal, autonomously operated unmanned aerial drones having autonomously functioning saws, line trimmer, and edger property tools positioned on a gyroscope gimbal, and interactive pole saw with improved real-time views whereby more accurate cutting, trimming, edging, or cleaning of targeted property asset area is achieved. Also, the present invention embodies a robotic lawnmower capable of being guided by peer connected drones that canvas the target property based on geo-fencing restrictions indicated by the property owner or caretaker.

[00364] According to the present invention, operational control can be user guided using bracket handles to maneuver the property identifying the property lines, obstructions, side walk and patio variances so the Artificial Intelligence machine learning engine grows in knowledge each subsequent owner guided correction or autonomous robotic lawnmower operation. The invention comprises a housing where a autonomously yet peer connected mesh network drone canvasses the target property and uses a fusion sensor array to identify additional obstructions, line variances between drive way and grass area, property privacy fence and autonomous lawnmower range and property maintenance's accuracy and relays any variances back to the cloud simultaneously communicating with other property devices the status of a particular zone being monitored thru a 3D topographical terrain depiction.

[00365] More specifically the invention uses the sensor array comprising of proximity, image, sonar, laser distance, humidity, heat detection capability and shares this information with the mesh network nodes with real-time continuous data feeds that uses a

mathematical algorithm to alter the geo-fenced property maintenance so the autonomous grass trimmer or edger device integrated with the robotic lawnmower knows the exact moment the device needs to reposition its gimbal pivoting head to perform its operational functions while the lawnmower mows the main yard at the same time. Also, the present invention uses a predictive analytical analysis machine learning process of optically determining a change in property variances and compares the accuracy of the property maintenance underway based on the superimposed design overlay to guide the autonomous property maintenance apparatus' system in order to achieve a desired property maintenance future design style state.

[00366] According to the present invention, operational control of a property maintenance tools uses artificial intelligence, and superimposed guide styles overlays for property maintenance is explained, which will allow a sensor to convert image processing to instruct the apparatus' controller function to operate further allowing the invention to automatically be guided using embedded microchip processor in order to achieve a selected property maintenance future design style state. More specifically, this invention relates to the use of various types of property maintenance apparatus', such as but not limited to robotic lawnmowers with electro-magnetic power distributed and grass trimmers and edgers, geo-fenced autonomous drones using context aided sensor fusion for enhanced urban navigation with power cutting apparatus integrated for property maintenance, smart manual pump and battery operated wet and dry distribution streaming water gun like apparatus, autonomous robotic trash can positioning device whereby more accurate property maintenance of targeted area is achieved to stakeholders satisfaction.

[00367] Drones flying overhead of a user may also cause a hazard as the drone may lose power and drop from the sky causing damage to the drone or to the surface it hits. FIG. 53 shows an embodiment of a protective mobile device case partially deployed and FIG. 54 shows an embodiment of the protective mobile device case fully deployed. Though the term "mobile device" is used herein, this term is not meant to be limiting as it is being used to also address an aerial drone. As shown, a mobile device 3210, such as, but not limited to a mobile phone, tablet, phablet, or laptop computer, is provided. A sensor 3220 is provided. As explained further herein, the sensor may be a fusion sensor. A deployable barrier, or pouch, 3201 or covering is provided. The pouch 3201, when activated is expanded around the mobile

device 3210. As shown, the pouch 3201 may have a top member 3200 and a bottom member 3230.

[00368] In other embodiments, the pouch may not provide for complete enclosure of the mobile device, but provides for the cover 3201 to expand in parts to cover key areas of the mobile device. The pouch 3201 may be activated by being at least one of a chemical mixture pouch, a pressurized gas, and an air inflatable protective encapsulation barrier. As is explained further herein, the pouch 3201 may be attached using adhesive substrate, an embedded part to the mobile device, an attachment slide or click component to the mobile device 3210, or to a protective cover 3400 attached to at least a part of the mobile device 3210. As further shown, when activated by the sensor 3220, the pouch is deployed.

[00369] More specifically, the deployable barrier may be either directly attached to the mobile device 3210 or by way of the protective cover 3400 that covers at least a part of the mobile device 3210. The protective cover 3400 may comprise an area to store or hold the deployable barrier 3201 prior to the barrier 3201 being deployed. In an embodiment, the stored deployable barrier 3201 is within a container 3440 that attaches to the protective cover 3400. When deployed, the container 3440 may be removed from the protective cover 3400 and a replacement protective cover 3400 with another packaged or stowed deployable barrier 3201 may be attached. In yet another embodiment, the deployed barrier 3201 may be folded back up and reinstalled.

[00370] FIG. 55 shows another embodiment of a pouch arrangement deployed. As discussed above, the pouch may not have a traditional pouch arrangement. Thus, the term “pouch” is not meant to be limiting as it includes any expandable or inflatable element that function as a deflector, barrier, or bumper to protect the mobile device 3210. As shown, an inflatable protective barrier comprising a plurality of individual mini-barriers is provided. Though mini-barriers are disclosed, the barrier may be a single component. Though the barrier 3201 is shown only on a single side of the mobile device 3210, it may be provided on other sides of the mobile device 3210 as well. In embodiment, based on a direction of fall, as may be detected by the sensor 3220, the barrier 3201 may be deployed either to direct the surface that will hit the ground first or sequentially around the mobile device where the side that is expected to strike first is deployed first.

[00371] FIG. 56 shows another embodiment of the pouch arrangement deployed. As shown, mini-barriers 3320 may be provided around all sides of the mobile device 3210, including a top surface, a bottom surface, and a side surface of the mobile device 3210. As discussed above, the mini-barriers 3320 may be deployed in parallel or in series, depending on an anticipated location the mobile device will hit a ground surface first. The shapes of the mini-barriers 3320 may not be the same, as is shown when comparing the bottom surface mini-barriers to the side surface mini-barriers 3320.

[00372] FIGS. 57-60 show other embodiments of the pouch arrangement. These embodiments may be for a single pouch or a mini-barrier. Embodiments are not limited to just one geometric form for either the pouch or mini-barrier. As a non-limiting example, a plurality of different mini-barriers may be used to form a single collective barrier at a particular location on the mobile device. Furthermore, a shape of the pouch or barrier may be decided based a location where the mobile device is located. For example, the sensor may comprise a sensor that determines an elevation of the device with respect to a ground surface. Factoring in weight of the mobile device, a processor may determine a shape of at least one of the pouch, barrier or mini-barriers. As a non-limiting example, either the pouch, barrier or mini-barrier may comprise a cube shape. But if the sensor detects the mobile device is going to fall a greater distance than normal, additional cavities may be inflated to convert the cube shape to a truncated cube or cuboctahedron.

[00373] FIG. 61 is an image drawing showing how kinetic energy $\{E_k = \frac{1}{2}mv^2\}$ force and torque analysis is constructive to the quantum mechanics probability for the embodiment of the mobile device within a protective case where the fusion sensor identifies potential impact along the elongated side edge angle and enables the electrical charge hardening to project a force field repelling of similar electrical charges and shock wave extrapolation paths before initiating the present inventions inflatable protective encapsulation barrier. $F' = IbB \sin(90^\circ - \alpha) = IbB \cos \alpha$.

[00374] FIG. 62 is an image drawing showing an embodiment of the mobile device within a protective case where the fusion sensor identifies potential impact along the end side edge angle and enables the electrical charge hardening to project a force field repelling of similar

electrical charges and shock wave extrapolation paths before initiating the present inventions inflatable protective encapsulation barrier.

[00375] FIG. 63 is an image drawing showing an embodiment of the mobile device within a protective case where the fusion sensor identifies potential impact along the flat front or back plane side and enables the electrical charge hardening to project a force field repelling of similar electrical charges and shock wave extrapolation paths before initiating the present inventions inflatable protective encapsulation barrier.

[00376] The embodiments shown in FIGS. 64-66 may be useful in activating deployment of the pouch, barrier or mini-barriers. The embodiments of FIGS. 64-66 may also be useful in a sequence of activation.

[00377] FIG. 67 shows an embodiment of a part of an embodiment of an inflatable protective barrier. The barrier 3201 may have a cavity into which a gas flows. In an embodiment, the protective barrier does not fully engulf the mobile device. Instead, as shown in FIG. 6, a straw or stick geometric enclosure surrounds the mobile device. Thus, the proactive barrier 3201 may comprises a plurality of expandable tubes into which gas is inserted to cause the tubes to expand to form the protective barrier.

[00378] Thus, as shown above, the inflatable protective barrier 3201 may not be readily visible until it is inflated. The inflatable protective barrier may comprise a variety of shapes that could be geometric, spherical, oblong, or vanity shapes representing an animal, sports mascot, or the like that surrounds the mobile phone, tablet, keyboard case combo, or laptop during the accident and cushions the device from shock or direct damage.

[00379] The inflatable protective barrier 3201 may be designed in many different manners and materials, and may not take more space than an ordinary protective case with a tuck-in, snap-on, slide-and-lock integrated or modulated attachment feature. Thus, a protective case may be provided with an inflatable protective barrier system for protecting the mobile device in case of an abnormal movement, e.g. during walking, cycling, running, standing, misstepping, or causing the phone case sensor to recognize an abnormal movement.

[00380] The inflatable protective barrier 3201 may be arranged around an encasement 3400 of the mobile device 3210 as an integrated part or as an attachment module along a back plane or longitudinal sides of the mobile device 3210, or may have parts attached

directly to the mobile device 3210. A sealable opening, normally at the back facing plane of the device, may be provided. Alternatively, the opening may be arranged on the front facing longitudinal edges of the encasement lip or collar portion of the protective case.

[00381] Furthermore, the opening may be totally or partly dividable. The sealing may be a micro-Velcro® fastening, magnets, pressurized hardened shape, glue, tape, straps or the like. The protective case may be made of any kind of flexible material, such as acetate silk, jeans, fleece, cotton, beaver nylon or the like. The case encloses the inflatable protective barrier system, which comprises an inflatable protective barrier, an inflator or propellant pouch, and one or several inflatable receptacles, depending on the design of the inflatable protective barrier. As non-limiting examples, the inflatable protective barrier may be a nylon, polyester, synthetic silk, biogenetic material, plant-based material, textile bag, rubberized, flexible plastic, mylar or the like.

[00382] The barrier 3201 may also be water resistant. Therefore, if the mobile device 3210 falls into a liquid and the barrier deploys in advance of the mobile device being submerged, the barrier may act as a flotation device or may insulate the mobile device from the liquid.

[00383] The inflatable protective barrier may be folded and packed into an upper portion of a collar on the cover or within the mobile device, for example in a pocket arranged therein. As a non-limiting example, the inflatable protective barrier 3201 may extend from the left front side, adjacent the opening, around the end point stopping close to the right front side, adjacent the sealed opening. The inflatable protective barrier may comprise one to many parts, depending on the finished shape of the inflatable protective barrier when inflated.

[00384] The protective barrier 3201 may be released by an activation device that cause the inflatable protective barrier to deploy from its stored location to protect all or a specific section of the mobile device. FIG. 68 is an image drawing showing an embodiment of a dual capsule of pressurized gas or air for used to initiate the inflatable protective encapsulation barrier.

[00385] FIG. 69 is a back view image drawing showing an alternative embodiment of a dual capsule of pressurized gas or air and a pre-deployed inflatable barrier. FIG. 70 is a

back view image drawing showing another embodiment. As shown, the a compressed gas propellant is within a same chamber or location as the pre-deployed inflatable barrier.

[00386] FIG. 70 shows another embodiment of the capsule and pre-deployed inflatable protective barrier, As shown, the barrier may comprise a pre-deployed arrangement of any arrangement. FIGS. 71-73 show other embodiments as disclosed further in the provisional patent application incorporated by reference in its entirety.

[00387] Thus, the inflator may be located within the housing of the integrated or on an attachment module along the back or longitudinal side of the protective case. It is connected to the inflatable protective barrier. The inflator may be a hybrid generator such as a canister, which is filled with gas or air. The hybrid generator has no powder, which results in less heat release and a minor pop/bang when the inflatable protective barrier is inflated. Alternatively, a sound compressor or dampener may be used to minimize a sound associated with the inflator device or propellant pouch expelling the gaseous or air contents into the inflatable protective barrier. The inflator may be smaller than most presently available inflators with the inflation volume quantity depending on a size or shape of the inflatable protective barrier.

[00388] Alternatively, the inflator may be a pyro technic inflatable protective barrier pouch inflator, which uses hot gases formed by powder, a cold gas inflator, a hybrid inflator or a heated gas inflator. The inflator may include a deflator, for directing the gas into the inflatable protective barrier. The inflator may be screwed, glued, snapped, slide, sewed or the like onto the protective inflatable protective barrier apparatus. The deflator may be positioned inside the inflatable protective barrier system for directing the gas into the bag for inflating the inflatable protective barrier in a proper manner.

[00389] The deflator may be T-shaped for being able to lead the gas into the inflatable protective barrier in a suitable way. Alternatively, the deflator may be Y-shaped, I-shaped, arrow-shaped, multiple part shaped cylindrical shaped or the like. The inflator may be ergonomically shaped to fit comfortably at the back of the user's device. It may have a rounded shape, optimized for its position and function. During inflation, the downward recoiling force of the inflator is counteracted by an upward force, which is absorbed by the strong fabric of the textile bag. The inflator may use a battery, as a non-limiting example with 3 Volt, which may be

located in the receptacles. The battery may be 20 a rechargeable battery, which is recharged by electrical or kinetic energy or a disposable battery, such as a watch battery. An indicator, which indicates whether the inner elements of the helmet is intact or not and if the battery is charged or not, is arranged in connection with the electronics. The indicator may be a light emitting diode (LED), which indicates with a light signal if the battery is charged or not or if any of the inner parts are broken. The indicator may also be a sound signal, such as a buzz, a vibrating signal or a smelling signal, which indicates when the battery is almost discharged or if 30 any of the inner parts are broken.

[00390] FIG. 74 shows a block diagram showing an embodiment of a gas propellant capsule or pouch or pressurized canister inflatable sensory. As shown, A controller is provided to control the subsystems to cause the gas release to deploy the deployable barrier. A recovery system is disclosed which may be used to recharge the embodiment once used. In another embodiment, the system may be removed and replaced with a replacement subsystem.

[00391] In another embodiment, a hardened invisible barrier screen protector may be create. FIG. 75 is an image drawing showing an embodiment of an electric charge that can have charge transference to enable repelling of like charged objects creating a hardened invisible barrier screen protector.

[00392] FIG. 76 is an image drawing showing an embodiment nanotubes or nanowires that enable the electric charge that can have charge transference to enable repelling of like charged objects creating a hardened invisible barrier screen protector. The nanotubes may be within a monitor or screen of the mobile device. The nanotubes or nanowires connectors that enable the electric charge that can have charge transference to enable repelling of like charged objects creating a hardened invisible barrier screen protector. The inline nanotubes or nanowires connectors that enable the electric charge that can have charge transference to enable repelling of like charged objects creating a hardened invisible barrier screen protector. In other non-limiting embodiments, the shield may be created with the use of at least one of an energy field of electro-magnetic, sound resonance, laser, forced air, or magnetic levitational technology.

[00393] FIG. 77 is an image drawing showing an embodiment of nanotubes or nanowires connectors from a side view that enable an electric charge that can have charge transference to enable repelling of like charged objects creating a hardened invisible barrier.

Whereas, FIG. 21 shows the nanowire connectors from a perspective view. As shown, the poles are marked.

[00394] FIG.78 is an image drawing showing an embodiment of inline nanotubes or nanowires connectors from a bottom view that enable the electric charge that can have charge transference to enable repelling of like charged objects creating a hardened invisible barrier screen protector. FIG.79 is an image drawing showing an embodiment of the screen protector from a top view with nanotubes or nanowires connectors that enable the electric charge that can have charge transference to enable repelling of like charged objects creating a hardened invisible barrier.

[00395] The sensor 3220 to detect abnormal movement, such as the mobile device falling may be a combination of different sensors, hence the term fusion sensor. Non-limiting examples of the fusion sensor may comprise a pressure impact sensor, a proximity sensor, a gyroscope or gyro meter, an accelerometer, a moisture detection sensor, etc. or like mechanism to be incorporated into the structure of a cover, or attachment point, to which an embodiment disclosed herein is attached to.

[00396] The cover to which the barrier is attached may comprise a plurality of auxiliary components to further enhance operation of the mobile device. As a non-limiting example, an auxiliary battery may be part of the cover that is attached to the mobile device. The battery may be a wireless charging battery bank file management device, as illustrated in FIG. 80. As shown, plurality of components may be included to provide for wirelessly charging a battery that is primarily used by the mobile device. An external memory device, such as, but not limited to, a SIM card may also be attached to the cover to provide the mobile device additional memory storage capabilities. A plurality of SIM cards may be attached. In another embodiment, a selector may be provided to select which SIM card to use at a given time. The use of SIM card is used to represent any memory device. FIG. 81 shows an embodiment where the protective case has an expandable memory location. 2450.

[00397] FIG. 82 shows a block diagram illustrating an embodiment of external components that may be attached to the cover and used by the mobile device. Such external components comprises, but are not limited to, supplemental battery or power source, as discussed above, SIM Card or memory device. As shown, there is an external interface 1520 to the mobile

device. The battery or power source may also provide power to the sensor, processor and activation device disclosed herein. Other components disclosed include a NFC scanner, a magnetic strip card reader, a smart card reader, RFID scanner, a bar code scanner, a cryptography engine. These are only representative components as others may be included as well. Furthermore, either fewer or more components disclosed may be use.

[00398] FIGS. 83 and 84 show other embodiments of components that may be included to enhance the mobile device. As shown in FIG. 83, the protective case may comprise a wire battery bank, the fusion sensor, and a multiple memory storage device center, such as, but not limited to a carousel changer tray.

[00399] As shown, in FIG. 84, the protective cover may comprise a wireless battery bank, the fusion sensor, a liquid sealed device for power and a data pass through port, a dual flat multi memory storage area. A cooling device, such as, but not limited to a mini fan, may also be included. Though these elements are shown primarily with respect to a smartphone, similar elements are applicable to other mobile devices, including, but not limited to a laptop computer.

[00400] FIG. 85 shows layers of the protective cover. The protective cover may comprise multi layers, that may be adhered together to provide for at least one of heat and shock wave absorption. The exposed layer may also comprise a non-harmful connection to ensure that the mobile device is held into place.

[00401] In an embodiment, external ports, such as, but not limited to data ports, headphone jacks may include an insertion cover of the protective cover to ensure that they are water tight.

[00402] Thus, embodiments relates to reducing damage to a mobile device if it is dropped. The embodiments disclosed herein include, in an embodiment, an inflatable device for automatic inflation of an air bag with high pressure gas or air or propellant pouch and ejects from the protective case embodiment the air bag to envelop the mobile phone, tablet or laptop device body for protection upon occurrence of a sensor driven crash accident upon abnormal movement of a user's handling of the electronic device to automatically protect the device from crash impact, liquid intrusion or physical damage due to user mishandling

[00403] As will be disclosed herein, a protective enclosure for an electronic device such as, but not limited to, a laptop computer or tablet computer, a smart phone, that comprises a shell that is capable of enclosing and substantially surrounding the electronic device is shown. The shell is substantially watertight, substantially rigid and substantially crush-resistant. The inside of the shell has a hook and loop liner with shock absorbing corner bumpers having hook and loop type bases so that the bumpers may attach at any point on the liner inside the shell to accommodate electronic devices of various sizes and to secure the device inside the enclosure in a shock absorbent suspended manner. The shell may further comprise a USB connector hub for connection to the USB port of a laptop computer or PC tablet enclosed in the protective shell.

[00404] FIG. 86 discloses a method. The method 4300 comprises detecting, with a sensor, an unexpected change in at least one of velocity, acceleration and moisture of a mobile device, at 4310. The method 4300 further comprises deploying, with an activation device, a deployable barrier, stored to a cover that is attached to at least a part of the mobile cover, to protect the mobile device from damage, at 4320. The method 4300 may further comprise detecting when to deploy the deployable barrier with a processor in communication with the sensor, at 4330.

[00405] FIG. 87 sets forth an illustrative computing functionality 1700 that may be used to components, such as the processor disclosed above. In all cases, computing functionality 1700 represents one or more physical and tangible processing mechanisms. The computing functionality 1700 may comprise volatile and non-volatile memory, such as random access memory (RAM) 1702 and read only memory ("ROM") 1704, as well as one or more processing devices 1706 (*e.g.*, one or more central processing units (CPUs), one or more graphical processing units (Gus), and the like). The computing functionality 1700 also optionally comprises various media devices 1708, such as a hard disk module, an optical disk module, and so forth. The computing functionality 1700 may perform various operations identified above when the processing device(s) 1706 execute(s) instructions that are maintained by memory (*e.g.*, RAM 1702, ROM 1704, and the like).

[00406] Instructions and other information may be stored on any computer readable medium 1710, including, but not limited to, static memory storage devices, magnetic storage devices, and optical storage devices. The term "computer readable medium" also

encompasses plural storage devices. In all cases, computer readable medium 1710 represents some form of physical and tangible entity. By way of example, and not limitation, the computer readable medium 1210 may comprise “computer storage media” and “communications media.”

[00407] “Computer storage media” comprises volatile and non-volatile, removable and non-removable media implemented in any method or technology for storage of information, such as computer readable instructions, data structures, program modules, or other data. The computer storage media may be, for example, and not limitation, RAM 1702, ROM 1704, EPROM, Flash memory, or other memory technology, CD-ROM, digital versatile disks (DVD), or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage, or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by a computer.

[00408] “Communication media” typically comprise computer readable instructions, data structures, program modules, or other data in a modulated data signal, such as carrier wave or other transport mechanism. The communication media may also comprise any information delivery media. The term “modulated data signal” means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media comprises wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, FRO, infrared, and other wireless media. Combinations of any of the above are also included within the scope of computer readable medium.

[00409] The computing functionality 1700 may also comprise an input/output module 1712 for receiving various inputs (via input modules 1714), and for providing various outputs (via one or more output modules). One particular output module mechanism may be a presentation module 1716 and an associated graphic user interface (“GUI”) 1718. The computing functionality 1700 may also include one or more network interfaces 1720 for exchanging data with other devices via one or more communication conduits 1722. In some embodiments, one or more communication buses 1724 communicatively couple the above-described components together.

[00410] The communication conduit(s) 1722 may be implemented in any manner (e.g., by a local area network, a wide area network (e.g., the Internet), and the like, or any

combination thereof). The communication conduit(s) 1722 may include any combination of hardwired links, wireless links, routers, gateway functionality, name servers, and the like, governed by any protocol or combination of protocols.

[00411] Alternatively, or in addition, any of the functions described herein may be performed, at least in part, by one or more hardware logic components. For example, without limitation, illustrative types of hardware logic components that may be used include Field-programmable Gate Arrays (Fogs), Application-specific Integrated Circuits (Asics), Application-specific Standard Products (Asps), System-on-a-chip systems (Sacs), Complex Programmable Logic Devices (Colds), and the like.

[00412] The terms "module" and "component" as used herein generally represent software, firmware, hardware, or combinations thereof. In the case of a software implementation, the module or component represents program code that performs specified tasks when executed on a processor. The program code may be stored in one or more computer readable memory devices, otherwise known as non-transitory devices. The features of the embodiments described herein are platform-independent, meaning that the techniques can be implemented on a variety of commercial computing platforms having a variety of processors (*e.g.*, set-top box, desktop, laptop, notebook, tablet computer, personal digital assistant (PDA), mobile telephone, smart telephone, gaming console, wearable device, an Internet-of-Things device, and the like).

[00413] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. Furthermore, to the extent that the terms "including," "includes," "having," "has," "with," or variants thereof are used in either the detailed description and/or the claims, such terms are intended to be inclusive in a manner similar to the term "comprising." Moreover, unless specifically stated, any use of the terms first, second, etc., does not denote any order or importance, but rather the terms first, second, etc., are used to distinguish one element from another.

[00414] Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one of ordinary skill in

the art to which embodiments of the invention belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

[00415] While various disclosed embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. Numerous changes, omissions and/or additions to the subject matter disclosed herein can be made in accordance with the embodiments disclosed herein without departing from the spirit or scope of the embodiments. Also, equivalents may be substituted for elements thereof without departing from the spirit and scope of the embodiments. In addition, while a particular feature may have been disclosed with respect to only one of several implementations, such feature may be combined with one or more other features of the other implementations as may be desired and advantageous for any given or particular application. Furthermore, many modifications may be made to adapt a particular situation or material to the teachings of the embodiments without departing from the scope thereof.

[00416] Further, the purpose of the foregoing Abstract is to enable the U.S. Patent and Trademark Office and the public generally and especially the scientists, engineers and practitioners in the relevant art(s) who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection the nature and essence of this technical disclosure. The Abstract is not intended to be limiting as to the scope of the present disclosure in any way.

[00417] Therefore, the breadth and scope of the subject matter provided herein should not be limited by any of the above explicitly described embodiments. Rather, the scope of the embodiments should be defined in accordance with the following claims and their equivalents.

CLAIMS

I claim:

1. A system comprising:
a deployable barrier, a sensor to detect when to deploy the barrier and an activation device to deploy the barrier, wherein the barrier, sensor and activation device are connected a surface attached to a mobile device and the deployable barrier is deployed when the mobile device experiences an unexpected change in at least one of velocity, acceleration and moisture.
2. The system according to claim 1, wherein the deployable barrier is at least one of an inflatable deployable barrier and at least one of nanotubes and nanowires that when electrically charged create an invisible barrier.
3. The system according to claim 1, wherein the activation device comprises a pressurized gas capsule that when activated releases a gas to inflate the inflatable deployable barrier.
4. The system according to claim 1, wherein the activation device creates at least one of an energy field, sound resonance, laser, forced air, and electro-magnetic field that passes through the at least one of nanotubes and nanowires to create a forces that extends from the at least one of nanotubes and nanowires.
5. The system according to claim 1, further comprising a cover attached to at least a part of the mobile device.
6. The system according to claim 1, further comprising a processor to analyze data from the sensor to determine a time to deploy the barrier.
7. A system comprising:
a deployable barrier to protect an aerial drone when the aerial drone experiences an unexpected change in at least one of velocity, acceleration and moisture;

a sensor to detect when the aerial drone experiences an unexpected change in at least one of velocity, acceleration, and moisture;

an activation device that cause the deployable barrier to deploy from a stored location to provide protection to at least one of all and a specific section of the aerial drone.

8. The system according to claim 7, wherein the deployable barrier is an inflatable deployable barrier.

9. The system according to claim 7, wherein the deployable barrier comprises at least one of nanotubes and nanowires that when electrically charged creates an invisible barrier.

10. The system according to claim 8, wherein the activation device comprises a pressurized gas capsule that when activated releases a gas to inflate the deployable barrier.

11. The system according to claim 9, wherein the activation device creates at least one of an energy field, sound resonance, laser, forced air, and electro-magnetic field that passes through the at least one of nanotubes and nanowires to create a forces that extends from the at least one of nanotubes and nanowires.

12. The system according to claim 7, wherein the sensor comprises at least one of

13. The system according to claim 7, further comprising a cover attached to at least a part of the aerial drone.

14. The system according to claim 13, wherein the deployable barrier is stored within the case prior to deployment.

15. The system according to claim 7, wherein the deployable barrier comprises a plurality of sub-deployable barriers.

16. The system according to claim 15, wherein the sub-deployable barriers are released based on a side of the aerial drone is expected to make contact with at least one of a ground surface and liquid surface first.

17. The system according to claim 7, further comprising a processor to analyze data from the sensor to determine a time to deploy the barrier.

18. The system according to claim 13, wherein the case comprises at least one of a backup data storage device for the aerial drone, a cooling system for the aerial drone, a financial transaction component that integrates with the aerial drone, and an external battery for use by the aerial drone.

19. The system according to claim 13, wherein the deployable barrier comprises a storage container so that when deployed, a replacement storage container with a replacement deployable barrier is installable within the case.

20. A method comprising:
detecting, with a sensor, an unexpected change in at least one of velocity, acceleration and moisture of a aerial drone; and
deploying, with an activation device, a deployable barrier, stored to a cover that is attached to at least a part of the mobile cover, to protect the aerial drone from damage.

21. The method according to claim 20, further comprising detecting when to deploy the deployable barrier with a processor in communication with the sensor.

22.

FIG. 1

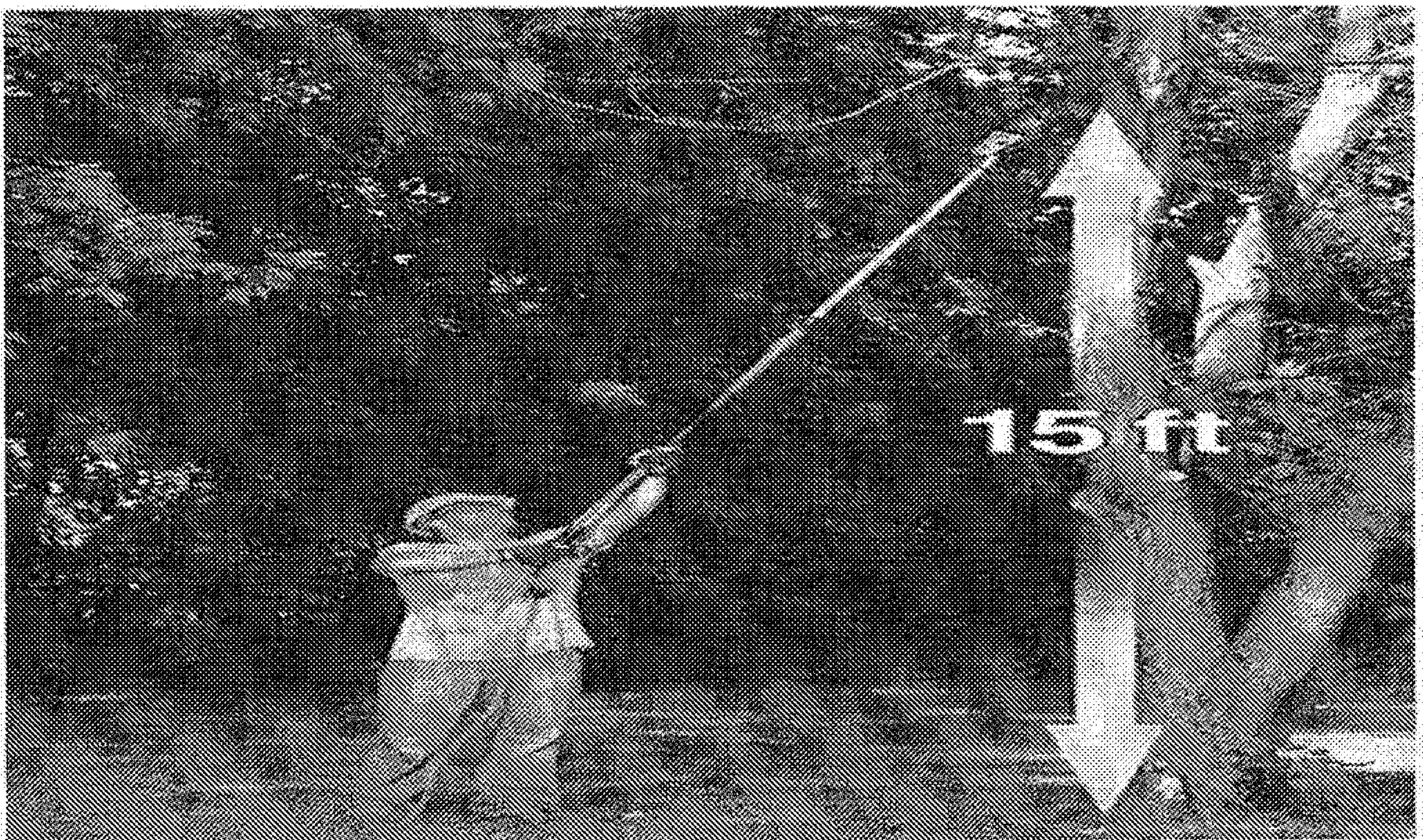
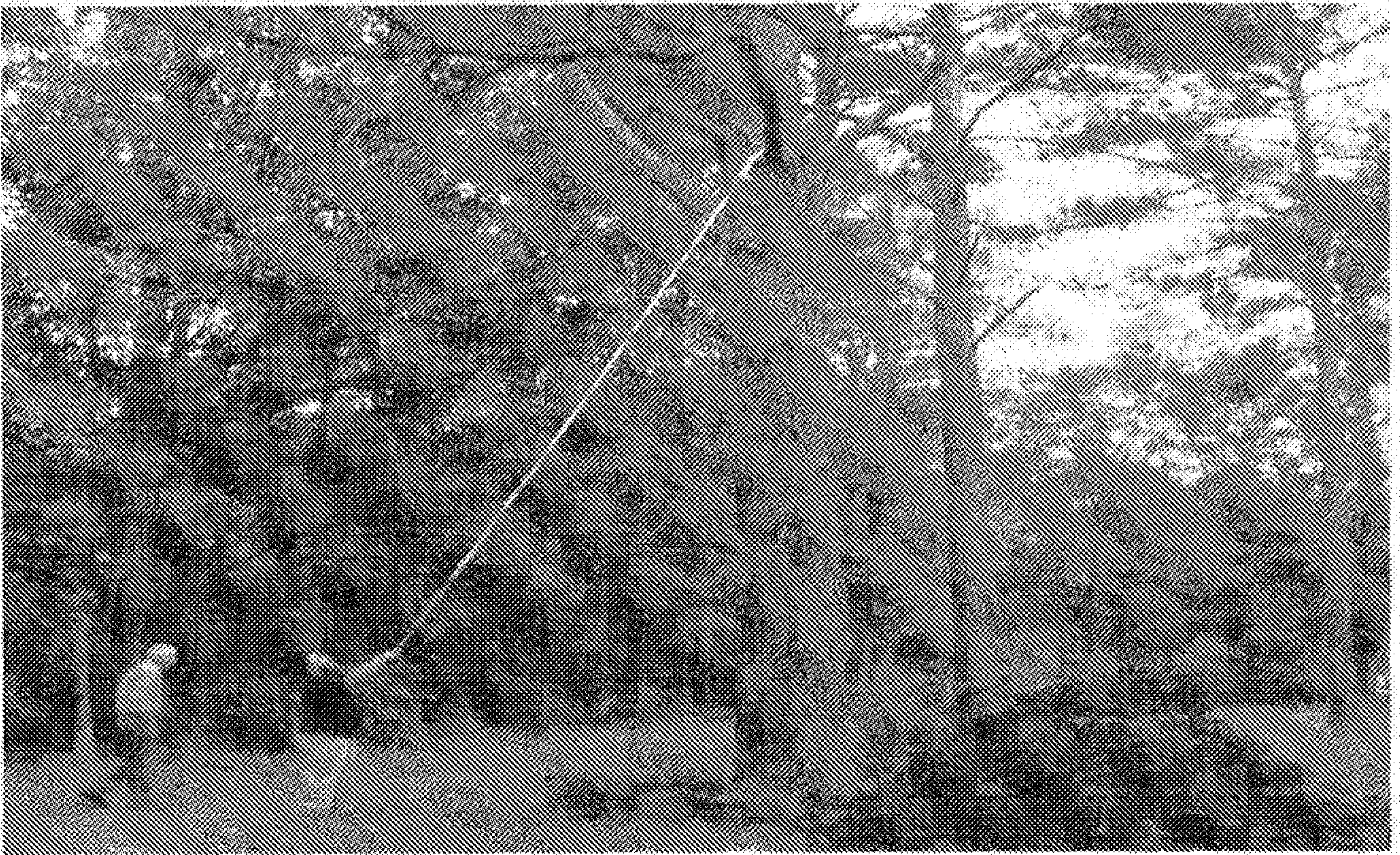


FIG. 2

FIG. 3

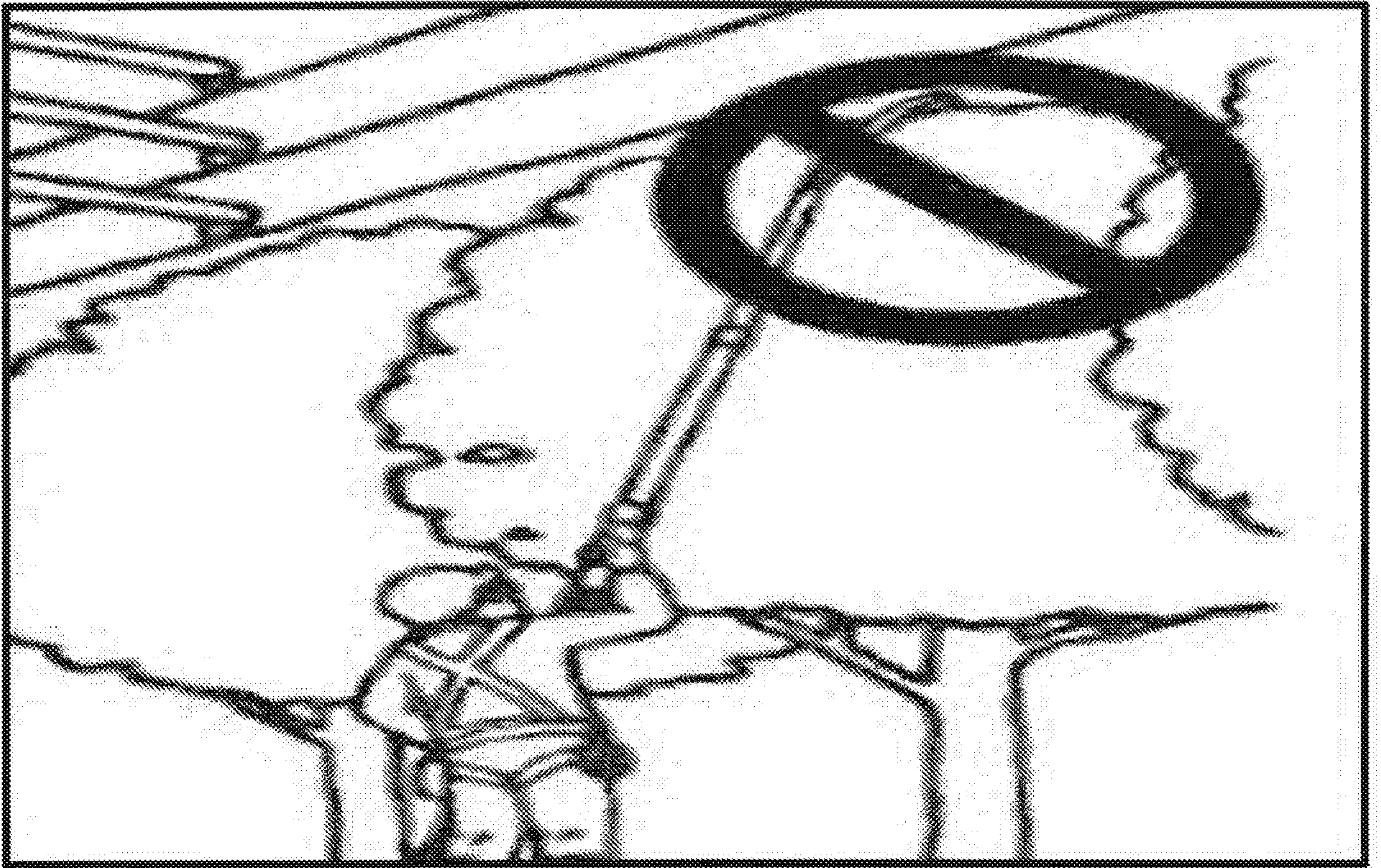


FIG. 5

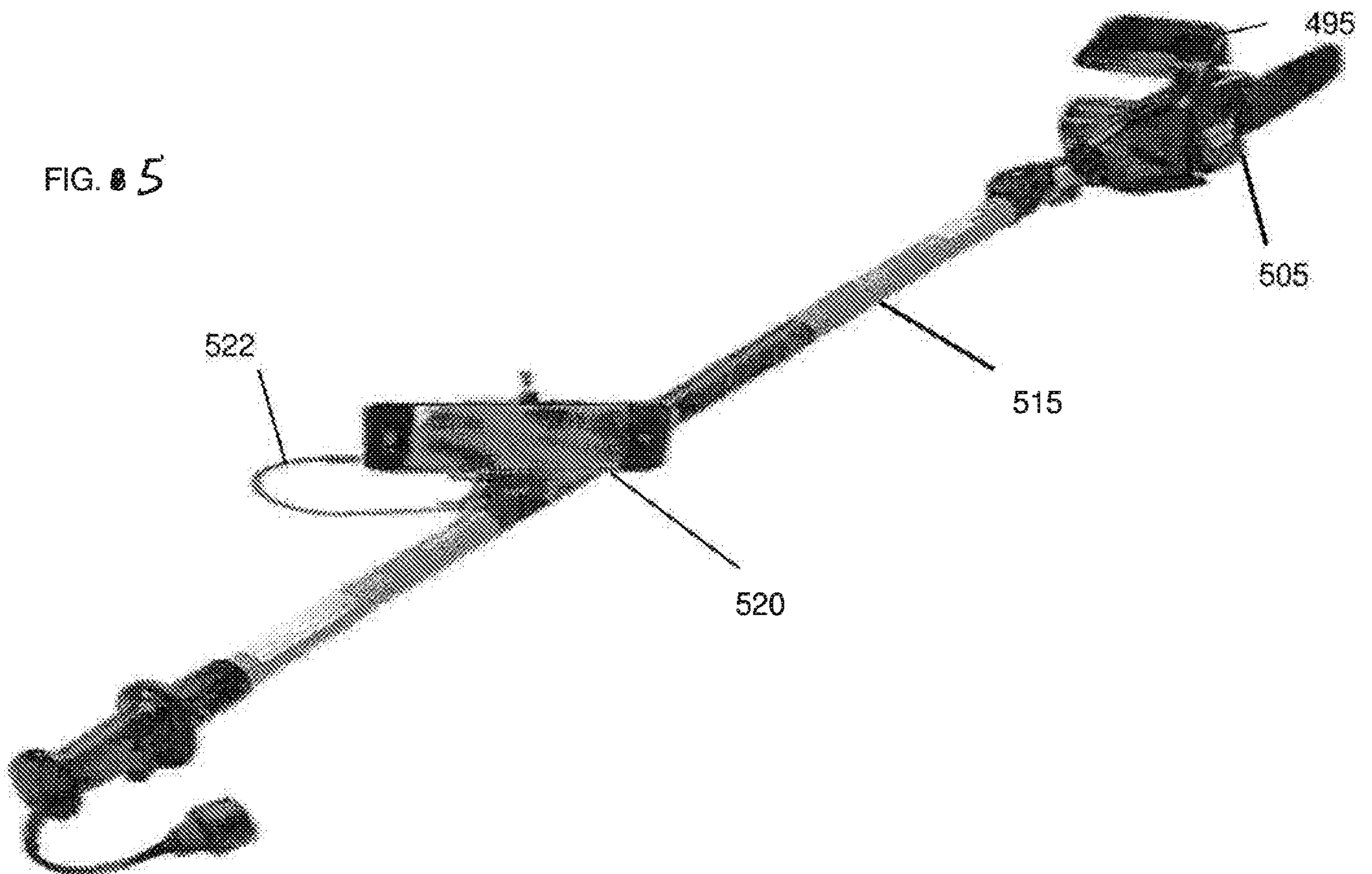


FIG. 6

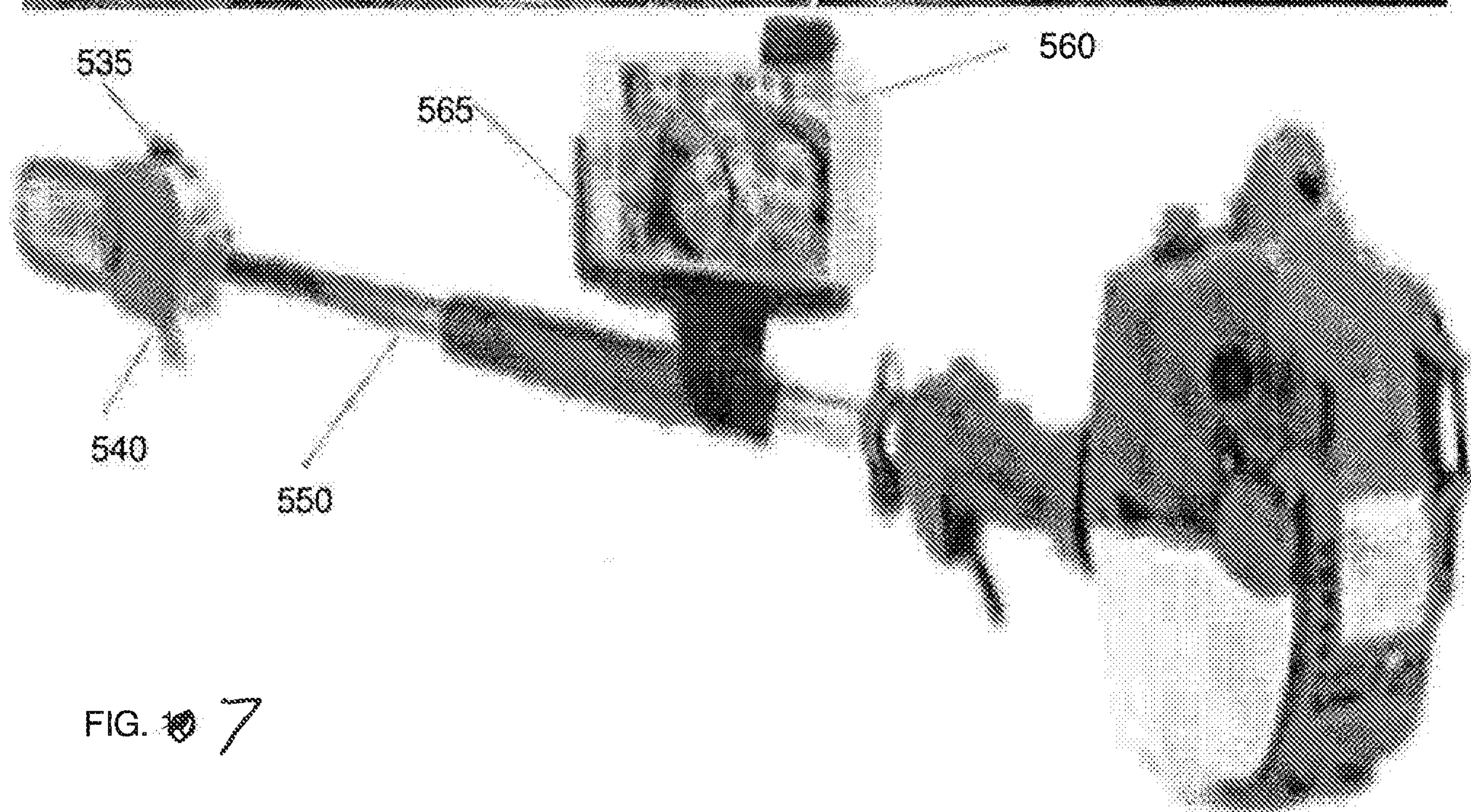
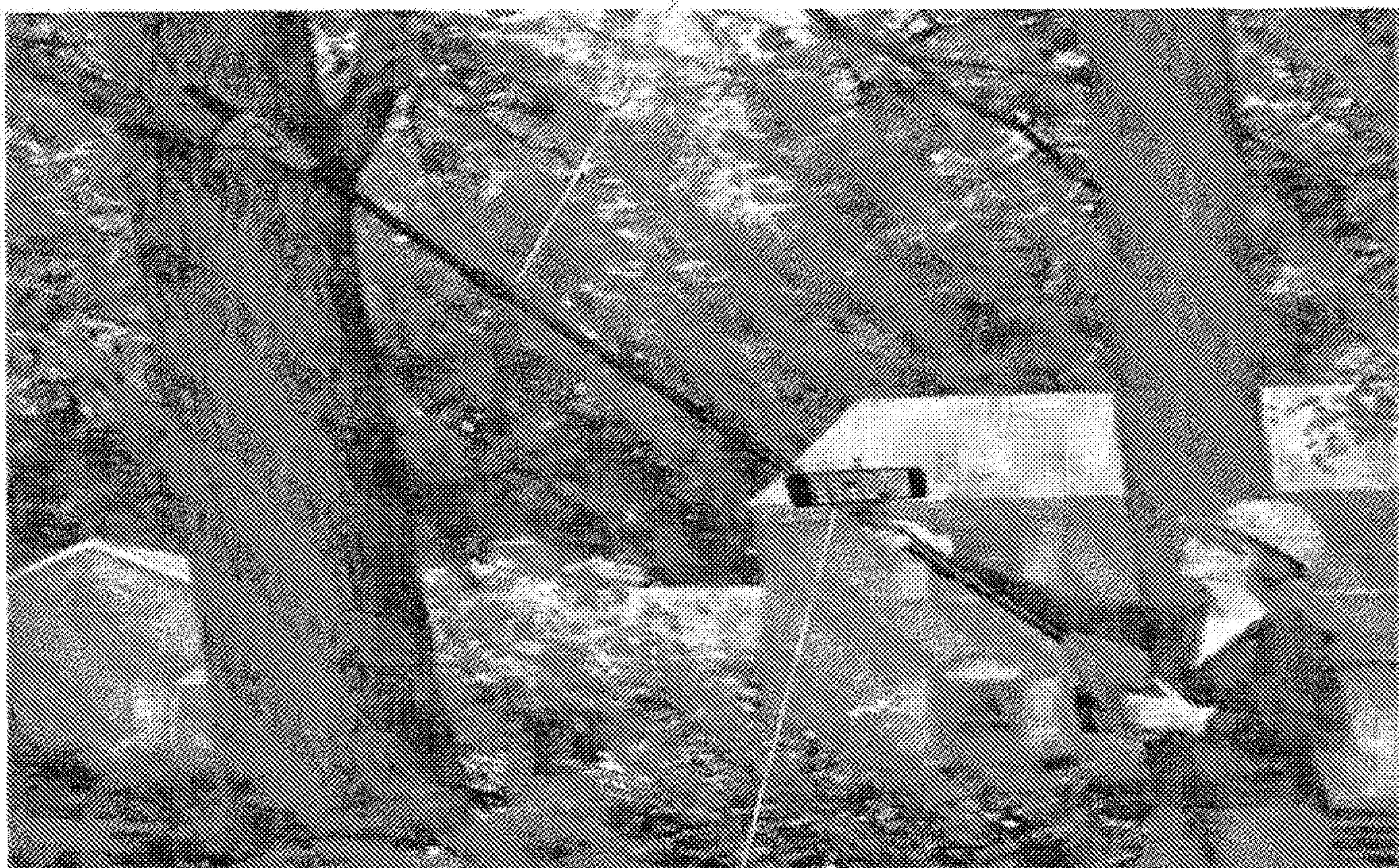


FIG. 7

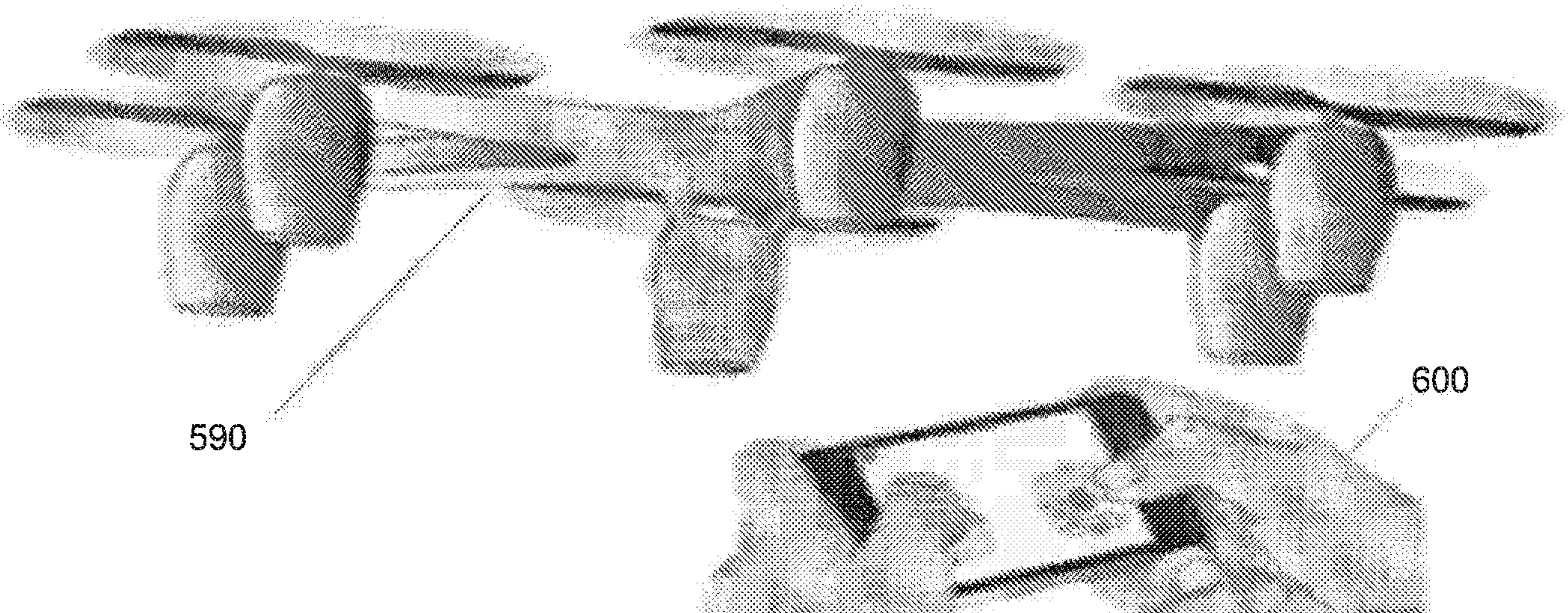
FIG. 11

570



580

FIG. 12



590

600

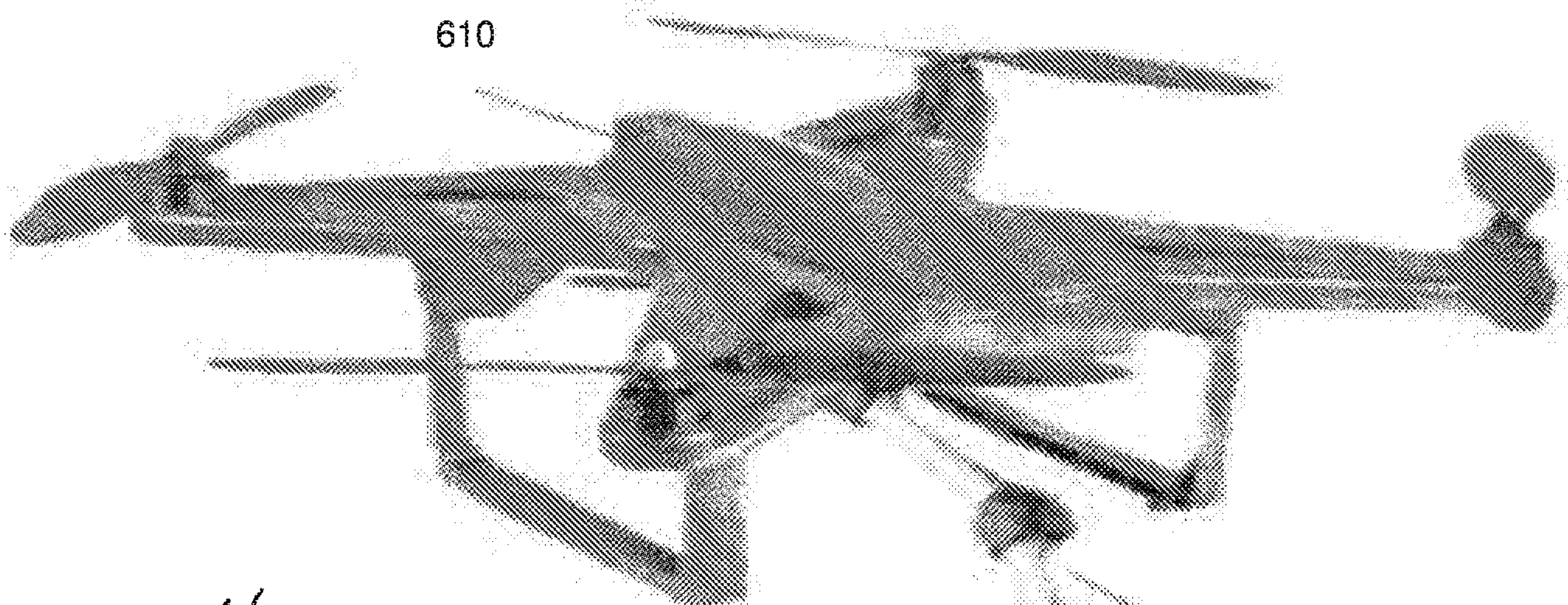


FIG. 16

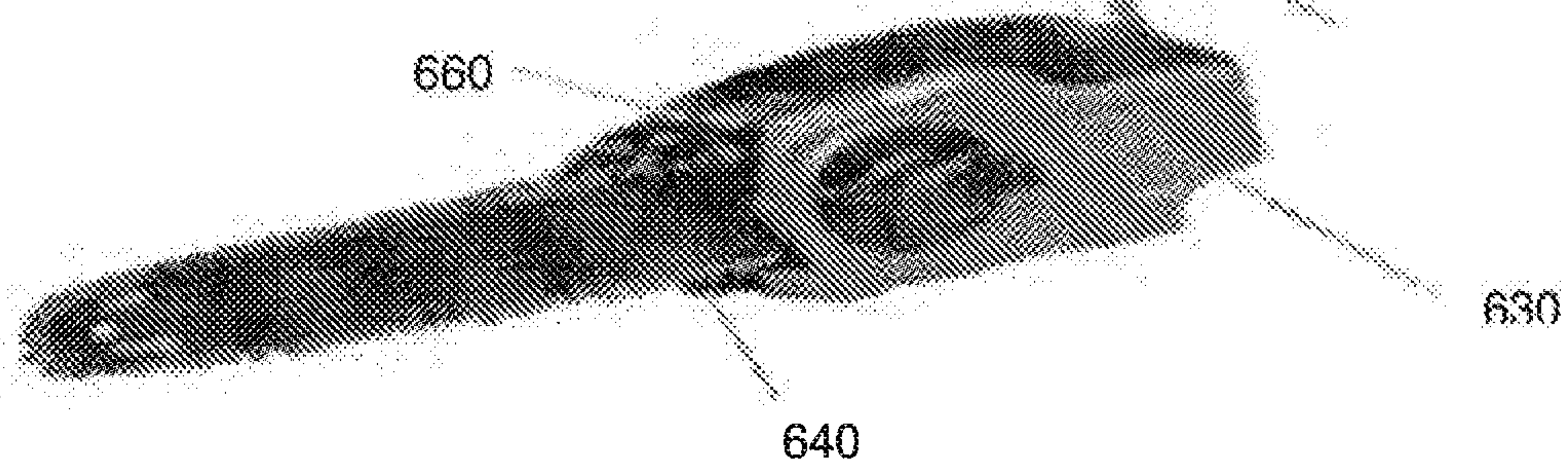
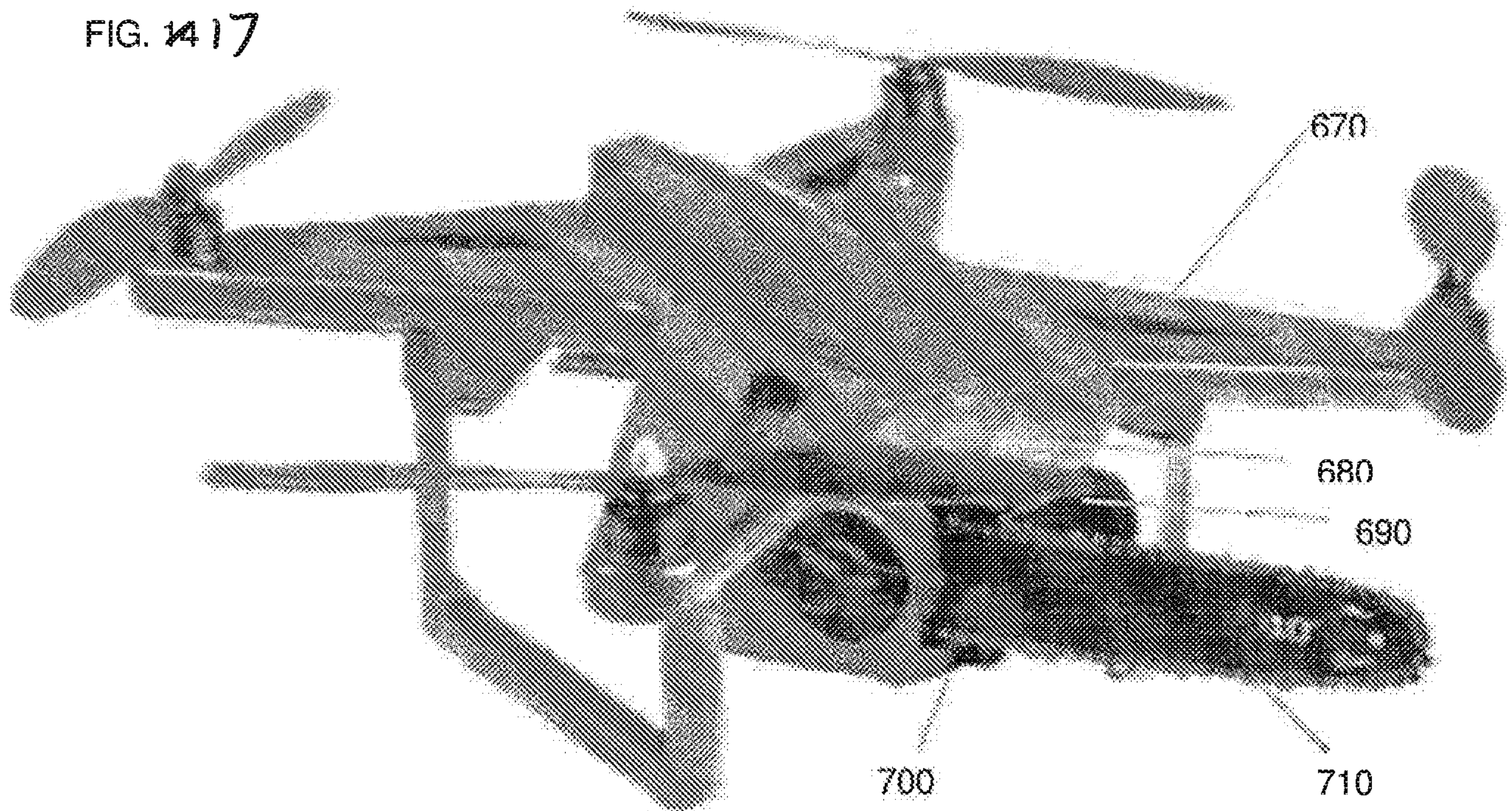
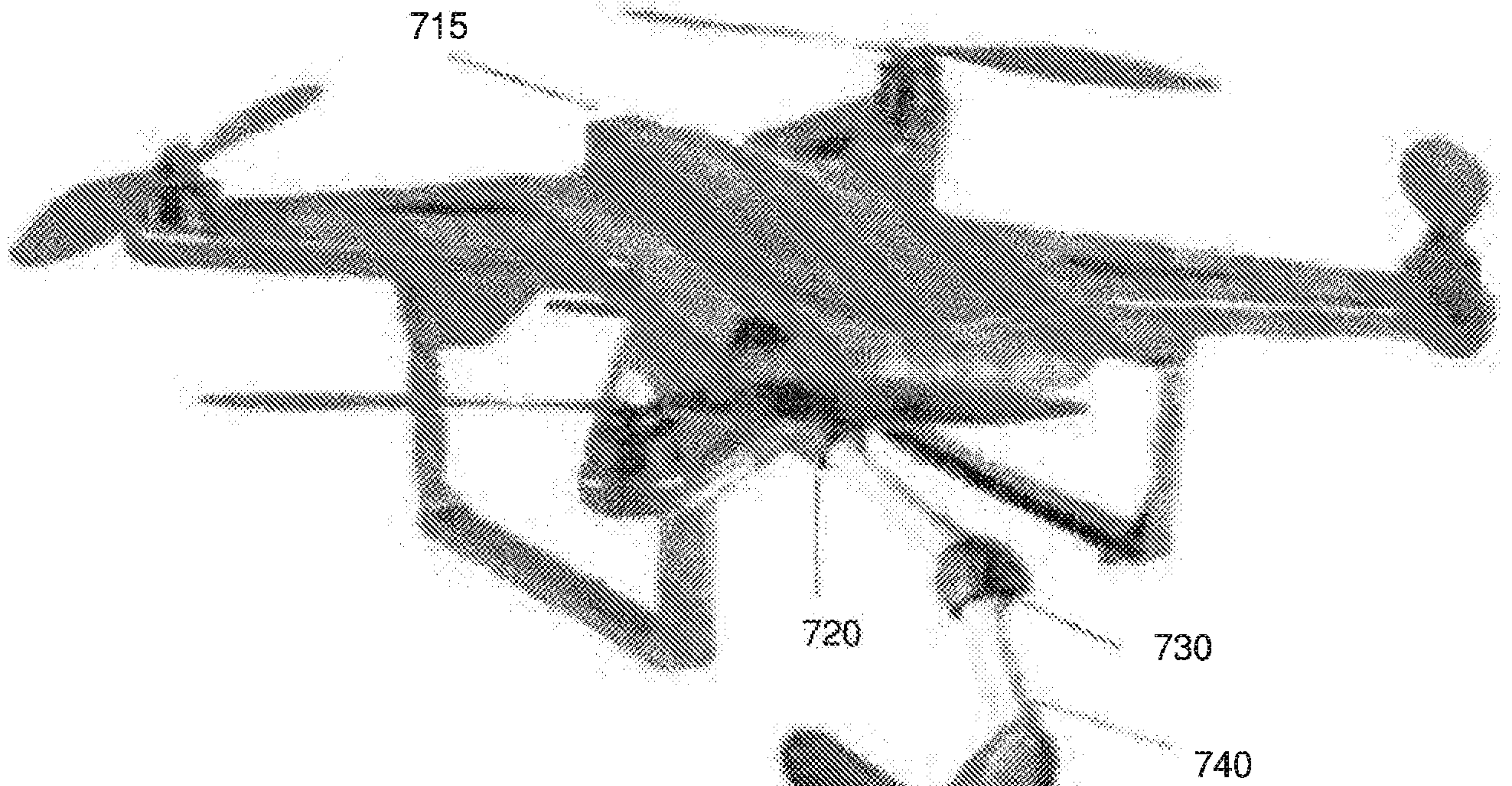
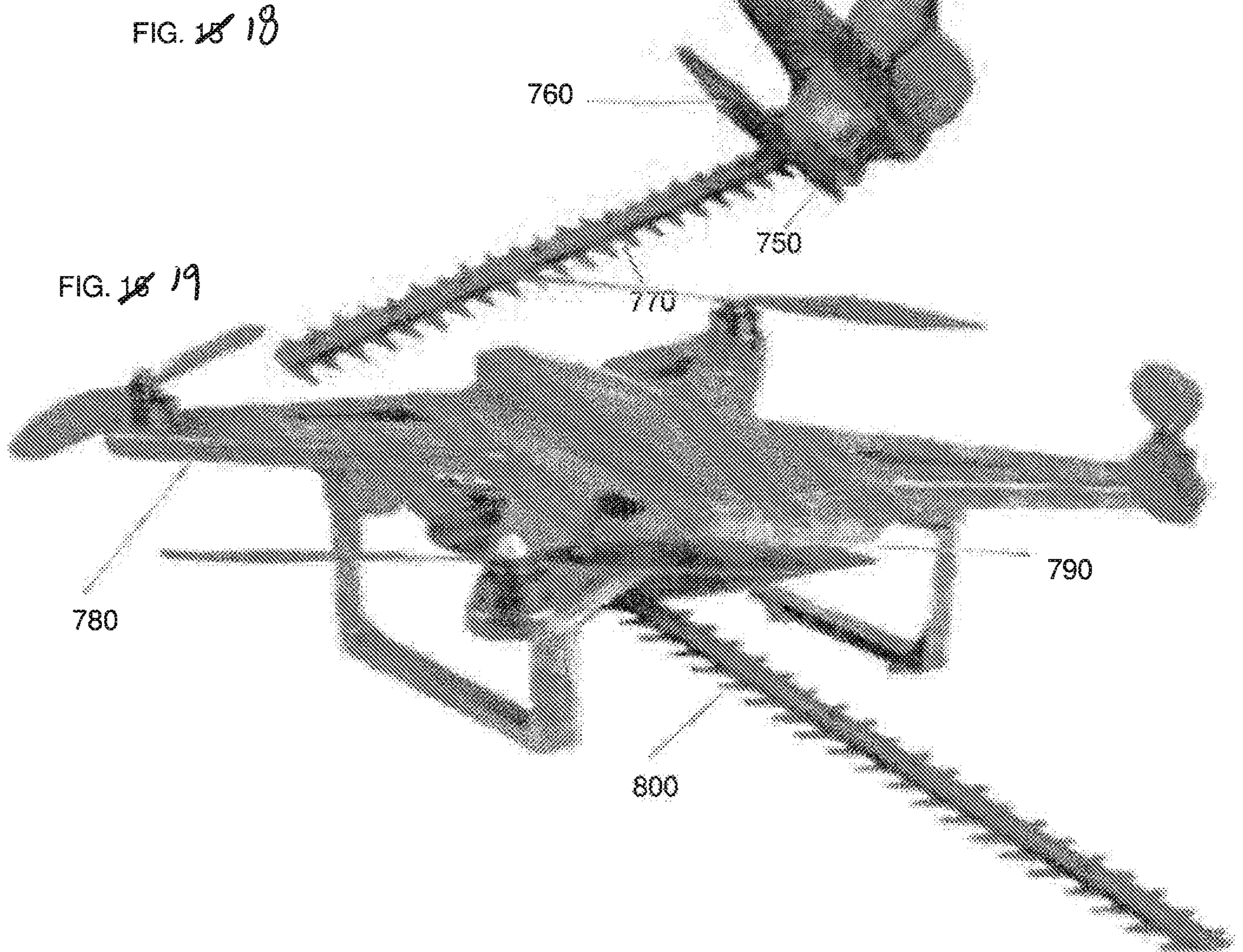


FIG. 17



FIG. 15¹⁸

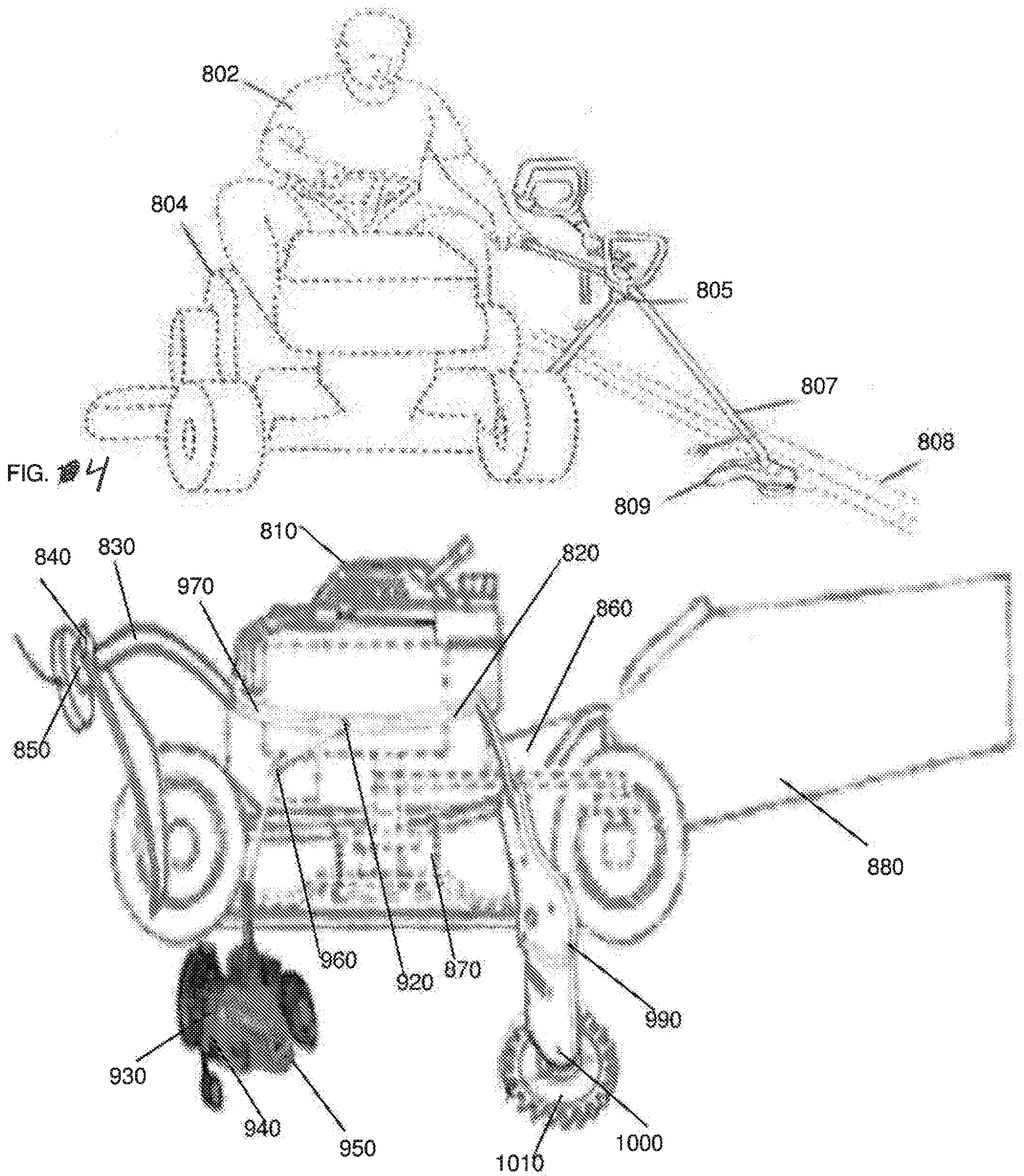
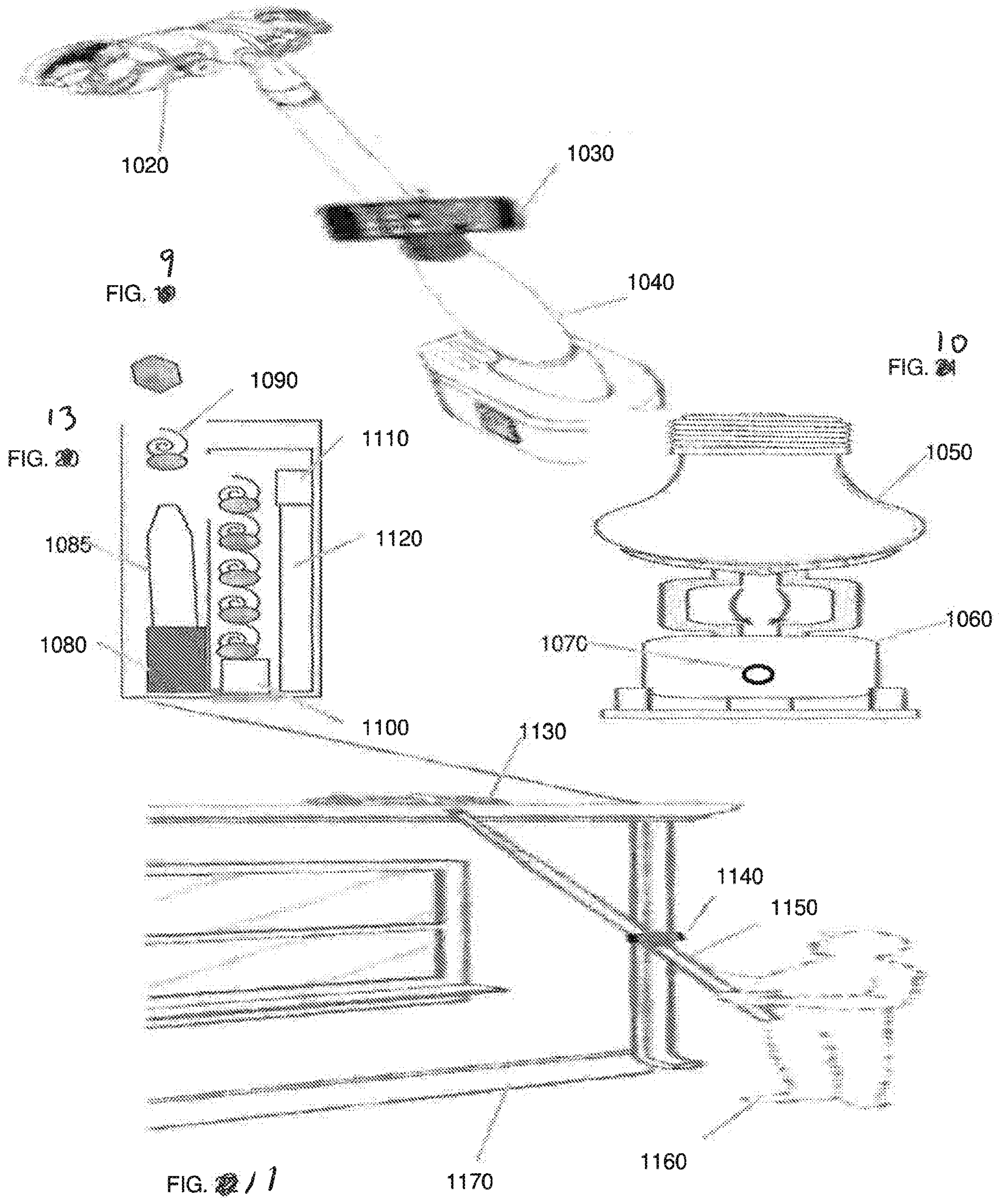


FIG. 14



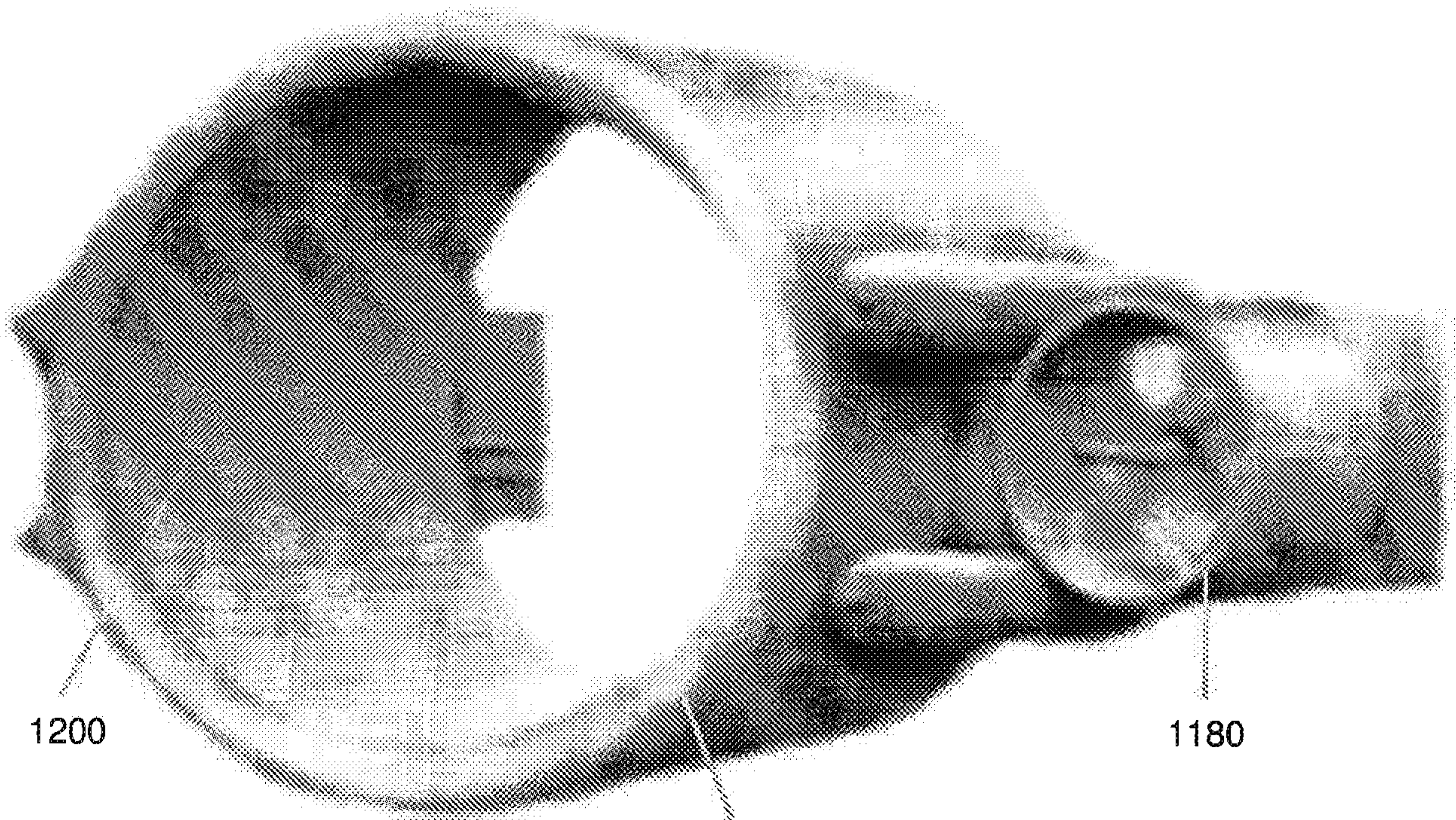
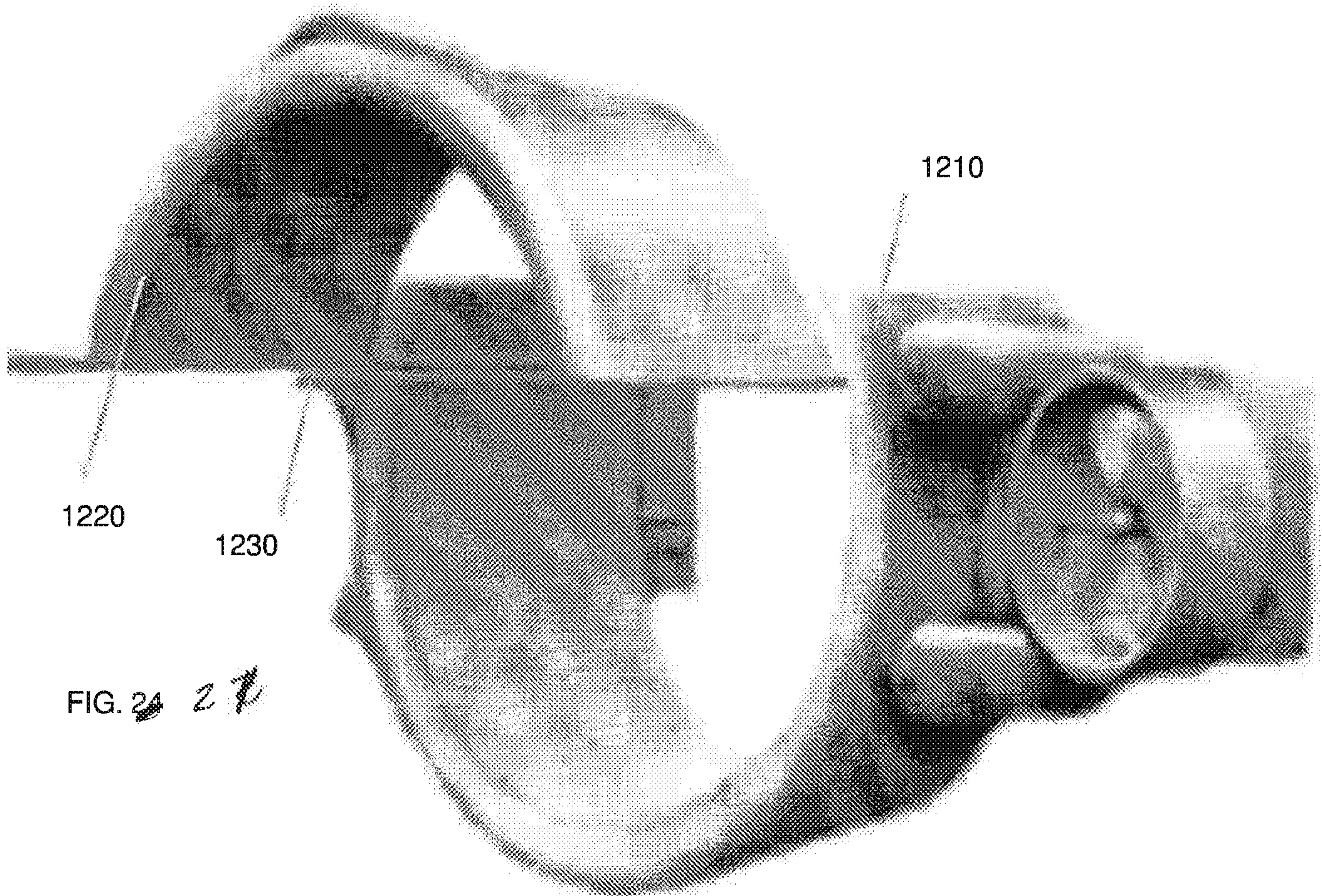


FIG. 20

1190



1220

1230

1210

FIG. 21

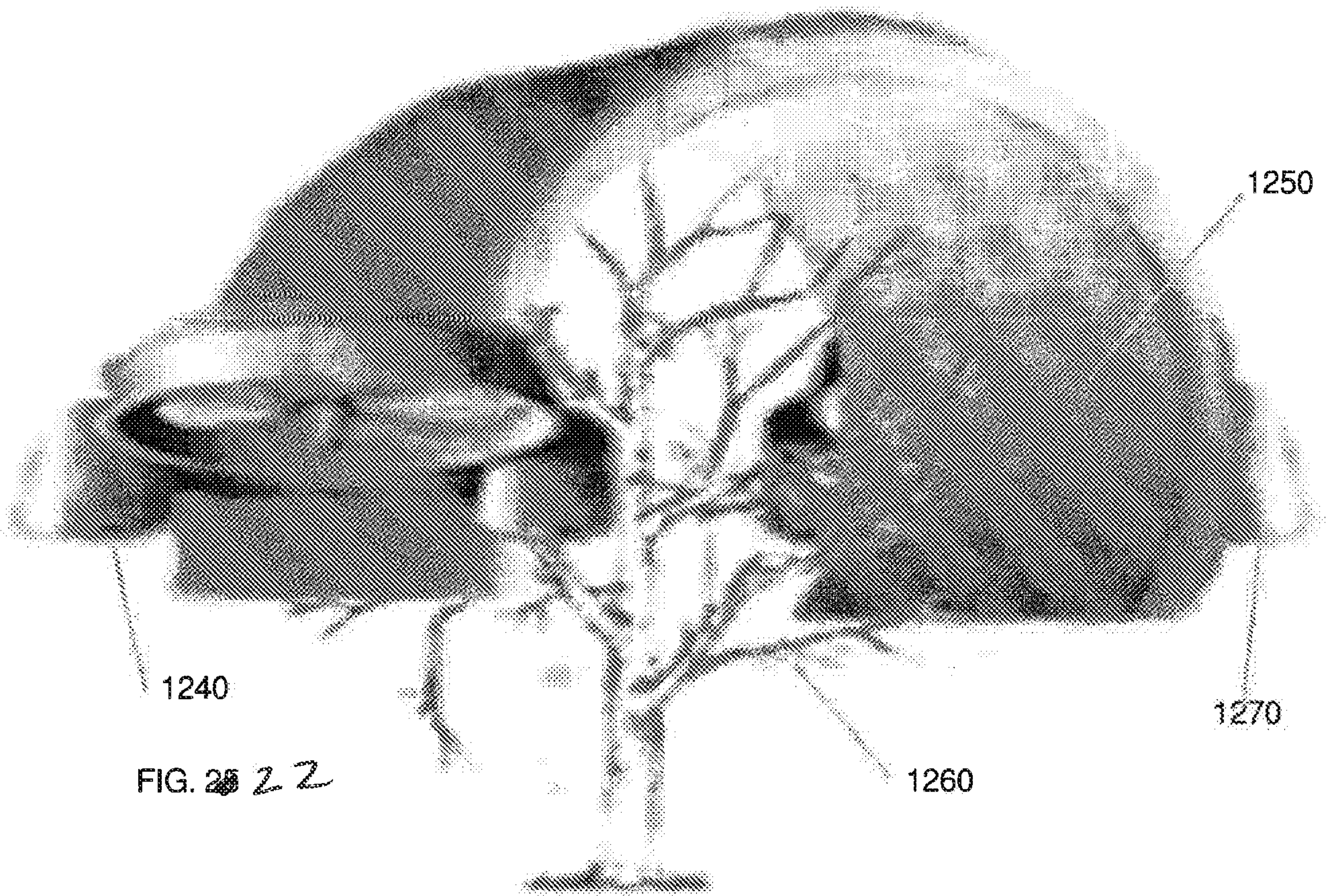


FIG. 22

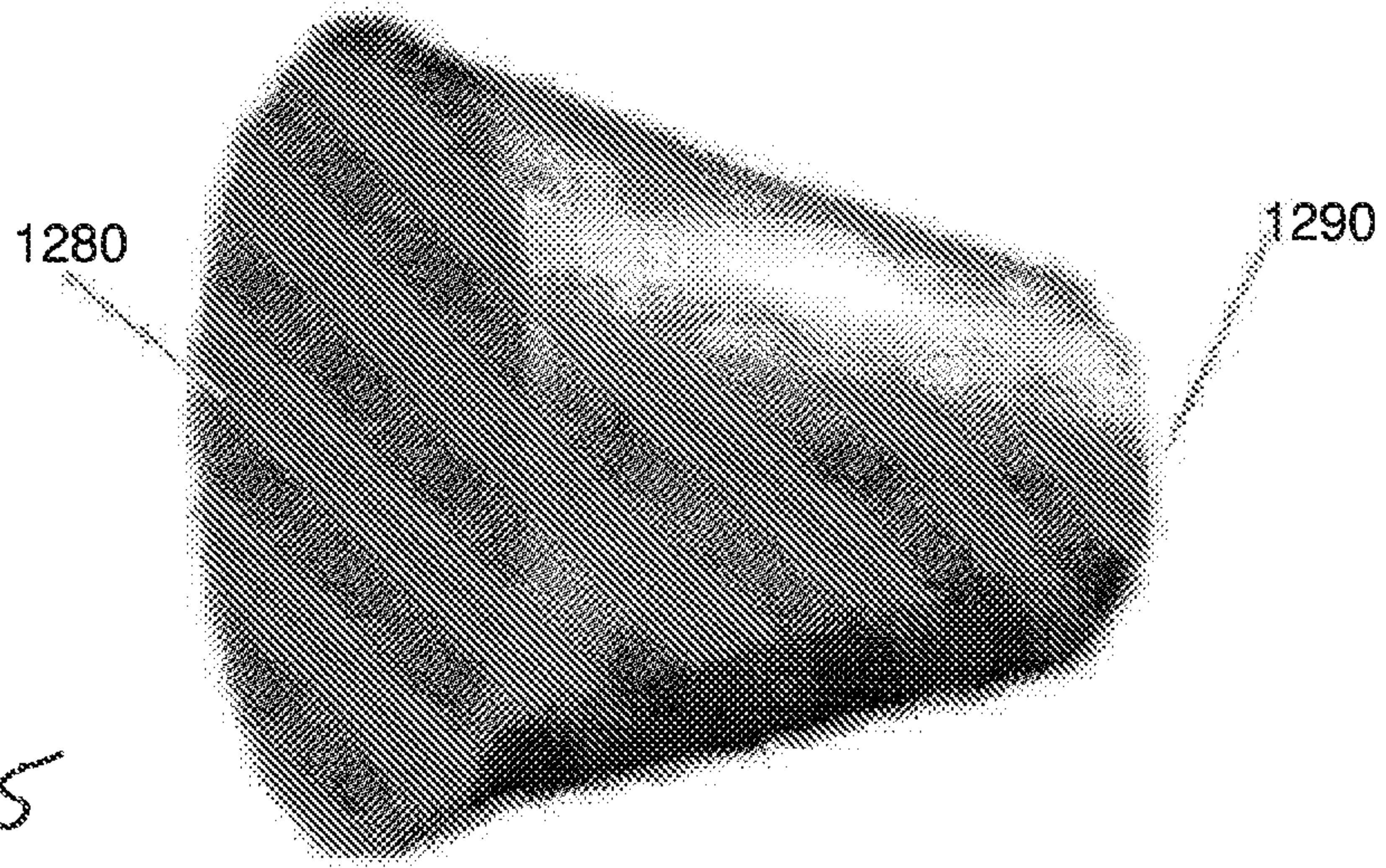
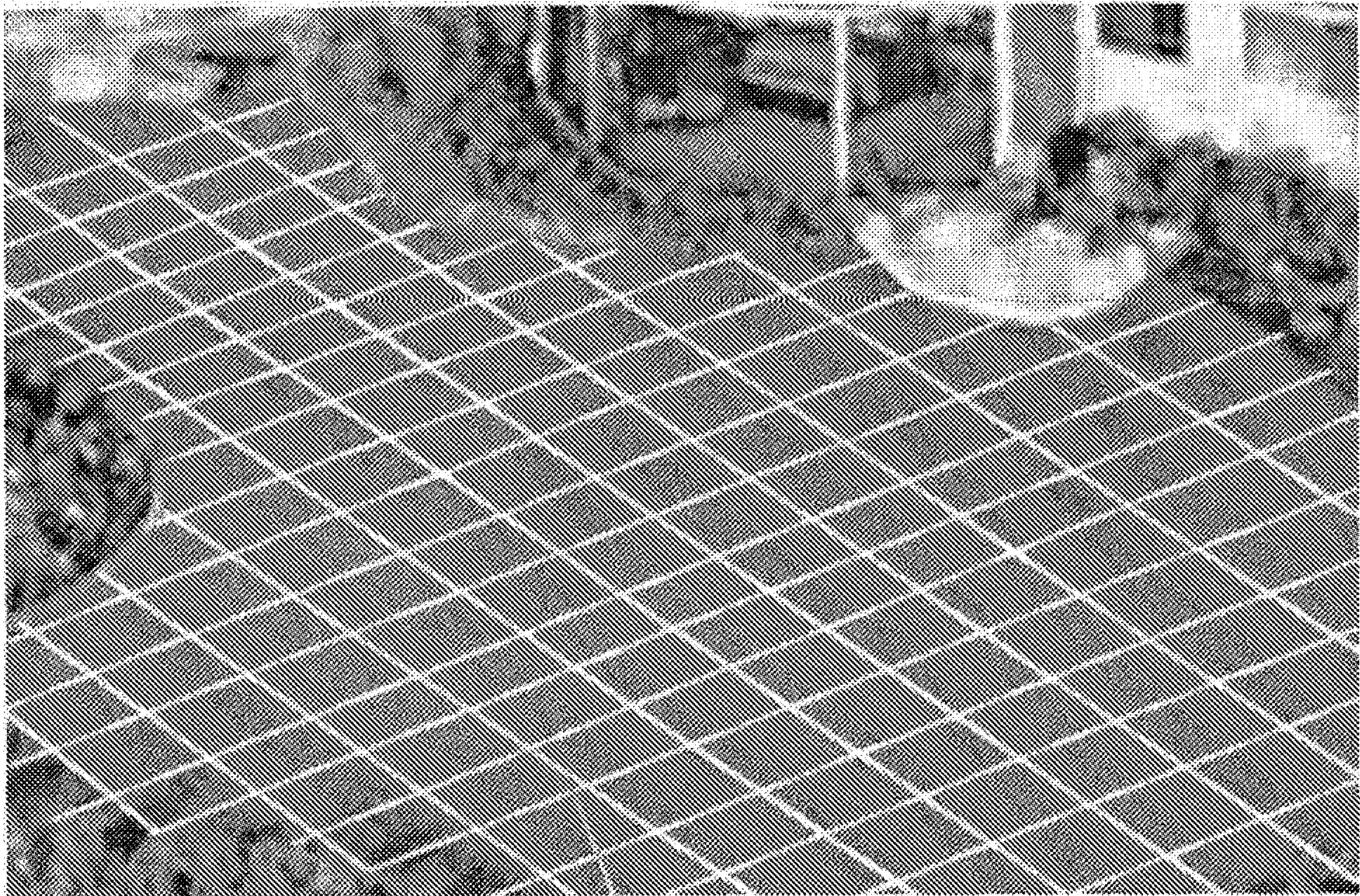


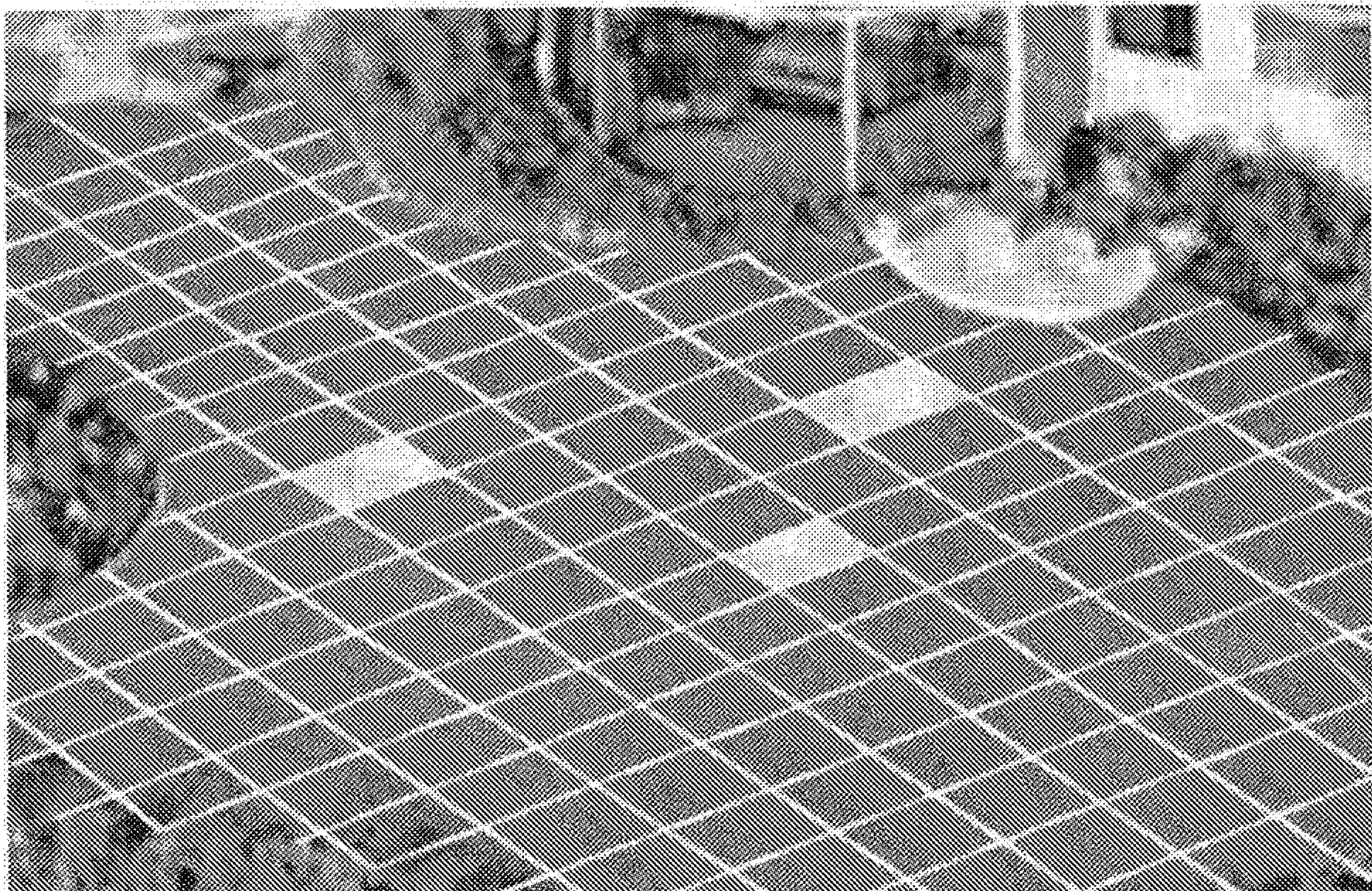
FIG. 25

FIG. 23



1300

FIG. 24



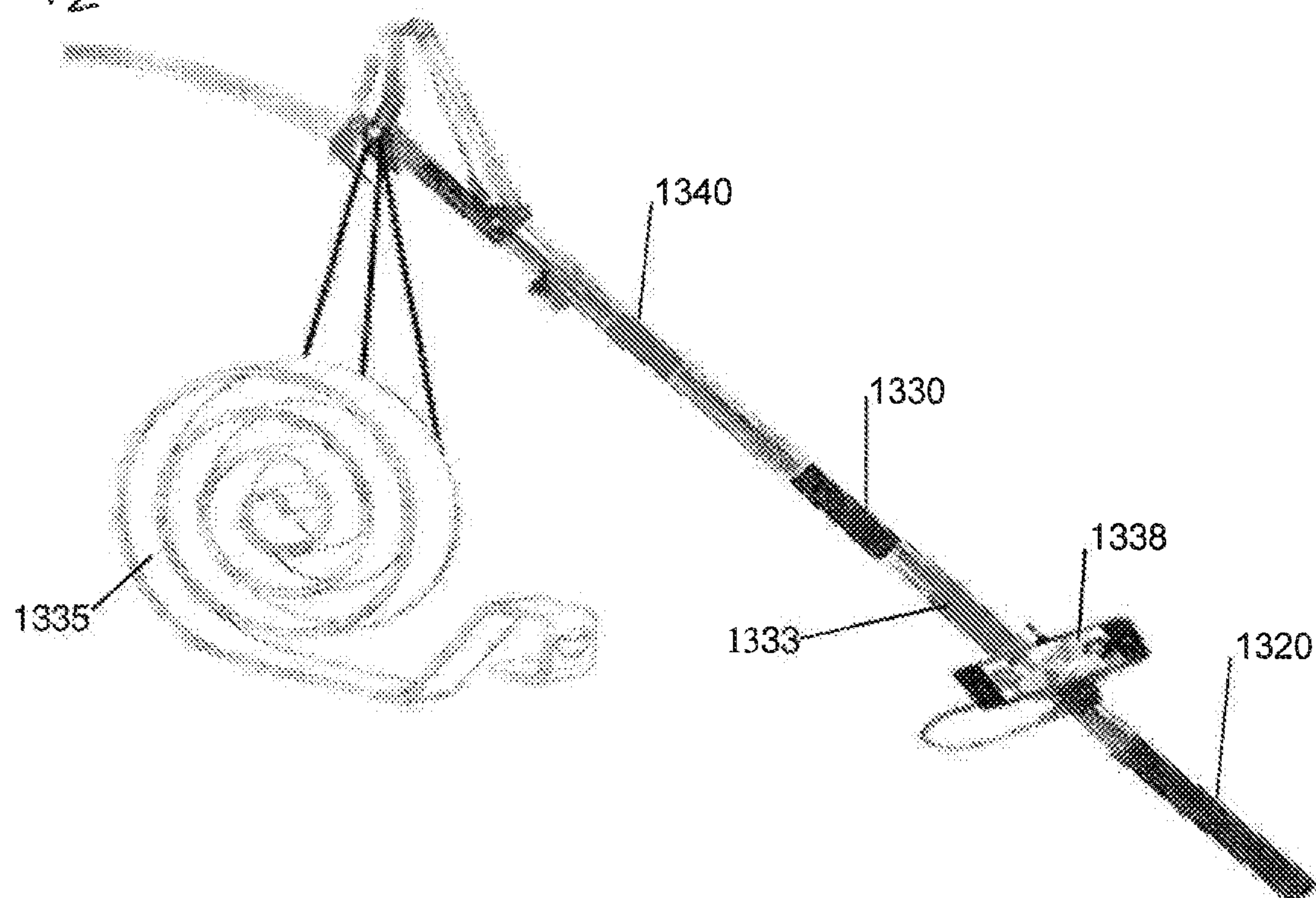
1310

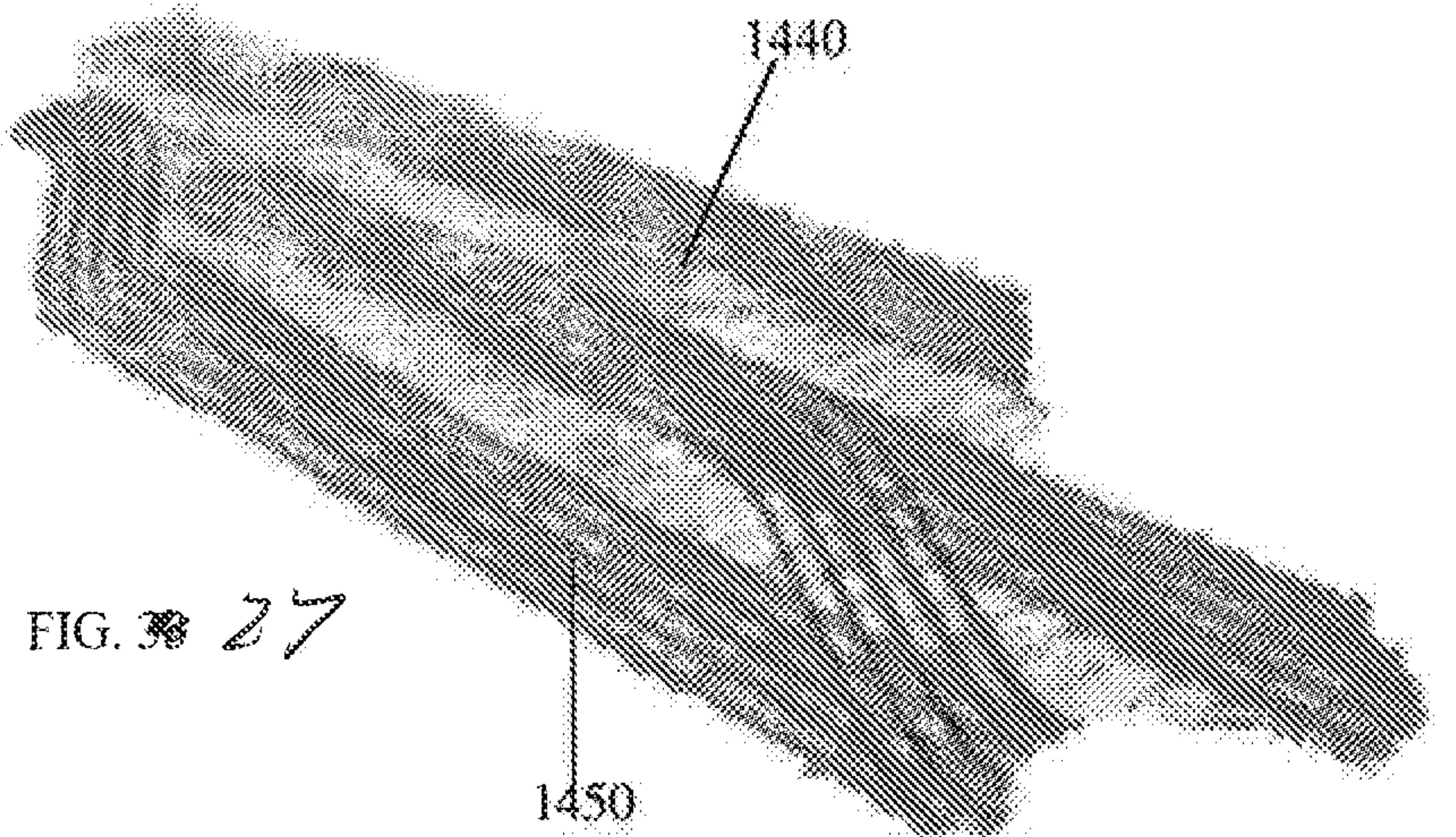
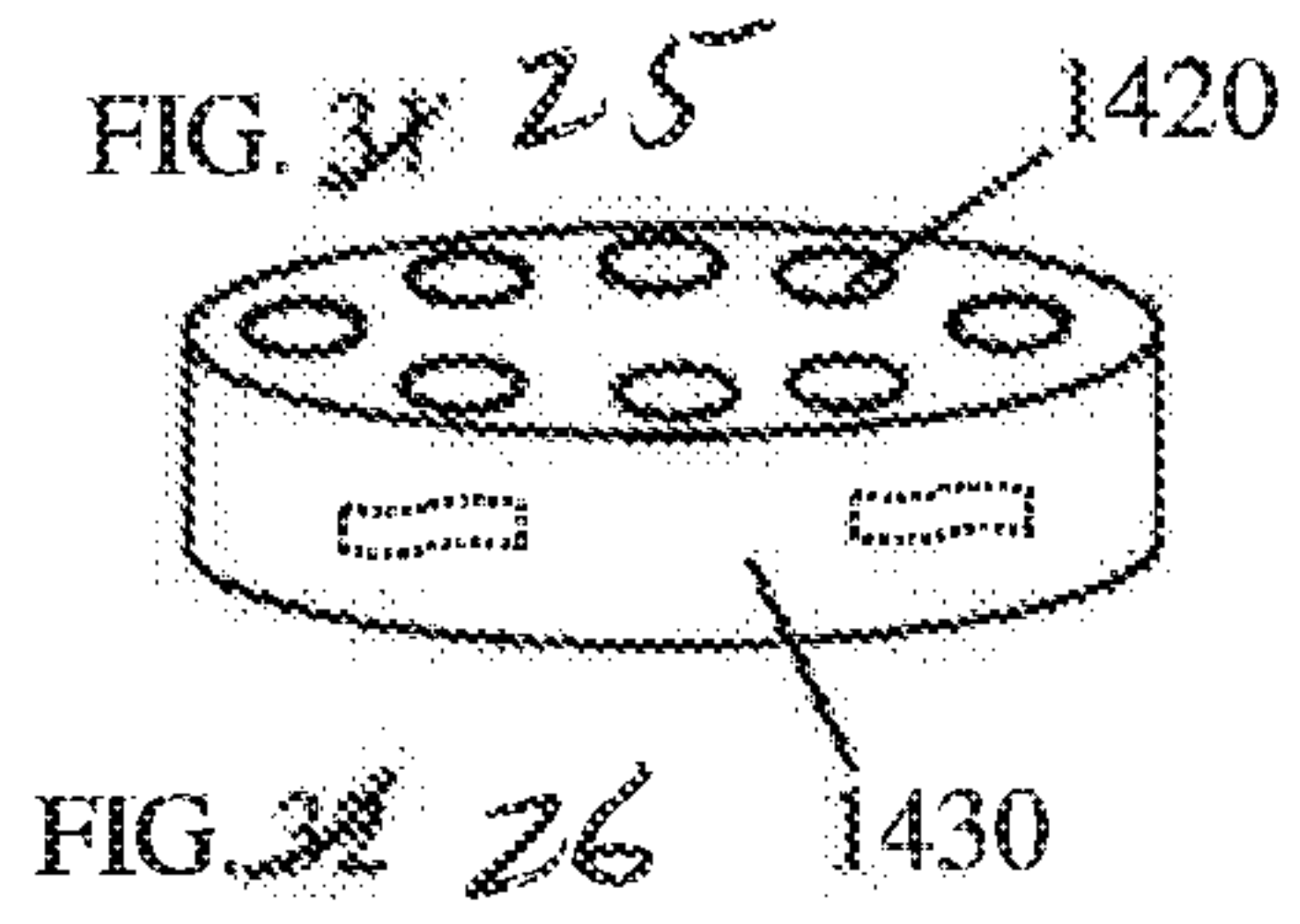
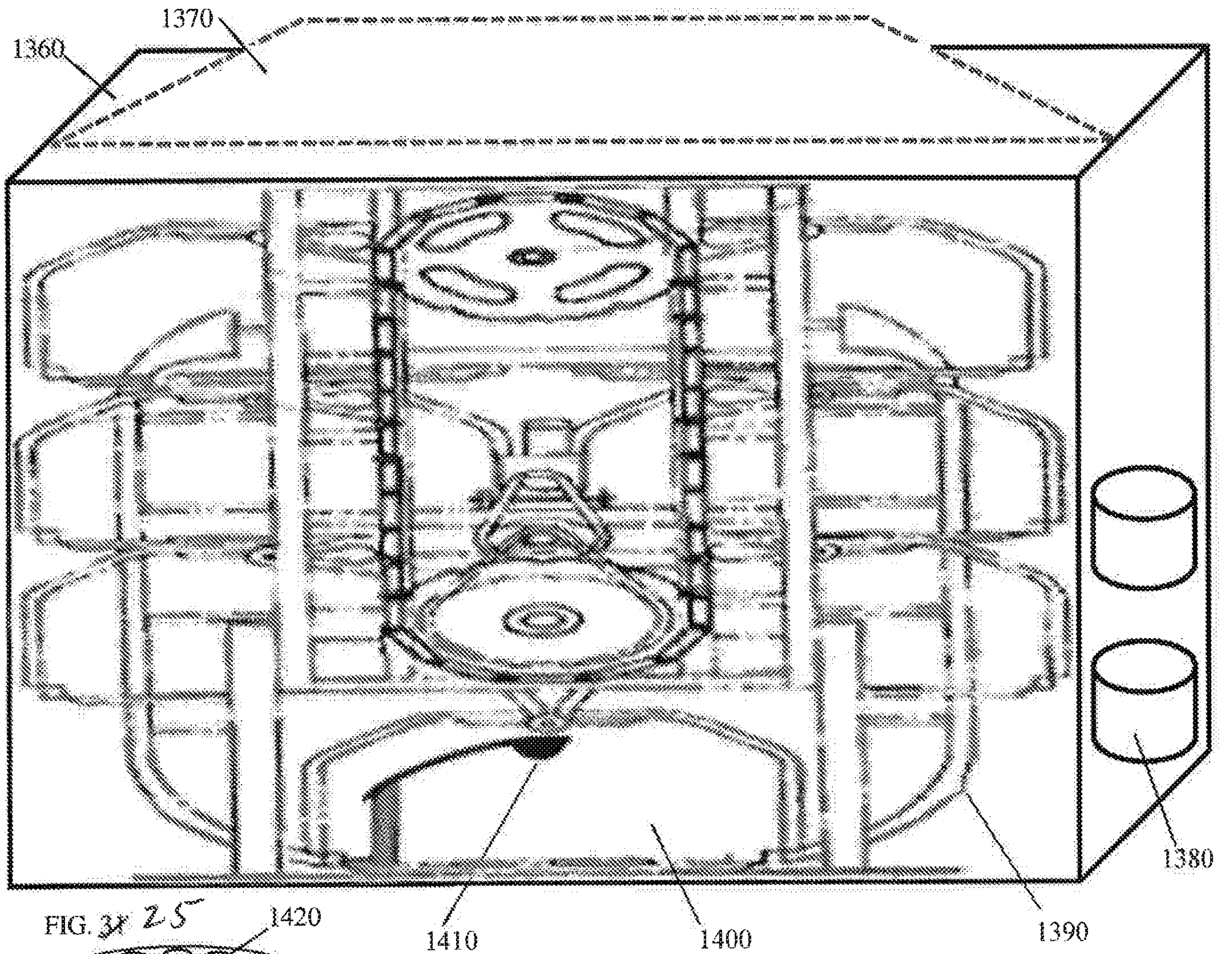
FIG. 29



FIG. 29

12





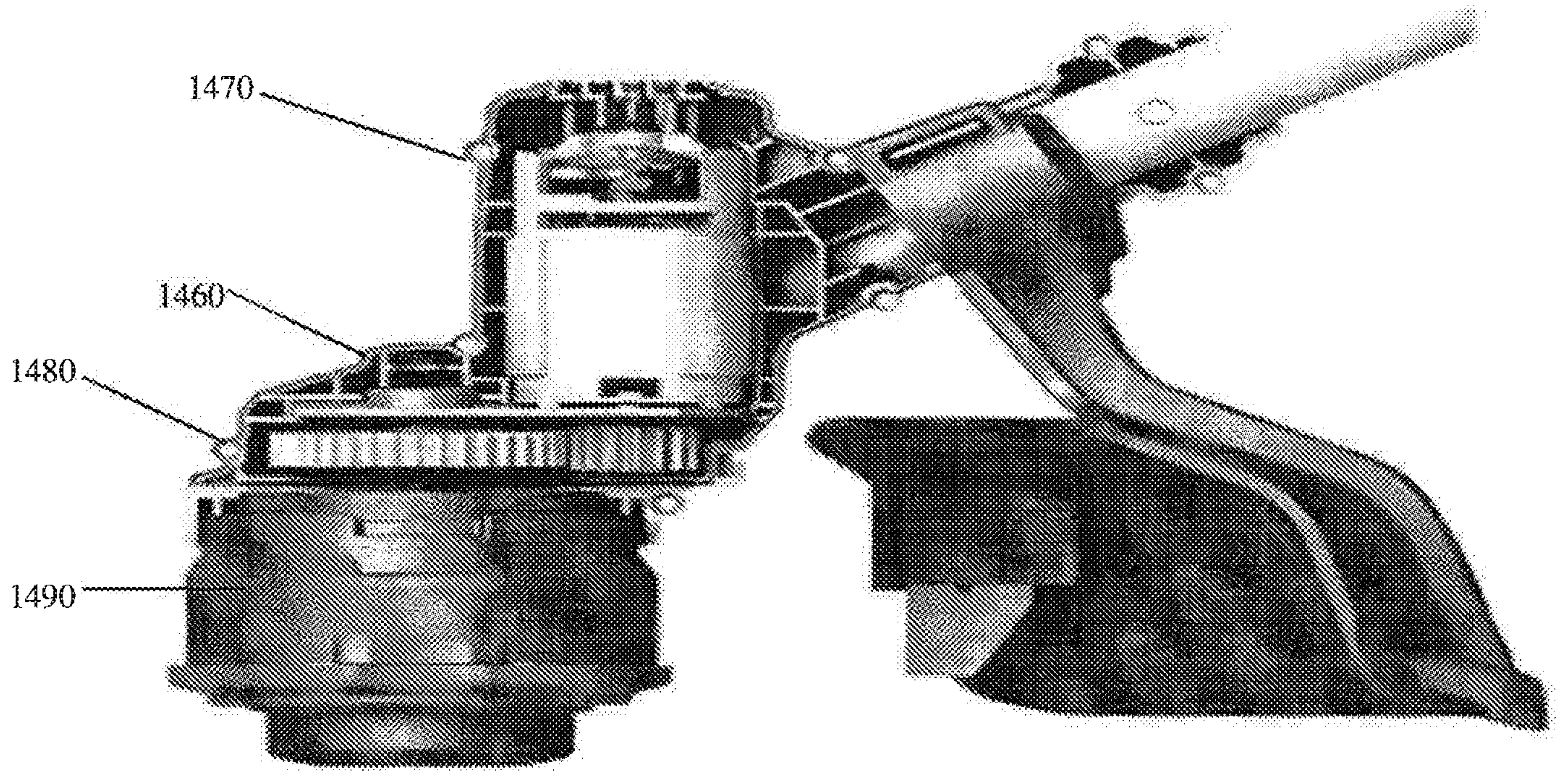


FIG. 28 28

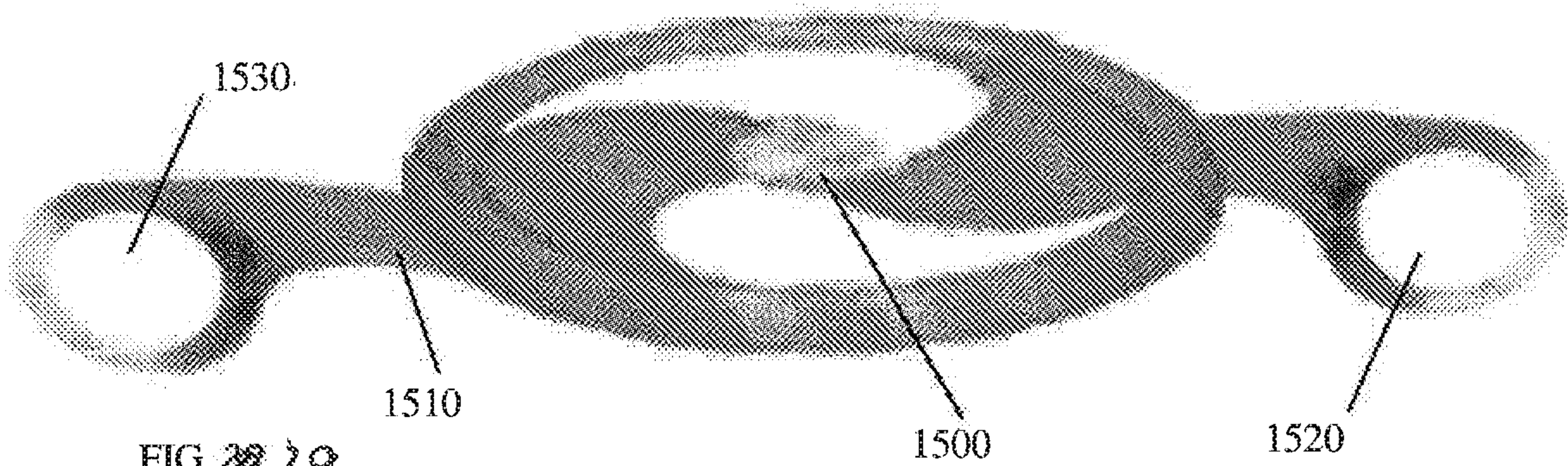


FIG. 29 29

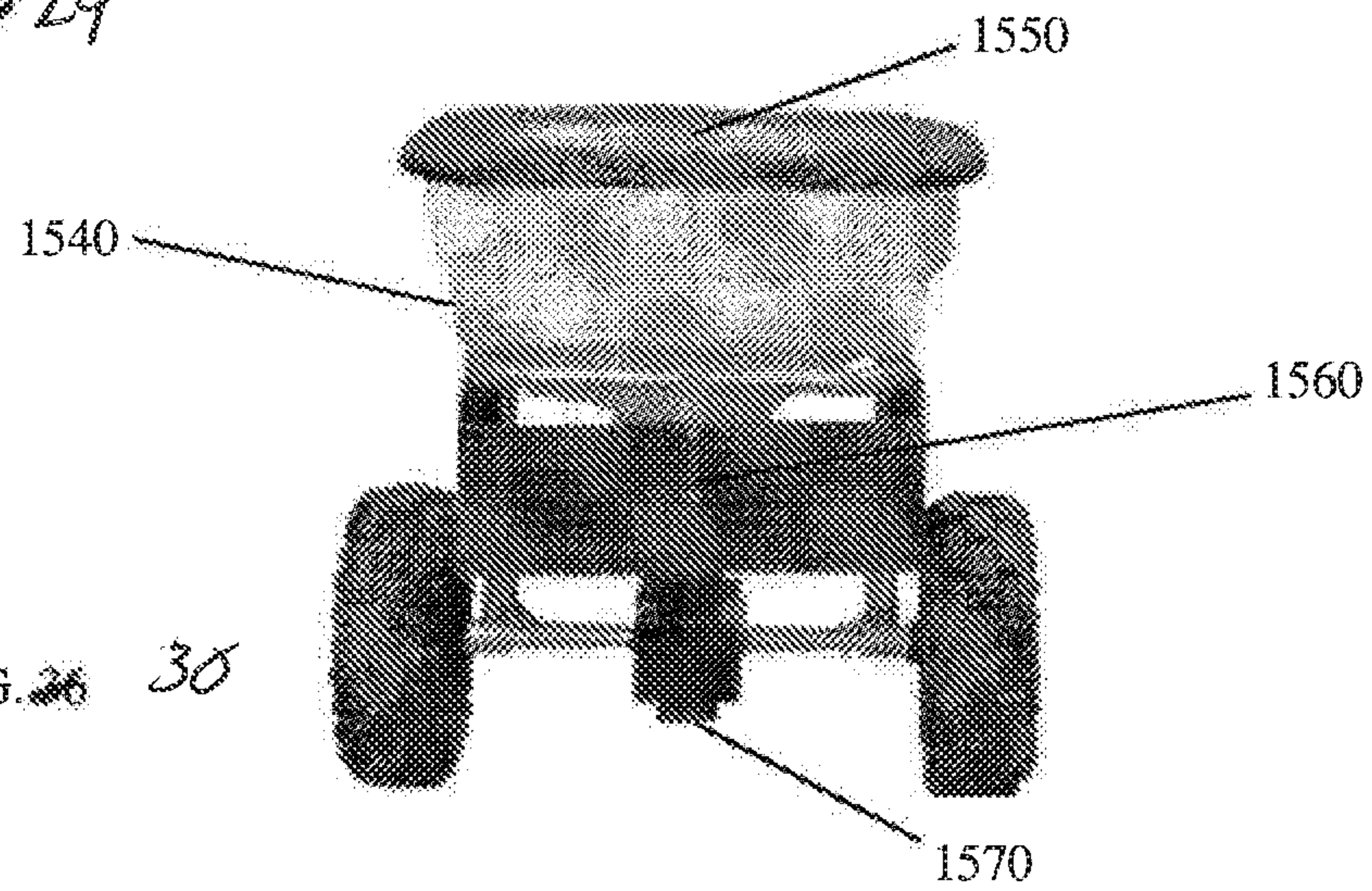
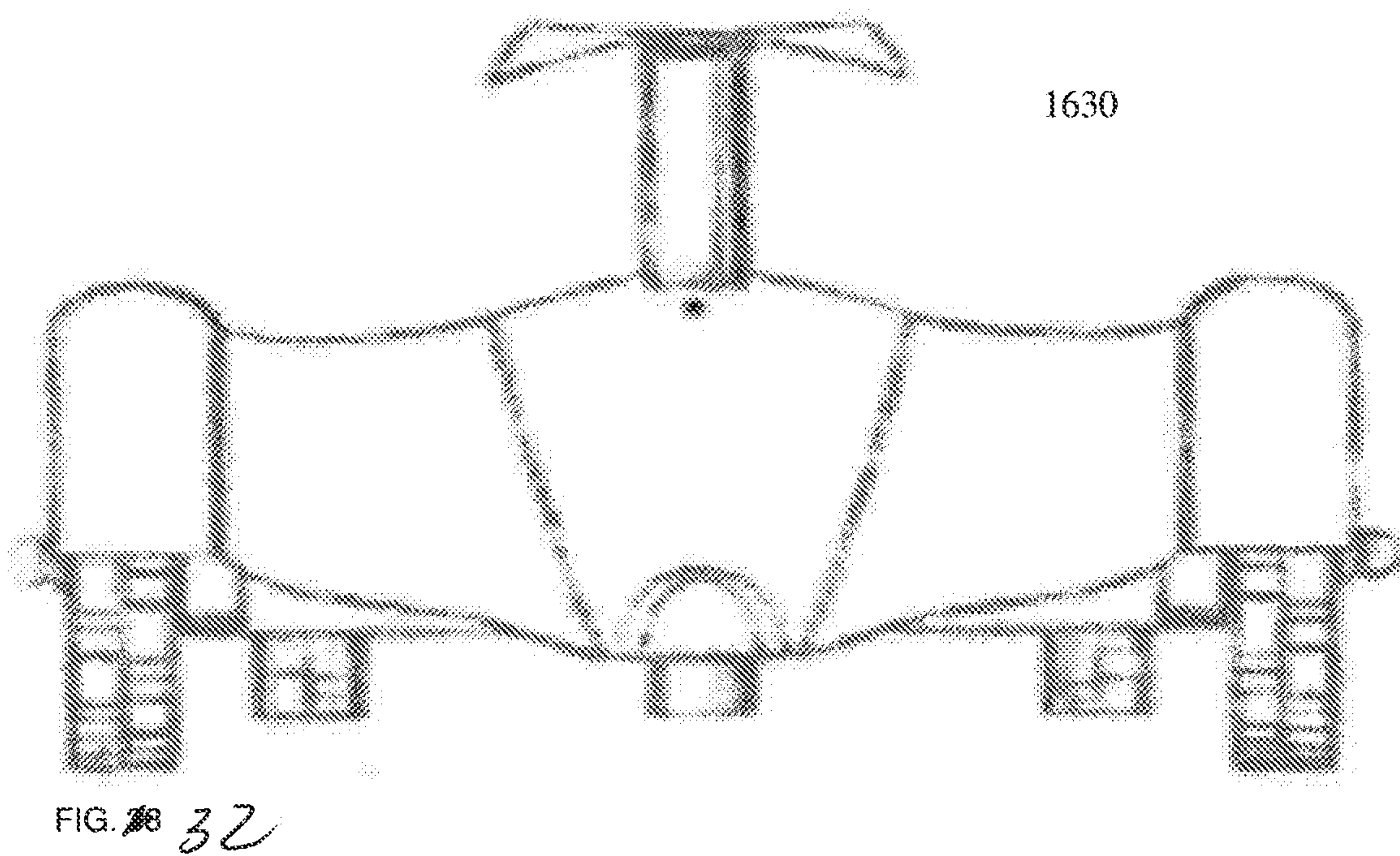
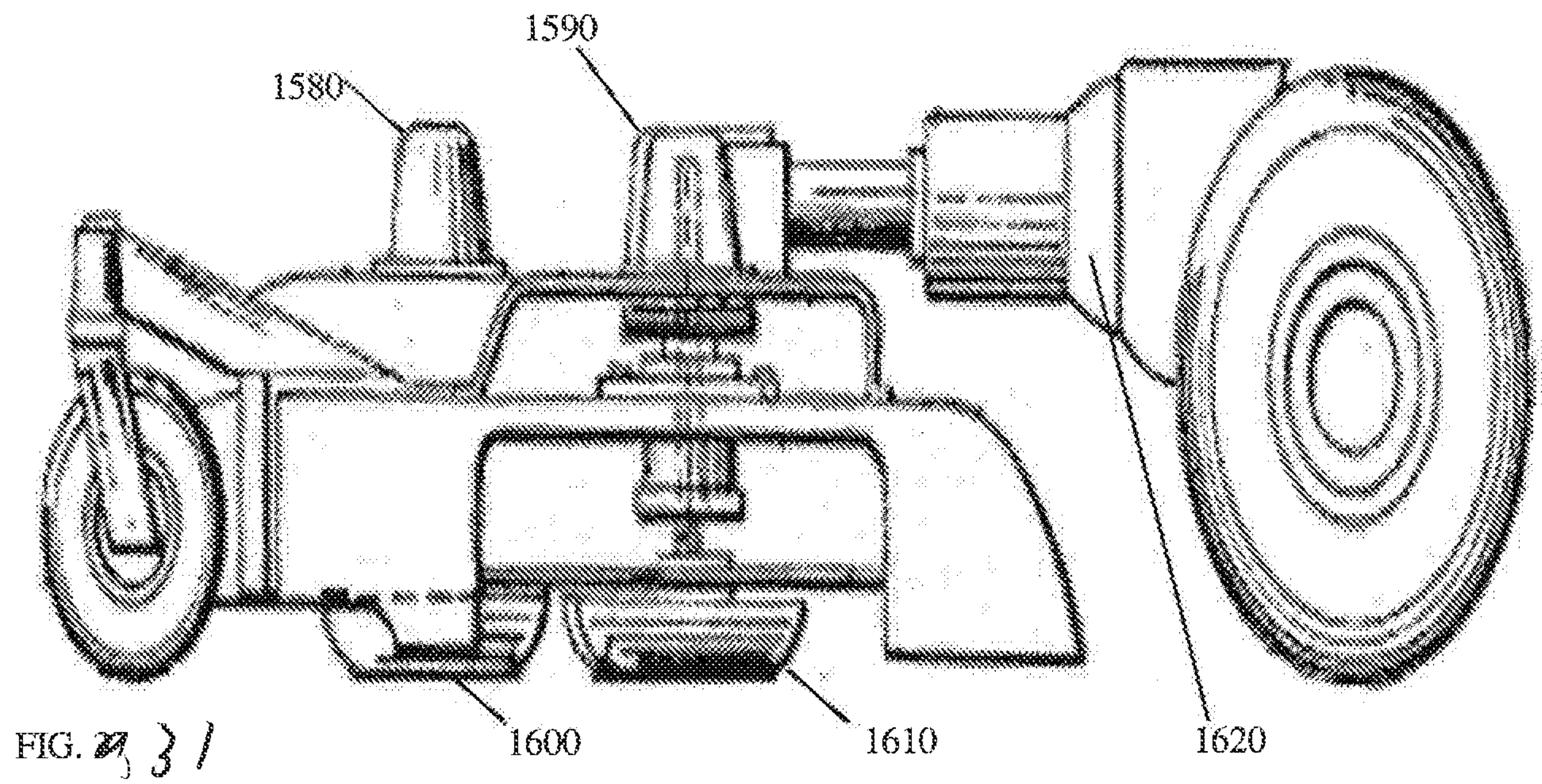
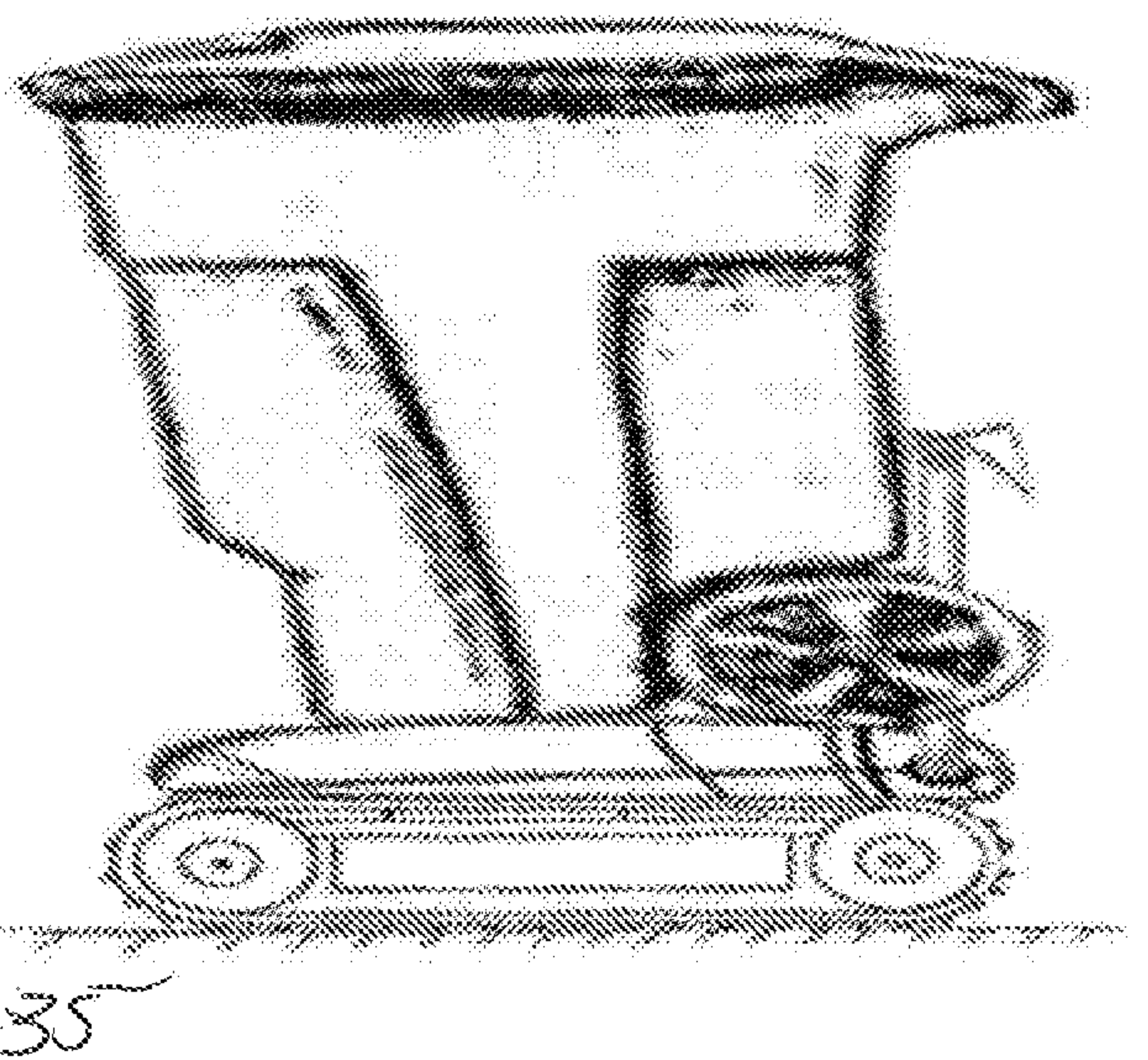
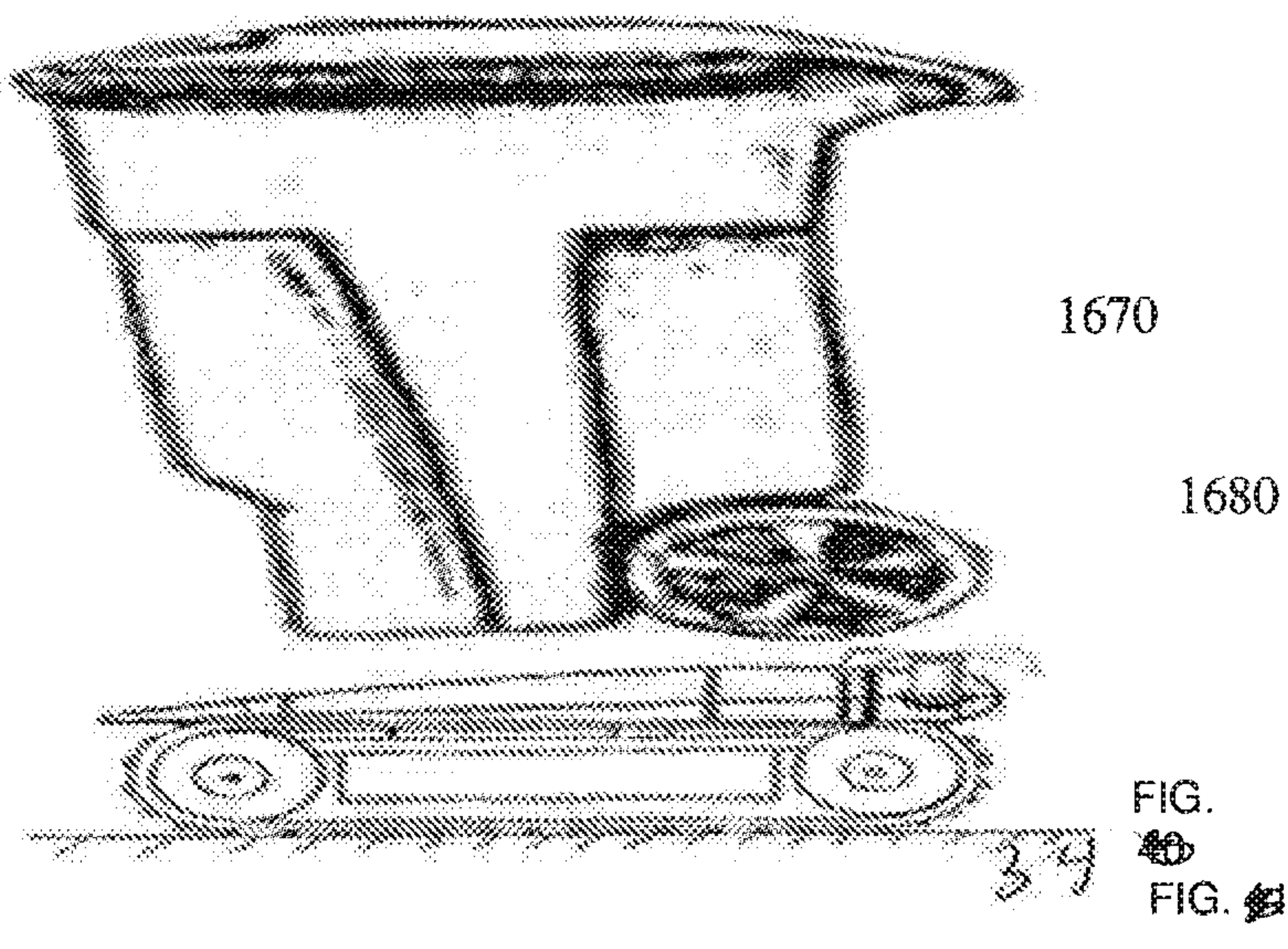
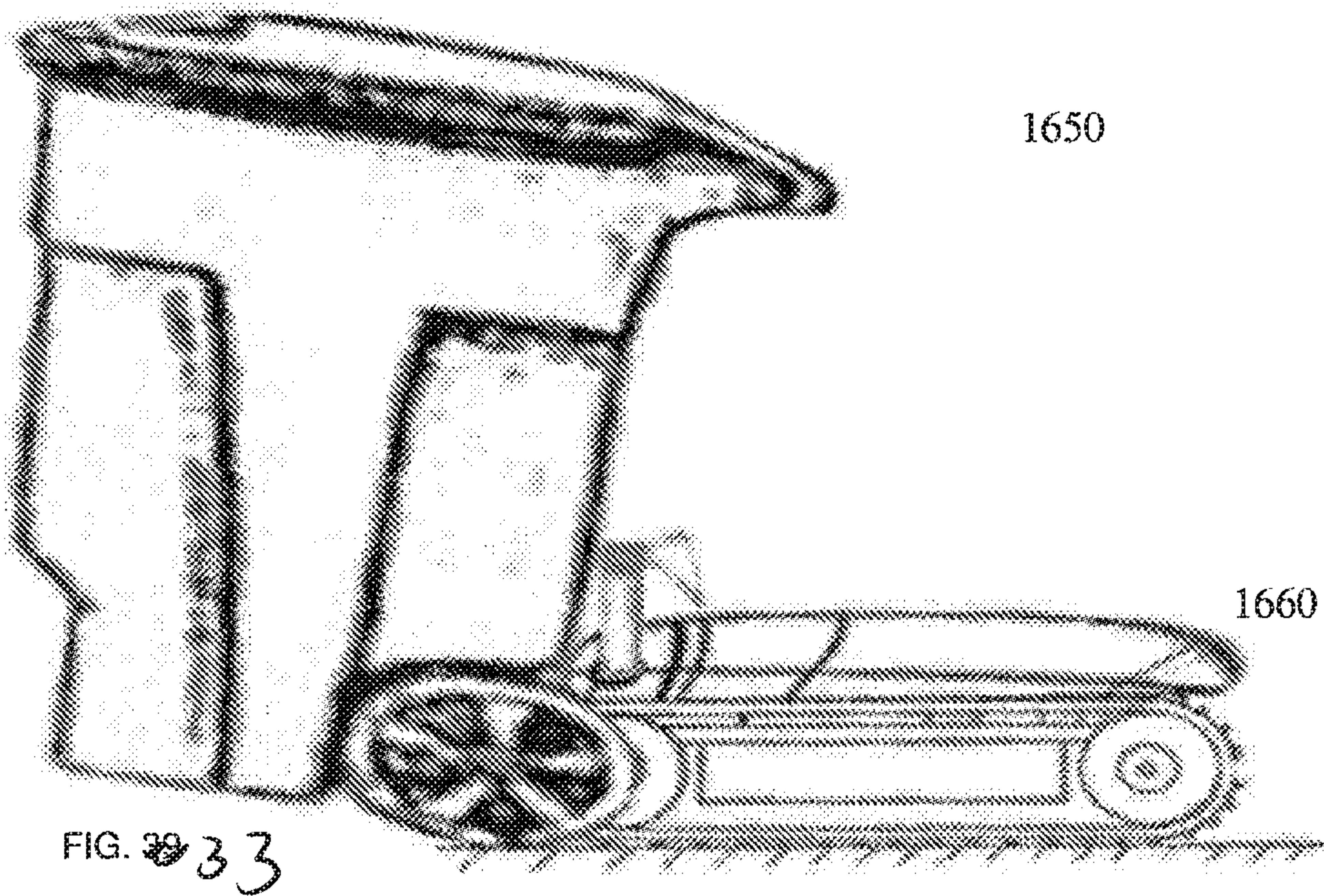
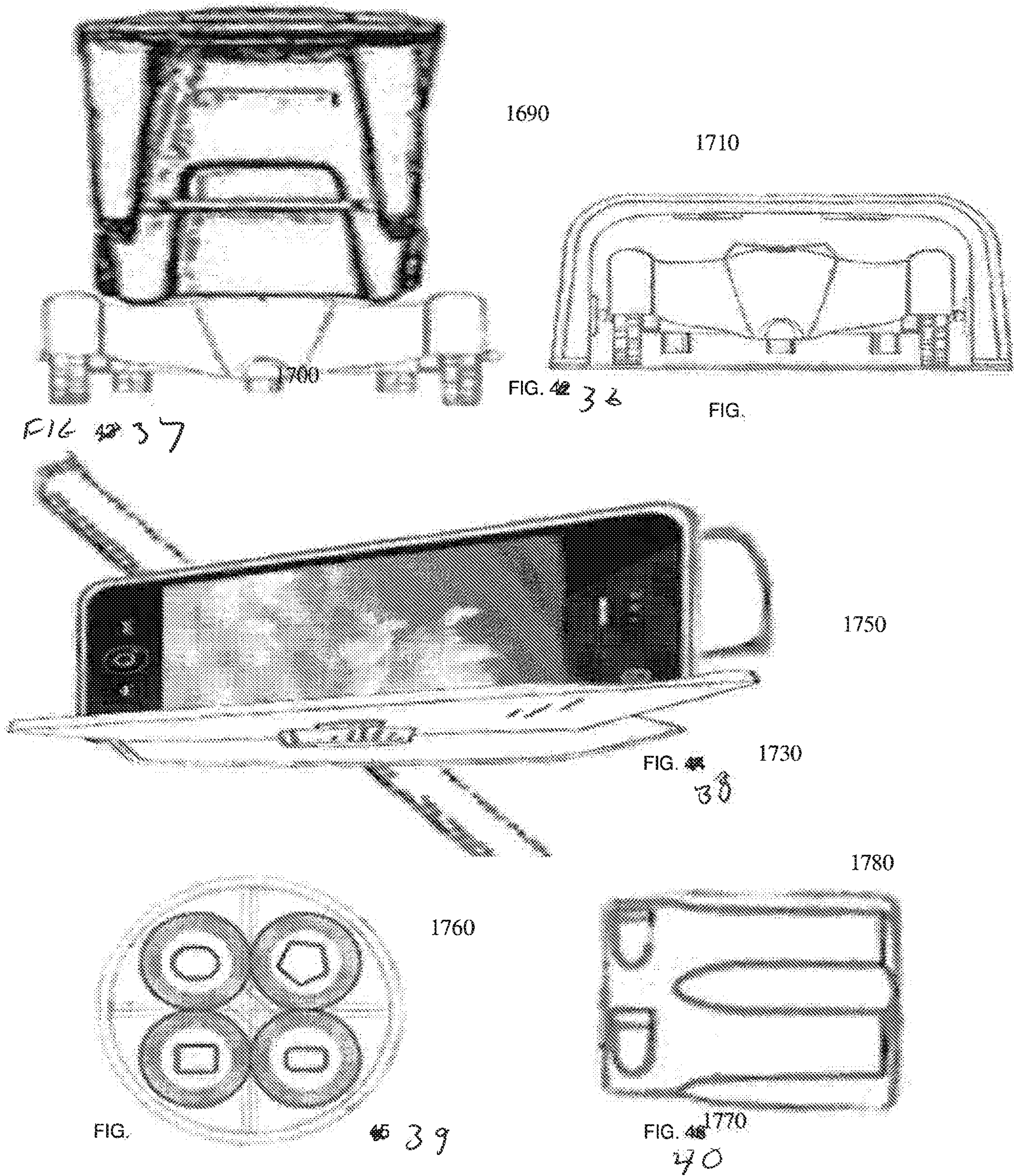


FIG. 30 30







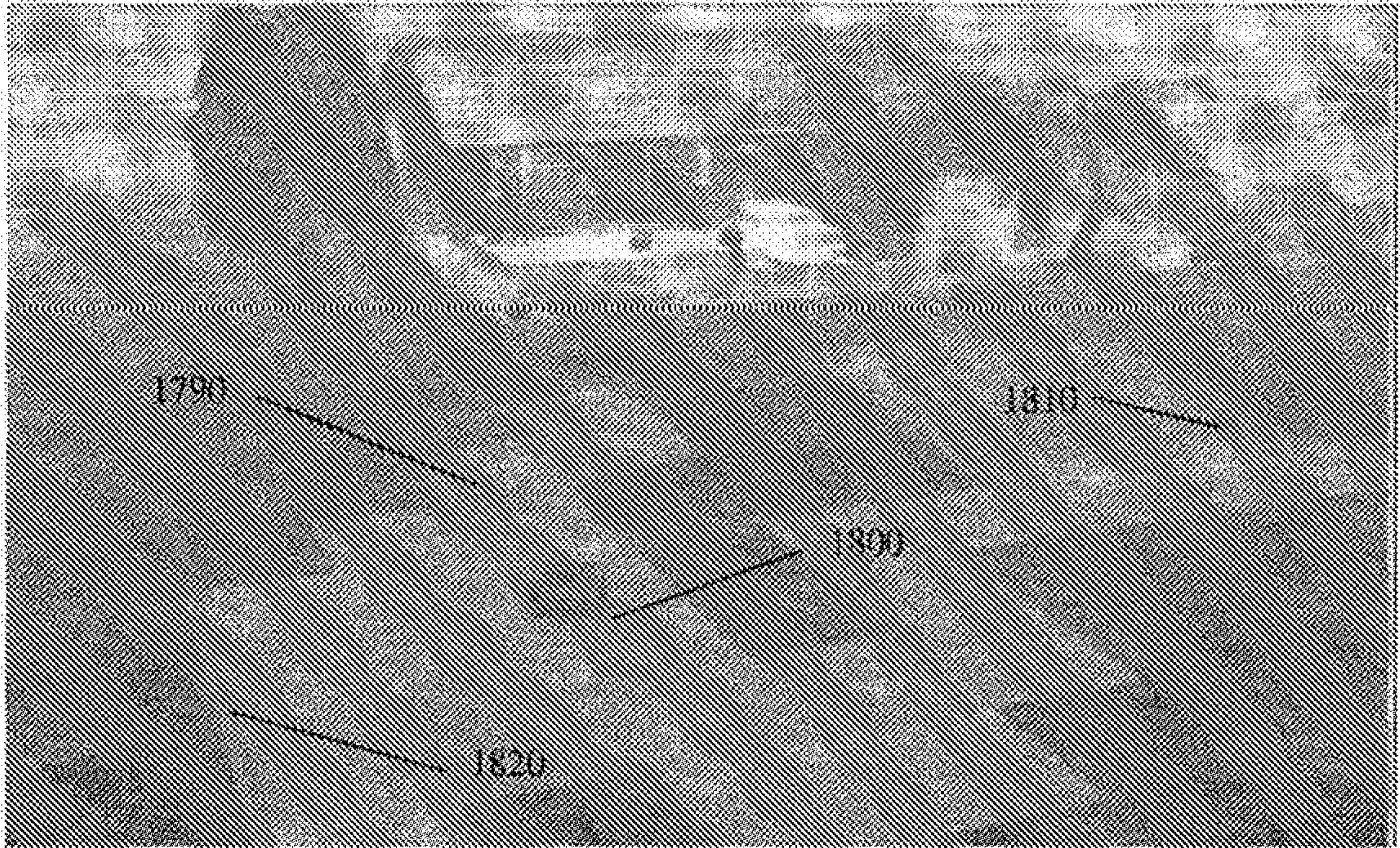


FIG. 41

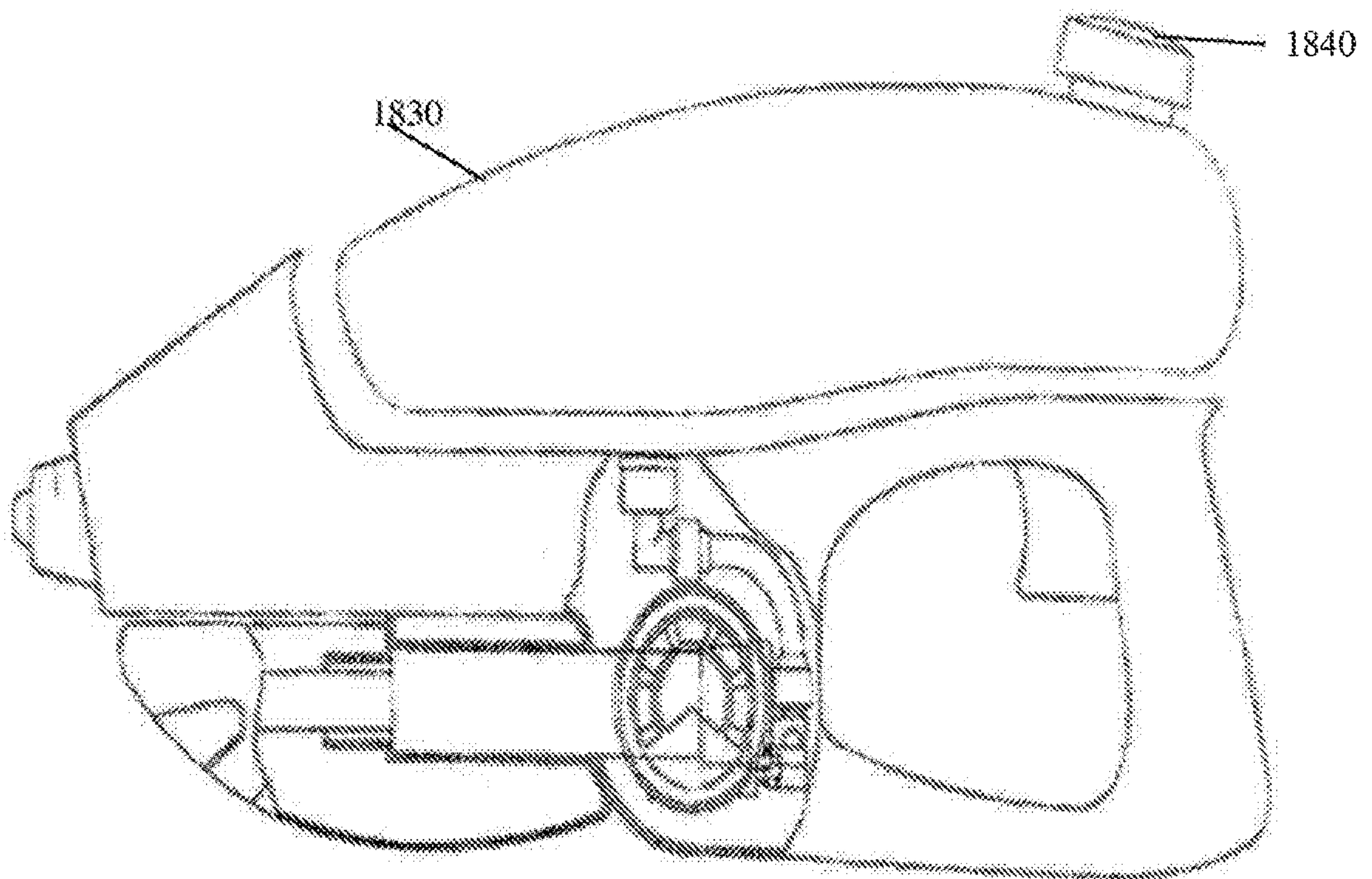
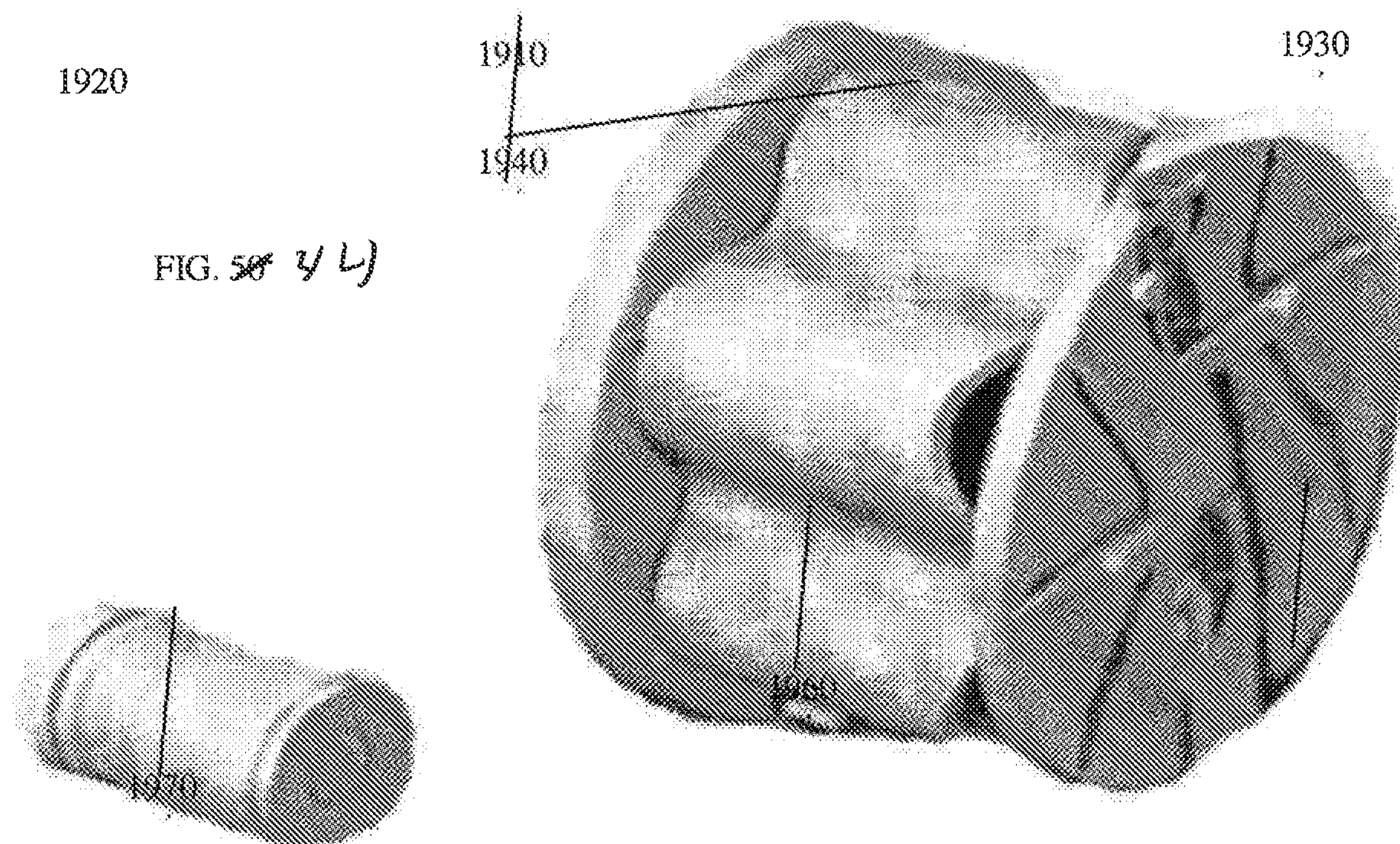
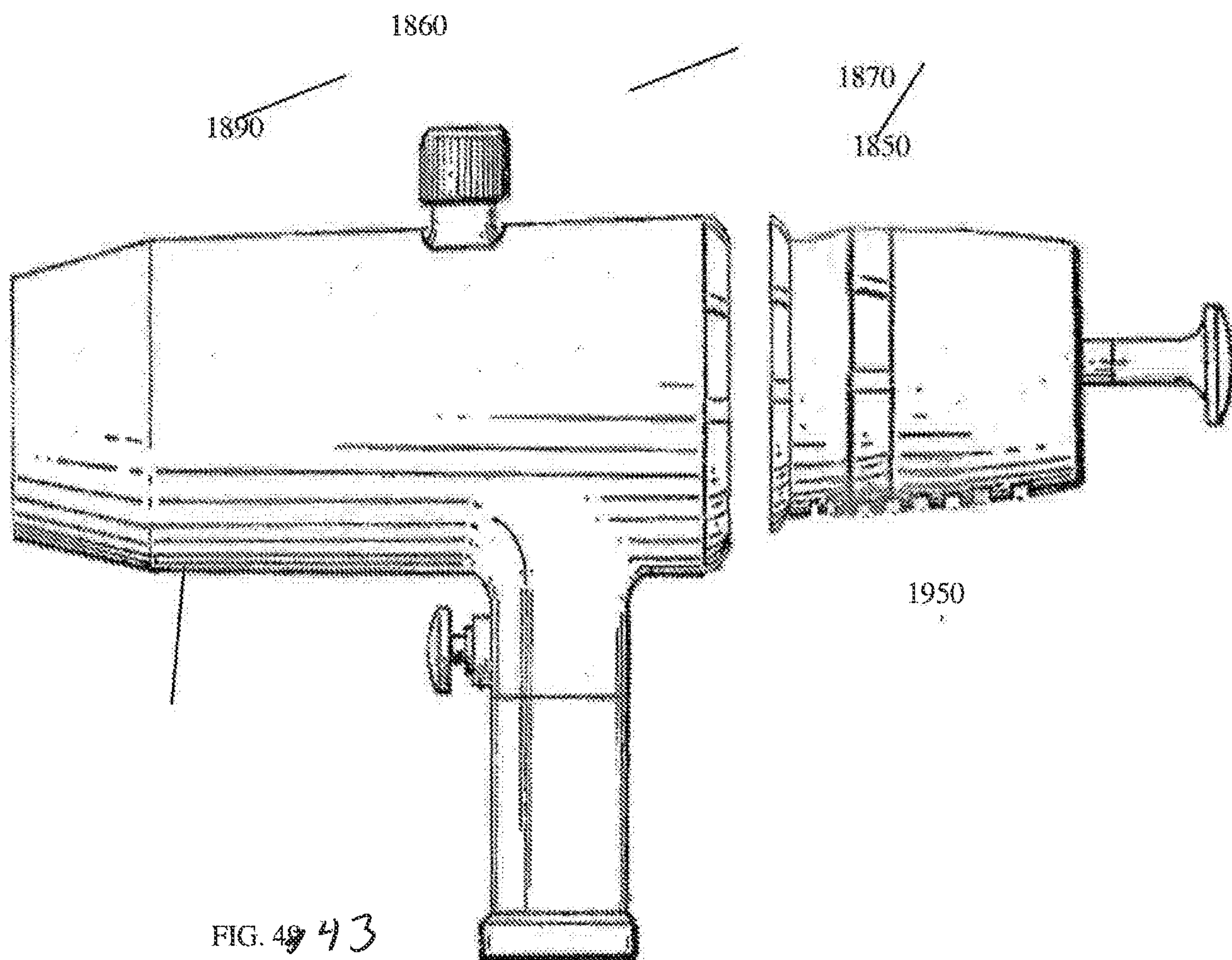
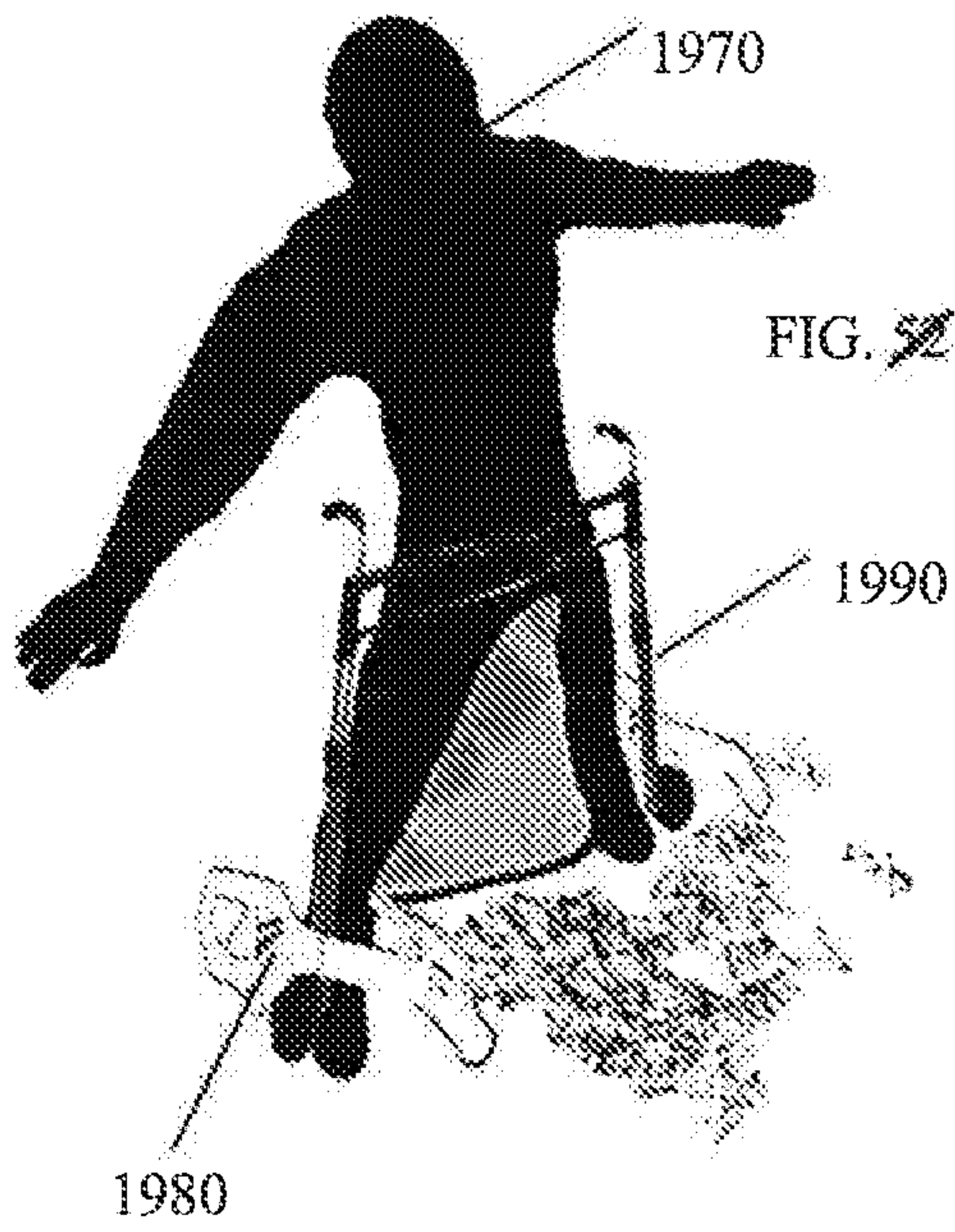


FIG. 42





PRIOR ART

FIG. 45

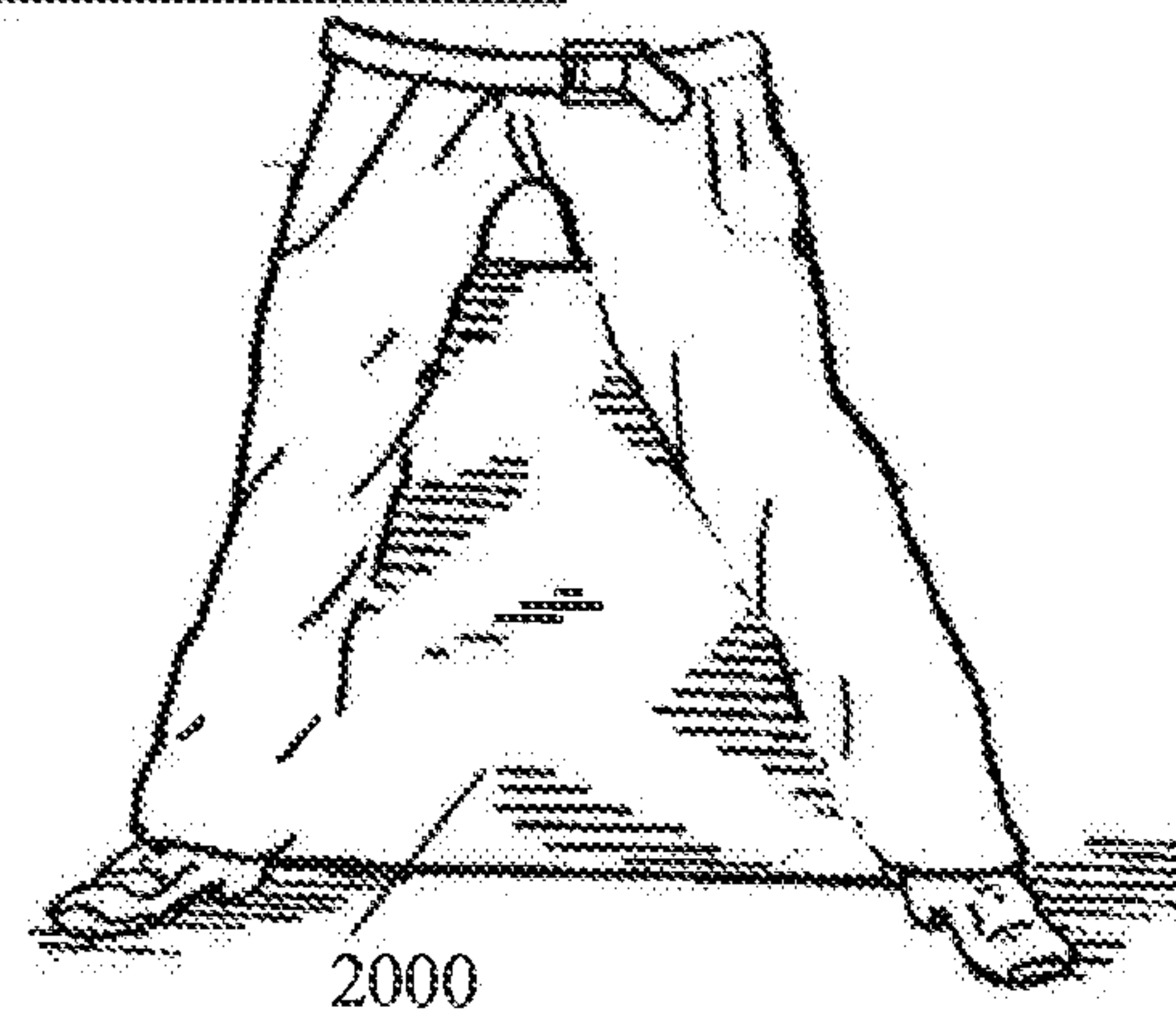


FIG. 47

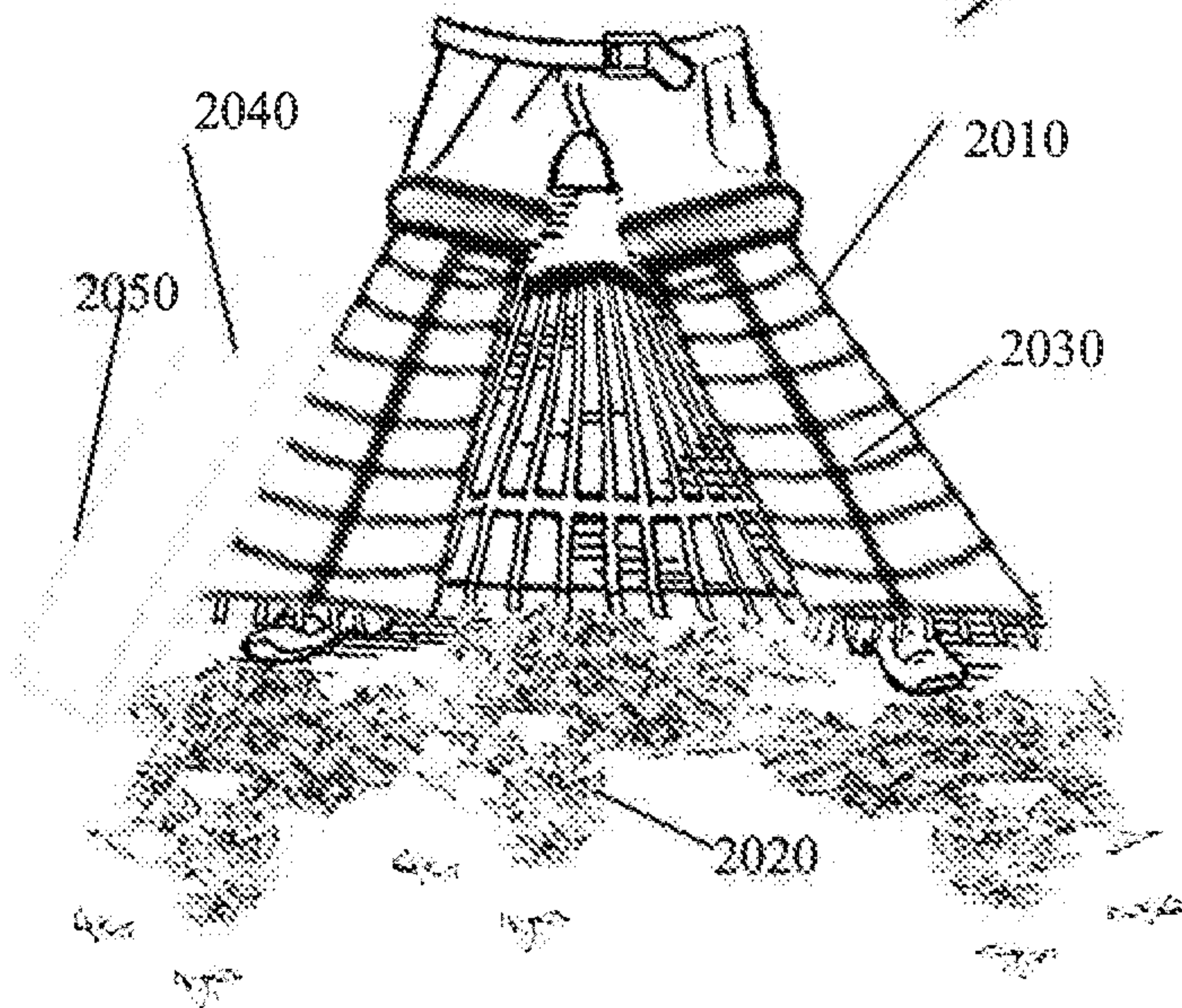


FIG. 48

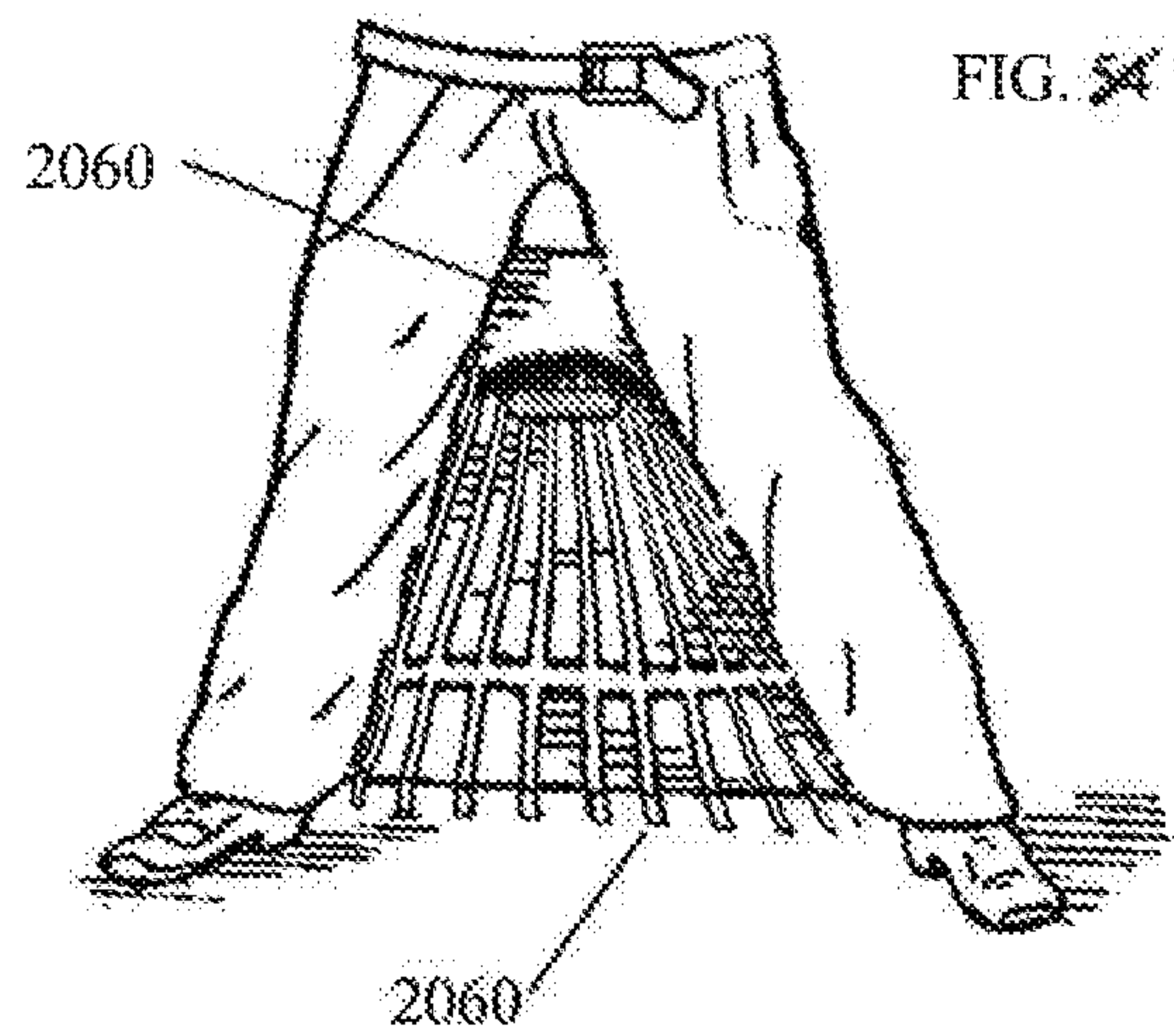


FIG. 49

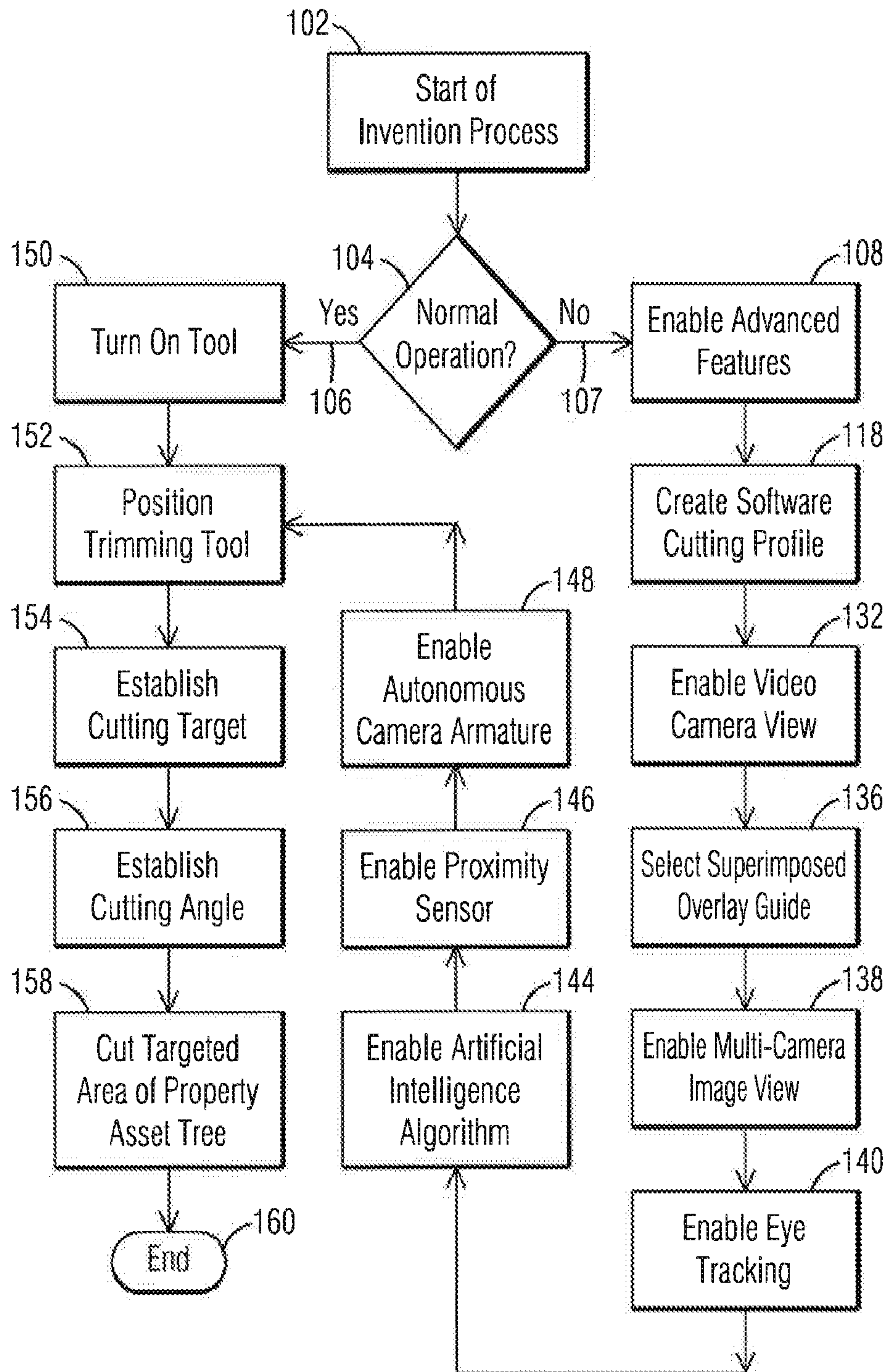


FIG. 50

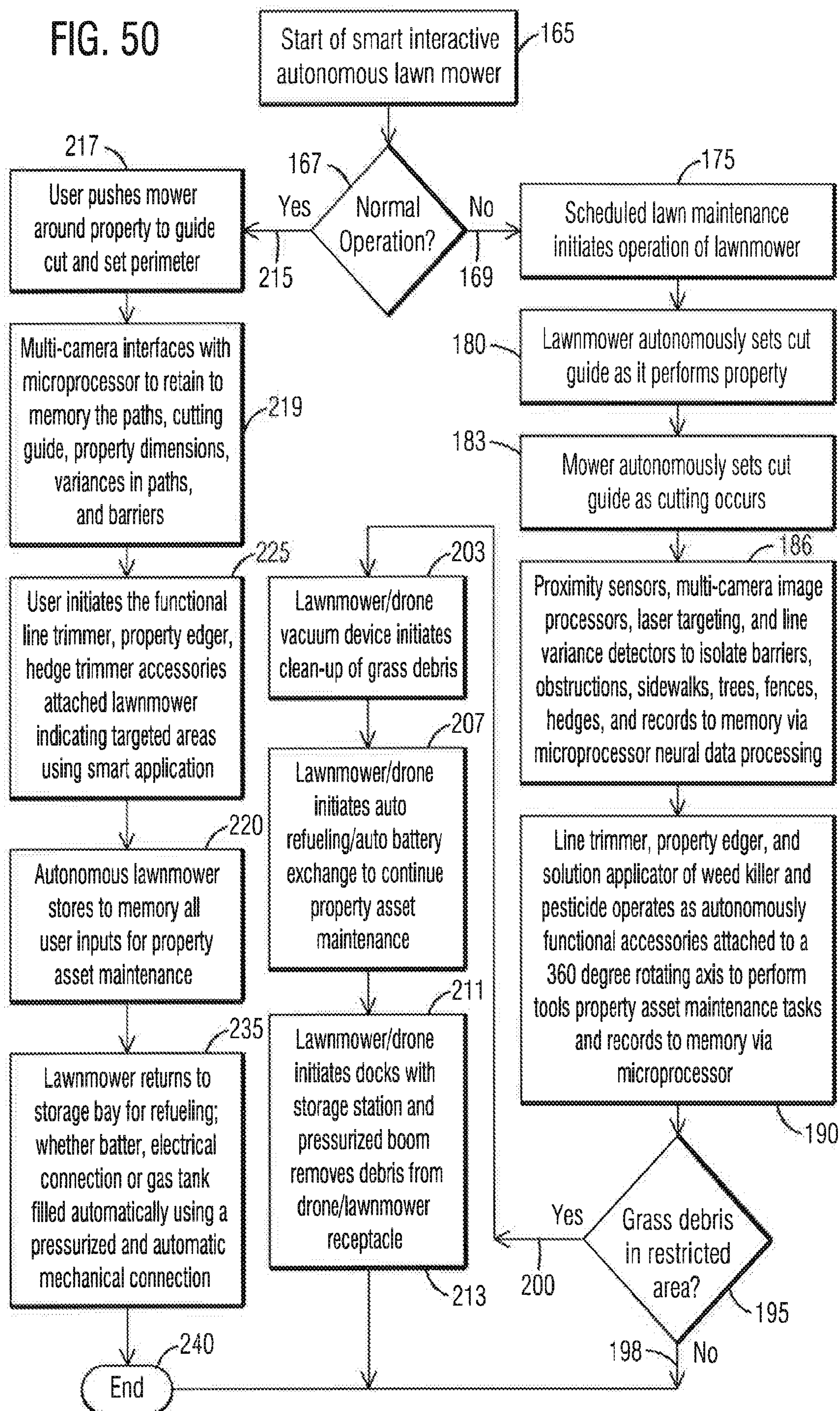


FIG. 51

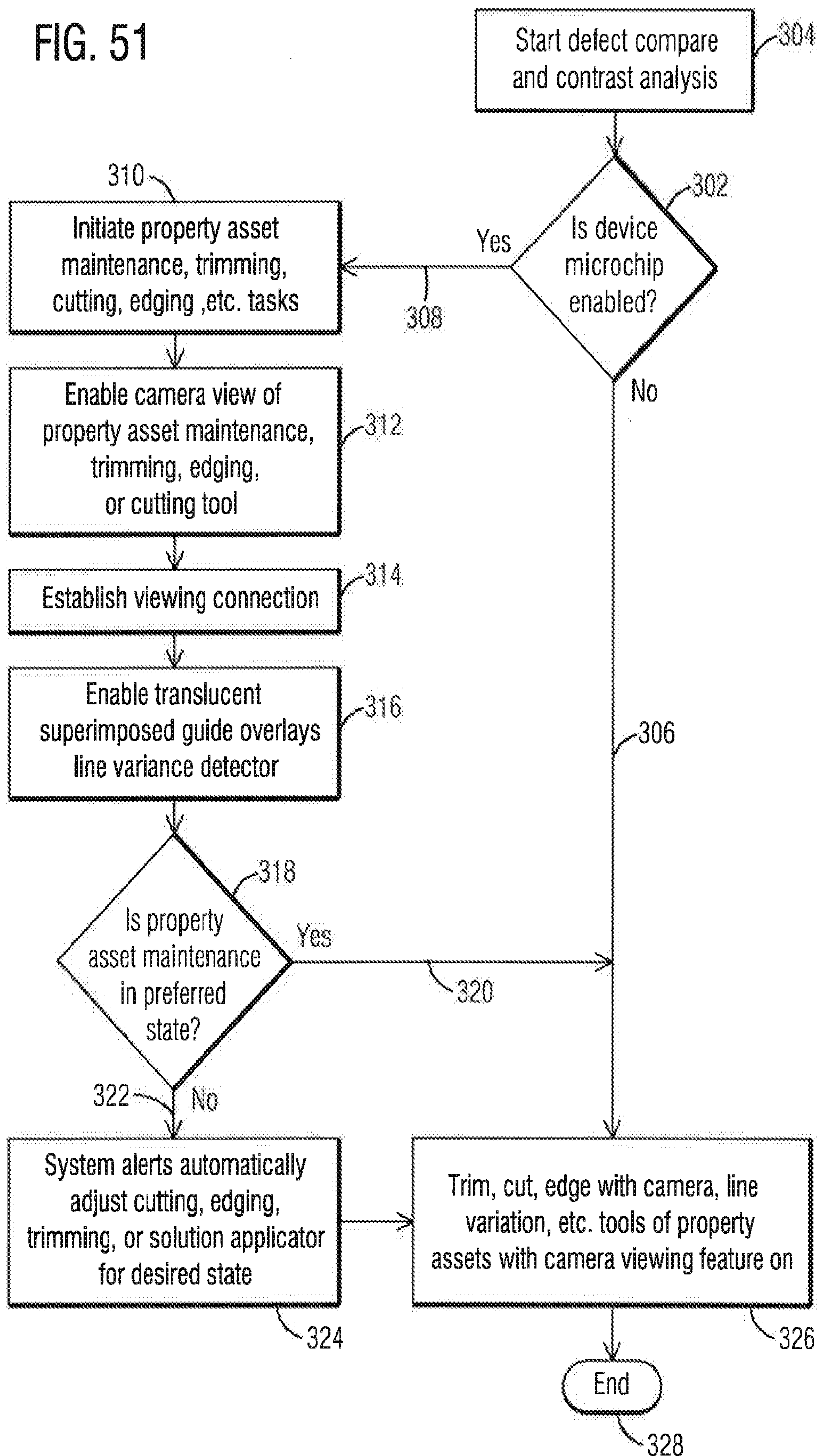
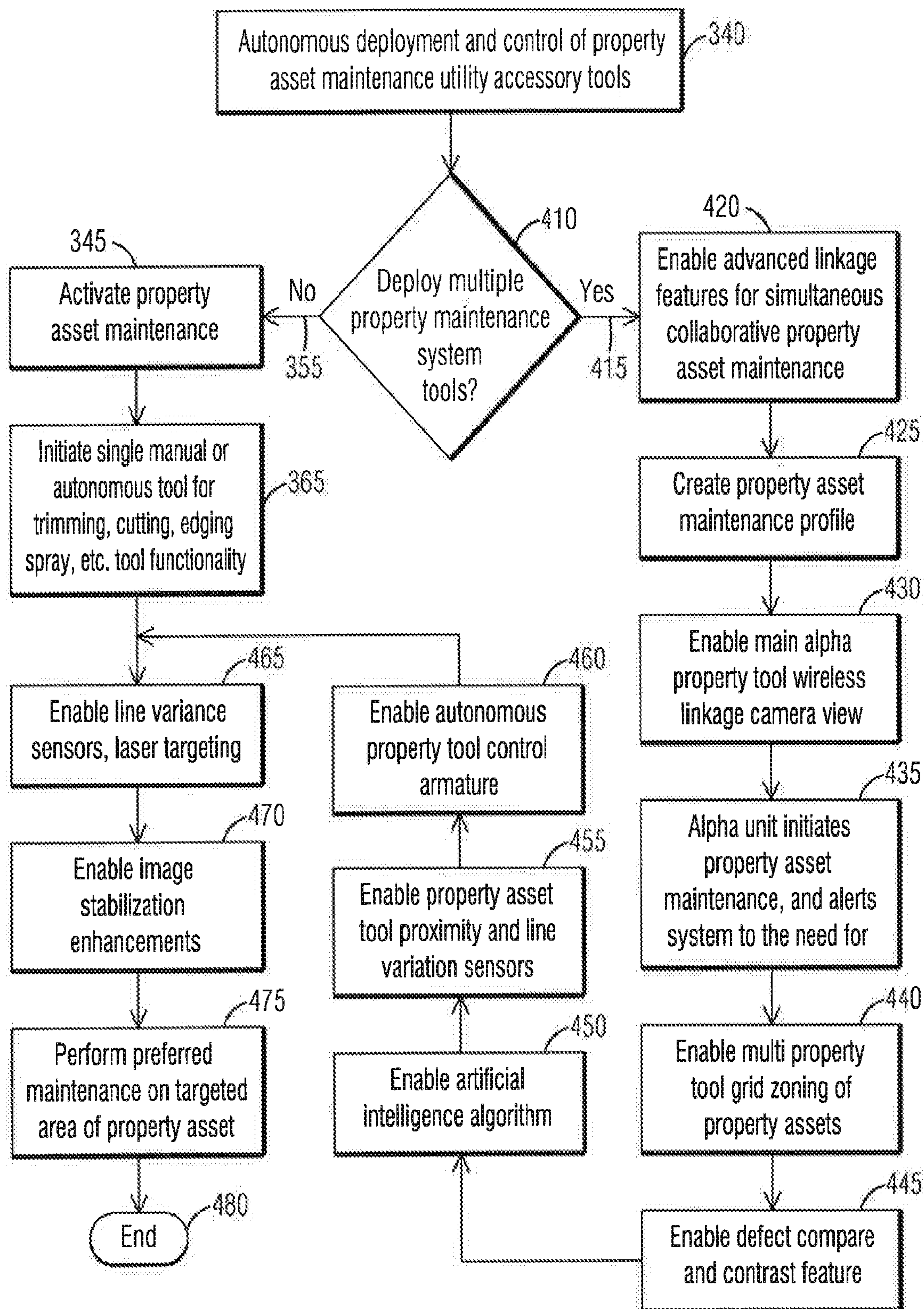


FIG. 52



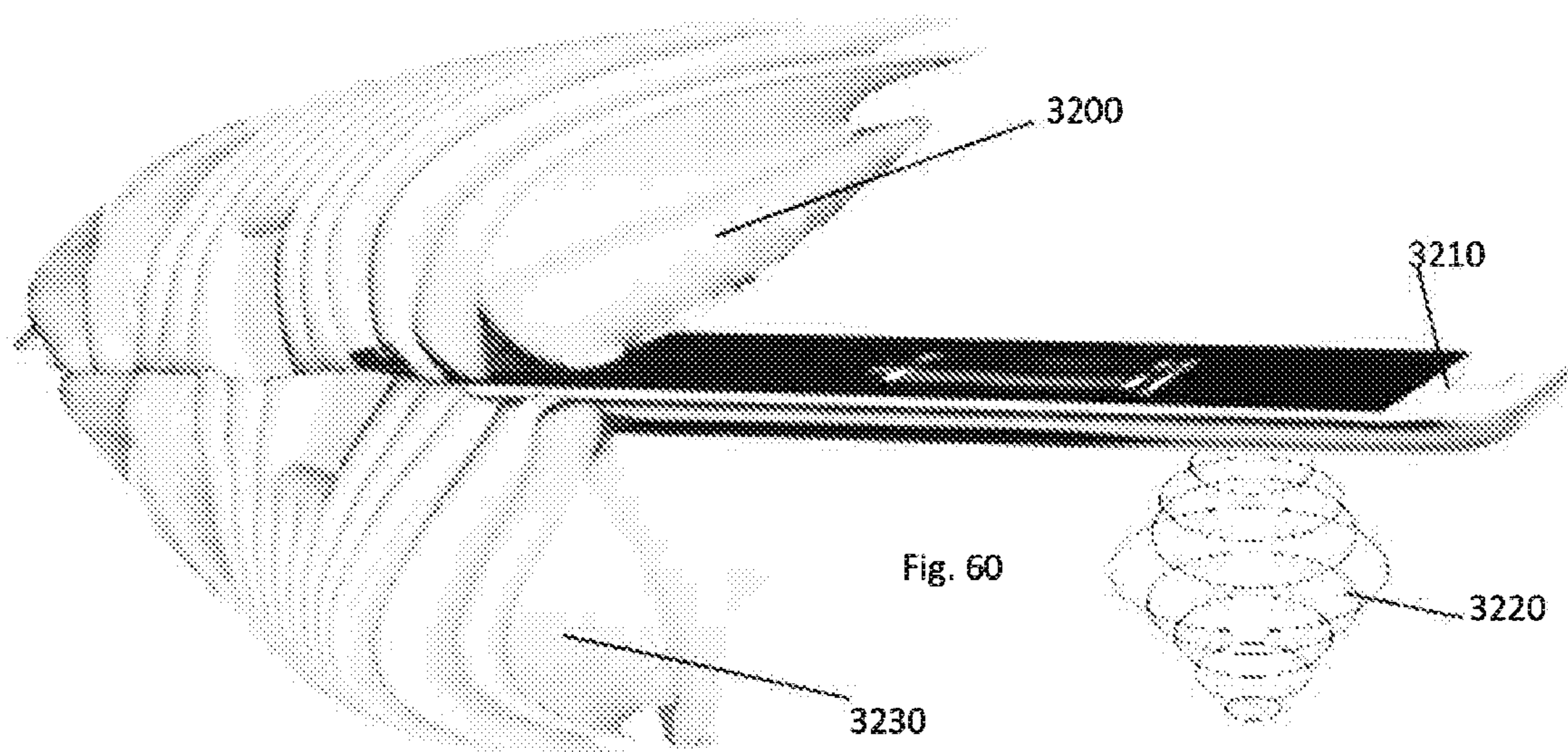


FIG. 53

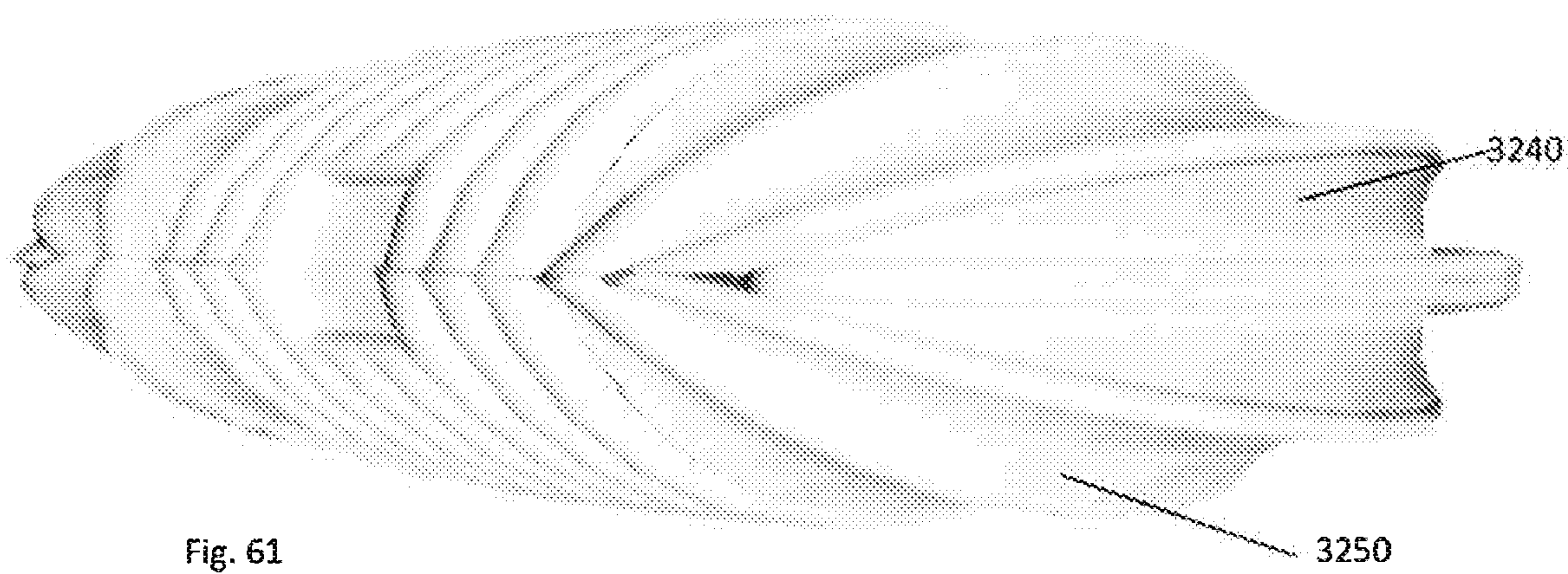


FIG. 54

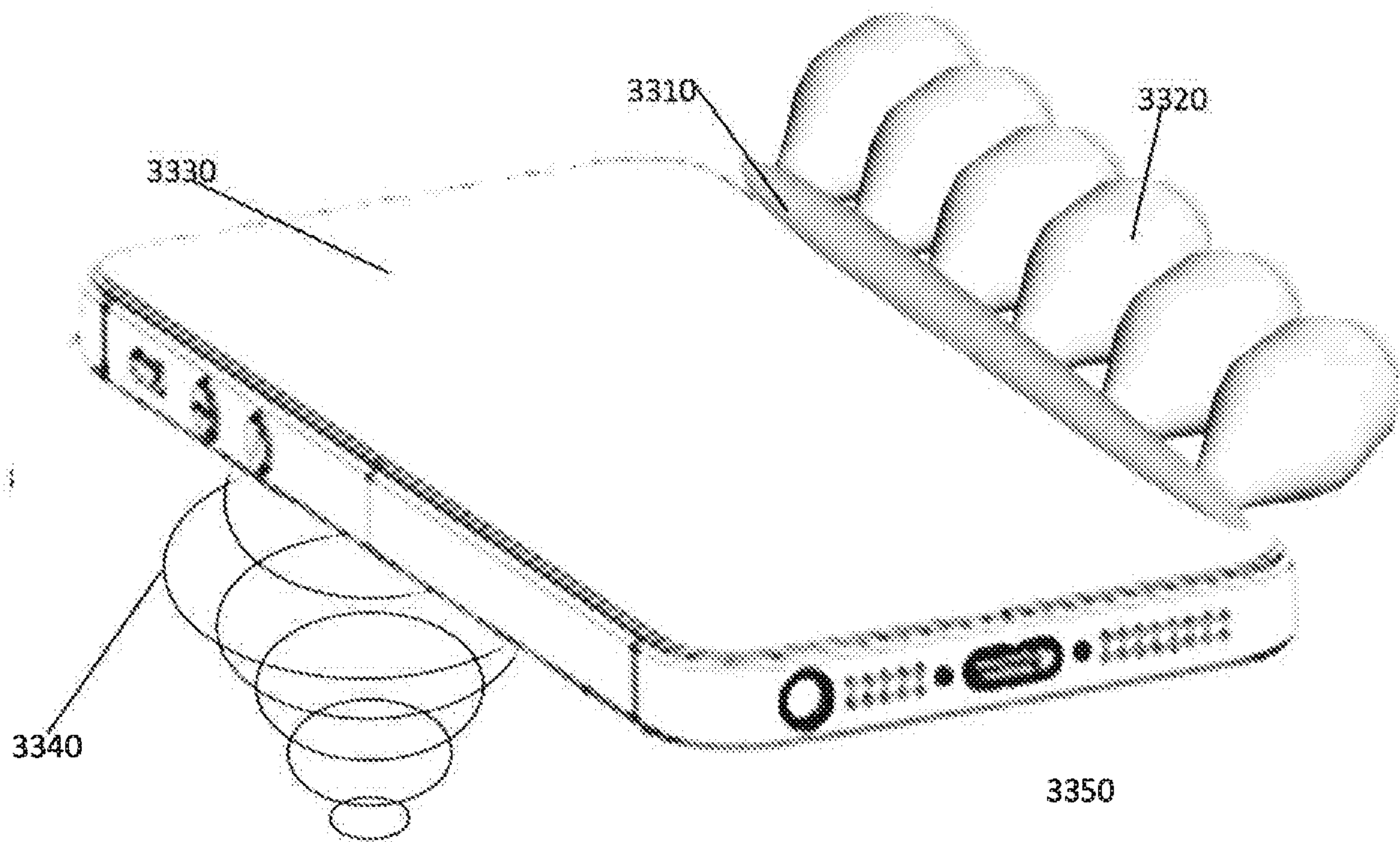


FIG. 55

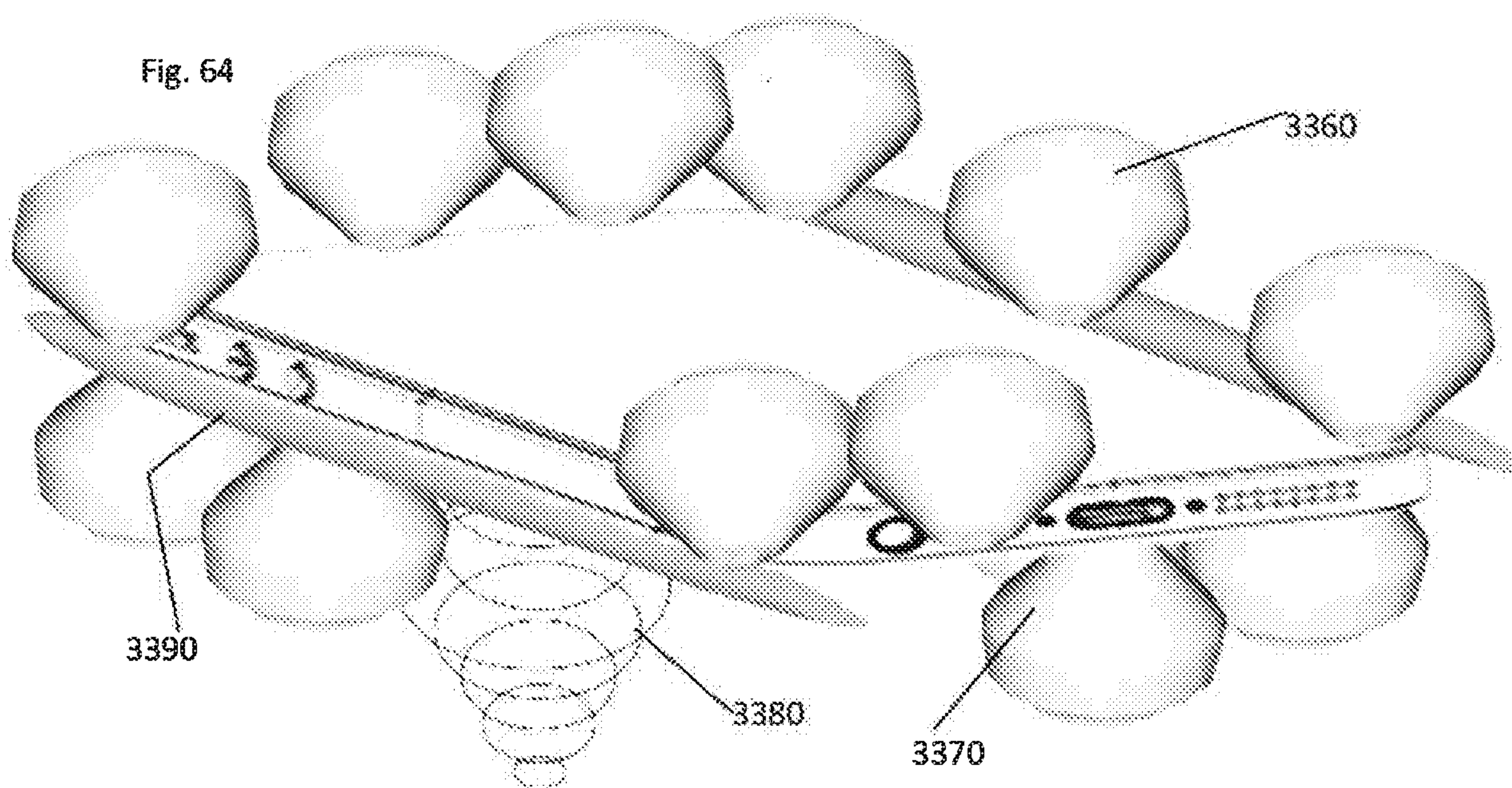


FIG. 56

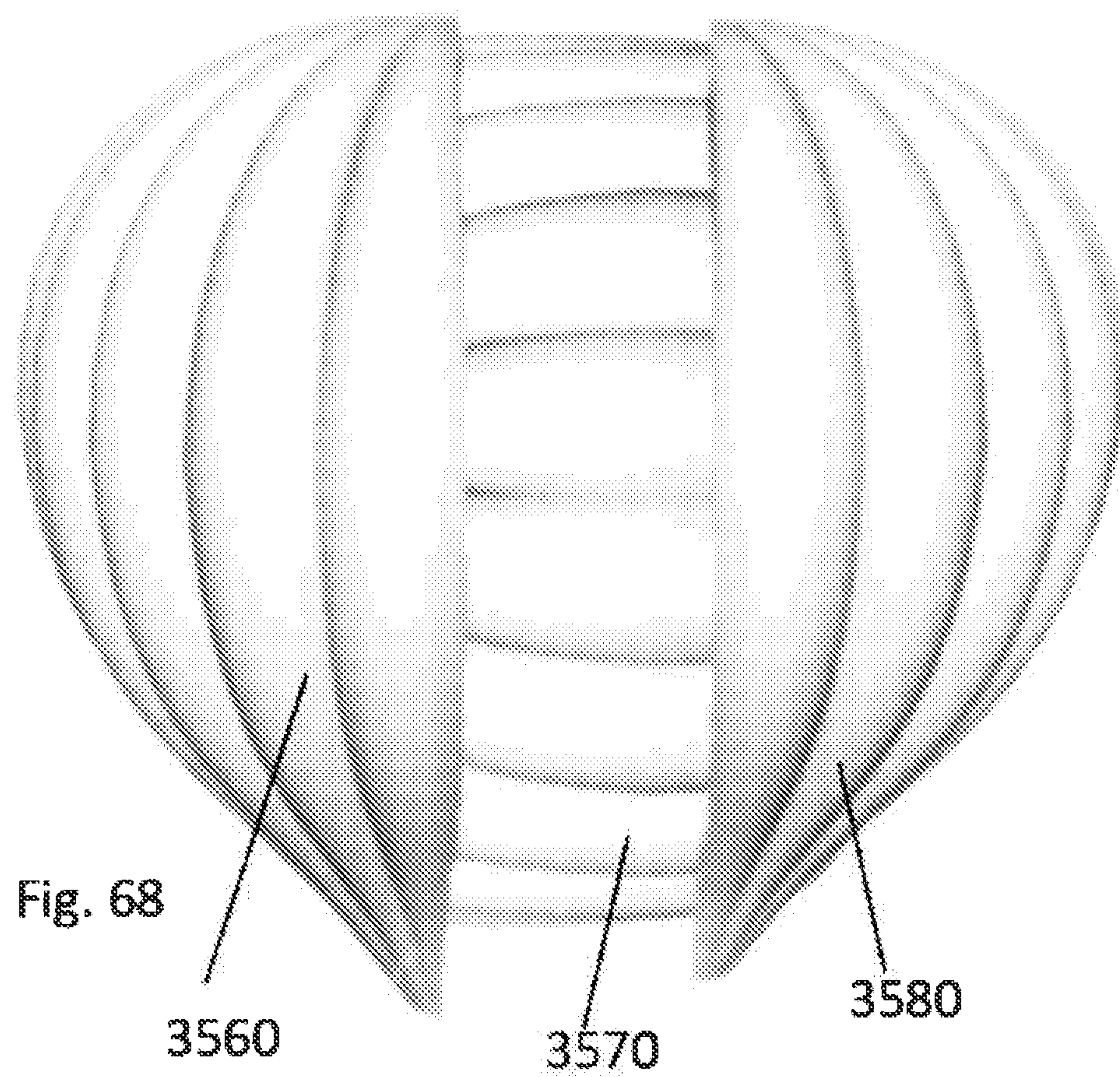


FIG. 57

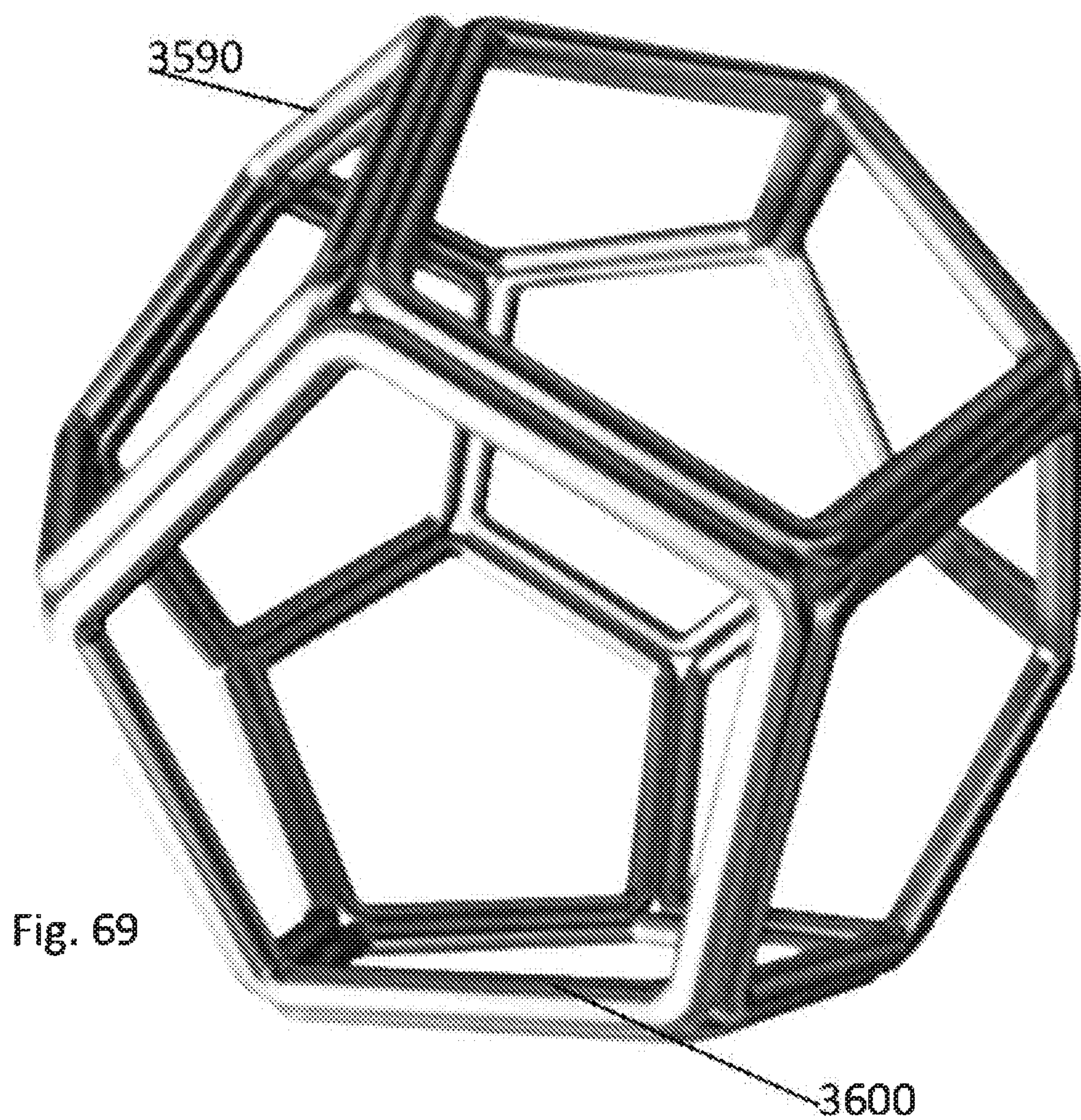


FIG. 58

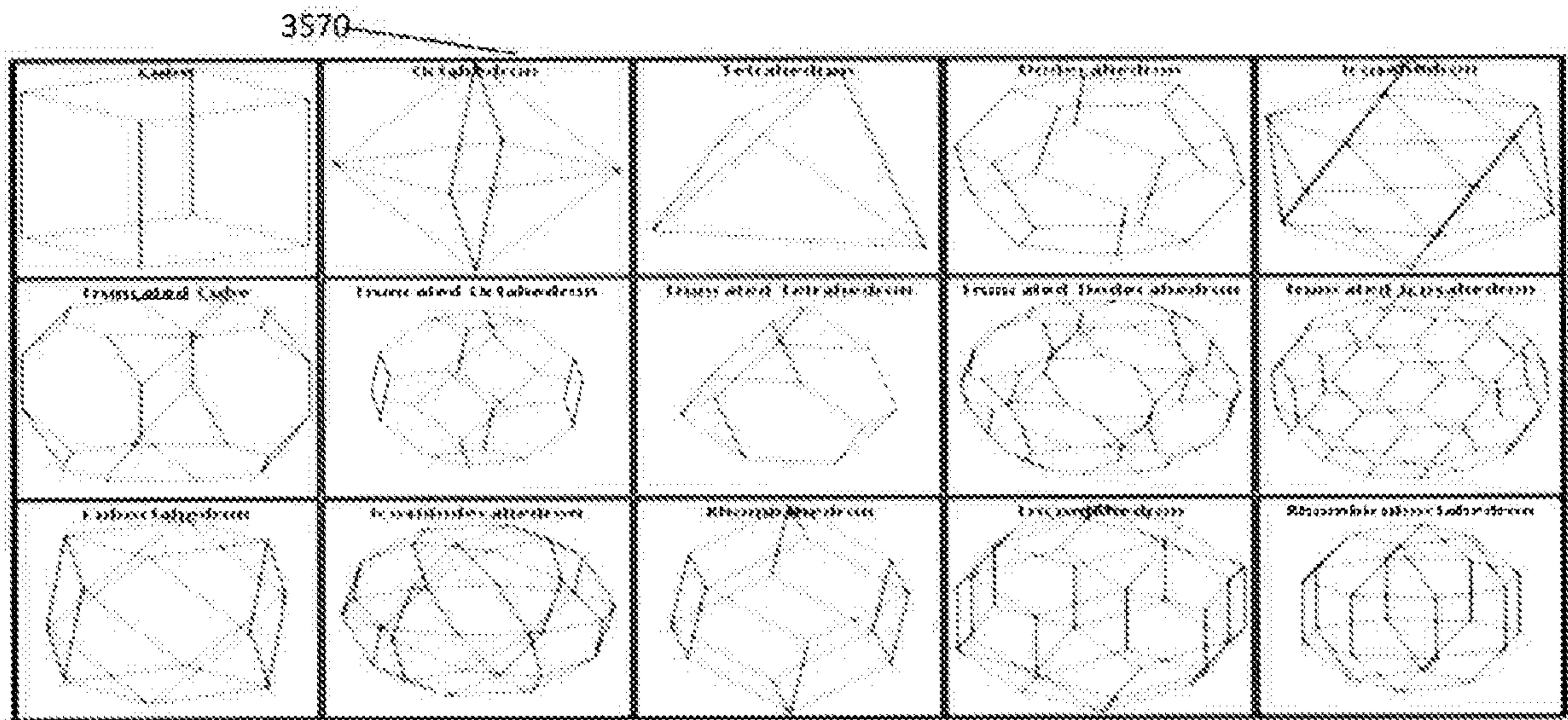


FIG. 59

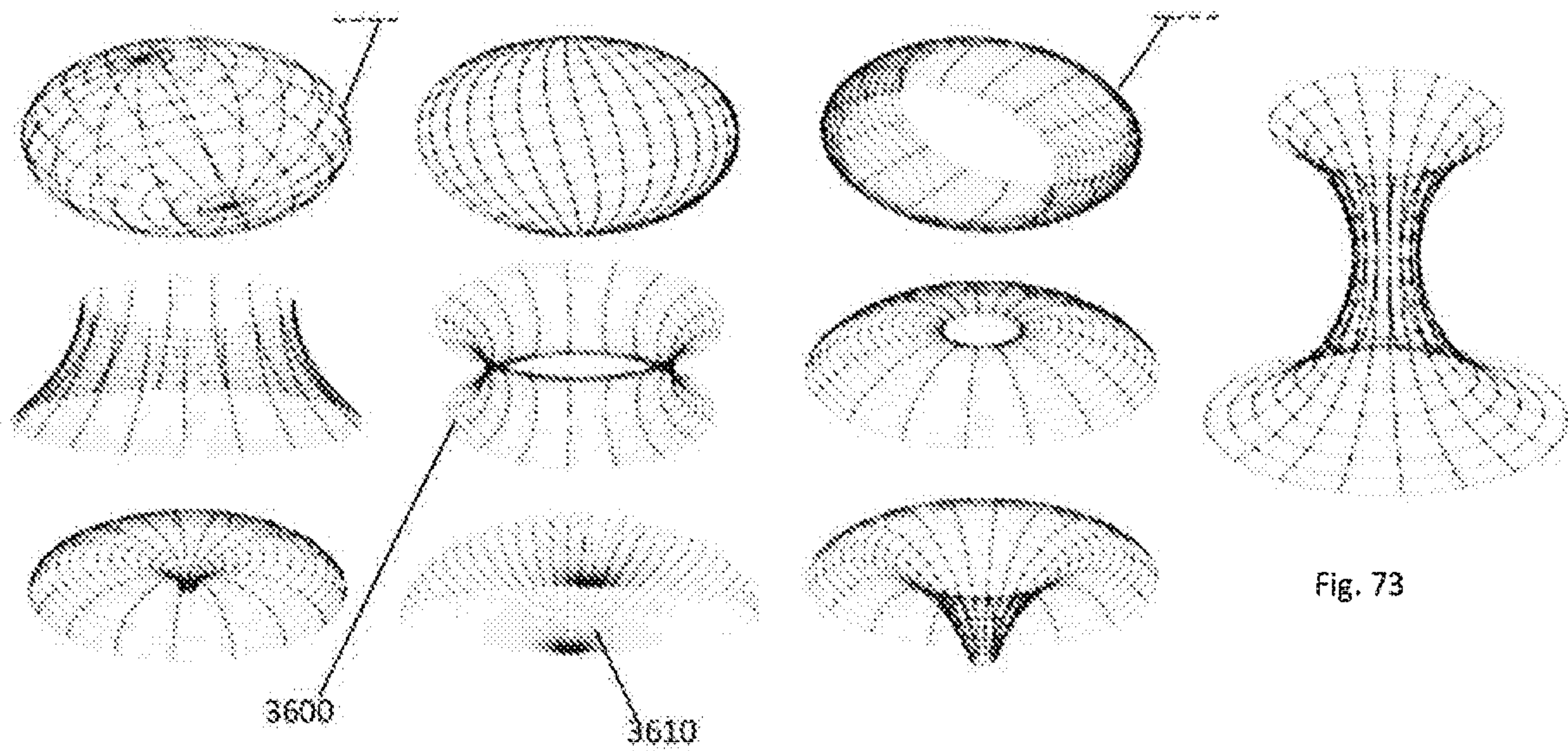


FIG. 60

Fig. 73

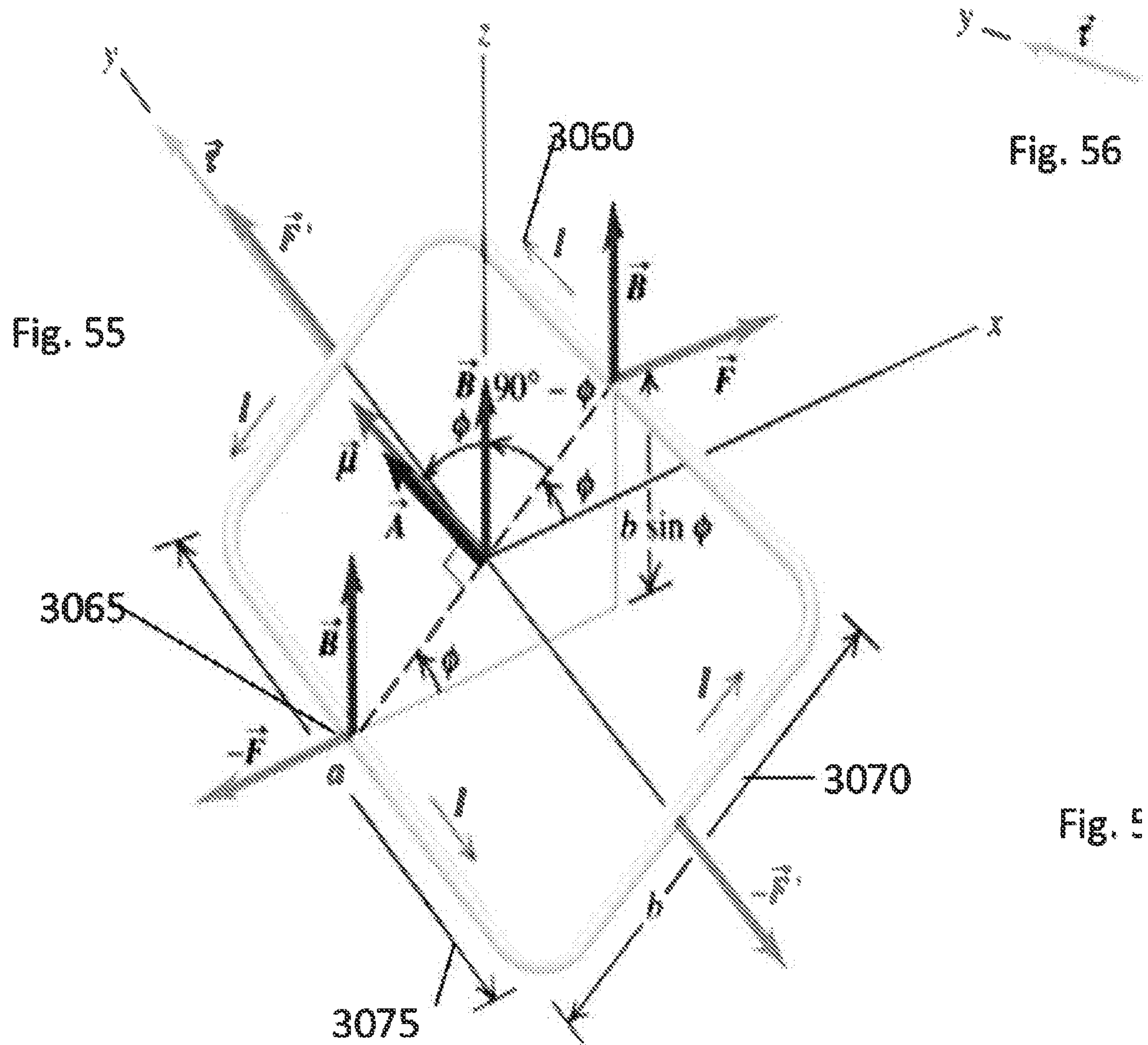


FIG. 61

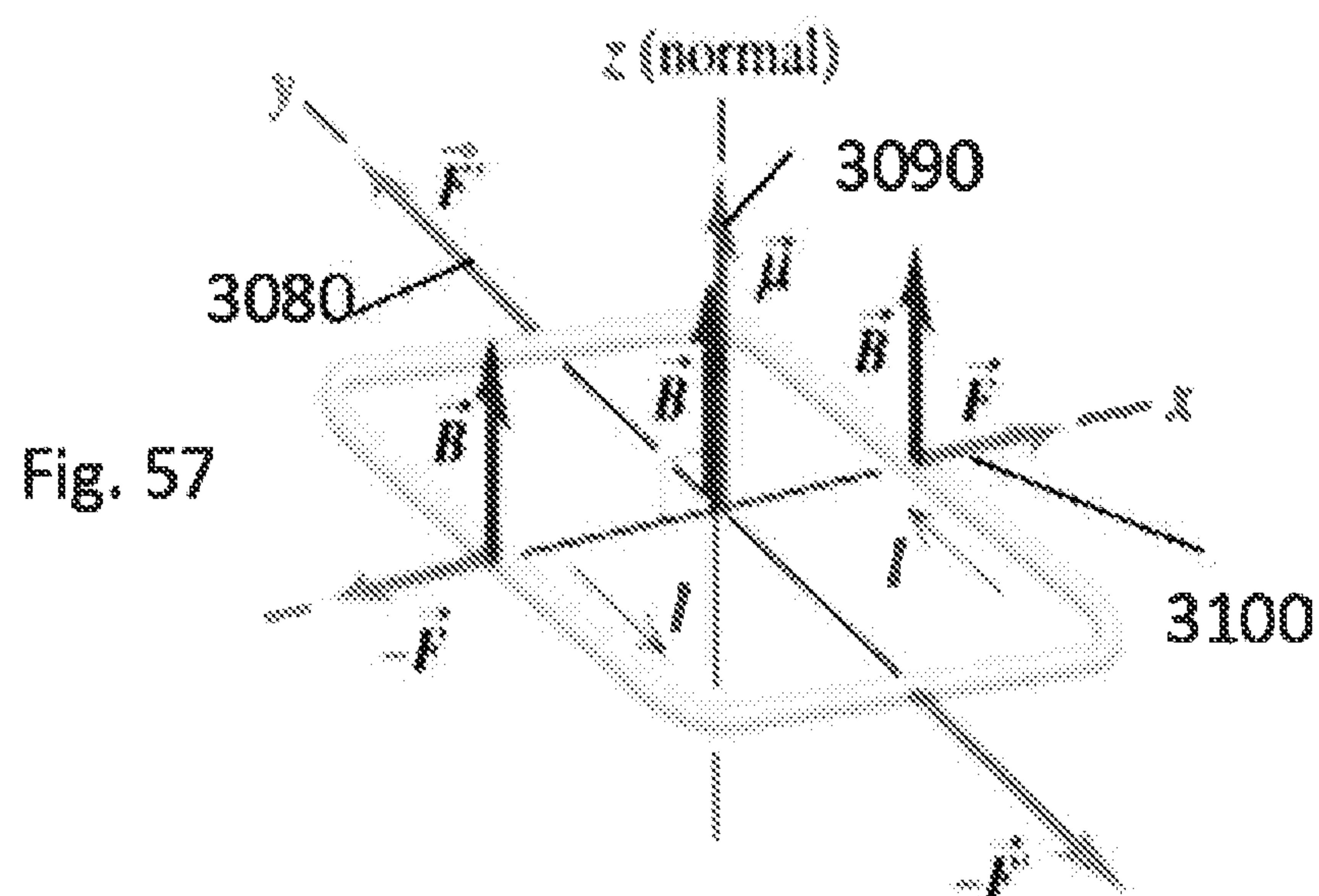
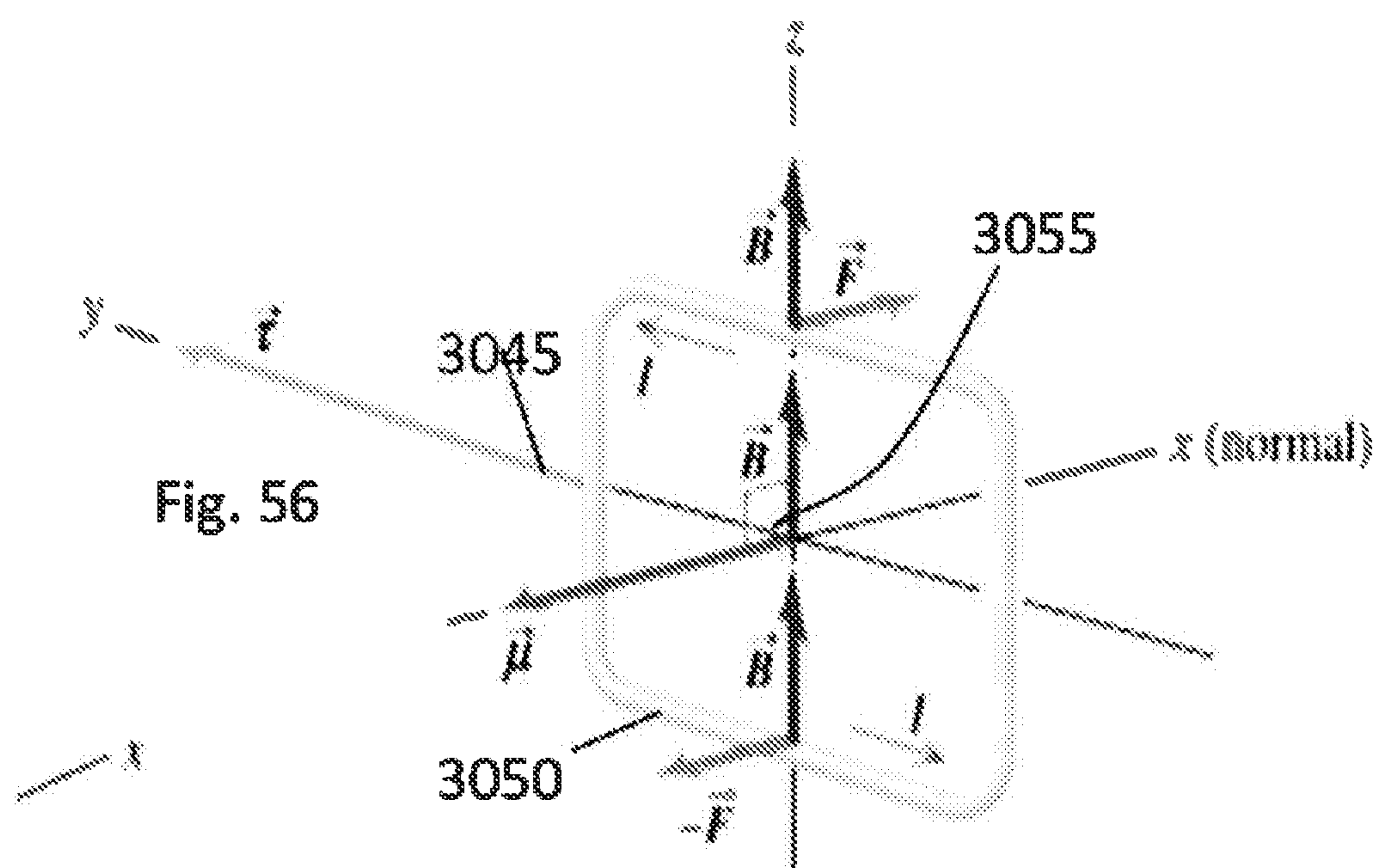


FIG. 62

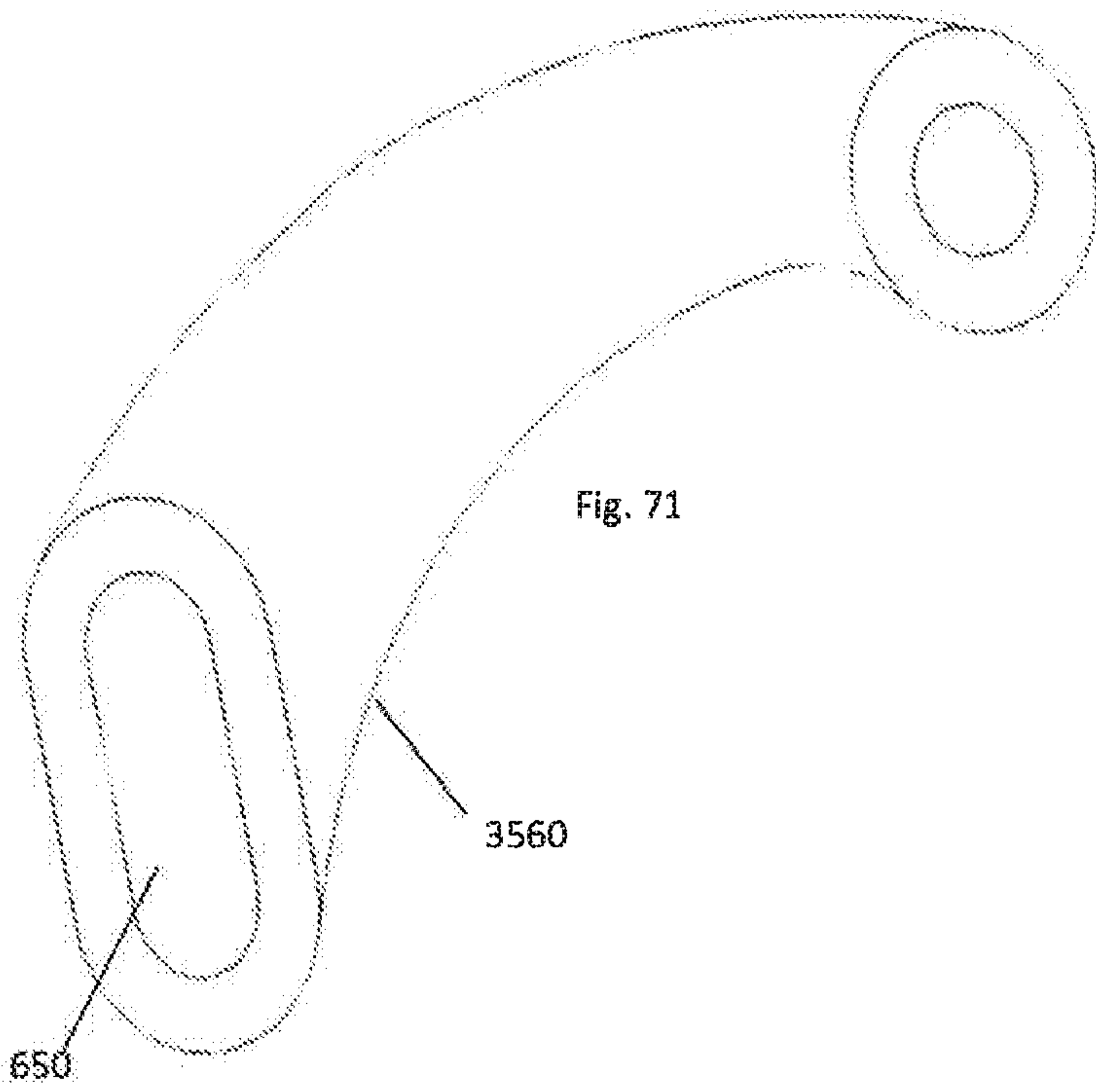


FIG. 63

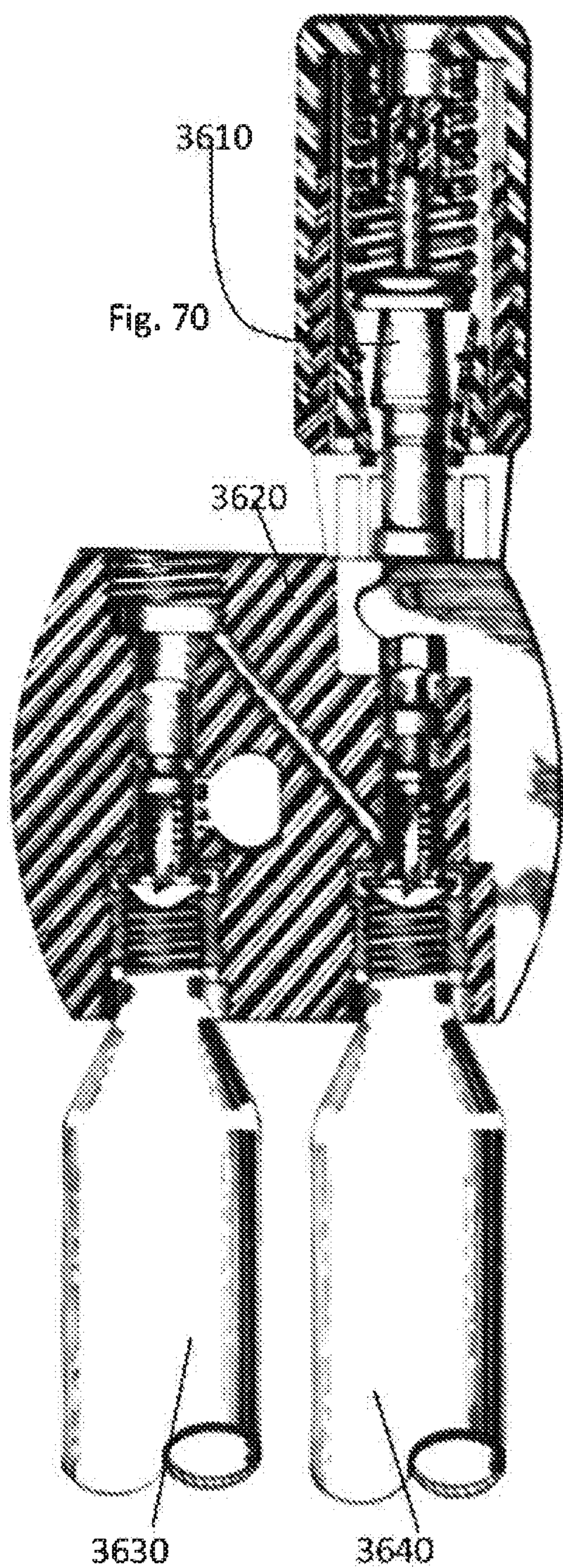


FIG. 64

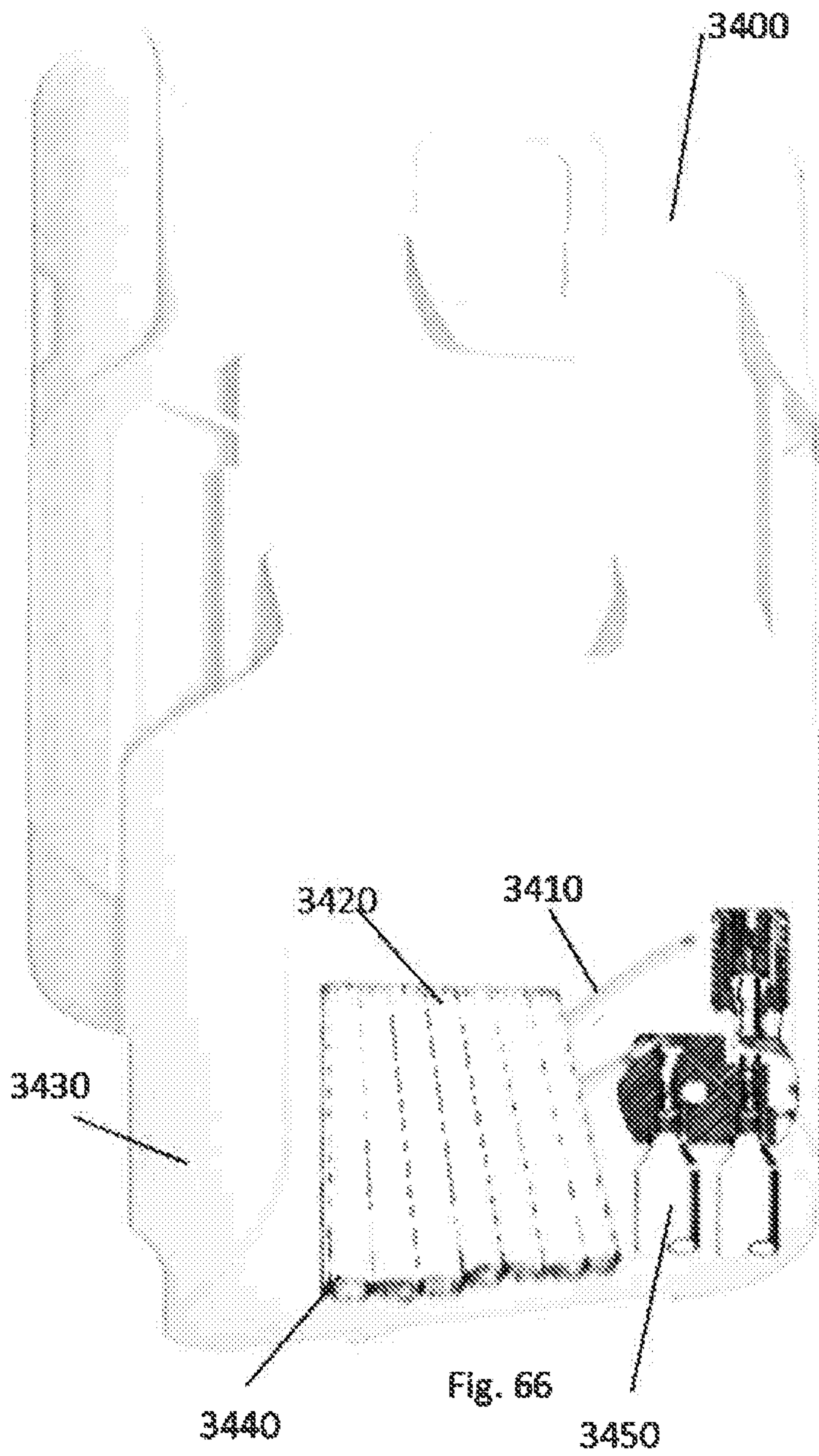


FIG. 65

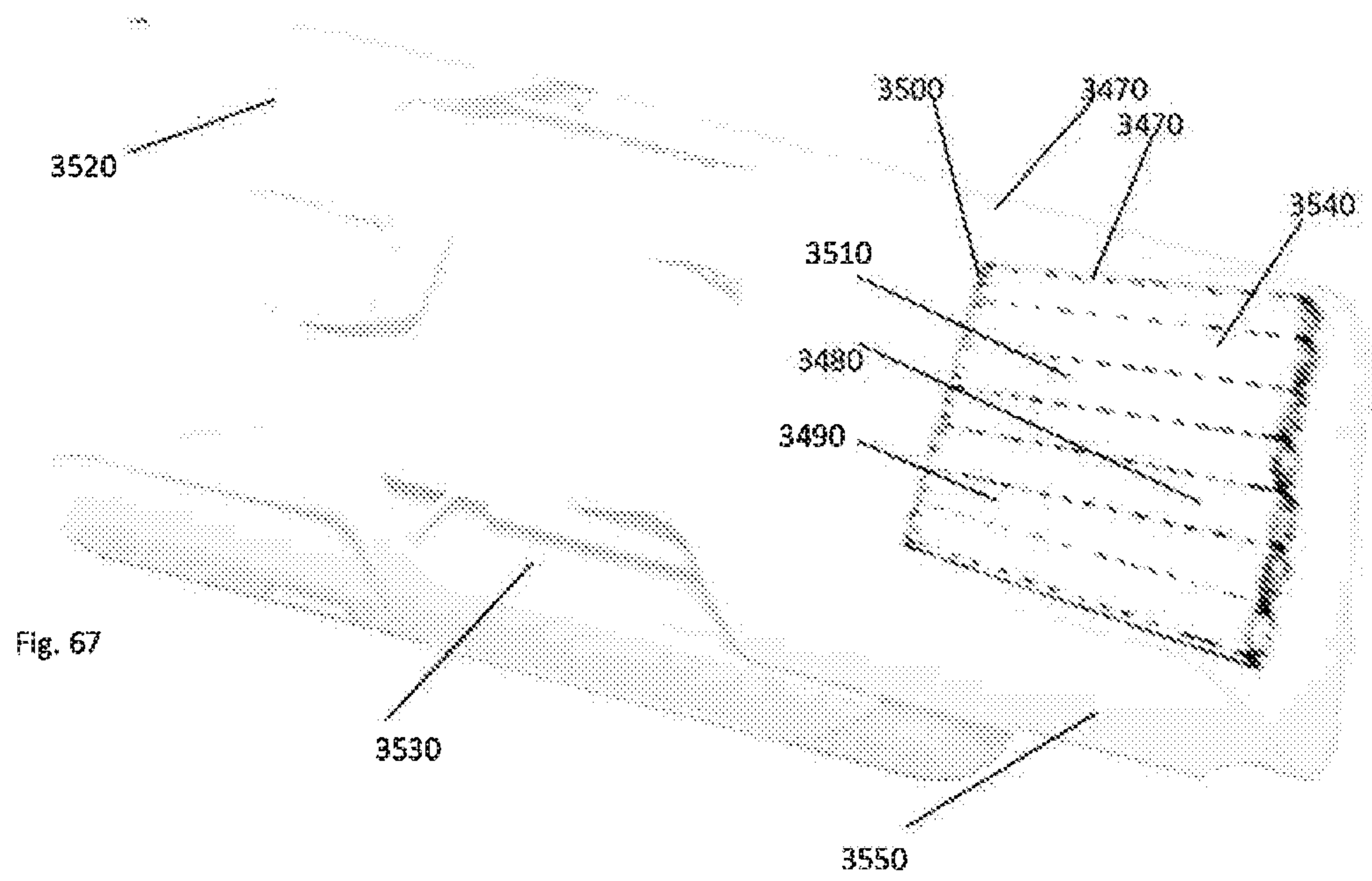


FIG. 66

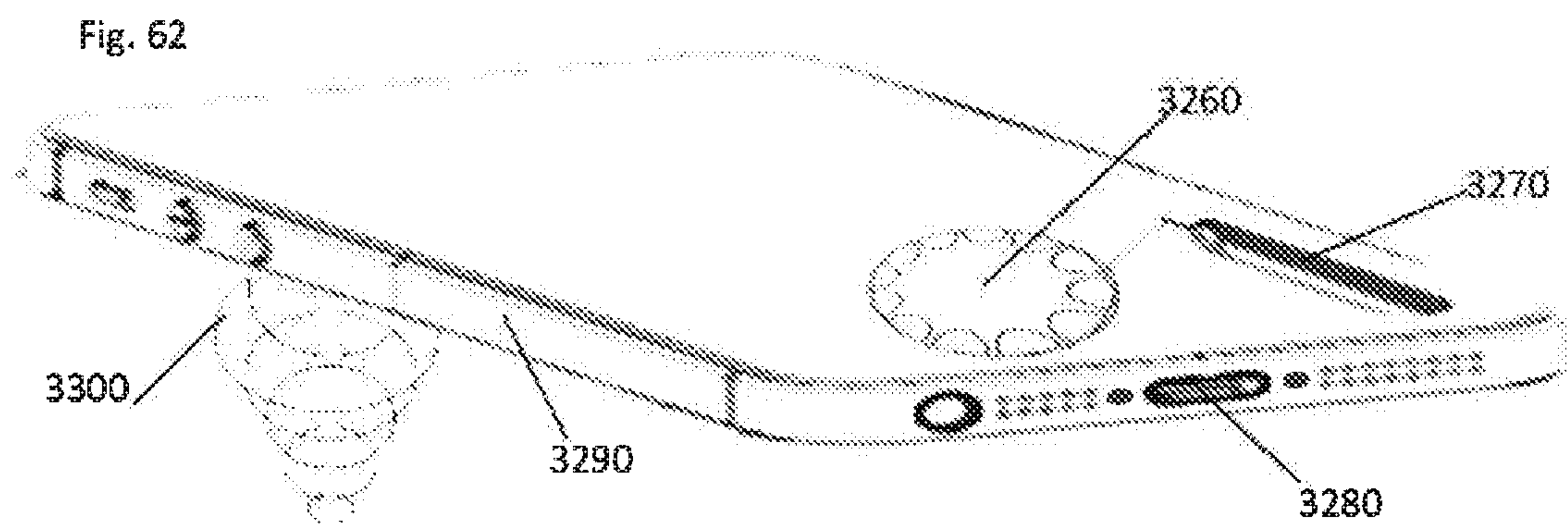


FIG. 67

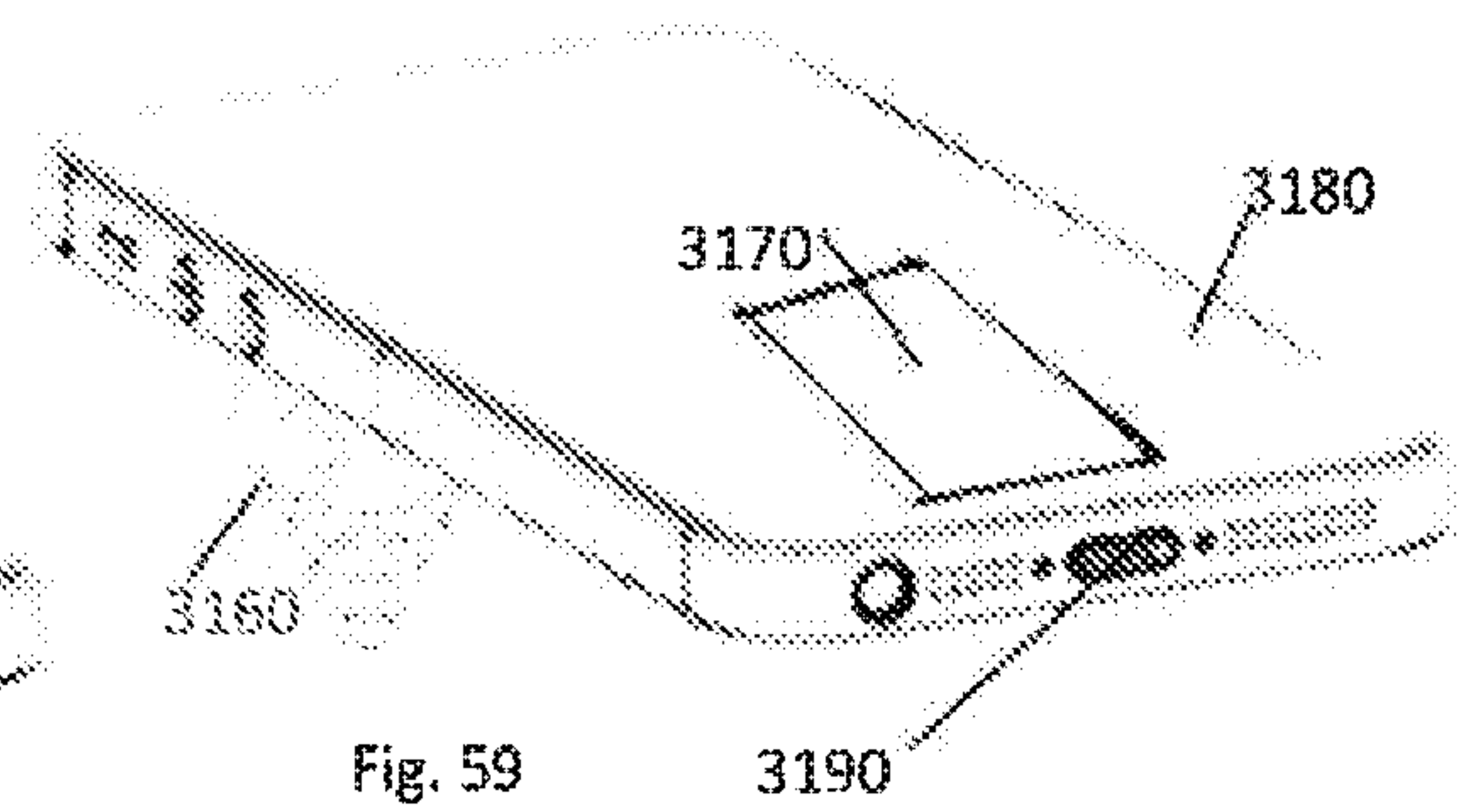
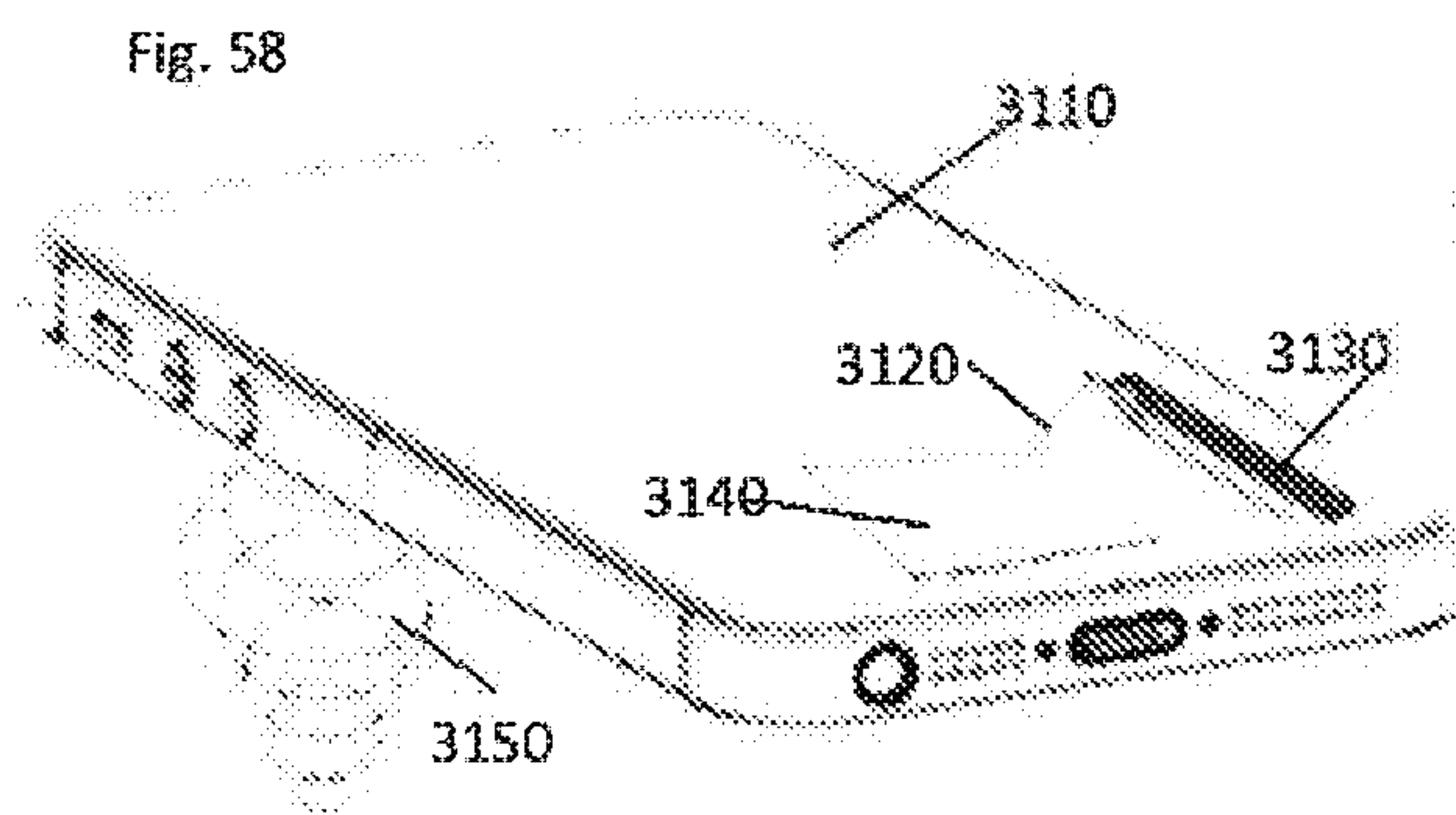


FIG. 68

FIG. 69

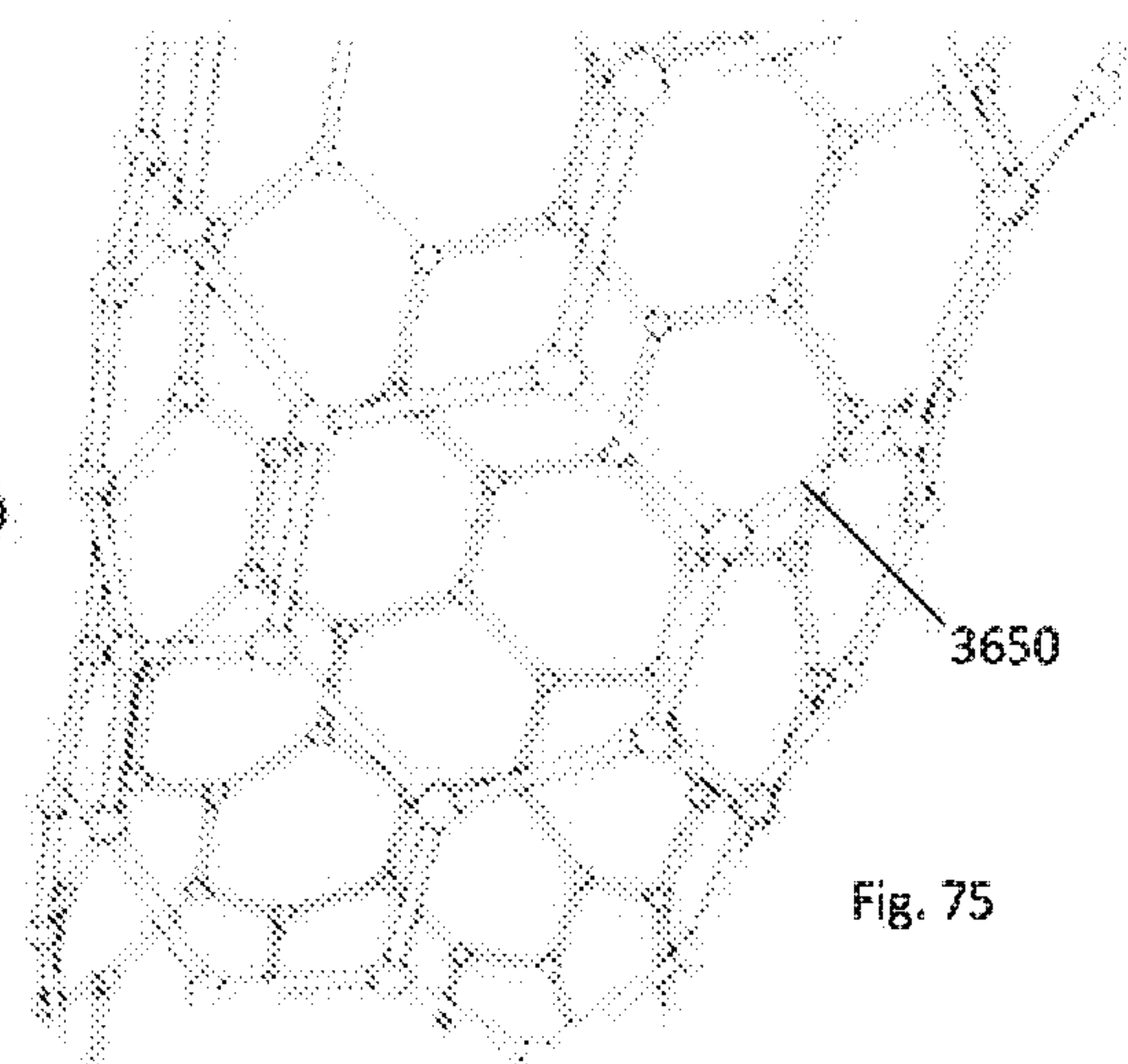
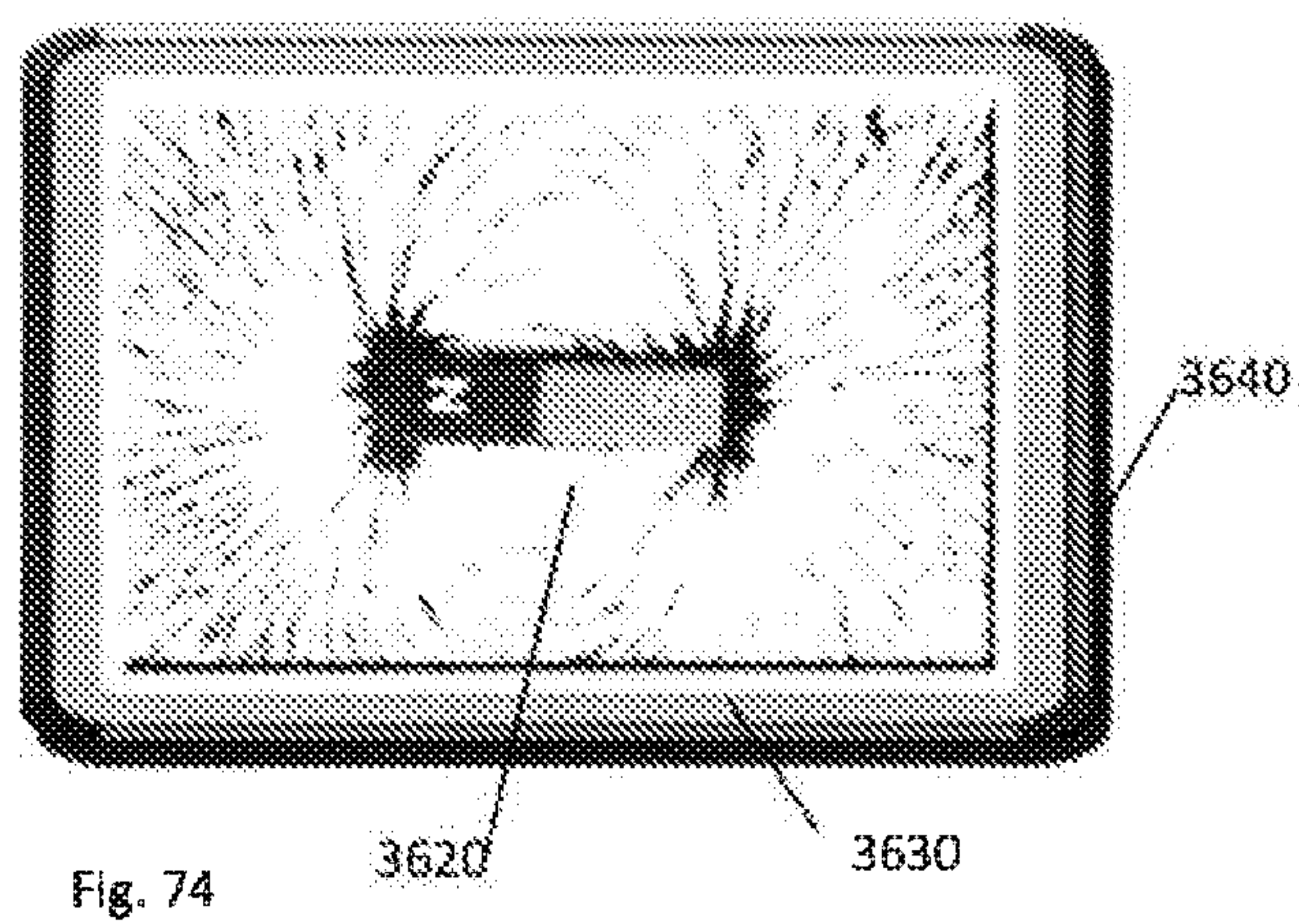


FIG. 70

FIG. 71

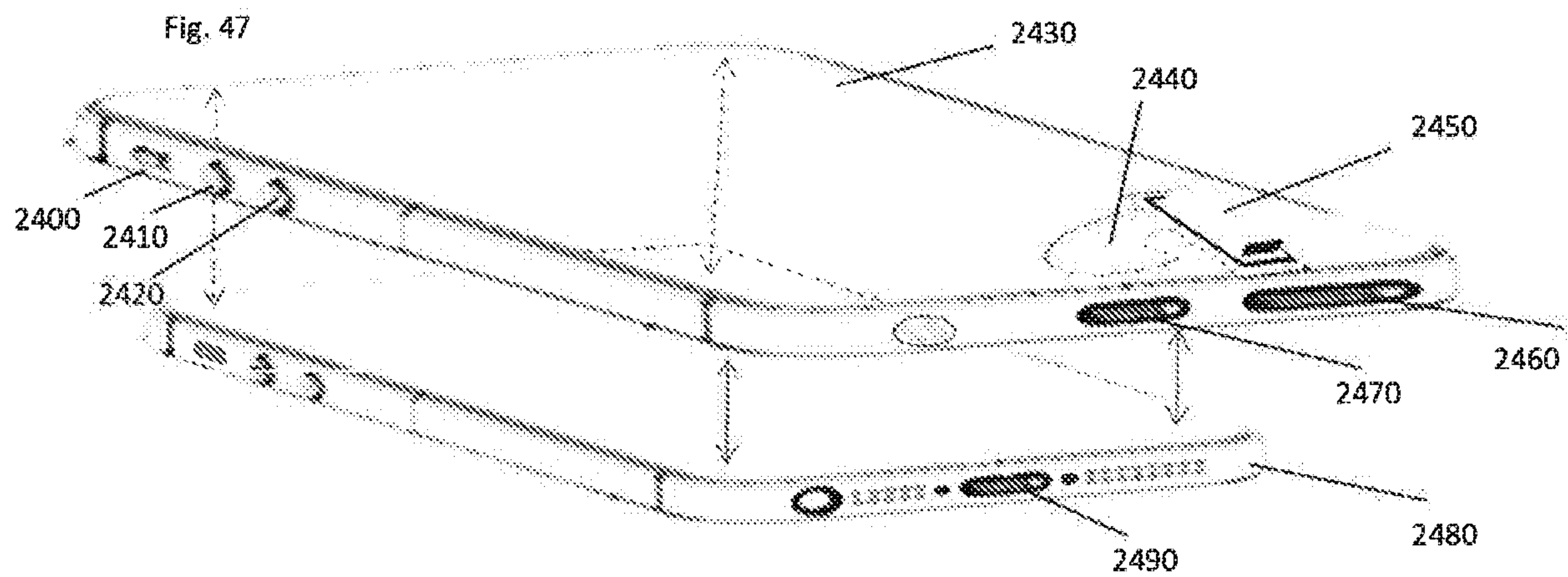
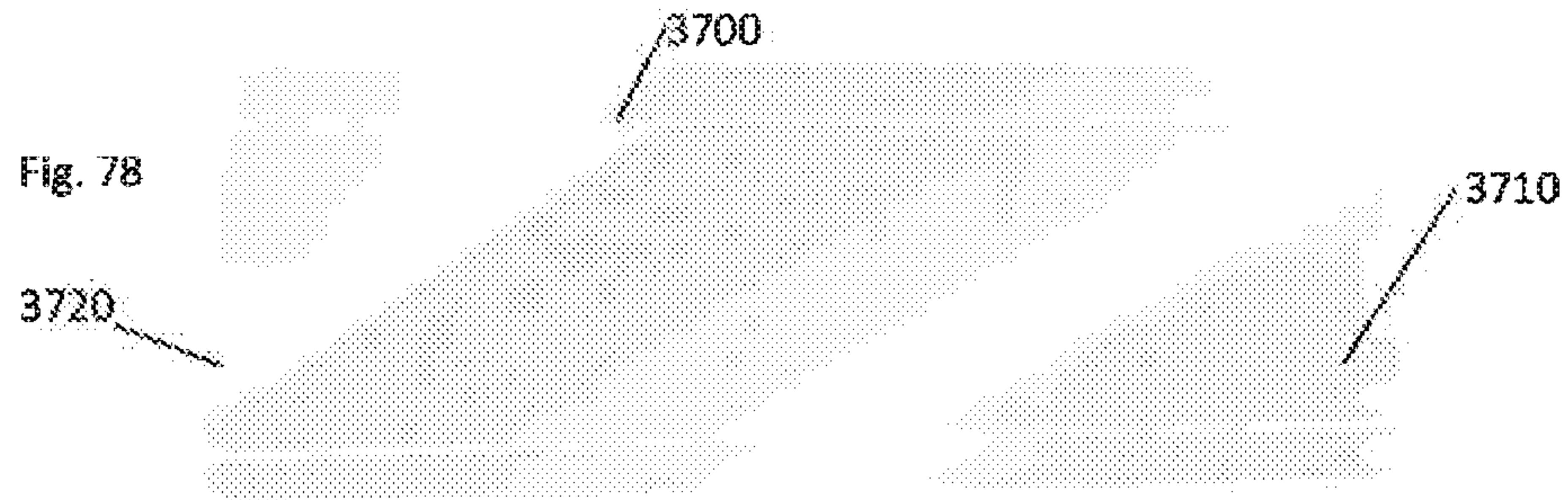
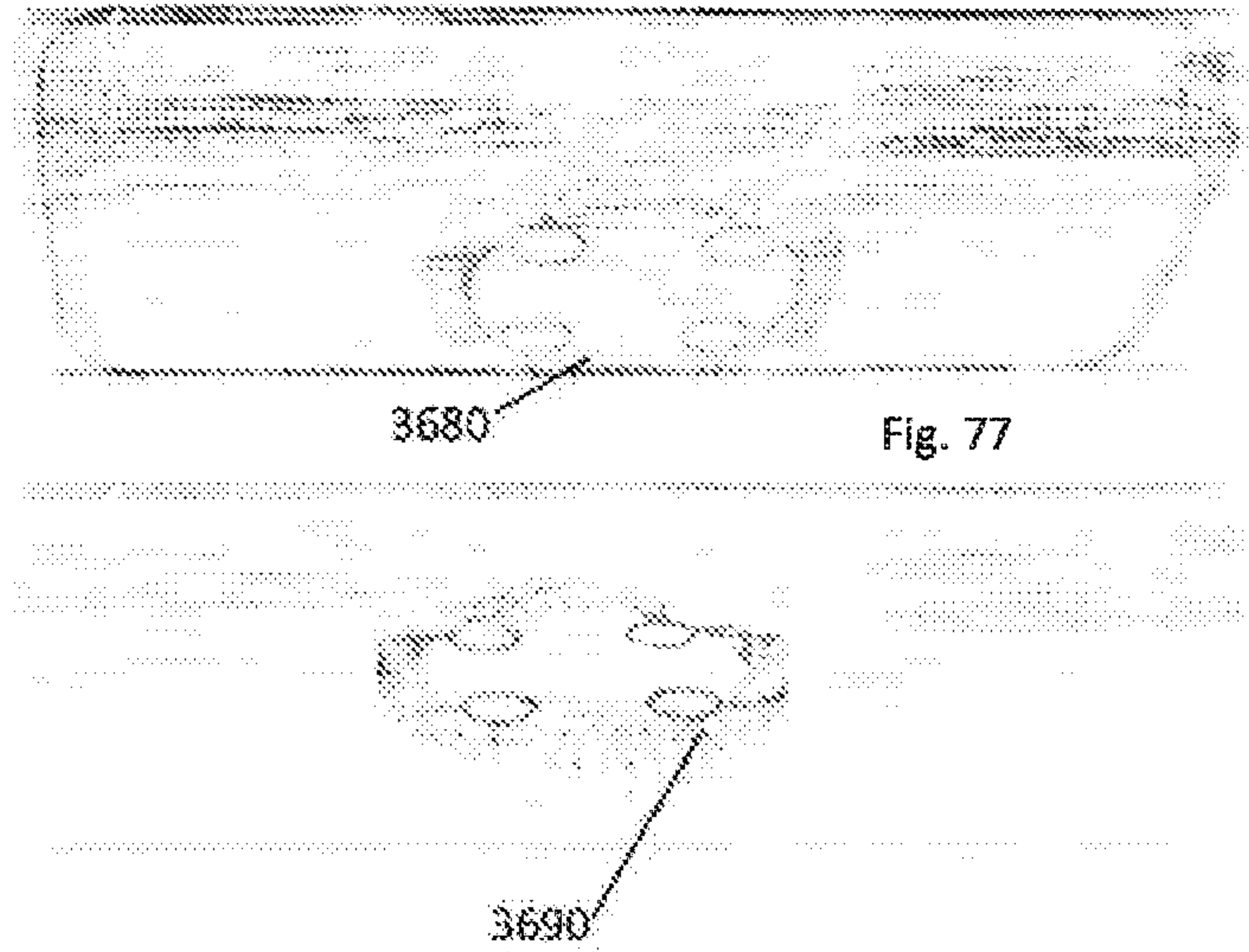
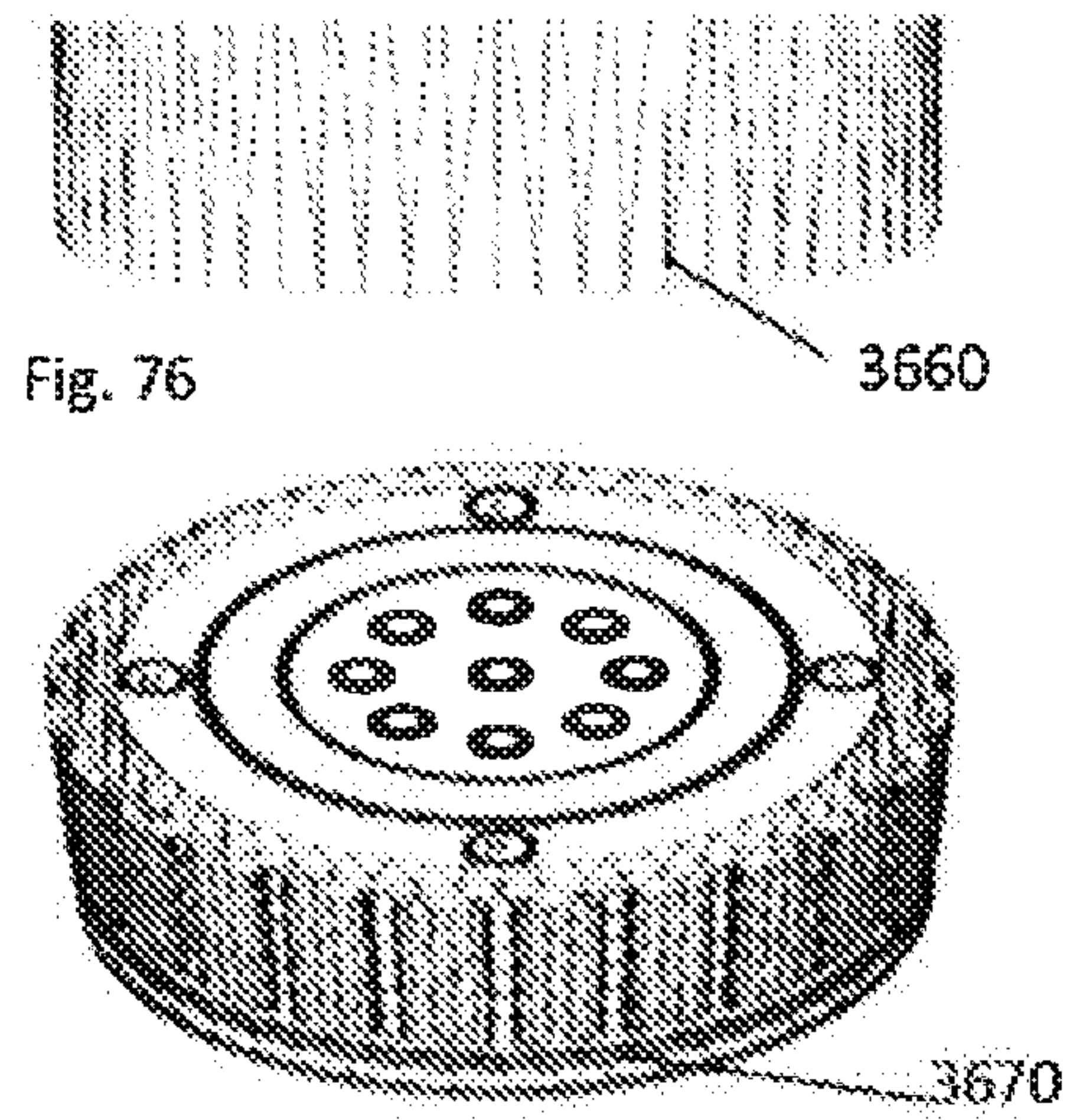
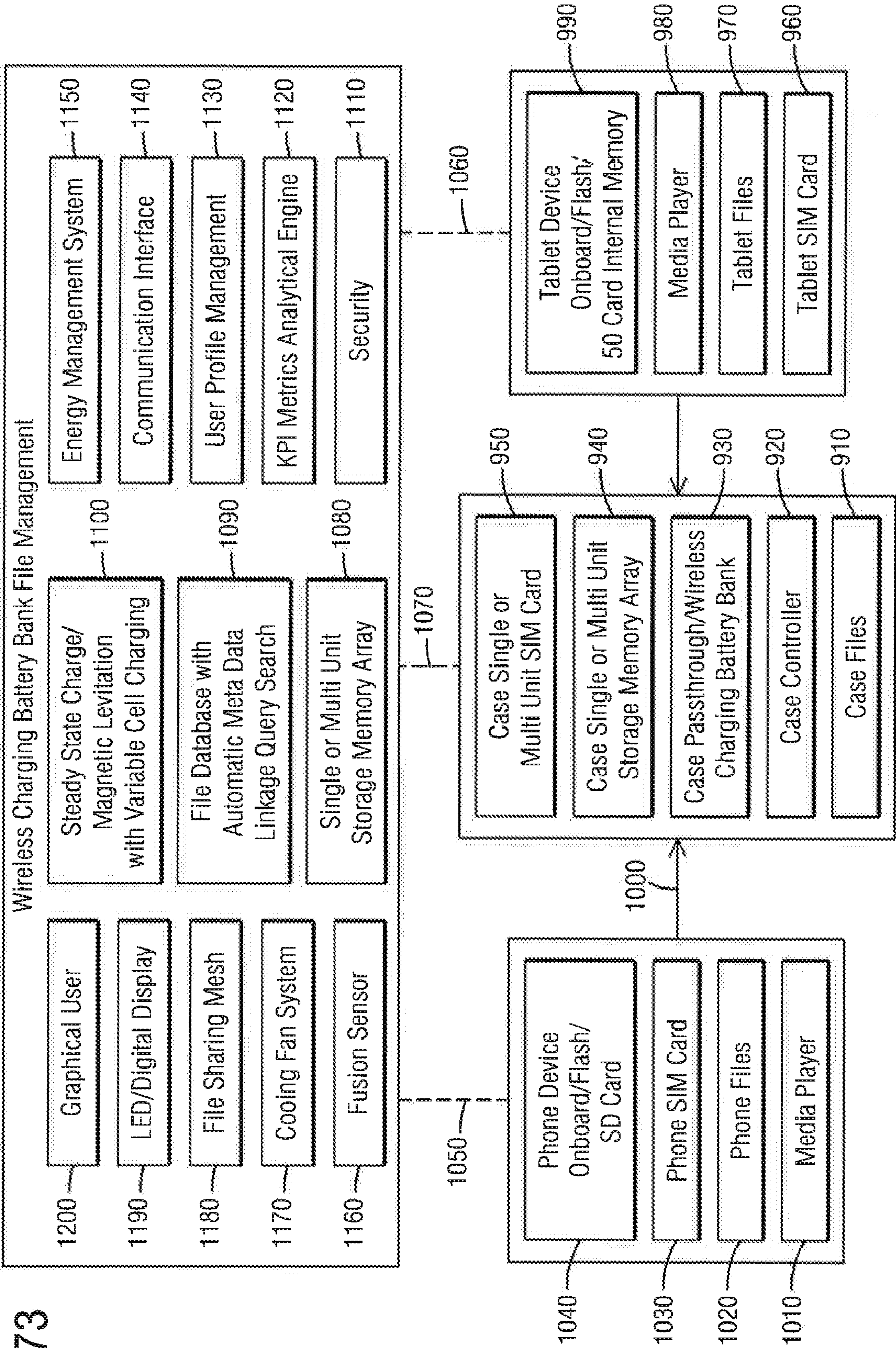


FIG. 72



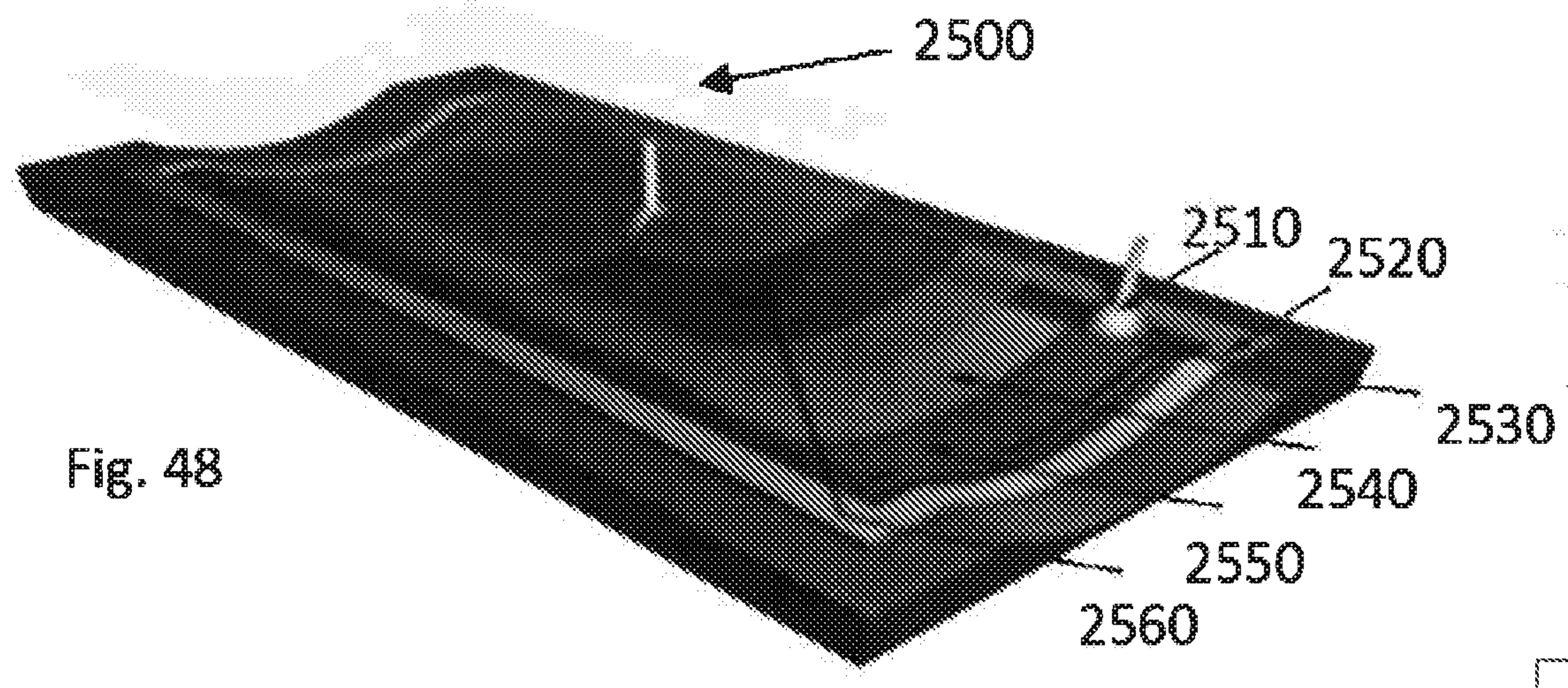


FIG. 74

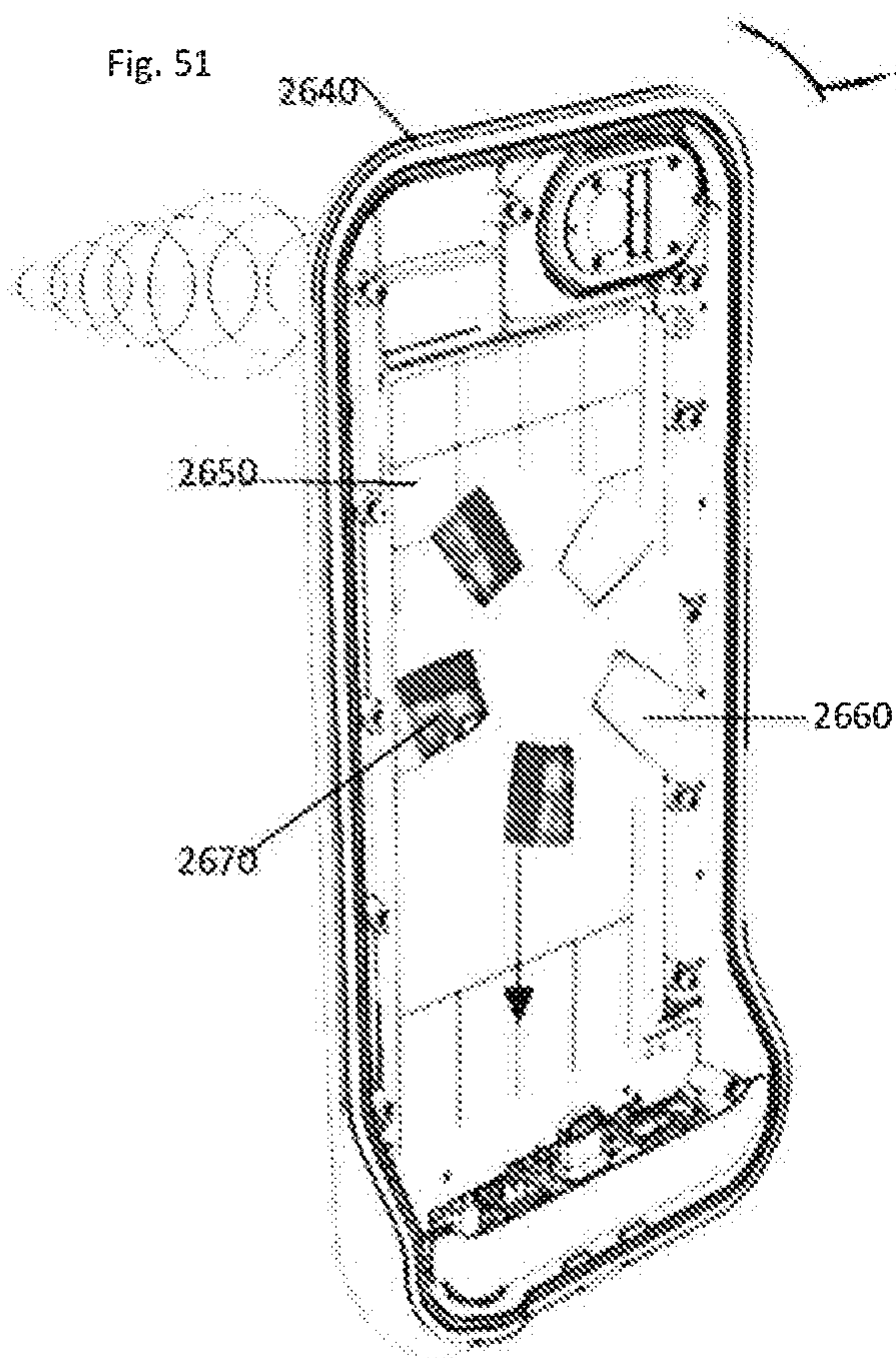


FIG. 75

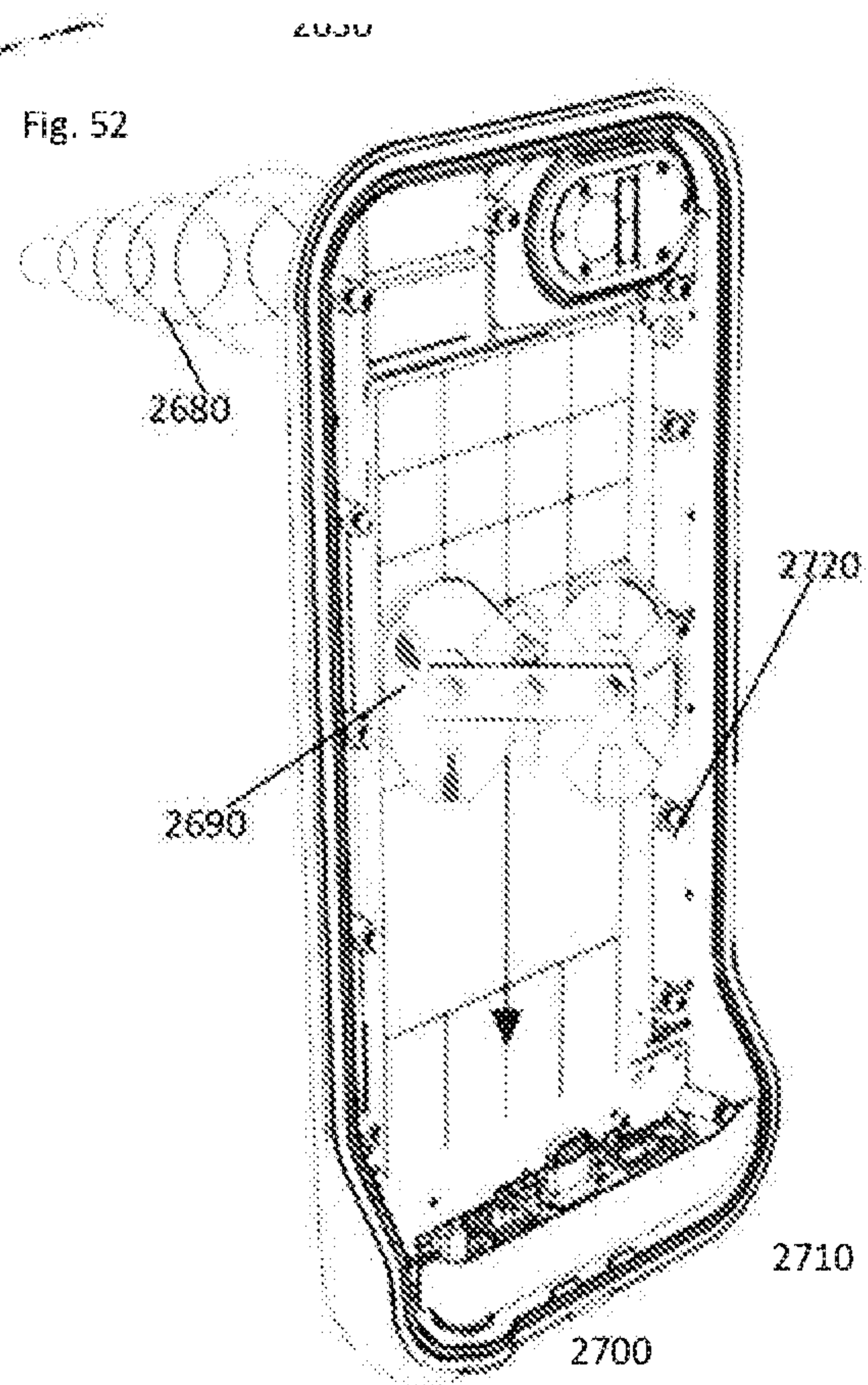


FIG. 76

detecting, with a sensor, an unexpected change in at least one of velocity, acceleration and moisture of a mobile device

deploying, with an activation device, a deployable barrier, stored to a cover that is attached to at least a part of the mobile cover, to protect the mobile device from damage

when to deploy the deployable barrier with a processor in communication with the sensor

FIG. 77

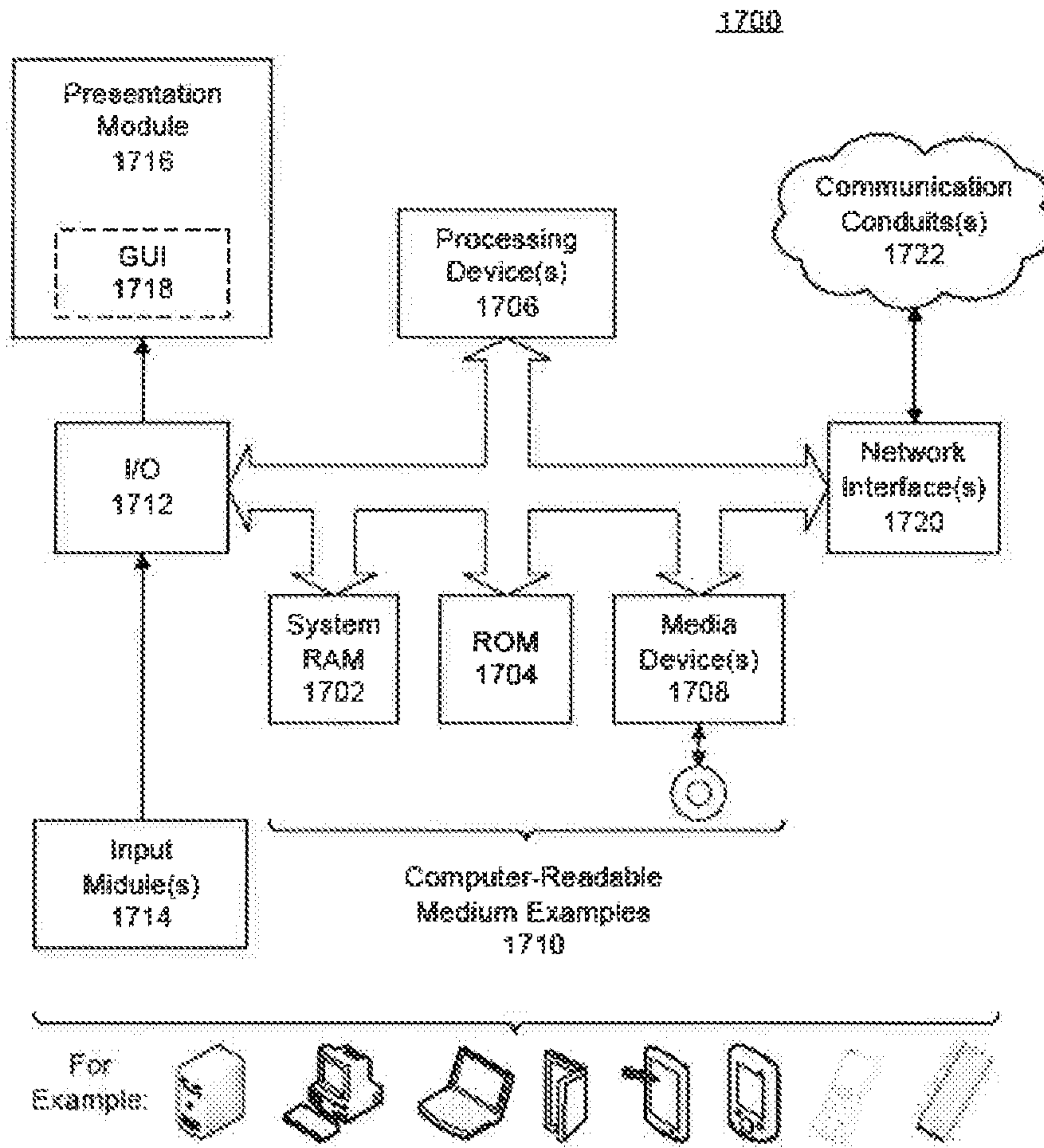


FIG. 78

FIG. 12

