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(54) A tool container

(57) A tool container (10) comprising: a first shell comprising a shell body of a first plastics material and a second plastics material different to the first material; and a second shell comprising a shell body of the first material and the second material. The first shell is coupled to the second shell by means of a hinge (60) to rotate between open and closed positions. The tool container comprises tool supports (202, 204, 212, 213, 214, 215, 223, 224, 233, 234) each arranged to support a respective hand tool inside the tool container. The first shell and/or second shell comprises a window to the or each tool support inside the tool container. The tool supports comprise material of the first shell or second shell pigmented with a fluorescent colour visible through a respective window.

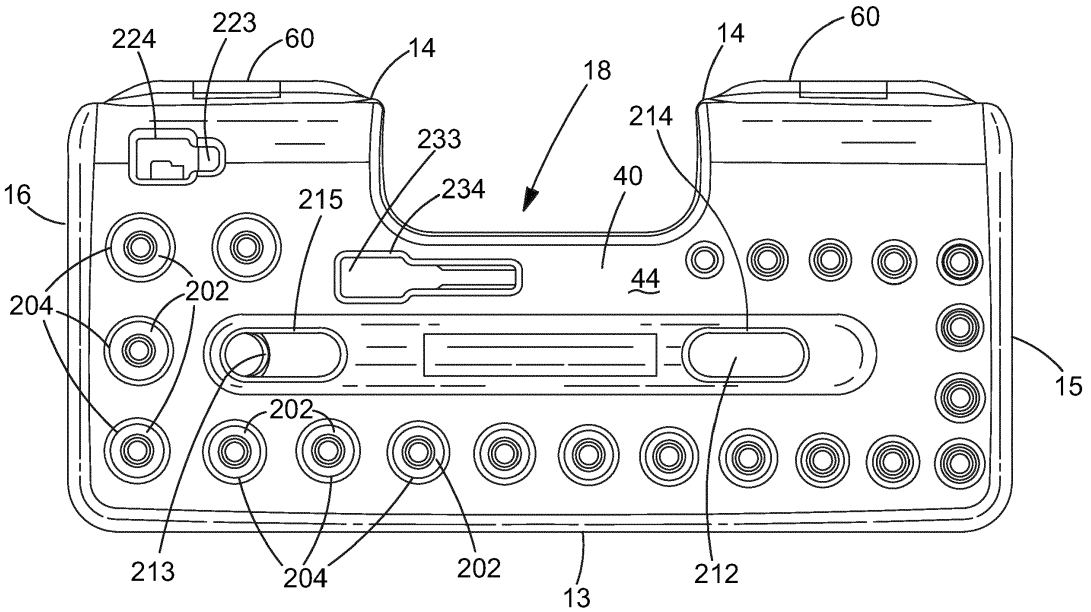

FIG.7

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Description

[0001] The present invention relates to an improved tool container for tools, in particular, a tool container providing visibility to fluorescent tool supports inside the tool container.

[0002] It is known to use containers to store and transport tools. In the past, tool containers, also referred to as tool boxes or tool cabinets, have been made of wood, metal or fabric material. Presently, tool containers are often made of injection molded plastics material. Plastic tool containers have become popular because they are durable, lightweight and relatively inexpensive to manufacture in different shapes and sizes. Often, plastic tool containers comprise a lower, or bottom, plastic shell and an upper, or lid, plastic shell coupled together on one side by a hinge mechanism so that the upper and lower shells may open and close like a pair of clam shells. The plastics material may be molded as an internal tray to organize storage and facilitate the identification and handling of tools located inside the tool container.

[0003] In a development of the plastic tool container, the injection molding process may use two different materials having different physical properties. A first relatively rigid plastics material may be used to provide strength to the shells of the tool container. A second relatively soft plastics material, attached externally to the first material, may be used to provide a softer touch and improves frictional contact and stability of the tool container when rested on a surface.

[0004] Patent publication No. FR2943267 discloses one such plastic tool container made of two plastics materials injection molded together. The tool container comprises an internal tool holding means in the lower shell which employs a combination of the relatively soft plastics material and the relatively rigid plastics material to hold an end of a tool such as a socket for a ratchet wrench. This arrangement maintains the socket in position until a user needs to remove it. To remove the socket, the user tilts the socket to one side away from the rigid material and towards the soft material. The soft material deforms elastically and its resilience ejects the socket from the holding means.

[0005] The present invention relates to a development of the plastic tool container. Accordingly, there is provided a tool container comprising: a first shell comprising a shell body of a first plastics material and a second plastics material relatively soft in relation to the first material; and a second shell comprising a shell body of the first material and the second material, wherein the first shell is coupled to the second shell by means of a hinge to rotate between: a closed position whereat the first and second shells define a space for storing hand tools; and an open position, wherein the tool container comprises at least one tool support arranged to support a respective hand tool in the tool container in the closed position, wherein the first shell and/or second shell comprises a window to the or each tool support inside the tool container wherein the or each tool support comprises second material of one of the first shell or second shell pigmented with a fluorescent colour visible through a respective window. The window provides the user with visibility inside the tool container to see if a particular hand tool is, or is not, present in the tool container. Absence of a hand tool from the tool container may be more easily detected by the user because eye-catching fluorescent colour of the unoccupied tool support becomes visible then when the hand tool is absent. The aero-engine maintenance sector is especially sensitive to what it calls "Foreign Object Damage" (FOD). Fluorescent tool supports may contribute to minimizing FOD by helping to alert the user to the absence of a hand tool in the tool container and the prospect that it may be inadvertently located inside equipment.

[0006] Preferably, the or each tool support is arranged to clasp a respective hand tool between the first and second shells of the tool container in the closed position, wherein the second material is softer in relation to the first material and wherein the at least one tool support comprises a cushion of second material of one of the first shell or second shell. When the tool container is closed, the first and second shells rotate towards each other, in the manner of a clam shell movement, and tightly clasp the hand tools between tool supports, in the manner of a vice grip. The hand tools are made of metal, typically steal or stainless steel, which is not deformable by the plastics materials of the tool container. Natural resilience of the tool supports' second material cushions the hand tools against impacts caused by accidental collisions with the tool container. This may reduce or eliminate rattling noises and may improve the user's working environment. Natural resilience of the second material may provide a soft closure of the first shell against the second shell as the hand tools are clasped between the tool supports. Soft closure may provide a tactile feedback to the user that full closure is approaching. Natural resilience of the second material may help open the tool container by gently baising the first shell away from the lower shell.

[0007] Preferably, the at least one tool support comprises a cushion of second material of the other of the first shell or second shell. Both of the first and second shells comprise the second material. Use of the second material on both sides of each tool support may increase cushioning of the hand tools against impacts, further reduce rattling noises, improves soft closure and biased opening of the first and second shells.

[0008] Preferably, the or each cushion of second material is supported by a respective portion of first material. The first material stiffens he tool support and may make it more durable whilst retaining the softening and absorbing properties of the second material. Preferably, the cushions protrude from the first material by a thickness within a range of 0.5mm and 3mm when uncompressed.

[0009] Preferably, the or each cushion supports the hand tool against movement along three orthogonal axes of the hand tool. The hand tool is restrained from moving along its longitudinal central axis and in a plane orthog-

onal to its longitudinal central axis. This may improve stability of the hand tool.

[0010] Preferably, the or each tool support comprises a support base on one of the first or second shells and a support cap on the other of the first or second shells. The support base may typically support the hand tool from below and cradle it against lateral movement when the tool container is in the open position. The support cap may typically support the hand tool from above and hold it firmly against the support base, in a vice-like grip, when the tool container is in the closed position.

[0011] Preferably, each of the first and second shells is clad with a portion of the second material fixed to the first material. This provides a softer touch and may improve frictional contact and stability of the tool container when rested on a work surface. Also, this may help to protect the tool container and its work environment from impacts caused by inadvertently dropping the tool container. Advantageously, the same second material may be used to clad the first and second shells as is used in the tool supports. To economise on time and materials, the second material of the various components of the tool container may be injection molded all at the same stage of the manufacturing process.

[0012] Preferably, the tool container has in the closed position a generally parallelepiped outer shape comprising a pair of peripheral edges along a side face wherein the locking mechanism is recessed behind the peripheral edges. This helps to avoid or minimize damage to the locking mechanism and/or surroundings if ever the tool container is unintentionally dropped because the locking mechanism is largely sheltered between the peripheral edges.

[0013] Preferably, the pair of peripheral edges along the side face is a pair of straight peripheral edges occupying the same plane as each other. When the tool container is in the closed position and located upright on a flat work surface, the straight peripheral edges may act as feet to support the tool container. Advantageously, the locking mechanism does not contact the work surface. This may improve the stability of the tool container.

[0014] Preferably, the hand tools stored in the tool container comprise one or more of a socket, a ratchet wrench, a drive adapter, a drive extension, a tool bit holder, a screwdriver, a screwdriver bit or a universal joint. Such hand tools are light and small enough to be stored and transported in a plastic tool container.

[0015] The invention and its advantages will be described by way of example and with reference to the accompanying drawings of which:

Figure 1 shows a perspective view of a tool container in an open position;
Figure 2 shows a plan view of the tool container of Figure 1 in an open position with tools;
Figure 3 shows a side elevation view of the tool container of Figure 1 in an open position with tools;
Figure 4 shows a cross-section IV-IV of Figure 2;
Figure 5A shows a detail V of Figure 4 of the cross-section IV-IV;
Figure 5B shows a detail equivalent to detail V with a smaller tool;
Figure 6 shows a perspective view of the tool container of Figure 1 in a closed position;
Figure 7 shows a plan view of the tool container of Figure 1 in a closed position;
Figure 8 shows a side elevation view of the tool container of Figure 1 in a closed position;
Figure 9A shows a perspective detailed view of a tool support of the container of Figure 1 in an open position;
Figure 9B shows a the same view as Figure 9A with a tool cradled by part of the tool support;
Figure 10 shows a cross-sectional view of the tool shown in Figure 9B being clasped by the tool container of Figure 1 in a closed position; and
Figure 11 shows a detail XI of Figure 8.

[0016] Referring to Figures 1 to 11, a tool container 10 comprises a first lower, or bottom, shell 20 and a second upper, or lid, shell 40 pivotally coupled to each other by a pair of hinge joints 60. The first 20 and second 40 shells are made by injection molding at least two plastics materials having relatively different properties. The upper shell 40 is movable relative to the lower shell 20 between an open position (Figure 1) and a closed position (Figure 6). The upper 20 and lower 40 shells may be locked in the closed position by a pair of locks 70 located on an opposite side of the tool container 10 to the hinge joints 60.

[0017] Referring in particular to Figure 6, in the closed position, the tool container 10 is of a generally parallelepiped outer shape with the lower shell 20 disposed substantially parallel to the upper shell 40. The tool container's closed position parallelepiped outer shape comprises a generally rectangular bottom plane face 11, a generally rectangular upper plane face 12 spaced apart from and parallel to the bottom plane face 11. The parallelepiped outer shape further comprises a long narrow peripheral side face 13, 14 between each long peripheral edge of the bottom 11 and upper 12 plane faces and a short narrow peripheral side face 15, 16 between each short peripheral edge of the bottom 11 and upper 12 plane faces. Inside the tool container's parallelepiped outer shape is a hollow space 17, defined by the upper 40 and the lower 20 shells, for storing tools, typically hand tools. The edges of the upper 11 and lower 12 plane faces are rounded for improved ergonomics and handling. The locks 70 are arranged on one of the long peripheral side faces 13 as is explained in more detail below. The other long peripheral side face 14 has a handle bay 18 recessed into the tool container's parallelepiped outer shape between where the hinges 60 are arranged. The handle bay 18 is deep enough to accommodate a human hand.

[0018] Referring in particular to Figures 1 and 3, in the

open position, the tool container 10 resembles an open book where the bottom 11 and upper 12 plane faces are generally parallel and planar and the peripheral side faces 13, 14, 15, 16 are each split in two. The hollow open space 17 is open to provide access to hand tools stored in the tool container 10.

[0019] Referring in particular to Figure 2, the tool container 10 is suitable for storing a plurality of hand tools like, for example, sockets 100 of different working diameters ranging from 10mm to 32mm, a ratchet wrench 110, a drive adapter 120, a short drive extension 130 and a long drive extension 140 or a tool bit holder, a screwdriver, screwdriver bits or a universal joint. Means for supporting and retaining the hand tools are formed, respectively, on the inside of the upper 40 and lower 20 shells.

[0020] The lower shell 20 is made by injection molding a first relatively rigid plastics material and a second relatively soft plastics material having a higher coefficient of friction than the first material. The first plastics material may be, for example, polycarbonate + acrylonitrile, polycarbonate + butadiene, polycarbonate + styrene, polycarbonate + polybutylene terephathalate or polyamide. The second material may be, for example, a thermoplastic elastomer, a thermoplastic rubber or thermoplastic polyurethane. The first material forms a lower shell body 22 which is clad by an over-mould of the second material which forms a lower shell cover 24. Due to compatibility between the first and second materials, there is a chemical adhesion of the coating during over-molding of the lower shell cover 24 on the lower shell body 22. Likewise, the upper shell 40 is made by injection molding the first and second materials. The first material forms an upper shell body 42 which is clad by an over-mould of the second material which forms an upper shell cover 44. Due to compatibility between the first and second materials, there is a chemical adhesion of the coating during over-molding of the upper shell cover 44 on the upper shell body 42.

[0021] Each lock 70 is arranged upon a respective rail 46 protruding from the upper shell body 42 of the long peripheral side face 13. The locks 70 are slidable a small distance in relation to the upper shell body 42 which is sufficient to lock or unlock the lower shell 20 and the upper shell 40. The locks 70 are biased by springs (not shown) to slide towards each other. The tool container 10 comprises a pair of complementary locking parts 72 formed integrally with the lower shell body 22 of the long peripheral side face 13. A complementary locking part 72 is located opposite each of the locks 70 so that when in the closed position, as is shown by Figure 6, each lock 70 may reversibly engage a respective complementary locking part 72 to lock the tool container 10 in the closed position. A user of the tool container 10 may overcome and reverse the bias of the springs to slide the locks away from each other in the direction of arrows E and, in doing so, disengage each lock 70 from its respective complementary locking part 72 to unlock the tool container 10 and allow it to be opened.

[0022] The long peripheral side face 13 and the short peripheral side faces 15, 16 are recessed into the tool container's parallelepiped outer shape behind the peripheral edges of the bottom 11 and upper 12 plane faces. The long peripheral side face 13 and the short peripheral side faces 15, 16 comprise a channel 19 around the tool container 10. Referring in particular to Figures 8 and 11, each lock 70 has an outer gripping face 74 which is accessible to a user. The outer gripping faces 74 occupy the channel 19. The outer gripping faces 74 do not protrude beyond the peripheral edges of the bottom 11 and upper 12 plane faces. Thus, when the tool container 10 is in the closed position and located upright on a flat work surface S, straight peripheral edges SPE of the bottom 11 and upper 12 plane faces contact the work surface S, in the manner of a pair of feet, and the gripping surfaces 74 of the locks 70 do not contact the work surface S. This is ensured by a gap G between the gripping surfaces 74 and the work surface S. This improves the stability of the tool container 10. Also, this helps to avoid or minimize damage to the locks 70 and/or surroundings if ever the tool container 10 is unintentionally dropped.

[0023] The tool container 10 comprises a tool support for each of the hand tools 100, 110, 120, 130, 140. Each tool support has a support base comprising second material protruding inside the lower shell body 22 and a support cap protruding inside the upper shell body 42. When the upper 40 and lower 20 shells are rotated into the closed position, in the manner of a clam shell movement, the tool supports clasp the hand tools between their support bases and support caps, in the manner of a vice grip, as is described in more detail below. The hand tools are made of metal, typically steal or stainless steel, which is not deformable by the plastics materials of the tool container 10. Natural resilience of the second material cushions the hand tools against impacts caused by accidental impacts against the tool container 10. This reduces or eliminates rattling noises. Natural resilience of the second material provides a soft closure of the upper shell 40 against the lower shell 20 as the hand tools are clasped between the support bases and support caps. Soft closure provides a tactile feedback to the user that full closure is approaching. Natural resilience of the second material may help open the tool container 10 by gently baising the upper shell 40 away from the lower shell 20.

[0024] Referring in particular to Figures 1 to 5B, each socket 100 has a generally cylindrical exterior extending longitudinally along a central axis between a driven end 102 with a square internal recess and a working end 104 with a hexagonal internal recess. Figure 2 shows a range of sockets 100 having working ends 104 with flat-to-flat diameters increasing in increments of 1 mm from 10mm to 32mm.

[0025] In the open position of the tool container 10, the driven end 102 of each socket 100 is seated upon a respective support base 202 in the form of a plug 202a integral with a circular disc 202b molded to the lower shell body 22. The plug 202a has an interference fit with the

inside of the driven end 102 which retains the socket 100 in the lower shell 20 and upon the circular disc 202b until the socket is manually pulled from the support base 202 by the user. The diameter of the circular disc 202b corresponds approximately to the outer diameter of the working end 104 of the socket 100 and indicates to the user which flat-to-flat diameter socket belongs on which support base 202.

[0026] Figure 5A shows how a socket 100 having a working end 104 with a flat-to-flat diameter within the range of 18mm to 32mm is clasped between a support base 202 of the lower shell 20 and a support cap 204 of the upper shell 40 when the tool container 10 is in the closed position. The support cap 204 is in the form of an annular shoulder 204a around a window 204b through the upper shell body 42. The annular shoulder 204a is integral with the upper shell body 42. The window 204b is lined by second material of the upper shell cover 44. The annular shoulder 204a engages the working end 104 to clasp the socket 100 between the support base 202 and the support cap 204.

[0027] Figure 5B shows how a socket 100 having a working end 104 with a flat-to-flat diameter within the range of 10mm to 17mm is clasped between a support base 202 of the lower shell 20 and a support cap 204 of the upper shell 40 when the tool container 10 is in the closed position. The support cap 204 comprises an annular shoulder 204a around a window 204b through the upper shell body 42. The annular shoulder 204a is integral with the upper shell body 42. The window 204b is lined by a lip 204c of second material of the upper shell cover 44. The lip 204c is molded over the annular shoulder 204a too. To compensate for the smaller height of sockets having a flat-to-flat diameter within the range of 10mm to 17mm, the support base 202 is molded to a raised cylindrical pillar 202c of first material protruding upward from the lower shell body 22. The lip 204c, supported by the annular shoulder 204a, engages the working end 104 to clasp the socket 100 between the support base 202 and the support cap 204.

[0028] The window 204b provides the user with visibility into the hollow space 17 to see if the socket is, or is not, present in the tool container 10. The second material of the support base 202 may be pigmented with a fluorescent colour. Absence of a socket from the tool container 10 is more easily detected by the user because eye-catching fluorescent colour is visible then when the socket 100 is present.

[0029] The ratchet wrench 110 has a handle 112 at one end and a working head 114 at the opposite end connected to the handle by an elongate shaft 116.

[0030] In the open position of the tool container 10, each of the handle 112 and the working head 114 is seated upon a respective support base 212, 213 having a shape that can fit around the part of the ratchet wrench 110 it supports. The support base 212 of the handle 112 comprises an oval pillar 212a of first material protruding from the lower shell body 22 over-molded with an oval cushion 212b of second material. The support base 213 of the working head 114 comprises a generally cylindrical collar 213a of first material protruding from the lower shell body 22 and surrounding a cushion 213b of second material molded to the lower shell body 22. A silhouette 216 of second material molded to the lower shell body 22 between the support bases 212, 213 has a shape resembling a ratchet wrench to indicates to the user where to locate the ratchet wrench 110.

[0031] In the closed position, each of the working head 114 and the handle 112 is engaged by a respective support cap 214, 215 each in the form of an oval rim 214a, 215a around a correspondingly shaped window 214b, 215b through the upper shell body 42. The oval rims 214a, 215a engage the handle 112 and the working head 114 to clasp the ratchet wrench 110 between the support bases 212, 213 and the support caps 214, 215. The window 214b, 215b provides the user with visibility into the hollow space 17 to see if the ratchet wrench 110 is, or is not, present in the tool container 10. Optionally, the oval rims 214a, 215a may be over-molded by second material from the upper shell cover 44. This second material may further reduce rattling noises, improve soft closure of the upper shell 40 against the lower shell 20, and assist opening of the tool container 10.

[0032] The drive adapter 120 has a generally cylindrical driven end 122 with a square internal recess and a driving end 124 with a square cross-section different to the internal recess of the driven end 122.

[0033] In the open position of the tool container 10, each of the driven end 122 and the driving end 124 is cradled by a respective support base 222, 223 having a shape that can fit the part of the drive adapter 120 it supports. Each support base 222, 223 comprises a pillar 222a, 223a of first material protruding from the lower shell body 22 over-molded with a cushion 222b, 223b of second material. The cushions 222b, 223b surround the extreme ends of the drive adapter 120 and retain it in the support bases 222, 223 with an interference fit. A silhouette 226 of second material molded to the lower shell body 22 between the support bases 222, 223 in the shape of a drive adapter indicates to the user where to locate the drive adapter 120.

[0034] In the closed position, each of the driven end 122 and the driving end 124 is engaged by a support cap 224 in the form of a rim 224a around a window 224b through the upper shell body 42. The rim 224a is shaped to fit the profile of the drive adapter 120. The rim 224a engages the driven end 122 and the driving end 124 to clasp the drive adapter 120 between the support bases 222, 223 and the support cap 224. The window 224b provides the user with visibility into the hollow space 17 to see if the drive adapter 120 is, or is not, present in the tool container 10. Optionally, the rim 224a may be over-molded by second material from the upper shell cover 44. This second material may further reduce rattling noises, improve soft closure of the upper shell 40 against the lower shell 20, and assist opening of the tool container 10.

[0035] The short drive extension 130 has driven end 132 and an opposite driving end 134 connected to the driven end 132 by a shaft 136.

[0036] In the open position of the tool container 10, each of the driven end 132 and the driving end 134 is cradled by a respective support base 232, 233 having a shape that can fit the part of the short drive extension 130 it supports. Each support base 232, 233 comprises a pillar 232a, 233a of first material protruding from the lower shell body 22 over-molded with a cushion 232b, 233b of second material. The cushions 232b, 233b surround the extreme ends of the short drive extension 130 and retain it in the support bases 232, 233 with an interference fit. A silhouette 236 of second material molded to the lower shell body 22 between the support bases 232, 233 in the shape of a short drive extension indicates to the user where to locate the short drive extension 130.

[0037] In the closed position, each of the driven end 132 and the driving end 134 is engaged by a support cap 234 in the form of a rim 234a about a window 234b through the upper shell body 42. The rim 234a is shaped to fit the profile of the short drive extension 130. The rim 234a engages the driven end 132 and the driving end 134 to clasps the short drive extension 130 between the support bases 232, 233 and the support cap 224. The window 224b provides the user with visibility into the hollow space 17 to see if the short drive extension 130 is, or is not, present in the tool container 10. Optionally, the rim 234a may be over-molded by second material from the upper shell cover 44. This second material may further reduce rattling noises, improve soft closure of the upper shell 40 against the lower shell 20, and assist opening of the tool container 10.

[0038] Referring in particular to Figures 9A, 9B and 10, the long drive extension 140 has a driven end 142 and an opposite driving end 144 connected to the driven end 142 by an elongate shaft 146.

[0039] In the open position of the tool container 10, the shaft 146 is cradled by a pair of support bases 242, 243. One support base 242 is located near or adjacent the driven end 142. The other support base 243 is located near or adjacent the driving end 144. Each support base 242, 243 comprises a pillar 242a, 243a of first material protruding from the lower shell body 22 over-molded with a hollow semi-cylindrical cushion 242b, 243b of second material. The shaft 146 is restrained from movement in a direction parallel to a longitudinal central axis X of the long drive extension 140 between a pair of stops 244, 245. One stop 244 faces the driven end 142. The other stop 245 faces the driving end 143. Each stop 244, 245 comprises a pillar 244a, 245a of first material protruding from the lower shell body 22 over-molded (on a side facing towards the long drive extension 140) with a pad 244b, 245b of second material. The pads 244b, 245b engage the driven end 142 and the driving end 144 and retain the short drive extension 130 with an interference fit. Silhouettes 246, 247 of second material molded to the lower shell body 22 between the support base 242 and the stop 244 and between the support base 243 and the stop 245 resemble portions of the driven end 142 and the driving end 144 to indicate to the user where to locate the long drive extension 140.

[0040] In the closed position, the shaft 146 is engaged by a pair of support caps 248, 249. One support cap 248 is located near or adjacent the driven end 142. The other support cap 249 is located near or adjacent the driving end 144. Each support cap 248, 249 comprises a pillar 248a, 249a of first material protruding from the upper shell body 42 over-molded with a hollow semi-cylindrical cushion 248b, 248b of second material. In Figures 1, 2, 9A and 9B, the cushions 248b, 249b are each shown as two parallel strips of semi-cylindrical cushion but they could just as easily be one larger strip of semi-cylindrical cushion like the cushions 242b, 243b of the support bases 242, 243. The cushions 248b, 248b engage the shaft 146 to clasp the long drive extension 140 between the support bases 242, 243 and the support caps 247, 248. The support bases 242, 243 and the support caps 247, 248 restrain movement of the long drive extension 140 in a plane orthogonal to the longitudinal central axis X of the long drive extension 140.

[0041] The second material of the cushion 242b protrudes from the pillar 242a by a thickness of typically 1.2mm but which may be within a range of 0.5mm to 3mm. Likewise, the second material of the cushion 248b protrudes beyond the pillar 248a by a thickness of typically 1.2mm but which may be within a range of 0.5mm to 3mm. Referring in particular to Figure 10, when tool container 10 is in the closed position, and the long drive extension 140 is clasped firmly between the support base 242 and the support cap 248, the cushions 242b, 248b are compressed to a thickness F of between 0.3mm and 1 mm. Figure 10, shows the support base 242 and the support cap 248. However, it is equally the case that when the long drive extension 140 is clasped firmly between the support base 243 and the support cap 249, the cushions 243b, 249b are slightly compressed to a thickness F of between 0.3mm and 1 mm.

[0042] Referring in particular to Figure 6, the long drive extension 140 is visible because it spans the handle bay 18 of the tool container 10 when it is clasped between the support bases 242, 243 and the support caps 247, 248. In this location, the long drive extension 140 serves the purpose of a handle. This saves weight because an additional handle is not required. Natural resilience of the second material of the cushions 242b, 243b, 248b, 249b and the pads 244b, 245b softens the feel of the long drive extension 140 and makes it more comfortable to the user holding the tool container 10.

[0043] The description discloses a tool container 10 with first and second shells 20, 40 made by injection molding two plastics materials having relatively different properties. The injection molding may be done with the first and second materials simultaneously. Preferably, the injection molding may be done sequentially with the first material of the upper and lower shell bodies 22, 42

being molded first and the second material of the upper and lower shell bodies being molded to the first material. It will be understood by the skilled addressee that the sockets 100, the ratchet wrench 110, the drive adapter 120, and the short drive extension 130 may be supplemented or substituted by other hand tools like, for example, a tool bit holder, a screwdriver, screwdriver bits or a universal joint. The tool container 10 need only be modified to make space for the other hand tools and have tool supports with appropriately shaped tools supports and tool bases.

Claims

1. A tool container (10) comprising:

a first shell (20) comprising a shell body (22) of a first plastics material and a second plastics material different to the first material; and
a second shell (40) comprising a shell body (42) of the first material and the second material,
wherein the first shell is coupled to the second shell by means of a hinge (60) to rotate between:

a closed position whereat the first and second shells define a space (17) for storing hand tools; and
an open position,
wherein the tool container comprises at least one tool support (202, 204, 212, 213, 214, 215, 222, 223, 224, 232, 233, 234, 242, 243, 248, 249) arranged to support a respective hand tool (100, 110, 120, 130, 140) in the tool container in the closed position, wherein the first shell (20) and/or second shell (40) comprises a window (204b, 214b, 224b, 234b) to the or each tool support inside the tool container **characterized in that** the or each tool support (202) comprises second material of one of the first shell or second shell pigmented with a fluorescent colour visible through a respective window.

2. A tool container as claimed in claim 1, wherein the or each tool support is arranged to clasp a respective hand tool (100, 110, 120, 130, 140) between the first and second shells of the tool container in the closed position, wherein the second material is softer in relation to the first material and wherein the at least one tool support comprises a cushion (202b, 204c, 212b, 213b, 222b, 223b, 232b, 233b, 242b, 243b, 248b, 249b) of second material of one of the first shell or second shell.

3. A tool container as claimed in claim 2, wherein the at least one tool support comprises a cushion (202b, 204c, 212b, 213b, 222b, 223b, 232b, 233b, 242b, 243b, 248b, 249b) of second material of the other of the first shell (20) or second shell (40).

4. A tool container as claimed in either one of claims 2 or 3, wherein the or each cushion is supported by a respective portion (242a, 243a, 244a, 245a, 248a, 249a) of first material.

5. A tool container as claimed in any one of claims 2 to 4, wherein the or each cushion (202b, 204c, 212b, 213b, 222b, 223b, 232b, 233b, 242b, 243b, 248b, 249b) of second material protrudes from the first material by a thickness of within the range of 0.5mm and 3mm when uncompressed.

6. A tool container as claimed in any one of claims 2 to 5, wherein the or each cushion (242b, 243b, 244b, 245b, 248b, 249b) supports the hand tool (140) against movement along three orthogonal axes of the hand tool.

7. A tool container as claimed in any one of claims 2 to 6, wherein the or each tool support comprises a support base (202, 212, 213, 222, 223, 232, 233, 242, 243) on one of the first or second shells and a support cap (204, 214, 215, 224, 234, 248, 249) on the other of the first or second shells.

8. A tool container as claimed in any one of claims 2 to 7, wherein each of the first and second shells is clad with a portion of the second material fixed to the first material.

9. A tool container as claimed in any one of the previous claims, wherein the tool container (10) has in the closed position a generally parallelepiped outer shape comprising a pair of peripheral edges along a side face (13) wherein the locking mechanism (70, 72, 74) is recessed behind the peripheral edges.

10. A tool container as claimed in claim 10, wherein the pair of peripheral edges along the side face (13) is a pair of straight peripheral edges (SPE) occupying the same plane.

11. A tool container as claimed in any one of the previous claims, wherein the hand tools stored in the tool container comprise one or more of a socket (100), a ratchet wrench (110), a drive adapter (120), a drive extension (130, 140), a tool bit holder, a screwdriver, a screwdriver bit or a universal joint.

12. A tool container substantially as hereinbefore described with reference to the accompanying drawings.

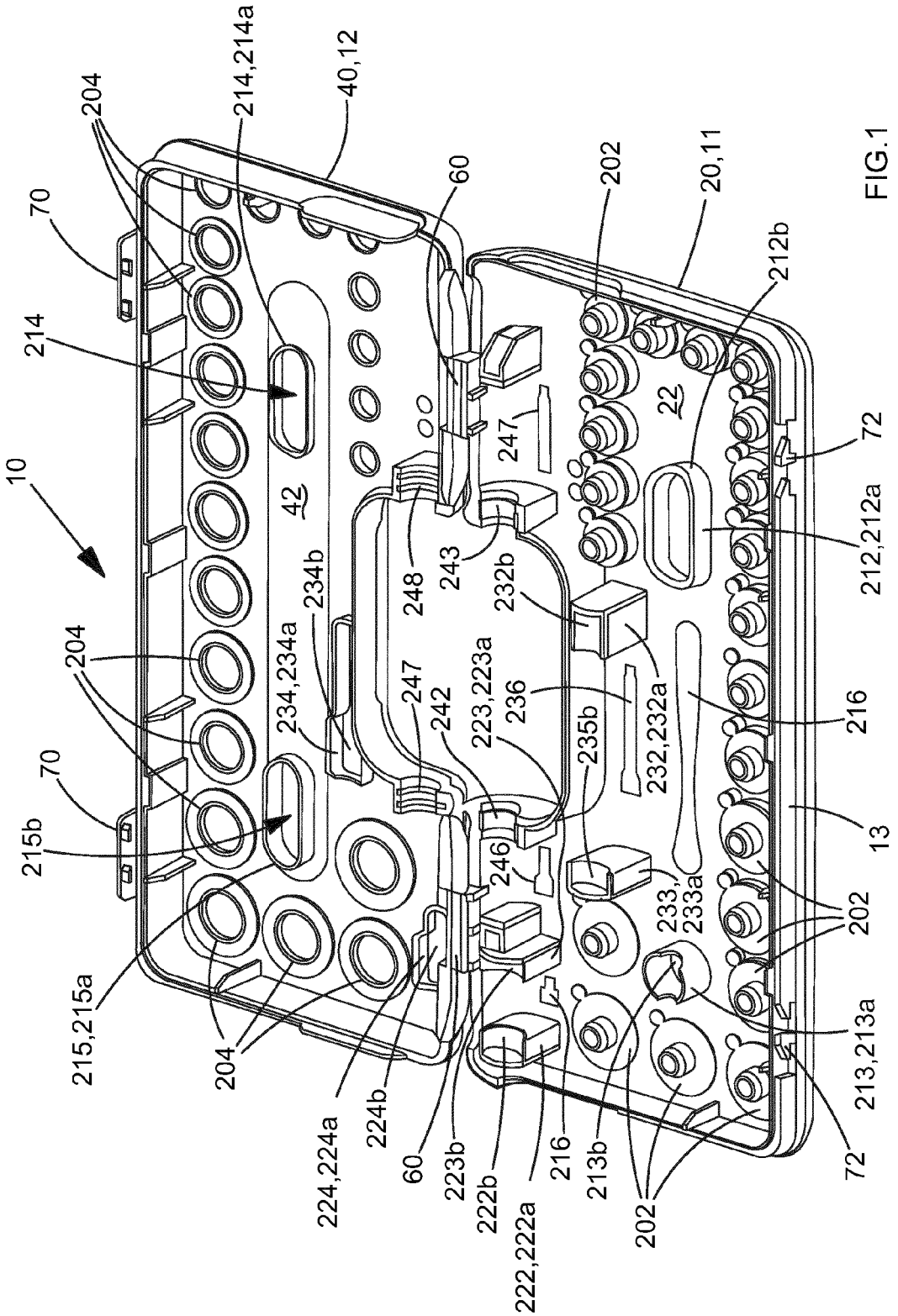
10
214
214,214a
40,12
204
70
60
202
20,11
212b
22
72
212,212a
42
247
248
243
232b
234b
234,234a
247
242
223,223a
236
235b
232,232a
216
246
13
233,
233a
202
213,213a
72
215b
70
215,215a
204
224,224a
224b
60
223b
222b
222,222a
216
213b
202

FIG.1

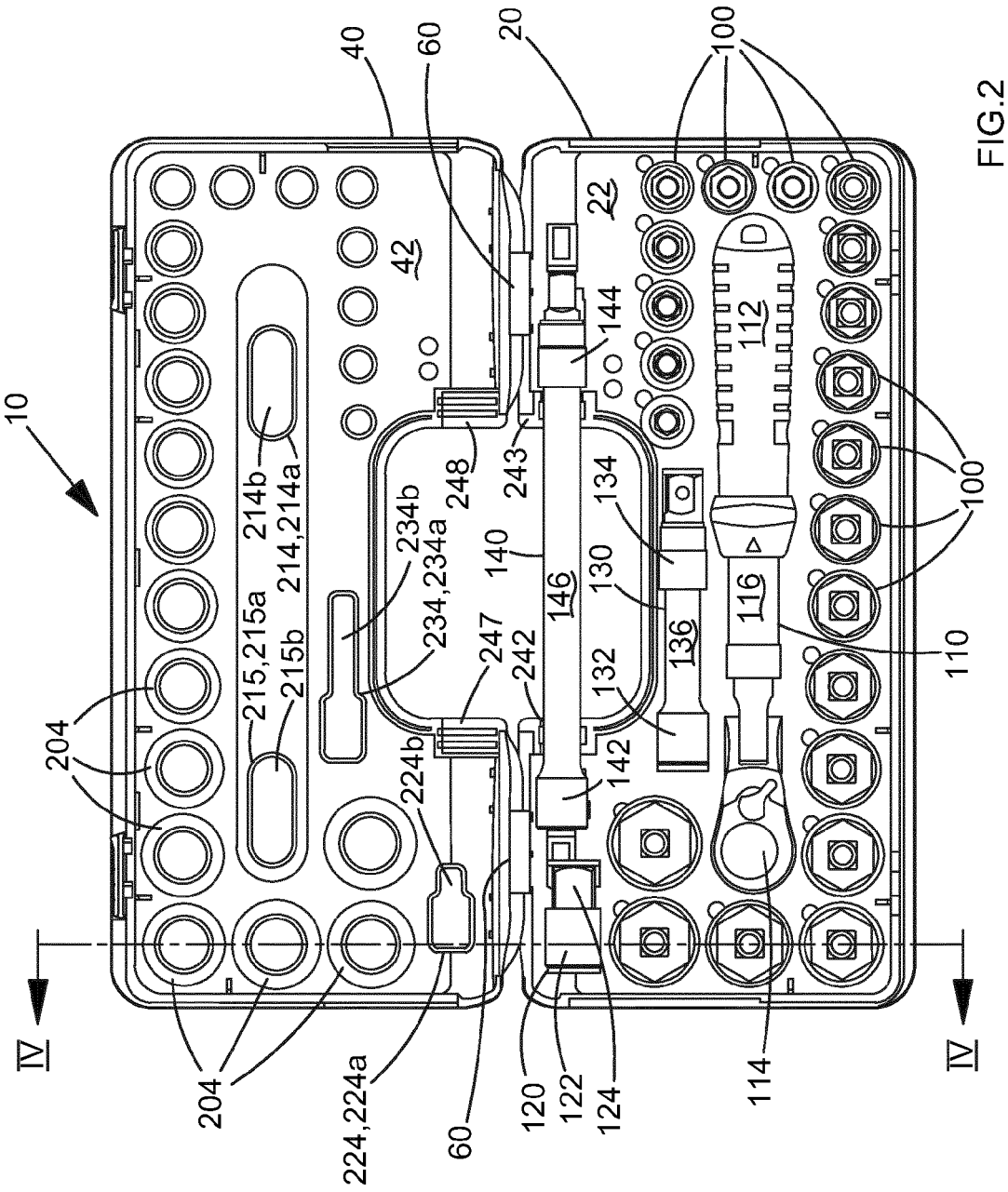
10
40
60
20
100
22
42
144
112
248
243
234b
234,234a
140
134
130
146
116
110
214b
214,214a
215,215a
215b
247
242
132
136
204
224b
142
224,224a
60
120
122
124
114
IV
IV

FIG.2

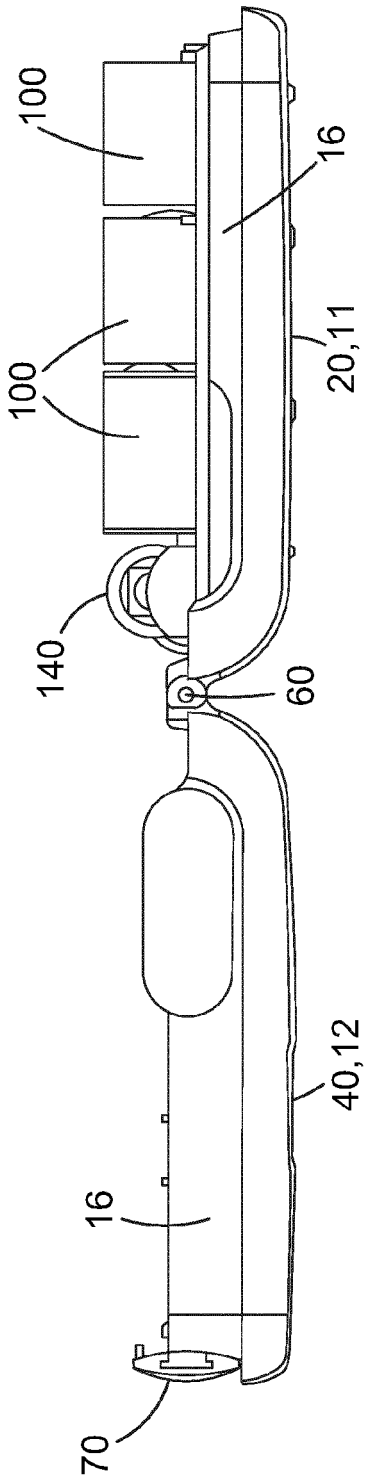
100
16
100
20,11
140
60
40,12
16
70

FIG.3

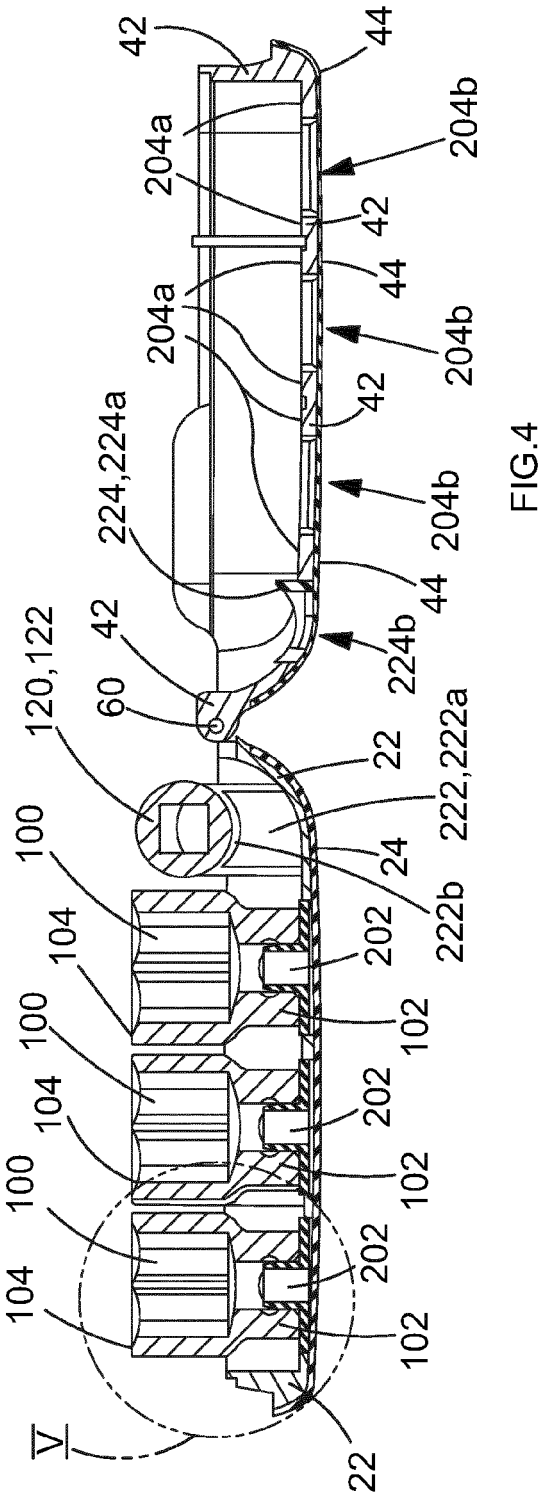
42
44
204a
204b
42
44
204a
204b
42
224,224a
204b
44
224b
42
120,122
60
22
222,222a
24
100
222b
104
202
102
100
104
202
102
100
104
202
102
V
22

FIG.4

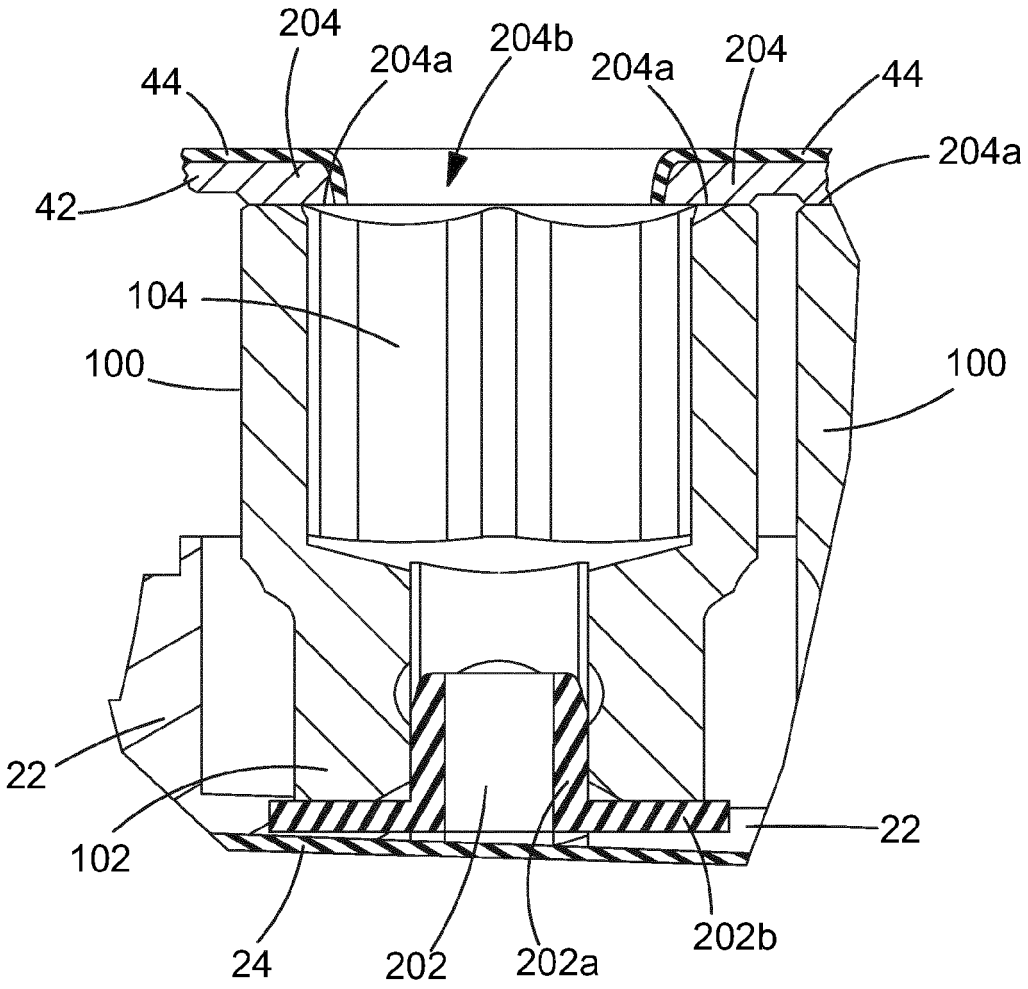
204
204a
204b
204a
204
44
44
204a
42
104
100
100
22
22
102
24
202
202a
202b

FIG.5A

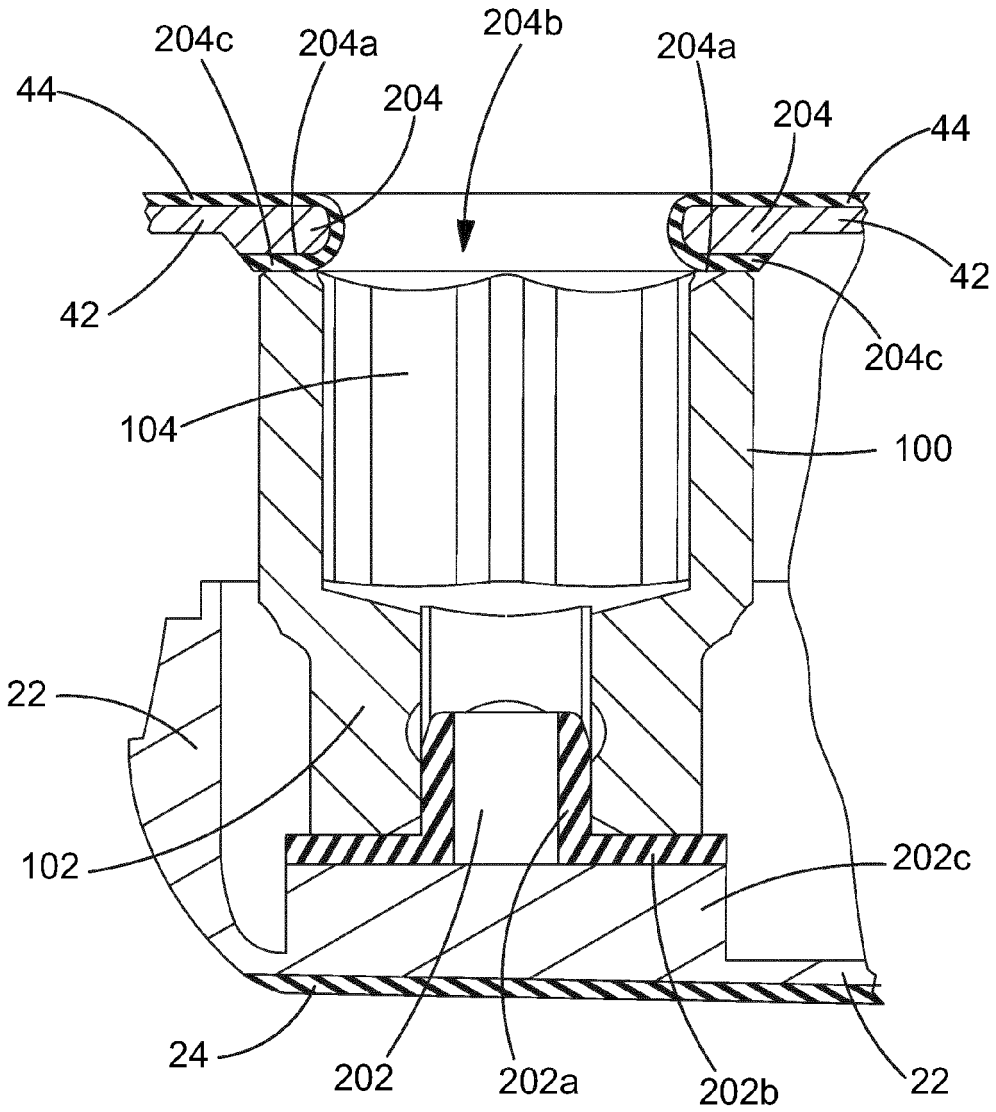
204c
204a
204b
204a
44
204
204
44
42
42
204c
104
100
22
102
202c
24
202
202a
202b
22

FIG.5B

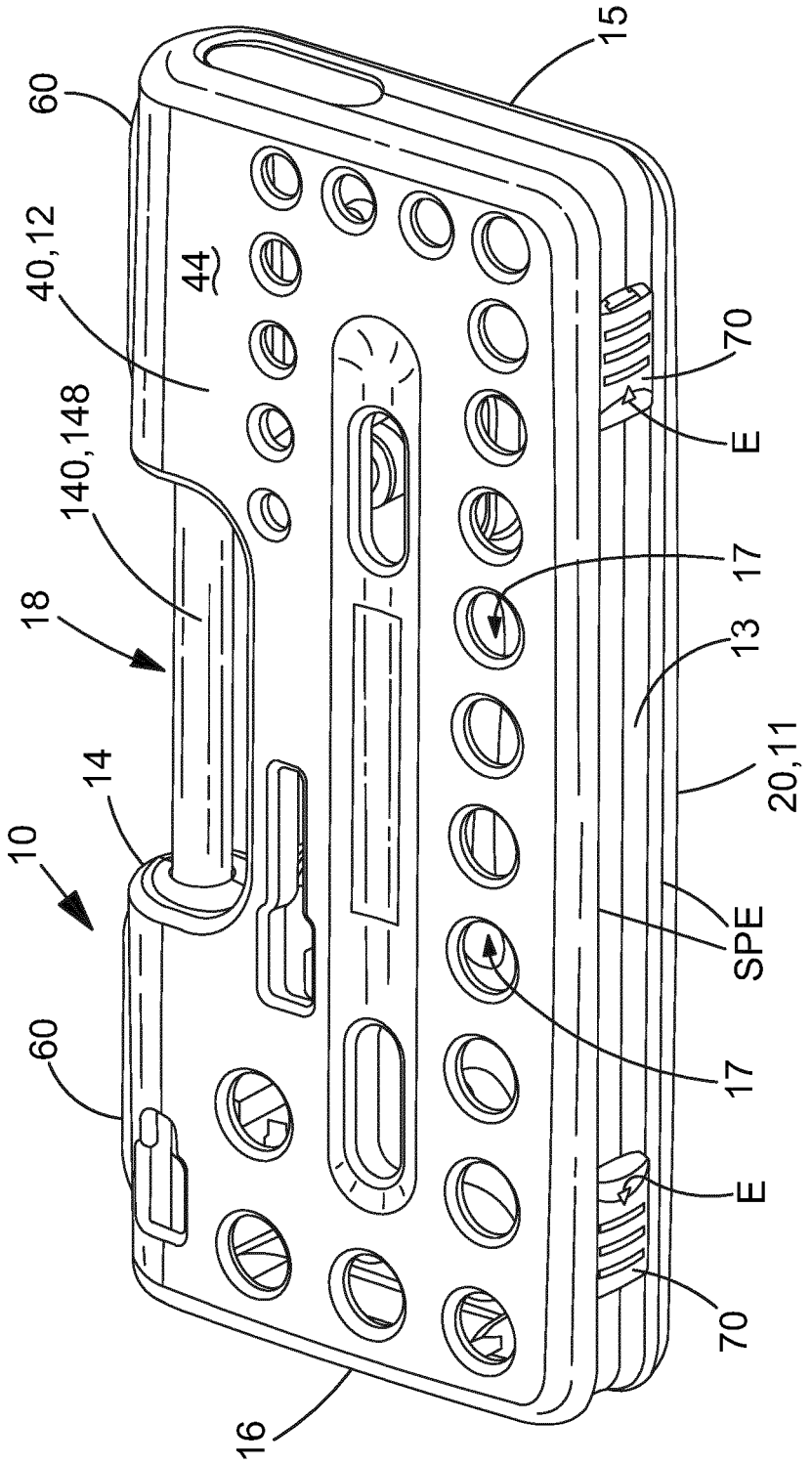

FIG.6

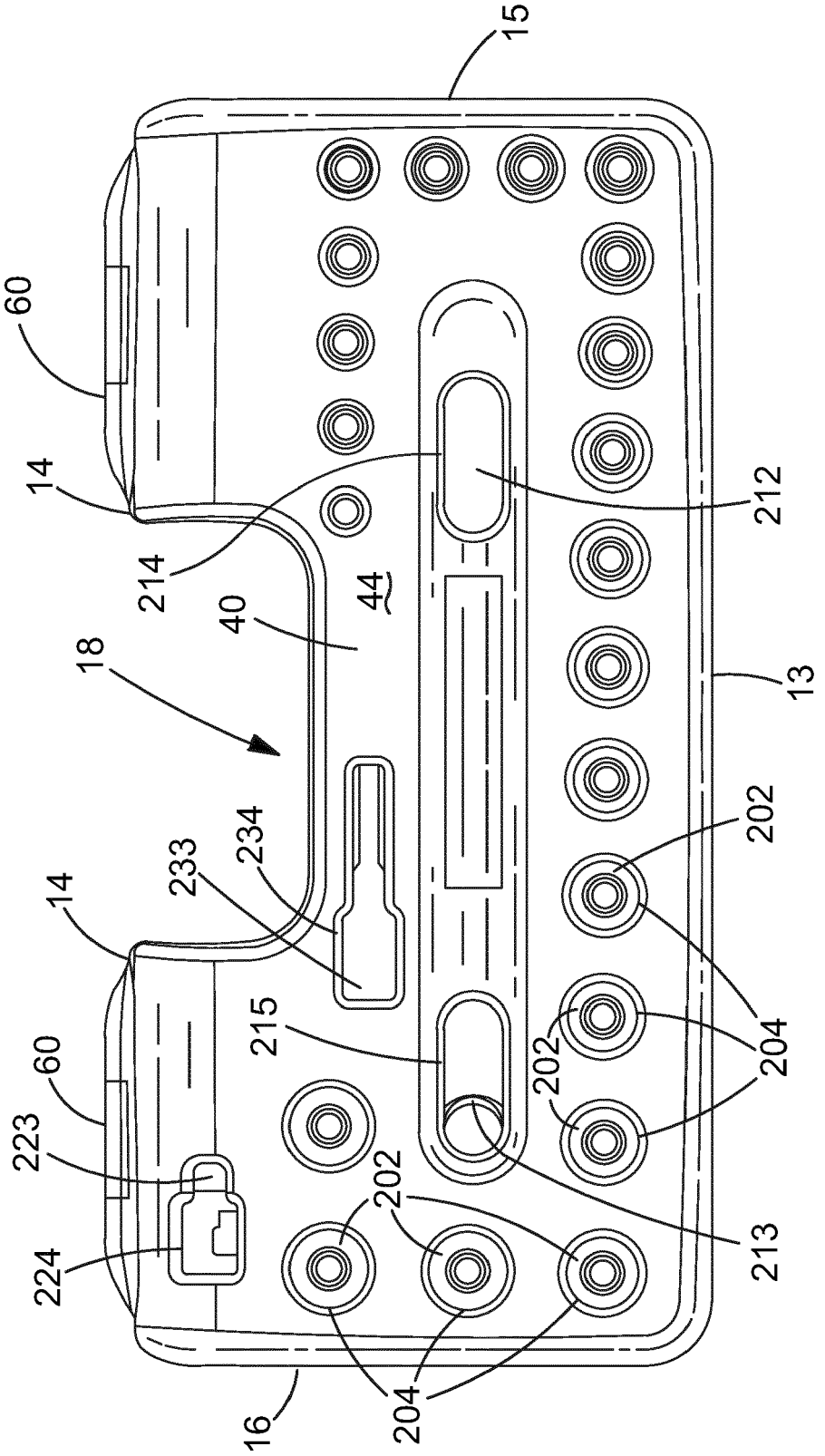
15
60
14
214
212
44
40
18
13
234
233
14
202
215
204
60
202
223
213
224
202
204
16
204

FIG.7

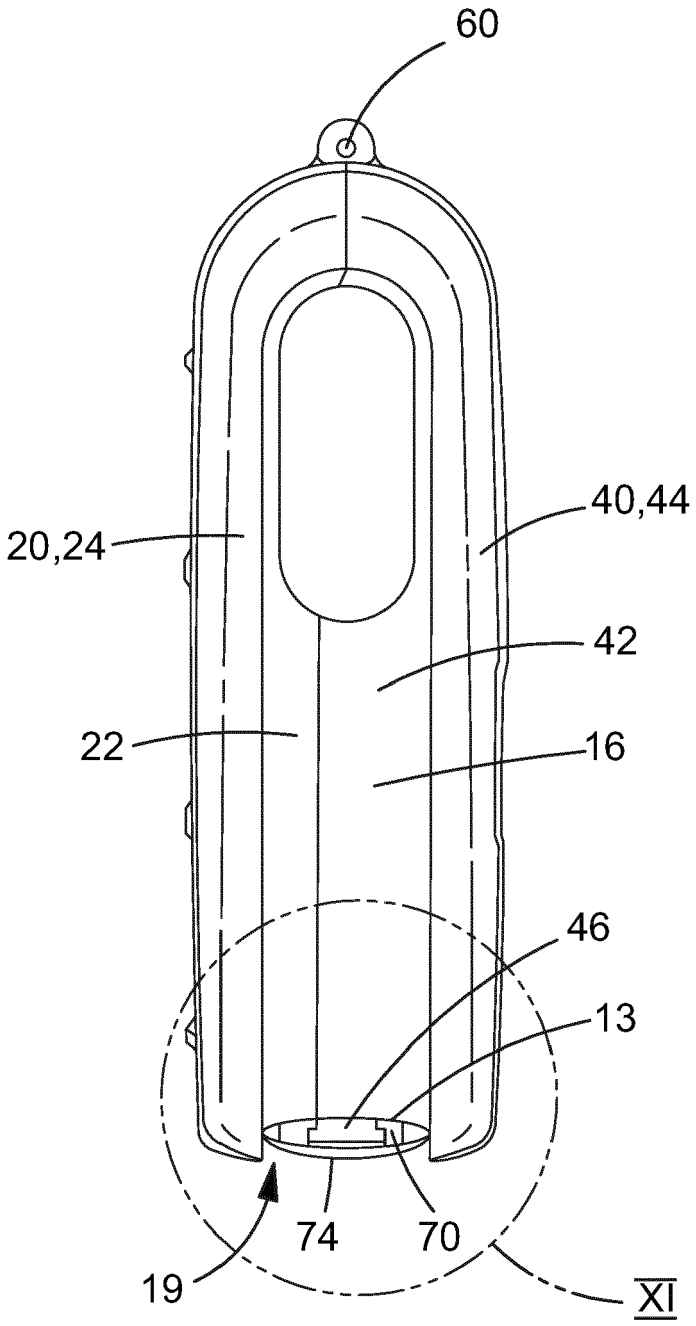

FIG.8

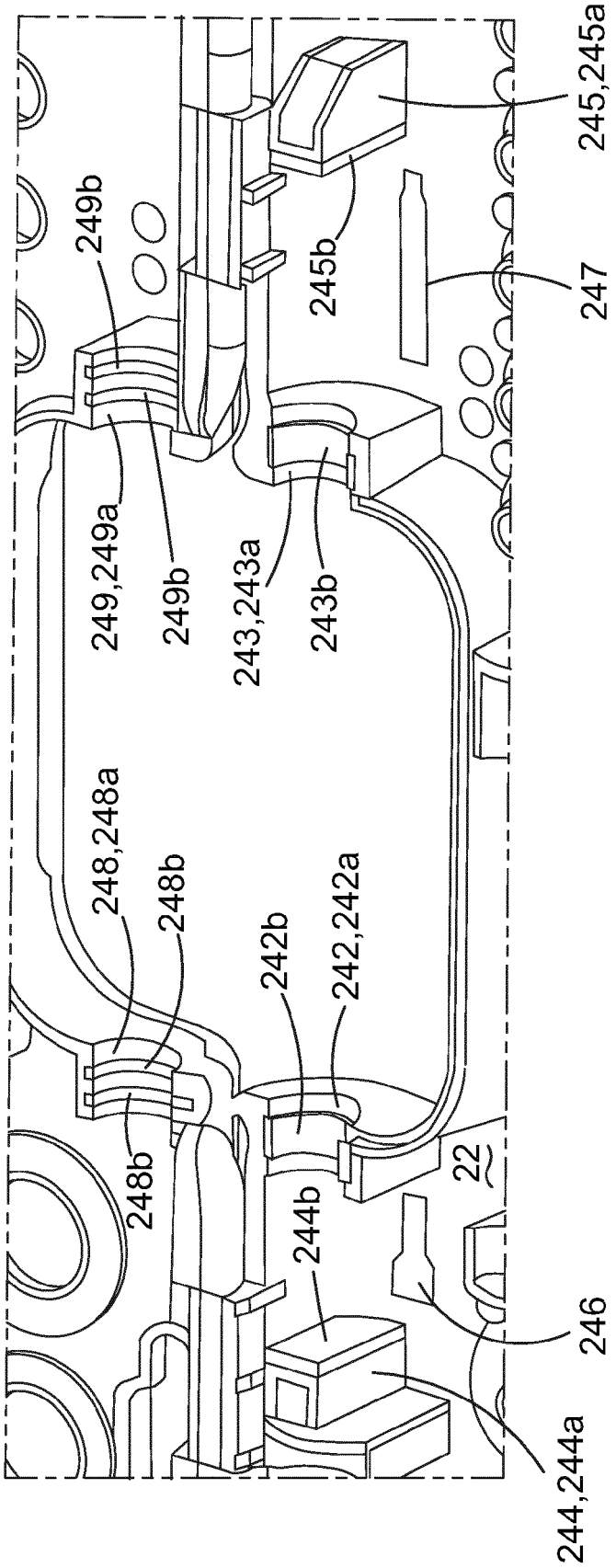
245,245a
249b
245b
247
249,249a
249b
243,243a
243b
248,248a
248b
242b
242,242a
248b
22
244b
246
244,244a

FIG.9A

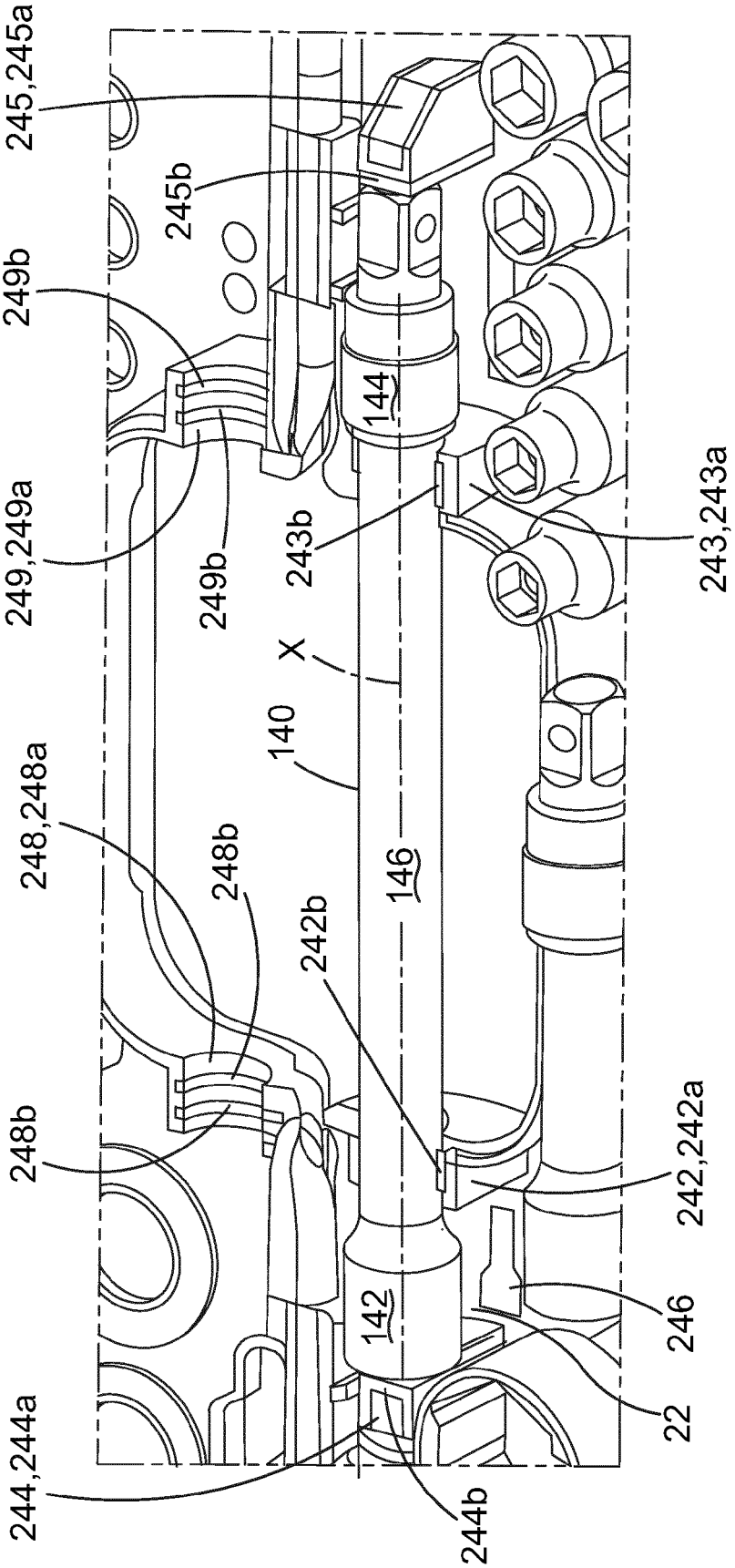
245,245a
245b
249b
249,249a
249b
144
243b
243,243a
X
140
248,248a
248b
146
242b
248b
242,242a
142
246
22
244,244a
244b

FIG.9B

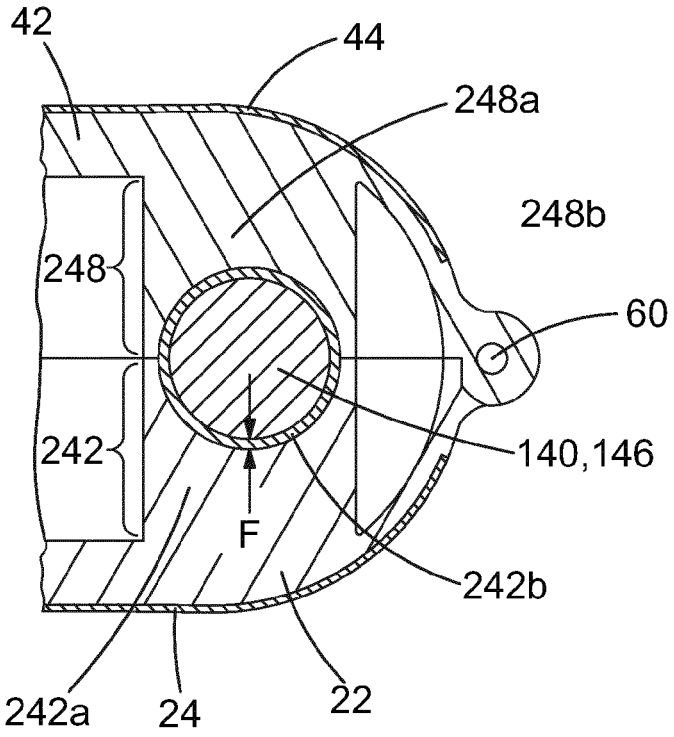
42
44
248a
248b
248
60
242
140,146
F
242b
242a
24
22

FIG.10

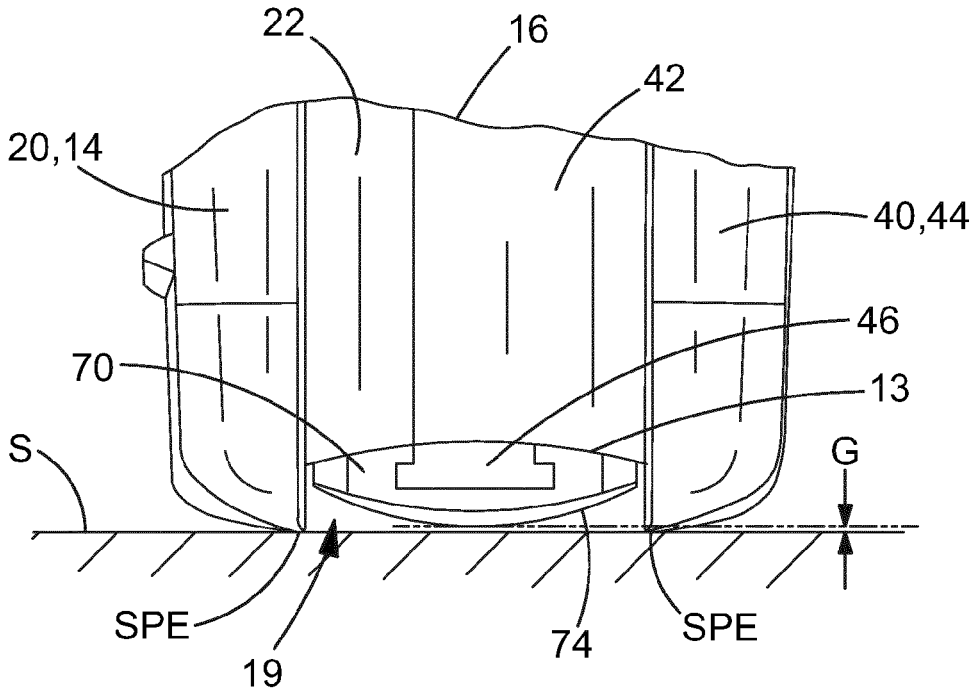
22
16
42
20,14
40,44
46
70
13
S
G
SPE
19
74
SPE

FIG.11

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- FR 2943267 **[0004]**