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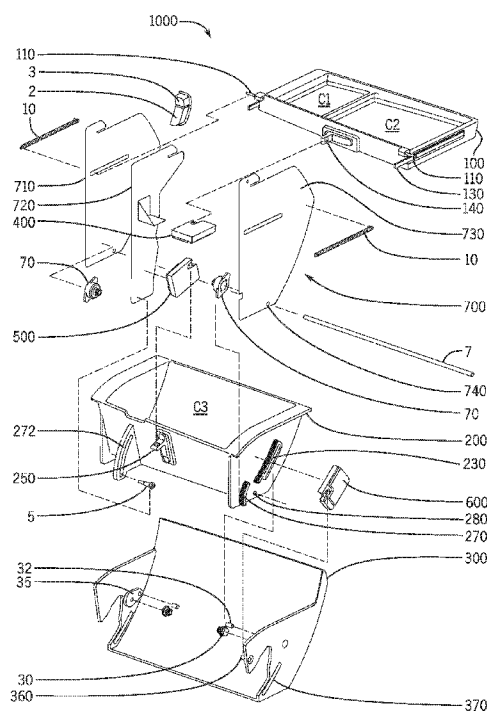


FIG. 3

(57) Abstract: A vehicle interior component is disclosed. The component may comprise a base, bin and tray. The bin may move from a closed position to an open position for access. The tray may move from a retracted position to an intermediate or extended position for access. The component may comprise a cover that may move from an upward position to cover the tray to a lowered position to uncover the tray. The component may comprise a first actuator to move the tray from the retracted to the intermediate position and a second actuator to move the bin from the closed to the open position. The bin may move from the closed to the open position when the tray is in the retracted, intermediate and extended positions. The tray may move from the retracted to the intermediate and extended positions when the bin is in the closed and open positions.



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PATENT APPLICATION**VEHICLE INTERIOR COMPONENT****FIELD**

[0001] The present invention relates to a vehicle interior component. The present invention also relates to an instrument panel assembly for a vehicle interior. The present invention further relates to a vehicle component providing an assembly comprising a receptacle such as a bin and a tray/drawer.

CROSS REFERENCE TO RELATED APPLICATIONS

[0002] The present application claims priority from and the benefit of U.S. Provisional Patent Application No. 62/442,257 filed January 4, 2017, entitled "Vehicle Interior Component." The entirety of this application is hereby incorporated herein by reference in its entirety.

BACKGROUND

[0003] It is well-known to provide an instrument panel for a vehicle interior. It is further known to provide an instrument panel that provides a component.

[0004] It would be advantageous to provide an improved instrument panel assembly providing an assembly comprising a receptacle such as a bin and a tray/drawer.

SUMMARY

[0005] The present invention relates to a component for a vehicle interior. The component may be configured to stow an article. The component may comprise a base, a bin, a tray and a cover. The bin may be coupled to the base. The bin may comprise a receptacle into which the article can be stowed. The bin may be configured to move relative to the base in an opening direction from a closed position to an open position for access. The tray may be coupled to the base. The tray may be configured to move relative to the base from a retracted position to an intermediate position for access. The cover may be coupled to the base. The cover may be configured to move from an upward position to cover the tray to a lowered position to uncover the tray.

[0006] The component may comprise a mechanism configured to (a) retain the bin in the closed position (b) guide movement of the bin from the closed position to the open position and (c) guide movement of the cover from the upward position to the lowered position. The cover may be coupled to the bin. The mechanism may be configured to guide movement of the cover and the bin. The mechanism may comprise (a) a latch configured to retain the bin in the closed position and (b) a gear and a rack configured to guide movement of the cover and the bin.

[0007] The component may comprise a mechanism configured to (a) retain the tray in the retracted position and (b) move the tray from the retracted position to the intermediate position. The mechanism may comprise a latch configured to retain the tray in the retracted position and a spring configured to move the tray from the retracted position to the intermediate position. The mechanism may be configured to (a) retain the cover in the upward position and (b) guide movement of the cover from the upward position to the lowered position. The mechanism may comprise a latch configured to retain the cover in the upward position and a gear and a rack configured to guide movement of the cover from the upward position to the lowered position. The mechanism may be configured to guide movement of the cover from the upward position to the lowered position and then move the tray from the retracted position to the intermediate position. The component may comprise a button, and the mechanism may be configured to move the cover and the tray in response to actuation of the button.

[0008] The tray may be configured to move relative to the base from the intermediate position to an extended position. The component may comprise a spring. The spring may be configured to move the tray from the extended position to the intermediate position. The tray may be

configured to move from the intermediate position to the extended position when the bin is in the closed position and the open position.

[0009] The tray may be latched to the base in the retracted position. The component may comprise a mechanism configured to (a) latch the tray to the base in the retracted position and (b) unlatch the tray from the base. The mechanism may comprise at least one of (a) a latch (b) a mechatronic latch. The mechanism may be configured to move the tray from the retracted position to the intermediate position. The mechanism may comprise a spring configured to move the tray from the retracted position to the intermediate position.

[0010] The cover may be latched to the base in the upward position. The component may comprise a mechanism configured to (a) latch the cover to the base in the upward position and (b) unlatch the cover from the base.

[0011] The component may comprise a first button and a second button. The first button may be configured to (a) move the cover relative to the bin from the upward position to the lowered position to uncover the tray and (b) move the tray relative to the base from the retracted position to the intermediate position for access. The first button may be configured to move the tray relative to the base from the retracted position to the intermediate position for access when the first button is pressed after the second button. The second button may be configured to move the bin relative to the base from the closed position to the open position for access. The second button may be configured to (a) move the cover relative to the bin from the upward position to the lowered position and (b) move the bin relative to the base from the closed position to the open position for access when the second button is pressed before the first button.

[0012] The cover may be configured to move relative to the base in the downward direction from the upward position to the lowered position to uncover the tray. The bin may be configured to move relative to the base from the closed position to the open position when the tray is in the retracted position and the intermediate position. The tray may be configured to move from the retracted position to the intermediate position when the bin is in the closed position and the open position. The cover may be configured to prevent movement of the tray when the cover is in the upward position. The cover may be configured to allow movement of the tray when the cover is in the lowered position.

[0013] The present invention further relates to a component for a vehicle interior. The component may be configured to stow an article. The component may comprise a base, a bin, a

tray, a first actuator and a second actuator. The bin may be coupled to the base. The bin may comprise a receptacle into which the article can be stowed. The bin may be configured to move relative to the base in an opening direction from a closed position to an open position for access. The tray may be coupled to the base. The tray may be configured to move relative to the base from a retracted position to an intermediate position for access. The first actuator may be configured to move the tray relative to the base from the retracted position to the intermediate position for access. The second actuator may be configured to move the bin relative to the base from the closed position to the open position for access. The bin may be configured to move relative to the base from the closed position to the open position when the tray is in the retracted position and the intermediate position. The tray may be configured to move from the retracted position to the intermediate position when the bin is in the closed position and the open position. The first actuator may comprise a first button and the second actuator may comprise a second button.

FIGURES

[0014] FIGURE 1A is a schematic perspective view of a vehicle according to an exemplary embodiment.

[0015] FIGURE 1B is a schematic perspective cut-away view of a vehicle showing an interior according to an exemplary embodiment.

[0016] FIGURES 2A to 2B are schematic perspective views of the interior of the vehicle according to an exemplary embodiment.

[0017] FIGURE 3 is a schematic exploded perspective view of a component shown as an instrument panel assembly according to an exemplary embodiment.

[0018] FIGURES 4A to 4G are schematic perspective views of a component shown as an instrument panel assembly according to an exemplary embodiment.

[0019] FIGURES 5A to 5G are schematic section views of a component shown as an instrument panel assembly according to an exemplary embodiment.

[0020] FIGURES 6A to 6F are schematic perspective views of a component shown as an instrument panel assembly according to an exemplary embodiment.

[0021] FIGURES 7A to 7F are schematic section views of a component shown as an instrument panel assembly according to an exemplary embodiment.

[0022] FIGURES 8A to 8D are schematic section views of a component shown as an instrument panel assembly according to an exemplary embodiment.

[0023] FIGURES 9A to 9C are schematic section views of a component shown as an instrument panel assembly according to an exemplary embodiment.

DESCRIPTION

[0024] According to an exemplary embodiment as shown schematically in FIGURES 1A to 1B, a vehicle V may include an interior I and a component shown as an instrument panel IP.

[0025] According to an exemplary embodiment as shown schematically in FIGURES 2A to 2B, interior I may include an instrument panel IP. Instrument panel IP may comprise a component shown as a glove box GB. As shown schematically in FIGURE 2B, glove box GB may at least comprise a tray or drawer 100, a bin 200 and a cover 300. Glove box GB may comprise bin 200 and cover 300. Tray 100 may be uncovered or revealed by an open glove box GB or by cover 300 sliding downward.

[0026] According to an exemplary embodiment as shown schematically in FIGURE 3, a vehicle interior component shown as an instrument panel assembly 1000 may comprise tray or drawer 100, bin 200, cover 300 and a base 700. The tray 100, bin 200 and cover 300 may be coupled to base 700 and may be configured to move relative to base 700. Bin 200 may move in an opening direction from a closed position to an open position for access. Bin 200 may rotate relative to base 700. Tray 100 may move in an outward direction from a retracted position to an intermediate, or partially open, position for access. Tray 100 may move or slide outward relative to base 700 from the retracted position to the intermediate position or from the intermediate position to an extended position. Outward movement of the tray 100 may be generally linear.

[0027] According to an exemplary embodiment, bin 200 may comprise a receptacle into which an article can be stowed. Access to the stowed article may be provided when bin 200 is in the open position. Tray 100 may comprise a receptacle into which an article can be stowed. Access to the stowed article may be provided when tray 100 is in the intermediate position or the extended position.

[0028] According to an exemplary embodiment, cover 300 may move with bin 200 from the closed position to the open position. Cover 300 may be configured to move relative to bin 200 and base 700 in a downward direction from an upward position to a lowered position to uncover tray 100. Cover 300 may be configured to allow movement of tray 100 from the retracted position to the intermediate position when cover 300 is in the lowered position. Cover 300 may be configured to conceal tray 100. Cover 300 may prevent outward movement of tray 100.

Cover 300 may retain tray 100 in the retracted position when the cover 300 is in the upward position.

[0029] According to an exemplary embodiment as shown schematically in FIGURE 3, vehicle interior component or instrument panel assembly 1000 may comprise an actuator or button 2 and an actuator or button 3. Button 2 and button 3 may be adjacent to cover 300. Button 2 and button 3 may control opening of instrument panel assembly 1000. Button 2 and button 3 may be mechanical or electronic buttons. Button 2 and button 3 may form a mechanical connection between a latch assembly 400, a latch assembly 500 and a latch assembly 600, and the mechanical connections may open latches within latch assembly 400, latch assembly 500 and latch assembly 600. Button 2 and button 3 may form a wired or wireless connection with latch assembly 400, latch assembly 500 and latch assembly 600. Wires may connect button 2 and button 3 to latch assembly 400, latch assembly 500 and latch assembly 600. Actuating or pressing one of button 2 and button 3 may send an electrical signal through the wires to latch assembly 400, latch assembly 500 and/or latch assembly 600 to open the latches within latch assembly 400, latch assembly 500 and latch assembly 600. Actuating or pressing one of button 2 and button 3 may cause a transmitter to transmit a wireless signal to one or more of latch assembly 400, latch assembly 500 and latch assembly 600. The wireless signal may cause one or more of latch assembly 400, latch assembly 500 and latch assembly 600 to release the latch within latch assembly 400, latch assembly 500 and latch assembly 600.

[0030] According to an exemplary embodiment as shown schematically in FIGURE 3, tray 100 may include one or more pins 110, one or more rails 130, a striker 140, a cavity C1, and a cavity C2. A wall in the receptacle defined by tray 100 may divide tray 100 into multiple cavities C1, C2. Rails 130 may be received by guides (not shown) formed within instrument panel IP. Tray 100 may be configured to move or slide between the retracted position, the intermediate position, and the extended position by rails 130 moving or sliding within the guides.

[0031] According to an exemplary embodiment as shown schematically in FIGURE 3, base 700 may comprise one or more springs 10, a rod 7, one or more gears 70, one or more holes 740, a sidewall 710, a middle wall 720, and a sidewall 730. Latch assembly 400 and latch assembly 500 may connect to or be on a middle wall 720 of base 700. Latch assembly 400 may engage striker 140 to lock or latch tray 100 in the retracted position.

[0032] According to an exemplary embodiment as shown schematically in FIGURE 3, rod 7 may extend between sidewalls 710, 730 of base 700 through holes 740. Rod 7 may extend through gears 70. Rod 7 may extend through holes 280 in bin 200 and guides 370 in cover 300. Cover 300 may slide from the upward position to the lowered position as rod 7 slides within guide 370.

[0033] According to an exemplary embodiment, springs 10 engage pins 110 to push pins 110 and tray 100 outward to the intermediate position from the retracted position. Springs 10 may also engage pins 110 to move or pull tray 100 from the extended position to the intermediate position. Springs 10 are neither generally extended nor generally compressed when tray 100 is in the intermediate position (see FIGURE 5A). Each spring 10 is attached to a pin 110 at one end of spring 10 and to a sidewall 710, 730 at another end of spring 10. Springs 10 may push tray 100 from the retracted position to the extended position (e.g. the intermediate position may be omitted).

[0034] According to an exemplary embodiment as shown schematically in FIGURE 3, bin 200 may comprise one or more racks 230, a striker 250, one or more racks 270, a slot 272, and one or more holes 280. Bin 200 may comprise a receptacle and define a cavity C3. Latch assembly 600 may be coupled to bin 200.

[0035] According to an exemplary embodiment as shown schematically in FIGURE 3, a pin 5 may engage and slide within slot 272. Pin 5 may be connected to middle wall 720 of base 700. Pin 5 may move or slide within slot 272 as bin 200 moves (e.g. rotates, pivots, opens, etc. on hinges) between the open position and the closed position.

[0036] According to an exemplary embodiment, racks 270 may comprise ridges for traction. The ridges of racks 270 may define a track. Gears 70 may engage racks 270 and dampen movement or rotation of bin 200 relative base 700. Gears 70 may engage the track of racks 270 and slow the movement of bin 200 from the closed position (see FIGURE 4A) to the open position (see FIGURE 4E).

[0037] According to an exemplary embodiment as shown schematically in FIGURE 3, cover 300 may comprise one or more gears 30, one or more pins 32, one or more plates 35, a pin 360, and guide 370.

[0038] According to an exemplary embodiment, gears 30 may engage racks 230 as cover 300 moves from the upward position to the lowered position. Racks 230 may comprise ridges for

traction. The ridges of racks 230 may define a track. Gears 30 may engage racks 230 and dampen movement of cover 300 relative bin 200. Gears 30 may engage the track of racks 230 and slow the movement of cover 300 from the upward position (see FIGURE 4A) to the lowered position (see FIGURE 4B). Racks 230 may include a slot beneath the ridges. Pin 32 may engage and slide within the slot of racks 230.

[0039] According to an exemplary embodiment as shown schematically in FIGURE 3, pins 32 and gears 30 may attach to cover 300 via plate 35.

[0040] According to an exemplary embodiment, pin 360 may be received by latch assembly 600 to hold cover 300 in the upward position (see FIGURE 4A). Latch assembly 600 may release pin 360 to allow cover 300 to move to the lowered position (see FIGURE 4B).

[0041] According to an exemplary embodiment as shown schematically in FIGURE 3, vehicle interior component or instrument panel assembly 1000 may include three latch assemblies 400, 500 and 600. Latch assembly 400 may receive striker 140 connected to tray 100 to hold tray 100 in the closed position. Latch assembly 400 may release striker 140 to allow tray 100 to move to the intermediate position or the extended position. Latch assembly 500 may receive striker 250 connected to bin 200 to hold bin 200 in the closed position. Latch assembly 500 may release striker 250 to allow bin 200 to move to the open position. Latch assembly 600 may receive pin 360 connected to cover 300 to hold cover 300 in the upward position. Latch assembly 600 may release pin 360 to allow cover 300 to move to the lowered position.

[0042] According to an exemplary embodiment, at least one of latch assembly 400, latch assembly 500 and latch assembly 600 may be implemented with a mechatronic system (e.g. mechanism operated by electronic control in a module). Actuation or activation of one of actuator or button 2 and actuator or button 3 may cause electronic circuitry within latch assembly 400, latch assembly 500 and/or latch assembly 600 to activate an electric motor in latch assembly 400, latch assembly 500 and/or latch assembly 600 to release a latch and release strikers 140, 250 or pin 360 from the latch assembly 400, latch assembly 500 and/or latch assembly 600.

Actuation or activation of button 3 may cause latch assembly 400 to release striker 140 and latch assembly 600 to release pin 360 (if button 3 is actuated or activated before button 2). Actuation or activation of button 2 may cause latch assembly 500 to release striker 250 and latch assembly 600 to release pin 360 (if button 2 is actuated or activated before button 3). Latch assembly 600

may include circuitry and/or logic (e.g. processors, sensors, etc.) to unlatch based on whether button 3 or button 2 was actuated first.

[0043] According to an exemplary embodiment as shown schematically in FIGURE 3, instrument panel assembly 1000 may comprise various mechanisms. Instrument panel assembly 1000 may comprise a first mechanism that retains bin 200 in the closed position and guides movement of bin 200 from the closed position to the opened position. The first mechanism may comprise latch assembly 500, which may be mechatronic, gear 70 and rack 270, which are configured to guide movement of bin 200 from the closed position to the open position. Latch assembly 500 may be configured to retain bin 200 in the closed position. Bin 200 may be coupled to cover 300. The first mechanism may be configured to guide movement of cover 300 and bin 200. The first mechanism may be configured to latch bin 200 to base 700 in the closed position and unlatch bin 100 from base 700 to allow movement of bin 200 from the closed position to the open position.

[0044] According to an exemplary embodiment, instrument panel assembly 100 may comprise a second mechanism configured to retain tray 100 in the retracted position and move tray 100 from the retracted position to the intermediate position. The second mechanism may comprise latch assembly 400, which may be configured to retain tray 100 in the retracted position and spring 10, which may be configured to move tray 100 from the retracted position to the intermediate position. The second mechanism may be configured to latch tray 100 to base 700 and unlatch tray 100 from the base using latch assembly 400. The second mechanism may be configured to retain cover 300 in the upward position and guide movement of cover 300 from the upward position to the lowered position. Cover 300 may be latched to base 700 in the upward position. The second mechanism may be configured to unlatch cover 300 from base 700. The second mechanism may comprise latch assembly 600, gear 30 and rack 230. Latch assembly 600 may be configured to retain or latch cover 300 in the upward position. Gear 30 and rack 230 may be configured to guide movement of cover 300 from the upward position to the lowered position. The second mechanism may be configured to guide movement of cover 300 from the upward position to the lowered position. The second mechanism may be configured to move tray 100 from the retracted position to the intermediate position. The second mechanism may comprise button 3. The second mechanism may move cover 300 and tray 100 in response to actuation of button 3.

[0045] According to an exemplary embodiment as shown schematically in FIGURES 4A, 5A, 6A, 7A, 8A and 9A, instrument panel assembly 1000 may be positioned within interior I of vehicle V. As shown schematically in FIGURE 4A, cover 300 may cover, conceal or hide bin 200 and tray 100 when cover is in the upward position. Tray 100 may be latched to base 700 when tray 100 is in the retracted position. Latch assembly 400 may latch striker 140 to hold tray 100 in the retracted position. Latch assembly 600 may latch pin 360 to hold cover 300 in the upward position. Latch assembly 500 may latch striker 250 to hold bin 200 in the closed position.

[0046] According to an exemplary embodiment as shown schematically in FIGURES 4B, 5B, and 8B, a finger F may actuate or press button 3. Actuation or pressing of button 3 may cause cover 300 to move to the lowered position and uncover or reveal tray 100. Movement of cover 300 to the lowered position may allow tray 100 to move or slide to the intermediate or extended positions. As shown schematically in FIGURES 5B and 8B, latch assembly 600 may release pin 360, guide 370 may move or slide about rod 7, and gears 30 may engage racks 230 as cover 300 moves to the lowered position. Gears 30 may engage racks 230 to dampen movement of cover 300. Guide 370 may guide movement of cover 300 as guide 370 slides about rod 7.

[0047] According to an exemplary embodiment as shown schematically in FIGURES 5A, 5B, 7A, 7B, 8A, 8B, 9A and 9B, spring 10 may be extended. Spring 10 may provide a force to tray 100 when extended. Latch assembly 400 may overcome the force provided by spring 10 to tray 100 to maintain or hold tray 100 in the retracted position.

[0048] According to an exemplary embodiment as shown schematically in FIGURE 4C, tray 100 may move or slide in response to actuation of button 3. Tray 100 may move or slide to the intermediate position or a partially open position. As shown schematically in FIGURES 4B and 4C, button 3 is configured to move cover 300 relative to bin 200 from the upward position to the lowered position to uncover tray 100 and move tray 100 relative to the base 700 from the retracted position to the intermediate position for access. As shown schematically in FIGURES 5C and 8C, latch assembly 400 may release striker 140, and spring 10 may move tray 100 to the intermediate position. When tray 100 is in the intermediate position, spring 10 may be neither compressed nor extended. Spring 10 may be configured to bias tray 100 in the intermediate position.

[0049] According to an exemplary embodiment as shown schematically in FIGURES 4D and 5D, a hand H may provide a force to move or pull tray 100 to the extended or fully opened position. In the extended position, spring 10 may be compressed against side wall 710, 730 and may apply a force to tray 100. Spring 10 may be configured to move tray 100 from the extended position to the intermediate position when the force from hand H is released.

[0050] According to an exemplary embodiment as shown schematically in FIGURE 4E, finger F may engage button 2 to move or rotate bin 200 from the closed position to the open position. As shown schematically in FIGURE 4E, button 2 may be configured to move bin 200 relative to base 700 from the closed position to the open position for access. As shown schematically in FIGURES 5E and 8D, in response to actuation or pressing of button 2, latch assembly 500 may release striker 250, gears 70 may engage rack 270 and bin 200 may move to the open position. Bin 200 may move or slide to the open position in response to actuation or pressing of button 2. In response to release of force on tray 100, spring 10 may compress and move or push the tray 100 to the intermediate position. Spring 10 may be configured to move tray 100 from the extended position to the intermediate position.

[0051] According to an exemplary embodiment as shown schematically in FIGURES 4F and 5F, hand H may move or push tray 100 from the intermediate position to the retracted position. Tray 100 may be engaged with latch assembly 400 to hold tray 100 in the retracted position. Tray 100 may be configured to move (a) from the retracted position to the intermediate position, (b) from the intermediate position to the retracted position, (c) from the intermediate position to the extended position, (d) from the extended position to the intermediate position, (e) from the retracted position to the extended position, and/or (f) from the extended position to the retracted position when bin 200 is in the closed position and the open position.

[0052] According to an exemplary embodiment as shown schematically in FIGURES 4G and 5G, hand H may provide a force to move or push bin 200 and/or cover 300 to move bin 200 from the open position to the closed position and to move cover 300 from the lowered position to the upward position.

[0053] According to an exemplary embodiment as shown schematically in FIGURES 5A through 5C and 8A through 8C, vehicle interior component or instrument panel assembly 1000 may comprise a mechanism configured to retain tray 100 in the retracted position and move tray 100 from the retracted position to the intermediate position. The mechanism may comprise latch

assembly 400 and spring 10. Latch assembly 400 may be configured to retain tray 100 in the retracted position as shown schematically in FIGURE 5A. Spring 10 may be configured to move tray 100 from the retracted position to the intermediate position as shown schematically in FIGURE 5C. The mechanism may be configured to retain cover 300 in the upward position as shown schematically in FIGURE 5A and guide movement of cover 300 from the upward position to the lowered position as shown schematically in FIGURE 5B. The mechanism may comprise latch 600. Latch 600 may be configured to retain cover 300 in the upward position as shown schematically in FIGURE 5A. The mechanism may comprise gear 30 and rack 230. Gear 30 and rack 230 may be configured to guide movement of cover 300 from the upward position to the lowered position as shown schematically in FIGURES 8A and 8B. The mechanism may be configured to guide movement of cover 300 from the upward position to the lowered position and then move tray 100 from the retracted position to the intermediate position as shown schematically in FIGURES 5A to 5C and 8A to 8C. As shown schematically in FIGURES 4B, 4C, 5B and 5C, vehicle interior component or instrument panel assembly 1000 may comprise actuator or button 3. The mechanism may be configured to move cover 300 and tray 100 in response to actuation of button 3.

[0054] According to an exemplary embodiment, tray 100 may be configured to move relative to base 700 from an intermediate position as shown schematically in FIGURES 4C and 5C to an extended position as shown schematically in FIGURES 4D and 5D. Spring 10 may be configured to move tray 100 from the extended position to the intermediate position as shown schematically in FIGURES 5D and 5E. Tray 100 may be configured to move from the intermediate position to the extended position when bin 200 is in the closed position as shown schematically in FIGURE 5D and when bin 200 is in the open position as shown schematically in FIGURE 7D.

[0055] According to an exemplary embodiment, tray 100 may be latched to base 700 in the retracted position as shown schematically in FIGURES 7A and 7B. Vehicle interior component or instrument panel assembly 1000 may comprise a mechanism configured to latch tray 100 to base 700 in the retracted position as shown schematically in FIGURES 7A and 7B and unlatch tray 100 from base 700 as shown schematically in FIGURE 7C. The mechanism may comprise at least one of a latch and a mechatronic latch. The mechanism may be configured to move tray 100 from the retracted position to the intermediate position as shown schematically in FIGURE

7C. The mechanism may comprise spring 10. Spring 10 may be configured to move tray 100 from the retracted position to the intermediate position as shown schematically in FIGURES 7B and 7C.

[0056] According to an exemplary embodiment, cover 300 may be latched to base 700 in the upward position as shown schematically in FIGURE 5A. Vehicle interior component or instrument panel assembly 1000 may comprise a mechanism configured to latch cover 300 to base 700 as shown schematically in FIGURE 5A and unlatch cover 300 from base 700 as shown schematically in FIGURES 5B through 5F.

[0057] According to an exemplary embodiment, vehicle interior component or instrument panel assembly 1000 may comprise first actuator or button 3 and second actuator or button 2. First button 3 may be configured to move cover 300 relative to bin 200 from an upward position to a lowered position to uncover tray 100 as shown schematically in FIGURES 4B and 5B and move tray 100 relative to base 700 from the retracted position to the intermediate position for access as shown schematically in FIGURES 4C and 5C. First button 3 may be configured to move tray 100 relative to base 700 from the retracted position to the intermediate position for access when first button 3 is pressed after second button 2 as shown schematically in FIGURES 6B, 6C, 7B and 7C. Second button 2 may be configured to move bin 200 relative to base 700 from the closed position to the open position for access as shown schematically in FIGURES 6B and 7B. Second button 2 may be configured to move cover 300 from the upward position to the lowered position and move bin 200 relative to base 700 from the closed position to the open position for access when second button 2 is pressed before first button 3 as shown schematically in FIGURES 6B, 6C, 7B and 7C.

[0058] According to an exemplary embodiment, cover 300 may be configured to move relative to base 700 in a downward direction from the upward position to the lowered position to uncover tray 100 as shown schematically in FIGURES 4B and 5B.

[0059] According to an exemplary embodiment, bin 200 may be configured to move relative to base 700 from the closed position to the open position when tray 100 is in the retracted position as shown schematically in FIGURES 6B and 7B and when tray 100 is in the intermediate position as shown schematically in FIGURES 4E and 5E.

[0060] According to an exemplary embodiment, tray 100 may configured to move from the retracted position to the intermediate position when bin 200 is in the closed position as shown

schematically in FIGURES 4C and 5C and when bin 200 is in the open position as shown schematically in FIGURES 6C and 7C.

[0061] According to an exemplary embodiment, cover 300 may be configured to prevent movement of tray 100 when cover 300 is in the upward position as shown schematically in FIGURES 4A and 5A. Cover 300 may be configured to allow movement of tray 100 when cover 300 is in the lowered position as shown schematically in FIGURES 4B and 5B.

[0062] According to an exemplary embodiment as shown schematically in FIGURES 6B, 7B and 9B, actuation or pressing of button 2 may move cover 300 from the upward position to the lowered position and bin 200 from the closed position to the open position. In response to actuation or pressing of button 2, latch assembly 600 may release pin 360, latch assembly 500 may release striker 250, guide 370 may move or slide about rod 7, gears 30 may engage racks 230, gears 70 may engage rack 270, cover 300 may move to the lowered position, and bin 200 move to the open position. Cover 300 and bin 200 may move or rotate to the open position in response to finger F pressing button 3. Gears 30 may engage racks 230 to dampen movement of cover 300. Gears 70 may engage racks 270 to dampen movement of bin 200 and cover 300 toward the opened position. Guide 370 may guide movement of cover 300 as guide 370 moves or slides about rod 7. Slot 272 may guide movement of bin 200 and cover 300 as slot 272 moves or slides about pin 5.

[0063] According to an exemplary embodiment as shown schematically in FIGURES 7B and 5E, bin 200 may be configured to move relative to base 700 from the closed position to the open position when tray 100 is in the retracted position and the intermediate position.

[0064] According to an exemplary embodiment as shown schematically in FIGURES 7A, 7B, 8C and 8D, vehicle interior component or instrument panel assembly 1000 may comprise a mechanism configured to retain bin 200 in the closed position, guide movement of bin 200 from the closed position to the open position and guide movement of cover 300 from the upward position to the lowered position. The mechanism may be configured to guide movement of cover 300 and bin 200. The mechanism may comprise latch 500, gear 70 and rack 270. Latch 500 may be configured to retain bin 200 in the closed position as shown schematically in FIGURE 7A. Gear 70 and rack 270 may be configured to guide movement of cover 300 and bin 200 as shown schematically in FIGURES 8C and 8D.

[0065] According to an exemplary embodiment as shown schematically in FIGURES 6C, 7C and 9C, in response to actuation or pressing of button 3 with bin 200 in the open position, latch assembly 400 may release striker 140, and tray 100 may move to the intermediate position. Spring 10 may compress and provide a force to move or pull tray 100 from the retracted position to the intermediate position. As shown schematically in FIGURES 7C and 5C, tray 100 may be configured to move from the retracted position to the intermediate position when bin 200 is in the closed position and the open position.

[0066] According to an exemplary embodiment as shown schematically in FIGURES 6D and 7D, hand H may provide a force to move or pull tray 100 from the intermediate position to the extended position when bin 200 is in the open position. Spring 10 is configured to compress as tray 100 moves from the intermediate position to the extended position.

[0067] According to an exemplary embodiment as shown schematically in FIGURES 6E and 7E, in response to hand H releasing force from tray 100, spring 10 expands and provides a force to move or push tray 100 from the extended position to the intermediate position. As shown schematically in FIGURE 7E, an external force may move tray 100 from the extended position through the intermediate position to the retracted position.

[0068] According to an exemplary embodiment as shown schematically in FIGURES 6F and 7F, hand H may provide a force to move or push bin 200 and/or cover 300 to move bin 200 from the open position to the closed position and to move cover 300 from the lowered position to the upward position.

[0069] According to an exemplary embodiment, latch assembly 400, latch assembly 500, latch assembly 600, button 2 and button 3 may be implemented as a mechanical assembly rather than implemented using mechatronic systems/modules. Mechanisms may connect button 2 and button 3 to a mechanical latch assembly 400, a mechanical latch assembly 500 and a mechanical latch assembly 600 to activate latches within latch assembly 400, latch assembly 500 and latch assembly 600.

[0070] According to an exemplary embodiment, latch assembly 400, latch assembly 500, latch assembly 600, button 2 and button 3 may be electrical or mechatronic. Wired or wireless connections may connect button 2 and button 3 to an electrical or mechatronic latch assembly 400, an electrical or mechatronic latch assembly 500 and an electrical or mechatronic latch assembly 600 to activate latches within electrical or mechatronic latch assembly 400, electrical

or mechatronic latch assembly 500 and electrical or mechatronic latch assembly 600. Latch assembly 400, latch assembly 500 and latch assembly 600 may be magnetic, and releasing a magnetic latch may involve reversing a magnetic polarity. Button 2 and button 3 may be touch activated, digital or presented on a touch screen or a console screen.

[0071] According to an exemplary embodiment, button 2 and button 3 may comprise push latches. A first push latch may move cover 300 from the upward position to the lowered position and tray 100 from the retracted position to the intermediate position. The first push latch may be actuated by applying a force to cover 300. A second push latch may move bin 200 from the closed position to the open position. The second push latch may be actuated by applying a force to bin 200.

* * *

[0072] It is important to note that the present inventions (e.g. inventive concepts, etc.) have been described in the specification and/or illustrated in the FIGURES of the present patent document according to exemplary embodiments; the embodiments of the present inventions are presented by way of example only and are not intended as a limitation on the scope of the present inventions. The construction and/or arrangement of the elements of the inventive concepts embodied in the present inventions as described in the specification and/or illustrated in the FIGURES is illustrative only. Although exemplary embodiments of the present inventions have been described in detail in the present patent document, a person of ordinary skill in the art will readily appreciate that modifications, variations, etc. of the subject matter of the exemplary embodiments and alternative embodiments are possible and contemplated as being within the scope of the present inventions; all such subject matter (modifications, variations, embodiments, combinations, etc.) is intended to be included within the scope of the present inventions. It should also be noted that various/other modifications, variations, substitutions, changes, omissions, etc. may be made in the configuration and/or arrangement of the exemplary embodiments (e.g. in concept, design, structure, apparatus, form, assembly, construction, means, function, system, method, steps, sequence, operation, operating conditions, performance, materials, composition, combination, etc.) without departing from the scope of the present inventions; all such subject matter (modifications, variations, embodiments, combinations, etc.) is intended to be included within the scope of the present inventions. The scope of the present inventions is not intended to be limited to the subject matter (e.g. details, structure, functions, materials, acts, steps, sequence, system, result, etc.) described in the specification and/or illustrated in the FIGURES of the present patent document. It is contemplated that the claims of the present patent document will be construed properly to cover the complete scope of the subject matter of the present inventions (e.g. including any and all such modifications, variations, embodiments, combinations, etc.); it is to be understood that the terminology used in the present patent document is for the purpose of providing a description of the subject matter of the exemplary embodiments rather than as a limitation on the scope of the present inventions.

[0073] It is also important to note that according to exemplary embodiments the present inventions may comprise conventional technology (e.g. as implemented in exemplary embodiments, modifications, variations, combinations, etc.) or may comprise any other applicable technology (present or future) with suitability and/or capability to perform the

functions and processes/operations described in the specification and/or illustrated in the FIGURES. All such technology is considered to be within the scope of the present inventions of the present patent document.

CLAIMS

1. A component for a vehicle interior configured to stow an article comprising:
 - (a) a base;
 - (b) a bin coupled to the base comprising a receptacle into which the article can be stowed and configured to move relative to the base in an opening direction from a closed position to an open position for access;
 - (c) a tray coupled to the base and configured to move relative to the base from a retracted position to an intermediate position for access; and
 - (d) a cover coupled to the base;wherein the cover is configured to move from (a) an upward position to cover the tray to (b) a lowered position to uncover the tray.
2. The component of Claim 1 comprising a mechanism configured to (a) retain the bin in the closed position (b) guide movement of the bin from the closed position to the open position and (c) guide movement of the cover from the upward position to the lowered position.
3. The component of Claim 2 wherein the cover is coupled to the bin, and wherein the mechanism is configured to guide movement of the cover and the bin.
4. The component of Claim 2 wherein the mechanism comprises (a) a latch configured to retain the bin in the closed position and (b) a gear and a rack configured to guide movement of the cover and the bin.
5. The component of Claim 1 comprising a mechanism configured to (a) retain the tray in the retracted position and (b) move the tray from the retracted position to the intermediate position.
6. The component of Claim 5 wherein the mechanism comprises a latch configured to retain the tray in the retracted position and a spring configured to move the tray from the retracted position to the intermediate position.

7. The component of Claim 5 wherein the mechanism is configured to (a) retain the cover in the upward position and (b) guide movement of the cover from the upward position to the lowered position.

8. The component of Claim 5 wherein the mechanism comprises a latch configured to retain the cover in the upward position and a gear and a rack configured to guide movement of the cover from the upward position to the lowered position.

9. The component of Claim 5 wherein the mechanism is configured to guide movement of the cover from the upward position to the lowered position and then move the tray from the retracted position to the intermediate position.

10. The component of Claim 9 comprising a button; wherein the mechanism is configured to move the cover and the tray in response to actuation of the button.

11. The component of Claim 1 wherein the tray is configured to move relative to the base from the intermediate position to an extended position.

12. The component of Claim 11 comprising a spring, wherein the spring is configured to move the tray from the extended position to the intermediate position.

13. The component of Claim 11 wherein the tray is configured to move from the intermediate position to the extended position when the bin is in the closed position and the open position.

14. The component of Claim 1 wherein the tray is latched to the base in the retracted position.

15. The component of Claim 14 comprising a mechanism configured to (a) latch the tray to the base in the retracted position and (b) unlatch the tray from the base.

16. The component of Claim 15 wherein the mechanism comprises at least one of (a) a latch (b) a mechatronic latch.

17. The component of Claim 15 wherein the mechanism is configured to move the tray from the retracted position to the intermediate position.

18. The component of Claim 17 wherein the mechanism comprises a spring configured to move the tray from the retracted position to the intermediate position.

19. The component of Claim 1 wherein the cover is latched to the base in the upward position.

20. The component of Claim 19 comprising a mechanism configured to (a) latch the cover to the base in the upward position and (b) unlatch the cover from the base.

21. The component of Claim 1 comprising a first button and a second button.

22. The component of Claim 21 wherein the first button is configured to (a) move the cover relative to the bin from the upward position to the lowered position to uncover the tray and (b) move the tray relative to the base from the retracted position to the intermediate position for access.

23. The component of Claim 21 wherein the first button is configured to move the tray relative to the base from the retracted position to the intermediate position for access when the first button is pressed after the second button.

24. The component of Claim 21 wherein the second button is configured to move the bin relative to the base from the closed position to the open position for access.

25. The component of Claim 21 wherein the second button is configured to (a) move the cover from the upward position to the lowered position and (b) move the bin relative to the base from the closed position to the open position for access.

26. The component of Claim 1 wherein the cover is configured to move relative to the base in a downward direction from the upward position to the lowered position to uncover the tray.

27. The component of Claim 1 wherein the bin is configured to move relative to the base from the closed position to the open position when the tray is in the retracted position and the intermediate position.

28. The component of Claim 1 wherein the tray is configured to move from the retracted position to the intermediate position when the bin is in the closed position and the open position.

29. The component of Claim 1 wherein the cover is configured to prevent movement of the tray when the cover is in the upward position.

30. The component of Claim 1 wherein the cover is configured to allow movement of the tray when the cover is in the lowered position.

31. A component for a vehicle interior configured to stow an article comprising:
- (a) a base;
 - (b) a bin coupled to the base comprising a receptacle into which the article can be stowed and configured to move relative to the base in an opening direction from a closed position to an open position for access;
 - (c) a tray coupled to the base and configured to move relative to the base from a retracted position to an intermediate position for access;
 - (d) a first actuator; and
 - (e) a second actuator.

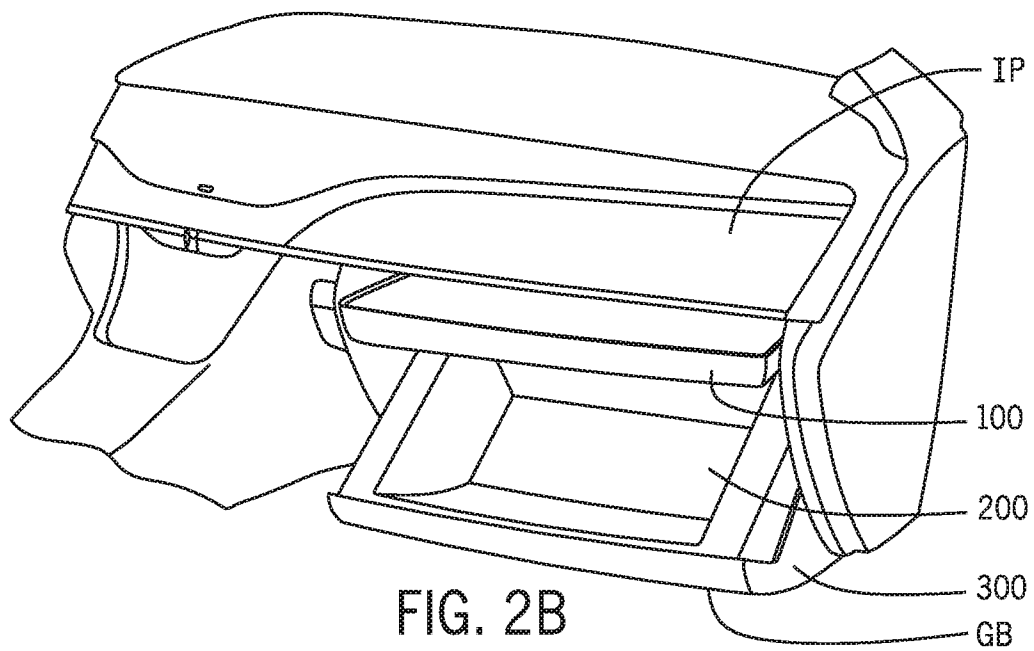
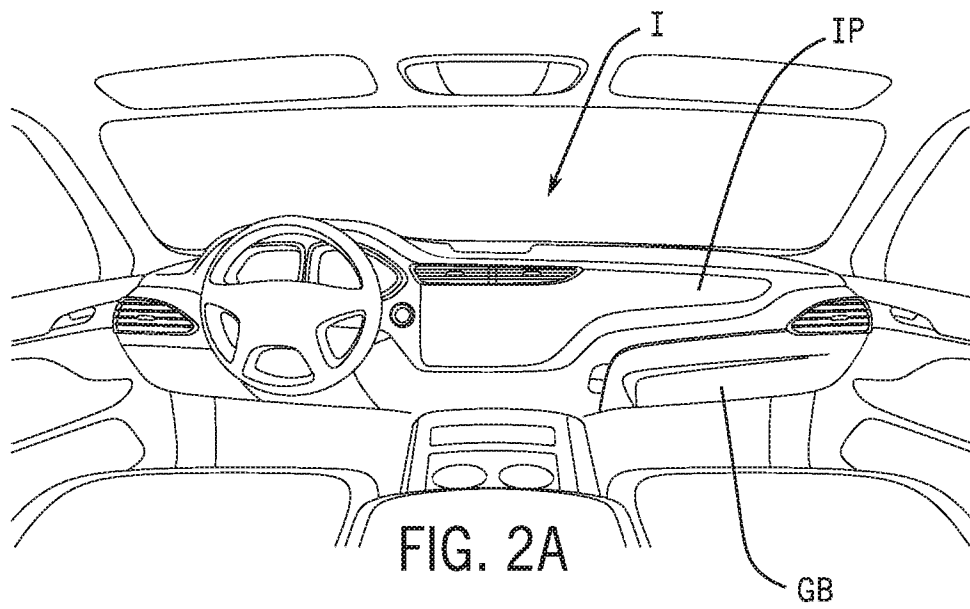
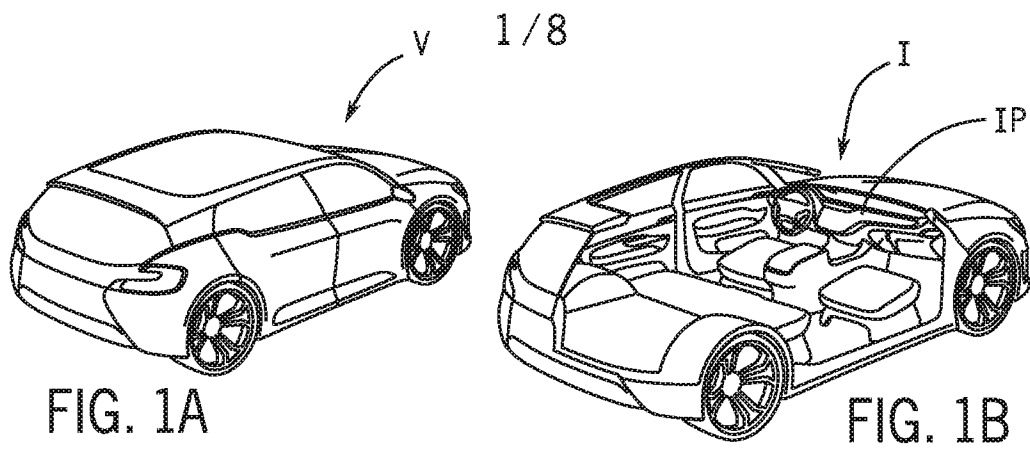
32. The component of Claim 31 wherein the first actuator is configured to move the tray relative to the base from the retracted position to the intermediate position for access.

33. The component of Claim 31 wherein the second actuator is configured to move the bin relative to the base from the closed position to the open position for access.

34. The component of Claim 31 wherein the bin is configured to move relative to the base from the closed position to the open position when the tray is in the retracted position and the intermediate position.

35. The component of Claim 31 wherein the tray is configured to move from the retracted position to the intermediate position when the bin is in the closed position and the open position.

36. The component of Claim 31 wherein the first actuator comprises a first button and the second actuator comprises a second button.



2 / 8

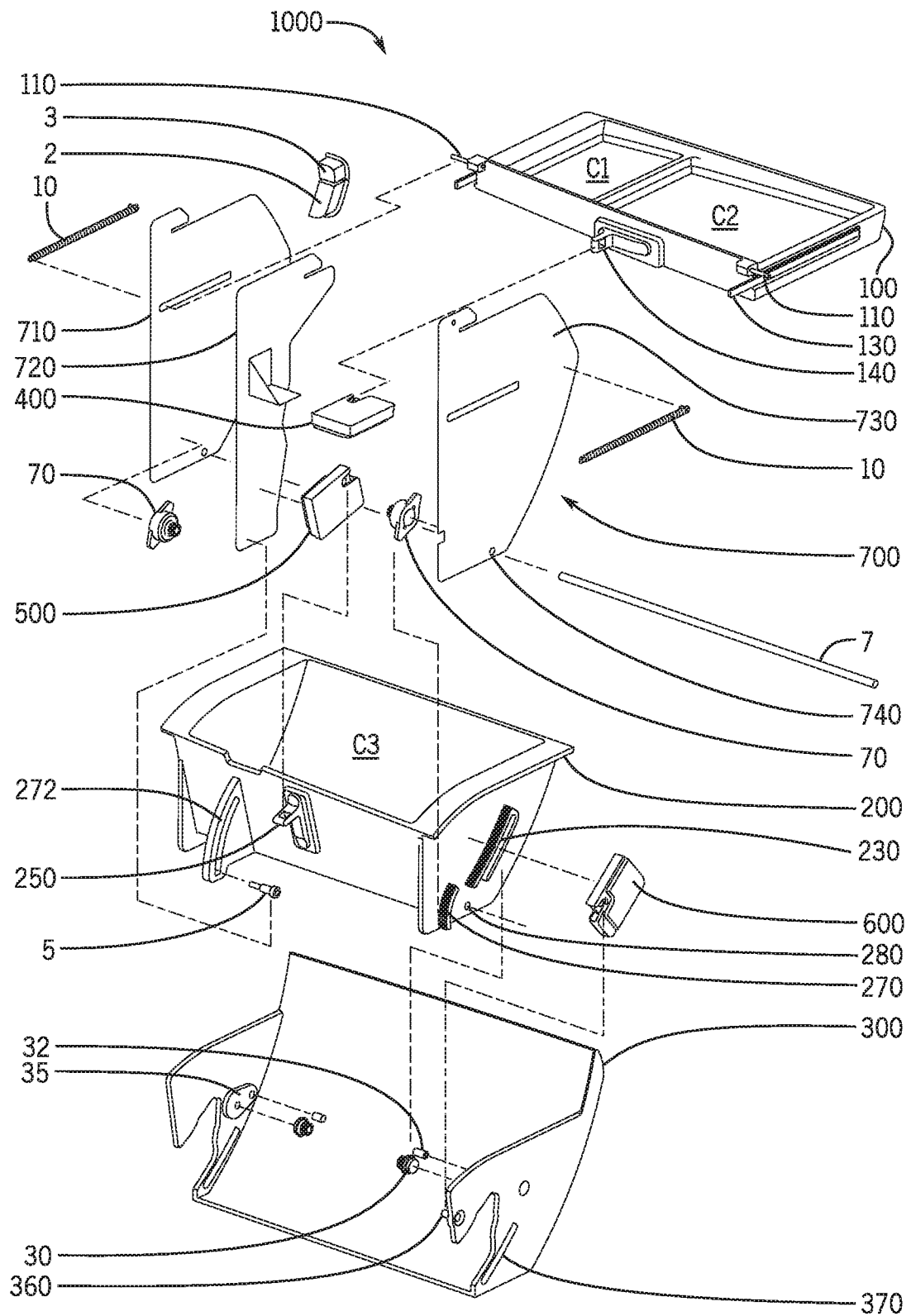
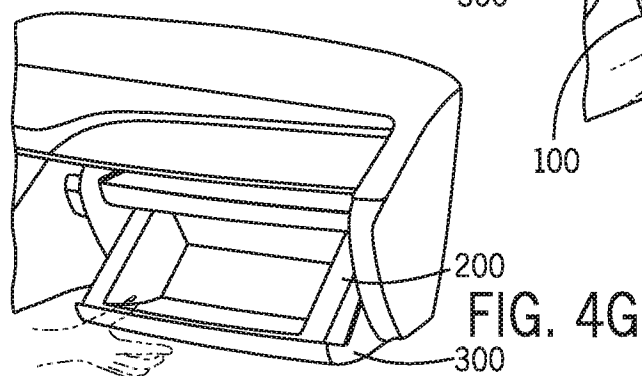
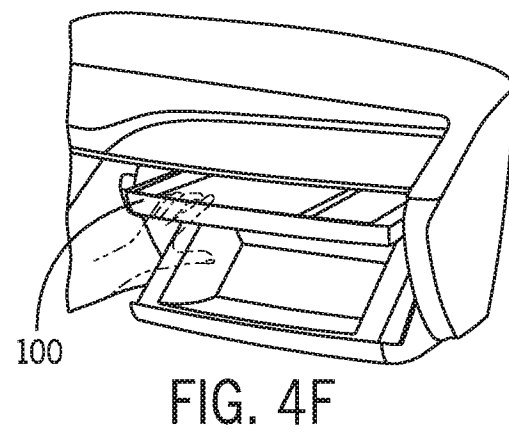
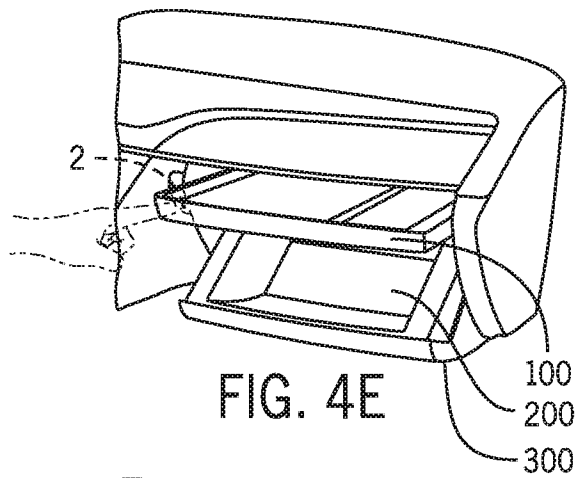
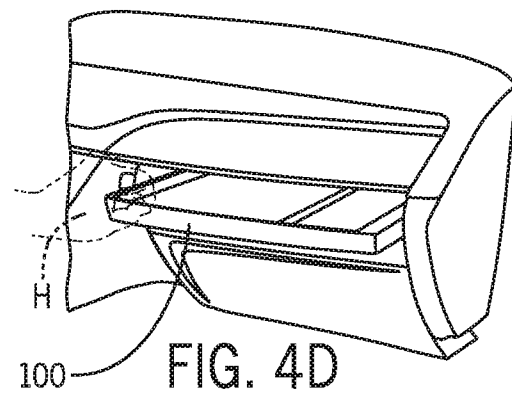
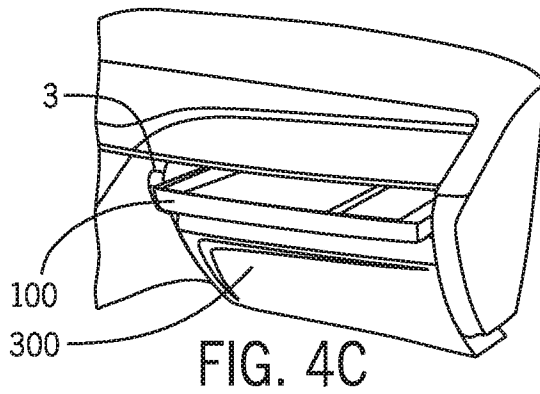
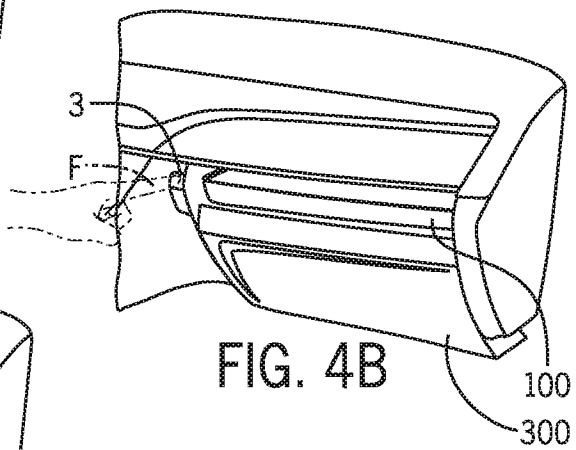
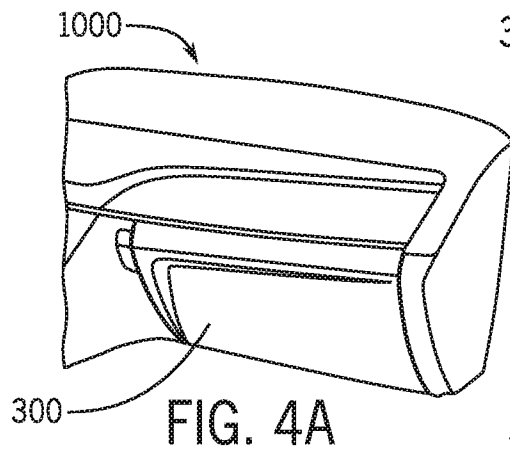
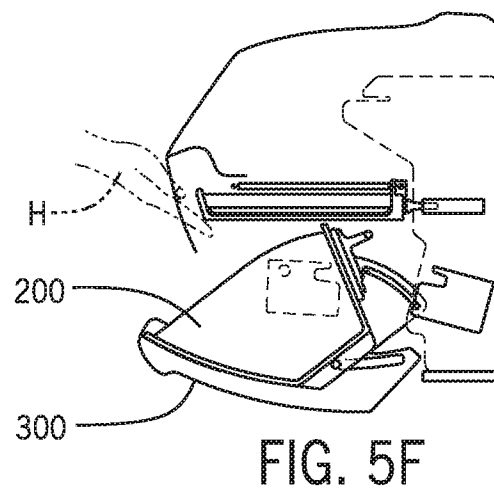
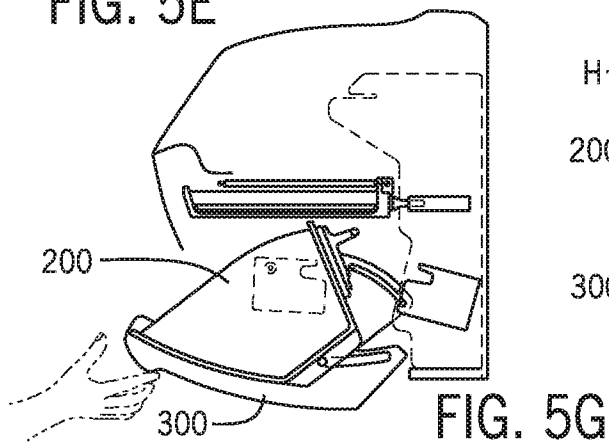
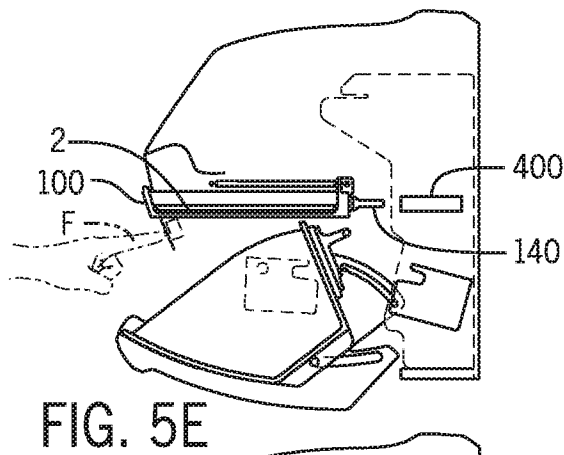
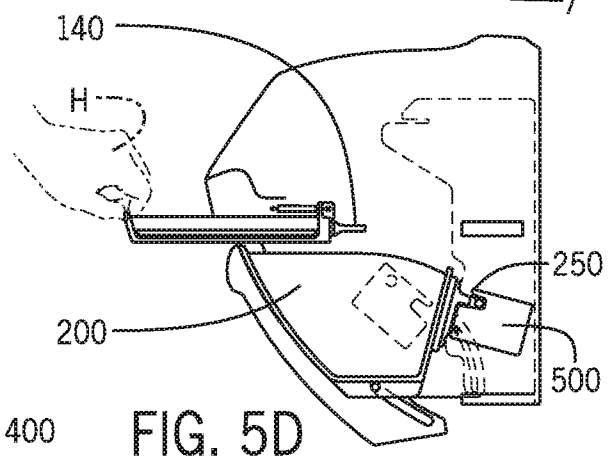
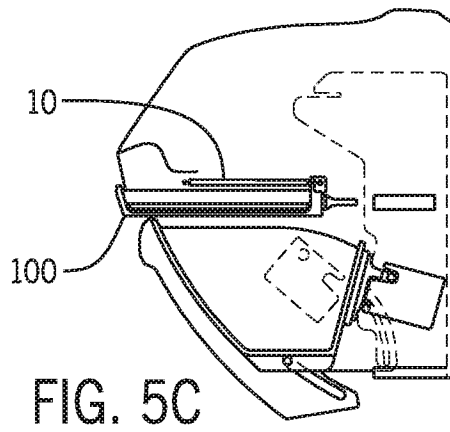
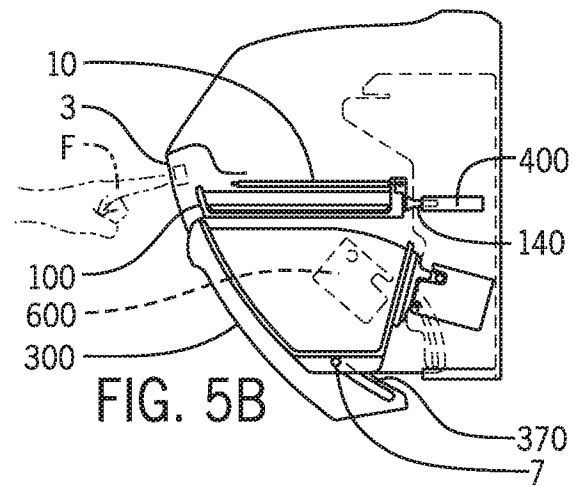
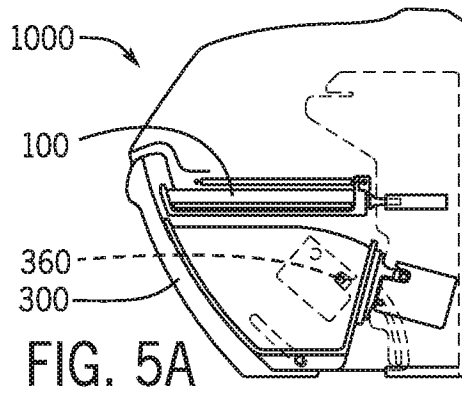


FIG. 3

3 / 8



4 / 8



5 / 8

1000

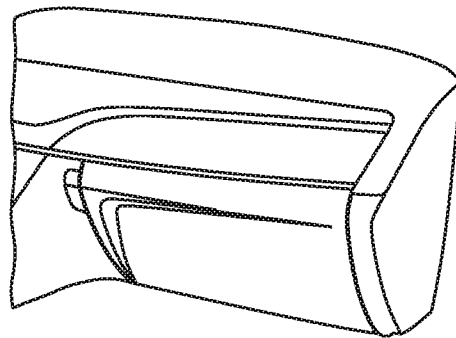


FIG. 6A

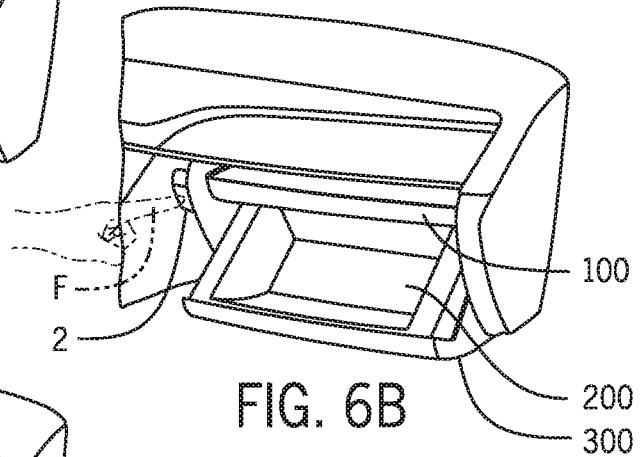


FIG. 6B

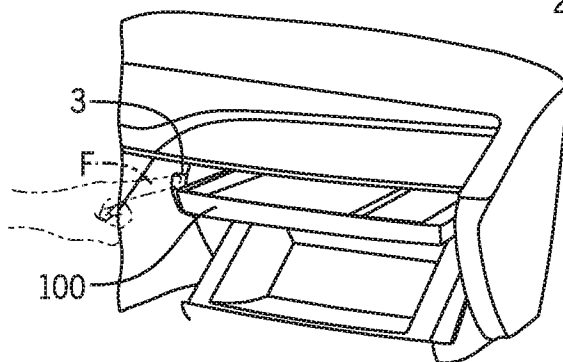


FIG. 6C

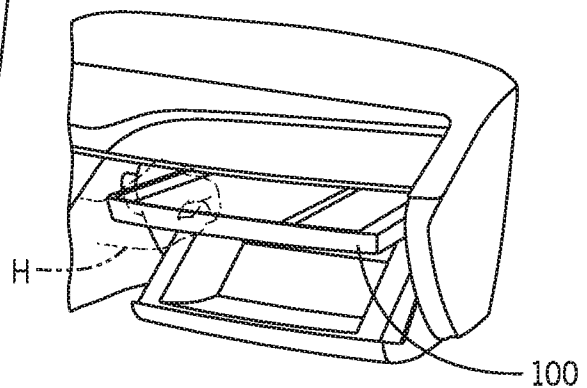


FIG. 6D

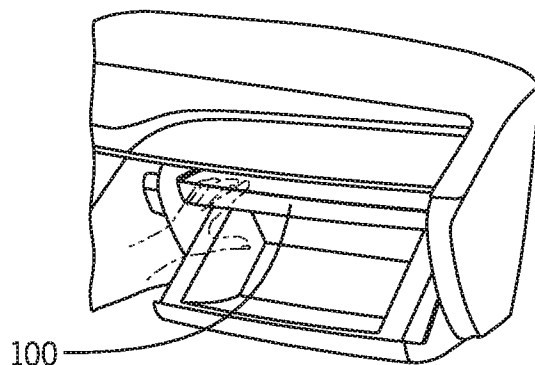


FIG. 6E

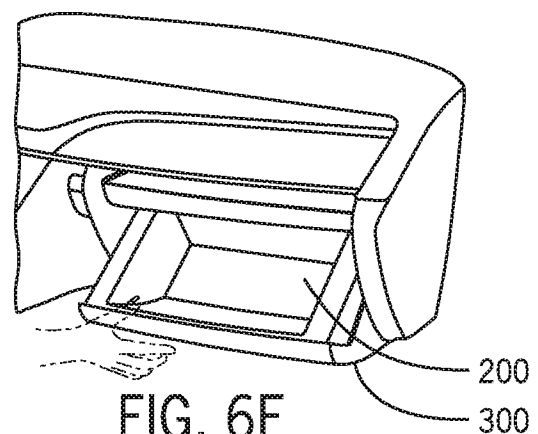
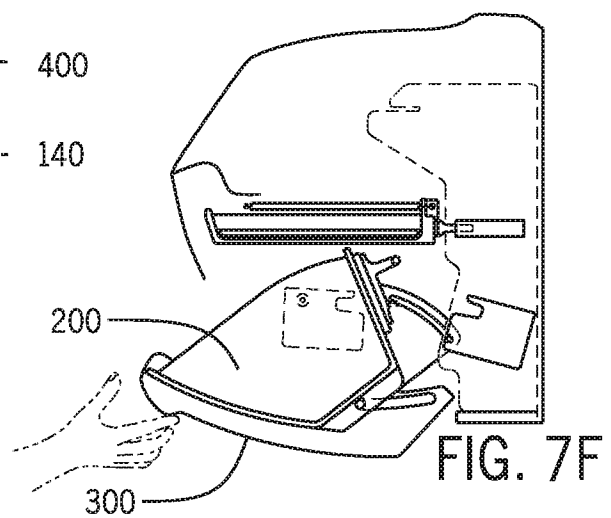
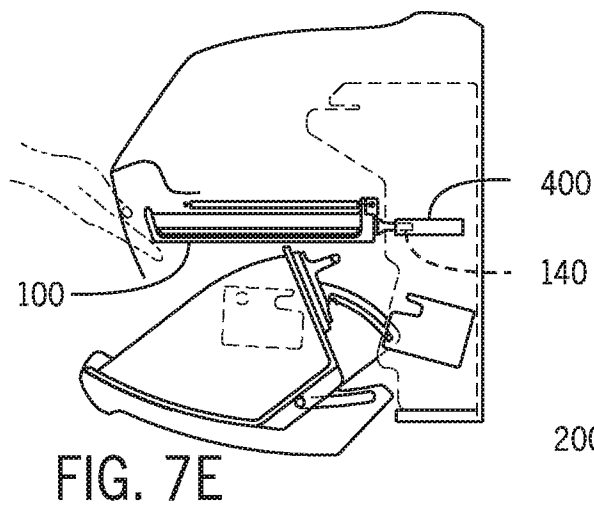
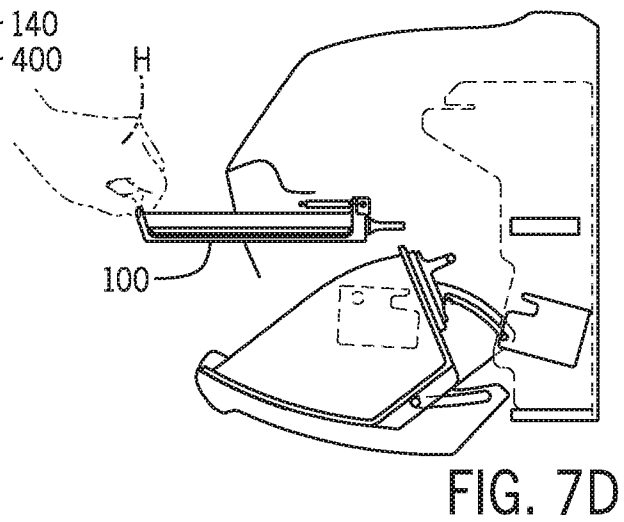
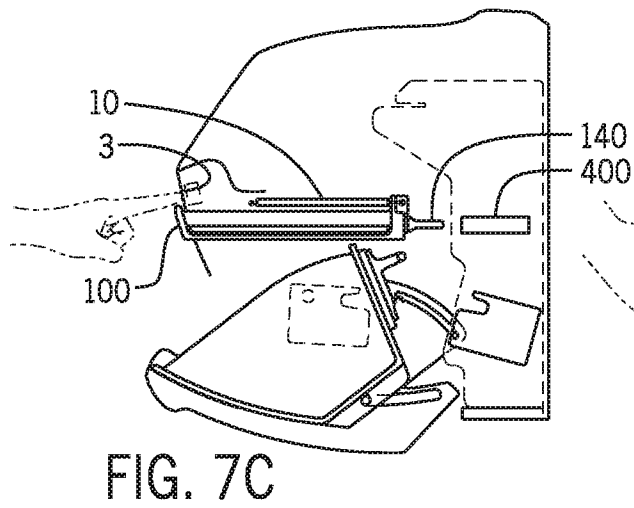
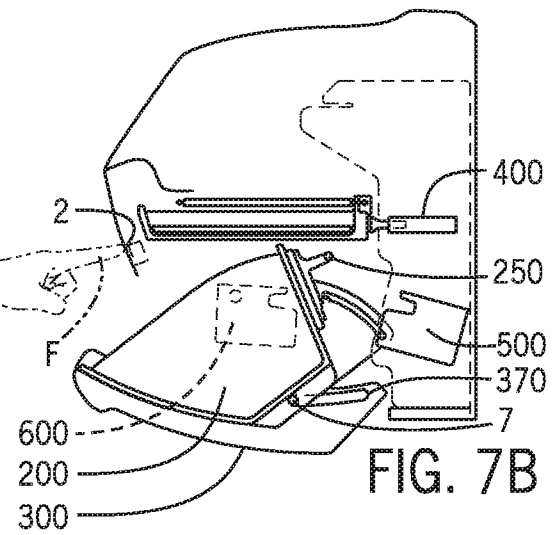
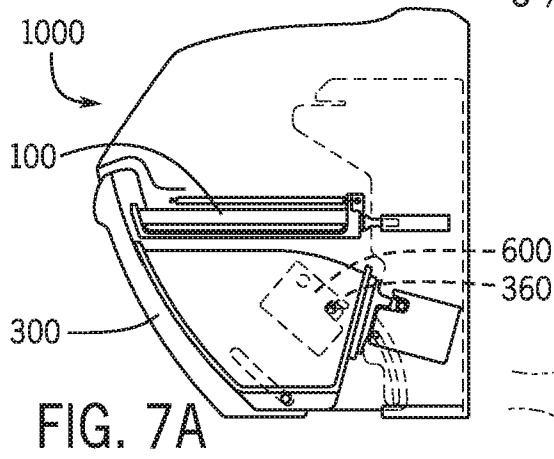


FIG. 6F

6 / 8



7 / 8

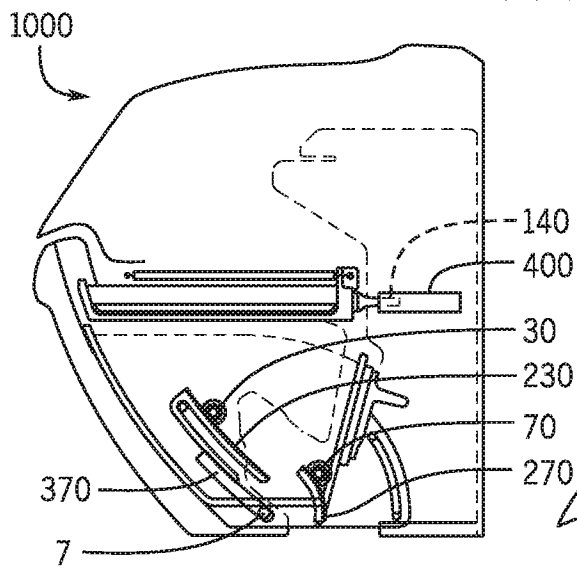


FIG. 8A

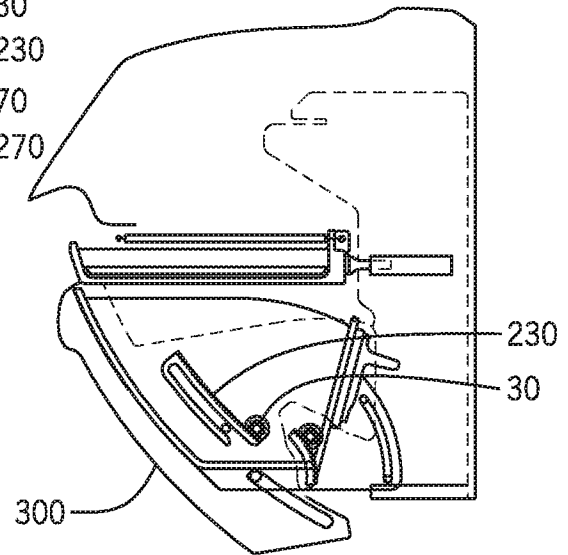


FIG. 8B

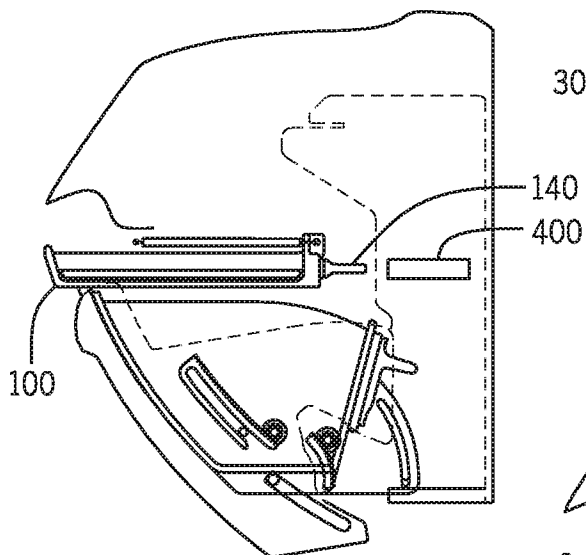


FIG. 8C

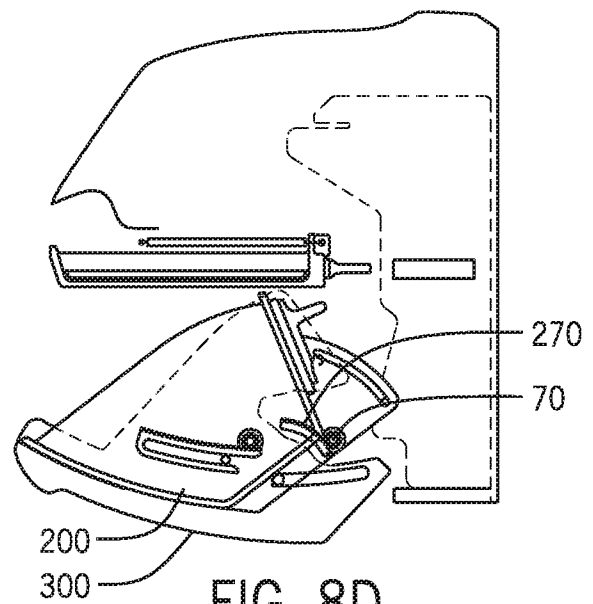


FIG. 8D

8 / 8

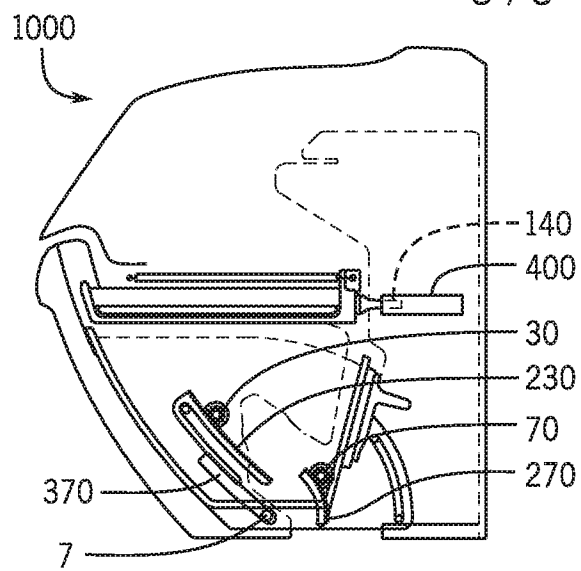


FIG. 9A

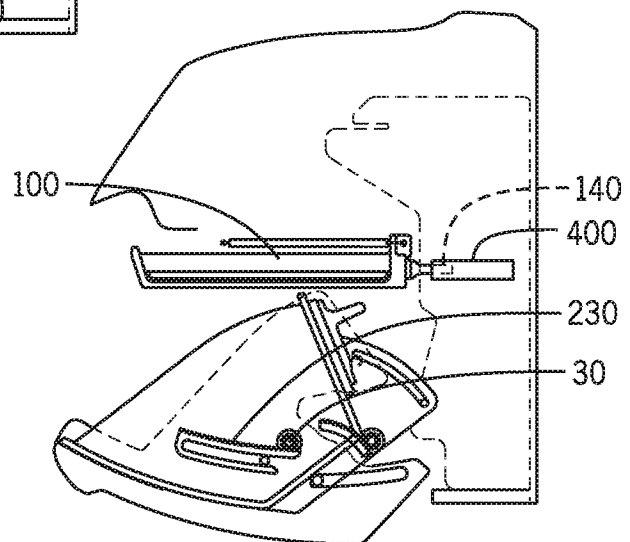


FIG. 9B

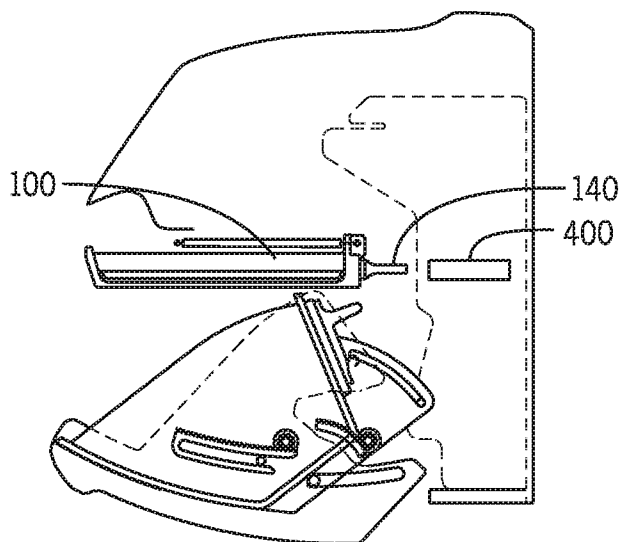


FIG. 9C

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2018/012056

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B60R 7/06; B60K 37/04; B60N 3/00; B60N 3/08; B60N 3/10; B60N 3/12; B60R 7/00 (2018.01)
 CPC - B60R 7/06; B60N 3/002; B60N 3/083 (2018.02)

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See Search History document

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

See Search History document

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

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 8,919,852 B2 (FAURECIA INNENRAUM SYSTEME GMBH) 30 December 2014 (30.12.2014) entire document	1, 5-7, 9, 10, 14-20, 26, 29, 30
Y	GB 2 325 441 A (ROVER GROUP LIMITED) 25 November 1998 (25.11.1998) entire document	1, 5-7, 9, 10, 14-20, 26, 29, 30
A	US 6,050,628 A (ALLISON et al) 18 April 2000 (18.04.2000) entire document	1-30
A	US 8,602,476 B2 (DOLL) 10 December 2013 (10.12.2013) entire document	1-30
A	US 4,902,061 A (PLAVETICH et al) 20 February 1990 (20.02.1990) entire document	1-30

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search

29 March 2018

Date of mailing of the international search report

10 MAY 2018

Name and mailing address of the ISA/US

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P.O. Box 1450, Alexandria, VA 22313-1450

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Authorized officer

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2018/012056

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

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

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

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

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

See extra sheet(s).

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-30

Remark on Protest

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

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

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

Group I, claims 1-30 are drawn to a component for a vehicle interior configured to stow an article comprising a cover.

Group II, claims 31-36 are drawn to a component for a vehicle interior configured to stow an article comprising a first actuator, and a second actuator.

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

The special technical features of Group I, a component for a vehicle interior configured to stow an article comprising a cover coupled to a base, wherein the cover is configured to move from an upward position to cover a tray to a lowered position to uncover the tray, are not present in Group II; and the special technical features of Group II, a component for a vehicle interior configured to stow an article comprising a first actuator, and a second actuator, are not present in Group I.

Groups I and II share the technical features of a component for a vehicle interior configured to stow an article comprising: a base; a bin coupled to the base comprising a receptacle into which the article can be stowed and configured to move relative to the base in an opening direction from a closed position to an open position for access; a tray coupled to the base and configured to move relative to the base from a retracted position to an intermediate position for access. However, these shared technical features do not represent a contribution over the prior art. Specifically, US 4,902,061 A to Plavetich et al. teaches of a component (14) for a vehicle interior (Partially shown in Fig. 1) configured to stow an article (Col. 2, Lns. 1-4, "glove box 14 is provided by a bin 16 having an open top defined by opening 12 through which gloves, maps, or other articles, may be placed into or removed from the bin 16.") comprising: a base (10, Fig. 1); a bin (14) coupled to the base (As seen in Figs. 1 and 2) comprising a receptacle (16) into which the article can be stowed (Col. 2, Lns. 1-4, "glove box 14 is provided by a bin 16 having an open top defined by opening 12 through which gloves, maps, or other articles, may be placed into or removed from the bin 16.") and configured to move relative to the base in an opening direction from a closed position to an open position for access (Col. 2, Lns. 13-16, "The pivot shaft mounts the closure 18 for pivotal movement between the solid line indicated open position of FIG. 2 and a phantom line closed position of FIG. 2"); a tray (28; Col. 2, Lns. 44-47, "Accordingly, as best seen in FIGS. 2 and 3, the convenience tray 28 of this preferred embodiment is provided by an outer tray panel 36 and an inner tray panel 38") coupled to the base (As in Figs. 1 and 2) and configured to move relative to the base from a retracted position (As in Figs. 1 and 2; Col. 2, Ln. 65 thru Col. 3, Ln. 5, "that the outer tray panel 36 and the inner tray panel 38 are telescopically inter-related for sliding movement relative to one another as will be appreciated by comparing the fully retracted position of FIG. 2 and the fully extended position of FIG. 3") to an intermediate position for access (As in Fig. 3; Col. 2, Ln. 65 thru Col. 3, Ln. 5, "that the outer tray panel 36 and the inner tray panel 38 are telescopically inter-related for sliding movement relative to one another as will be appreciated by comparing the fully retracted position of FIG. 2 and the fully extended position of FIG. 3").

Since none of the special technical features of the Group I and II inventions are found in more than one of the inventions, unity is lacking.