

INTELLECTUAL PROPERTY OFFICE OF SINGAPORE
PATENT AGENTS QUALIFYING EXAMINATION 2018

PAPER A: PREPARATION OF A PATENT SPECIFICATION
22 October 2018, Monday
1330 – 1730 hrs

Maximum Time: 4 Hours (includes reading time)

Maximum Marks: 100



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INSTRUCTIONS TO CANDIDATES

1. This Question Paper consists of 18 pages, including this cover page.
2. Type your answers in English. Answers in any other language will not be marked.
3. You are given one hard copy of the Question Paper. The soft copy of the Question Paper is also provided in the given laptop.
4. Only answers and/or drawings typed or indicated in the Answer Script template provided by the Examination Secretariat will be considered. Candidates should not change the given format of the Answer Script or type in the margin.
5. The information provided in the Question Paper may be obtained from actual situations or modified therefrom for the purpose of this examination. You should accept the facts given in the paper and assume that the prior art given is exhaustive.
6. The documents provided in this Question Paper are:
 - a. Cover Page (1 page);
 - b. Details of Client Requirements (2 pages);
 - c. Document A: New Invention (13 pages including drawings);
 - d. Document B: Prior Art A (1 page including drawings); and
 - e. Document C: Prior Art B (1 page including drawings).

END

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Details of Client Requirements (1/2)

Your client, Harvey, approaches you for assistance to draft a patent specification. He explains that fatherhood has made him particularly safety conscious. He wants to prevent his children
5 from the harmful effects of touching electrical terminals, as they get fascinated with power sockets or electrical switches when exploring their surroundings.

Harvey has thus installed power socket covers shown as attached Prior Art A on all power sockets in his home. This known power socket cover is an external safety mechanism device
10 having a frame with a hinged door. When lifted, the hinged door exposes the power socket and when closed it covers the power socket.

However, Harvey finds that the hinged door requires sufficient space to be provided to allow the door to swing through its full range of motion. Thus, it cannot be used in confined spaces,
15 such as together with a computer table with a back panel that stretches the full length between the two legs that are pushed against a wall. The back panel would prevent the hinged door from closing or opening. Harvey would thus have to shift the computer table each time he wants to close or open the power socket cover. This is inconvenient to him.

Harvey has thus conceived a new design for a power socket cover which has a door that is coupled to move differently from the door of Prior Art A. Specifically, the door of Prior Art A needs more space measured from a wall surface to accommodate its full range of motion, especially during the portion when it pivots away from the wall. His new design is shown in attached Figures 1A to 6B. While he believes that his new design will be used mainly on
20 power sockets, he believes it can also be used on electrical points in general, including light switches.
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Details of Client Requirements (2/2)

You perform a prior art search and locate Prior Art B, being an internal safety mechanism 7 that provides electrical shielding, which is located inside a power socket. Figure 8 of Prior Art
5 B shows the safety mechanism 7 without plug prongs 43 (see Figure 7) inserted into terminal openings 25 of a power socket. A safety cover 21 is biased by a spring 31 to close the terminal openings 25 to prevent contact with the electrical terminal contacts 9. The insertion of plug prongs 43, see Figure 7, will compress the spring 31, allowing the plug prongs 43 to establish an electrical connection with the terminal contacts 9. The other reference numerals shown in
10 Figures 7 and 8 can be ignored. Harvey informs you that the internal safety mechanism 7 appears to be well-known. He thus believes that his design will provide a cost effective means to shield electrical power sockets from child play in such older homes.

Please draft a patent specification for Harvey in light of the identified prior art. Harvey asks
15 that you only write a maximum of 12 claims. These 12 claims are to include one independent claim for his design being used with existing power sockets/light switches and one independent claim for his design being integrated with power sockets/light switches. He is mainly interested in protecting his device and sees nothing unique in its manufacture. The description should also have disclosure that fully supports the claim language.

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Document A: New Invention (1/13)

Description of Embodiments of Client's Invention

5 Several embodiments of an electrical point guard are disclosed. An electrical point is a general term that covers outlets where a power grid can be tapped, e.g. power sockets, light switches and circuit breaker switches. Figures 1A, 2A, 3A and 4A provide perspective views of each embodiment in an open state, while Figures 1B, 2B, 3B and 4B provide perspective views of each embodiment in a closed state. While Figures 1A, 1B; 2A, 2B, 3A, 3B; and 4A, 4B show
10 the embodiments in use with power sockets with which an electric plug engages, it will be appreciated that the electrical point guard may also be used on other wall mounted electrical interfaces, such as light switches and circuit breaker panels. For the sake of simplicity, only the electric plug is shown in each of these Figures; the power socket into which the electric plug is inserted is omitted.

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Figures 1A and 1B show a first embodiment of the electrical point guard 100 having a U-shaped frame 102 that is dimensioned to accommodate a power socket (not shown) into which an electric plug 104 is inserted. A gap 108 between parallel walls of the U-shaped frame 102 allows for a cable 106 of the electric plug 104 to pass through.

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The U-shaped frame 102 has a rear surface 116 (confer end of dotted line associated with reference numeral 116) and a front 112 that is opposite to the rear surface 116. The rear surface 116 may be provided with an adhesive backing to allow the U-shaped frame 102 to be affixed to a wall where the power socket is situated, so that the rear surface 116 becomes
25 hidden when the electrical point guard 100 is installed. Alternatively, one or more flaps (not shown) may be provided along any side of the U-shaped frame 102 through which a screw may be drilled to secure the U-shaped frame 102 onto the wall.

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Document A: New Invention (2/13)

The electrical point guard 100 has an opening 114 located in the front 112 of the U-shaped frame 102. The opening 114 is for receiving an electrical point located on a surface of the wall, the electrical point being the power socket in the embodiment shown in Figures 1A and 1B. The opening 114 is dimensioned to allow for inner walls 118 of the U-shaped frame 102 to abut against the perimeter of the power socket, so that the visible inner wall 118 is adjacent to a corresponding side of the power socket. The opening 114, accessible from the front 112 of the U-shaped frame 102, provides passage for the electric plug 104 for insertion into the electric socket. The opening 114 has a depth that spans the entire thickness 120 of the U-shaped frame 102.

A door 122 is coupled to the U-shaped frame 102 to slide in a vertical direction 134 along a slot 124 that is provided on a top surface 126 of the U-shaped frame 102. Figure 1A shows the door 122 in its open state, where the opening 114 is exposed. A guide rail 128 facilitates the sliding of the door 122 from its open state to its closed state shown in Figure 1B, where the opening 114 is covered by the door 122. The end of the guide rail 128 provides a mechanical stop to the door 122 in its closed state.

The door 122 is designed to slide to its closed state by virtue of its own weight; although a spring mechanism (not shown) disposed inside the U-shaped frame 102 may facilitate the covering of the opening 114 by biasing the door 122 to be in the closed state shown in Figure 1B. While the embodiment of Figures 1A and 1B shows the slot 124 being of a width greater than that of the opening 114 (confer gap 108), it is also possible (not shown) that the slot width is the same as that of the opening 114. The door 122 also has a handle 132 to facilitate its opening, where the handle 132 may also provide a mechanical stop in the closed state, especially in an embodiment where the guide rail 128 extends the full length of the inner wall 118.

Figures 2A and 2B show a second embodiment of the electrical point guard 100 having a U-shaped frame 202 that is dimensioned to accommodate a power socket (not shown) into which an electric plug 104 is inserted.

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Document A: New Invention (3/13)

The main differences between the U-shaped frame 202 of Figures 2A and 2B and the U-shaped frame 102 of Figures 1A and 1B are as follows.

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The U-shaped frame 202 is configured to allow the door 122 to slide in a horizontal direction 234, rather than a vertical direction, when exposing (see Figure 2A) and covering (see Figure 2B) the opening 114. The inner wall 218 of the U-shaped frame 202 provides a slot 224 that is a counterpart to the slot through which the door 122 enters the U-shaped frame 202 through a side surface, rather than providing a guide rail 128 as shown in Figures 1A and 1B. In addition, the U-shaped frame 202 has a spring mechanism that biases the door 122 to its default closed state, since the door 122 is unable to close by virtue of its own weight.

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Figures 3A and 3B show a third embodiment of the electrical point guard 100 having a U-shaped frame 302 that is dimensioned to accommodate a power socket (not shown) into which an electric plug 104 is inserted.

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Instead of having one door, as in the case of Figures 2A and 2B, the U-shaped frame 302 of Figures 3A and 3B accommodates two doors 322A and 322B to slide in a horizontal direction 334 when exposing (see Figure 3A) and covering (see Figure 3B) the opening 114. The inner wall 318 of the U-shaped frame 302 provides a slot 324B that is a counterpart to the slot through which the door 322B enters the U-shaped frame 302 through a side surface, similar to the slot 224 provided by the inner wall 218 of the U-shaped frame 202 of Figures 2A and 2B. The slot 324A on the side surface 336 through which the door 322A enters the U-shaped frame 302 is shown in Figures 3A and 3B, while the slot on the inner wall (opposite to the inner wall 318) through which the door 322A passes to cover the opening 114 is hidden from the perspective view of Figures 3A and 3B. Closing of one of the doors 322A and 322B only partially closes the opening 114, while the opening 114 is completely covered when the doors 322A and 322B meet. The U-shaped frame 302 also has a spring mechanism that biases the doors 322A and 322B to their default closed state, since the doors 322A and 322B are unable to close by virtue of their own weight.

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Document A: New Invention (4/13)

Figures 4A and 4B show a fourth embodiment of the electrical point guard 100 having a U-shaped frame 402 that is dimensioned to accommodate a power socket (not shown) into which an electric plug 104 is inserted.

A door 422 is pivotally coupled to the U-shaped frame 402 through a spindle 440, as opposed to the sliding mount used in the earlier three embodiments. The U-shaped frame 402 does not have slots through which the door 422 passes when pivoting to expose (see Figure 4A) or cover (see Figure 4B) an opening 114 located in front of the U-shaped frame 402.

The door 122 is designed to swivel 434 to its closed state by virtue of its own weight; although a spring mechanism (not shown) disposed inside the U-shaped frame 402 may facilitate the covering of the opening 114 by biasing the door 422 to be in the closed state shown in Figure 4B. The door 422 also has a handle 432 to facilitate its opening, although in contrast to the first three embodiments, the handle 432 does not have a dual function of providing a mechanical stop in the closed state.

Similar to the first three embodiments, the U-shaped frame 402 has a rear surface 416 (confer end of dotted line associated with reference numeral 416) and a front 412 that is opposite to the rear surface 416. The rear surface 416 may be provided with an adhesive backing to allow the U-shaped frame 402 to be affixed to a wall where the power socket is situated, so that the rear surface 416 becomes hidden when the electrical point guard 100 is installed. Alternatively, one or more flaps (not shown) may be provided along any side of the U-shaped frame 402 through which a screw may be drilled to secure the U-shaped frame 402 onto the wall.

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Document A: New Invention (5/13)

Figures 1A, 1B; 2A, 2B, 3A, 3B; and 4A, 4B show the electrical point guard 100 implemented as an accessory for attachment to existing power sockets. Figure 5A shows a perspective view of an electrical point housing 200 with a door 522 that is similar to the one shown in Figures 1A and 1B. Instead of a surround structure provided by the frame 102, 202, 302 and 402 of Figures 1A, 1B; 2A, 2B, 3A, 3B; and 4A, 4B respectively, the electrical point housing 200 has a body 502 having a panel 550 onto which a light switch 552 (as shown in Figure 5A) is installed. Alternatively, this panel 550 can have openings providing access to power socket terminals.

The door 522 is coupled to slide in a vertical direction 534 along a slot 524A that is provided on a top surface 526 of the body 502. A guide rail 528, disposed in inner wall 518A of the body 502, facilitates the sliding of the door 522 from its open state, shown in Figure 5A, to its closed state (not shown) where the opening 114 is covered by the door 522.

The door 522 is designed to slide to its closed state by virtue of its own weight; although a spring mechanism (not shown) disposed inside the U-shaped frame 502 may facilitate the covering of the opening 114 by biasing the door 522.

Figure 5B shows a bottom view of the electrical point housing 200 as seen from line AA' of Figure 5A. Slot 524B, disposed in inner wall 518B of the U-shaped frame 502, is also shown, the slot 524B being the counterpart to the slot 524A provided on the top surface 526. As seen from Figure 5B, the opening 114 has a depth that does not span the entire thickness 520 of the body 502.

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Document A: New Invention (6/13)

While Figures 5A and 5B show the door 522 using the coupling configuration of the first embodiment of Figures 1A and 1B, the other door coupling configurations shown in the second to fourth embodiments of Figures 2A, 2B; 3A, 3B, 4A, 4B; and 5A and 5B are also possible.

Figures 6A and 6B show side cross sectional views of a locking mechanism 600 that prevents the door 122, 322A, 322B, 422 and 522 from moving when closed. The locking mechanism 600 has a member 602 that is located within a channel structure 604 of the U-shaped frame 102, 202, 302 and 402 and the body 502. The channel structure 604 also accommodates a spring 608 that is biased to push the member 602 against the door 122, 322A, 322B, 422 and 522. When the door 122, 322A, 322B, 422 and 522 is in a position in which the opening 114 is at least partially exposed, the spring 608 is under higher compression, as shown in Figure 6A, when compared to the situation when door 122, 322A, 322B, 422 and 522 is in a position such that the opening 114 is covered, as shown in Figure 6B. As the door 122, 322A, 322B, 422 and 522 moves to cover the opening 114, a recess 610 located on a surface of the door 122, 322A, 322B, 422 and 522 will move into alignment such that a forward end of the member 602 will then enter the recess 610, whereby the door 122, 322A, 322B, 422 and 522 is then held in its closed state by the biasing force of the spring 608.

To release the door 122, 322A, 322B, 422 and 522, the member 602 is pushed back against the biasing force of the spring 608. A rear end of the member 602 is exposed to facilitate actuation of the member 602. It will be appreciated that the rear end of the member 602 is hidden from view by a portion 612 of the door 122, 322A, 322B, 422 and 522 that protrudes when closed. This protruding portion 612 seeks to prevent children from readily moving the door 122, 322A, 322B, 422 and 522 to expose the opening 114. This protruding portion can readily be appreciated in Figures 1B, 2B (obstructed), 3B and 4B, although not labelled. The locking mechanism 600 is optional, whereby its omission will mean that the door 422 of the fourth embodiment need not necessarily protrude in its closed state, compared to the implementation shown in Figure 4B.

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Document A: New Invention (7/13)

5 While U-shaped frames 102, 202, 302 and, 402 are shown, other shapes are possible, such as triangular or arcuate frames. The front of the frame need not be straight, as long as it presents a surface that does not obstruct movement of the door. For instance, the front may have a surface that tapers towards the opening 114.

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Document A: New Invention (8/13)

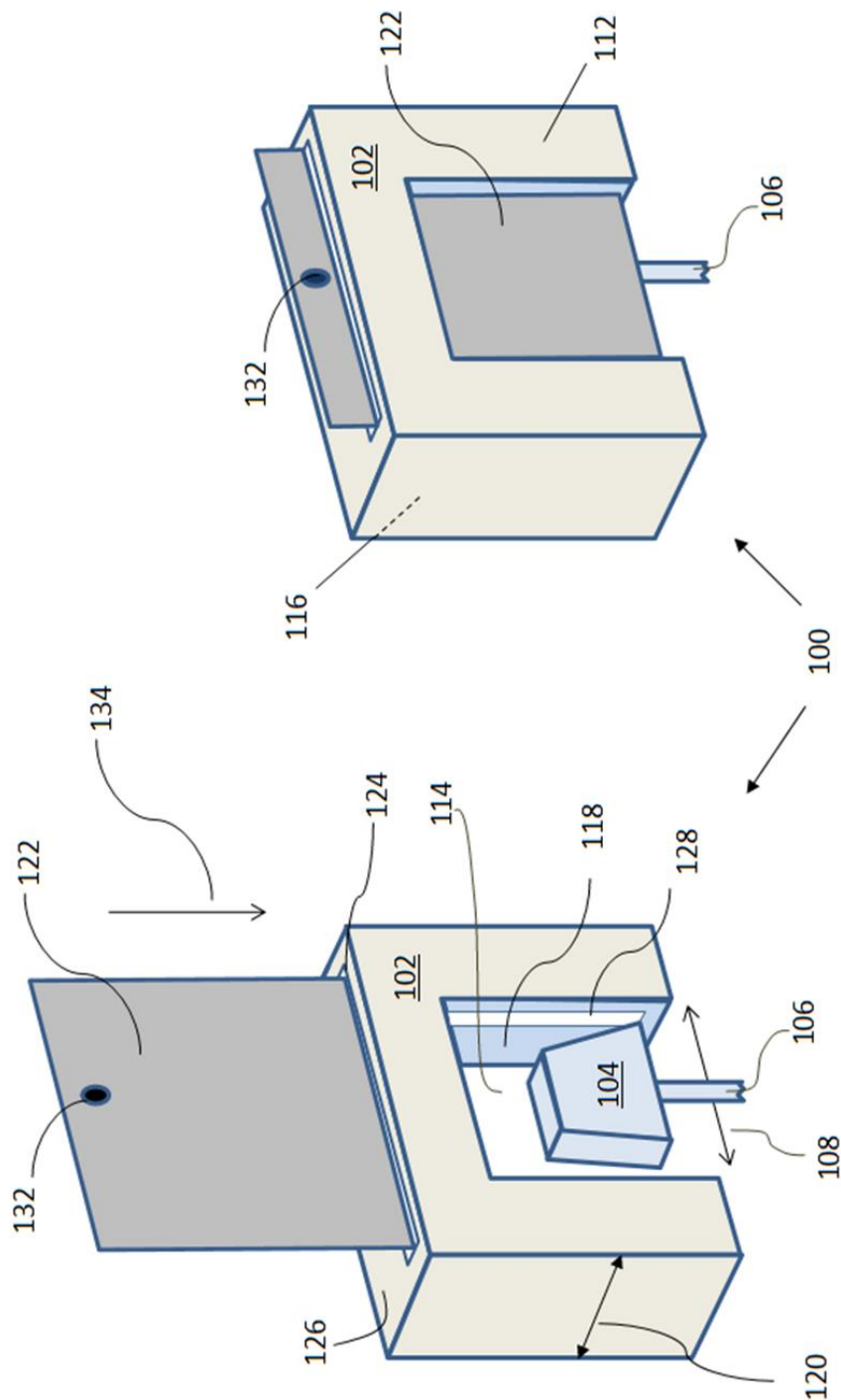


Figure 1B

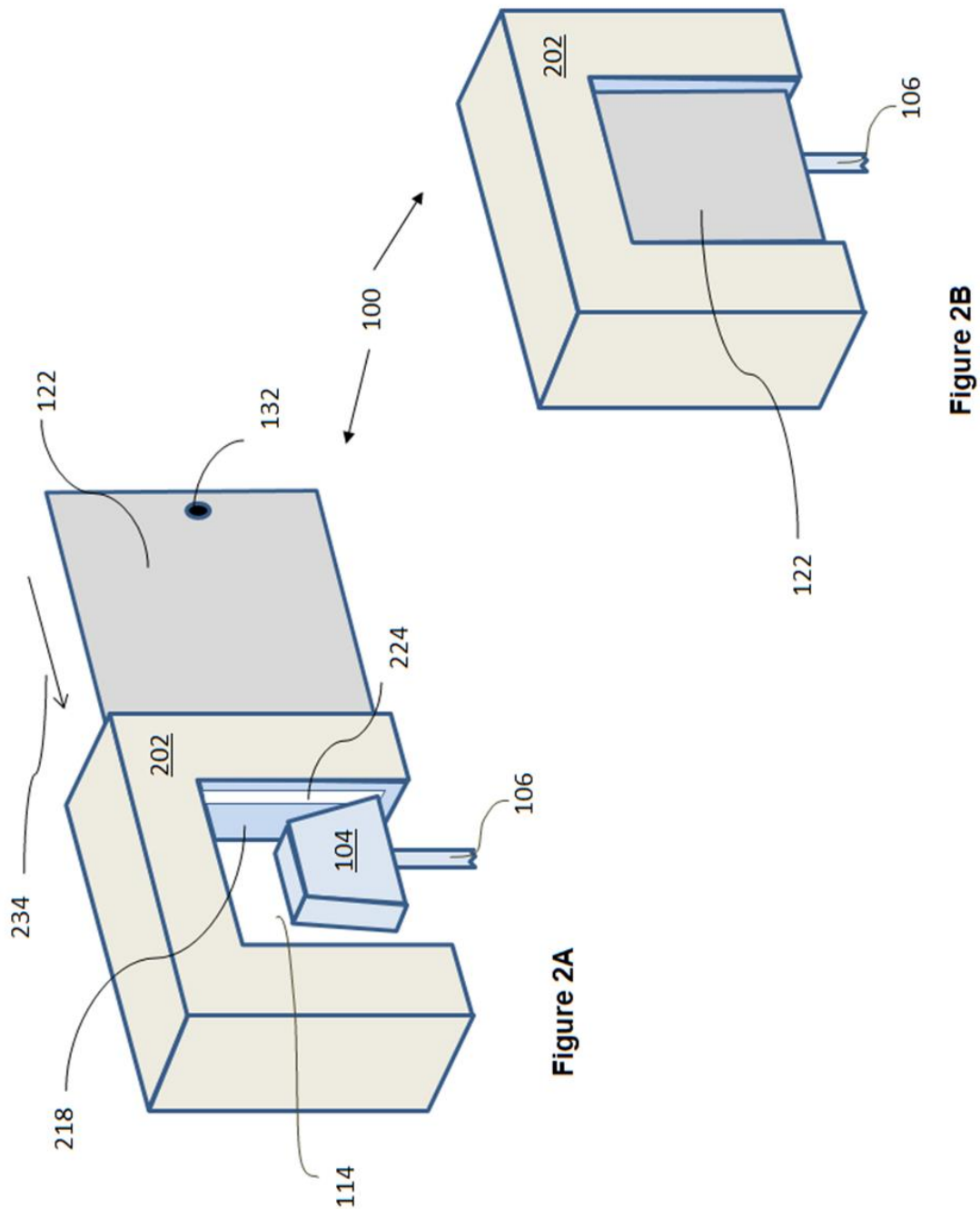
Figure 1A

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Document A: New Invention (9/13)

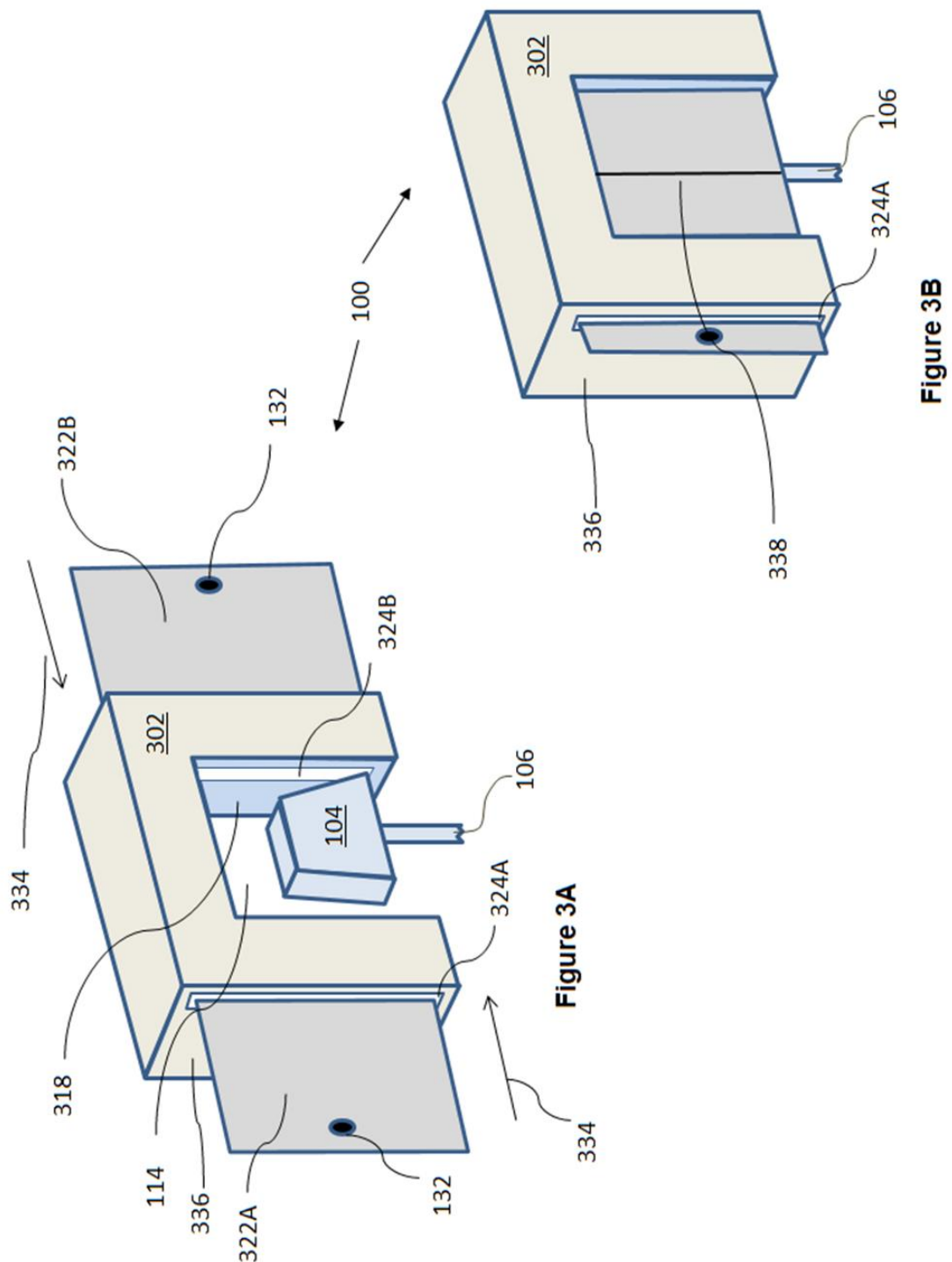


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Document A: New Invention (10/13)



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Document A: New Invention (12/13)

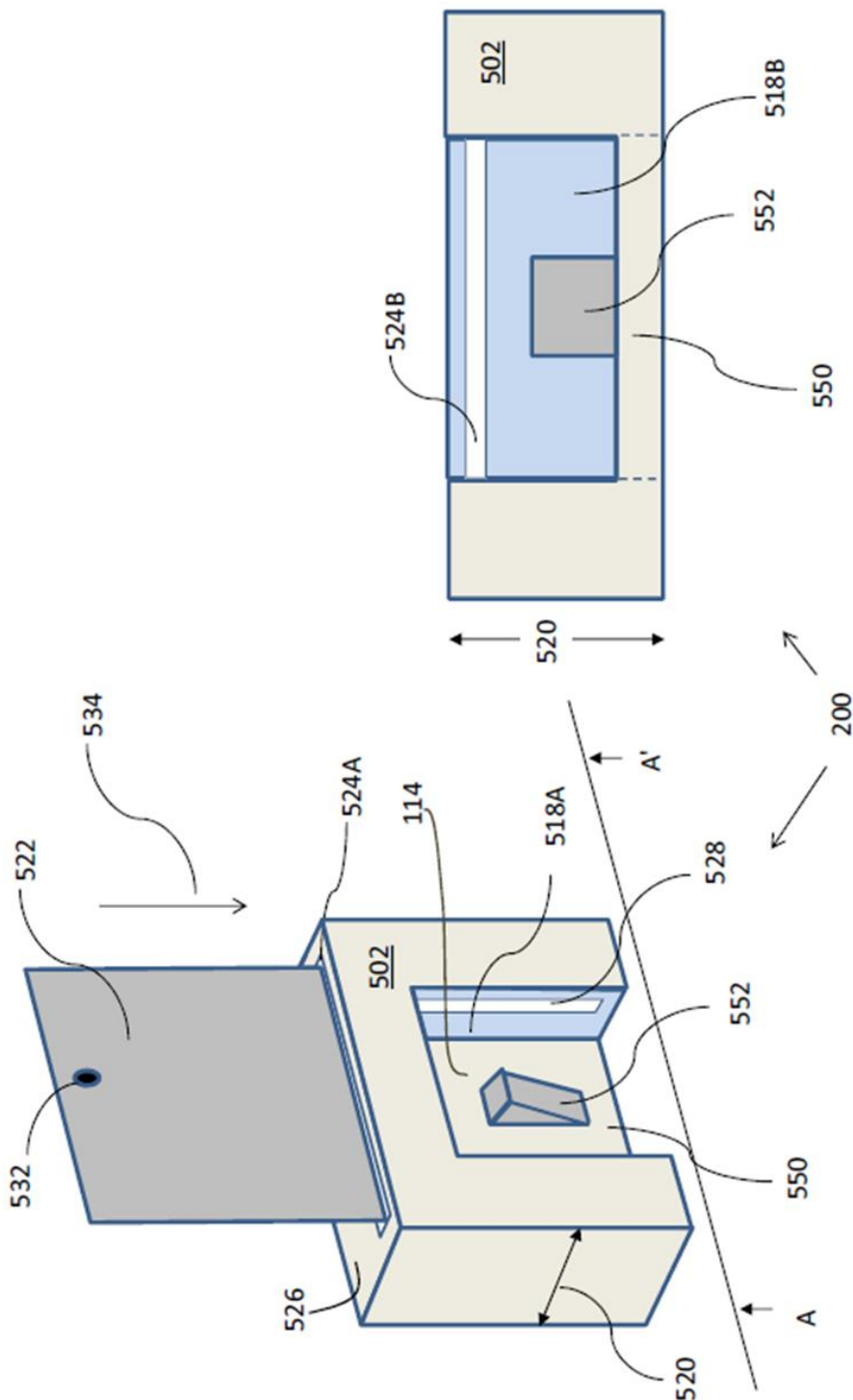


Figure 5B

Figure 5A

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Document A: New Invention (13/13)

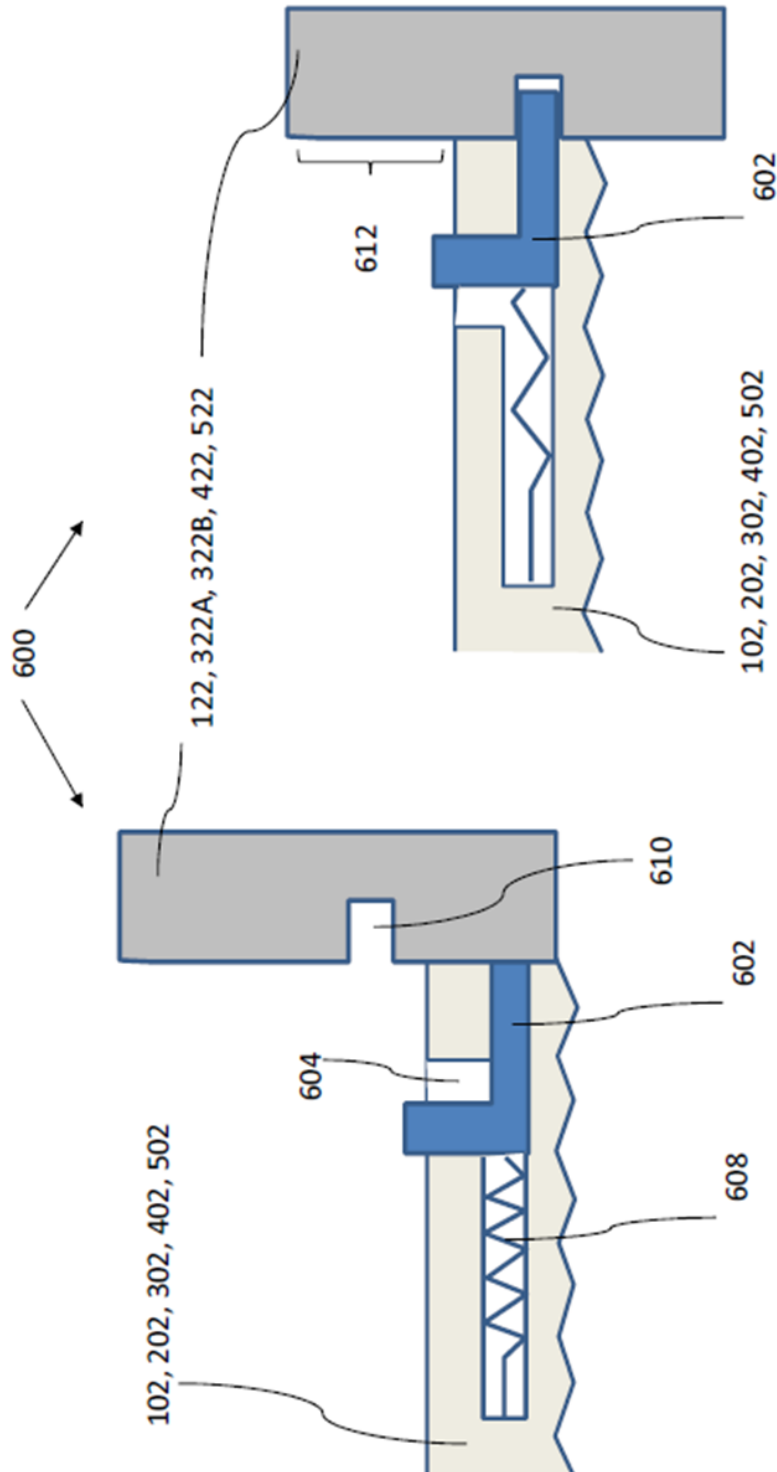


Figure 6B

Figure 6A

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Document C: Prior Art B (1/1)

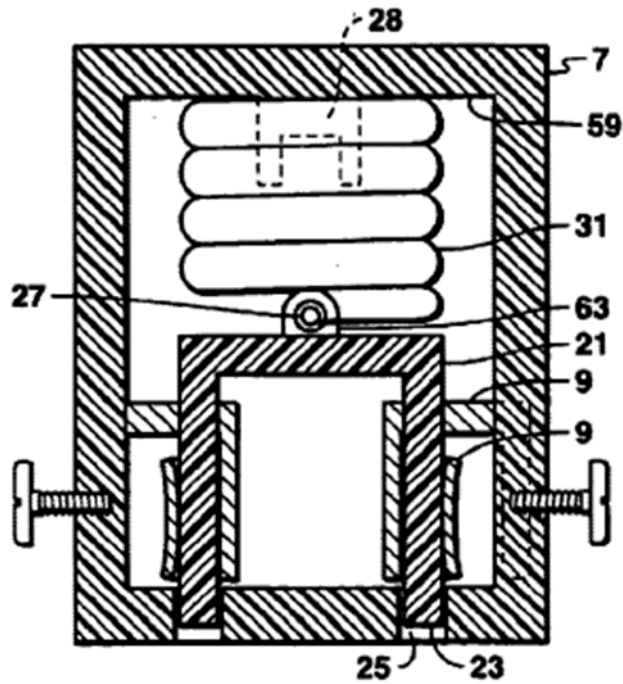


FIG. 8

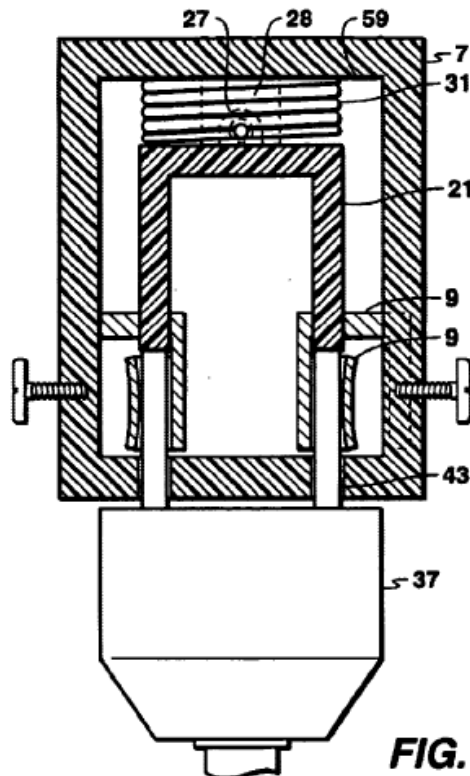


FIG. 7

END