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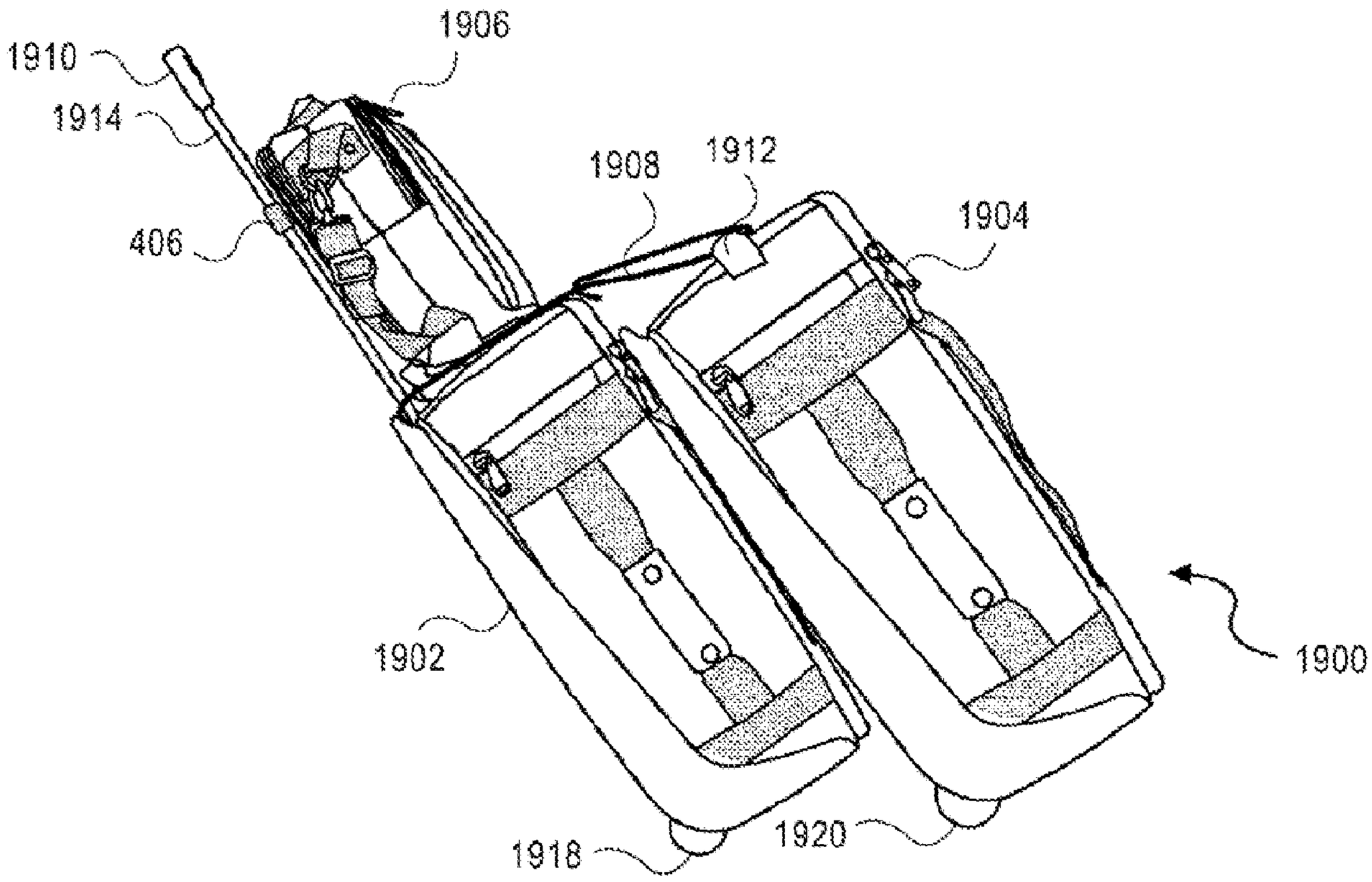
(54) **Titre : APPAREIL ET PROCEDE POUR ENSEMBLE BAGAGE ROULANT AUTO-STABILISE**
(54) **Title: APPARATUS AND METHOD FOR SELF-STABILIZED ROLLABLE LUGGAGE ASSEMBLY**



(57) **Abrégé/Abstract:**
A luggage assembly includes a first piece of luggage and a second piece of luggage. An attachment member couples the second piece of luggage to the first piece of luggage so that the first and second pieces of luggage are self-stabilized while upright and inclined, and while in motion and while stationary.

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(54) Title: APPARATUS AND METHOD FOR SELF-STABILIZED ROLLABLE LUGGAGE ASSEMBLY

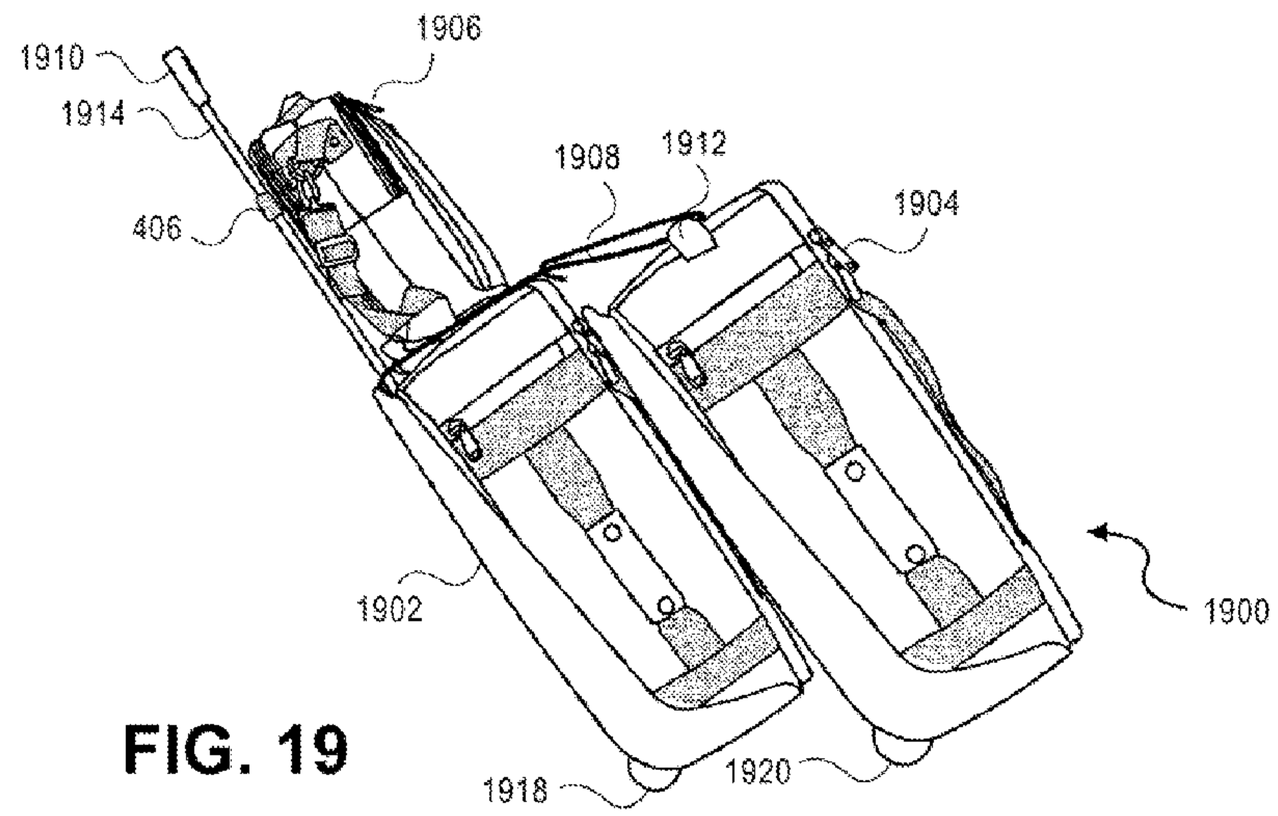

FIG. 19

(57) Abstract: A luggage assembly includes a first piece of luggage and a second piece of luggage. An attachment member couples the second piece of luggage to the first piece of luggage so that the first and second pieces of luggage are self-stabilized while upright and inclined, and while in motion and while stationary.

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APPARATUS AND METHOD FOR SELF-STABILIZED ROLLABLE LUGGAGE ASSEMBLY

Background

[0001] Some conventional pieces of luggage, such as carry-on bags and rolling duffel bags, may have rollers on the bottom to make the bags easier for travelers to transport. However, travelers often need to transport two or more wheeled pieces of luggage simultaneously. If a traveler needs to transport two wheeled pieces of luggage, both hands are typically required. Consequently, while transporting two or more large, heavy pieces of luggage, the traveler may find it difficult or impossible to do other things, such as answering a cellular telephone call, retrieving cash or keys from a pocket or purse, holding the hand of a small child, etc.

[0002] Furthermore, in many situations, travelers find it difficult to maneuver multiple pieces of luggage simultaneously. For instance, it can be difficult to safely transport two large pieces up or down a step or escalator, or to transport both pieces through a narrow opening. Such maneuvers may be particularly difficult when the traveler is small and one or both of the pieces of luggage are large and heavy. When more than two pieces need to be transported, these kinds of difficulties may be multiplied.

Brief Description Of The Drawings

[0003] Features and advantages of the present invention will become apparent from the appended claims, the following detailed description of one or more example embodiments, and the corresponding figures, in which:

[0004] Figure 1 shows an embodiment of a self-stabilized rollable luggage assembly;

[0005] Figure 2 depicts a perspective view of a piece of luggage referred to as a carry-on bag.

[0006] Figure 3 shows a perspective view of a piece of luggage referred to as a rolling duffel bag.

[0007] Figure 4 depicts a perspective view of a piece of luggage referred to as a shoulder bag.

[0008] Figures 5-8 shows side views of the components depicted in Figures 2-4, illustrating a method for creating a luggage assembly or luggage train, according to an example embodiment of the present intention.

[0009] Figure 9 depicts a top view of the carry-on bag and the rolling duffel bag from Figure 7.

[0010] Figure 10 depicts a rear view of a carry-on bag and a front view of a rolling duffel bag, according to another embodiment of the present invention..

[0011] Figures 11-13 show side views of the carry-on and rolling duffel bags of Figure 10, in different stages of another example embodiment of a method for creating a luggage train.

[0012] Figures 14-17 show side views of another embodiment of carry-on and rolling duffel in different stages of another method for creating a luggage train.

[0013] Figure 18 shows a top view of the carry-on coupled to the rolling duffel in Figure 17.

[0014] Figure 19 depicts an embodiment of a tilted luggage assembly including two suitcases and a shoulder bag.

[0015] Figure 20 depicts an embodiment of the luggage assembly in an upright position.

[0016] Figure 21A shows a top view of an embodiment of a stabilizer that can be used in the luggage assemblies of Figures 19 and 20.

[0017] Figures 21B and 21C show respective top and side views of another embodiment of a stabilizer that can be used in the luggage assemblies of Figures 19 and 20.

[0018] Figure 22 shows a top view of the stabilizer of Figure 21A coupling a pair of suitcases.

[0019] Figure 23 shows another embodiment of a stabilizer.

[0020] Figure 24 shows a top view of the stabilizer of Figure 23 coupling a pair of suitcases.

[0021] Figure 25 depicts a perspective view of an embodiment of a piece of luggage referred to as a carry-on suitcase.

[0022] Figures 26-29 depict an embodiment of a method for creating the luggage assembly of Figure 19.

[0023] Figure 30 is an embodiment of a stabilizer built into or stored in a pocket of a suitcase.

[0024] Figure 31 shows another embodiment of a stabilizer for a luggage assembly.

[0025] Figure 32 shows another embodiment of a stabilizer for a luggage assembly.

Detailed Description

[0026] Figure 1 depicts an example embodiment of such a luggage assembly 100 including carry-on bag 102 connected to a trailing bag 104, and a third bag 106. Moreover, the bags 102, 104, 106 are connected in a way that allows a majority of the weight of the assembly 100 to rest on the wheels of carry-on bag 102 and trailing bag 104. Assembly 100 is self-stabilized when in motion and when stationary, and in particular, a traveler does not need to hold handle 236 for the assembly 100 to remain upright or in an inclined position whether or not assembly 100 is in motion. These and other characteristics of luggage assembly 100 provide for excellent stability and maneuverability. Additional details concerning the components and steps used for creating a rollable luggage assembly 100, as well as various operating characteristics of luggage assembly 100, are provided below.

[0027] Figure 2 depicts a perspective view of an embodiment of a piece of luggage referred to as a carry-on bag 102. As illustrated, carry-on bag 102 has a front 224, a back 222, a top 226, a bottom 228, a left side 230, and a right side 232. As described in greater detail below, in some embodiments, carry-on bag 102 serves as the foundation for an assembly of bags that can easily be transported, maneuvered, and parked.

[0028] For purposes of this disclosure, carry-on bag 102 may be referred to as a first bag, a base bag, or a leading bag 102. In one embodiment, the dimensions of first bag 102 are approximately 23 inches high, 12 inches wide, and 10 inches deep. In other embodiments, other types and/or sizes of bags may be used as the first bag or base bag.

[0029] In the embodiment of Figure 2, the top of first bag 102 features a soft handle 234. Left side 230 can also features a soft handle. First bag 102 also features a substantially rigid, yet extendable handle 236 that includes two extendable, rigid upright members 240, and a substantially rigid grip member 238 that spans the top of upright members 240. In the embodiment of Figure 1,

handle 236 is situated at the back of bag 102, and is centered longitudinally between the left and right sides.

[0030] First bag 102 can also have a pair of wheels 242, with one wheel situated at the back left corner of the bottom of the bag 102, and the other wheel situated at the back right corner of the bottom of the bag 102. One or more feet 244 may also be provided at or near the front edge of the bottom of first bag 102, to provide stability and prevent movement when first bag 102 is parked in an upright position with the weight resting on feet 244 and wheels 242.

[0031] Figure 3 depicts a perspective view of an embodiment of a piece of luggage known as rolling duffel bag 104. As illustrated, rolling duffel bag 104 has a front 304, a back 302, a top 306, a bottom 308, a left side 310, and a right side 312.

[0032] In some embodiments, rolling duffel bag 104 is connected to first bag 102 to create a luggage assembly 100 that can easily be transported, maneuvered, and parked. Accordingly, for purposes of this disclosure, rolling duffel bag 104 may be referred to as a second bag or a trailing bag 104. In at least one embodiment, the trailing bag 104 is larger than the leading bag. In one embodiment, the dimensions of second bag 104 are approximately 28.5 inches high, 13.5 inches wide, and 11.5 inches deep. In another embodiment, the dimensions of the second bag are approximately 33 inches high, 16 inches wide, and 13 inches deep. In another embodiment, the second bag may be greater than 47 inches high. In other embodiments, other types and/or sizes of bags may be used as the second bag or trailing bag 104. For example, the trailing bag 104 may be the same size as, or smaller than, the leading bag 102, with attachment means 604 (Figure 6) dimensioned accordingly (e.g., a longer attachment strap) to provide a suitable weight distribution to stabilize the bags 102, 104.

[0033] In the embodiment of Figure 3, the top of second bag 104 features a soft handle 314. Second bag 104 may also feature a rigid, extendable handle 316, along with a pair of wheels 318 at the back corners of the bottom of the bag, and one or more feet 320 at or near the front edge of the bottom. Feet 320 may

provide stability and prevent movement when second bag 104 is parked in an upright position on feet 320 and wheels 318.

[0034] Figure 4 depicts a perspective view of an embodiment of piece of luggage known as shoulder bag 106. As illustrated, shoulder bag 106 has a back 402, a front 404, and a strap 406. As described in greater detail below, in one embodiment, shoulder bag 106 may be connected to first bag 102 along with second bag 104 to create an assembly of bags that can easily be transported, maneuvered, and parked. Accordingly, for purposes of this disclosure, shoulder bag 106 may be referred to as a top bag or a third bag 106.

[0035] In the embodiment of Figure 4, strap 406 is dimensioned to snugly receive handle 236. Thus, strap 406 may be slid down handle 236 until third bag 106 rests on top of first bag 102, and strap 406 will thereafter prevent top bag 106 from being dislodged. In other embodiments, other types and/or sizes of bags may be used as the third bag 106 (e.g., a laptop bag, a purse, a carry-all bag, a gear bag). Typically the third bag 106 can be sized to meet airline requirements for carry-on bags. For instance, the third bag 106 could be small enough to fit under a typical airline seat. In other embodiments, the third bag 106 may be omitted.

[0036] Figures 5-8 depict side views of the components depicted in Figures 2-4. In addition, Figures 5-8 illustrate an embodiment of a method for creating luggage assembly 100 (Figure 1).

[0037] Figure 5 depicts first bag 102, second bag 104, and third bag 106 resting on the floor, each in an upright position, as they might be situated, for instance, after a traveler has retrieved second bag 104 from a baggage carousel. The process for attaching the bags together in a manner to create a stable luggage assembly 100 may begin with the bags in this position. The traveler may then separate handle 314 into two separate members.

[0038] As shown in Figure 6, handle 314 may include a main handle strap 602 and a reinforcement handle strap 604. A sleeve with snaps, or any other temporary connection means, may be used to keep main handle strap 602 and

reinforcement handle strap 604 connected when second bag 104 is being used alone. When desired, however, the traveler may release the temporary connection means, to allow the traveler to separate reinforcement handle strap 604 from main handle strap 602, as shown by arrow 606 in Figure 6.

[0039] In one embodiment, two ends of main handle strap 602 are connected to the top of second bag 104, at two points at or near the left and right edges of the top 306 of bag 104, while two ends of reinforcement handle strap 604 are connected to the upper portion 322 (e.g., the upper third) of the back of second bag 104. For instance, the two ends of reinforcement handle strap 604 may be connected at two points at or near the top edge of the back 302. In one embodiment, the two attachment points for reinforcement handle strap 604 are approximately equal distances from the longitudinal center of second bag 104, and the two attachment points are situated at least as far apart from each other as are the upright members 240 of handle 236 of first bag 102. Other embodiments may use other configurations of uprights, handles, and/or straps.

[0040] Once the traveler has separated reinforcement handle strap 604 from main handle strap 602, the traveler lifts reinforcement handle strap 604 over grip 238 of handle 236, as shown by arrow 608. Extendable handle 236 may be retracted to make this operation easier.

[0041] As shown in Figure 7, the traveler then slides reinforcement handle strap 604 down handle 236, and/or extends handle 236 up through reinforcement handle strap 604, to couple second bag 104 to first bag 102. Accordingly, reinforcement handle strap 604 and handle 236 may serve as, and may be referred to as, attachment members. Similarly, reinforcement handle strap 604 may also be referred to as an attachment strap 604.

[0042] Figure 9 depicts a top view of the configuration of first bag 102 and second bag 104 shown in Figure 7 with the second bag 104 attached to the first bag 102, but without third bag 10 As illustrated, once the traveler has attached second bag 104 to first bag 102 with reinforcement handle strap 604, reinforcement handle strap 604 may have three segments, namely, a first

segment 604A and a third segment 604C, each of which extends from second bag 104 around handle 236, and an intermediate second segment 604B, which spans handle 236. In one embodiment, first segment 604A and third segment 604C are approximately the same length 902, and that length 902 is approximately twice the length 904 of the segment that spans handle 236. For instance, segments 604A and 604C may be approximately 10 inches long, and segment 604B may be approximately six inches long. The distance between the attachment points on second bag 104 for segments 604A and 604C may also be approximately six inches. 904 The relatively wide intermediate segment, in conjunction with the relatively wide attachment points on second bag 104, may provide increased stability for the luggage assembly 100 by helping to prevent the left or right side of second bag 104 from lifting away from first bag 102. Other dimensions and/or proportions may be used in other embodiments. For instance, the rigid handle 236 on the leading bag 102 could be wider than six inches or less than six inches (e.g., a single post), and the attachment strap could be longer or shorter, correspondingly. A rollable luggage assembly 100 may thus use an attachment strap 604 that is proportionate in length to the distance from the trailing bag 104 to and around the handle 236 to prevent the trailing bag 104 from sliding too far down the leading bag 102.

[0043] Referring again to Figure 7, the traveler may also attach third bag 106 to the assembly 100 by sliding strap 406 down handle 236 to rest third bag 106 on top of first bag 102 and reinforcement handle strap 604. The added weight of third bag 106 on reinforcement handle strap 604 may provide increased stability for luggage assembly 100. The added weight of third bag 106 may also contribute to the overall stability of luggage assembly 100, depending on the weight and angle of the other bags. For instance, if the trailing bag 104 was very heavy and the leading bag 102 was very light, a third bag 106 on top of the leading bag 102 could provide a beneficial force downward in front of the wheels 242 of the first bag 102 to prevent the first bag 102 from reverting to the upright position.

[0044] Furthermore, as indicated above, many different kinds of objects could be used as the third bag 106. For instance, a box or package may be

placed on top of first bag 102 to serve as the third bag 106, and the rollable luggage assembly 100 may also serve as a self-stabilized dolly for transporting that box or package. Third bag 106 may or may not include strap 406.

[0045] When handle 236 has been extended up through reinforcement handle strap 604, the assembly may take on substantially the configuration shown in Figure 7, with first bag 102 in an upright position and second bag 104 leaning against first bag 102. In this configuration, most of the weight of second bag 104 may rest behind wheels 318. The force of gravity may therefore pull reinforcement handle strap 604 firmly against the front of upright members 240 and the top of first bag 102. Reinforcement handle strap 604 is configured to retain second bag 104 in contact with at least a portion of first bag 102, and may prevent second bag 104 from sliding down or moving away from the front of first bag 102 while luggage assembly 100 is in motion. In one embodiment, reinforcement handle strap 604 keeps the top back edge of second bag 104 substantially adjacent to the top back edge of first bag 102. In other embodiments, the attachment member may allow the second bag 104 to slide a short distance further down the back of the first bag 102. However, it is generally preferable to keep to top of the second bag 104 within a certain distance, such as, for example, approximately two inches of the top of the first bag 102, to provide weight distribution advantages such as those described below.

[0046] Referring again to Figure 8, luggage assembly 100 is depicted in an inclined configuration. Specifically, (a) reinforcement handle strap 604 of second bag 104 is wrapped around handle 236 of first bag 102, (b) third bag 106 is resting on top of first bag 102 and reinforcement handle strap 604, with strap 406 receiving handle 236, (c) both first bag 102 and second bag 104 are inclined at an angle on their wheels 242, 318 with the feet 244, 320 elevated from the floor, and (d) at least a portion of the back of second bag 104 is in contact with at least a portion of the front of first bag 102. In embodiments that do not include third bag 106, the assembly 100 may be considered fully assembled when in the preceding configuration, but without third bag 106.

[0047] Reinforcement handle strap 604 is dimensioned to engage handle 236 when second bag 104 is situated next to first bag 102. Reinforcement handle strap 604 is typically flexible but substantially inelastic, but strap 604 can also have some elasticity. Consequently, when first bag 102 is tilted forward from an upright position into the inclined position shown in Figure 8, reinforcement handle strap 604 substantially prevents second bag 104 from sliding down the front of first bag 102 or moving away from first bag 102 while assembly 100 is in motion and stationary. For instance, the relative positions of the tops of first bag 102 and second bag 104 may change by less than five percent of the height of first bag 102 (e.g., approximately one inch) in the embodiment of Figure 8. In other embodiments, depending on the size and weight of the trailing bag 104, the attachment means 604 may provide for a larger or smaller change in position to maintain balance.

[0048] When first bag 102 and second bag 104 are tilted or inclined as shown in Figure 8, most of the weight of second bag 104 sits in front of wheels 318. Consequently, the weight of second bag 104 keeps second bag 104 firmly pressed against first bag 102, and prevents second bag 104 from accidentally reverting to the upright position. Furthermore, a sufficient portion of the weight of the assembly 100 typically rests in front of wheels 242 to prevent first bag 102 from reverting to the upright position. As described in greater detail below, this tendency for the bags to stay in inclined or pitched forward positions may be referred to as internal pitch stability or self-stabilizing.

[0049] In one embodiment, the contact area where the front 222 of first bag 102 contacts the back 302 of second bag 104 covers more than seventy-five percent of the front 224 of first bag 102 and more than sixty percent of the back 302 of second bag 104. This contact area helps to keep second bag 104 from shifting relative to first bag 102.

[0050] Accordingly, when the bags 102, 104 are substantially fully loaded and are configured in the position depicted in Figure 8, luggage assembly 100 tends to remain in that position, with some of the weight of the assembly supported by wheels 242, and the rest supported by wheels 318. Consequently,

once the assembly has been completed, the traveler need not expend any effort to keep the assembly together and properly positioned. The traveler may also easily move assembly 100 with a single hand. Furthermore, whether stationary or in motion, and whether tilted or not, the assembly 100 is completely self-stabilized and may continue on its established course with no hands or other external support.

[0051] In addition, in some embodiments, when in the completed and ready-to-roll position depicted in Figure 8, much of the weight of assembly 100 can rest in front of wheels 242. For instance, depending upon the weight of each bag, and the distribution of weight in each bag, approximately twenty to forty percent of the weight of the assembly 100 might rest in front of the wheels 242 of the first bag 102.

[0052] Furthermore, handle 236 provides significant leverage, and reinforcement handle strap 604 prevents second bag 104 from shifting from its position on first bag 102. Consequently, it is typically easy to press down on handle 236 and lift wheels 318 completely off of the ground. For example, if the weight is well distributed within the bags, it may be easy for a 100 pound traveler to perform this operation with one hand on a luggage assembly 100 weighing in excess of 100 pounds. Additionally, the further down the traveler pushes handle 236, the more weight shifts in front of wheels 242. The traveler may therefore easily balance the whole assembly 100 on wheels 242 similar to maneuvering baby strollers over steps, escalators, etc. Accordingly, with the assembly 100 balanced on the wheels 242 of the leading bag 102, the traveler may find it very easy to maneuver the entire assembly 100 around turns, over steps, up and down escalators, and through various other obstacles which would be more difficult to handle with two or more pieces of conventional luggage, one in each hand. Further, since assembly 100 is no wider than the widest bag in the assembly 100, it may be easy to maneuver assembly 100 through crowded or narrow openings or passages.

[0053] When the traveler does not want assembly 100 to move, the traveler may simply return first bag 102 to the upright position, so that feet 244 contact the ground and bear some of the weight of assembly 100.

[0054] Also, as indicated above, the way reinforcement handle strap 604 connects the first and second bags together helps to keep the left and right sides of second bag 104 from lifting or moving away from first bag 102 when assembly 100 is in the rollable configuration. In other words, reinforcement handle strap 604 prevents second bag 104 from spinning or rotating along its longitudinal axis, relative to first bag 102. For example, in the embodiment of Figure 8, reinforcement handle strap 604 prevents second bag 104 from rolling more than five degrees, relative to first bag 102, when first bag 102 and second bag 104 are substantially fully packed. Another embodiment may allow the first bag to roll up to thirty degrees, relative to the first bag. This type of stability for assembly 100 may be referred to as internal roll stability. By contrast, the resistance of the entire assembly 100 from rotating about its longitudinal axis may be determined largely by the distance between the wheels on the bottom of first bag 102, and that type of stability may be referred to as external roll stability.

[0055] Assembly 100 also exhibits good internal and external pitch stability. For purposes of this disclosure, internal pitch stability refers to the tendency of both bags 102, 104 to retain the same angle of inclination, relative to each other, when the first and second bags 102, 104 are in the rollable configuration. In other words, the attachment members, the weight distribution, and other features work to resist forces which might otherwise cause one bag to lean up or down, relative to the other bag, even when a traveler is not holding onto handle 236 or any other part of the first bag 102 or second bag 104. Good internal pitch stability is one of the attributes that makes it easy to lift wheels 318 by pressing down on handle 236. External pitch stability refers to the tendency of the complete assembly 100 to keep all four wheels 242, 318 on the ground.

[0056] Furthermore, assembly 100 exhibits good internal and external yaw stability. For purposes of this disclosure, internal yaw stability refers to the tendency for the first and second bags 102, 104 to keep the same relative

alignment for their longitudinal axes. In other words, considering the contact patch 802 between the first and second bags 102, 104, the front 304 of the second bag 104 tends not to rotate relative to the back 222 of the first bag 102. External yaw stability refers to the tendency for assembly 100 to track straight when it is rolling on all four wheels. The characteristics of pitch, roll, and yaw stability exhibited by assembly 100 contribute to assembly 100 being self-stabilized when in motion and when stationary, whether bags 102, 104 are tilted or not. Note that components of assembly 100 can be coupled using alternative attachment means such as one or more Velcro straps, straps with snaps or zippers, and straps on the trailing bag 104 that disconnect and reconnect with corresponding straps on the leading bag 102. The straps may or may not be adjustable to provide suitable balance/leverage for bags packed with different weights, and that may serve as reinforcement straps when not being used to form a luggage assembly 100.

[0057] Figure 10 depicts a rear view of another embodiment of carry-on bag 1040 and a front view of another embodiment of rolling duffel bag 1050. Carry-on bag 1040 may also be referred to as a leading bag or a first bag 1040. Rolling duffel bag 1050 may also be referred to as a trailing bag or a second bag 1050. As shown, a mating strap 1042 is affixed to the front of first bag 1040, and a corresponding mating hook 1052 is attached to the back of second bag 1050. Mating strap 1042 may be made of textile, leather, plastic, or any other suitable material. Mating hook 1052 may be made of metal, plastic, or any other suitable material.

[0058] Mating strap 1042 is dimensioned to receive mating hook 1052. For instance, the top 1054 of mating hook 1052 may be approximately 4 inches wide, and the opening 1044 between mating strap 1042 and the back of first bag 1040 may be substantially the same width as top 1054. The relatively wide mating hook 1052, when engaged by mating strap 1042 may tend to prevent the left and right sides of second bag 1050 from moving or lifting away from first bag 1040. Opening 1044 may also be referred to as a mating slot 1044. Other dimensions may be used in other embodiments.

[0059] Figure 11 depicts a side view of bags 1040 and 1050 in a first position. To begin connecting first bag 1040 and second bag 1050 into a stable luggage assembly 1000 (Figures 12 and 13) or luggage train, the traveler may lean first bag 1040 and second bag 1050 slightly backwards, as shown. The traveler may then insert the tip 1056 of mating hook 1052 into mating slot 1044.

[0060] Figure 12 depicts a side view of bags 1040 and 1050 upright in luggage assembly 1000. As depicted, when first bag 1040 and second bag 1050 are returned to upright positions, mating hook 1052 may keep the bags together. Accordingly, mating hook 1052 and mating strap 1042 may be referred to as attachment members.

[0061] Figure 13 depicts a side view of bags 1040 and 1050 tilted in a luggage assembly 1000. As first bag 1040 is tilted away from second bag 1050, mating hook 1052 slides down into mating slot 1044 until the inside top 1054 of mating hook 1052 engages mating strap 1042. In a tilted orientation, at least some the weight of second bag 1050 may rest in front of the wheels 1058 of second bag 1050, so that gravity presses the back of second bag 1050 against the front of first bag 1040. Consequently, similar to the embodiment of Figure 8, the luggage assembly 1000 may be self-stabilized in this configuration, and may be easily rolled with one hand. The handle of first bag 1040 may also be used to lift wheels 1058 off of the ground, thereby allowing for good maneuverability, substantially as described above with regard to Figures 2-9.

[0062] Figures 14-17 show side views of another embodiment of carry-on bag 1402 and rolling duffel bag 1404 in different stages of another method for creating a luggage assembly 1400. In the embodiment shown, carry-on bag 1402 and rolling duffel bag 1404 include two or more respective sets of straps 1406, 1410 with releasable connectors 1408, 1412 coupled at an intermediate portion along straps 1406, 1410. Connectors 1408, 1412 are configured to be released and recoupled to a receiving connector portion either on the same bag or on the adjacent bag. That is, one end of straps 1406, 1410 are attached to the top back of bags 1402, 1404 and an intermediate end of straps 1406, 1410 terminates with a portion of connector 1408, 1412. Another end of straps 1406, 1410 are

attached to the front top of bags 1402, 1404 and another intermediate end of straps 1406, 1410 terminates with another portion of connector 1408, 1412. Straps 1406, 1410 can span from front to back across the tops of respective bags 1402, 1404 when portions of connectors 1408, 1412 are coupled. Additionally, portions of connectors 1412 on duffel bag 1404 can couple to a compatible portion of connector 1408 on carry-on bag 1402 and vice versa. Straps 1406, 1410 and connectors 1408, 1412 may also be referred to collectively herein as attachment members.

[0063] Figure 15 shows connectors 1408, 1412 decoupled, leaving four intermediate ends of straps 1406, 1410 loose. In Figure 16, the portions of connectors 1412 on straps 1410 attached to the top back of duffel bag 1404 are coupled to portions of connectors 1408 on straps 1406 that are attached to the top back of the carry-on bag 1402. The length of straps 1406, 1410 may be adjusted to draw carry-on bag 1402 and duffel bag 1404 closer together once the connectors 1408/1412 are coupled.

[0064] Figure 17 shows a side view of luggage assembly 1400 with bags 1402, 1404 in a tilted position. With connectors 1408, 1412 coupled, bag 1404 leans in the direction of bag 1402 as bag 1402 is tilted. In this orientation, at least some the weight of bag 1404 may rest over and/or in front of the wheels 1414 of bag 1402, so that gravity presses the back of bag 1404 against the front of bag 1402. Consequently, similar to the embodiment of Figure 8, the luggage assembly 1400 may be self-stabilized in this configuration, and may be easily rolled with one hand. The handle of first bag 1402 may also be used to lift wheels 1416 off of the ground, thereby allowing for good maneuverability, substantially as described above with regard to Figures 2-9.

[0065] Figures 19 and 20 depict an example embodiment of a luggage assembly 1900 including carry-on suitcase 1902 connected to trailing suitcase 1904, and shoulder bag 1906. Moreover, suitcases 1902 and 1904 are connected with stabilizer 1908 in a way that allows all or most of the weight of assembly 1900 to rest on the wheels of carry-on suitcase 1902 and trailing suitcase 1904. Stabilizer 1908 enables assembly 1900 to be self-stabilized when in motion and when

stationary, and in particular, a traveler does not need to hold handle 1910 for assembly 1900 to remain in an inclined position as shown in Figure 19 or upright as shown in Figure 20, whether assembly 1900 is in motion or stationary. These and other characteristics of luggage assembly 1900 provide for excellent stability and maneuverability. Additional details concerning the components and steps used for creating rollable luggage assembly 1900, as well as various operating characteristics of stabilizer 1908 and luggage assembly 1900, are provided below.

[0066] Referring to Figures 19 and 21A, Figure 21A shows an embodiment of stabilizer 1908 including a first connector or attachment member 2102 configured to fit under a handle 1912 on a first suitcase. Handle 1912 is typically sized to accommodate a person's hand and the attachment member 2102 can be further configured to be at least half as wide as the length of the handle 1912 to increase the stability of suitcase 1904 when coupled to suitcase 1902 with stabilizer 1908. Stabilizer 1908 also includes extension portion 2104 (also referred to as a central body) coupled to the attachment member 2102. The length of extension portion 2104 can be configured to extend between the first suitcase 1902 and second suitcase 1904 and to retain the first suitcase 1902 adjacent to the second suitcase 1904 when the first and second suitcases 1902, 1904 are upright, tilted, moving, and stationary.

[0067] Extension portion 2104 can include one or more engagement structures such as slots 2108A-2108D along the length of extension portion 2104. The embodiment of stabilizer 1908 shown in Figure 21A includes four (4) rectangular slots 2108A-2108D within extension portion 2104, however any suitable number and shape of slots 2108A-2108D can be used. Once attachment member 2102 is pulled under and through handle 1912, the end of extension portion 2104 coupled to attachment member 2102 can be folded over handle 1912 to couple or engage attachment member 2102 to one of slots 2108.

[0068] Attachment member 2102 can include an end 2106 that is L-shaped, cotter-pin shaped, U-shaped, or another suitable shape to fit under handle 1912 on the first suitcase 1904 and engage one of slots 2108. As shown in Figures 19 and 20, attachment member 2102 can include a substantially planar portion

between end 2106 and extension portion 2104 to allow attachment member 2102 to fit between handle 1912 and suitcase 1904. Other suitable configurations of attachment member 2102 can be used such as velcro, snaps, and/or one or more straps, among others.

[0069] Extension portion 2104 can have any other suitable dimensions and shape. Extension portion 2104 is typically fabricated using an inelastic material, although the material can be rigid/semi-rigid, or flexible for easy storage. The material can also be elastic with a low modulus of elasticity. For example, in some embodiments, extension portion 2104 is fabricated with ballistic nylon and attachment member 2102 is fabricated with metal or plastic. In other embodiments, extension portion 2104 is fabricated with plastic. Additionally, the edges of slots 2108 can be reinforced with a rigid material such as plastic or metal to increase the stability of luggage assembly 1900. Other suitable materials and configurations can be used for extension portion 2104 and attachment member 2102.

[0070] In one embodiment, extension portion 2104 is approximately 16 inches long and 8 inches wide. Slots 2108 are approximately 2.5 inches long by 7.5 inches wide with one-half to one inch dividers or edges 2110 between slots 2108. Attachment member is approximately 2.5 inches long and 2 inches wide. Other suitable dimensions can be used based on the size of handles 1910, 1912 on suitcases 1902, 1904.

[0071] Figures 21B and 21C show respective top and side views of another embodiment of stabilizer 1908 including a first connector or attachment member 2102 configured to fit under a handle 1912 (Figure 19) on a suitcase. Handle 1912 is typically sized to accommodate a person's hand and the attachment member 2102 can be any suitable size. In some embodiments, attachment member 2102 is configured to be at least half as wide as the length of the handle 1912 to increase the stability of suitcase 1904 when coupled to suitcase 1902 with stabilizer 1908. Stabilizer 1908 also includes an extension portion 2104 (also referred to as a central body) coupled to the attachment member 2102. The length of extension portion 2104 can be configured to extend between the first

suitcase 1902 and second suitcase 1904 and to retain the first suitcase 1902 adjacent to the second suitcase 1904 when the first and second suitcases 1902, 1904 are upright, tilted, moving, and stationary. Extension portion 2104 is tapered at one end to be slightly larger than the width of attachment member 2102 where one end of attachment member 2102 is fastened to extension portion 2104. In the embodiment shown, one end 2105 of attachment member 2102 wraps around the end of the tapered section of extension portion 2104 and is fastened to extension portion 2104 with rivets. Other suitable fasteners and configurations for coupling or fastening attachment member 2102 to extension portion 2104 can be used.

[0072] The other end 2106 of attachment member 2102 can be L-shaped, cotter-pin shaped, U-shaped, or another suitable shape to fit under handle 1912 on the first suitcase 1904 and engage an edge of one of dividers 2110A-D between slots 2108A-D. As shown in Figures 19 and 20, attachment member 2102 can include a substantially planar portion between end 2106 and extension portion 2104 to allow attachment member 2102 to fit between handle 1912 and suitcase 1904. Other suitable configurations of attachment member 2102 can be used such as velcro, snaps, and/or one or more straps, among others.

[0073] Extension portion 2104 can include one or more engagement structures such as slots 2108A-2108D along the length of extension portion 2104. The embodiment of stabilizer 1908 shown in Figure 21B includes a combination of one trapezoidal slot 2108A and three (3) rectangular slots 2108B-2108D in extension portion 2104, however any suitable number and shape of slots 2108A-2108D can be used. Extension portion 2104 can also have any other suitable dimensions and shape. Extension portion 2104 is typically fabricated using an inelastic material, although the material can be rigid/semi-rigid, or flexible for easy storage. The material can also be elastic with a low modulus of elasticity. For example, in some embodiments, extension portion 2104 is fabricated with ballistic nylon and attachment member 2102 is fabricated with metal or plastic. In other embodiments, extension portion 2104 is fabricated with plastic. Additionally, the edges of slots 2108 can be reinforced with a rigid material such as plastic or metal to increase the stability of luggage assembly 1900. Other suitable materials and

configurations can be used for extension portion 2104 and attachment member 2102.

[0074] In one embodiment, extension portion 2104 is approximately 16 inches long and 8 inches wide at one end, and tapers from 8 inches at divider 2108B to approximately 2.5 to 3 inches at the end of extension portion 2104 that is couple to attachment member 2102. Slots 2108B-2108D are approximately 2.5 inches long by 7 inches wide, and slot 2108A has a trapezoidal shape that is approximately 2.5 inches long and tapers from approximately 7 inches wide at divider 2108B to 6 inches at divider 2108A. Another tapered slot 2112 can be included between divider 2110A and the end of extension portion 2104 at attachment member 2102. Dividers 2110 can be one-half to one inch wide. In some embodiments, attachment member 2102 is approximately 2.5 inches long and 2 inches wide. Other suitable dimensions can be used for extension member 2104, attachment member 2102, slots 2108, and dividers 2110 based on the size of handles 1910, 1912 on suitcases 1902, 1904.

[0075] Referring to Figures 21A-21C and 22, Figure 22 shows a top view of stabilizer 1908 coupling suitcases 1902, 1904 to one another. One of slots 2108A-2108D in stabilizer 1908 will typically be the correct distance to engage handle 1910 on the second suitcase 1902 while extension portion 2104 (also referred to as a central body) is folded over handle 1912 and attachment member 2102 is engaged in one of slots 2108. In the example shown in Figure 22, slot 2108D engages handle 1910 on suitcase 1902 while attachment member 2102 engages slot 2108B. The slot 2108A-2108D used will generally depend on the depth of suitcases 1902 and 1904 and the dimensions of slots 2108. For example, thin suitcases 1902, 1904may result in attachment member 2102 engaging slot 2108C or 2108D while deep suitcases 1902, 1904 may result in attachment member 2102 engaging slot 2108A or 2108B. In general, a slot 2108 that positions suitcases 1902, 1904 in contact with, or with minimum possible separation from, one another while in upright and tilted positions, and while in motion and stationary, and while wheels 1918, 1920 on suitcases 1902, 1904 remain on the ground, is typically used. Wheels 1918, 1920 can be swivel

wheels, uni-directional wheels, or other suitable devices that allow suitcases 1902, 1904 to roll along.

[0076] The handle 1910 on the second suitcase 1902 is typically sized to accommodate a person's hand and can include a retractable portion 1914 that allows handle 1910 to be stored within or along the backside of suitcase 1902 and approximately flush with the top of suitcase 1902. Handle 1910 may be placed in a stored position and raised after the appropriate slot 2108 has been positioned over handle 1910.

[0077] Referring to Figures 23 and 24, another embodiment of a stabilizer 2300 is shown including a first connector or attachment member 2102 engaged in handle 1912 on suitcase 1904 and a second attachment member 2302 engaged in handle 1916 on suitcase 1902. Handles 1912, 1916 are typically sized to accommodate a person's hand and the attachment members 2102, 2302 can be further configured to engage at least half of the length of the handles 1912, 1916 to increase the stability of suitcase 1904 when coupled to suitcase 1902 with stabilizer 2300. Stabilizer 2300 can also include an adjustable extension portion 2304 coupled between attachment members 2102, 2302. The extension portion 2304 includes two lengths of material coupled with a buckle or other suitable fastener. Stabilizer 2300 is configured to extend between suitcases 1902, 1904 and to retain suitcase 1902 adjacent to suitcase 1904 when suitcases 1902, 1904 are upright, tilted, moving, and stationary.

[0078] Attachment member 2302 can include an end 2306 that is L-shaped, U-shaped, cotter-pin shaped, or that has another suitable-shape to engage at least an edge of handle 1912 or 1916. As shown in Figure 24, attachment members 2102, 2302 can include a substantially planar portion between ends 2106, 2306 and extension portion 2304 to allow attachment members 2102, 2302 to fit under handles 1912, 1916 on respective suitcases 1902, 1904. Other suitable configurations of attachment member 2102, 2302 can be used, such as VELCRO®, snaps, and/or one or more straps, among others. Although the embodiment of extension portion 2304 shown has a rectangular shape, extension portion 2304 can have any suitable shape, such as an oval, square, or circle.

[0079] Figure 25 depicts a perspective view of an embodiment of a piece of luggage referred to as a carry-on suitcase 1902. As illustrated, carry-on suitcase 1902 has a front 2502, a back 2504, a top 2506, a bottom 2508, a left side 2510, and a right side 2512. As described in greater detail below, in some embodiments, two or more suitcases 1902, 1904 (Figure 19) are coupled with stabilizer 1908 to form a luggage assembly 1900 that can easily be transported, maneuvered, and parked. For purposes of this disclosure, suitcases 1902, 1904 may be referred to as a suitcase or a piece of luggage.

[0080] In the embodiment of Figure 25, the top of suitcase 1902 features a soft handle 1916. Left side 2510 can also features a soft handle. First suitcase 1902 also features a substantially rigid, yet extendable handle 1910 that includes two extendable, rigid upright members 1914, and a substantially rigid grip member 2520 that spans the top of upright members 1914. In the embodiment of Figure 19, handle 1910 is situated at the back of suitcase 1902, and is centered longitudinally between the left and right sides. In other embodiments, handle 1910 is attached to a single, rigid retractable upright member 1914 instead of two retractable upright members 1914.

[0081] Suitcase 1902 can also have a pair of rigid or swivel wheels 1920, with one wheel situated at the back left corner of the bottom of the suitcase 1902, and the other wheel situated at the back right corner of the bottom of the suitcase 1902. One or more feet 2524 may also be provided at or near the front edge of the bottom of suitcase 1902, to provide stability and prevent movement when suitcase 1902 is parked in an upright position with the weight resting on feet 2524 and wheels 1920. Alternatively, swivel wheels can be provided at the back and front of a suitcase.

[0082] To balance luggage assembly 1900, suitcase 1904 is typically the same size, larger, and/or weighs equal to or more than suitcase 1902. Stabilizer 1908 can be adjusted as required to balance luggage assembly 1900 in upright and tilted positions with wheels 1918, 1920 of both suitcases 1902, 1904 remaining on the ground. If stabilizer 1908 is too tight, the wheels 1920 of suitcase 1904 may lift off the ground and cause luggage assembly 1900 to

become unstable. If stabilizer 1908 is too loose, it can be difficult to balance suitcases 1902, 1904 so that luggage assembly 1900 is self-stabilized. Stabilizer 1908 provides a wide range of adjustment to establish a center of gravity for various sizes and weights of suitcases that balances those suitcases in inclined and upright positions.

[0083] Figures 26-29 depict side views of luggage pieces 1902, 1904 and an embodiment of a method for creating luggage assembly 1900 (Figure 19). Note that instructions according to embodiments of a method for creating luggage assembly 1900 can be included in packaging with the stabilizer 1908 or available via another source, such as a sign displayed where stabilizers 1908 are sold, and/or a manufacturer's website that may be accessed via a computerized information network, such as the Internet.

[0084] Figure 26 depicts first suitcase 1902 and second suitcase 1904 resting upright on the floor, as they might be situated, for instance, after a traveler has retrieved second suitcase 1904 from a baggage carousel. The process for attaching the suitcases together in a manner to create a stable luggage assembly 1900 may begin with the suitcases 1902, 1904 in this position. The back of suitcase 1904 is placed adjacent to the front of suitcase 1902. One of slots 2108 (Figure 21A) of stabilizer 1908 is placed over the retractable handle 1910 of suitcase 1902.

[0085] Figure 27 shows the loose end 2106 (Figure 21A) of stabilizer 1908 ready to be pulled through under handle 1912 on suitcase 1904, thus engaging handle 1912 on top of suitcase 1904. Figure 28 shows stabilizer 1908 being pulled taut through handle 1912, and Figure 29 shows stabilizer 1908 being folded over handle 1912 so that end 2106 (Figure 21A) of attachment member 2102 can engage an edge of one of slots 2108.

[0086] In other embodiments, the traveler can engage handle 1910 on top of the first piece of luggage 1904 with one end 2106 (Figure 24) of the stabilizer 2300 (Figure 24) and engage handle 1916 on top of the second piece of luggage 1902 with another end 2306 of the stabilizer 2300.

[0087] When one of slots 2108 engages handle 1910, or handle 1916 engages attachment member 2302 (Figure 23), first suitcase 1902 may be in an upright position and second suitcase 1904 may lean against first suitcase 1902. In this configuration, most of the weight of second suitcase 1904 may rest behind wheels 1920. The force of gravity may therefore pull stabilizer 1908, 2300 firmly against the handles 1912, and 1910 or 1916.

[0088] Stabilizers 1908, 2300 are configured to retain second suitcase 1904 in contact with at least a portion of first suitcase 1902, and prevent second suitcase 1904 from sliding down or moving away from the front of first suitcase 1902 while luggage assembly 1900 is in motion. In some embodiments, stabilizer 1908, 2300 keeps the top back edge of second suitcase 1904 substantially adjacent to the top back edge of first suitcase 1902. In other embodiments, stabilizer 1908, 2300 may allow the second suitcase 1904 to slide a short distance further down the back of the first suitcase 1902. However, it is generally preferable to keep to top of the second suitcase 1904 within a certain distance, such as, for example, approximately two to four inches within the top of the first suitcase 1902, to provide weight distribution advantages such as those described below.

[0089] When first suitcase 1902 and second suitcase 1904 are tilted or inclined as shown in Figure 19, most of the weight of second suitcase 1904 sits behind wheels 1920. Consequently, the weight of second suitcase 1904 keeps second suitcase 1904 firmly pressed against first suitcase 1902, and prevents second suitcase 1904 from accidentally reverting to the upright position. Furthermore, a sufficient portion of the weight of the assembly 1900 typically rests behind wheels 1920 to prevent suitcase 1902 from reverting to the upright position. As described in greater detail below, this tendency for the suitcases to stay in inclined or tilted positions may be referred to as internal pitch stability or self-stabilizing.

[0090] Accordingly, when the suitcases 1902, 1904 are substantially fully loaded and are configured in the position depicted in Figure 19, luggage assembly 1900 tends to remain in that position, with some of the weight of the assembly

supported by wheels 1918 on suitcase 1902, and the rest supported by wheels 1920 on suitcase 1904. Consequently, once the assembly 1900 has been completed, the traveler need not expend any effort to keep the assembly together and properly positioned. The traveler may also easily move assembly 1900 with a single hand. Furthermore, whether stationary or in motion, and whether tilted or not, the assembly 1900 is completely self-stabilized and may continue on its established course while in motion with no hands or other external support.

[0091] In addition, in some embodiments, when in the completed and ready-to-roll position depicted in Figure 19, much of the weight of assembly 1900 can rest behind wheels 1920. For instance, depending upon the weight of each suitcase, and the distribution of weight in each suitcase, approximately twenty to forty percent of the weight of the assembly 1900 might rest behind wheels 1920 of the suitcase 1904.

[0092] Furthermore, handle 1910 provides significant leverage, and stabilizer 1908, 2300 prevents second suitcase 1904 from shifting from its position on first suitcase 1902. Consequently, it is typically easy to press down on handle 1910 and lift wheels 1920 completely off of the ground. For example, if the weight is well distributed within the suitcases, it may be easy for a 1910 pound traveler to perform this operation with one hand on a luggage assembly 1900 weighing in excess of 1900 pounds. Additionally, the further down the traveler pushes handle 1910, the more weight shifts behind wheels 1920. The traveler may therefore easily balance the whole assembly 1900 on wheels 1918 similar to maneuvering baby strollers over steps, escalators, etc. Accordingly, with the assembly 1900 balanced on the wheels 1918 of the leading suitcase 1902, the traveler may find it very easy to maneuver the entire assembly 1900 around turns, over steps, up and down escalators, and through various other obstacles which would be more difficult to handle with two or more pieces of conventional luggage, one in each hand. Further, since assembly 1900 is no wider than the widest suitcase in the assembly 1900, it may be easy to maneuver assembly 1900 through crowded or narrow openings or passages. Alternatively, when suitcases 1902, 1904 include swivel wheels, no downward pressure may be required to maneuver luggage assembly 1900 in tight spaces.

[0093] When the traveler does not want assembly 1900 to move, the traveler may simply return first suitcase 1902 to the upright position, so that feet 2524 contact the ground and bear some of the weight of assembly 1900.

[0094] Also, as indicated above, the way stabilizer 1908, 2300 connects the first and second suitcases together helps to keep the left and right sides of second suitcase 1904 from lifting or moving away from first suitcase 1902 when assembly 1900 is in the rollable configuration. In other words, stabilizer 1908, 2300 prevents second suitcase 1904 from spinning or rotating along its longitudinal axis, relative to first suitcase 1902. For example, in the embodiment of Figure 26, stabilizer 1908, 2300 prevents second suitcase 1904 from rolling more than five degrees, relative to first suitcase 1902, when first suitcase 1902 and second suitcase 1904 are substantially fully packed. Another embodiment may allow the first suitcase to roll up to thirty degrees, relative to the first suitcase. This type of stability for assembly 1900 may be referred to as internal roll stability. By contrast, the resistance of the entire assembly 1900 from rotating about its longitudinal axis may be determined largely by the distance between the wheels on the bottom of first suitcase 1902, and that type of stability may be referred to as external roll stability.

[0095] Assembly 1900 also exhibits good internal and external pitch stability. For purposes of this disclosure, internal pitch stability refers to the tendency of both suitcases 1902, 1904 to retain the same angle of inclination, relative to each other, when the first and second suitcases 1902, 1904 are in the rollable configuration. In other words, the attachment members, the weight distribution, and other features work to resist forces which might otherwise cause one suitcase to lean up or down, relative to the other suitcase, even when a traveler is not holding onto handle 1910 or any other part of the first suitcase 1902 or second suitcase 1904. Good internal pitch stability is one of the attributes that makes it easy to lift wheels 1920 by pressing down on handle 1910. External pitch stability refers to the tendency of the complete assembly 1900 to keep wheels 1918, 1920 on the ground.

[0096] Furthermore, assembly 1900 exhibits good internal and external yaw stability. For purposes of this disclosure, internal yaw stability refers to the tendency for the first and second suitcases 1902, 1904 to keep the same relative alignment for their longitudinal axes. In other words, considering the contact are between the first and second suitcases 1902, 1904, the back of the second suitcase 1904 tends not to rotate relative to the front 2502 of the first suitcase 1902. External yaw stability refers to the tendency for assembly 1900 to track straight when it is rolling on all four wheels. The characteristics of pitch, roll, and yaw stability exhibited by assembly 1900 contribute to assembly 1900 being self-stabilized when in motion and when stationary, whether suitcases 1902, 1904 are tilted or not.

[0097] Referring to Figure 30, another embodiment of stabilizer 3002 is shown built into a pocket 3004 at the top of suitcase 1902. One end of stabilizer 3002 can be sewn or otherwise fastened into pocket 3004 while another end 3006 is available to couple to another suitcase (not shown). Stabilizer 3002 can be stored in pocket 3004 when not in use. In other embodiments, stabilizer 3002 may be completely removable from pocket 3004, and one end (not shown) of stabilizer 3002 may be configured to be attached to handle 1910, 1916 or other suitable location on suitcase 1902, while another end 3006 of stabilizer 3002 is attached to a suitable location on another suitcase (not shown).

[0098] Figure 31 shows another embodiment of a Y-shaped stabilizer 3100 that can be used to form luggage assembly 1900 (Figure 19). One attachment member 3110 of stabilizer 3100 includes a triangular opening with a base that is positioned around upright supports of retractable handle 1910. Another section 3112 of stabilizer 3100 extends over the top of suitcases 1902, 1904 and includes an end that is configured to engage at least a portion of handle 1912. Stabilizer 3100 can also include an adjustable extension portion 3114 coupled between attachment members 3110, 3112 using a buckle or other suitable fastener. Stabilizer 3100 is configured to extend between suitcases 1902, 1904 and to retain suitcase 1902 adjacent to suitcase 1904 when suitcases 1902, 1904 are upright, tilted, moving, and stationary. Extension portion 3114 can be configured to allow a traveler to pull excess material from between handles 1910, 1912 and

draw suitcases 1902, 1904 closer together, as well as to extend the length of extension portion 3114 as required.

[0099] Figure 32 shows another embodiment of a Y-shaped stabilizer 3200 that can be used to form luggage assembly 1900. One section 3202 of stabilizer 3200 is positioned around upright supports of retractable handle 1910 and another section 3204 of stabilizer 3200 extends over the top of suitcase 1904 and includes an end 3206 that is configured to wrap around handle 1912 and engage one of a series of slots or bars 3208 positioned on a central or extension portion of stabilizer 3200 between handles 1910 and 1912. Stabilizer 3200 is configured to extend between suitcases 1902, 1904 and to retain suitcase 1902 adjacent to suitcase 1904 when suitcases 1902, 1904 are upright, tilted, moving, and stationary. The traveler can engage end portion 3206 in one of slots or bars 3208 to pull excess material from between handles 1910, 1912 and draw suitcases 1902, 1904 closer together.

[00100] Thus, as has been described, embodiments of a rollable luggage assembly may be made of two or more luggage pieces using suitable attachment means to keep the luggage assembly self-stabilized when stationary and when rolling. The size and weight of each luggage piece, when fully loaded, as well as the configuration of the attachment means, may serve to keep the pieces balanced on the wheels of the assembly,

[00101] In light of the principles and example embodiments described and illustrated herein, it will be recognized that the illustrated embodiments can be modified in arrangement and detail without departing from such principles. For instance, alternative embodiments may use approaches like those described above to create luggage assemblies with other types and sizes of bags, other types of attachment members, etc. For instance, the trailing bag may be shaped substantially like a rectangular cuboid in some embodiments. Also, second trailing bag may be attached to the first trailing bag to form a rolling luggage assembly with six wheels on the ground. Likewise, more than two trailing bags could be used.

[00102] Also, the foregoing discussion has focused on particular embodiments, but other configurations are contemplated. In particular, even though expressions such as "in one embodiment," "in another embodiment," or the like are used herein, these phrases are meant to generally reference embodiment possibilities, and are not intended to limit the invention to particular embodiment configurations. As used herein, these terms may reference the same or different embodiments that are combinable into other embodiments.

[00103] Similarly, although example processes have been described with regard to particular operations performed in a particular sequence, numerous modifications could be applied to those processes to derive numerous alternative embodiments of the present invention. For example, alternative embodiments may include processes that use fewer than all of the disclosed operations, processes that use additional operations, and processes in which the individual operations disclosed herein are combined, subdivided, rearranged, or otherwise altered.

[00104] In view of the wide variety of useful permutations that may be readily derived from the example embodiments described herein, this detailed description is intended to be illustrative only, and should not be taken as limiting the scope of the invention. What is claimed as the invention, therefore, are all implementations that come within the scope of the following claims and all equivalents to such implementations.

CLAIMS

1. A luggage stabilizing apparatus, comprising:

a stabilizer configured to engage a first piece of wheeled luggage and a second piece of wheeled luggage so that the first and second pieces of luggage remain self-stabilized and adjacent to one another while upright and inclined, and while in motion and stationary, the stabilizer including: a first connector configured to retain a portion of the first piece of luggage; a second connector configured to retain a portion of the second piece of luggage; and

an extension portion coupled between the first and second connectors; the first connector is attachable at different positions along the extension portion to adjust the length of the extension portion between the first and second pieces of luggage; and

the stabilizer is removable from the first and second pieces of luggage.

2. A luggage stabilizing apparatus according to claim 1, further comprising:

the first connector is configured to wrap around a handle on top of the first piece of luggage.

3. A luggage stabilizing apparatus according to claim 1, further comprising:

the extension portion is configured with a series of slots, one of the slots is configured to fit over a retractable handle on the second piece of luggage and the other slots are configured to be engaged by the first connector based on the dimensions of the first and second pieces of luggage.

4. A luggage stabilizing apparatus according to claim 1, further comprising the second connector is configured to engage a substantial portion of a handle on top of the second piece of luggage.

5. A luggage stabilizing apparatus according to claim 1, further comprising at least one of the group consisting of:

the second connector is a slot in the extension portion,

the first connector includes an end configured to engage a first handle on top of a first suitcase, and

the second connector configured to fit under a second handle on top of a second suitcase, the second handle is sized to accommodate a person's hand and the second conenctor member is further configured to engage at least half of the length of the second handle.

6. A luggage stabilizing apparatus according to claim 1, further comprising the first piece of wheeled luggage; and

the second piece of wheeled luggage.

7. A luggage stabilizing apparatus, comprising:

a central body with a first end, a second end, and at least one engagement structure between the first end and the second end;

a first attachment member coupled to the first end of the central body; and

a second attachment member coupled to the second end of the central body; wherein the first attachment member is configured to engage a first handle at an upper portion of a first suitcase;

the second attachment member is operable to pass under a second handle at an upper portion of a second suitcase and then engage the engagement structure of the central body, thereby causing the luggage stabilizing apparatus to capture the second handle, the central body is configured to: extend between the first and second handles when the first attachment member engages the first handle and the second engagement member engages the engagement structure of the central body and subsequently retain the first suitcase adjacent to the second suitcase with sufficient force to create a substantially stable luggage assembly when the first and second suitcases are both tilted.

8. An apparatus according to claim 7, wherein:

the second end of the central body is configured to fold over the handle on the second suitcase and allow the second attachment member to engage the engagement structure of the central body.

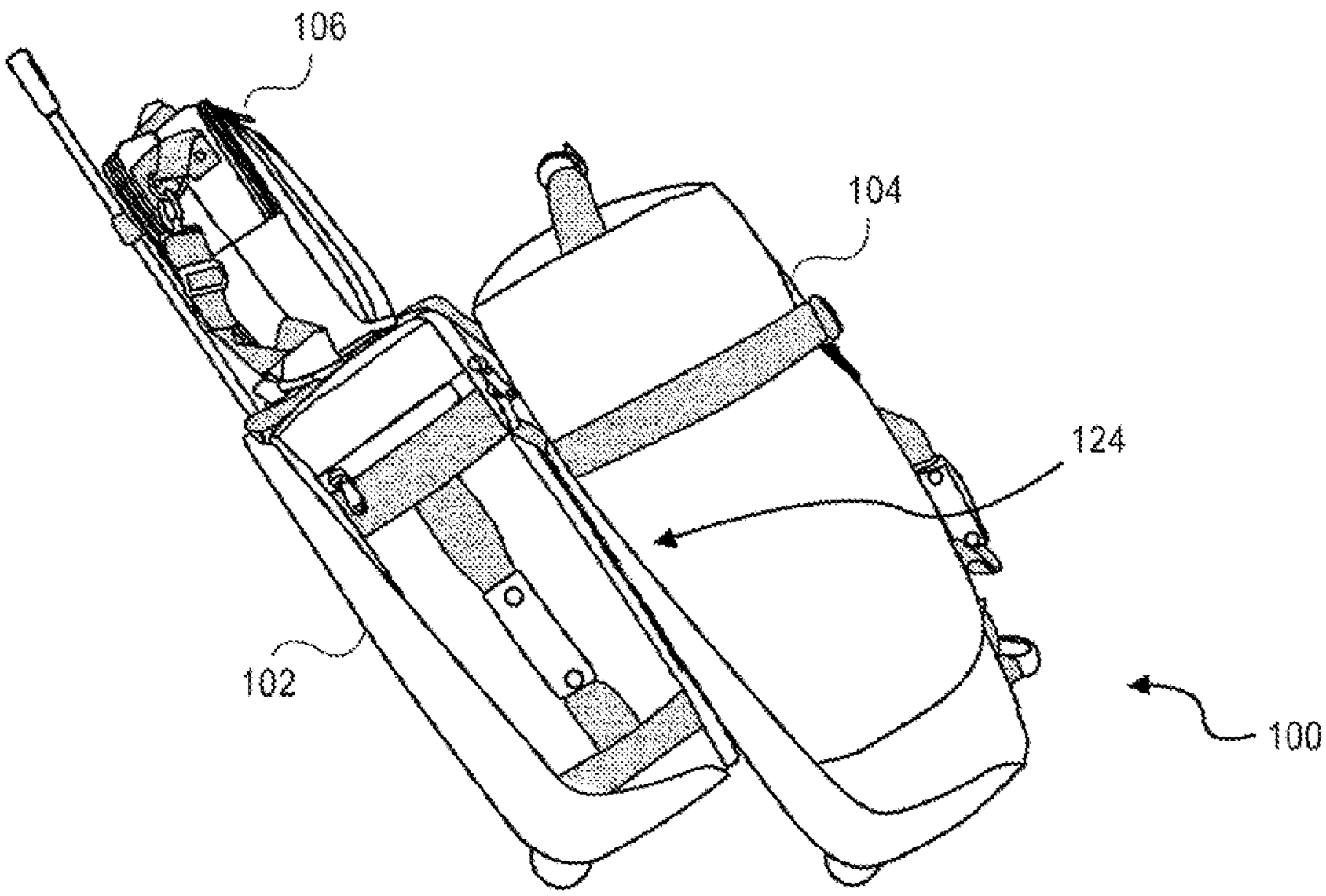

FIG. 1

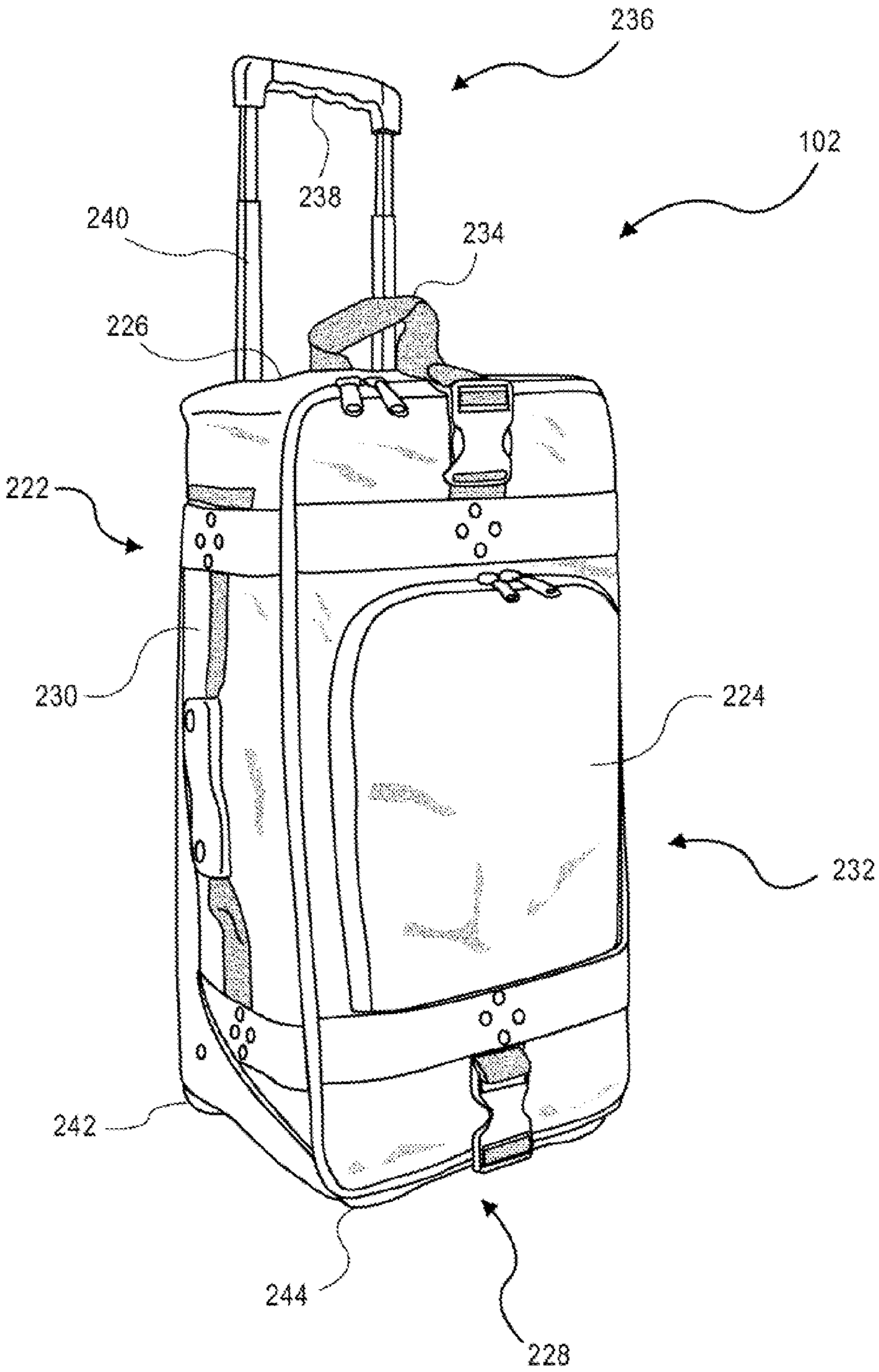

FIG. 2

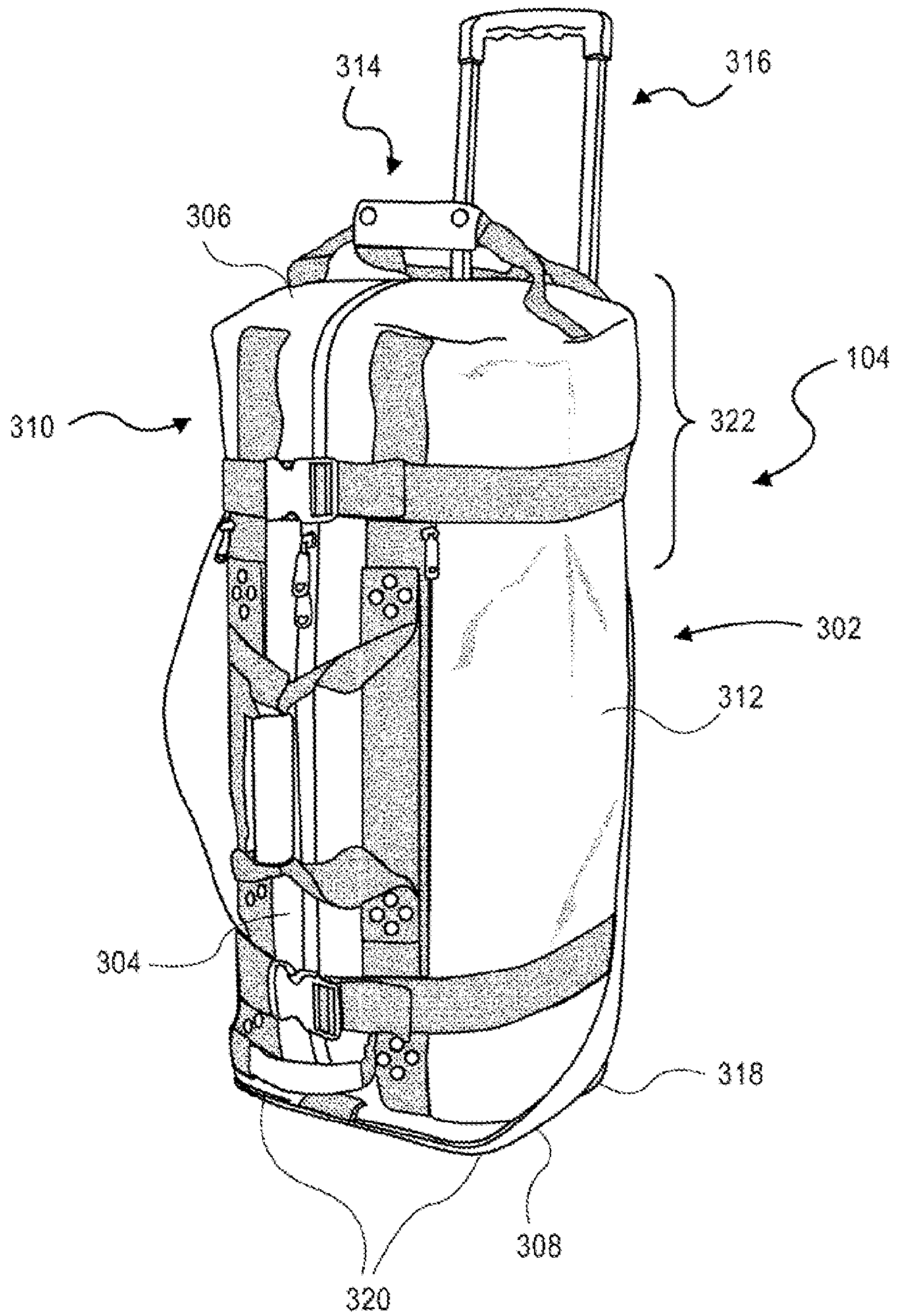

FIG. 3

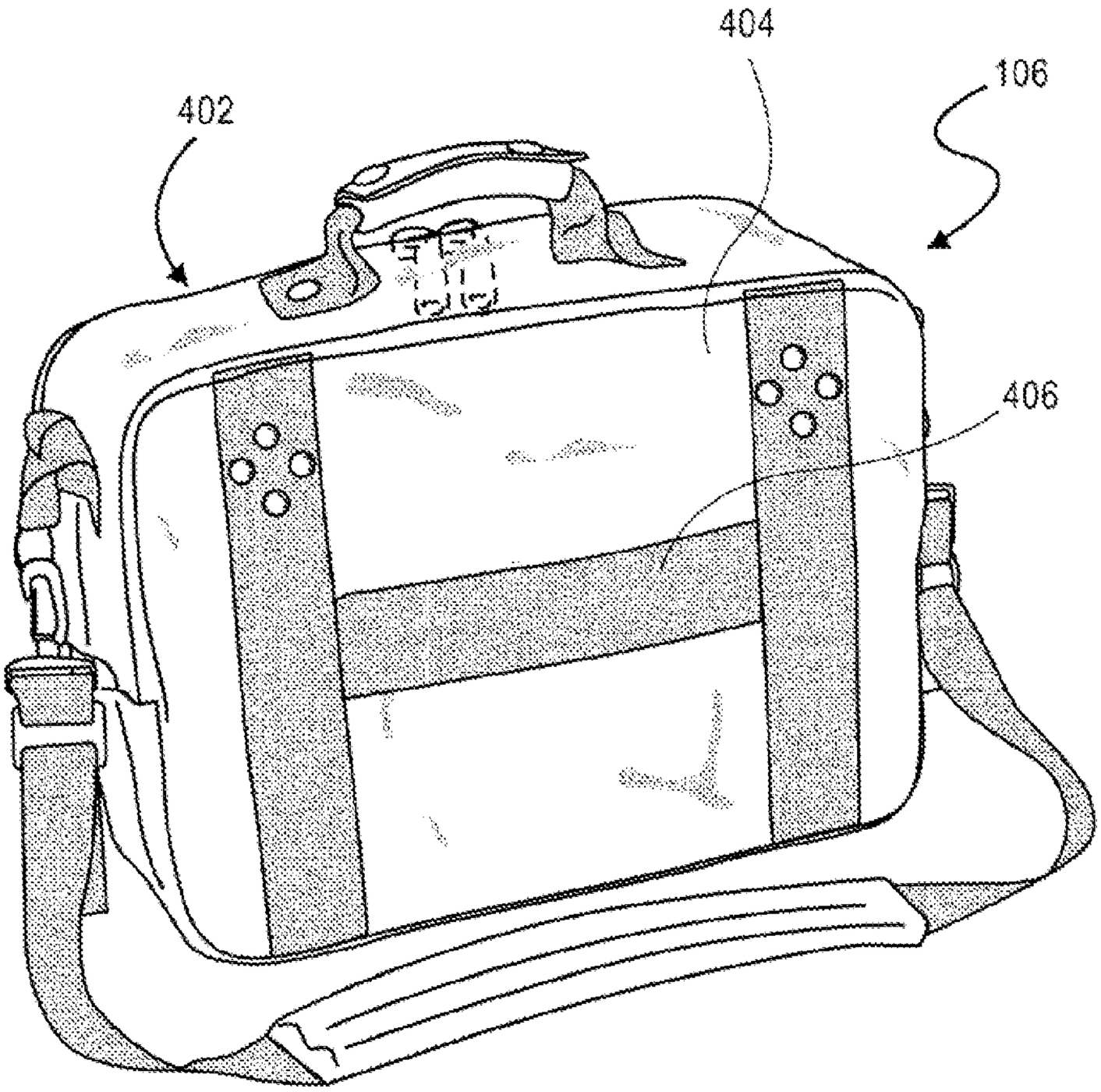

FIG. 4

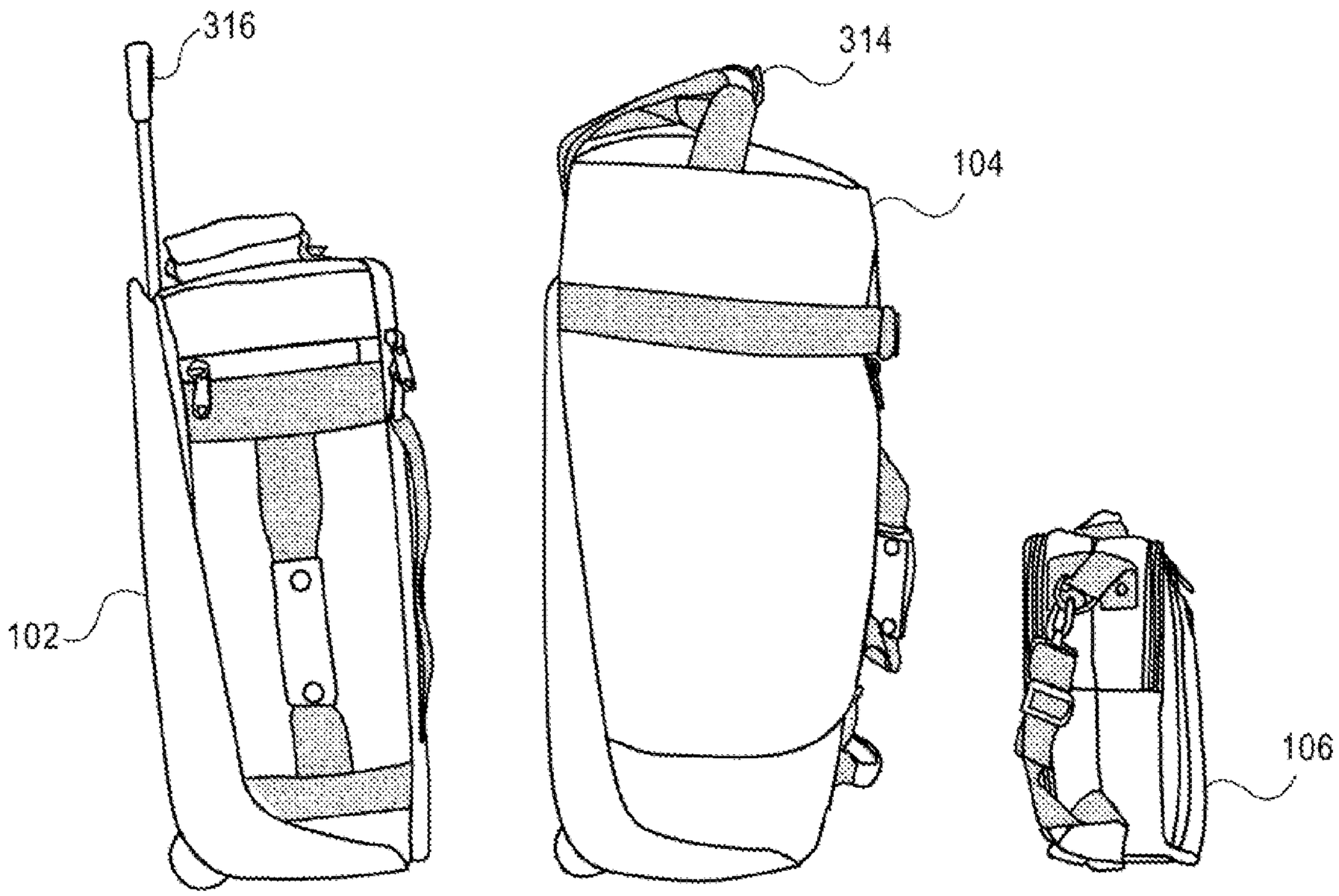

FIG. 5

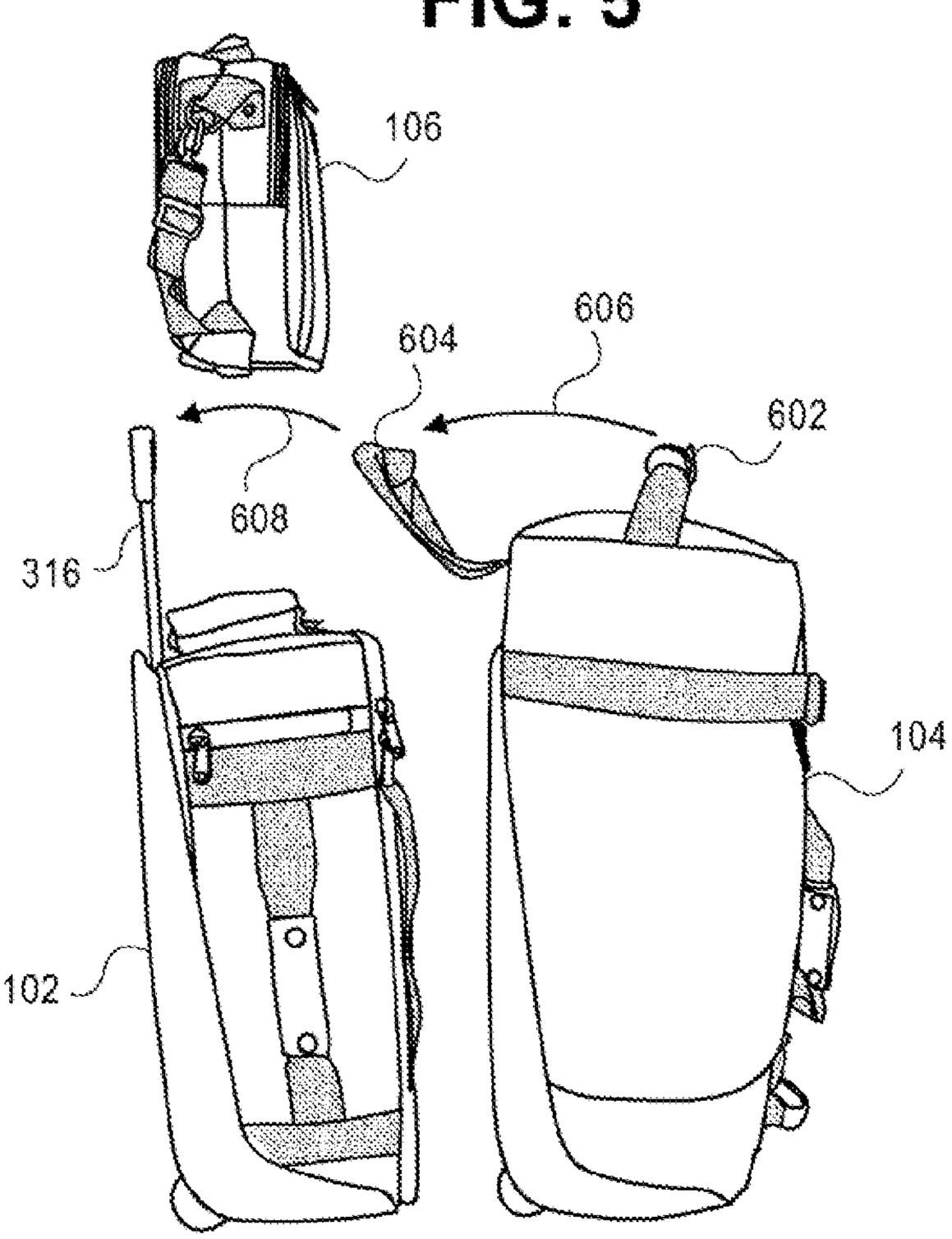

FIG. 6

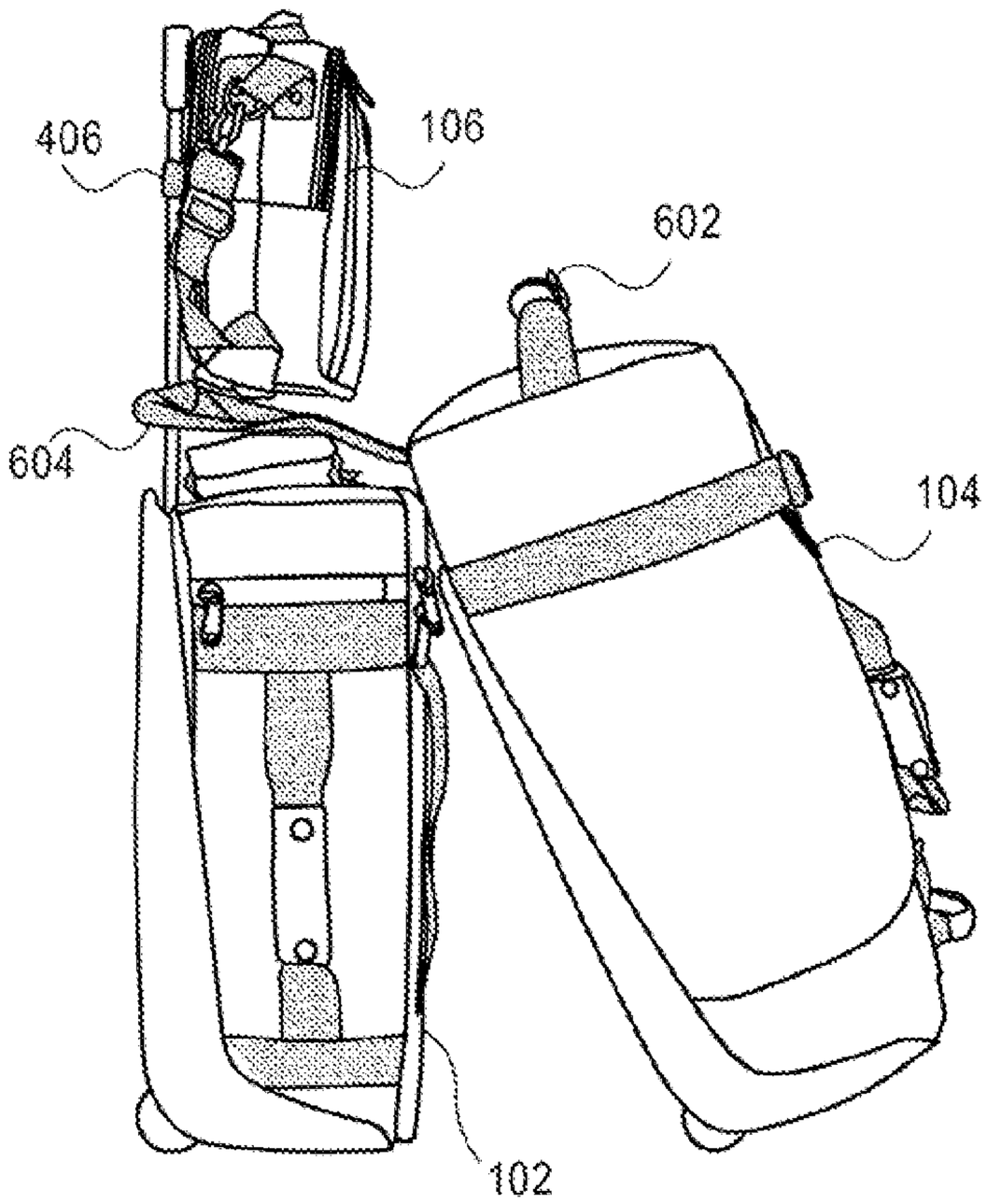
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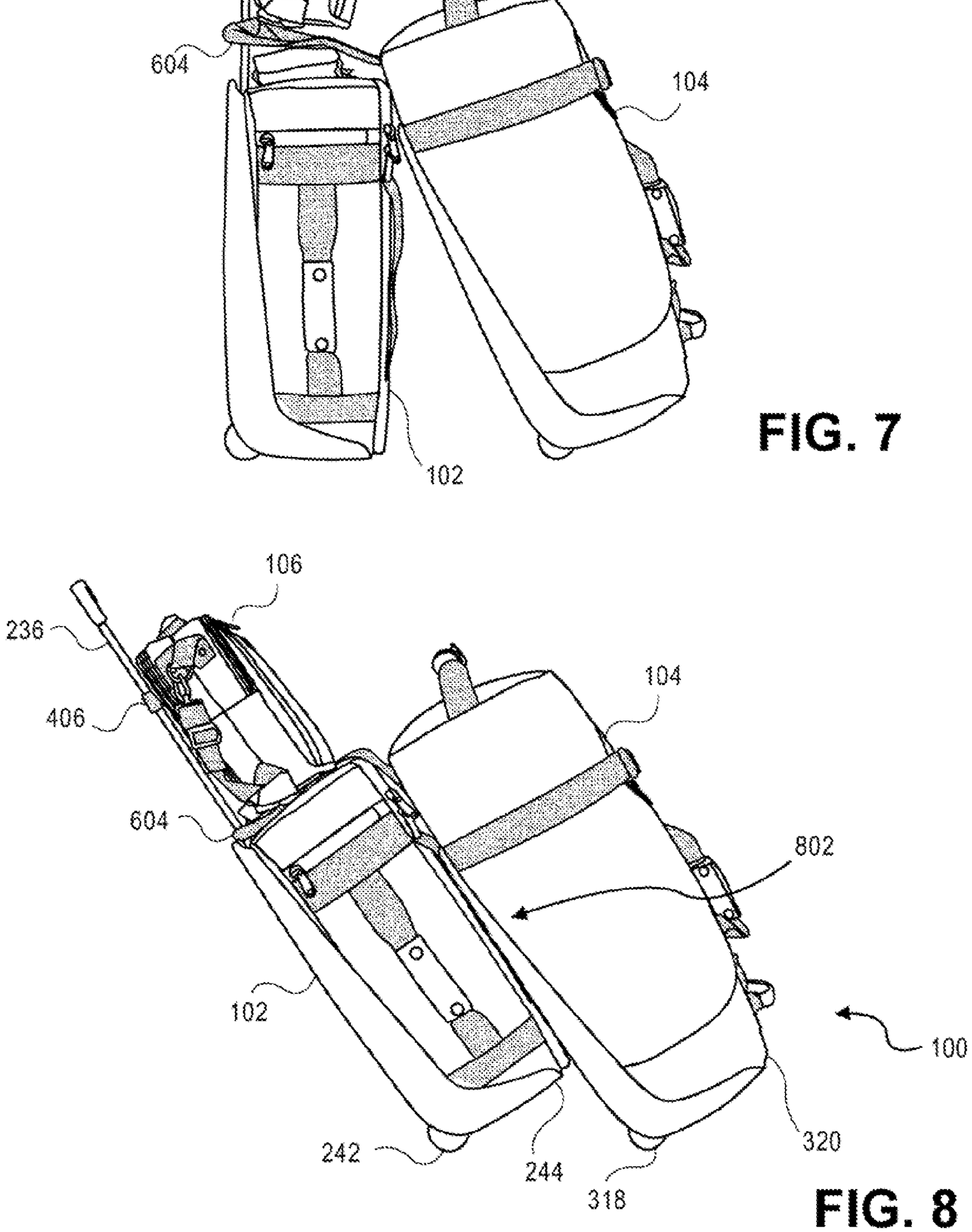
FIG. 7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318
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FIG. 8

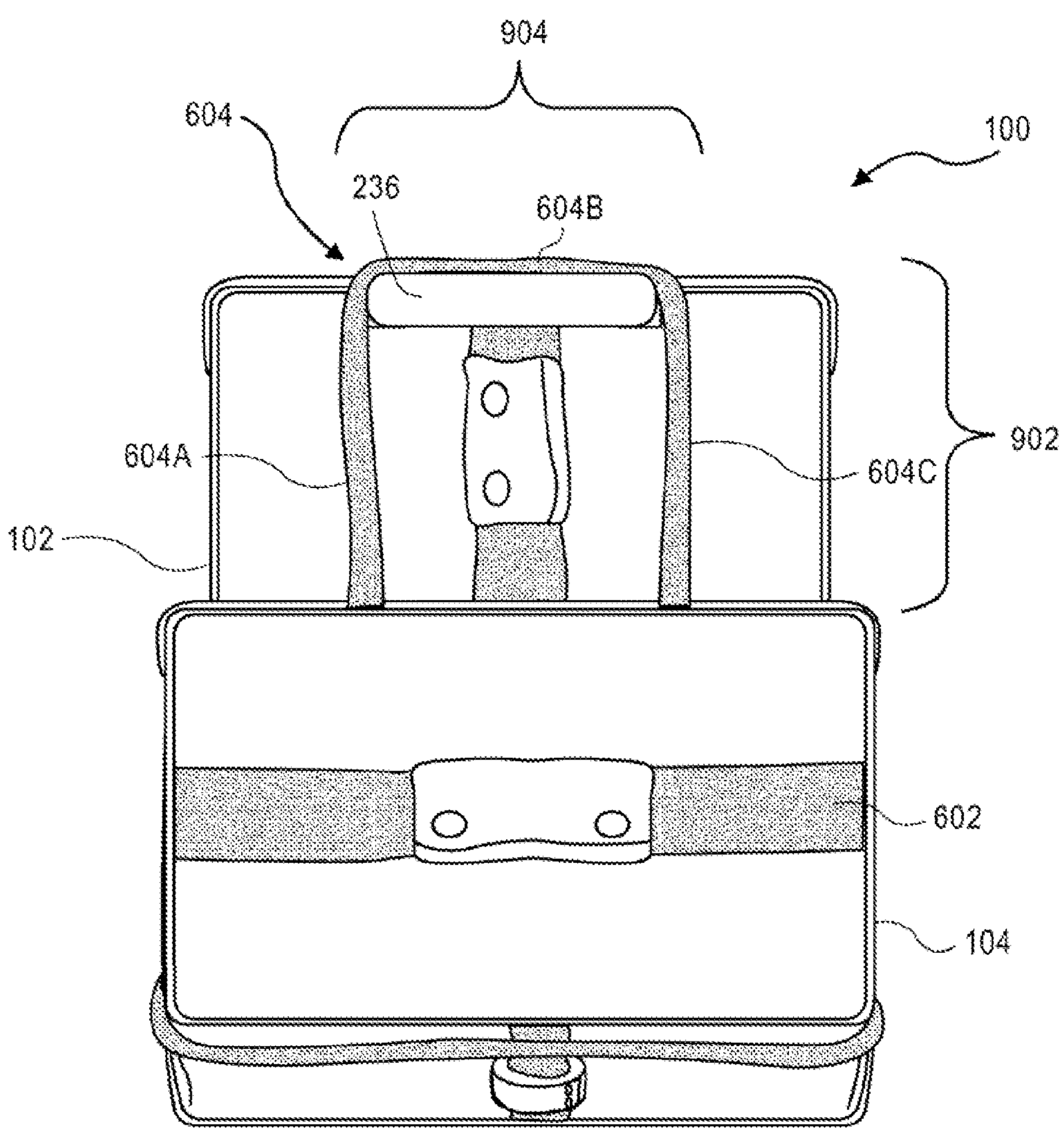
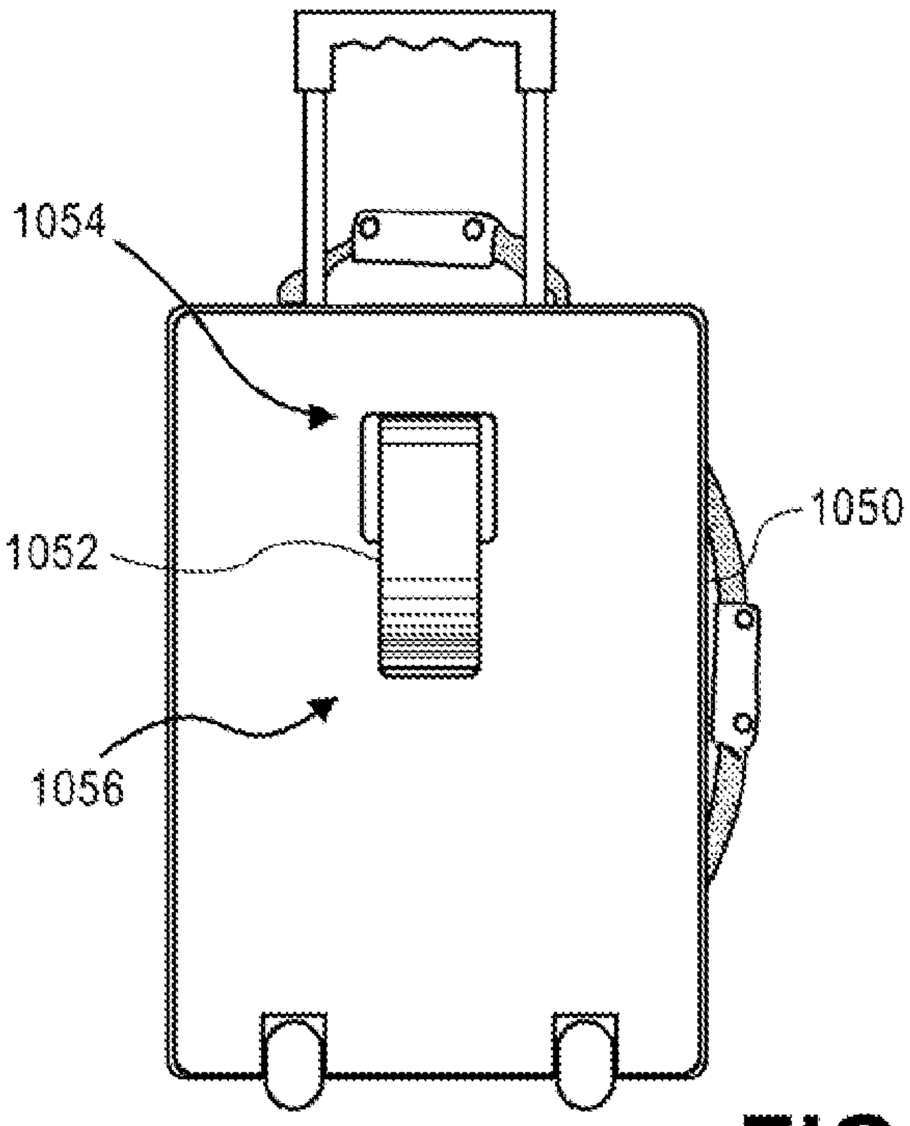


FIG. 9



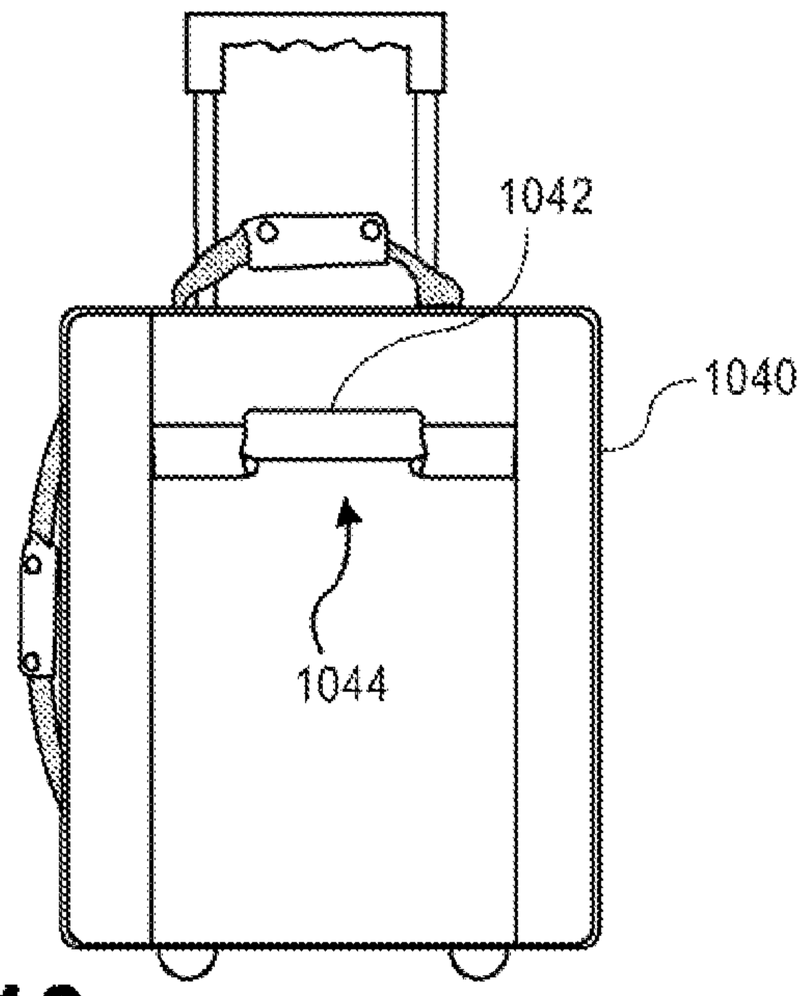


FIG. 10

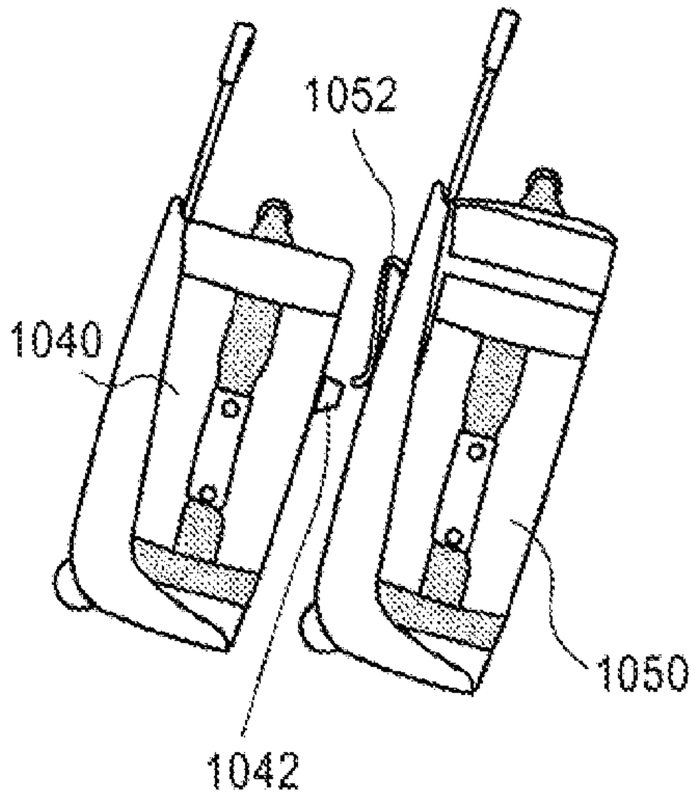


FIG. 11

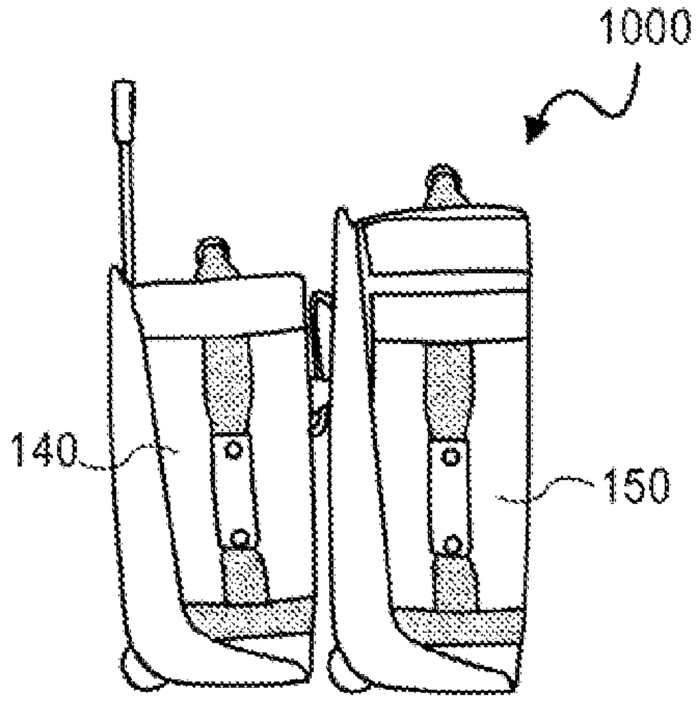


FIG. 12

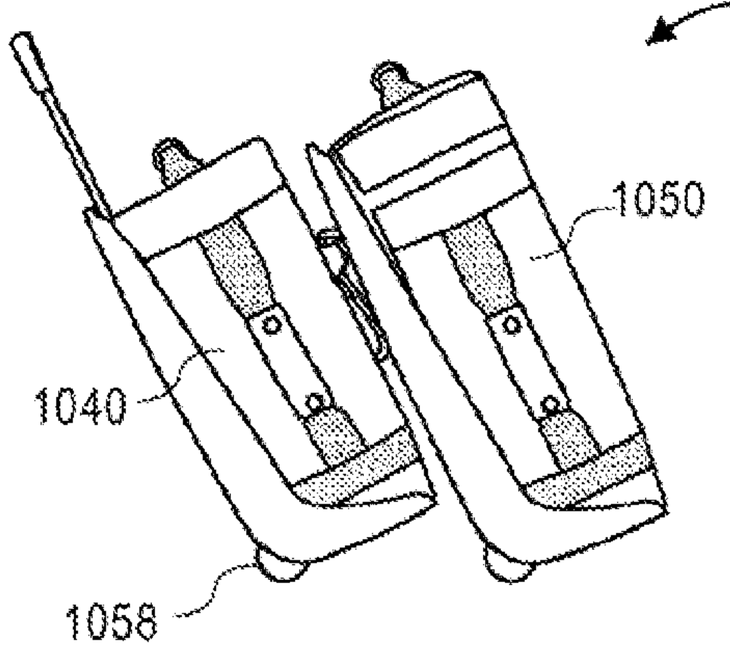


FIG. 13

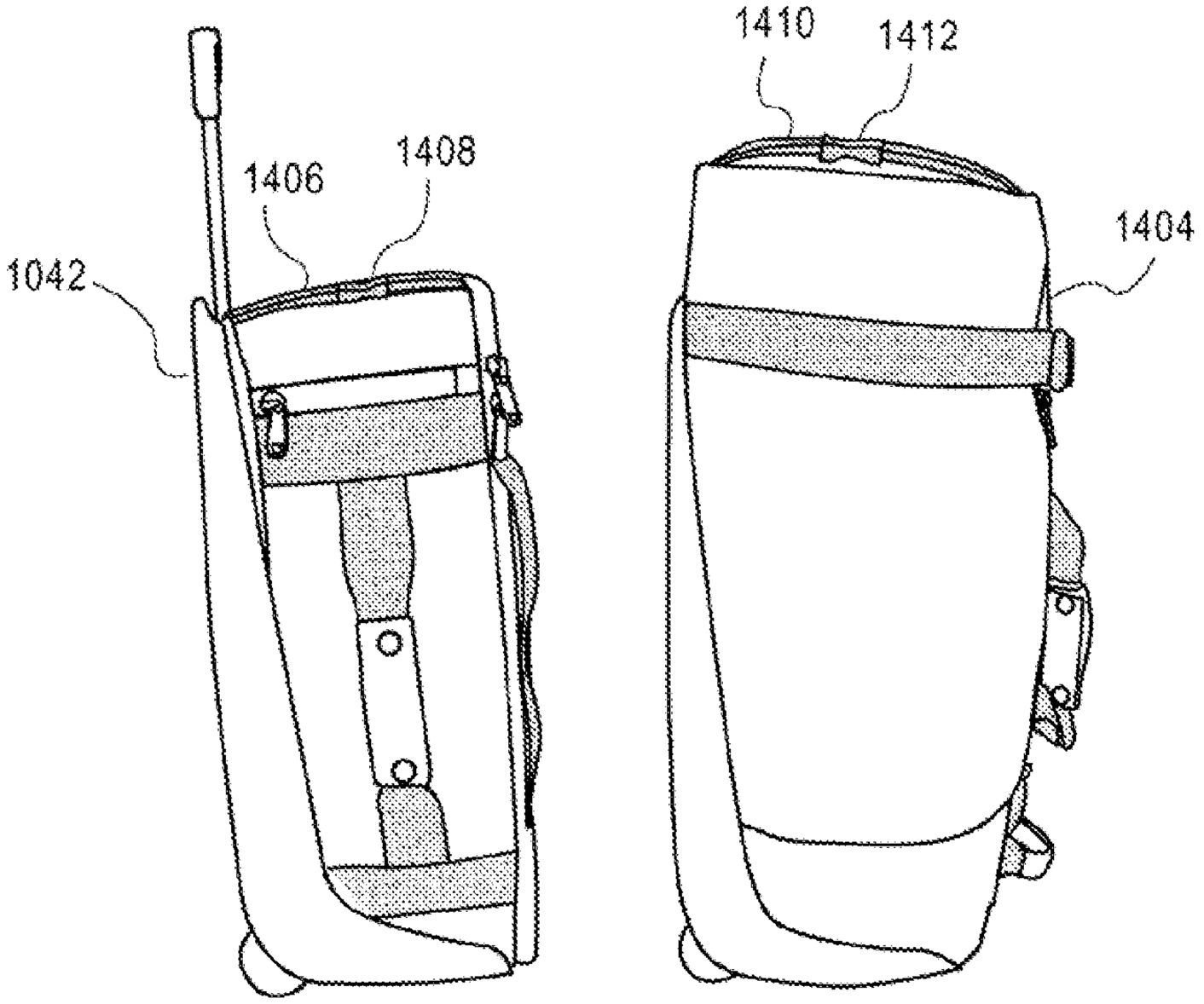


FIG. 14

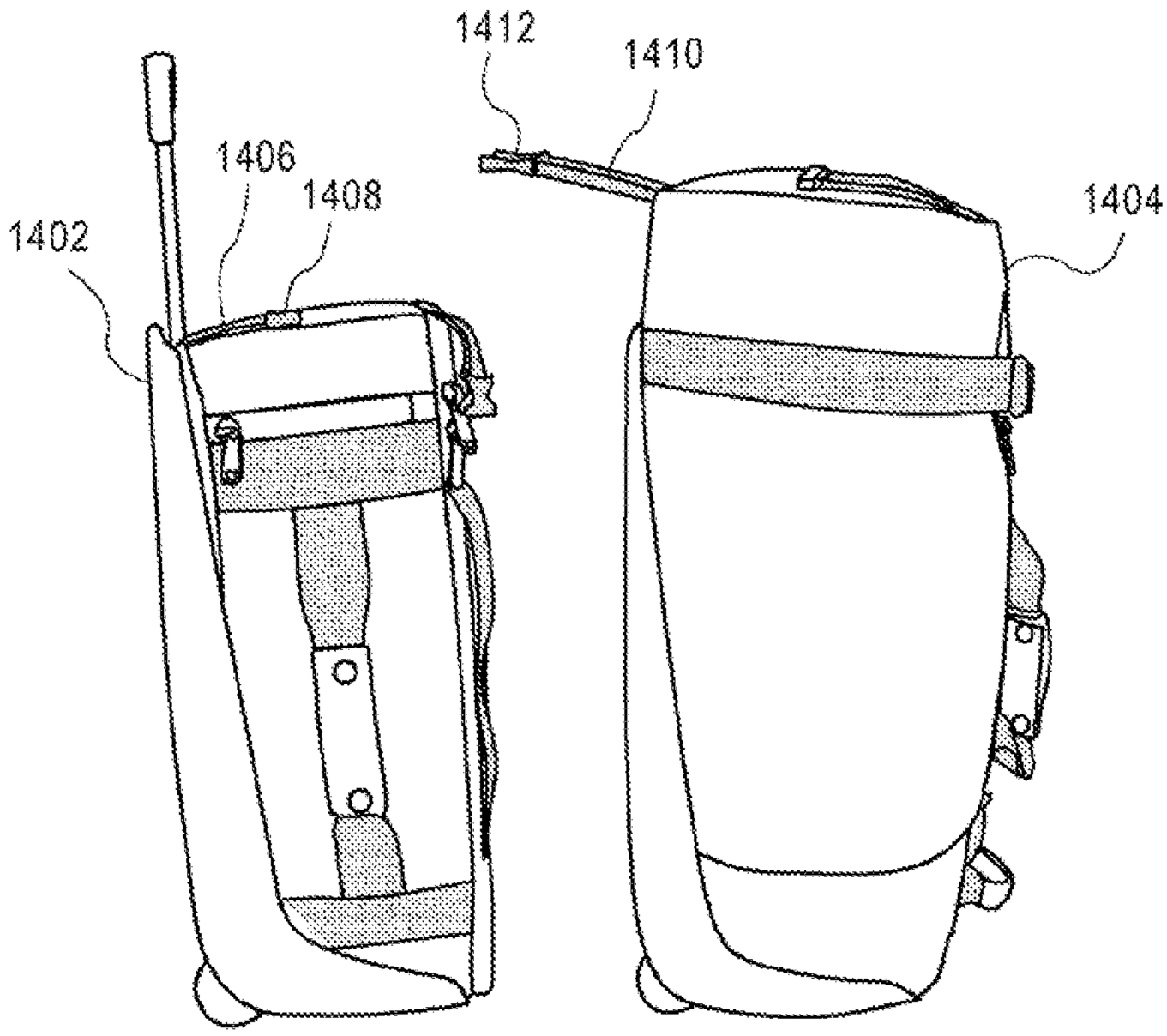


FIG. 15

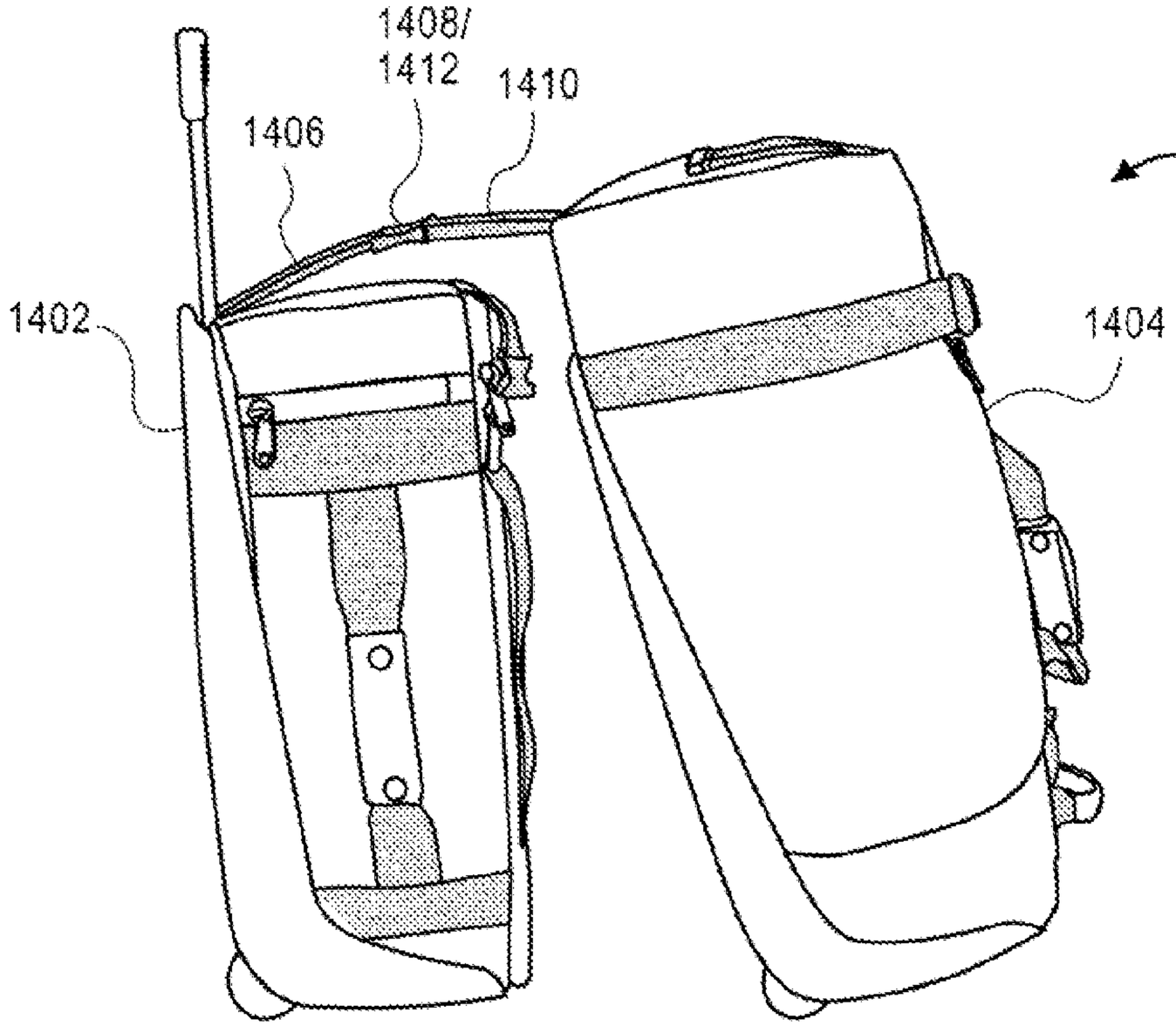

1408/
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FIG. 16

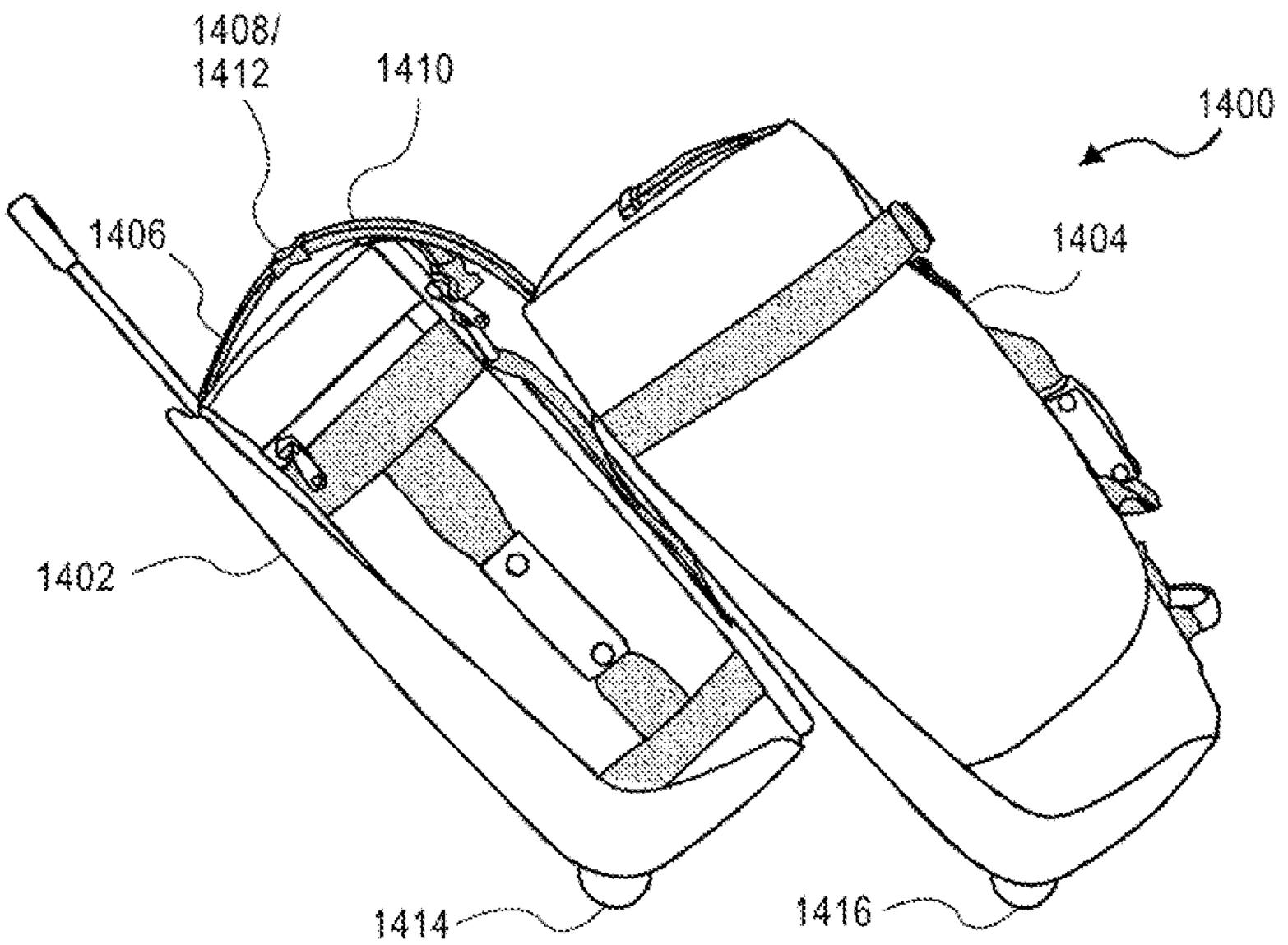
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FIG. 17

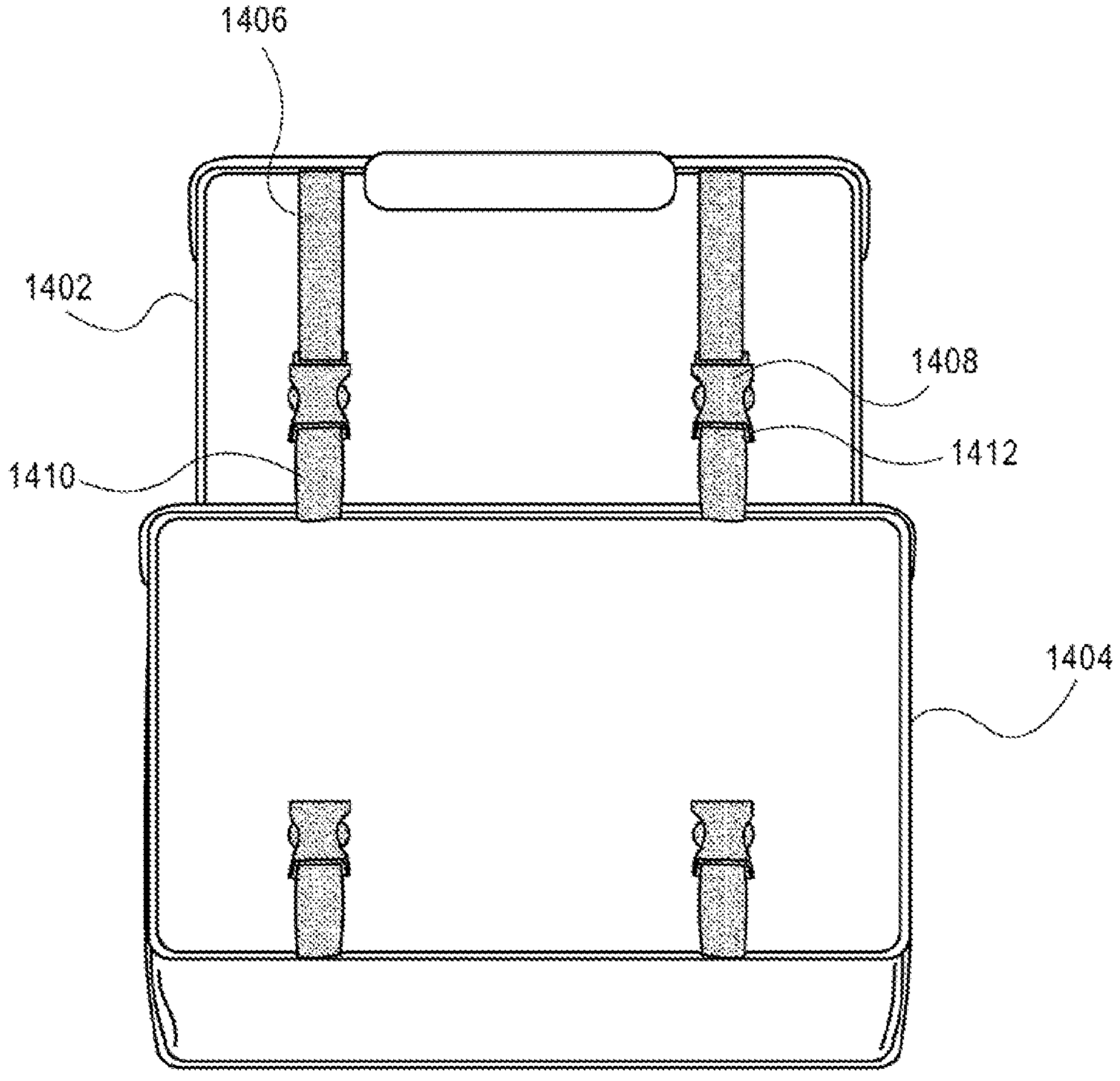


FIG. 18

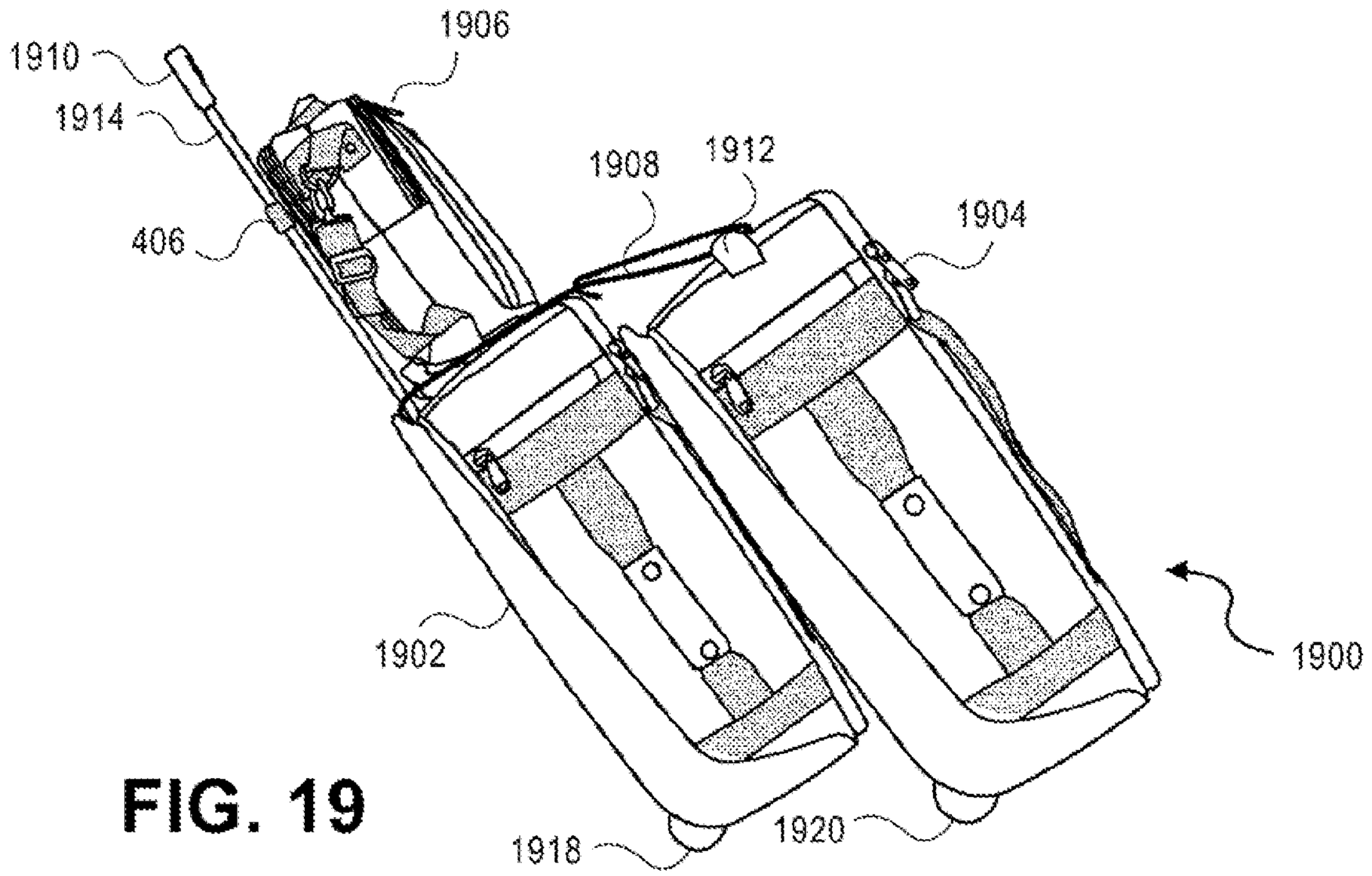


FIG. 19

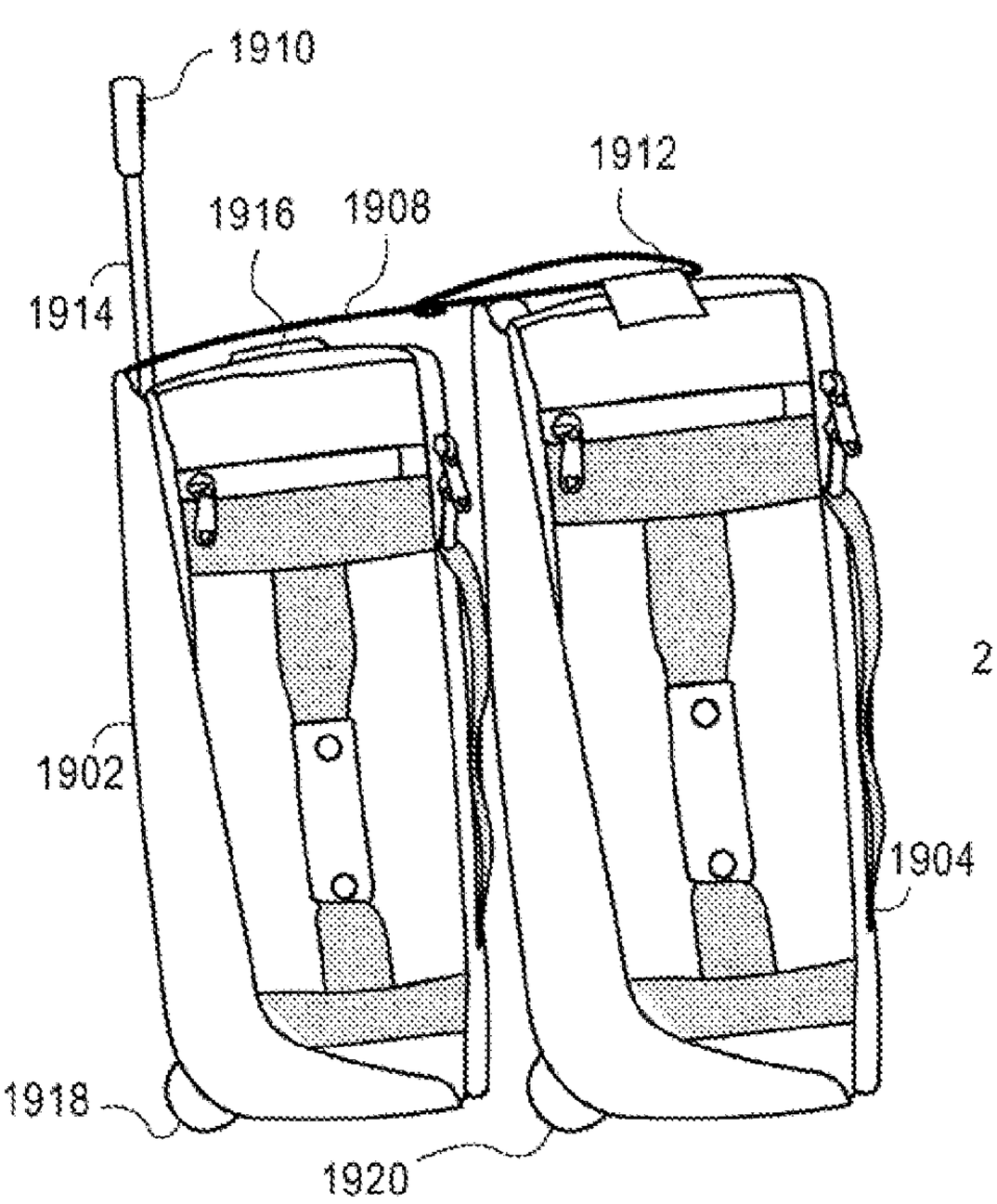


FIG. 20

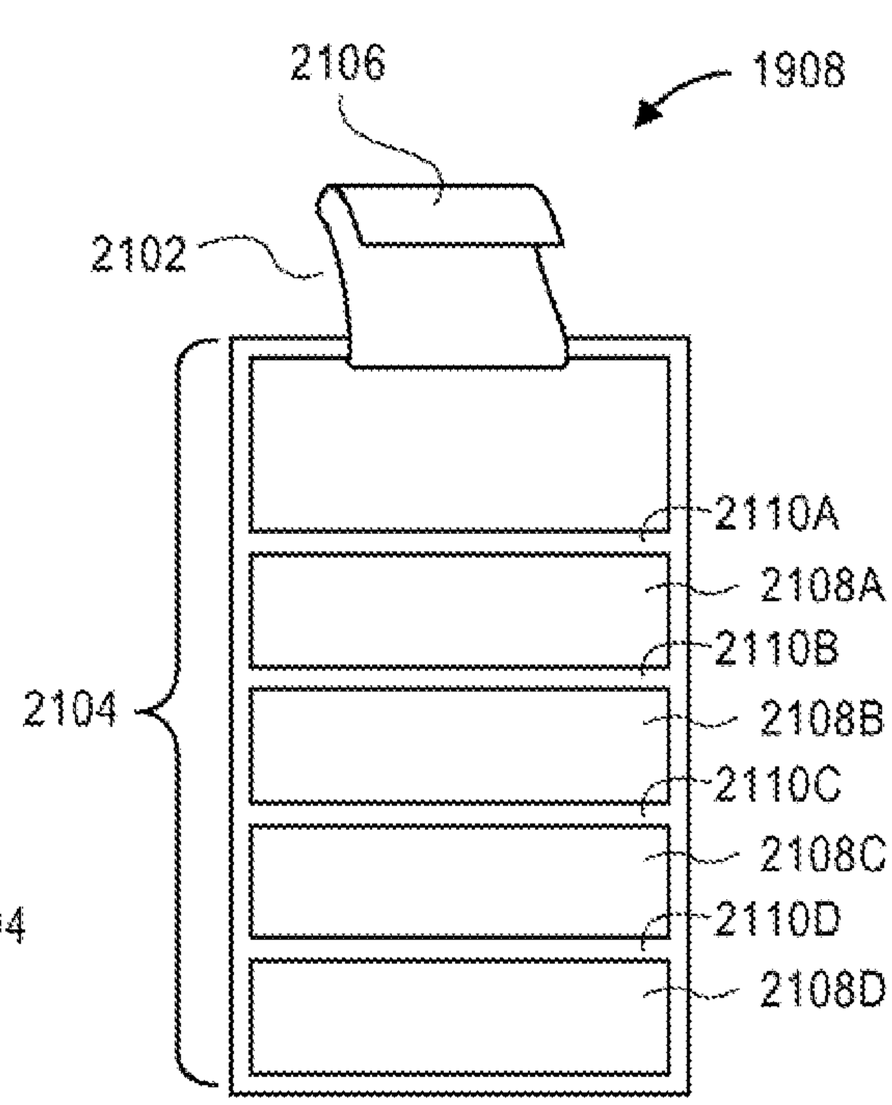


FIG. 21A

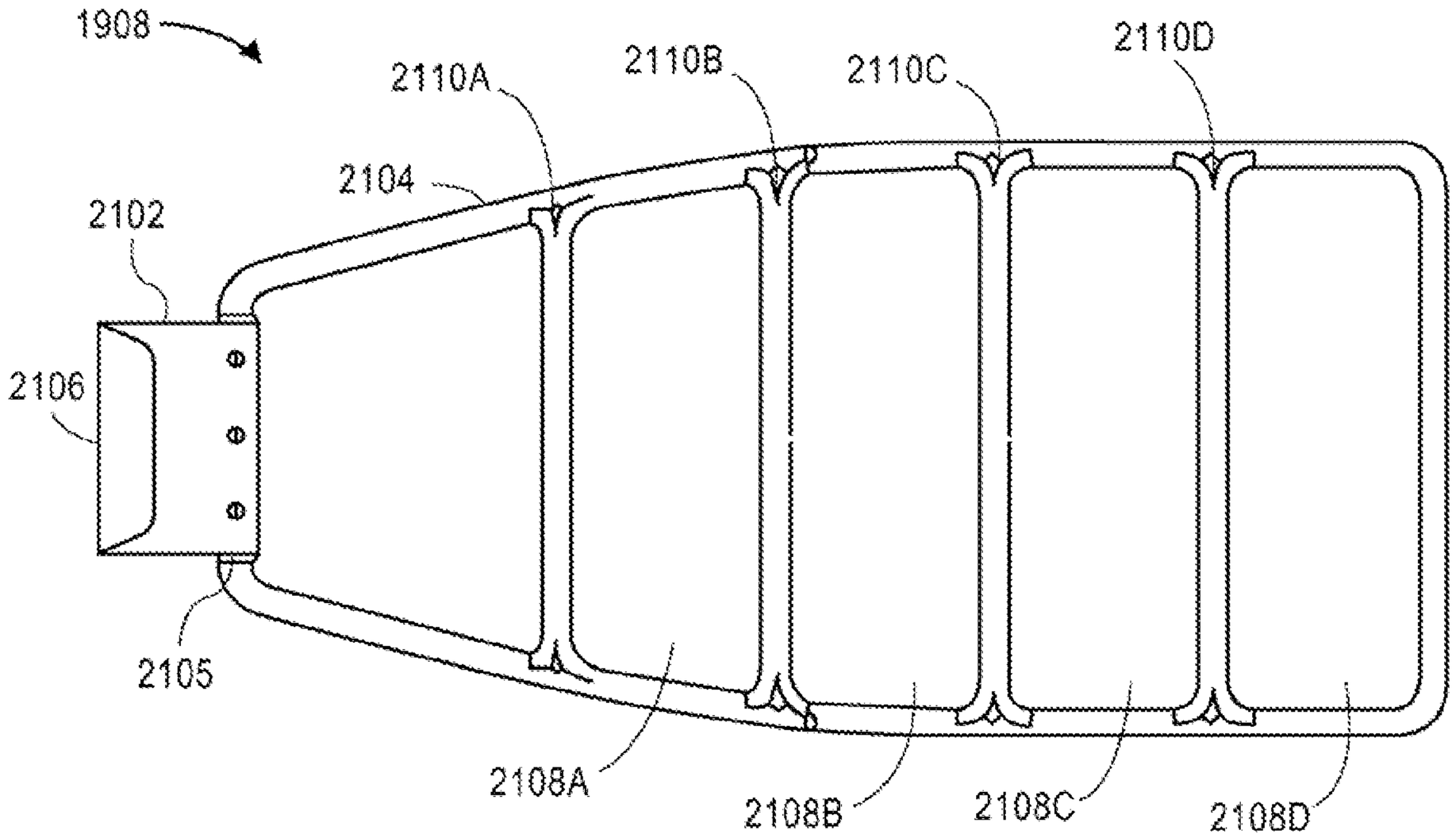


FIG. 21B

FIG. 21C

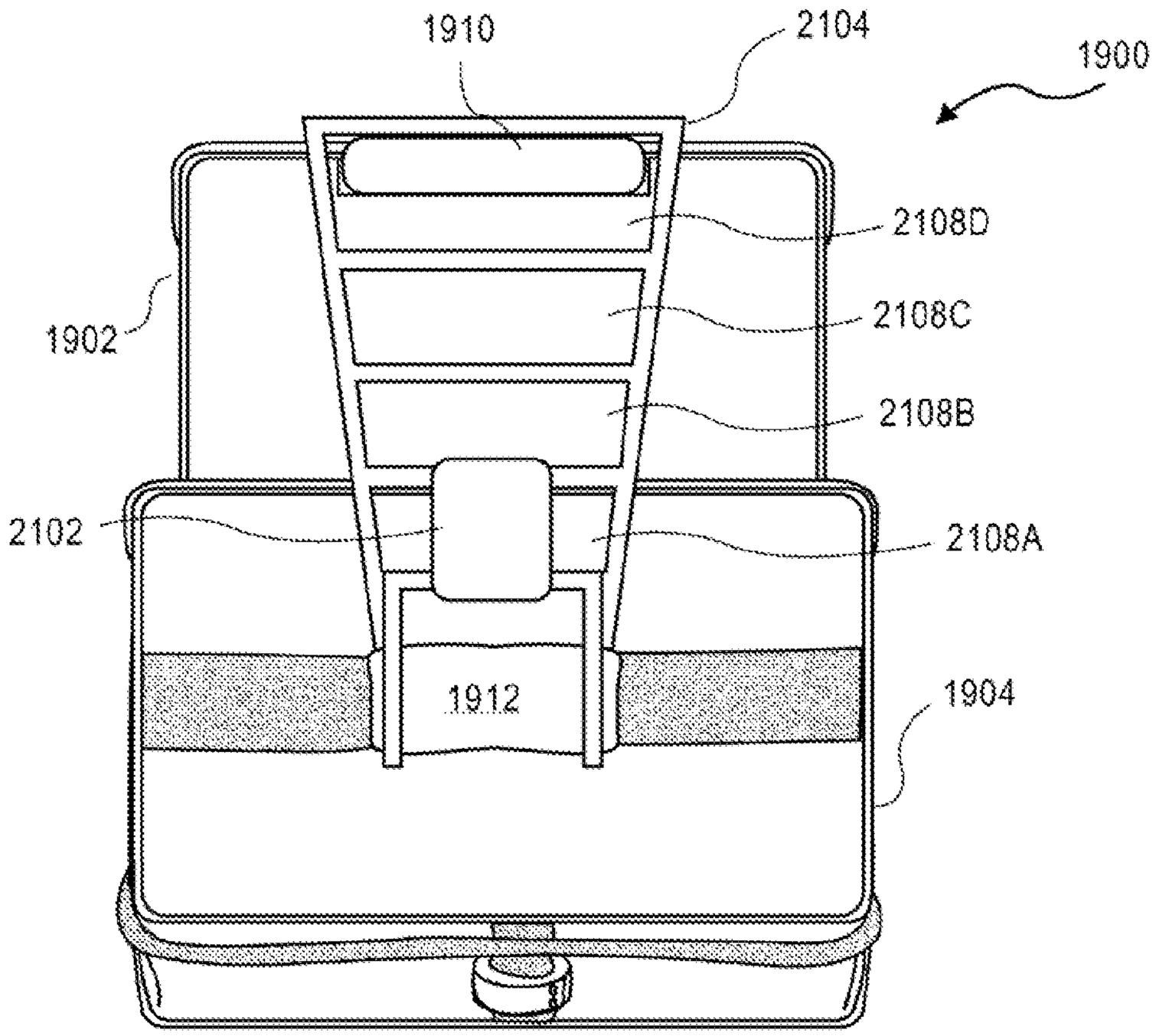


FIG. 22

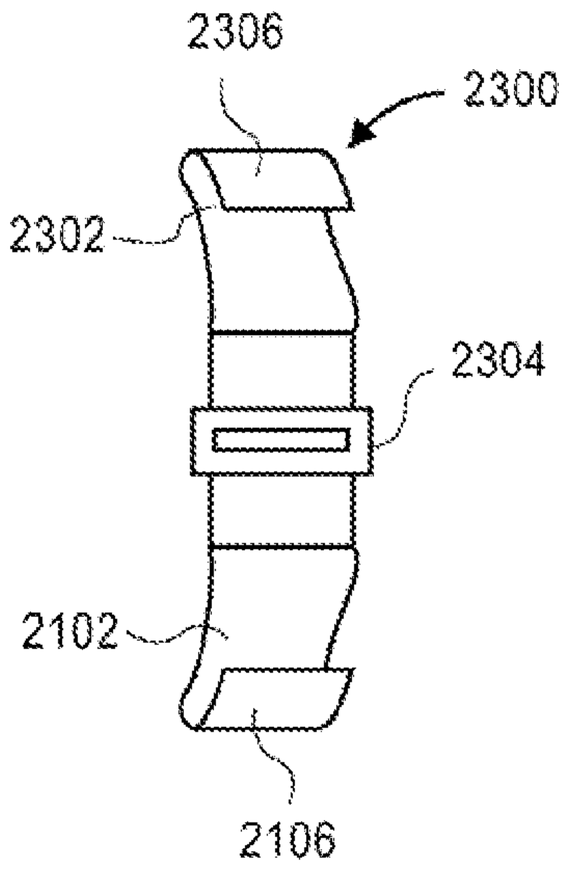


FIG. 23

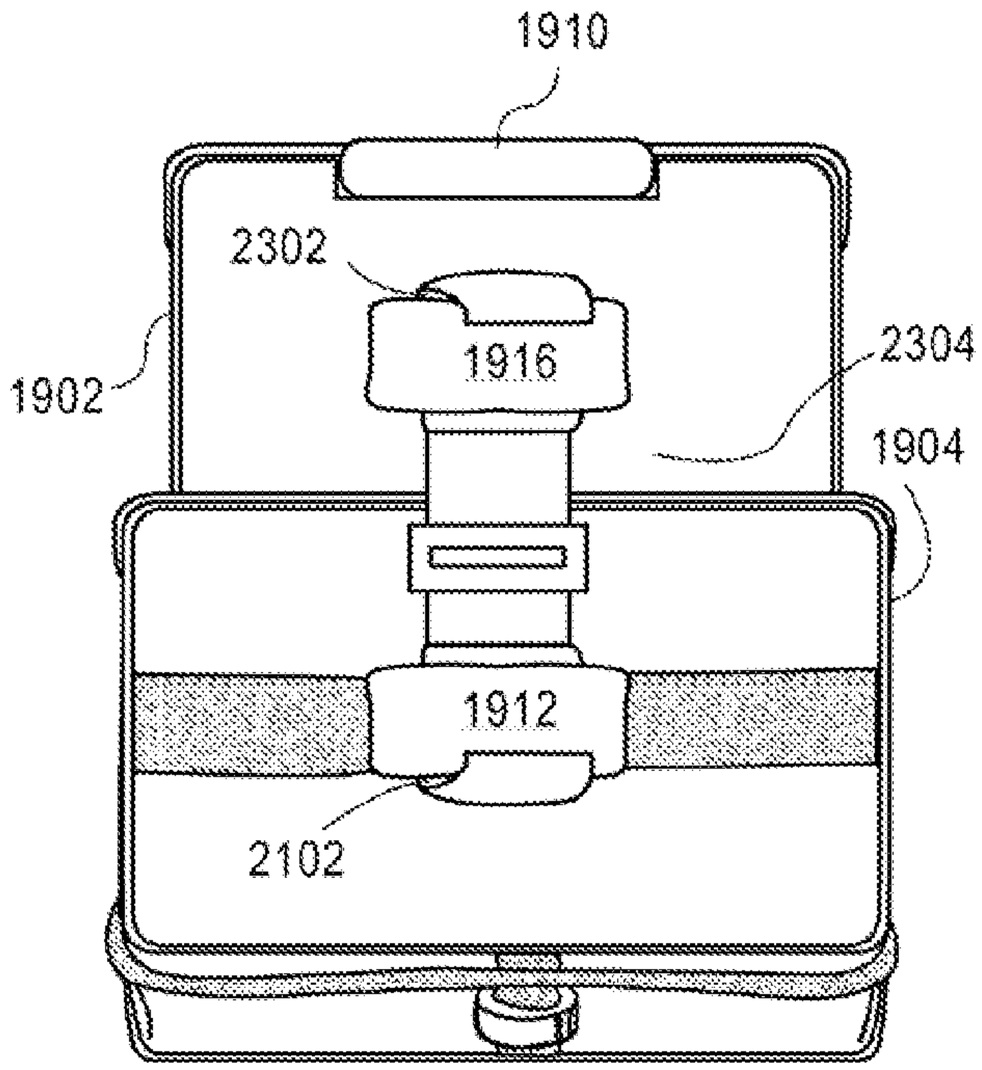
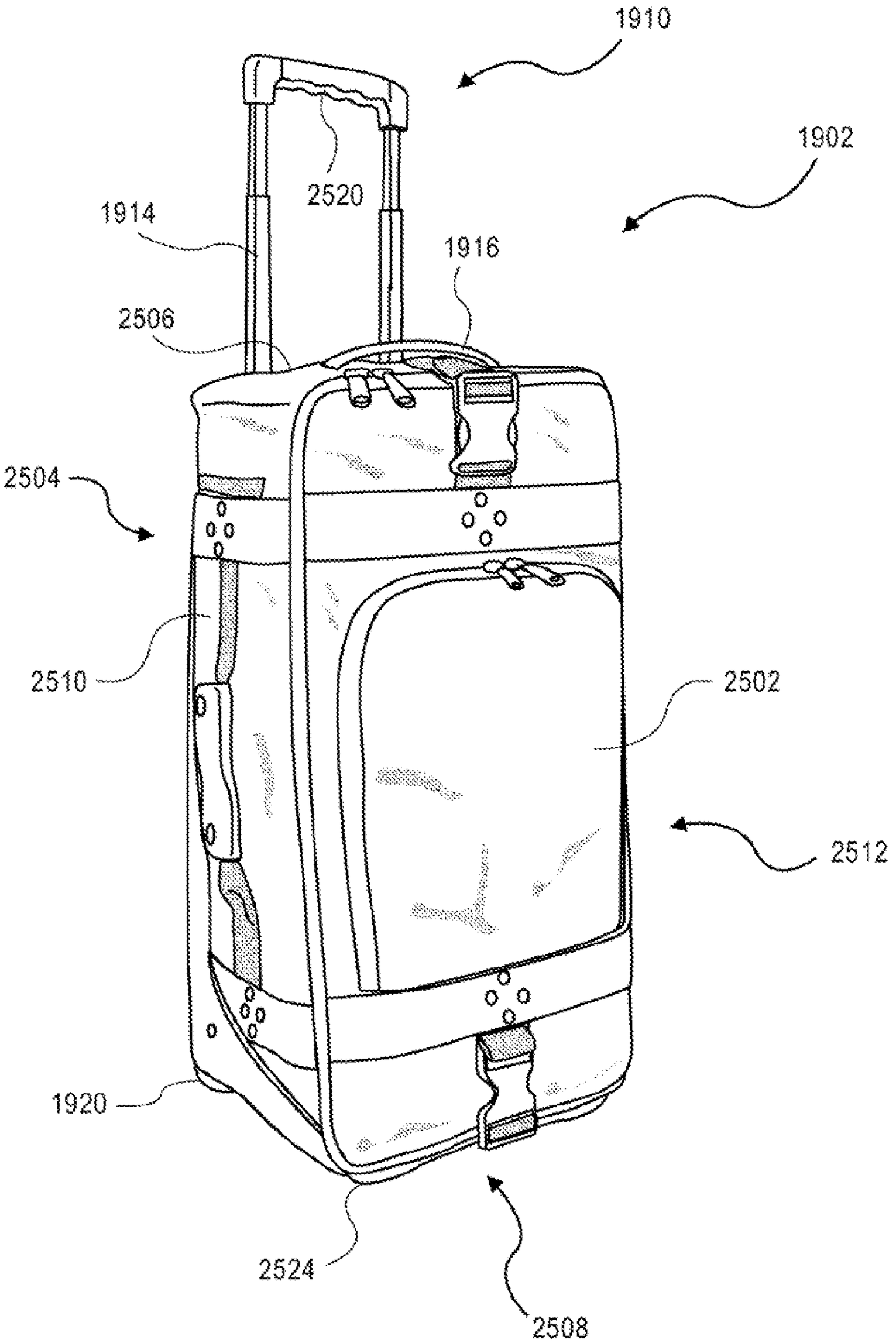


FIG. 24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1914
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FIG. 25

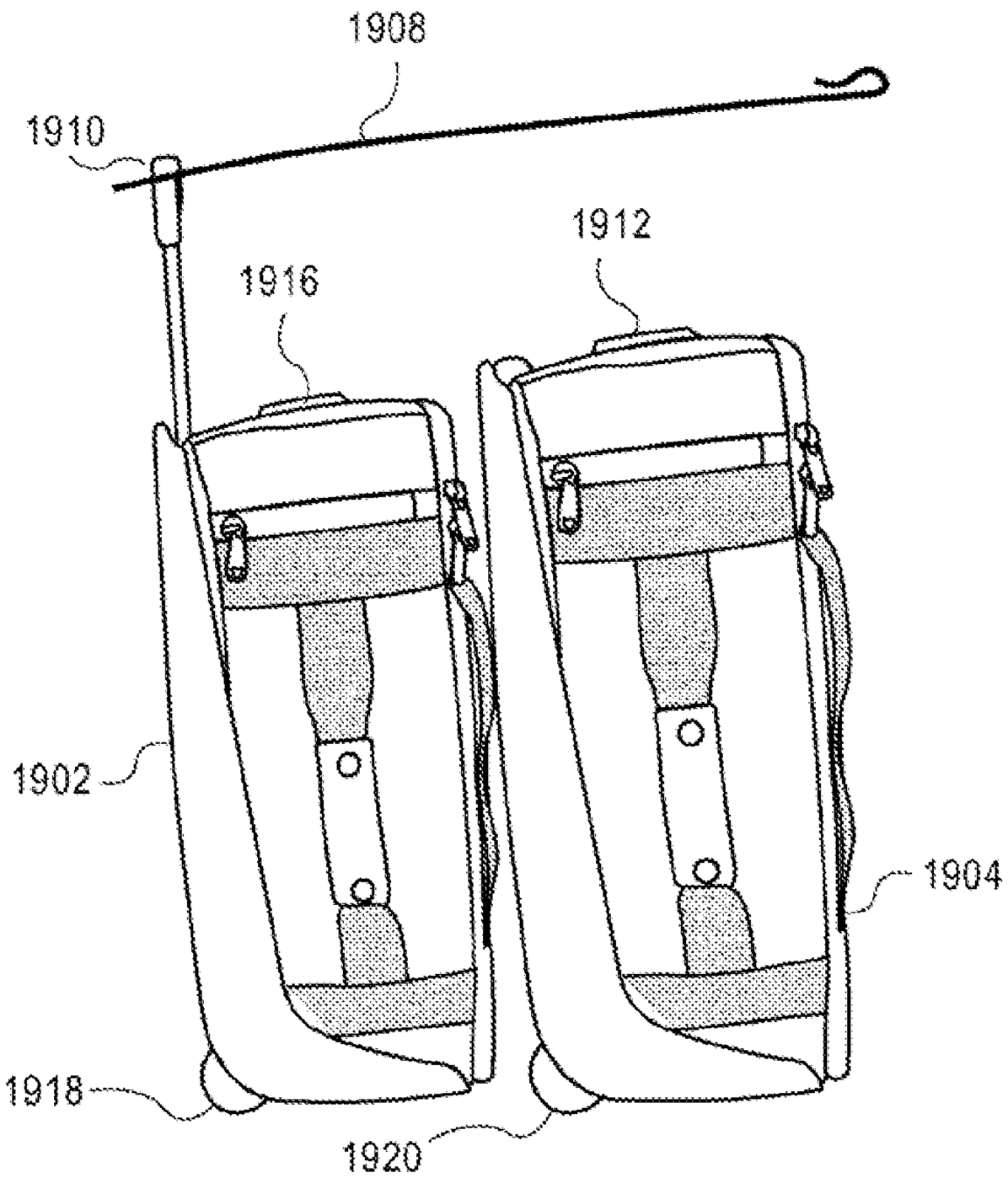
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FIG. 26

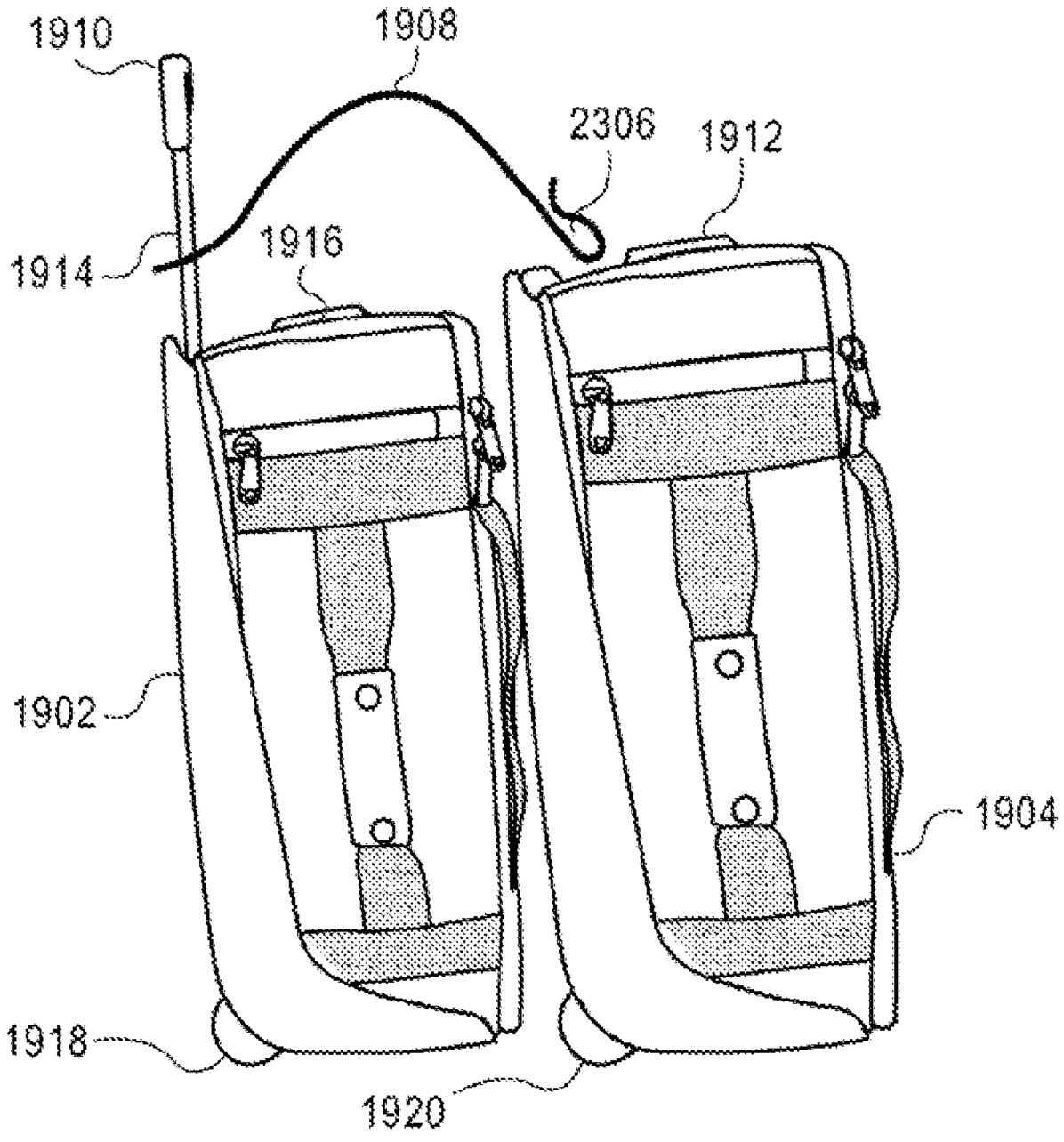
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FIG. 27

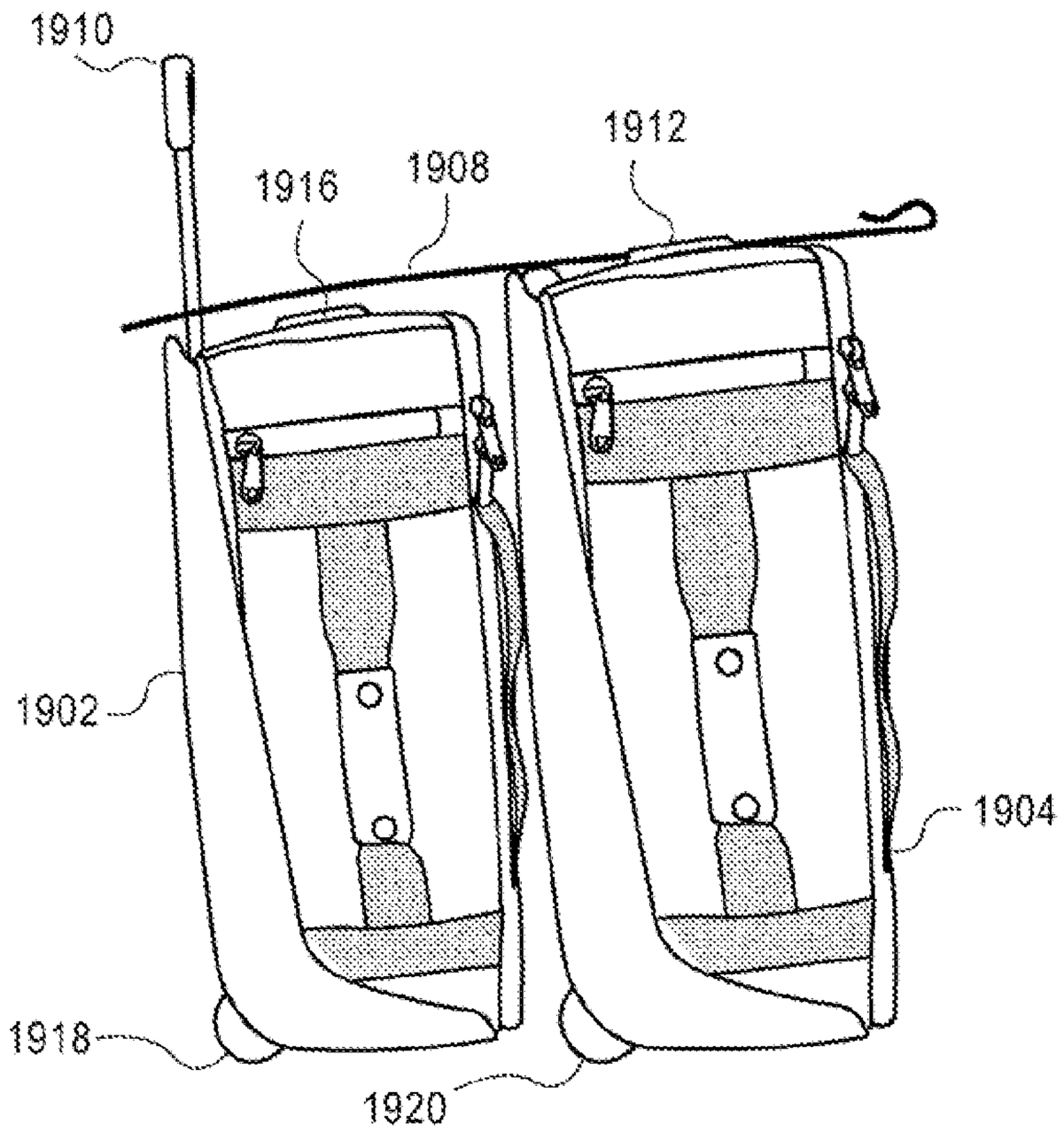
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FIG. 28

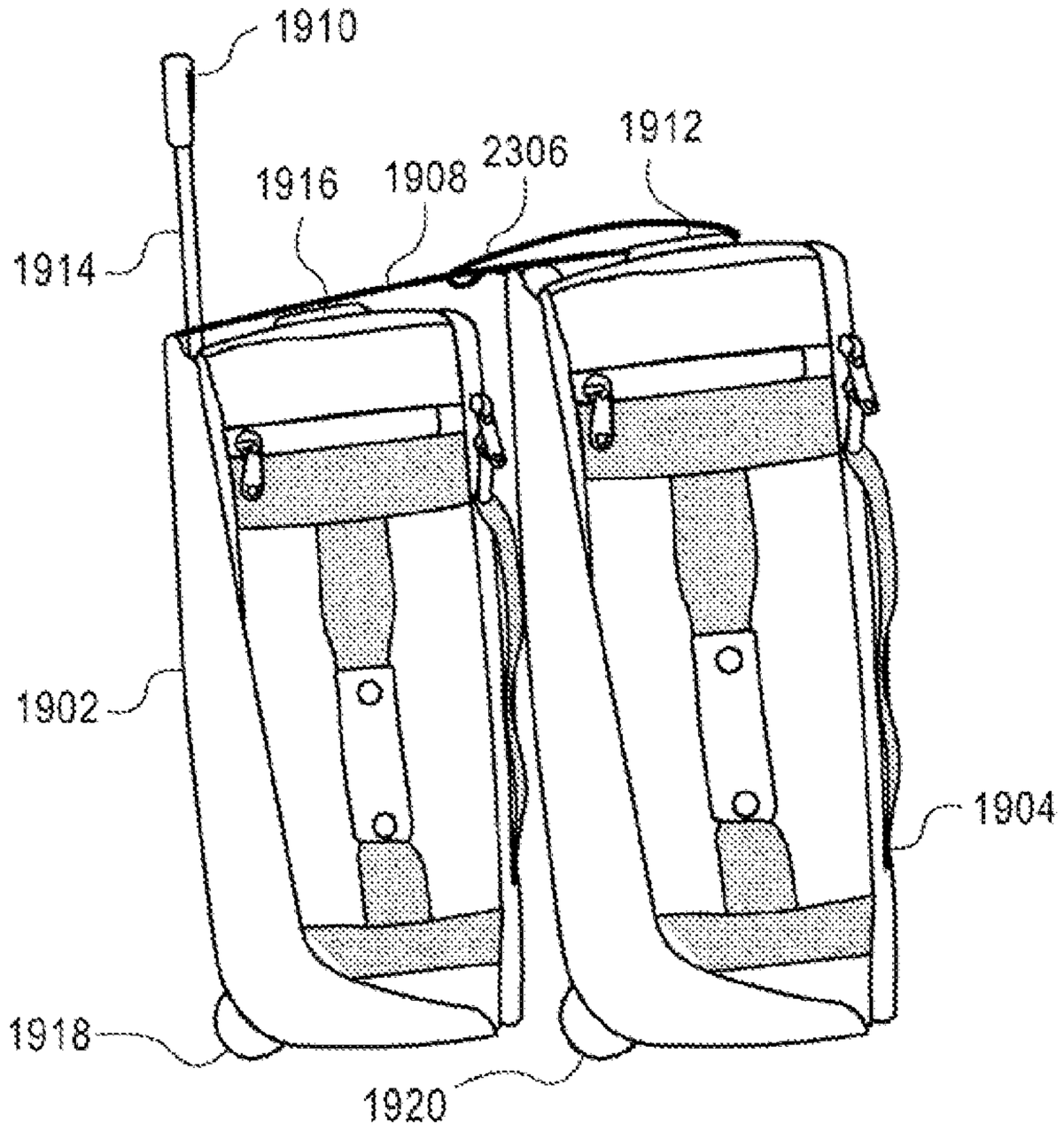
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FIG. 29

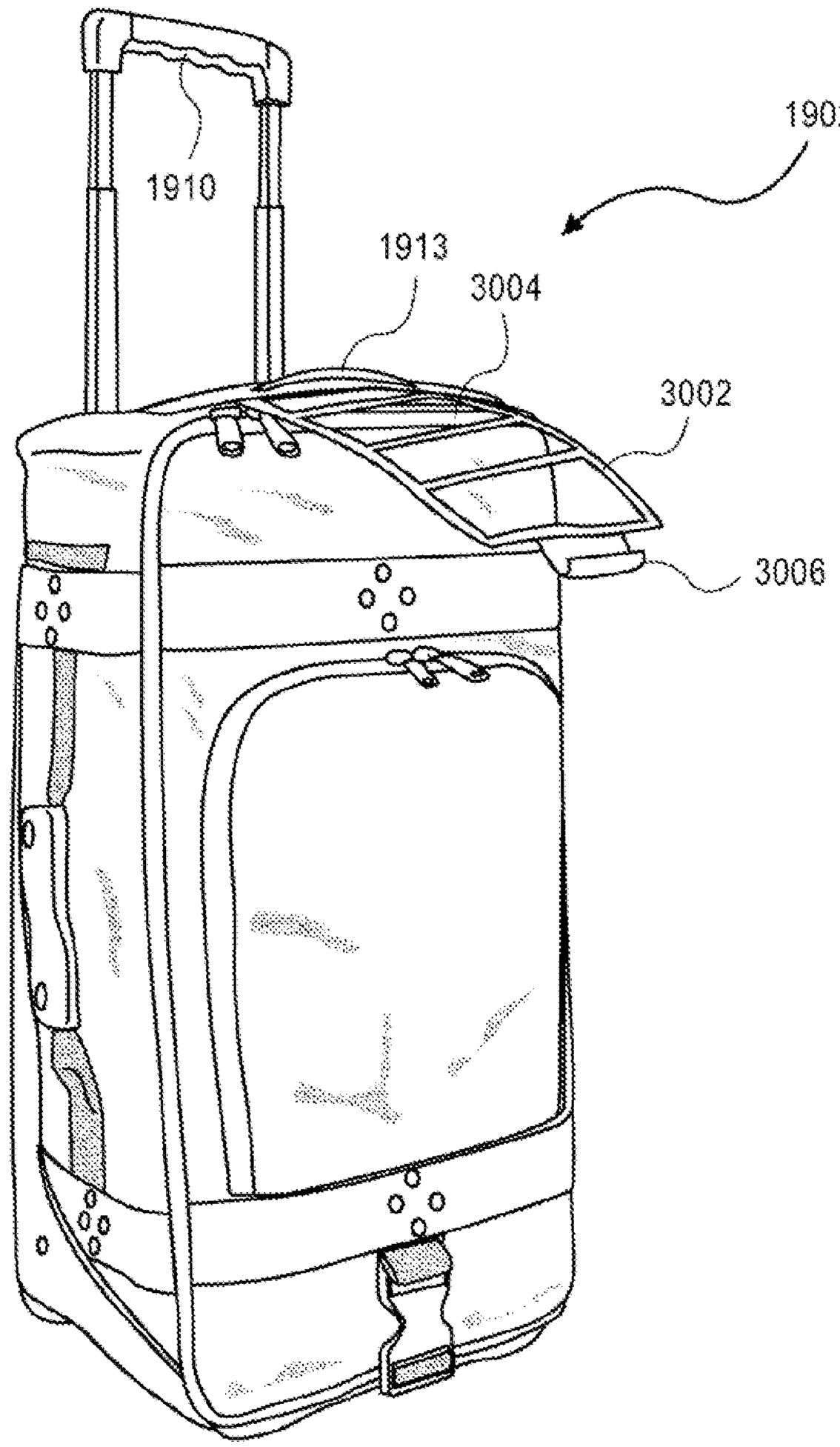
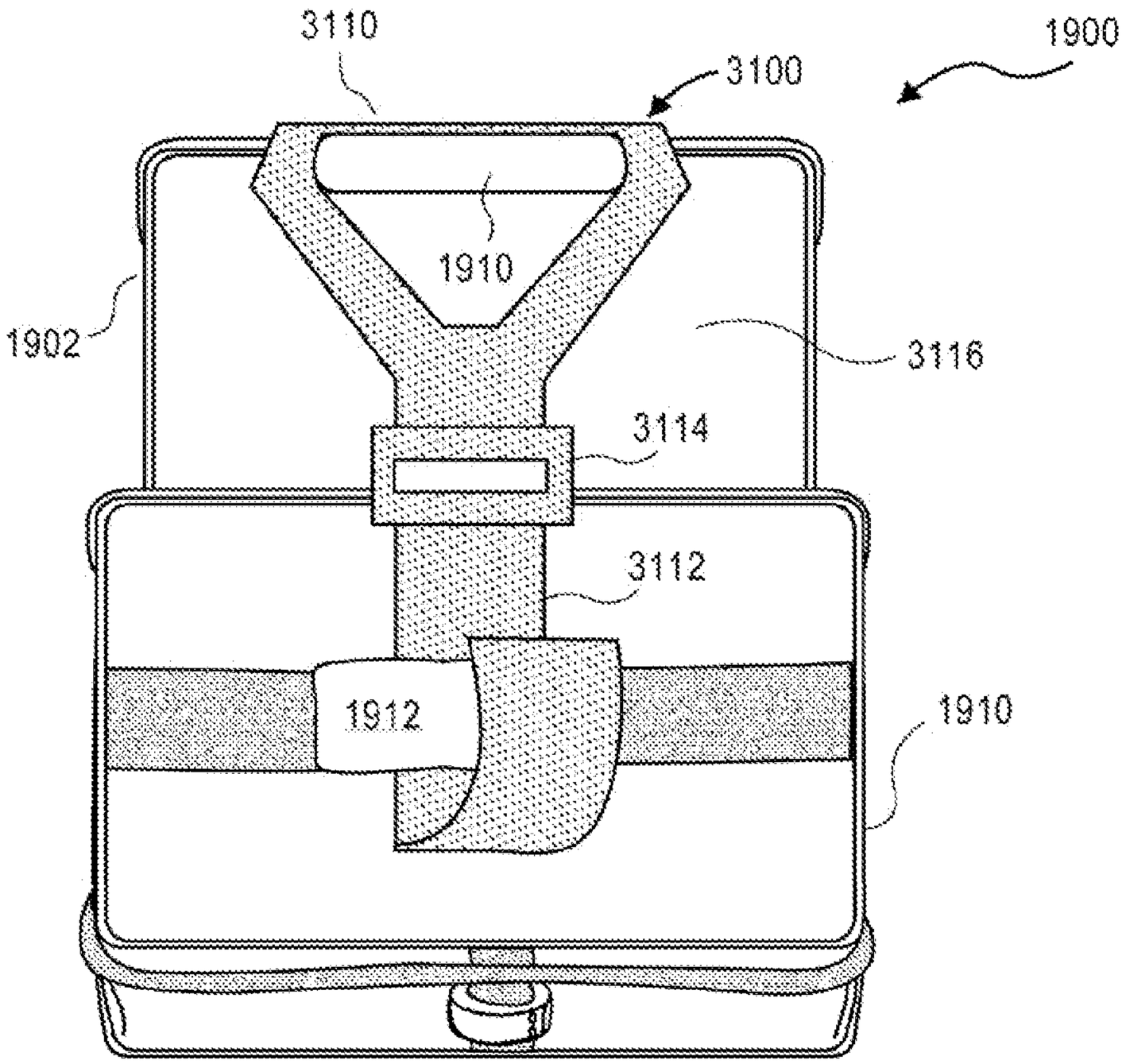


FIG. 30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1910

FIG. 31

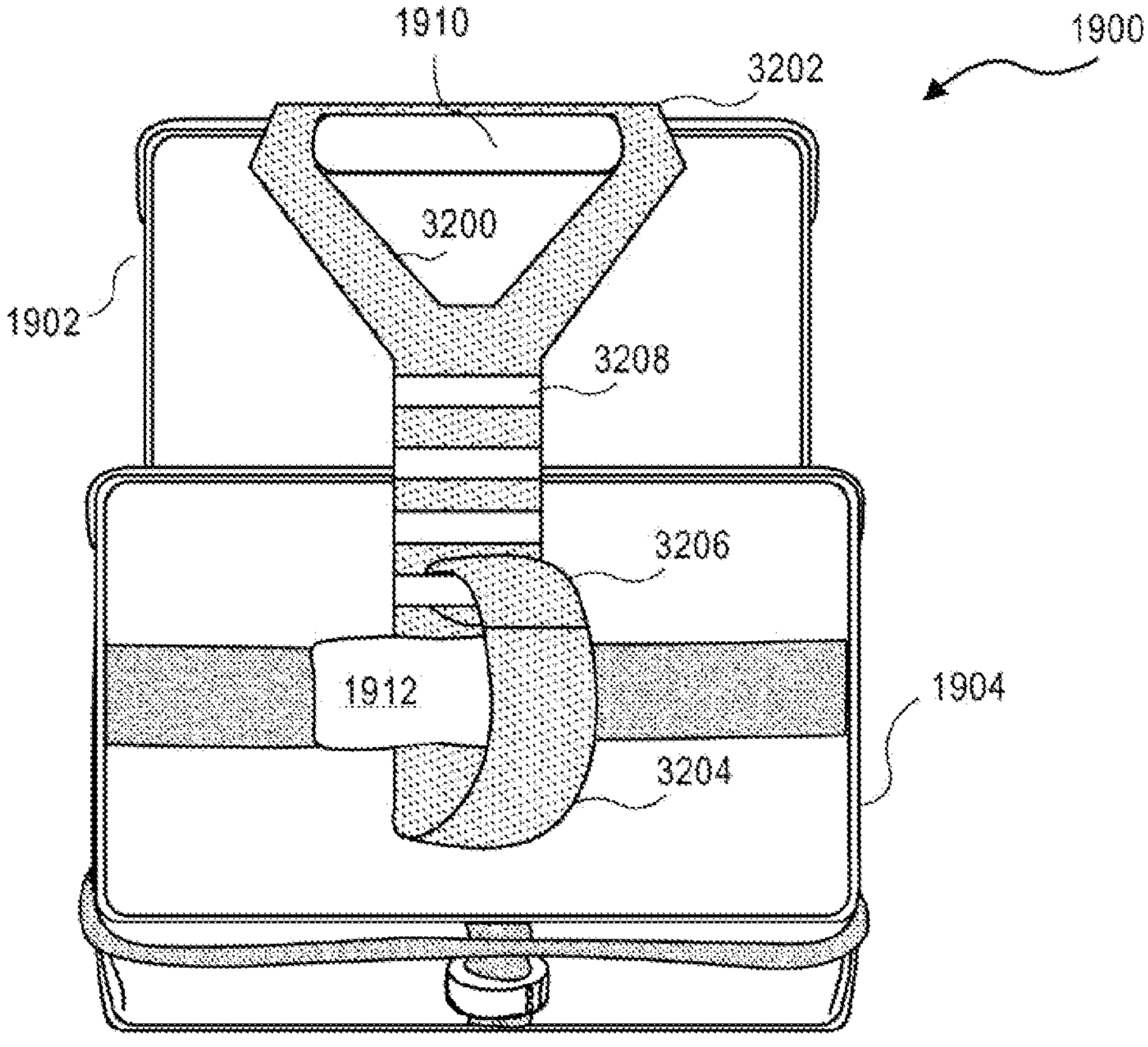
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FIG. 32

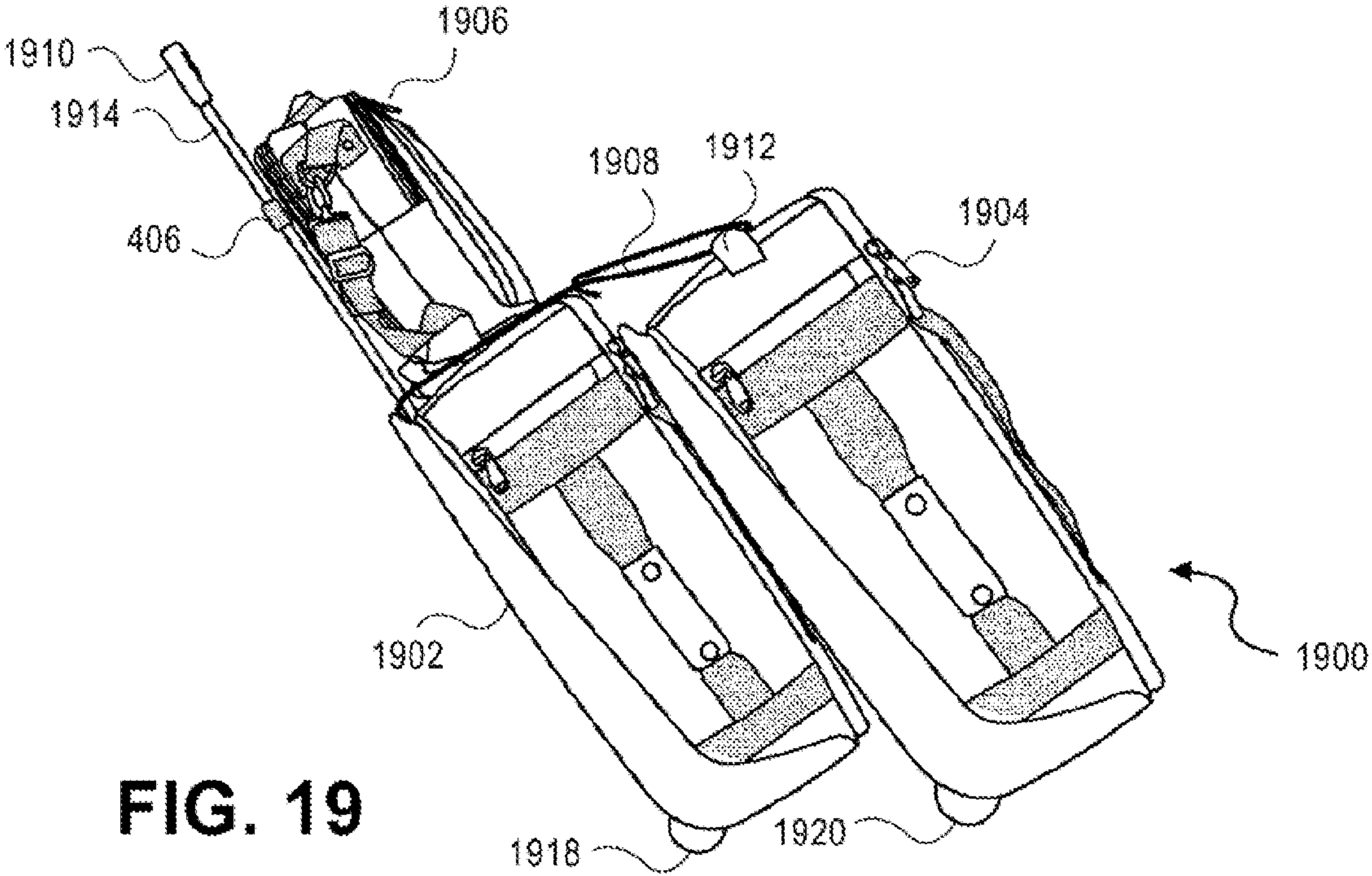

FIG. 19