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(54) SPACE EXPANDABLE LUGGAGE CASE

(57) A luggage case includes a case and a base, and a handle is retractably connected to one side of the case. The base includes two parallel rails and two transverse bars are connected to two respective ends of each rail. Multiple wheels are connected to the two rails. A positioning device is connected to one of the two rails. Each rail has a middle rail fixed to the underside of the case, a bottom rail and a top rail respectively and slidably connected to the bottom and the top of the middle rail. The top and bottom rails are expanded relative to the middle rails. The two transverse bars are respectively connected to the top rails and the bottom rails. The positioning device positions the two rails at an expanded position or a retracted position. The top and bottom rails are expanded relative to the case to provide more space.

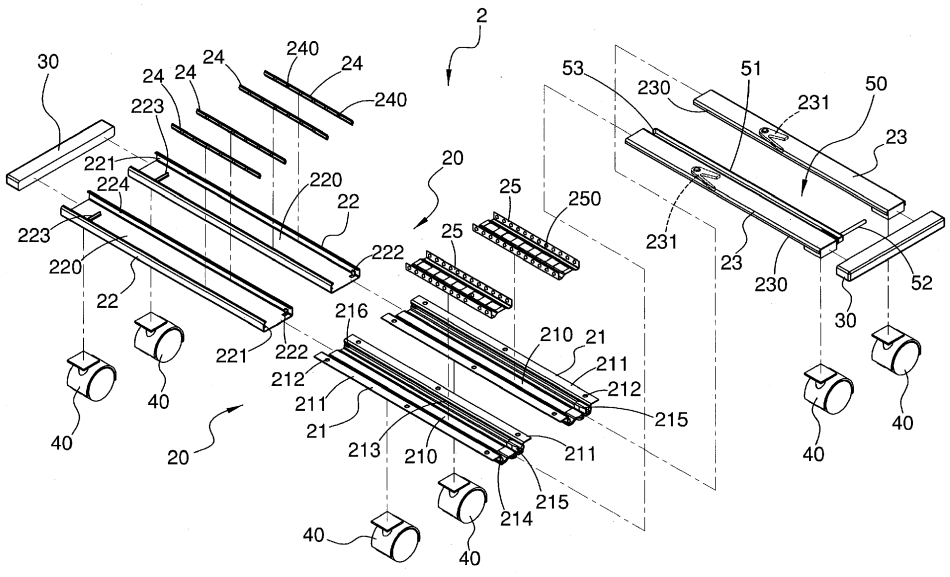

FIG.1

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Description

BACKGROUND OF THE INVENTION

(1) Field of the invention

[0001] The present invention relates to a luggage case, and more particularly, to an space expandable luggage case wherein the bottom of the luggage case can be expanded to provide extra space for carrying extra objects.

(2) Description of Related Art

[0002] The conventional luggage cases are used for travel and generally comprise a case with wheels connected to the underside of the case, and a handle is retractably connected to the case so that the user can easily move the luggage case by pulling the handle. Nevertheless, the space defined in the luggage case cannot be expandable so that when extra objects or goods need to be carried with the user, the users have to purchase another luggage case.

[0003] One of the ways to improve the problem mentioned above is to hook another case or bag to the luggage case. However, the second case or bag changes the center of weight and the user may feel difficult to control the luggage case. The luggage case with the second case or bag can easily fall aside. The second case or bag is hooked to a hooking device on the luggage case, and the hooking device becomes an obstacle when the user wants to sit on the luggage case in some situations.

[0004] The present invention intends to provide a luggage case that eliminates the problems mentioned above.

SUMMARY OF THE INVENTION

[0005] The present invention relates to a luggage case and comprises a case and a base connected to the case, and a handle is retractably connected to one side of the case. The base includes two parallel rails and two transverse bars are connected to two respective ends of each rail. Multiple wheels are connected to the two rails. A positioning device is connected to one of the two rails. Each rail has a middle rail having a first end and a second end and fixed to the underside of the case, a bottom rail having a first end and a second end and a top rail having a first end and a second end respectively and slidably connected to an underside and the top of the middle rail. The top and bottom rails are expanded relative to the middle rails. The two transverse bars are respectively located at the two respective first ends of the bottom rails and the two respective second ends of the top rails. The positioning device positions the two rails at an expanded position or a retracted position. The top and bottom rails are expanded relative to the case to provide more space to carry objects.

[0006] The base of the luggage case of the present invention is in retracted status and the luggage case is used as the conventional luggage case. When the top and bottom rails are expanded relative to the middle rails, the expanded top rails and the bottom rails provide extra space to carry extra cases and bags, so that the ability for carry luggage is increased. There are wheels supporting the expanded top rails and the bottom rails to stably carry the extra cases and bags. The manufacturing cost is low and the structure is simple, the base is easily assembled to the underside of the case. The base provides extra carry space.

[0007] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

Fig. 1 is an exploded view of the base of the luggage case of the present invention;
Fig. 2 is a perspective view to show that the base is in retracted status;
Fig. 3 is the top view to show that the base is in retracted status;
Fig. 4 is the front view to show that the base is in retracted status;
Fig. 5 shows that the base is in expanded status;
Fig. 6 is the top view of the base in expanded status;
Fig. 7 is the front view of the base in expanded status;
Fig. 8 shows that the base is in retracted status of the first embodiment of the luggage case of the present invention;
Fig. 9 shows that the base is in expanded status of the first embodiment of the luggage case of the present invention;
Fig. 10 shows that the base is in retracted status of the second embodiment of the luggage case of the present invention, and
Fig. 11 shows that the base is in expanded status of the second embodiment of the luggage case of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0009] Referring to Figs. 1 to 11, the luggage case of the present invention comprises a case 1 and a base 2.

[0010] The case 1 is a rectangular case and a handle 10 is retractably connected to one side of the case 1.

[0011] The base 2 is connected to the case 1 and has two rails 20 which are parallel to each other. Two transverse bars 30 are connected to two respective ends of each rail 20 and multiple wheels 40 are connected to the two rails 20. A positioning device 50 is connected to one

of the two rails 20 of the base 2. In this embodiment, the positioning device 50 is connected to the rail 20 at the front side or the rear side of the case 1. The following description is based on the positioning device 50 connected to the rail 20 at the front side.

[0012] As shown in Figs. 1, 2 and 5, each rail 20 comprises a middle rail 21, a bottom rail 22, a top rail 23, two roller strips 24 and a roller seat 25.

[0013] The middle rails 21 each have a first end and a second end. Each middle rail 21 has a U-shaped cross section and a middle rail slot 210 is defined in the top thereof. The middle rail slot 210 is located between two sidewalls of the middle rail 21. Each sidewall of the middle rail 21 has a wing 211 extending therefrom, and the wings 211 each have holes 212 through which bolts (not shown) extend so as to fix the middle rails 21 to the underside of the case 1. Each of the sidewalls of each middle rail 21 has a first recess 213 defined in the inside thereof, and each first recess 213 opens to first and second ends of the middle rail 21. Each of the sidewalls of each middle rail 21 has a second recess 214 defined in the outside thereof, and each second recess 214 opens to first and second ends of the middle rail 21. A first stop 215 is connected to the top surface of each of the middle rail slots 210 and located at the second end of each of the middle rails 21. Two first protrusions 216 are respectively connected to outside of the two sidewalls of each of the middle rails 21 and located at the first end of each of the middle rails 21. In this embodiment, the middle rails 21 can be connected to the underside of the case 1 by way of threading, welding or snapping.

[0014] The bottom rail 22 is slidably connected to the underside of the middle rail 21 and has a first end and a second end. The bottom rails 22 each have U-shaped cross section and a bottom rail slot 220 is defined in the top of the bottom rail 22. The two middle rails 21 are slidably received in the bottom rail slots 220. Each bottom rail slot 220 is located between two sidewalls of the bottom rail 22. Each of the two sidewalls of the bottom rail 22 has a side slot 221 defined in the inside thereof. Each side slot 221 opens to the first and second ends of the bottom rail 22. A second protrusion 222 extends from each of the side slots 221 of each of the bottom rails 22. The second protrusions 22 are located at the second end of the bottom rails 22. A second stop 223 extends from the bottom rail slot 220 of each of the bottom rails 22, and the second stop 223 is located at the first end of the bottom rail 22. The first end of each of the two middle rails 21 is stopped by the second stop 223 when the middle rails 21 are retracted in the bottom rail slots 220. A positioning slot 224 is defined in the outside of one of the two sidewalls of one of the bottom rails 22.

[0015] The top rail 23 slidably connected to the top of the middle rail 21, and has a first end and a second end. The sidewalls of each top rail 23 each have a top rail slot 230 defined in the outside thereof, and each top rail slot 230 opens to first and second ends of the top rail 23. A block 231 is formed on the underside of each of the top rails 23. The blocks 231 contact the first stops 215 to restrict the top rails 23 from sliding out from the middle rails 21 and to maintain a certain length that the top rails 23 extend beyond the middle rails 21.

[0016] The two roller strips 24 are slidably received in the two side slots 221 of each middle rail 21 and each roller strip 24 has multiple rollers 240 which are rotatably accommodated in the second recess 214 and the side slot 221 corresponding thereto. The two roller strips 24 enhance the smooth movement between the bottom rails 22 and the middle rails 21. When the bottom rails 22 move relative to the middle rails 21, two ends of each roller strip 24 contact the second protrusion 222 and the first protrusion 216 to restrict the bottom rails 22 from sliding out from the middle rails 21.

[0017] The roller seat 25 is slidably received in the middle rail slot 210 of each middle rail 21, and located between the top rail 23 and the middle rail 21. Each roller seat 25 has a U-shaped cross section and includes multiple rollers 250 rotatably connected to each of two sidewalls thereof. The rollers 250 of each of the roller seats 25 are rotatably accommodated in the first recess 213 and the top rail slot 230 corresponding thereto. The roller seat 25 enhances the smooth movement between the top rails 23 and the middle rails 21.

[0018] The two roller strips 24 can be replaced by one roller seat 25. Alternatively, the roller seat 25 can be replaced by the two roller strips 24.

[0019] As shown in Figs. 1, 2 and 5, one of the two transverse bars 30 is located at the two respective first ends of the bottom rails 22, and the other one of the two transverse bars 30 is located at the two respective second ends of the top rails 23.

[0020] Each of the two rails 20 has three wheels 40 connected thereto, wherein two of the three wheels 40 are connected to the first and second ends of the underside of each bottom rail 22, and the rest one of the three wheels 40 is connected to the first end of the top rail 23.

[0021] As shown in Figs. 2 to 4, the top rails 23 and the bottom rails 22 are able to be retracted to the top and bottom of the middle rails 21 to set the rails 20 to be the retracted status.

[0022] As shown in Figs. 5 to 7, the top rails 23 and the bottom rails 22 are able to be expanded from the top and bottom of the middle rails 21 to set the rails 20 to be the expanded status.

[0023] As shown in Figs. 1, 3, and 6, the positioning device 50 includes a resilient plate 51 and a control bar 52. The resilient plate 51 has the first end thereof fixed to one side of the first end of one of the top rails 23, and the second end of the resilient plate 51 has a hook 53. When the top rails 23 and the bottom rails 22 are retracted in the middle rails 21, the hook 53 is engaged with the positioning slot 224 of the bottom rail 22 to retract the rails 20. When the top rails 23 and the bottom rails 22 are extended relative to the middle rails 21, the hook 53 is engaged with the first end of the bottom rail 22 to maintain the rails 20 at expanded position. The control bar 52

has the first end fixed to the outside of the first end of the resilient plate 51. When operating the control bar 52, the resilient plate 51 swings to engage the hook 53 with the positioning slot 224 or to disengage the hook 53 from the positioning slot 224, and to engage the hook 53 with the first end of the bottom rail 22 or to disengage the hook 53 from the first end of the bottom rail 22.

[0024] As shown in Figs. 8 and 9, the first embodiment of the present invention is disclosed. The handle 10 is connected to the rear side of the case 1. The two rails 20 of the base 2 are parallel to the rear side of the case 1. When the two rails 20 are retracted relative to the case 1, the luggage case is used as the conventional luggage case. When the two rails 20 are expanded from the left and right sides of the case 1, objects such as the second cases or bags are supported on the expanded rails 20. When the two rails 20 are expanded, the top and bottom rails 23, 22 are extended from the left and right sides of the case 1, two support areas are formed one the left side and the right side of the case 1, so that objects 60 such as the second cases or bags are supported on the expanded rails 20. A strip 61 can be used to tie the bags or cases to the case 1. The user can even sit on the cases or bags if necessary.

[0025] As shown in Figs. 10 and 11, the second embodiment of the present invention is disclosed. The handle 10 is connected to the rear side of the case 1, and the two rails 20 of the base 2 are perpendicular to the rear side of the case 1. When the two rails 20 are retracted relative to the case 1, the luggage case is used as the conventional luggage case. When the two rails 20 are expanded, the top and bottom rails 23, 22 are extended from the rear side and the front side of the case 1, two support areas are formed on the rear side and the front side of the case 1, so that objects 60 such as the second cases or bags are supported on the expanded rails 20. A strip 61 can be used to tie the bags or cases to the case 1. The user can even sit on the cases or bags if necessary.

[0026] The present invention provides a space expandable luggage case, when the rails 20 of the base 2 are retracted, the luggage case is used as the conventional luggage case. When the rails 20 of the base 2 are expanded, the luggage case provides two more spaces on two opposite sides of the case 1 to carry more objects. The wheels 40 on the underside of the rails 20 provide sufficient support. The base 2 is easily manufactured at low cost. The base 2 is simply connected to the case 1 to have the features mentioned above. The assembling processes are simple, convenient and quick.

[0027] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

Claims

1. A luggage case comprising:

a case (1) having a handle (10) retractably connected to one side thereof;
a base (2) connected to the case (1) and having two rails (20) which are parallel to each other, two transverse bars (30) connected to two respective ends of each rail (20) and multiple wheels (40) connected to the two rails (20), a positioning device (50) connected to one of the two rails (20) of the base (2), each rail (20) having a middle rail (21), a bottom rail (22) and a top rail (23), the middle rails (21) fixed to the underside of the case (1) and having a first end and a second end, the bottom rail (22) slidably connected to an underside of the middle rail (21) and having a first end and a second end, the top rail (23) slidably connected to a top of the middle rail (21) and having a first end and a second end, one of the two transverse bars (30) located at the two respective first ends of the bottom rails (22), the other one of the two transverse bars (30) located at the two respective second ends of the top rails (23), the positioning device (50) positioning the two rails (20) at an expanded position or a retracted position.

2. The luggage case as claimed in claim 1, wherein each of the two rails (20) includes two roller strips (24) and a roller seat (25), the middle rails (21) each has a middle rail (21) slot defined in a top thereof, middle rail (21) slot located between two sidewalls of the middle rail (21), each sidewall of the middle rail (21) has a wing (211) extending therefrom, the wings (211) are fixed to the underside of the case (1), a first stop (215) connected to a top surface of each of the middle rail (21) slots and located at the second end of each of the middle rails (21), two first protrusions (216) are respectively connected to outside of the two sidewalls of each of the middle rails (21) and located at the first end of each of the middle rails (21), the bottom rails (22) each have a bottom rail (22) slot defined in a top thereof, the two middle rails (21) are slidably received in the bottom rail (22) slots, each bottom rail (22) slot is located between two sidewalls of the bottom rail (22), each of the two sidewalls of the bottom rail (22) has a side slot (221) defined in an inside thereof, each side slot (221) opens to the first and second ends of the bottom rail (22), a second protrusion (222) extends from each of the side slots (221) of each of the bottom rails (22), the second protrusions (222) are located at the second end of the bottom rails (22), a second stop (223) extends from the bottom rail (22) slot of each of the bottom rails (22), the second stop (223) is located at the first end of the bottom rail (22), the first end of

each of the two middle rails (21) is stopped by the second stop (223) when the middle rails (21) are retracted in the bottom rail (22) slots, the top rails (23) are slidably received in the middle rail (21) slots, a block (231) is formed on an underside of each of the top rails (23), the blocks (231) contact the first stops (215) to restrict the top rails (23) from sliding out from the middle rails (21) and to maintain a certain length that the top rails (23) extend beyond the middle rails (21), the two roller strips (24) are slidably received in the two side slots (221) of each middle rail (21) and each roller strip (61) has multiple rollers (240) which are accommodated between the respective sidewalls of the middle rail (21) and the bottom rail (22), when the bottom rails (22) move relative to the middle rails (21), two ends of each roller strip (61) contact the second protrusion (222) and the first protrusion (216) to restrict the bottom rails (22) from sliding out from the middle rails (21), the roller seat (24) is slidably received in the middle rail (21) slot of each middle rail (21), and located between the top rail (23) and the middle rail (21), each roller seat (24) includes multiple rollers (240) rotatably connected to each of two sidewalls thereof, the rollers (250) are in contact with the sidewalls of the middle rail (21) and the top rail (23) corresponding thereto.

3. The luggage case as claimed in claim 2, wherein each of the wings (211) has multiple holes (212) which are adapted to allow bolts extend therethrough to fix the wings (211) to the underside of the case (1).

4. The luggage case as claimed in claim 2, wherein each of the sidewalls of each middle rail (21) has a first recess (213) defined in an inside thereof, and each first recess (213) opens to first and second ends of the middle rail (21), each of the sidewalls of each middle rail (21) has a second recess (214) defined in an outside thereof, and each second recess (214) opens to first and second ends of the middle rail (21), the sidewalls of each top rail (23) each have a top rail (23) slot defined in an outside thereof, and each top rail (23) slot opens to first and second ends of the top rail (23), the rollers (250) of each roller strip (61) are rotatably accommodated in the second recess (214) and the side slot (221) corresponding thereto, the rollers (250) of each of the roller seats (24) are rotatably accommodated in the first recess (213) and the top rail (23) slot corresponding thereto.

5. The luggage case as claimed in claim 2, wherein one of the bottom rails (22) includes a positioning slot (224) defined in an outside of one of the two sidewalls thereof, the positioning device (50) includes a resilient plate (51) and a control bar (52), the resilient plate (51) has a first end thereof fixed to one side of the first end of one of the top rails (23), a second end of the resilient plate (51) has a hook (53), when the top rails (23) and the bottom rails (22) are retracted in the middle rails (21), the hook (53) is engaged with the positioning slot (224) of the bottom rail (22) to retract the rails (20), when the top rails (23) and the bottom rails (22) are extended relative to the middle rails (21), the hook (53) is engaged with the first end of the bottom rail (22) to maintain the rails (20) at expanded position, the control bar (52) has a first end fixed to an outside of the first end of the resilient plate (51), when operating the control bar (52), the resilient plate (51) swings to engage the hook (53) with the positioning slot (224) or to disengage the hook (53) from the positioning slot (224), and to engage the hook (53) with the first end of the bottom rail (22) or to disengage the hook (53) from the first end of the bottom rail (22).

6. The luggage case as claimed in claim 5, wherein each of the two rails (20) has three wheels (30) connected thereto, wherein two of the three wheels (30) are connected to the first and second ends of an underside of each bottom rail (22), the rest one of the three wheels (30) is connected to the first end of the top rail (23).

7. The luggage case as claimed in claim 5, wherein the case (1) is a rectangular case.

8. The luggage case as claimed in claim 7, wherein the handle (10) is connected to a rear side of the case (1), the two rails (20) of the base (2) are parallel to the rear side of the case (1), when the two rails (20) are expanded from the right side and the left side of the case (1), objects (60) are supported on the expanded rails (20).

9. The luggage case (1) as claimed in claim 7, wherein the handle (10) is connected to a rear side of the case (1), the two rails (20) of the base (2) are perpendicular to the rear side of the case (1), when the two rails (20) are expanded from the rear side and a front side of the case (1), objects are supported on the expanded rails (20).

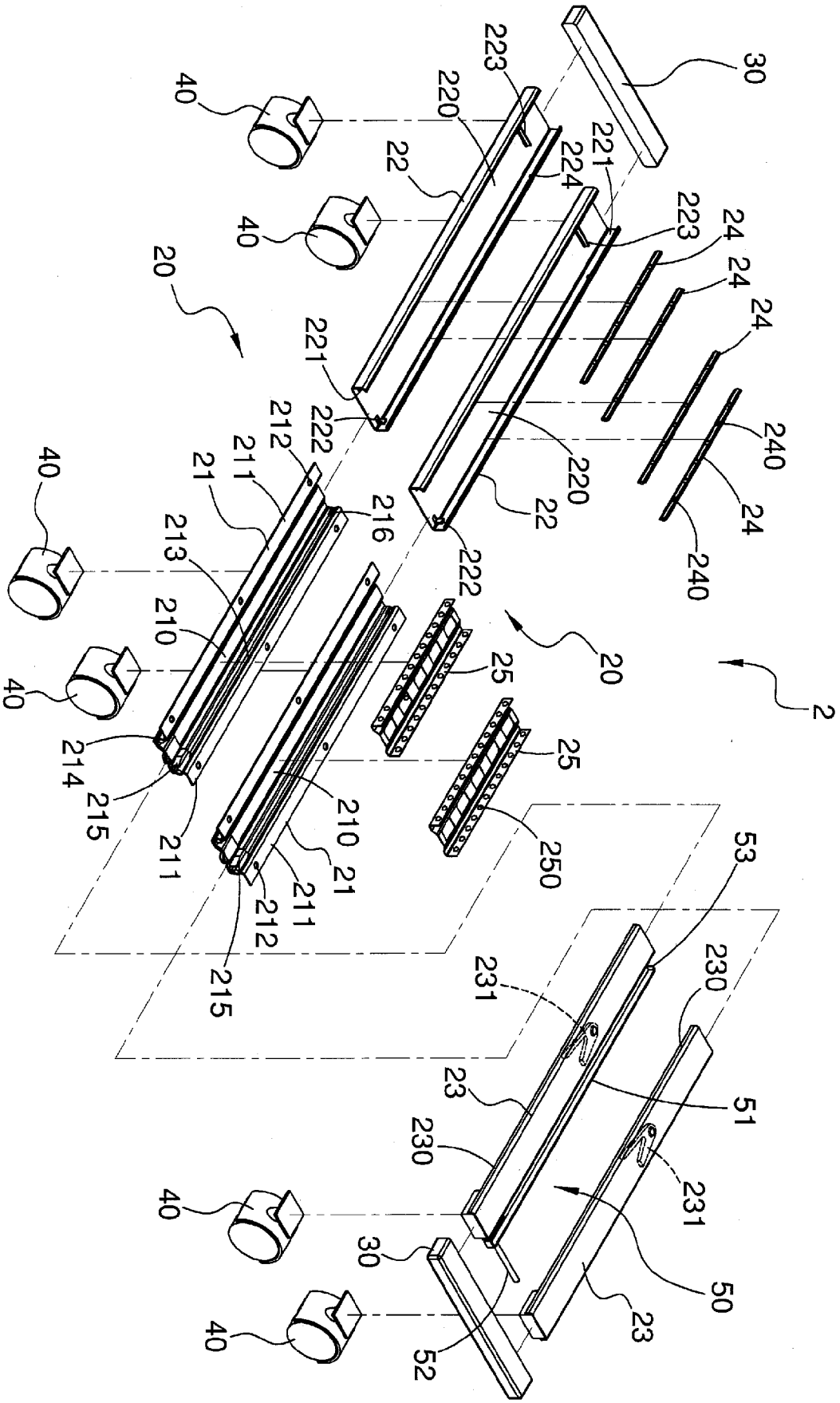
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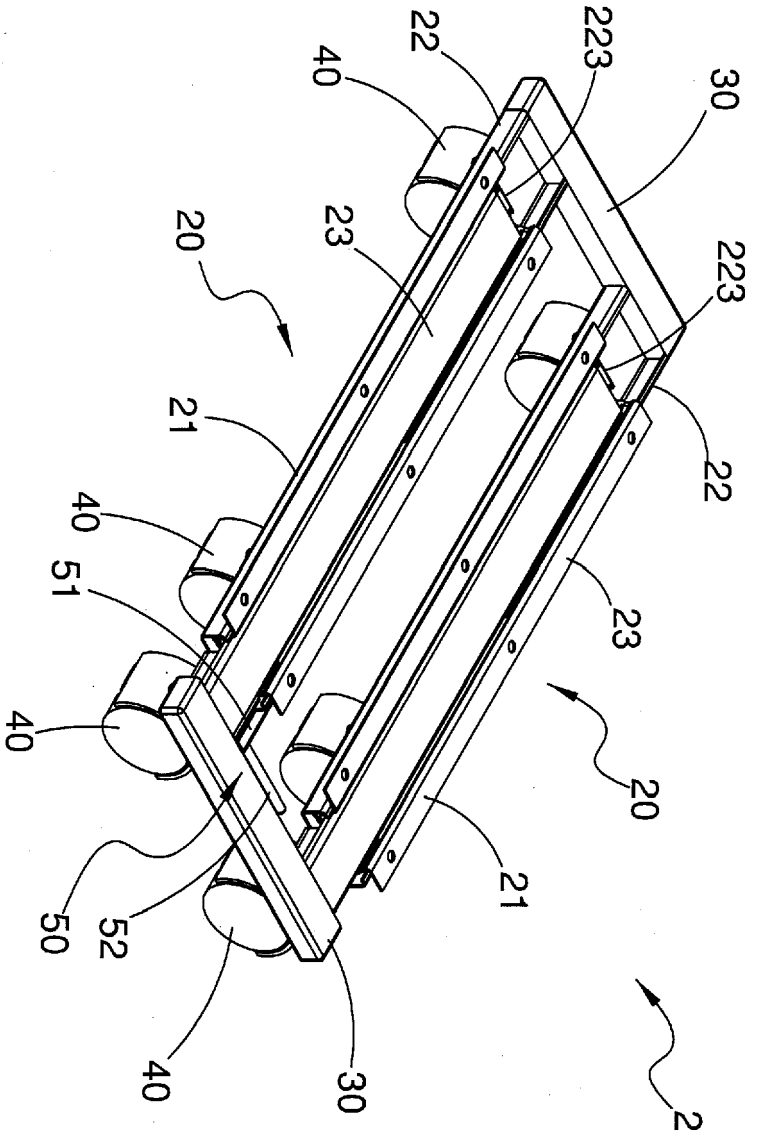
FIG.1

FIG.2



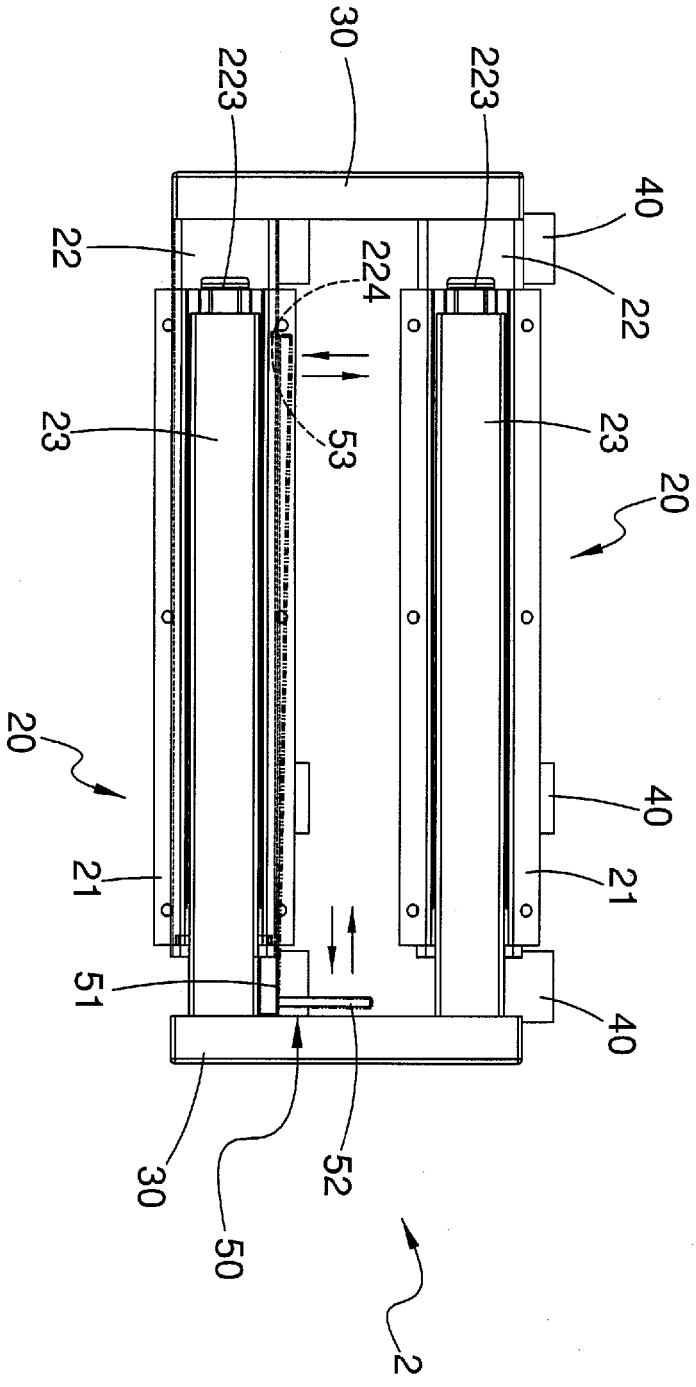

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FIG.3

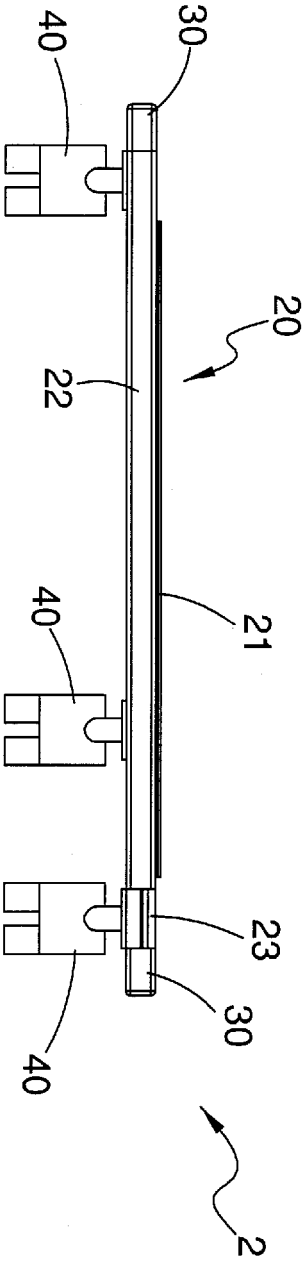
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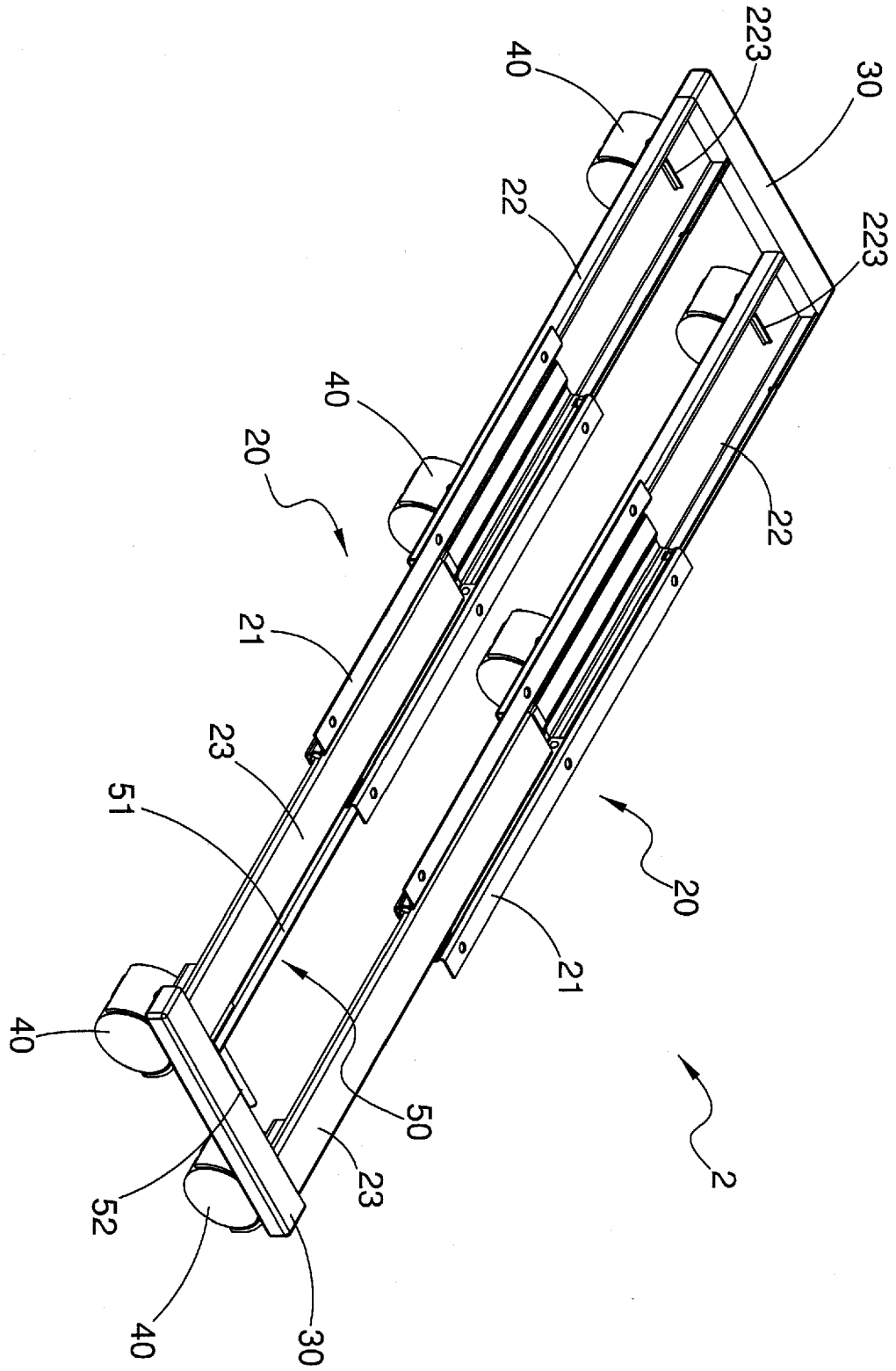
FIG.4

FIG.5



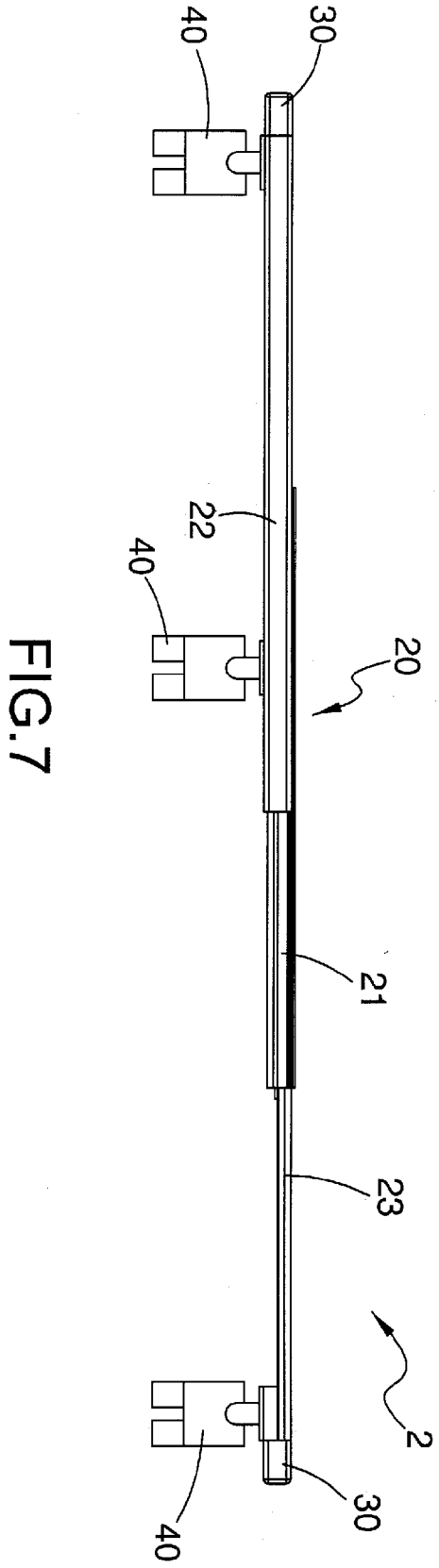

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FIG.7

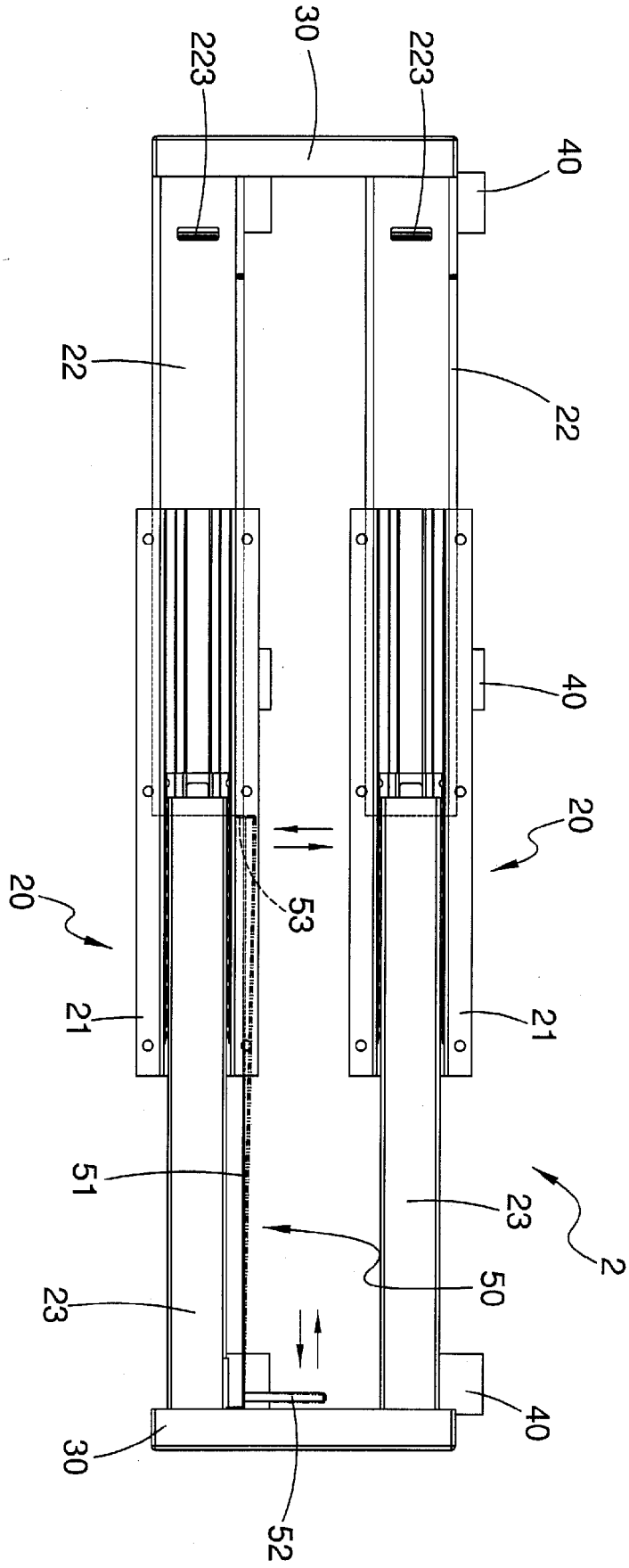
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FIG.6

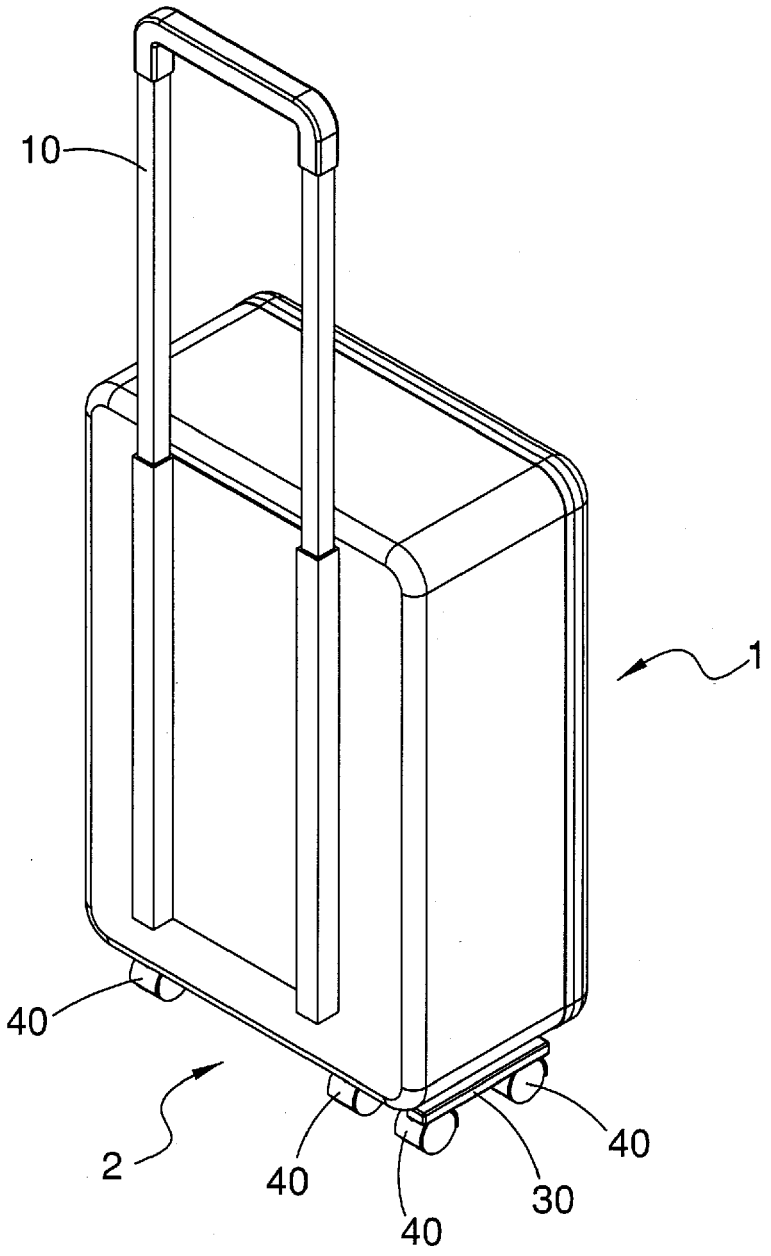

FIG.8

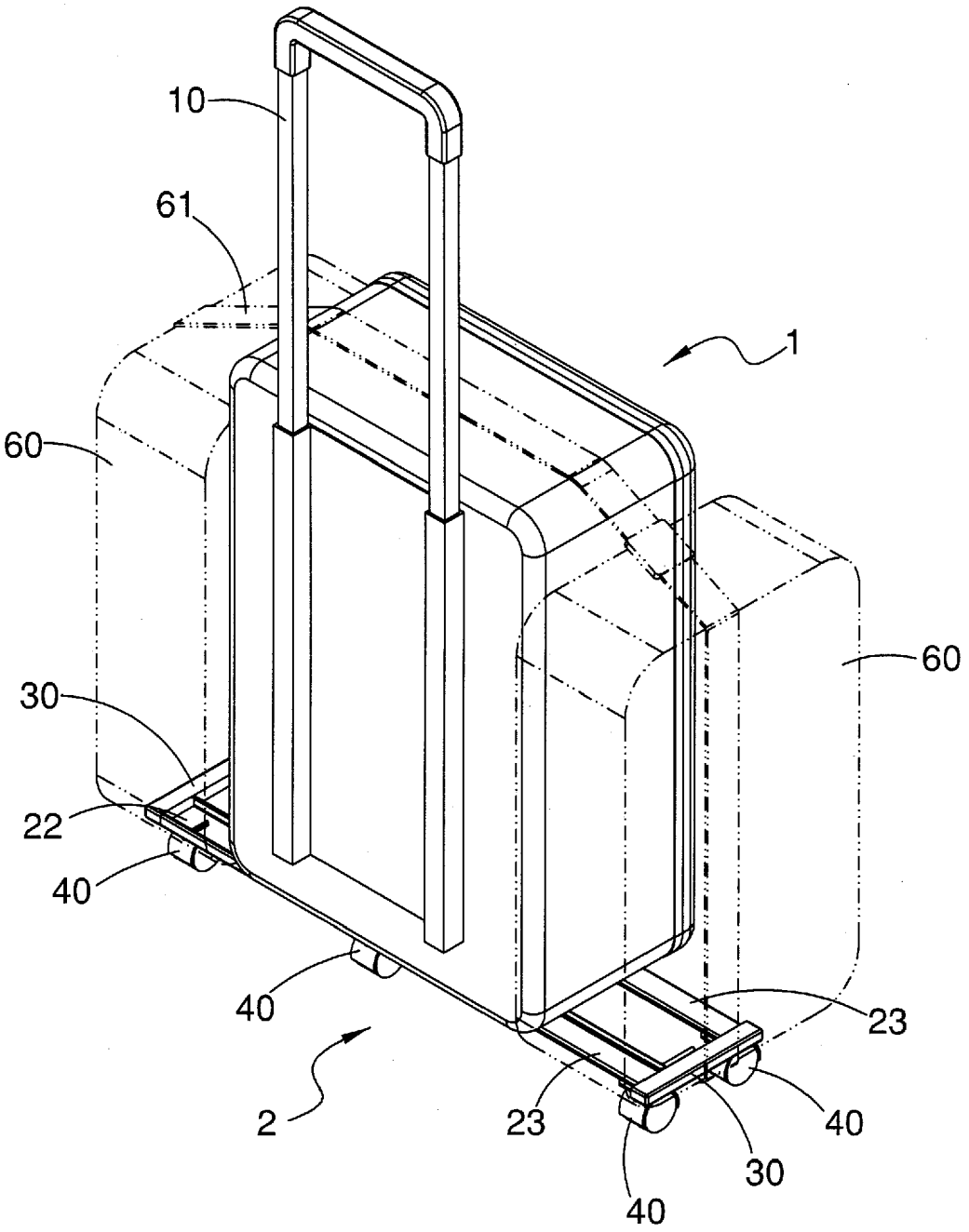

FIG.9

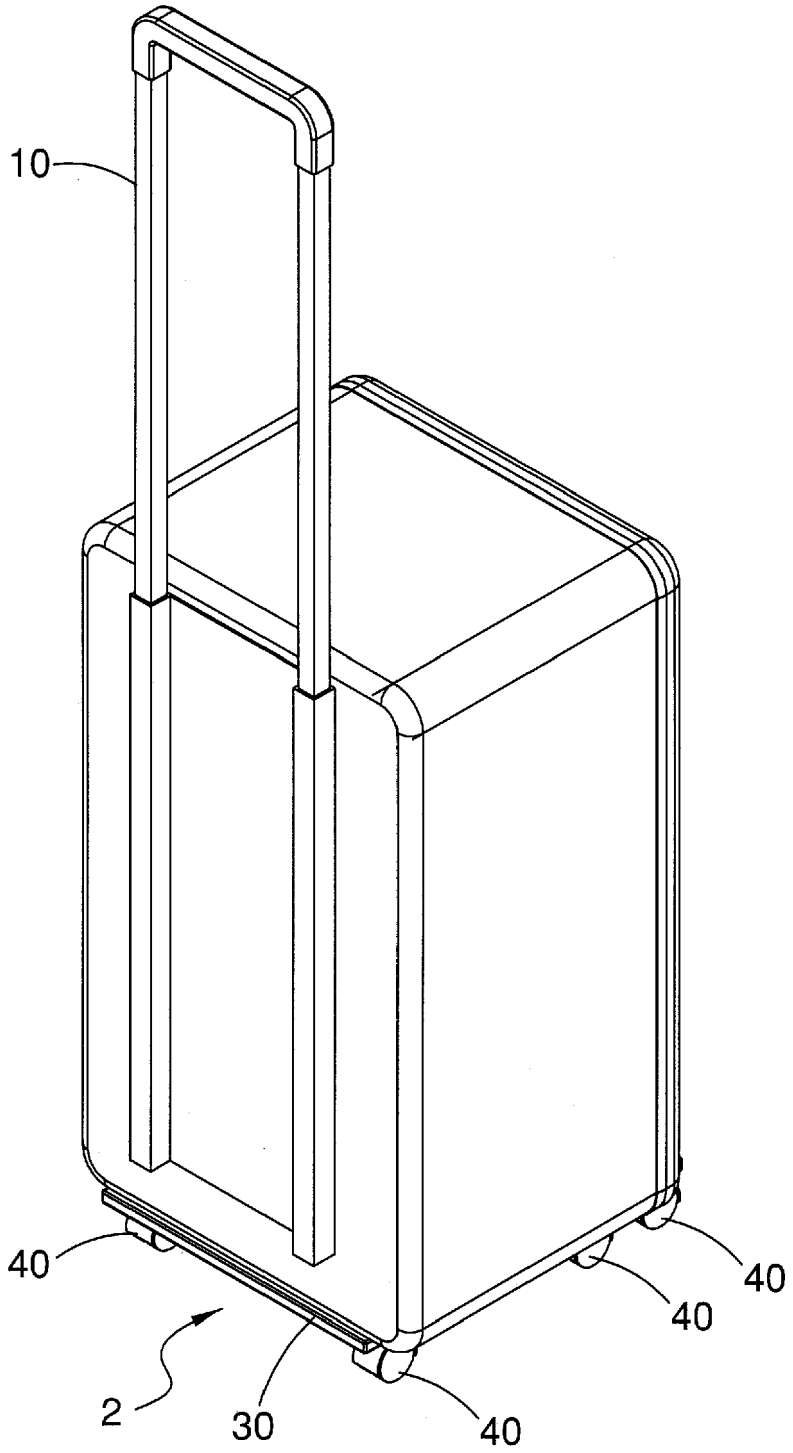

FIG.10

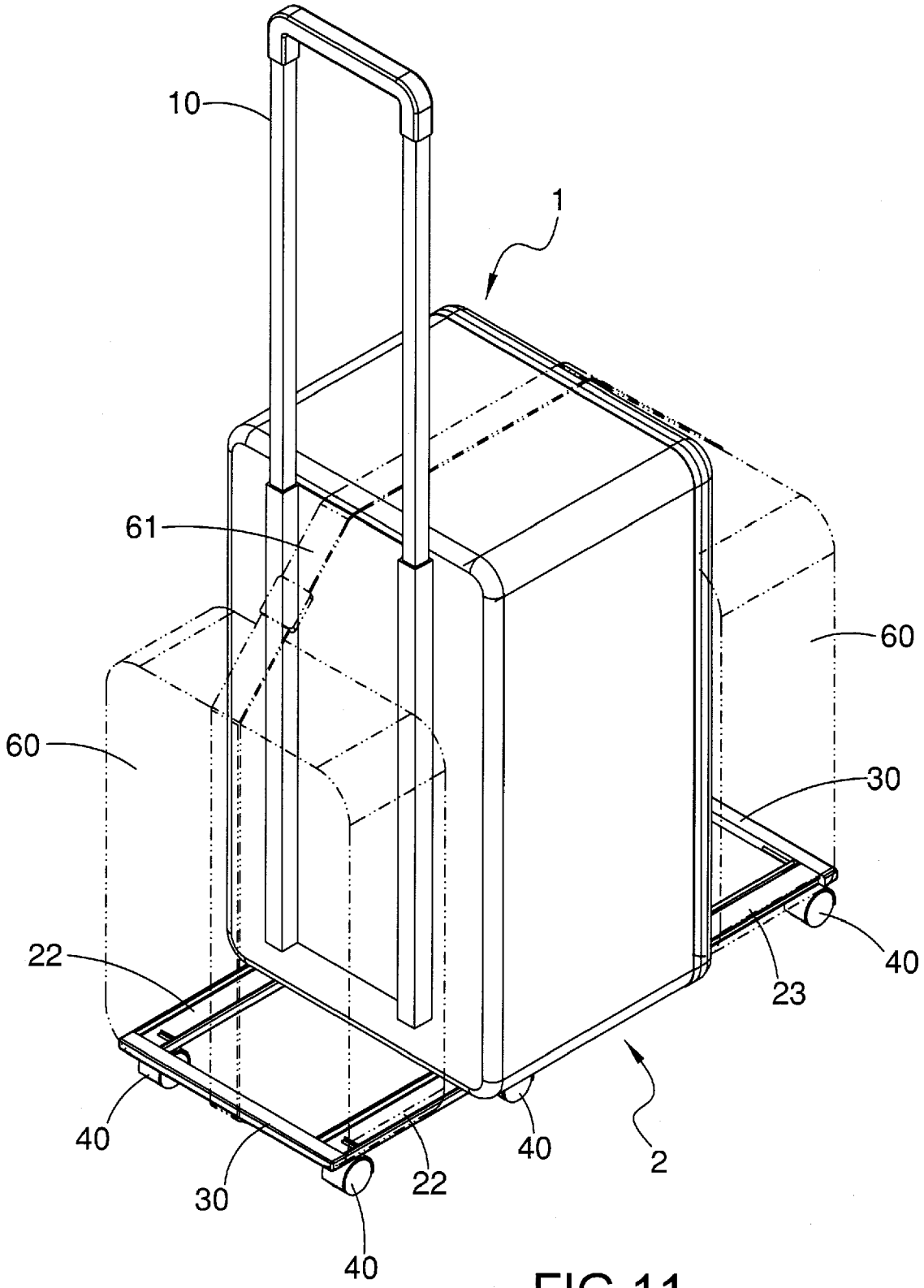

FIG.11

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European Patent Office
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EUROPEAN SEARCH REPORT

Application Number
EP 17 16 8907

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2015/208776 A1 (BENNETT CHARLES EVANS [US]) 30 July 2015 (2015-07-30) * abstract * -----	1	INV. A45C7/00 A45C13/00 A45C13/04
A	WO 2010/094824 A1 (ARAUJO ALONSO JAIME [ES]; REVERTER SANTASUSAGNA JOAN [ES]) 26 August 2010 (2010-08-26) * abstract * -----	1	A45C13/38 A45C9/00

TECHNICAL FIELDS SEARCHED (IPC)

A45C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 June 2017	Nicolás, Carlos

CATEGORY OF CITED DOCUMENTS

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E : earlier patent document, but published on, or after the filing date
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 16 8907

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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21-06-2017

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