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DESCRIPTION

FIELD OF THE INVENTION

[0001] The present invention relates to logistics equipment, namely to load carriers. In particular, the invention relates to retrofit accessories for nestable roll containers. More specifically, the invention relates to a shelf, roll container and method according to the preamble portions of claims 1, 10 and 11, respectively.

BACKGROUND ART

[0002] Roll containers are used for various tasks ranging from transporting only one large piece, e.g. a painting, to transporting a large number of small items, e.g. letters. For the purpose of transporting large items it is quite common to order a new roll container without any accessories, whereby the roll container only contains a chassis, castors and two fixed walls. For the purpose of collecting small items, however, a new roll container is typically ordered with a shelf for dividing the inner volume of the roll container, which not only improves occupational safety but also protects the collected items in the bottom section of the container from the weight of stacked items in the same batch.

[0003] Figs. 1 to 5 illustrate one example of such an accessory shelf (200) which is designed to be installed between the opposing side walls (110, 120) of a roll container during the manufacture of the roll container (100). The first end (210) of the shelf (200) is pivoted to the frame profile (111) of the first wall (110) via a hinge (211) which is locked to the profile (111) by means of screws (cf. Fig. 2). The first end (210) also has a support (212) which limits the vertical movement of the shelf (200) by engaging with a horizontal wire (113) of the mesh of the first wall (110) from below. The opposing end (220), i.e. the second end, of the shelf (200) has downward extending and curved protrusions (222) for further limiting the angular position of the shelf (200) to the horizontal position by engaging with a horizontal wire (123) of the mesh of the second wall (120) from above (cf. Figs. 3 and 5). The second end (220) of the shelf (200) also has an upwardly extending straight protrusion (221) which is used for locking the shelf (200) to a vertical folded position in which the protrusion (221) engages with a specially designed angular wire in the mesh of the first wall (110) (cf. Fig. 4).

[0004] EP 0326767 A1, on the other hand, discloses a roll container according to the preamble of claim 1 having a shelf with two ends and pivoting means at one end for pivoting the shelf to a frame profile between a horizontal load carrying configuration and a vertical folding configuration. Locking means are used at the other end for locking the shelf into the two configurations. The average life span of a roll container is about 10 years. During its expected life span, the roll container may be used for new tasks which require features which were not installed in the original configuration of the roll container. One example would be a roll container which was originally intended to be used for transporting a small number of large items within a factory and which is subsequently used for collecting a large number of smaller items for shipping outside the factory. Should the purpose of the roll container change to the collection of smaller items, it is necessary to install a retrofit shelf for dividing the inner volume of the roll container.

[0005] A problem associated with known accessory shelves for roll containers is that they require the use of tools, e.g. in attaching the hinge (cf. Figs. 2 and 5). Simple non-folding shelves are also known, but they are not ideal for the reasons that detachable become lost very easily as - instead of folding away - they must be stored somewhere.

AIM OF THE INVENTION

[0006] It is therefore an aim of the present invention to provide a folding accessory shelf for a roll container which may be readily retrofitted.

[0007] It is a particular aim to provide a folding accessory shelf for a roll container which may be retrofitted without the use of tools or modification of the roll container in any way.

SUMMARY

[0008] The aim of the present invention is achieved with aid of a novel shelf for a roll container, a roll container including such a shelf and with a method of retrofitting such a shelf to a roll container.

[0009] According to the first aspect, the novel shelf includes a first end and a second end, which opposes the first end. The shelf also includes pivoting means, which is provided to the first end of the shelf for pivoting the shelf to a frame profile of a first wall of the roll container between a horizontal load carrying configuration and a vertical folding configuration. Included in the shelf is also locking means, which is provided to the second end of the shelf for resting the shelf in a load carrying orientation to a second wall of the roll container disposed at a distance from and opposing the first wall. The locking means is also configured to engage with a horizontal element of the first wall from suspending the shelf from the horizontal element of the first wall, when the shelf is in the vertical folding configuration. Furthermore, the pivoting means includes two slide members, which oppose each other at the first end of the shelf. The slide members are shaped to at least partly envelop a vertical section of a frame profile of the first wall of the roll container such so as to slide along corresponding opposing vertical sections of the frame profile of the first wall, whereby the shelf may be retrofitted to the roll container. Included in the pivoting means is also an axle, which is connected to at least one of said slide members to extend towards the other hinge member such to create an axis of revolution for the shelf. The pivoting means further includes a limiter, which is connected to the axle and set up to be rotated about said axis of revolution in respect to said at least one slide member and to engage with a horizontal element of the first wall for positioning the shelf vertically into the load carrying configuration.

[0010] More specifically, the shelf according to the present invention is characterized by the characterizing portion of claim 1.

[0011] According to another aspect, the novel roll container includes a first wall having a frame profile as well as horizontally and vertically extending elements. The roll container also includes a second wall, which opposes the first wall at a distance there from and which second wall has a frame profile as well as horizontally and vertically extending elements. The roll container further includes a shelf as described above.

[0012] More specifically, the roll container according to the present invention is characterized by the characterizing portion of claim 10.

[0013] According to a third aspect, in the novel method of retrofitting an above-described shelf to a roll container a shelf the slide members of the shelf are aligned with opposing vertical sections of a frame profile a first wall of the roll container. The shelf is slid into a desired height and the second end of the shelf is descended toward a horizontal position load carrying position. The shelf is locked into the horizontal load carrying position by setting the locking means of the shelf to rest against a horizontal element of a second wall of the roll container opposing the first wall, wherein the limiter at the first end of the shelf rests against a horizontal element of the first wall of the roll container.

[0014] More specifically, the method according to the present invention is characterized by the characterizing portion of claim 11.

BENEFITS

[0015] Considerable benefits are gained with aid of the present invention. By virtue of the slide members the shelf may be attached to the wall of the roll container simply by sliding the first end of the shelf along the frame profile. Accordingly, the installation requires no tools.

[0016] According to the invention the free end of the shelf includes locking means for locking the shelf to the opposing second wall in the load carrying orientation. The locking means is shaped to engage with a horizontal element, such as a mesh wire, of the first wall, whereby the retrofit shelf may be pivoted to a folding configuration without the need of modifying the roll container.

BRIEF DESCRIPTION OF DRAWINGS

[0017] In the following, exemplary embodiments of the invention are described in greater detail with reference to the accompanying drawings in which:

Fig. 1 presents an isometric view of a roll container having a shelf according to the prior art in a horizontal load carrying orientation,

Fig. 2 presents a detail view of the pivoted end of the shelf of Fig. 1,

Fig. 3 presents a detail view of the terminal end of the shelf of Fig. 1,

Fig. 4 presents a detail view of the terminal end of the shelf of Fig. 1 in a vertical folded orientation,

Fig. 5 presents a detail view of the pivoted end of the shelf of Fig. 1 in a vertical folded orientation,

Fig. 6 presents an isometric view of a shelf according to one embodiment in a horizontal load carrying orientation,

Fig. 7 presents a detail view of area A of Fig. 6,

Fig. 8 presents a detail view of area B of Fig. 6,

Fig. 9 presents an isometric view of the shelf of Fig. 6 in a vertical folded position,

Fig. 10 presents a detail view of area C of Fig. 9, and

Fig. 11 presents a detail view of area D of Fig. 9.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0018] As can be seen from Figs. 6 to 11, the shelf 200 according to one embodiment is retrofitted between two walls of a roll container 100, namely the first and second wall 110, 120. The shelf 200 has two ends. The first end 210 is connected to the first wall 110 of the roll container 100 and acts as a pivoting point. The second end 220 is the free terminal end of the shelf 200 which is moved between the horizontal load carrying configuration (cf. Figs. 6 to 8) and vertical folded configuration (cf. Figs. 9 to 11).

[0019] Turning now to Fig. 7 which shows a detail view of the connection between the first end 210 of the shelf 200 and the first wall 110 of the roll container 100. The first end 210 includes two opposing slide members 211 provided to opposite lateral ends of the shelf 200. The slide members 211 are configured to slide along their respective vertical sections of the frame profile 111 of the first wall 110. The slide members 211 are shaped to envelop at least the outer portion of the frame profile 111 such that the slide member 211 is free to slide past horizontal wires 113 of the mesh. The illustrated example exhibits a cross-sectional shape substantially that of the letter C. The slide member 211 is further dimensioned such to provide a rotation fit between the slide member 211 and the frame profile 111.

[0020] Connected to the slide member 211 is an axle 213 which extends towards the other hinge member such to create an axis of revolution for the shelf 200. In the illustrated example the two slide members 211 are connected by one axle 213, but each slide member 211 could have its own axle which would extend towards the other slide member but terminate before joining the other slide member 211. A limiter 212 is arranged to the axle 213. In the shown example, there are three limiters 212 arranged along one axle 213 joining the two slide members 211. Should there be two axles (not shown), both axles would have their own limiters 212. The limiter 212 includes an enclosing portion, which encloses the axle 213, and a tab portion which extends from the enclosing portion. The tab portion is dimensioned to engage vertically with the horizontal wire 113 of the mesh or another horizontal element of the first wall 110 of the roll container 100. Instead of a horizontal wire 113 such a horizontal element could be a retrofitted stopper piece (not shown) which is provided between opposing vertical sections of the frame profile 110. Thus, the limiter 212 may engage with a horizontal element of the first wall 110 for locking the shelf 200 vertically into the load carrying configuration.

[0021] The limiter 212 is configured to be rotated about the axis of revolution of the shelf 200. According to the illustrated embodiment, the enclosing portion of the limiter 212 encloses the axle 213 in a rotatable manner such that there is a rotation fit between the enclosing portion and the axle 213. This rotation fit enables the limiter 212 to rotate in respect to the slide member 211 thus creating the axis of revolution of the shelf 200. In this embodiment, the axle 213 is fixed to the slide member 211. When in the horizontal load carrying configuration (cf. Fig. 7), the tab portion of the limiter 212 rests against the horizontal wire 113 of the mesh of the first wall 110 thus positioning the shelf 200 vertically. When in the vertical folding configuration (cf. Fig. 11), the tab portion is detached through rotation from the wire 113.

[0022] According to an alternative embodiment (not shown), the axle is rotatably connected to the slide member, wherein the limiter is angularly fixed to the axle. In this embodiment, the rotation between the limiter and slide member is provided with a sleeve (not shown) arranged to the slide member, wherein the axle is attached to the slide member via the sleeve with a rotation

fit between the sleeve and axle.

[0023] Turning now to Figs. 8 and 10 which show detailed views of the connection between the second end 210 of the shelf 200 and walls 110, 120 of the roll container 100. The second end 210 includes locking means 221, 222 for locking the shelf 200 on the one hand to the opposing second wall 120 in the load carrying orientation and on the other hand to the first wall 110 in the folding orientation. In particular, the locking means has a first protrusion 221 which is configured to engage with the horizontal wire 113 of the mesh or other horizontal element of the first wall 110, when the shelf 200 is in the folded configuration. The first protrusion 221 extends upward from a horizontal shelf 200 and is curved for enabling the shelf 200 to be suspended from the horizontal element of the first wall 100. In the illustrated example, the first protrusion 221 has a claw-like shape. The locking means also has a second protrusion 222 which extends to the opposite direction than the first protrusion 221. The second protrusion 222 is configured to engage with the horizontal wire 123 of the mesh or other horizontal element of the second wall 120 of the roll container, when the shelf 200 is in the load carrying configuration. The second protrusion 222 extends downward from a horizontal shelf 200 for enabling the shelf 200 to rest against the horizontal element of the first wall 100. In the illustrated example, the first protrusion 221 has a shape resembling the letter L. As may also be seen from the Figs., the locking means, i.e. the first and second protrusions 221, 222, are formed as one piece which is attached to the second end of the mesh 230 of the shelf, wherein the piece is simply shaped to exhibit protrusions to both directions normal to the plane of the mesh 230.

[0024] The shelf 200 as described above is retrofitted to a roll container 100 by aligning the slide members 211 with the opposing vertical sections, e.g. side tubes, of frame profile 110, of the first wall 110. The shelf 200 is slid into the desired height, where after the second end 220 of the shelf 200 is descended toward the horizontal position. The shelf 200 is locked into the horizontal load carrying position by setting the locking means, namely the second protrusion 222, to rest against a horizontal element, such as a wire 123 of the mesh, of the second wall 120. At the first end 210 of the shelf 200, the tab portion of the limiter 212 rests against the opposing horizontal element, e.g. a wire 113 of the mesh, of the first wall 110. The height of the shelf 200 may be adjusted by elevating the second end 220, sliding the slide members 211 to the desired direction and locking the height by bringing the locking means 222 of the second end 220 into contact with the corresponding horizontal element of the second wall 120. The shelf 200 is removed from the roll container 100 by performing the acts of installation in a reversed order.

TABLE 1: LIST OF REFERENCE NUMBERS.

Number	Part
100	roll container
110	1st wall
111	frame profile
112	vertical wire of mesh
113	horizontal wire of mesh
120	2nd wall
121	frame profile
122	vertical wire of mesh
123	horizontal wire of mesh
200	shelf
210	1st end
211	slide member
212	limiter
213	axle
220	2nd end
221	1st protrusion
222	2nd protrusion
230	mesh

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP0326767A1 [0004]

Patentkrav

1. Hylde (200) til en rullebeholder (100), hyliden (200) omfattende:

- en første ende (210),
- 5 - en anden ende (220) modstående den første ende (210),
- drejeorgan tilvejebragt til den første ende (210) af hyliden (200) for at dreje hyliden (200) til en rammeprofil (111) af en første væg (110) af rullebeholderen (100) mellem en horisontal lastbærende konfiguration og en vertikal sammenfoldende konfiguration, og
- 10 - låseorgan (221, 222) tilvejebragt til den anden ende (220) af hyliden (200) for at stille hyliden (200) i en lastbærende orientering mod en anden væg (120) af rullebeholderen (100) anbragt i en afstand fra og modstående den første væg (110), hvor låseorganet (221, 222) også er konfigureret til at indgribe med et horisontalt element (113) af den første væg (110) for at
- 15 ophænge hyliden (200) fra det horisontale element af den første væg (100), når hyliden (200) er i den vertikalt sammenfoldende konfiguration,

kendetegnet ved at drejeorganet omfatter:

- to glideelementer (211) modstående hinanden ved den første ende (210) af hyliden (200), hvilke glideelementer (211) er formet til mindst delvist at
- 20 omslutte et vertikalt afsnit af en rammeprofil (111) af den første væg (110) af rullebeholderen (100) for at glide langs tilsvarende modstående vertikale afsnit af rammeprofilen (111) af den første væg (110), hvorved hyliden (200) kan blive eftermonteret til rullebeholderen (100),
- en aksel (213) forbundet til mindst et af glideelementerne (211) for at
- 25 strække sig mod det andet hængselement for at skabe en omdrejningsakse for hyliden (200), og
- en begrænser (212) forbundet til akslen (213), hvor begrænseren (212) er konfigureret til at blive roteret omkring omdrejningsaksen i forhold til det mindst ene glideelement (211) og til at indgribe med et horisontalt
- 30 element (133) af den første væg (110) for at positionere hyliden (200) vertikalt i den lastbærende konfiguration.

2. Hyliden (200) ifølge krav 1, hvor de horisontalt og vertikalt udstrækkende elementer er horisontale og vertikale tråde (112, 113; 122, 123) af et net

35 tilvejebragt til rammeprofilen (111, 121).

- 3.** Hylden (200) ifølge krav 1 eller 2, hvor glideelementet (211) har en tværsnitsform i alt væsentligt den af bogstavet C.
- 4.** Hylden (200) ifølge krav 1, 2 eller 3, hvor begrænseren (212) har:
- 5 - en omsluttende del omsluttende akslen (213) og
- en fligdel strækkende sig fra den omsluttende del.
- 5.** Hylden (200) ifølge krav 2 og 4, hvor fligdelen dimensioneres til at indgribe vertikalt med den horisontale tråd (113) af nettet af den første væg (110) af
- 10 rullebeholderen (100).
- 6.** Hylden (200) ifølge krav 4 eller 5, hvor den omsluttende del omslutter akslen (213) på en roterbar måde, idet der er en rotationstilpasning mellem den omsluttende del og akslen (213).
- 15
- 7.** Hylden (200) ifølge et hvilket som helst af kravene 1 til 5, hvor akslen (213) er roterbart forbundet til glideelementet (211) og hvor begrænseren (212) er vinklet fastgjort til akslen (213).
- 20 **8.** Hylden (200) ifølge et hvilket som helst af de foregående krav 2 til 7, hvor låseorganet (221) omfatter et første fremspring (221), som er konfigureret til at indgribe med den horisontale tråd (113) af nettet af den første væg (110), når hylden (200) er i den sammenfoldede konfiguration.
- 25 **9.** Hylden (200) ifølge krav 8, hvor låseorganet (221) omfatter et andet fremspring (222) som strækker sig til den modsatte retning end det første fremspring (221) og som er konfigureret til at indgribe med den horisontale tråd (123) af nettet af den anden væg (120), når hylden (200) er i den lastbærende konfiguration.
- 30
- 10.** Rullebeholder (100) omfattende:
- en første væg (110) med en rammeprofil (111) samt horisontalt og vertikalt strækkende elementer (112, 113), og

- en anden væg (120) modstående den første væg (110) i en afstand derfra, hvilken anden væg (120) har en rammeprofil (121) samt horisontalt og vertikalt strækkende elementer (122, 123),

kendetegnet ved en hylde (200) ifølge et hvilket som helst af de foregående
5 krav.

11. Fremgangsmåde til eftermontering af en hylde (200) til en rullebeholder (100), **kendetegnet ved:**

- tilvejebringelse af en hylde (200) ifølge et hvilket som helst af de
10 foregående krav 1 til 9,
- tilpasning af glideelementerne (211) af hylden med modstående vertikale afsnit af en rammeprofil (110) en første væg (110) af rullebeholderen (100),
- glidning af hylden (200) til en ønsket højde,
- 15 - bevæge nedadgående den anden ende (220) af hylden (200) mod en horisontal lastbærende position, og
- låsning af hylden (200) i den horisontale lastbærende position ved indstilling af låseorganet af hylden (200) til at hvile mod et horisontalt element af en anden væg (120) af rullebeholderen (100) modstående den
20 første væg (110), hvor begrænseren (212) ved den første ende af hylden (200) hviler mod et horisontalt element af den første væg (110) af rullebeholderen (100).

DRAWINGS

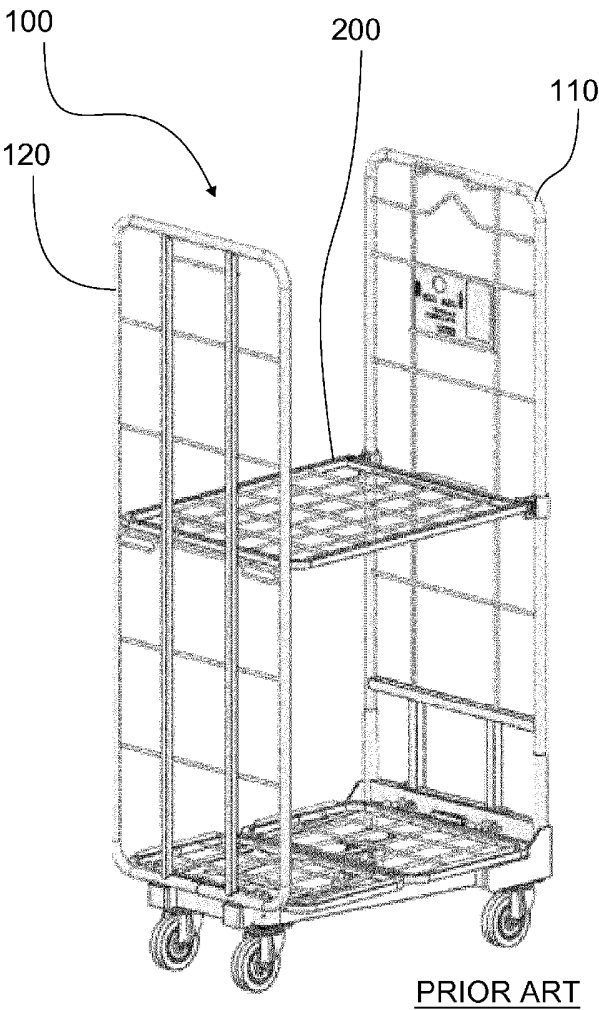
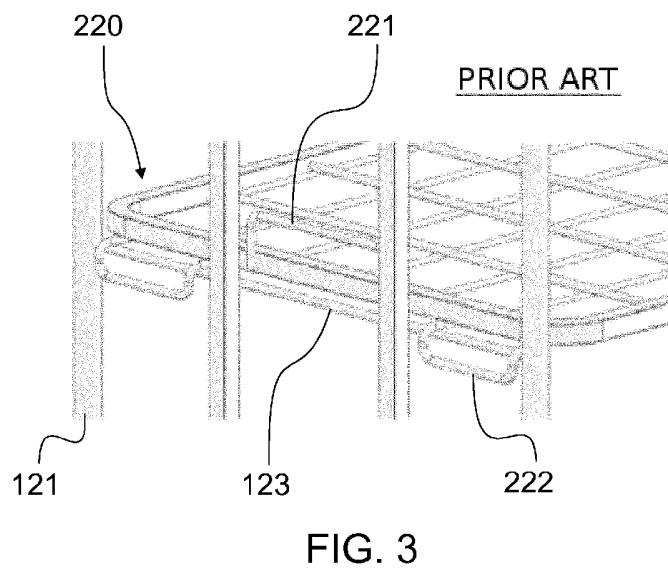
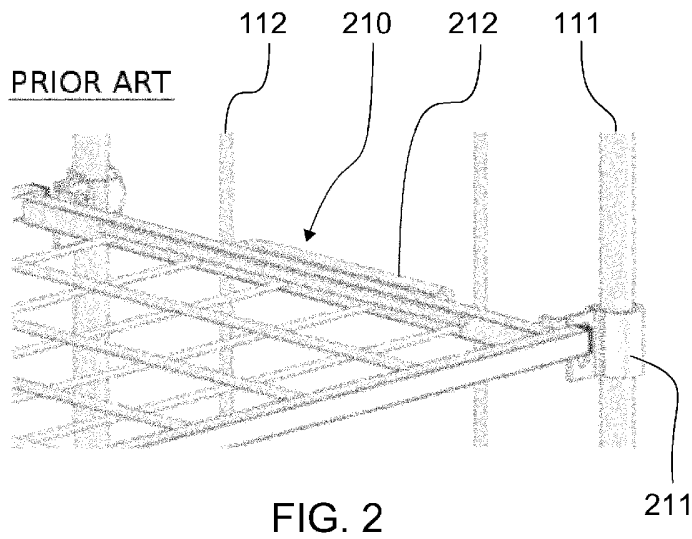


FIG. 1



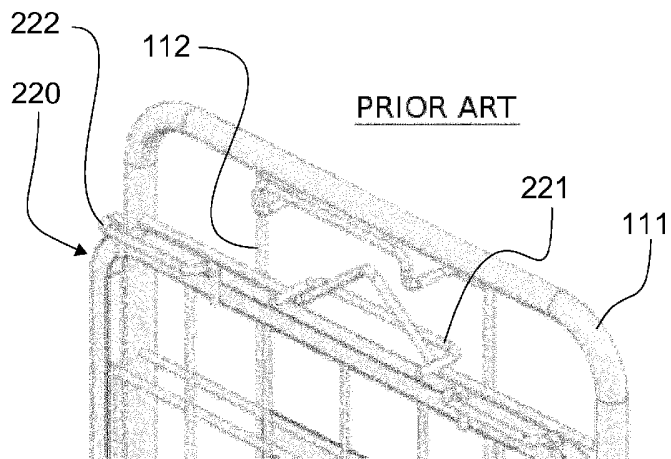


FIG. 4

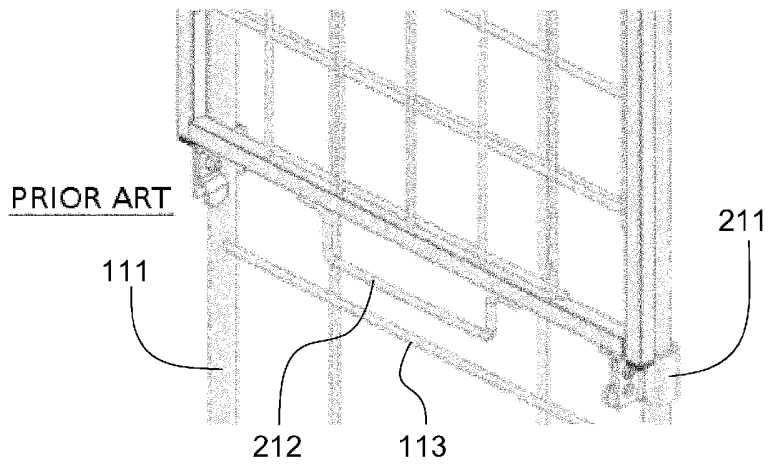
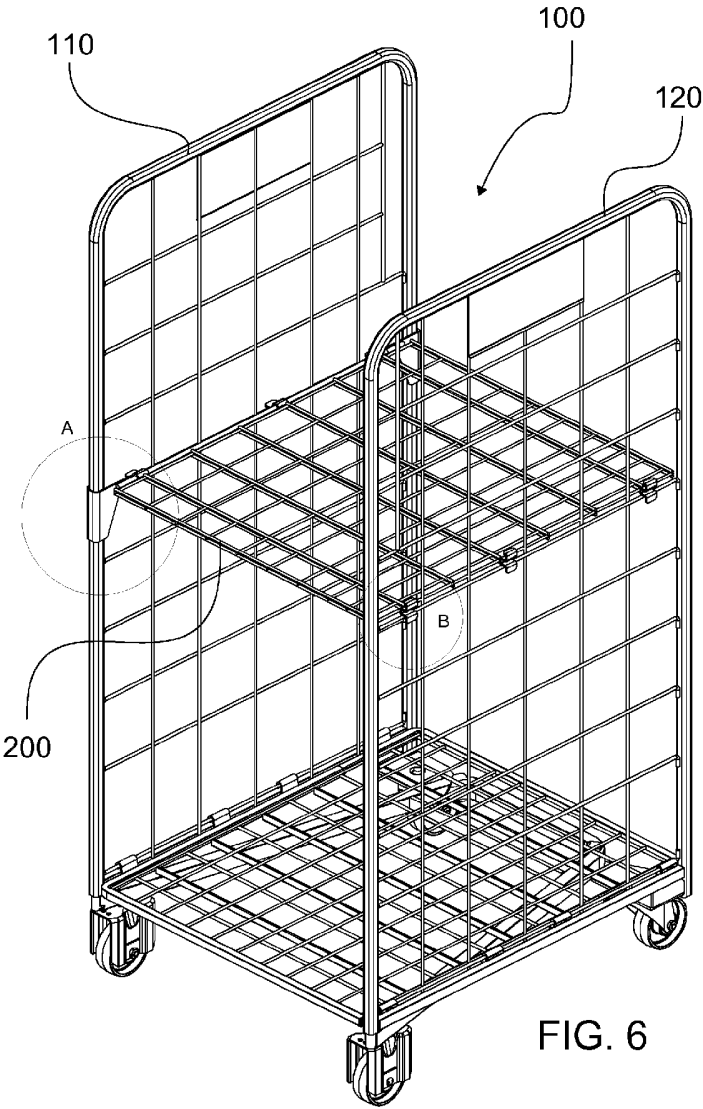


FIG. 5



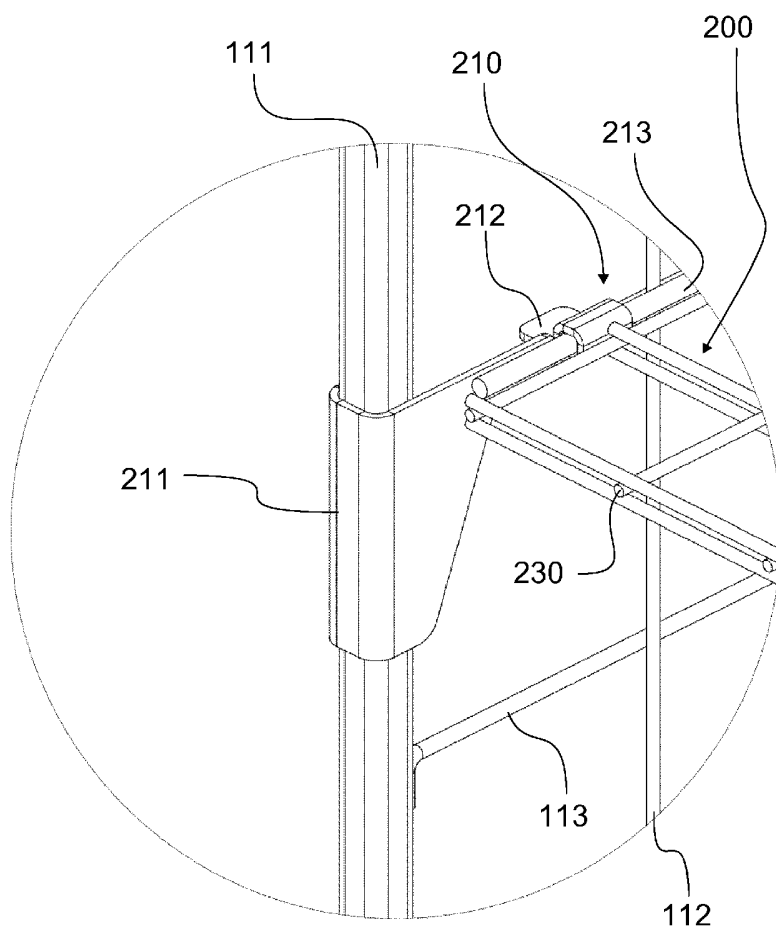


FIG. 7

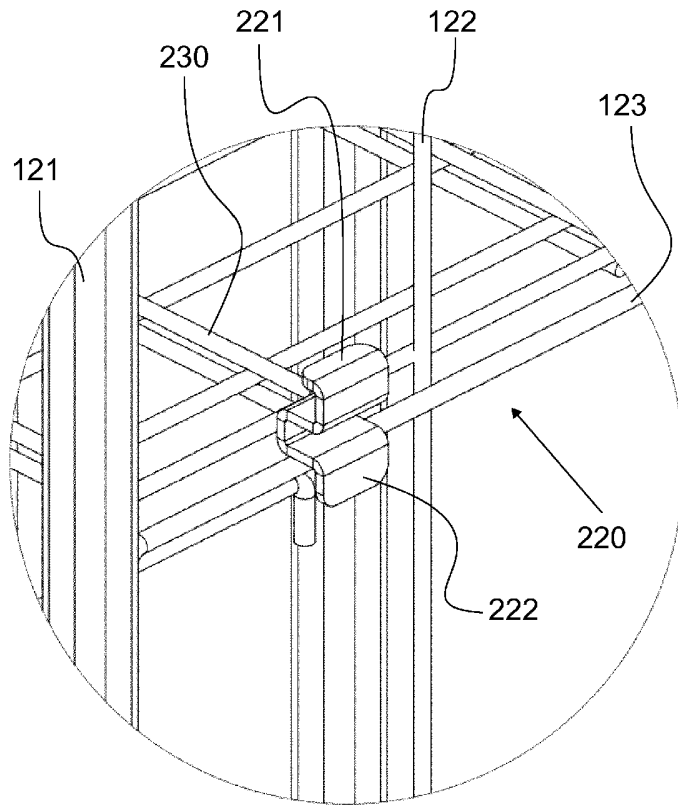


FIG. 8

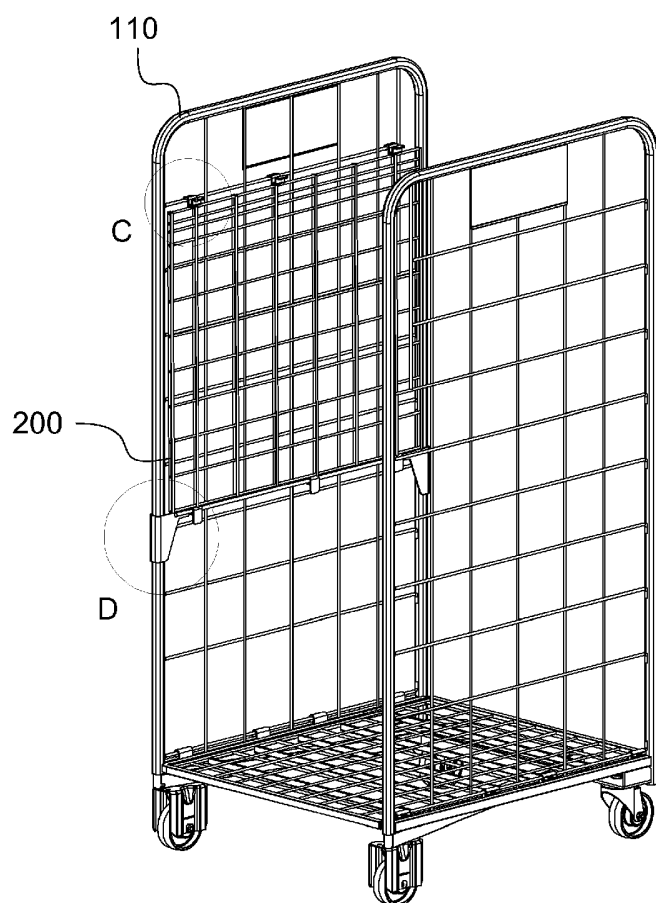


FIG. 9

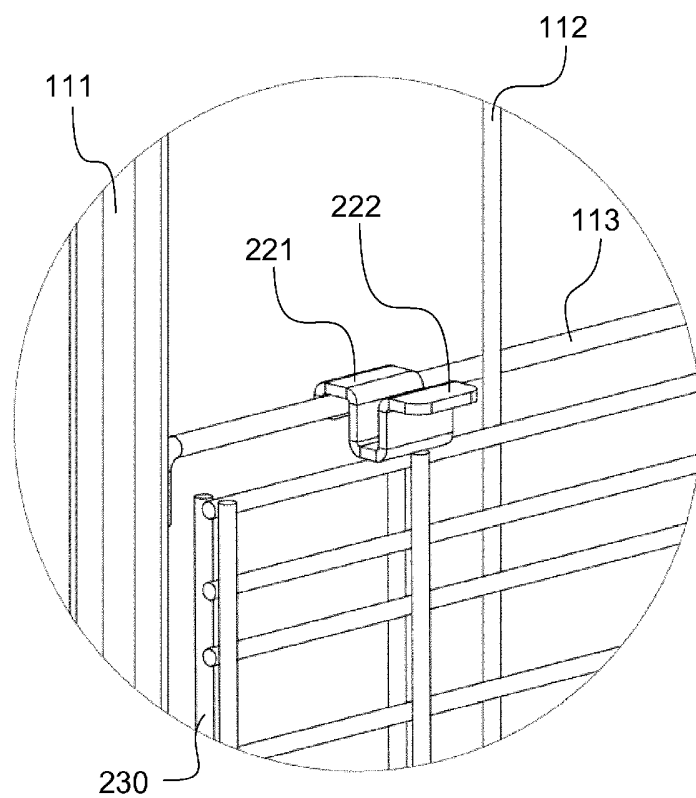


FIG. 10

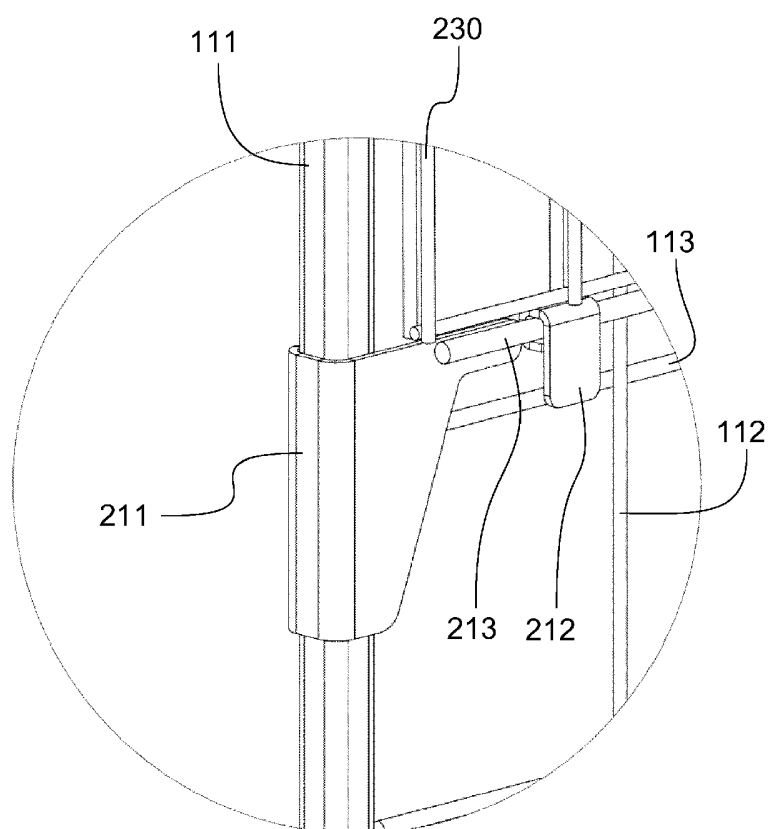


FIG. 11