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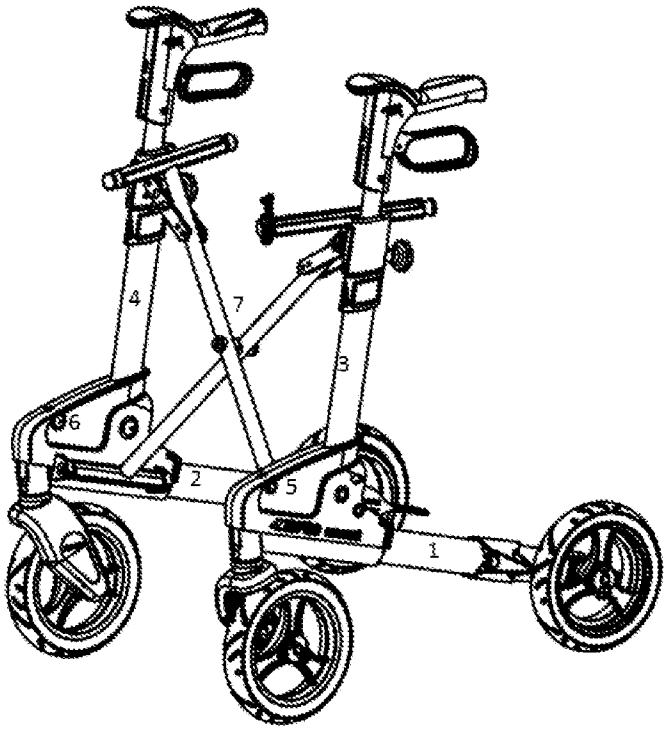
(54)	Title	**Two way foldable four wheel rollator**
(56)	References Cited:	DE 202014101241 U1, CN 202568758 U, US 6212733 B1, US 6149245 A
(57)	Abstract	

Two way foldable four wheel rollator comprising left and right upright bars (3, 4) each comprising a grip in their upper parts, and left and right lower horizontal bars (1, 2) each comprising a wheel in each end, a lateral folding system (7) that enables folding of the rollator in the lateral direction from an unfolded locked position to a narrow folded position. The upright bars (3, 4) and the lower bars (1, 2) are joined by means of a folding unit (5, 6), comprising an upper house (11) fixed to an upright bar (3, 4) and a lower base (10) fixed to a lower horizontal bar (1, 2). The upper house (11) and lower base (10) comprises mating rear locking means (17a, b), mating front locking means (16a, b), and a horizontal rotation axle (12) attached to both the upper house (11) and the lower base (10), around which the upper house (11) rotates relative to the lower base (10). The upper house (11) further comprises two lateral sides and a front side providing support for the upright bar (3, 4) in a locked position and a rear side being open to allow for rearward folding of the upright bar.



Field of invention

This invention relates to support materials for elderly or disabled persons, more specifically to a four wheel rollator that may be folded two ways.

Background

The number and percentage of people using rollators is increasing in most parts of the world, and the quality of life for these users depends on various support materials. Rollators are one of the most important ones and enables the users to remain independent, and carry out everyday tasks like shopping and move around according to own free will.

Often users find themselves in situation where transport of the rollator becomes an issue. Relatives might want to transport the user and his/her rollator in a car or the user wants to make use of public transport. Obviously it is an advantage in these situations that the volume and weight of the rollator is minimized and that the steps needed for folding and unfolding the rollator is easy to execute. At the same time the rollator must be firm and steady and safe from collapse.

WO 2012/089694 A1 describes a wheeled walking aid composed of two side parts, each having a lower longitudinal beam with holders mounted thereon with bearings for at least one front arrangement and rear wheel arrangements, a height adjustment profile with an inserted support bar, or a support bar on its own, is provided on a respective longitudinal beam, each of which support bars has, at the upper end, a rearward extending handle, the two side parts being connected to each other via a collapsible strut system. The height adjustment profiles, or the support bars on their own, are foldably arranged on the lower longitudinal beam in the longitudinal direction and can be brought from an upwardly extending deployment position to a stowage position extending substantially parallel to the longitudinal beam, the lower ends of the height adjustment profiles or the support bars on their own, being lifted off the longitudinal beams.

DE 202014101241 U1 describes a belting system for a mobility aid, comprising a backrest belt and two belt receivers spaced apart from one another, wherein fastening means are provided at the ends of the backrest with which the backrest belt is connected to the belt receivers in a connected state , such that the backrest strap is releasable and fixedly arranged in the belt receivers by the fastening means in the connected state without tools.

CN 202568758U describes a utility model disclosing a folding structure for a trolley. The folding structure for the trolley comprises a bottom frame and a manumotive frame, wherein the manumotive frame can be folded on the bottom frame, a connecting retaining sheet which is approximately perpendicular to the bottom frame is arranged on the bottom frame, the manumotive frame and the connecting retaining sheet are pin-jointed through a pivot.

US 6212733 B1 describes a hub and wheel assembly enabling the moving direction of wheels of a vehicle to be adjusted instantly as the exerted pushing force changes direction comprises a wheel mount having wheels mounted thereon, and a swivel base assembly mounted on stroller leg. Wheel mount may quickly assemble with and detach from swivel base assembly. A protrusion of wheel mount, inserted into swivel base assembly, includes a circumferential groove having a cavity provided therein such that a spring-biased locking member may releasably engage with cavity for setting movement of wheels in a linear direction. Further, as a deflecting force is applied on the stroller locking member disengages with cavity for allowing wheels to move to left or right. Once the force is released, locking member will instantly return to its normal position to engage with cavity.

US 6149245 A a wheel mounting structure includes a holder plate connected to the frame of a golf cart, a wheel axle holding a wheel and having a rectangular coupling block at one end fitted into a rectangular coupling hole on the holder plate, the rectangular coupling block of the wheel axle having a positioning groove at a bottom side wall thereof, and a lock lever pivoted to the holder plate and turned to lock/unlock the wheel axle, wherein the lock lever has two engagement portions bilaterally disposed on a top end thereof, which are alternatiavely forced into engagement with the positioning groove at the retangular coupling block of the wheel axle when the lock lever is turned forwards or backwards.

The invention provides an improved and easier to use two way foldable four wheel rollator comprising left and right upright bars each comprising a grip in their upper parts, and left and right lower horizontal bars each comprising a wheel in each end. The rollator further comprises a lateral folding system that enables folding of the rollator in the lateral direction from an unfolded locked position to a narrow folded position, wherein the upright bars and the lower bars are joined by means of a folding unit. The folding unit comprises an upper house fixed to an upright bar and a lower base fixed to the lower horizontal bar. The upper house comprises two lateral sides and a front side providing support for the upright bar in a locked position and a rear side being open to allow for rearward folding of the upright bar, and a horizontal rotation axle attached to both the upper house and the lower base, around which the upper house rotates relative to the lower base,

The novel features of the rollator are that the upper house and the lower base comprises mating rear locking means, positioned on fins protruding rearward from the upper house and on the base, and mating front locking means comprising a spring loaded hook, mating with a corresponding reciprocal hook in the base, wherein the hook rotates around an axle fixed to the two sides of the housing near the front.

The two way foldable four wheel rollator is further provided with a steering bolt lock assembly comprising: a steering bolt frame; a steering bolt, attached to a wheel, comprising a groove at the top with a nearly horizontal upper surface; a steering bolt hole designed to receive the steering bolt; a locking aperture with two triangular shaped grooves on the sides, the rearward side of the groove being close to parallel with the steering bolt; a locking structure comprising: a handle; a middle section in approximate right angle to the handle; and an upward pointing locking tip at an angle of

approximately 60 – 80 degrees to the middle section; a support plate on each side of the middle section and locking tip; a leverage corner on the lower corner between the middle section and the locking tip. The leverage corner forms a ledge hooking on to a corner between the steering bolt hole and the locking aperture, when the locking structure is in the locked position,

Furthermore the handle of the locking structure is flush with the front side of the steering bolt frame when the locking structure is in a locked position so that the upper house of the folding unit covers the locking structure and blocks the locking structure of a front wheel from releasing the front wheel, when the rollator is in its unfolded state.

Brief description of the drawings

For better understanding of the invention, a set of drawings is provided. Like numerals on different drawings describe the same feature.

Fig 1 shows a perspective view of the rollator in an unfolded state.
Fig 2 shows the rollator in a sideways folded state.
Fig 3 shows the rollator when it is folded both ways.
Fig 4a and b shows the front locking means in an unlocked and locked position.
Fig 5a and b shows the folding unit in an upright and folded state.
Fig 6 shows the sliding handle and the locking part of the lateral folding system.
Fig 7a and b shows an unlocked and locked position of the steering bolt.
Fig 8a and b shows the locking structure from the side and front.
Fig 9a, b, and c shows three different positions of the steering bolt and locking structure while locking the steering bolt.

Detailed description

When using words like upward, downward, front, back, etc. it is always with respect to an unfolded rollator in normal use on a floor

The frame of the two way foldable four wheel rollator according to the invention comprises left and right lower horizontal bar 1, 2, left and right upright bars 3, 4, two folding units 5, 6 connecting the lower bar and the upright bar of each side, and finally a folding system 7 connecting the two sides in two states: an unfolded, locked state and a folded, narrow state. **Fig. 1** shows an embodiment of a frame with wheels 8 and handles 9 mounted. Normally the upright bars 3, 4 are fitted with height adjustable handles 9, brakes and means for attaching a carrier bag, a seat, arm rest or other useful objects. **Fig. 2** shows the rollator when it is folded sideways only.

The folding unit 5, 6 comprises a lower base 10 fixed to a lower bar 3, 4 and an upper house 11 fixed to an upright bar 5, 6. The purpose of the folding unit is to enable simultaneous folding of the two upright bars 3, 4 into a parallel or almost parallel position in relation to the lower horizontal bar 1, 2.

Furthermore the purpose of the folding unit is to support the upright bars 3, 4 in a secure manner, when it is in its upright position. The lower base 10 and the upper house 11 are both connected to a horizontal rotation axle 12. The axle is situated between the middle point and the front end of the lower bar 1, 2 and at a distance above the lower bar 1, 2 and preferably at a right angle to the lower bar 1, 2, to allow simultaneous folding of both sides. The position of the axle 12 must be high enough to allow the upright bars 3, 4 to come to rest more or less parallel to the lower bar 1, 2 when the rollator is folded, and low enough to ensure that the rollator is as compact as possible when folded. The rollator in its folded state is shown in **fig 3**.

In one embodiment shown in **fig. 4a and b** the axle 12 is fixed to two protrusions 13, 14, one on each side of the lower base 10, extending upward from the lower base 10 and clamping the upright bar 3, 4 between them, wherein the axle goes through a hole in the upright bar 3, 4 and wherein each side of the axle 12 also extends beyond the protrusions 13, 14 in order to be attached to the sides of the upper house 11 in attachment points 15 as shown in fig. 3.

The upper house 11 comprise front locking means 16a and rear locking means 17a mating with corresponding front and rear locking means 16b, 17b of the lower base 10. The purpose of the upper house 11 is to keep the upright bars 3, 4 in its upright position in a stable manner and handle the weight of an adult user. As can be seen in **fig. 5a and b** the two lateral sides and the front side of the house provides support for the upright bars 3, 4 in a locked position and the rear side of the house is open to allow for rearward folding of the upright bars 3, 4 when folding the rollator. The open rear side of the house causes the rearward left and right sides to protrude rearward as two fins 18 from the central region of the upper house 11. In one embodiment the rear locking means comprises a dent in the contour of the rear part of the two fins 18 that mates with a corresponding formation 17b attached to the lower base 10.

In order to increase safety, a securing system for at least one of the locking means should be implemented. In one embodiment the front locking means is a spring loaded hook 19 attached to the house 11 in attachment points 15 shown I fig. 3, The hook 19 prevents rotation of the house when mating with a reciprocal hook 20 in the lower base 10. The spring forces the hook 19 into contact with the reciprocal hook 20 in the lower base 10. The hook 19 is rotating around an axle 21 fixed to the two sides of the house near the front of the house, and the front locking means 16a, 16b is only releasable when the user activates a release mechanism. Preferably the position of the axle 21 of the hook 19 and configuration of the contact surfaces of the hook 19 and reciprocal hook 20 is such that when forces are applied to the upright bars 3, 4 in a rearward direction, the two hooks are forced further into contact with each other without slipping. This can be achieved by making sure that the contact surfaces between the two hooks 19, 20 are at right angles with the force of the upper house 11 or preferably at a slight tilt, the front of contact surface of the spring loaded hook 19 being slightly higher than the rear, and parallel to the reciprocal hook 20. This is possible due to the resilience in the upper house 11.

To further increase the sideways stability of the upper house 11, lateral supports 22 may be provided on the lower base 10. The lateral supports 22 also ensure that the hook 19 and reciprocal hook 20 are correctly positioned in relation to each other.

In one embodiment shown in **fig. 4a and b** the release mechanism is a wire 23 attached to the spring loaded hook and running inside the upright bar 3, 4, preferably in a cable housing 24. The wire 23 is then running around a block positioned a distance above a sliding handle 25that slides along the upright bars 3, 4 and the wire is then fastened to said sliding handle 25.

The effect of this setup is that when the handle 25 is pushed down, the hook 19 will be released from the reciprocal hook 20 in the lower base 10 and the upright bars 3, 4 may be folded backward. This is beneficial because it is much easier for an elderly/disabled person to exert a pressure downward than upward. Due to the spring load in the hook 19 and the stiffness of the cable housing 24, the sliding handle 25 will go back to its original position when the user releases the sliding handle 25.

The upper house 11 may advantageously comprise an indicator 26, indicating whether or not the front locking means are securely locked.

The folding unit 5 may advantageously be made of some kind of plastic product although other materials like metal or carbon can be imagined

Unintentional release of the release mechanism is further prevented by a locking part 27 attached to the lateral folding system entering into a matching formation in the sliding handle when the lateral folding system is in its unfolded position, as shown in **fig. 6**. As a result of this safety feature the rollator must always be folded sideways first.

As can be seen in fig. 3 the front wheels are the features sticking out the most. Hence a releasable fastening mechanism or steering bolt lock assembly shown in **fig. 7a and b** has been provided in order to further minimize the volume needed for transporting or storing the rollator.

The parts of the steering bolt lock assembly comprises a vertical, or close to vertical, steering bolt 28, attached to a wheel, around which the wheel can rotate, having a groove 29 at the top with a nearly horizontal upper surface; a locking structure 30 that fits into a locking aperture 31. The locking structure 30 further comprises a locking tip 32 intended to engage the upper surface of the groove 29 of the steering bolt 28 and forcing it upward, two guide lugs 33, 34 on each side of the locking structure 30 that is guided in a corresponding triangular shaped guide groove 35 on each side of the locking aperture at the front end of the lower base 10. Preferably the rearward side of the groove is close to parallel with the steering bolt

Preferably the locking structure 30 comprises a handle 36, a middle section 37 in approximate right angle to the handle and an upward pointing locking tip 32 at an angle of approximately 60 – 80 degrees to the middle section 37, forming an upside down L-shape with the locking tip 32 being attached to the

end of the L as seen in **fig. 8a**. The middle section 37 and locking tip 32 have on each side a support plate 38, 39 to stiffen the locking structure 30 and enabling the locking structure to exert greater force on the steering bolt. Preferably the support plates are separated far enough for the steering bolt to fit between them. A leverage corner 40 is provided on the plates between the middle section 37 and the locking tip 30. The leverage corner 40 is formed so that when the locking structure 30 is in its locked position, the outer part of the leverage corner 40 is close to an inner side of the groove 29 in the steering bolt 28 and forms a ledge that hooks on to a corner between a lower side of the locking aperture 31 and a steering hole in which the steering bolt is mounted, thus preventing forward movement of the locking structure.

The handle provides upward leverage to the locking tip by means of the leverage corner, and guide lugs shown on **fig. 8b** and corresponding grooves, one of which is shown in **fig. 9a, b and c.** The lugs 33, 34 and grooves 35a, b prevent the locking structure from falling out when released, guides the movement of the locking structure in the locking process and also prevents forward movement of the locking structure 30 when in locked position. When the locking structure 30 is in its locked position the handle should be flush with the front of the steering bolt frame and / or the lower base 10 of the folding unit 5. When the rollator is in its unfolded state, the upper house 11 will then cover the front of the lower base 10 including the locking structure 30, thus blocking the locking structure 30 from releasing the front wheel, when the rollator is in its unfolded state.

Claims

1. Two way foldable four wheel rollator comprising:

left and right upright bars (3, 4) each comprising a grip in their upper parts,
left and right lower horizontal bars (1, 2) each comprising a wheel in each end,
a lateral folding system (7) that enables folding of the rollator in the lateral direction from an unfolded locked position to a narrow folded position,

wherein the upright bars (3, 4) and the lower bars (1, 2) are joined by means of a folding unit (5, 6), comprising an upper house (11) fixed to an upright bar (3, 4) and a lower base (10) fixed to a lower horizontal bar (1, 2),

wherein the upper house (11) comprises two lateral sides and a front side providing support for the upright bar (3, 4) in a locked position and a rear side being open to allow for rearward folding of the upright bar, and

a horizontal rotation axle (12) attached to both the upper house (11) and the lower base (10), around which the upper house (11) rotates relative to the lower base (10),

characterized by that the upper house (11) and the lower base (10) comprising;
mating rear locking means (17a, b), positioned on fins (18) protruding rearward from the upper house (11) and on the base (10), and
mating front locking means (16a, b) comprising a spring loaded hook (19), mating with a corresponding reciprocal hook (20) in the base, wherein the hook (19) rotates around an axle (21) fixed to the two sides of the housing near the front.

2. Two way foldable four wheel rollator according to claim 1, **characterized in that** the front locking means is only releasable when the user intentionally activates a release mechanism (25).

3. Two way foldable four wheel rollator according to claim 2, **characterized in that** the release mechanism (25) of the front locking means (16a, b) comprise a locking part (27) attached to the lateral folding system (7) that enters into a matching formation in a sliding handle (25) when the lateral folding system (7) is in its locked unfolded position, thus preventing unintentional release of the folding unit.

4. Two way foldable four wheel rollator according to claim 1, **characterized in that** the rear locking means (17a, b) comprises a dent in the contour of the rear part of the two fins (18) that mates with a corresponding formation (17b) attached to the lower base (10).

5. Two way foldable four wheel rollator according to claim 1, **characterized in that** the axle (12) is fixed to two protrusions (13, 14), one on each side of the lower base (10), extending upward from the lower base (10) and clamping the upright bars (3, 4) between them, wherein the axle goes through a hole in the upright bar (3, 4) and wherein each side of the axle also extends beyond the protrusions in order to be attached to the sides of the upper house (11) in attachment points.

6. Two way foldable four wheel rollator according to claim 1, **characterized in that** the house comprises an indicator (26) indicating whether or not the front locking means (16a, b) are locked.

7. Two way foldable four wheel rollator according to claim 1, **characterized in that** lateral supports (22) are provided on the lower base (10), ensuring that the hook (19) and reciprocal hook (20) are correctly positioned in relation to each other and providing stability to the structure.

8. Two way foldable four wheel rollator according to any previous claim, **characterized in that** the upper house of the folding unit (5, 6) covers a locking structure (30) that blocks a steering bolt lock assembly of a front wheel from releasing the front wheel, when the rollator is in its unfolded state.

9. Two way foldable four wheel rollator according to claim 8, **characterized in that** the steering bolt lock assembly comprises:

a steering bolt frame (41),
a steering bolt (28), attached to a wheel, comprising a groove (29) at the top with a nearly horizontal upper surface,
a steering bolt hole (42) designed to receive the steering bolt,
a locking aperture (31) with a triangular shaped groove (35) on each side, the rearward side of the groove (35) being close to parallel with the steering bolt,
a locking structure (30) comprising:

a handle (36),
a middle section (37) in approximate right angle to the handle and
an upward pointing locking tip (32) at an angle of approximately 60 – 80 degrees to the middle section (37),
a support plate (38, 39) on each side of the middle section and locking tip,
a leverage corner (40) on the lower corner between the middle section and the locking tip (32),

wherein the leverage corner (40) forms a ledge hooking on to a corner between the steering bolt hole (42) and the locking aperture (31), when the locking structure (30) is in the locked position,

wherein the handle (36) of the locking structure (30) is flush with the front side of the steering bolt frame (41) when the locking structure is in a locked position.

10. Two way foldable four wheel rollator according to claim 9 **characterized in that** the steering bolt frame (41) is integrated in the lower base (10) of the folding unit.

Patentkrav

1. Toveis sammenleggbar firehjuls rullator omfattende:

venstre og høyre vertikalstenger (3, 4) som hver omfatter et håndtak i deres øvre deler,
venstre og høyre nedre horisontalstenger (1, 2) som hver omfatter et hjul i hver ende,
et lateralt foldesystem (7) som muliggjør folding av rullatoren i lateral retning fra en utfoldet låst stilling til en smal, foldet stilling,

hvori vertikalstengene (3, 4) og de nedre stengene (1, 2) er forbundet ved hjelp av en sammenfoldingsenhet (5, 6), omfattende et overhus (11) festet til en vertikalstang (3, 4) og en nedre base (10) festet til en nedre horisontalstang (1, 2),

hvor det øvre hus (11) omfatter to laterale sider og en fremre side som gir støtte til vertikalstangen (3, 4) i en låst stilling og en bakside som er åpen for å tillate folding av vertikalstangen bakover, og

en horisontal rotasjonsaksel (12) festet til både overhuset (11) og den nedre base (10), rundt hvilken det øvre huset (11) roterer i forhold til den nedre base (10),

karakterisert ved at det øvre huset (11) og den nedre base (10) omfatter:
parrende bakre låsemidler (17a, b), plassert på finner (18) som rager bakover fra overhuset (11) og på basen (10), og
parrerende fremre låsemidler (16a, b) som omfatter en fjærbelastet krok (19) som passer sammen med en tilsvarende resiprok krok (20) i basen, hvor kroken (19) roterer rundt en aksel (21) som er festet til begge sider av huset nær fronten.

2. Toveis sammenleggbar firehjuls rullator ifølge krav 1, **karakterisert ved at** frontlåsemidlene kun er frigjør når brukeren forsettlig aktiverer en frigjøringsmekanisme (25).

3. Toveis sammenleggbar firehjuls rullator ifølge krav 2, **karakterisert ved at** frigjøringsmekanismen (25) til de fremre låsemidlene (16a, b) omfatter en låsedel (27) festet til det laterale foldesystemet (7) som går inn i en matchende formasjon med et glidehåndtak (25) når foldesystemet (7) er i sin låste utfoldede stilling, og forhindrer dermed utilsiktet utløsning av foldeenheten (5, 6).

4. Toveis sammenleggbar firehjuls rullator ifølge krav 1, **karakterisert ved at** de bakre låsemidler (17a, b) omfatter en innsparing i konturen til den bakre delen av de to finner (18) som passer med en tilsvarende formasjon (17b) festet til den nedre basen (10).

5. Toveis sammenleggbar firehjuls rullator ifølge krav 1, **karakterisert ved at** akselen (12) er festet til to fremspring (13, 14), én på hver side av den nedre base (10), som strekker seg oppover fra den nedre base (10) og klemmer vertikalstengene (3, 4) mellom seg, hvor akselen går gjennom et hull i vertikalstangen (3, 4) og hvor hver side av akselen også strekker seg utover fremspringene for å være festet til sidene av det øvre huset (11) i festepunkter.

6. Toveis sammenleggbar firehjuls rullator ifølge krav 1, **karakterisert ved at** huset omfatter en indikator (26) som indikerer hvorvidt de fremre låsemidler (16a, b) er låst.

7. Toveis sammenleggbar firehjuls rullator ifølge krav 1, **karakterisert ved at** laterale støtter (22) er anbrakt på den nedre base (10), slik at kroken (19) og den resiproke krok (20) er riktig plassert i forhold til hverandre og gir stabilitet til strukturen.

8. Toveis sammenleggbar firehjuls rullator ifølge et hvilket som helst av de foregående krav, **karakterisert ved at** det øvre hus til foldingsenheten (5, 6) dekker en låsestruktur (30) som blokkerer en styreboltslåsesammenstilling til et forhjul fra frigjøring av forhjulet, når rullatoren er i sin utfoldede tilstand.

9. Toveis sammenleggbar firehjuls rullator ifølge krav 8, **karakterisert ved at** styreboltslåsesammenstillingen omfatter:

en styreboltramme (41),
en styrebolt (28) festet til et hjul, omfattende et spor (29) på toppen med en nesten horisontal øvre overflate,
et styrebolthull (42) utformet for å motta styrebolten,
en låseåpning (31) med en trekantet spalte (35) på hver side, idet baksiden av sporet (35) er nær parallelt med styrebolten,
en låsestruktur (30) som omfatter:

et håndtak (36),
en midtdel (37) i omtrentlig rett vinkel mot håndtaket og
en oppadgående låsespiss (32) i en vinkel på ca. 60 - 80 grader til

midtdelen (37),
en støtteplate (38, 39) på hver side av midtseksjonen og låsespissen,
et anleggshjørne (40) i det nedre hjørnet mellom midtdelen og låsespissen (32),

hvor anleggshjørnet (40) danner en kant som hekter på et hjørne mellom styrebolthullet (42) og låseåpningen (31) når låsestrukturen (30) er i låst stilling, hvor håndtaket (36) av låsestrukturen (30) er i flukt med forsiden av styreboltrammen (41) når låsestrukturen er i en låst stilling.

10. Toveis sammenfoldbar firehjuls rullator ifølge krav 9 **karakterisert ved at** styreboltrammen (41) er integrert i den nedre basen (10) til foldeenheten (5,6).

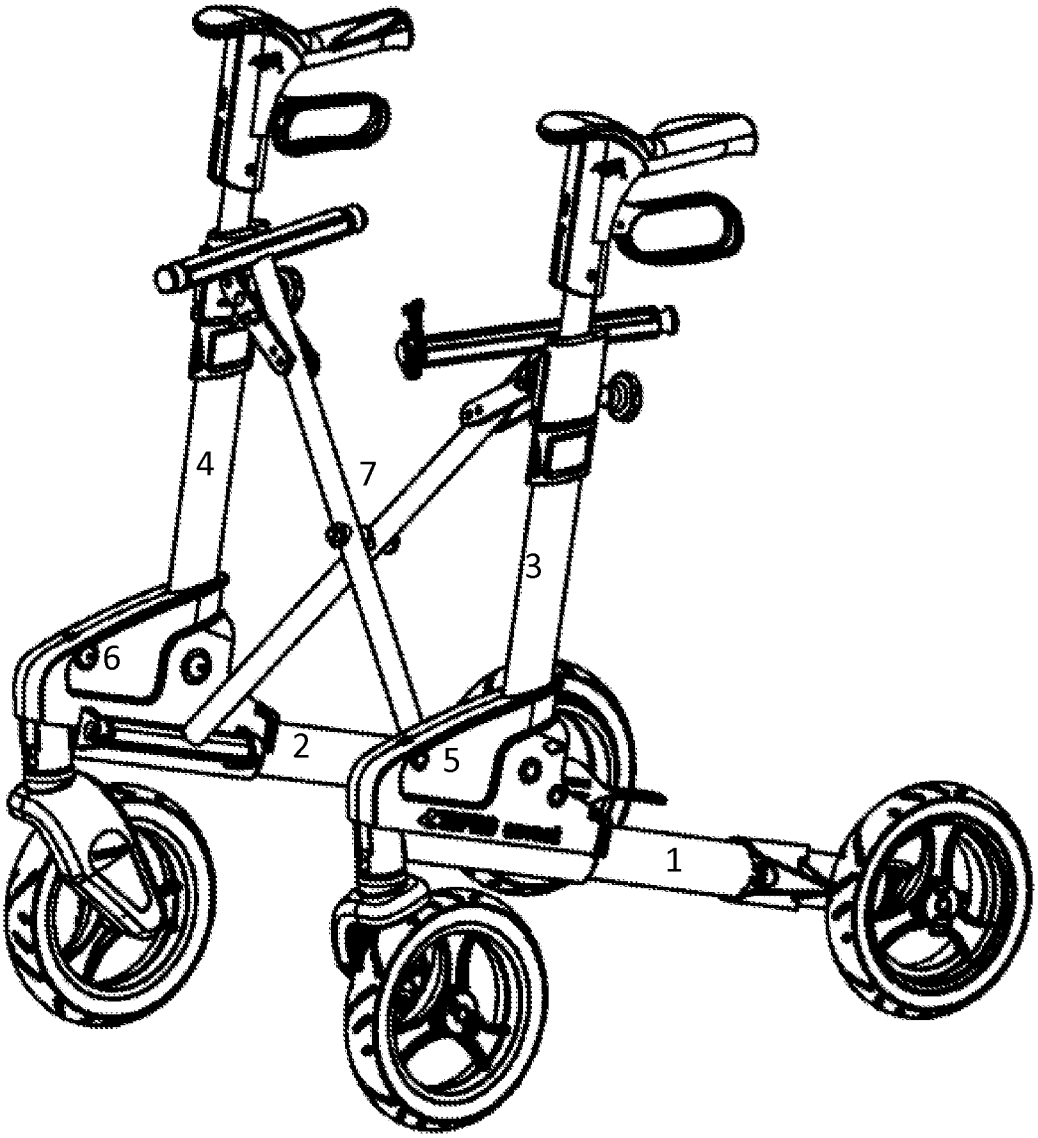


Fig. 1

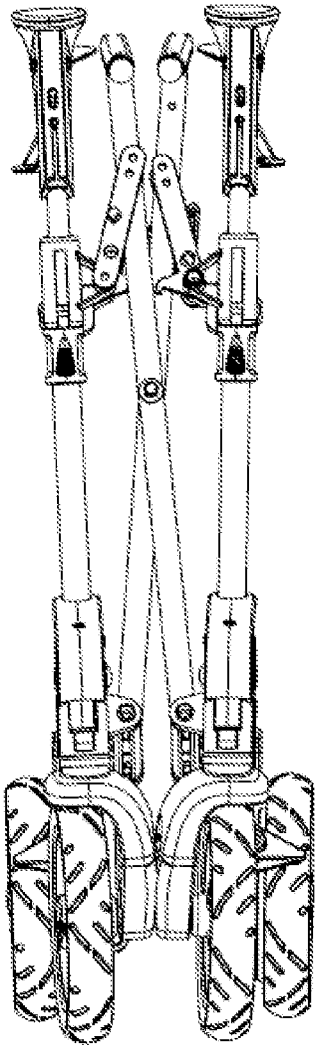


Fig.2

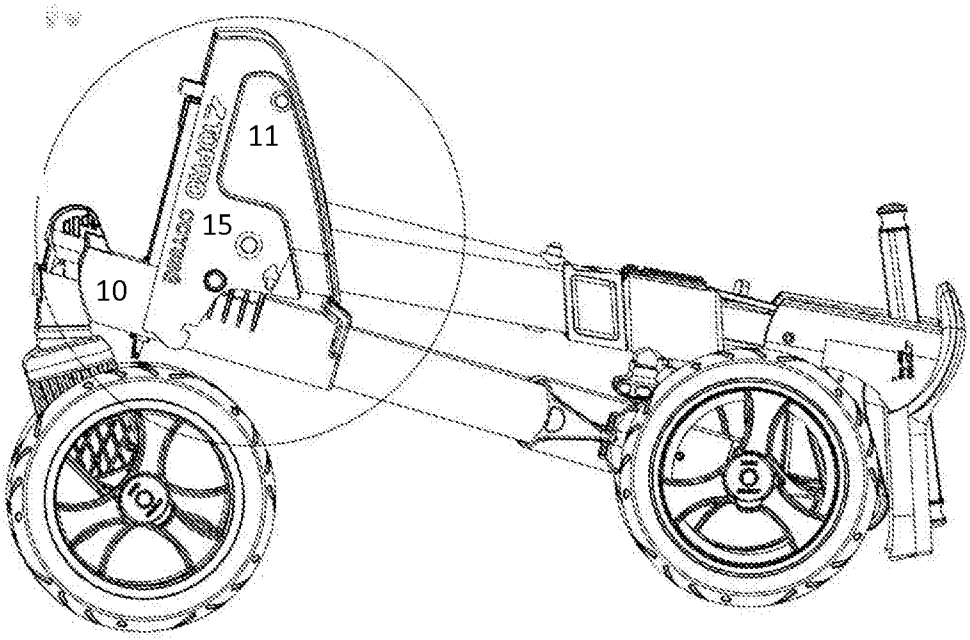


Fig. 3

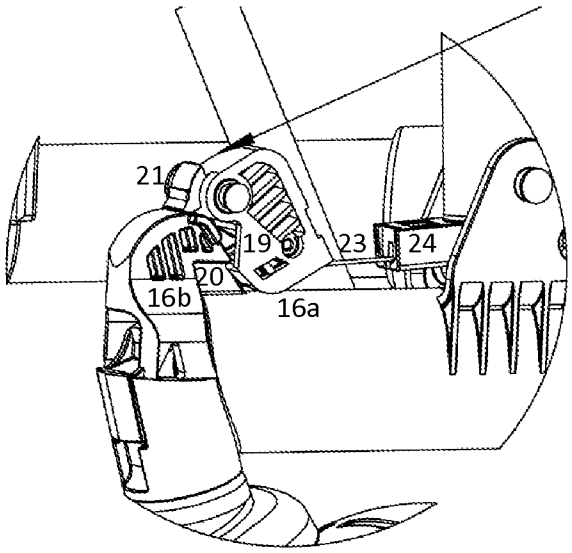


Fig 4a

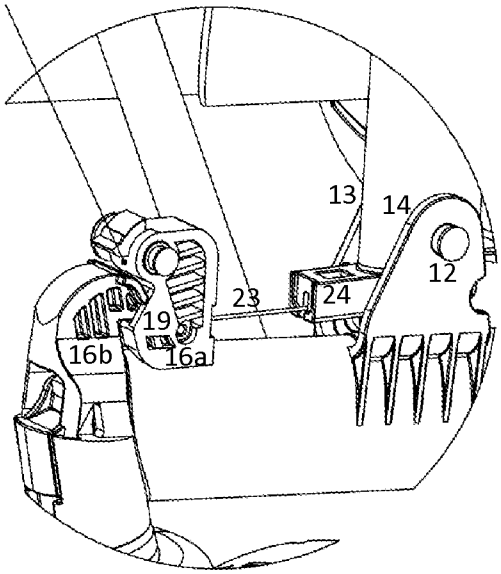


Fig 4b

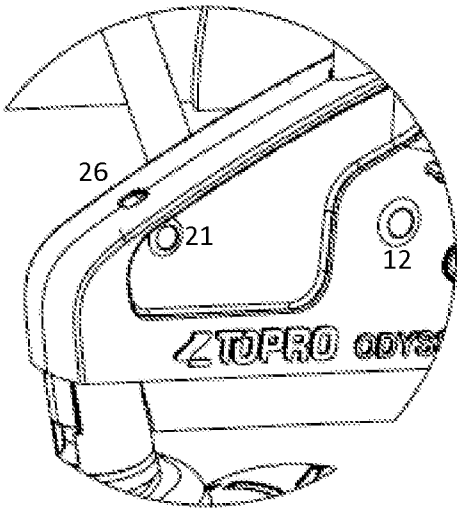


Fig 5a

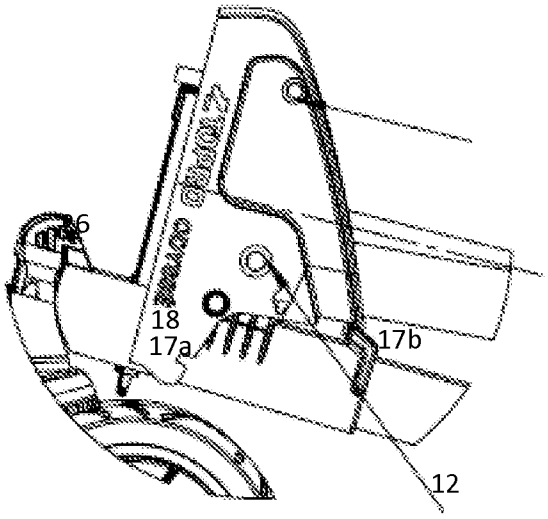


Fig5b

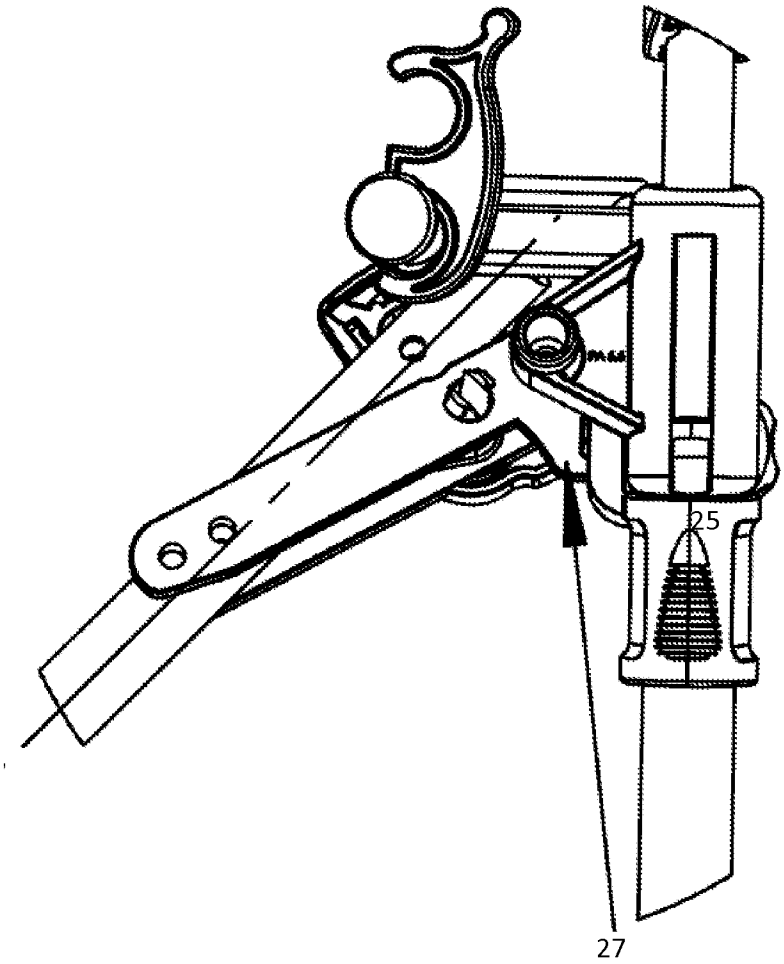


Fig 6

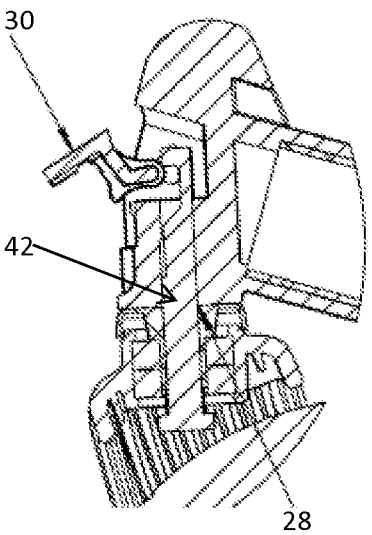


Fig 7a

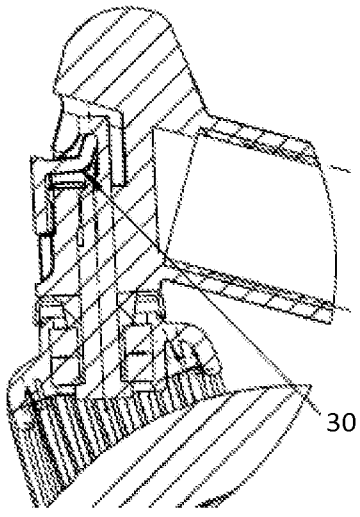


Fig 7b

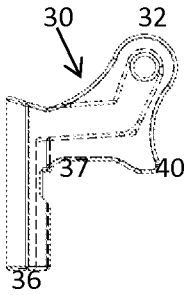


Fig. 8a

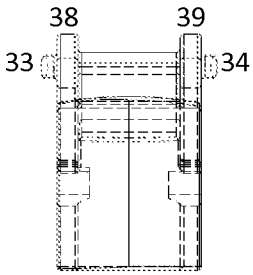


Fig.8b

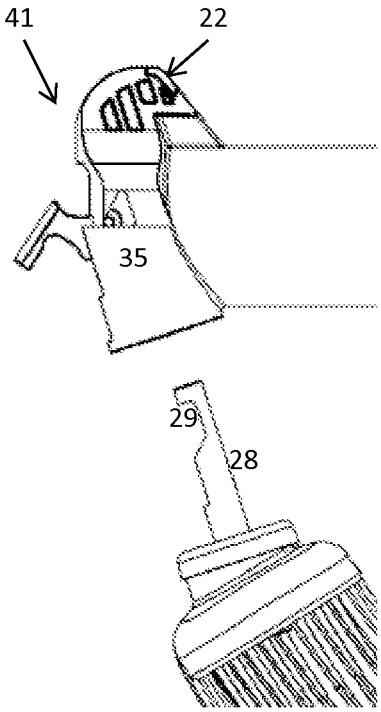


Fig.9a

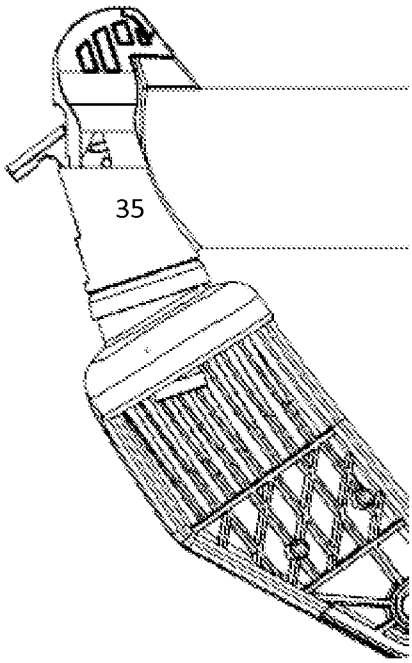


Fig. 9b

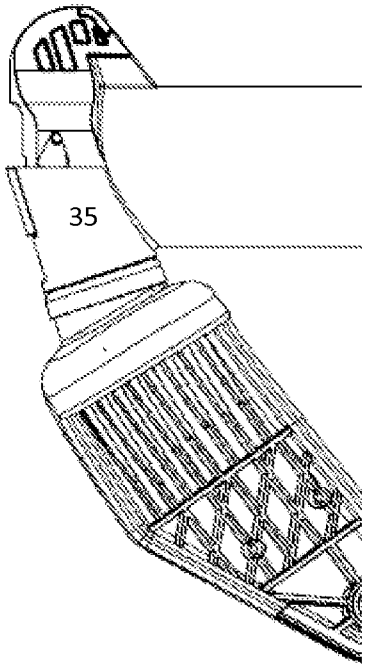


Fig. 9c