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(54) **Locking/unlocking manipulation mechanism disposed on the handlebars of baby carriage**

Auf dem Handgriff eines Kinderwagen angebrachte handbetätigte Verriegelungs-
/Entriegelungsanlage

Ensemble manuel de verrouillage/déverrouillage disposé sur le guidon d'une voiture d'enfant

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(56) References cited:
EP-A- 0 494 701

• **PATENT ABSTRACTS OF JAPAN** vol. 15, no. 279
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(APRICA KASSAI INC.)

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a manipulation mechanism for selectively locking or unlocking the locking mechanism of a baby carriage, and more particularly relates to a remote manipulation mechanism disposed on the handlebars of a baby carriage.

Background

Collapsible baby carriages are known. Also, it is known to design the handlebars so that they can alternatively be positioned so as to extend forwardly or rearwardly of the seat so that the carriage can be pushed in the backward or forward direction, respectively. Each of these carriages includes a locking device for locking the carriage in the upright position and locking the handlebars in the forward or backward position. A locking/unlocking manipulation mechanism is disposed at the upper end of the handle bars so that the locking device can be activated from a remote, more convenient position, as disclosed in Japan Utility Model Applications (OPI) Nos. 48866/86, 139859/86 and 34766/88 (the term "OPI" as used herein means an "unexamined published application").

The manipulation mechanism includes a manipulation lever pivotally supported at the central portion thereof in a housing so as to be rotatable and a remote manipulation wire anchored at one end thereof to an end of the lever and at the opposite end to the locking device. The manipulation portion of the lever, which projects from the housing, is rotated rightward or leftward to operate the wire for the manipulation mechanism.

With such a design, the operating stroke of the remote manipulation wire is a function of the ratio of the distance between the point at which the wire is secured to the lever and the pivot point at the central portion of the manipulation lever to the distance between the pivot point and the butt of the lever where the manipulation force is applied. Therefore, the latter distance needs to be maximized in order to minimize the required manipulation force to actuate the locking mechanism. However, when the distance between the pivot point and the butt of the lever is increased, the size of the locking/unlocking manipulation mechanism becomes correspondingly larger. On the other hand, if the operation stroke of the wire is increased while the distance between the pivot and the butt of the lever is decreased, the required actuation force becomes larger in inverse proportion to the ratio, making it difficult to rotate the lever and actuate the locking mechanism. Further, the locking device can be inadvertently unlocked if the manipulation lever projecting from the housing is accidentally touched during the movement of the baby carriage. To prevent such a

problem, the shape of the lever or the construction for engaging the lever with the housing needs to be specially designed. However, such a special design results in a complicated assembly of the baby carriage and increased cost thereof.

A manipulation mechanism provided on the handle bars of a baby carriage for locking and unlocking a locking means of said carriage for maintaining the carriage in the open or closed state is known from EP-A-0 494 701. With respect to Figs. 35 to 39 thereof, the manipulation mechanism comprises a housing, in which a first wire is connected to a first pivoted lever and a second wire is connected to a second pivoted lever, and a pushing element which, when forced inwardly, causes a drive plate of the pushing element to cause the two levers to rotate in opposite directions to exert a pulling motion on the wires and actuate the locking means. A sliding prevention stopper with projections extending into the housing is also provided such that the projections can be positioned to abut against distal ends of the drive plate to prevent the pushing element from being actuated. A further embodiment described with respect to Figs. 49 to 53 includes two rotating members and two pushing elements for actuating the rotating members as well as a locking element provided independently of the rotating members and the pushing elements for actuating the rotating members to selectively lock or unlock the locking means.

A similar mechanism is also known from JP-A-03 096 474 with pivotable levers and a pushing element with a drive plate as well as a sliding prevention stopper for the drive plate.

It is the object of the present invention to provide such a locking/unlocking manipulation mechanism on the handle bars of a baby carriage where the operation stroke of a manipulation wire can be made sufficiently long although the manipulation space is small.

It is additionally advantageous in accordance with the present invention to provide such a locking/unlocking manipulation mechanism on the handle bars of a baby carriage which includes a sliding prevention stopper for preventing the manipulation lever from being inadvertently moved so that the locking means will remain locked.

This object is solved in accordance with the present invention by a manipulation mechanism including the features of claim 1. Detailed embodiments of the invention are described in the dependent claims.

The above and other objects, features and advantages of the invention will become more apparent from the following detailed description of the invention when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a baby carriage having a locking/unlocking manipulation mechanism which is an embodiment of the present device;

Fig. 2 is an enlarged perspective view of a major part of the carriage;

Fig. 3 is an exploded perspective view of another major part of the carriage;

Fig. 4 is a cutaway view of the mechanism illustrating a state in which the manipulation lever is prevented from being actuated;

Fig. 5 is a cutaway view of the mechanism illustrating the state in which the lever is capable of being actuated; and

Fig. 6 is a partial view of the mechanism illustrating the relationship between the lever and a wire moving pulley.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An embodiment of the present device is hereafter described with reference to the drawings attached hereto.

Figs. 1-6 show a baby carriage including a locking/unlocking manipulation mechanism 2 for actuating the locking mechanism 17 of the carriage which locks the carriage in the upright state. The carriage also includes a pair of front legs 11, a pair of rear legs 12, a pair of armrests 13, coupling bars 14 extending along the width of the carriage and coupling the legs and the armrests together, a pair of handlebars 15 pivotally coupled at the lower ends thereof to the rear legs, collapsing brackets 16, the locking mechanism 17, sliders 18, and drive pins 19.

The handlebars 15 are coupled to each other to form an inverted U, and are pivotally coupled at the lower ends thereof to the midportion of the rear legs 12 by the collapsing brackets 16.

Each of the locking mechanisms 17 is disposed slightly above the pivot point of the lower end of the associated handlebar 15 and the collapsing bracket 16 and is movable up and down. When the baby carriage is in the upright (uncollapsed) state, the locking mechanism 17 is fitted on the collapsing bracket 16 at the upper end thereof to prevent the bracket from moving in such a direction as to allow the rear leg 12 and the handlebar 15 to be rotated relative to each other so that the baby carriage is prevented from being collapsed. The locking mechanism 17 can be disengaged by moving the sliders 18 upwardly using manipulation wires 3 extending from the locking/unlocking manipulation mechanism 2 provided at the upper ends of the handlebars 15.

In more detail, each drive pin 19 projects from the side of the slider 18 and is engaged with a portion of the locking means 17. The slider 18 and the drive pin 19 are equivalent to those disclosed in Japan Utility Model Applications (OPI) Nos. 48866/86 and 34766/88, and are therefore not described in detail herein.

The locking/unlocking manipulation mechanism 2 includes a housing 4, a wire moving pulley 5 rotatably supported in the housing, a manipulation lever 6 for

rotating the pulley, and a stopper 7 for preventing the lever from being pushed deeper into the housing and, attendantly, from rotating the pulley 5. Rotation of the pulley by the manipulation lever 6 causes the manipulation wire to be pulled upwardly to thereby unlock the locking mechanism 17.

The housing 5 is shaped as a parallelepiped, and has handlebar openings 41 at opposite lateral ends thereof, a lever opening 42 in the lower portion thereof, and a sliding hole 43 in the upper portion thereof. The upper ends of the handlebars 15 are fitted in the handlebar openings 41, the manipulation lever 6 is fitted in the opening 42 so that the lever is movable up and down and the stopper 7 is fitted in the sliding hole 43 so that the stopper is laterally slidable therein.

The pulley 5 is disk-shaped having an appropriate thickness, and is rotatably supported by shaft 44 secured to the housing 4. The pulley 5 has a guide groove 51 extending around the circumference thereof and engagement portions 52. The manipulation wires 3 are fitted in the groove 51 and have spherical terminals 31 coupled to the ends thereof which are anchored in the engagement portions 52. An engagement pin 53 projects from one side of the pulley 5 near the peripheral edge thereof and is fitted in the fitting hole 63 of a drive plate 62 extending upwardly from the manipulation lever 6 so that movement of the slide plate causes the pulley to rotate.

The lever 6 includes a main body 61 and the drive plate 62 extending upwardly therefrom, and is fitted in the housing 4 so that the upper portion of the main body is located in the housing. The tip 64 of the drive plate 62 is L-shaped so that when the stopper is in the position illustrated in Fig. 4, the lower end of the sliding prevention plate 72 contacts the top of the L-shaped tip so that the lever 6 is prevented from being urged deeper into the housing 4. However, it is noted that the tip 64 need not be L-shaped. If the tip 64 is not L-shaped, the mechanism 2 is constituted so that the sliding stroke of the stopper 7 is longer so that the lower end of the sliding prevention plate 72 thereof can move into and out of contact with the entire upper end of the drive plate 62.

The housing 4 has guide grooves 45 for guiding the manipulation lever 6 into and out of the housing. Juts (not shown) formed on the rear of the main body 61 of the lever 6 are fitted in the guide grooves 45 to ensure the precise smooth sliding of the lever along the grooves and to prevent the lever from coming off the housing 4. A return spring 65 is disposed in contact with the inner surface of the lever 6 at one end of the spring and located in an appropriate position in the housing 4 at the other end of the spring, for urging the lever toward the position shown in Figs. 4 and 5 where the lever is urged downwardly so that the locking mechanism 17 remains locked.

The stopper 7 prevents the manipulation lever 6 from being pushed into the housing 4 so that the lever will not rotate the pulley and the locking mechanism 17 will not be inadvertently unlocked, as shown in Fig. 4.

The stopper includes an outer body 71 shaped as an inverted U and slidably fitted on the outer surface of the housing 4, and the sliding prevention plate 72 projecting down from the central portion of the inner surface of the outer body and extending into the housing through the sliding hole 43 of the upper portion thereof. The length of the plate 72 is such that the lower end of the plate is in contact with the upper end of the drive plate 62 of the lever 6 when the sliding prevention plate is in a sliding prevention position (Fig. 4), and that the lower end of the sliding prevention plate 72 is out of contact with the upper end of the drive plate 62 when the sliding prevention plate is not in the sliding prevention position (Fig. 5).

The length of the sliding hole 43 is equal to the sliding stroke of the sliding prevention plate 72 so that the plate is not in the sliding prevention position when located at one end of the hole, as shown in Fig. 5, and is in the sliding prevention position when located at the other end of the hole, as shown in Fig. 4. Both sides of the housing 4 have sliding guide grooves 46 in which opposite ends of the outer body 71 of the stopper 7 are respectively slidably fitted.

While the present invention has been particularly shown and described with reference to particular embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be effected therein without departing from the scope of the invention as defined by the appended claims.

Claims

1. A manipulation mechanism provided on the handle-bars of a baby carriage for locking and unlocking a locking means (17) of said carriage, comprising:
 - a housing (4);
 - a pulley (5) rotatably disposed in said housing (4);
 - a wire (3) connected at one end thereof to said pulley (5) and at another opposite end thereof to said locking means (17);
 - actuating means (6), operatively connected to said pulley (5), for selectively actuating rotation of said pulley (5) so that said wire (3) is wound therearound and, attendantly, said wire (3) disengages said locking means (17); and
 - preventing means (7) for selectively preventing said actuating means (6) from moving to rotate the pulley (5) in a direction in which said locking means (17) is released.
2. The manipulation mechanism of claim 1, wherein said actuating means includes a button slidably disposed in said housing, said button including a drive plate extending therefrom and connected to said pulley, wherein when said button is pushed inwardly said pulley is caused to rotate to thereby tension said wire and unlock said locking means.

3. The manipulation mechanism of claim 2, further comprising a spring for urging said button outwardly from said housing.
4. The manipulation mechanism of claim 2, wherein said preventing means is slidably disposed in said housing between first and second positions, wherein in said first position said preventing means abuts against said drive plate to thereby prevent said button from being moved inwardly and in said second position said preventing means is displaced from said drive plate allowing inward movement of said drive plate.
5. The manipulation mechanism of claim 4, wherein said preventing means includes a stopper having a sliding prevention plate extending into said housing which abuts against said drive plate when said preventing means is in said first position.
6. The manipulation mechanism of claim 5, wherein said button is disposed on a bottom portion of said housing and said stopper is disposed on a top portion of said housing.
7. The manipulation mechanism of claim 1, wherein the pulley is a wire moving pulley (5) rotatably supported in said housing (4), said pulley (5) having the wire (3) wound at least partially therearound and connected thereto at one end of the wire, the opposite end of the wire (3) being connected to said locking means (17);
the actuating means is a manipulation lever (6) including a main body (61) and a drive plate (62) extending downwardly from the main body (61) into said housing (4) and engaged with a portion of said pulley (5), said lever (6) being slidably fitted in said housing (4) so that a portion of said main body (61) is exposed outside said housing (4), movement of said lever (6) causing said pulley (5) to rotate and attendantly said wire (3) to unlock said locking means (17); and
the prevention means is a sliding prevention stopper (7) slidably disposed in said housing (4), said stopper (7) including a sliding prevention plate (72) extending therefrom and into said housing (4) so that a distal end of said prevention plate (72) can be selectively placed in contact with said drive plate (62) to prevent said lever (6) from being moved.
8. The manipulation mechanism according to claim 7, wherein a distal end of the drive plate (62) is L-shaped including a protruding portion (64) so that said distal end of the sliding prevention plate (72) can be selectively contacted with only said protruding portion (64) of the drive plate (62).

Patentansprüche

1. Bedienungseinrichtung, die an den Griffstangen eines Kinderwagens zum Verriegeln und Entriegeln eines Verriegelungsmittels (17) des Wagens geschaffen ist, umfassend:
 - ein Gehäuse (4);
 - eine in dem Gehäuse (4) drehbar angeordnete Rolle (5);
 - ein an einem Ende mit der Rolle (5) verbundener und mit dem gegenüberliegenden Ende mit dem Verriegelungsmittel (17) verbundener Draht;
 - ein mit der Rolle (5) funktionsmäßig verbundenes Betätigungsmittel (6) zum wahlweisen Indrehungsversetzen der Rolle (5), so daß der Draht (3) hierum gewunden wird, und damit verbunden, der Draht (3) das Verriegelungsmittel (17) außer Eingriff bringt; und
 - ein Sicherungsmittel (7) zum wahlweisen Verhindern, daß sich das Betätigungsmittel (6) bewegt, um die Rolle (5) in eine Richtung zu drehen, in der das Verriegelungsmittel (17) gelöst wird.
2. Betätigungseinrichtung nach Anspruch 1, bei der das Betätigungsmittel einen in dem Gehäuse verschiebbar angeordneten Knopf beinhaltet, wobei der Knopf eine sich hiervon erstreckende Antriebsplatte beinhaltet und mit der Rolle verbunden ist, bei der, wenn der Knopf einwärtsgedrückt wird, die Rolle veranlaßt wird, sich zu drehen, um hierdurch den Draht zu spannen und das Verriegelungsmittel zu entriegeln.
3. Betätigungseinrichtung nach Anspruch 2, des weiteren umfassend eine Feder zum Nachauswärtsdrängen des Knopfes von dem Gehäuse.
4. Betätigungseinrichtung nach Anspruch 2, bei der das Sicherungsmittel in dem Gehäuse zwischen ersten und zweiten Positionen verschiebbar angeordnet ist, bei der in der ersten Position das Sicherungsmittel gegen die Antriebsplatte anschlägt, um hierdurch den Knopf am Sicheinwärtsbewegen zu hindern, und in der zweiten Position das Sicherungsmittel von der Antriebsplatte abgelöst ist, was eine Einwärtsbewegung der Antriebsplatte zuläßt.
5. Betätigungseinrichtung nach Anspruch 4, bei der das Sicherungsmittel einen eine sich in dem Gehäuse erstreckende Verschiebeverhinderungsplatte aufweisenden Anschlag beinhaltet, der gegen die Antriebsplatte anstößt, wenn das Sicherungsmittel in der ersten Position ist.
6. Betätigungseinrichtung nach Anspruch 5, bei dem der Knopf auf einem Grundabschnitt des Gehäuses

angeordnet ist und der Anschlag an einem oberen Abschnitt des Gehäuses angeordnet ist.

7. Betätigungseinrichtung nach Anspruch 1, bei der die Rolle eine in dem Gehäuse (4) drehbar gestützte Drahtaufwickelscheibe (5) ist, wobei die Scheibe (5) den Draht (3) zumindest teilweise hierum gewunden hat und mit einem Ende des Drahts verbunden ist, wobei das gegenüberliegende Ende des Drahtes (3) mit dem Verriegelungsmittel (17) verbunden ist; bei der das Betätigungsmittel ein Betätigungshebel (6) ist, der einen Hauptkörper (61) und eine sich von dem Hauptkörper (61) in das Gehäuse (4) abwärtserstreckende und mit einem Abschnitt der Scheibe (5) in Eingriff stehende Antriebsplatte (62) beinhaltet, wobei der Hebel (6) in dem Gehäuse (4) verschiebbar eingepaßt ist, so daß ein Abschnitt des Hauptkörpers (61) außerhalb des Gehäuses (4) liegt, wobei eine Bewegung des Hebels (6) die Scheibe (5) veranlaßt sich zu drehen, und damit verbunden, den Draht (3) dazu veranlaßt, das Verriegelungsmittel (17) zu entriegeln; und bei der das Sicherungsmittel ein Schiebeverhinderungsanschlag (7) ist, der in dem Gehäuse (4) verschiebbar angeordnet ist, wobei der Anschlag (7) eine sich hiervon und in das Gehäuse (4) erstreckende Schiebeverhinderungsplatte (72) beinhaltet, so daß ein entferntes Ende der Verhinderungsplatte (72) wahlweise in Kontakt mit der Antriebsplatte (62) plaziert werden kann, um zu verhindern, daß der Hebel (6) bewegt wird.
8. Betätigungseinrichtung nach Anspruch 7, bei der ein entferntes Ende der Antriebsplatte (62) L-förmig ist, beinhaltend einen vorstehenden Abschnitt (64), so daß das entfernte Ende der Schiebeverhinderungsplatte (72) wahlweise mit nur dem vorstehenden Abschnitt (64) der Antriebsplatte (62) in Kontakt gebracht werden kann.

Revendications

1. Mécanisme de manipulation prévu sur les poignées d'une voiture d'enfant pour verrouiller et déverrouiller des moyens de verrouillage (17) de cette voiture, comprenant :
 - un boîtier (4) ;
 - une poulie (5) disposée rotative dans ledit boîtier (4) ;
 - un fil (3) relié à ladite poulie (5) par une de ses extrémités et auxdits moyens de verrouillage (17) par son autre extrémité opposée ;
 - des moyens d'actionnement (6) reliés fonctionnellement à ladite poulie (5) pour actionner sélectivement la rotation de ladite poulie (5) de manière que ledit fil (3) s'enroule autour de

celle-ci et que, en conséquence, ledit fil (3) dégage lesdits moyens de verrouillage (17) ; et des moyens d'interdiction (7) destinés à empêcher sélectivement lesdits moyens d'actionnement (6) de se déplacer pour faire tourner ladite poulie (5) dans un sens dans lequel lesdits moyens de verrouillage (17) sont relâchés.

2. Mécanisme de manipulation selon la revendication 1, dans lequel lesdits moyens d'actionnement comprennent un bouton disposé coulissant dans ledit boîtier, ledit bouton comprenant une plaque d'entraînement en saillie sur lui et relié à ladite poulie, dans lequel, lorsque le bouton est poussé vers l'intérieur, ladite poulie est entraînée en rotation pour tendre ainsi ledit fil et déverrouiller lesdits moyens de verrouillage.
3. Mécanisme de manipulation selon la revendication 2, comprenant en outre un ressort servant à repousser ledit bouton vers l'extérieur dudit boîtier.
4. Mécanisme de manipulation selon la revendication 2, dans lequel lesdits moyens d'interdiction sont disposés dans ledit boîtier pour coulisser entre des première et deuxième positions et dans lequel, dans ladite première position, lesdits moyens d'interdiction butent contre ladite plaque d'entraînement pour empêcher ainsi de repousser ledit bouton vers l'intérieur tandis que, dans ladite deuxième position, lesdits moyen d'interdiction sont écartés de ladite plaque d'entraînement, en permettant ainsi à ladite plaque d'entraînement de se déplacer vers l'intérieur.
5. Mécanisme de manipulation selon la revendication 4, dans lequel lesdits moyens d'interdiction comprennent un butoir ayant une plaque d'interdiction coulissante qui pénètre dans ledit boîtier et qui bute contre ladite plaque d'entraînement lorsque lesdits moyens d'interdiction sont dans ladite première position.
6. Mécanisme de manipulation selon la revendication 5, dans lequel ledit bouton est disposé sur une portion inférieure dudit boîtier et ledit butoir est disposé sur une portion supérieure dudit boîtier.
7. Mécanisme de manipulation selon la revendication 1, dans lequel la poulie est une poulie (5) d'entraînement de fil montée rotative dans ledit boîtier (4), ladite poulie (5) ayant le fil (3) enroulé au moins partiellement autour d'elle et relié à cette poulie à une première extrémité du fil, l'extrémité opposée du fil (3) étant reliée audit moyen de verrouillage (17) ;
les moyens d'actionnement sont un levier de manipulation (6) qui comprend un corps principal (61) et une plaque d'entraînement (62) qui fait saillie vers le bas sur ledit corps principal (61) pour

pénétrer dans ledit boîtier (4) et qui est en prise avec une portion de ladite poulie (5), ledit levier (6) étant monté coulissant dans ledit boîtier (4), de sorte qu'une portion dudit corps principal (61) apparait à l'extérieur dudit boîtier (4), le mouvement dudit levier (6) faisant tourner ladite poulie (5) et amenant en conséquence ledit fil (3) à déverrouiller lesdits moyens de verrouillage (17) ; et

les moyens d'interdiction sont un butoir (7) d'interdiction du coulisement disposé coulissant dans ledit boîtier (4), ledit butoir (7) comprenant une plaque (72) d'interdiction du coulisement, qui fait saillie sur lui et pénètre dans ledit boîtier (4), de manière qu'une extrémité distale de ladite plaque d'interdiction (72) puisse être sélectivement placée en contact avec ladite plaque d'entraînement (62) pour empêcher de déplacer ledit levier (6).

8. Mécanisme de manipulation selon la revendication 7, dans lequel l'extrémité distale de la plaque d'entraînement (62) est en forme de L, et comprend une portion saillante (64), de sorte que ladite extrémité distale de la plaque (72) d'interdiction du coulisement peut être sélectivement mise en contact uniquement avec ladite portion saillante (64) de la plaque d'entraînement (62).

Fig. 1

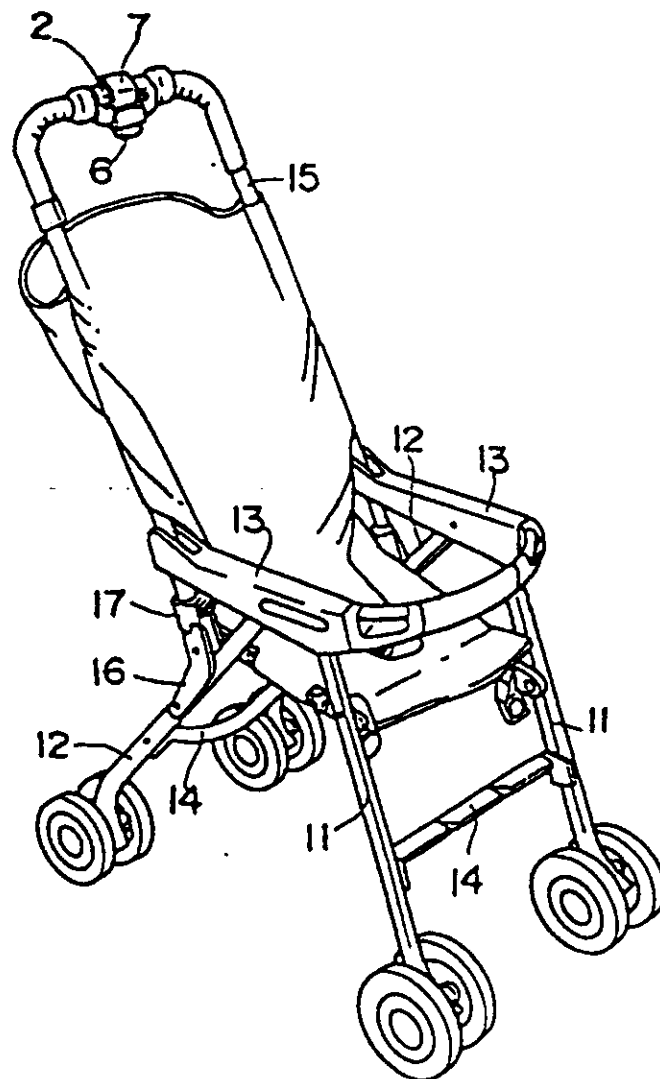


Fig. 2

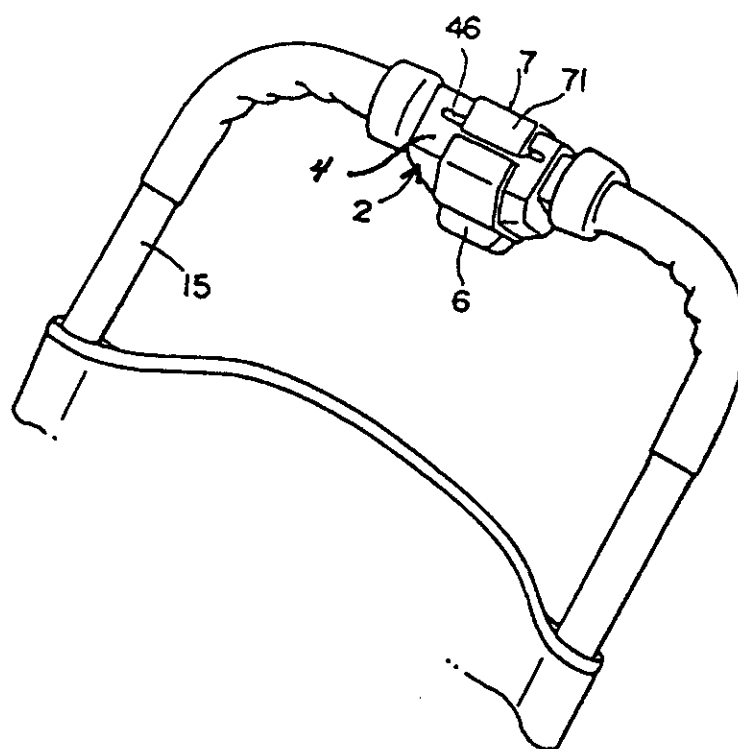


Fig. 3

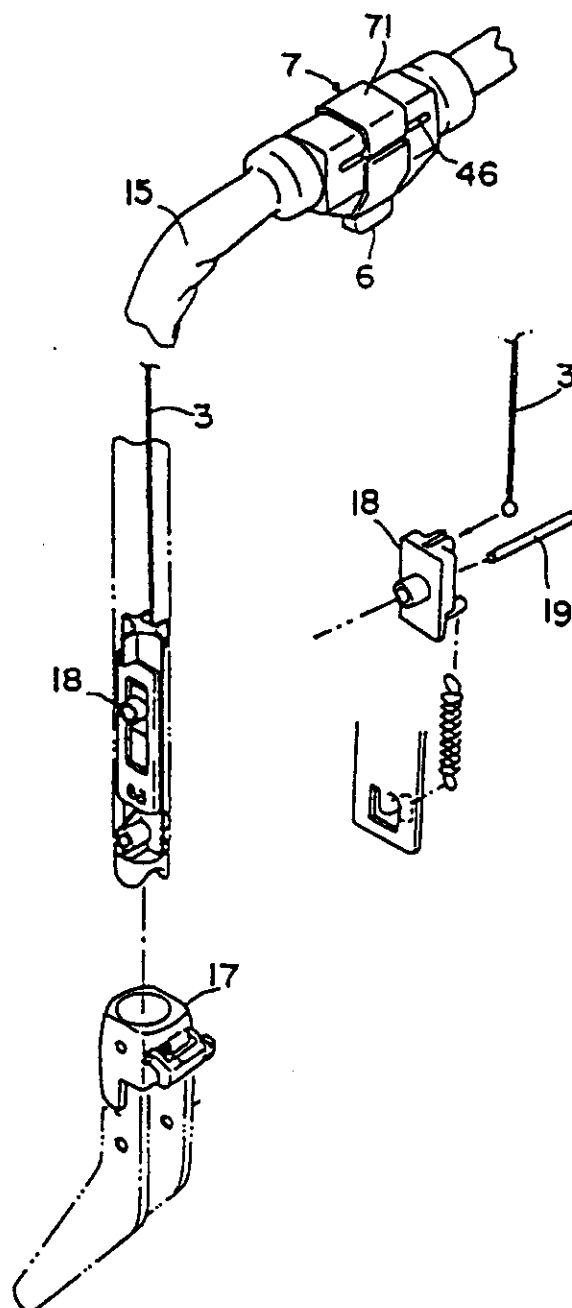


Fig. 4

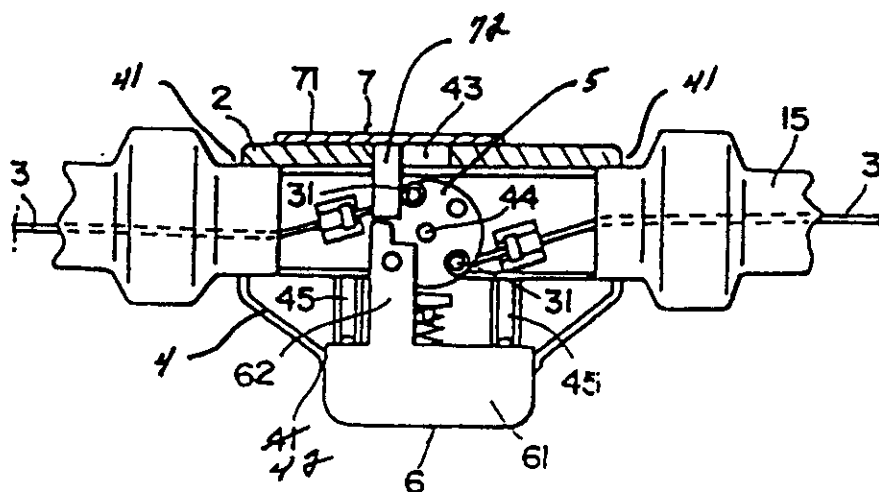


Fig. 5

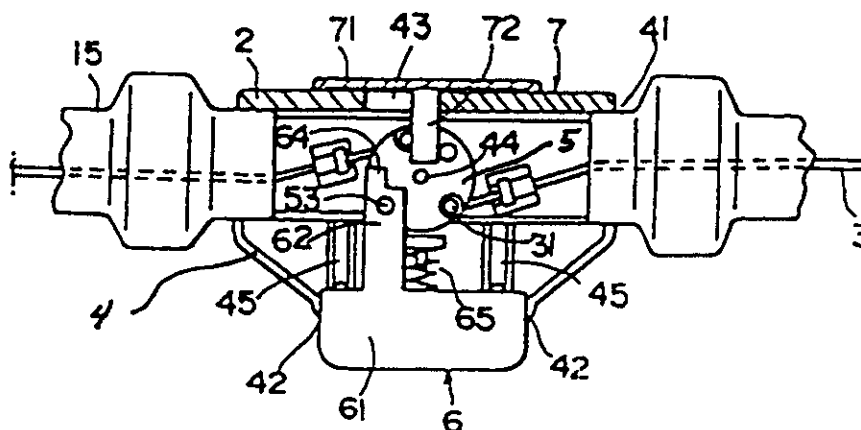
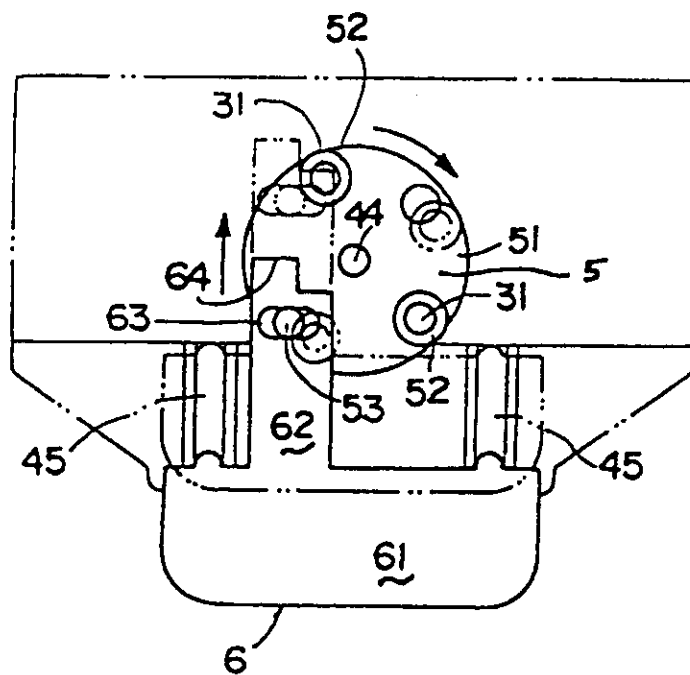


Fig. 6



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Title LOCKING/UNLOCKING MANIPULATION MECHANISM DISPOSED ON THE HANDLEBARS OF
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YEAR OF LAST RENEWAL 00

STATUS PATENT IN FORCE

**** END OF REPORT ****