Abstract: A safety device (1) with a retractable cable (64) and a gripping device (2) such as a gripper or grapple, where the cable (64) connects the gripping device (2) to a spindle (63) inside the safety device (1). The spindle (63) is controlled by a spring (62) or the like. The purpose of the invention is to provide a safe and easy to use safety device (1) for securing a portable urban object such as a stroller or the like whilst under transport. The enhanced security is achieved by fixing the safety device to the portable urban object to be secured, and when the object is placed inside for example a bus, the gripping device (2) is pulled and looped around a pole (103) or other type of device provided for support, and the gripping device (2) is fastened on the object itself. The spring (62) provides enough spring force to tighten the cable (64) around the support device, and thereby provides a firm support for the object.
Device, method and system for securing portable urban objects in transport

FIELD OF INVENTION

The invention relates to safety locks. More specifically it relates to locks securing portable urban objects such as strollers, prams, bikes and the like while being in transport vehicles such as buses, trams, trains and the like. The lock also includes a key operated locking feature for use when lock is used to secure objects when owner cannot have visual contact with object.

BACKGROUND OF THE INVENTION

Strollers and the like, portable urban objects, are often brought on board of buses, trams and trains when parent and child are in need of transport. In public transportation there is very often provided an area for such strollers to be placed. For example is this often provided in the middle of the bus, where the floor lever is lowered in order to provide a lower step, to make it easier for a stroller and the like to be brought on board. Poles or handles are provided for the traveler, in order for them to be able to stand next to the stroller and the like to be able to oversee it during the transport. It is advisable to put all available brakes on the stroller during transport to avoid too much movement of the stroller due to forces induced by the vehicle moving in traffic. There is a safety risk for such objects, not only for the objects itself, but also for the content that often remains in the object during the transport, in fact this is even the case with infants being left in a stroller during transport. The stroller comprising an infant is used further as an example in this description, meaning also to comprise portable urban objects with its potential content. There are no requirements to safety belts or the like, which is common for other passengers being transported. An always present problem for these strollers is that a collision or a sudden movement may bring the stroller out of balance, and in worst case it can tip over and harm the child in the stroller and other travelers. The same problem is present when bringing another portable urban object such as a bicycle or large/heavy suitcase on board a bus, train or the like where there are no specific safe storage systems available, and they are simply placed on the floor of the vehicle.

It is possible to use a bicycle wire lock or a rope or other fastening means, but this will become cumbersome and potentially not used since the process of locking and unlocking will create too much
hassle. Another drawback will be that if a slack is provided by the wire lock this will reduce the safety aspect if an accident occurs.

A gripping device with at least one movable arm is described in US 2005/230444 Al, wherein the movable arm may be selectably positionable and secured at a position by a locking pin.

In US 2007/277569 Al, is a combined bicycle pedal and lock, and a method for its use, described. It is further showing that the device is an integral part of a bicycle and serves both as an ordinary bicycle pedal and as means of locking the bicycle to an object which is not a part of the bicycle.

In US 2005/016232 Al it is shown an anti-theft lock assembly for securing a mobile object such as a baby carriage to an immovable structure such as a pole. The lock assembly includes a lock housing adapted for being securely attached to the carriage, and a lock mechanism positioned in the lock housing for being selectively moved between an engaged locked position and a disengaged unlocked position by a user having access means to operate the lock mechanism. The phrase portable urban objects is used in this document to describe an object being able to be rolled, and operated by a traveler or user, comprising but not being limited by: strollers, suitcases, bicycles, trundle, push chair, wheelchairs, crate trills, cart, trolley, (hand-) pallet truck.

The phrase transport vehicle is used in this document to describe any type of transportation aids, comprising but not limited by: buses, trains, taxis, cars, trucks, trams, subway carriages, boats, air planes, fixed and floating offshore installations, elevators, ski lifts.

It is an aim for the present invention to solve the above stated problem.

SUMMARY OF THE INVENTION

The invention and its embodiments as described herein overcome the problem described above in an easy to use and failsafe device for securing an object in a moving vehicle.

The present invention may comprise a safety device with a retractable cable and a gripping device such as a, grip or grapple, where the cable connects the gripping device to a spindle inside the safety device. The spindle is controlled by a spring or the like. The purpose of the invention is to provide a safe and very easy to use safety device for securing a portable urban object such as a stroller or the like whilst under transport. The enhanced security is achieved by fixing the safety device to the
securing portable urban object to be secured, and when the object is placed inside for example a bus, the gripping device is pulled and looped around a pole or other type of device provided for support, and the gripping device is fastened on the object itself. The spring provides enough spring force to tighten the cable around the support device, and thereby provides a firm support for the object. Advantageous features and uses are described with references to the figures and embodiments described below.

The invention is defined by the independent device claim 1, method claim 14, and system claim 18. Advantageous embodiments are further defined by the dependent claims.

BRIEF DESCRIPTION OF THE FIGURES

The following figures show embodiments of the invention, and its intention is to visualize possible solutions, and not to limit the scope of the invention:

Fig. 1 - Safety device with gripping device mounted in docking ports seen from above

Fig. 2 - Oblique view from above of safety device with gripping device mounted in the docking ports

Fig. 3 - Safety device with gripping device mounted in docking ports seen from below

Fig. 4 - Safety device with gripping device outside docking ports seen from below

Fig. 5 - Oblique view from below of safety device with gripping device mounted in the docking ports and with one version of fastening straps installed

Fig. 6 - Exploded view of safety device

Fig. 7 - Internal view of safety device showing the braking element in position to prohibit movement of the reel plate

Fig. 8 - Exploded view of gripping device

Fig. 9 - Gripping device in a locked state

Fig. 10 - Safety device mounted on stroller with gripping device locked around stroller frame
Fig. 11 - Safety device house lock mounted on stroller with gripping device mounted in the docking ports

Fig. 12 A and 12 B - Alternative arrangements of gripping arms and gripping device

DETAILED DESCRIPTION OF THE INVENTION

Fig. 1 is a top view of the safety device 1, with gripping device 2 mounted in docking ports 7. The docking ports 7 are provided by the safety device housing. The gripping device is further provided with an optional key lock 5 feature that needs to be operated by a key (not shown) to enable the gripping device to be pulled out from the docking ports 7 in the safety device 1. The safety device 1 is provided with a winding button 3. The winding button 3, when pushed, enables activation of a spring inside the safety device 1. The spring is connected to a spindle comprising a woundable cable, and the spindle is constructed in a manner so that the cable (not shown) which is connecting the gripping device 2 to the safety device 1, can be pulled out or retracted, and further it controls the spring operation of a winding function that enables the cable to forcibly be retracted. This operation is explained further later in this description. The cable is typically of a material with a high strength, but still flexible enough to be able to easily be wined into the spindle. Examples of such cable material can be, without being limited to: polyamide and/or polyester and/or polyethylene based such as Nylon®, Kevlar® and Vectran®, steel, galvanized steel, any type of polymer fibers compounds, carbon fiber based.

Fig. 2 shows an oblique view of the safety device and the gripping device partly retracted from the docking ports.

Fig. 3 is a bottom view of the safety device 1 with gripping device 2 mounted in the docking ports 7. The bottom cover 4 of the house lock chassis and the bottom side of the casing 604 may have through holes/anchor points 8 for providing fastening means for such as a strap, belt, clamp or the like, for fixing the safety device 1 to the object in need for securing, for example a stroller.

Fig. 4 shows the safety device with gripping device outside docking ports seen from below. The gripping device has independent of the optional key operated lock, an end cap 86.
Fig. 5 presents an oblique view of the safety device 1 from below with gripping device 2 mounted in the docking ports 7, and further, straps 51 are shown protruding the through holes.

Fig. 6 shows an exploded view of an optional internal composition of the safety device 1. The safety device may comprise a top cover 61, a spring 62, a spindle device 63 for winding of a cable 64, the spindle device 63 may comprise a circular spindle plate 65 at a first end of the spindle device 63, the spindle plate 65 being a gear wheel comprising a number of teeth 66 at its periphery, a braking element 67 arranged for controllably engaging the gear wheel teeth 66, and an activation button 3 for controlling the braking element 67. The spindle device may further comprise a stop plate 69 at the second end of the spindle device 63. A bottom cover 4 is provided and comprises arrangement for fastening the bottom cover to the top cover. The fastening arrangements 602, 603 may be nuts and bolts, ridges and grooves, "click"-feature or other, or the two covers may simply be glued or welded together in the production phase. Finally an "envelop"-type casing 604 is provided for protection and enhanced performance of the safety device. The casing 604 "embraces" the safety device 1, and may be made of an elastic material such as rubber to provide a "soft" look and feel. Any other material providing an extra layer of protection for the safety device may be used for the casing 604, comprising without excluding other materials: aluminum, plastic, rubber, carbon fiber.

Fig. 7 shows how the braking element 67 of the safety device engages the gear wheel teeth 66 and hence effectively prohibits any movement of the attached spindle plate 65 and the spindle device 63.

In Fig. 7 the safety device 1 is in a locked state because the activation button 3 has not been pushed inward. When activation button 3 is pushed (in the direction of the arrow), the backside of activation button 3 will engage the braking element 67 which will pivot around a center pin 71 and then at one point release the braking element engagement of the gear wheel teeth 66.

Fig. 8 shows an exploded view of an optional internal composition of the gripping device 2. The gripping device 2 may be constructed to comprise a first gripping arm 82 with a first base 870, and a second gripping arm 85 with a second base 860. The first base 870 may be designed to engage the second base 860, in a pivot point, in a manner such that the gripping arms 82, 85 can rotate in opposite directions to close and open a gap between the gripping arms 82, 85. The gripping device 2 may further comprise various intermediate constructional elements, as outlined in one example in figure 12A and 12B, in order to enhance gripping functionality and flexibility for adapting to various
needs. This may include comprising one or more base elements 120 providing two separate pivot points 121, 122, or hinge arrangements, for the gripping arms 82, 85.

The gripping device, as shown in figure 8, may be composed to comprise a key lock 5, the first gripping arm 82, a grip spring 83, a gripping gear 84, the second gripping arm 85 comprising arm gear teeth 850 for engaging with the gripping gear 84, and an end cap 86. The end cap 86 may comprise inward facing protrusions/triggers 87 for release of the gripping gear 84 engagement with arm gear teeth 850 of the second gripping arm 85. The grip spring 83 will bias the gripping gear 84 to engage with the arm gear teeth 850 of the second gripping arm 85, prohibiting an opening movement of the arms 82, 85, and allowing only tightening movement of the gripping arms 82, 85. The gripping gear 84 is mounted on a pipe formed section 810, in the form of a type of spur gear, of the first gripping arm 82, and is further in engaging contact with the key lock 5. The key lock 5 is arranged to lock the gripping gear 84 and the gripping arms 82, 85 in a current position when key (not shown) is turned and/or removed. Although locked the gripping arms 82, 85 may be arranged to be able to tighten the grip, independent on whether a key has unlocked the key lock 5 or not. The latter may be achieved by that the key lock 5 is designed with a contact pattern (not shown) for engagement of a corresponding contact pattern (not shown) in the gripping gear 84, such that when the key lock is in an unlocked state, the patterns will engage and the gripping gear 84 can move along the pipe formed section 810 in the spur gear 870 of the first arm when end cap 86 is pushed, and thus be freed from the engagement with the arm gear teeth 850, whilst if the key lock 5 is in a locked state the patterns will not engage and the gripping gear 84 cannot move along the pipe formed section 810 in the spur gear 870 of the first arm, and the gripping gear 84 will not be moved away from the arm gear teeth 850 if someone tries to push the end cap 86. The gripping arms are designed to engage each other in a bearing, such as a roller bearing 850, 860. Finally an "envelop"-type cover 89 is provided for protection and enhanced performance of the gripping device. The cover 89 covers part of the gripping arms 82, 85, and may be made of an elastic material such as rubber to provide a "soft" look and feel. The cover 89 may further provide a biased force working to open up the grip of the gripping arms 82, 85, so when end cap 86 is pressed or locking device is unlocked, the grip opens up automatically. The biased force is dependent on the material used in the cover 89. Any other material providing an extra layer of protection and biased force for the gripping device may be used for the cover 89, comprising, alone or in a mix, without excluding other materials: aluminum, plastic,
rubber, carbon fiber. When the parts of the gripping device 2 are mounted together, all the internal parts of the gripping gear 810, 83, 84, 850 will be arranged inside the roller bearing 860, 870 of the gripping arms 82, 85. The gripping device 2 may comprise fastening means for a cable 64 as shown in the figure, the cable 64 may be used to connect the gripping device 2 to other objects, such as for example the safety device 1 described above.

Fig. 1 - 5 show the gripping device 2 in an open state, whilst Fig. 9 shows the gripping device in a closed state. If the gripping device is in an unlocked state, the opening of the gripping device 2 is performed by pressing the end cap 86, and moving the arms open. A spring (not shown) may also be arranged inside the gripping device or inside the cover to provide an enhanced biased force working to open up the grip of the gripping arms 82, 85, so when end cap 86 is pressed or locking device is unlocked, the grip opens up automatically. If the gripping device is in a locked state, with a key, the lock may have to be unlocked with the key to be able to alter its state to a more open or optionally a more closed state. As visible in the figure, the gripping arms 82, 85 of the gripping device 2 may be parallel displaced in a manner such that when the gap between the gripping arms 82, 85 is closed, the outer ends of the gripping arms are enabled to pass each other when closing the grip, and thus the circumference of the grip is not limited by the gripping arms meeting in the middle. The grip can be further improved by altering the shape of the gripping arms 82, 85 and the structure and material of the inside arch of the shaped gripping arms 82, 85 or the optional cover 89. Protruding rubber knots/patterns, saw tooth formed design, magnet material, square/rectangle shaped, wave form are examples of such custom design of the grip.

Fig. 10 and 11 show an embodiment where the safety device 1 is mounted on a stroller 101 with gripping device 2 mounted on stroller handle 102 whilst the device secures the stroller in an environment which could be the stroller area of a bus or the like. The cable 64 is typically looped around a pole 103 provided for the purpose of supporting standing travelers in a bus or the like.

Now an embodiment of the invention is described in a case scenario where a mother is taking her child on a bus trip. The safety device 1 is mounted to a stroller 101 and is arranged on the push handle 102 in a position not interfering with the function of collapsing the stroller 101 for transport/stowing/storing. The mother enters the bus through the mid door, which is often designed for easy access by strollers, and positions the stroller 101 on the floor space provided for strollers or standing passengers. Since the mother plans to keep the stroller 101 under surveillance all the time,
she has left the gripping device 2 in an unlocked state. She positions the stroller 101 close to a pole 103 provided for support purposes. To unclip the gripping device 2 from the safety device she first pushes the end cap 86 of the gripping device 2 to release the grip of the gripping device 2 holding it in the docking ports 7 of the safety device 1. She then pushes the activation button 3 of the safety device 1 to enable the gripping device to be pulled out and a length of cable 64 necessary to bring the gripping device 2 around the pole 103 and back to the stroller 101. When the gripping device 2 has been looped around the pole 103, the mother arranges the gripping arms 82, 85 around a suitable part of the stroller 101, for example the side frame 104. When the gripping arms 82, 85 are brought in a firm gripping contact with the side frame 104 of the stroller 101, the stroller is secured from uncontrolled movement due to unexpected movement of the vehicle. To make the securing of the stroller optimal the mother will now push the activation button 3 of the safety device 1 to enable the spring 62 to pull the cable 64 tight, and when the cable 64 is tightened to the mother's satisfaction, the activation button 3 is released, and the cable is locked in the present state. Now the stroller 101 is much more secure against uncontrolled movement of the bus. When the bus trip is at its end, the mother simply pushes the end cap 86 of the gripping device 2 and unfastens the grip on the side frame of the stroller.

The mother can then position the gripping arms 82, 85 in the ports 7 of the safety device 1 by pushing the arms 82, 85 toward each other. The cable is spooled back into the safety device 1 with a simple push at the activation button 3, and the spring 62 retracts the cable 64 by winding the cable 64 up on the spindle device 63 inside the safety device 1.

In another scenario the safety device 1 is used to secure for example a stroller 101 when the owner is unable to oversee the stroller at all time. To prevent theft of the stroller the gripping device is used to lock the stroller to a fixed pole or the like. For example can a staircase handle be used, or a lamp pole or the like. The owner simply arranges the stroller close to the anchor point, and arranges the gripping device 2 by closing the gap of the gripping arms 82, 85 around a pole of the anchor point. When a firm grip has been established the user locks the gripping device by using the key to lock the key lock 5. It is now not possible to open the grip of the gripping arms 82, 85 unless a key unlocks the key lock 5. The cable is then tightened by pushing the activation button 3 of the safety device 1.
Although the gripping device 2 and the safety device 1 optimize the safe keeping of portable urban object under transportation when combined, it is within the scope of the invention to facilitate the use of the two devices 1, 2 separately or combine the features of the two devices 1, 2 in one device. A variety of such uses may include:

a) Attaching the gripping device 2 permanently to the portable urbane object with separate fastening means 123 provided for this purpose (not using the cable 64 and the safety device 1), and when transporting bringing the object close to a pole or fastening device provided for attachment purpose on the vehicle and then operate the grip with the provided fastening device.

b) The vehicle provides the gripping device 2 permanently installed in suitable spots where the traveler can maneuver the object to be secured close to the gripping device 2 and close the grip around a suitable element of the object.

c) The gripping device 2 may comprise the spring/spindle function as described for the safety device 1 above, and a cable 64 to connect the gripping device 2 as stated in a) and b) above including the flexibility of the combined devices.

The safety device 1 and gripping device 2 may also comprise alarm/status functions, for communicating to the owner/surroundings if the portable urban object under transport is tilted, broken or for example moving away from owner/traveler (the case if for example the portable urban object being stolen). An alarm may need additional host devices, and such alarms may well be connected to communication devices for communicating status to a remote device/host.

The safety device 1 and gripping device 2 may also comprise additional electronic devices or electrical equipment such as light, phone-card, phone, camera, navigation device, display, communication device, speakers and microphones, buzzers, gyros, vibrating devices, power source and/or connector for connecting to power source, battery.

The key lock may be adapted to use any form of keys or locking device, including but not limited to: mechanical key lock, electronic key lock, fingerprint or smartcard locking device, code lock.

It is therefore an intention with this invention to provide a device in a first embodiment where a gripping device 2 for securing a portable urban object may comprise a first gripping arm 82 with a first base 870, a second gripping arm 85 with a second base 860, where the first bases 870, 860 are
designed to move around a pivot point in a manner such that the gripping arms 82, 85 can rotate in opposite directions to close and open a gap between the gripping arms 82, 85.

In a second embodiment is provided a device according to the first embodiment, where the first base 870 is designed to engage the second base 860 in a single pivot point in a manner such that the gripping arms 82, 85 can rotate in opposite directions to close and open a gap between the gripping arms 82, 85.

In a third embodiment is provided a device according to the first or second embodiments, where a cable 64 having a first end securely fixed to the first or second base 870, 860 of the gripping arms 82, 85, and the cable further has a second end securely attached to a safety device 1, wherein the safety device 1 may comprise a spindle device 63 for securely attaching and winding the cable 64, a spring 62 connected to the spindle device 63 for providing force to wind the cable onto the spindle, a spindle plate 65 attached to a first side of the spindle device 63, a stop plate 69 attached to a second side of the spindle device 63 for enclosing the cable 64 when wound up onto the spindle device 63, a top cover 61 and a bottom cover 4, designed to engage each other with fastening arrangements 602, 603 for thereby to enclose the spindle device 63, the spring 62, the spindle plate 65, the stop plate 69 and the part of the cable 64 being reeled onto the spindle device 63.

In a fourth embodiment is provided a device according to any of the preceding first to third embodiments, wherein the gripping device 2 may further comprise a gripping gear 84, and a grip spring 83, the gripping gear 84 having a first side comprising a plurality of teeth for engaging of corresponding teeth 850 of the second base 860, the grip spring 83 and the gripping gear 84 being mounted onto a pipe formed section 810 protruding from the center of the first base 870 towards the second base 860 such that the grip spring 83 will bias the gripping gear 84 away from the first base 870 towards the second base 860 so the teeth of the gripping gear 84 contact the teeth 850 of the second base 860, the gripping device 2 may further comprise an end cap 86 slidingly mounted on the outward facing side of the second base 860, the end cap having inward facing protrusions 87 for engagement with the first side of the gripping gear, such that when the end cap 86 is pushed into the second base 860, the gripping gear will be pushed towards the first base 870 and the engaged teeth
of the gripping gear 84 will disengage the contact with the inward facing teeth 850 of the second base.

In a fifth embodiment is provided a device according to the fourth embodiment, wherein the gripping device 2 further may comprise a key lock 5 mounted in the first base 870, the key lock 5 protruding into the pipe formed section 810 and engaging a second side of the gripping gear 84, such that when key lock 5 is either in a first locked state where the gripping gear is prohibited from sliding on the pipe formed section 810, engaging permanently the teeth of the gripping gear 84 with the teeth 850 of the second base 860, or a second open state where the gripping gear is able to slide on the pipe formed section 810.

In a sixth embodiment is provided a device according to any of the preceding first to fifth embodiments, wherein the gripping device 2 further may comprise a cover 89 for surrounding the first and second gripping arm 82, 85, the cover being made of a flexible material providing a biased force working to open up the gripping arms 82, 83.

In a seventh embodiment is provided a device according to any of the preceding first to sixth embodiments, wherein the gripping arms 82, 85 of the gripping device 2 may be parallel displaced when the gap between the gripping arms 82, 85 is closed, enabling the outer ends of the gripping arms to pass each other when closing the grip.

In an eighth embodiment is provided a device according to any of the preceding first to seventh embodiments, wherein the gripping arms 82, 85 of the gripping device 2 may have an arched form inward pointing toward each other, enabling a better grip around objects such as poles or stroller frame.

In a ninth embodiment is provided a device according to any of the preceding first to eighth embodiments, wherein the teeth of the gripping gear 84 and the teeth 850 of the second base 860 may be designed to allow closing of the gripping arms 82, 85 and to prohibit opening the gripping arms 82, 85 when the gripping gear 84 is biased towards the second base 860, wherein the teeth have a first slanting side and a second perpendicular to the circular movement side, such that when
the gripping arms are at rest the slanting side of the teeth of the gripping gear 84 and of the teeth of the second base 860 are in contact, and the corresponding perpendicular sides of the teeth of the gripping gear 84 and the teeth of the second base 860 are in contact.

In a tenth embodiment is provided a device according to any of the preceding second to ninth embodiments, wherein the spindle plate 65 of the safety device 1 may further comprise a plurality of teeth 66 at its periphery, and the safety device may further comprise a braking element 67 pivotally arranged around a center pin 71, the braking element 67 is arranged for controllably engaging the gear wheel teeth 66, and an activation button 3 for controlling the braking element 67 so that when pushed, the braking element 67 will pivot around the center pin 71 and disengage the gear wheel teeth 66.

In an eleventh embodiment is provided a device according to any of the preceding second to tenth embodiments, wherein the safety device 1 may further comprise docking ports 7 for receiving and holding the outer tip of the gripping arms 82, 85 of the gripping device 2.

In a twelfth embodiment is provided a device according to any of the preceding second to eleventh embodiments, wherein the safety device 1 may further comprise a casing 604 surrounding the safety device 1.

In a thirteenth embodiment is provided a device according to any of the preceding second to twelfth embodiments, wherein the bottom cover 4 of the safety device 1 may further comprise through holes or anchor points 8 for providing fixing arrangement of fastening means 51.

In a fourteenth embodiment is provided a method for securing a portable urban object that may comprise the following steps: fastening a safety device 1 according to any of the preceding third to thirteenth embodiments with a gripping device 2 according to any of the preceding first to thirteenth embodiments mounted in the docking ports 7, the safety device 1 and the gripping device 2 being bound to each other by a cable 64 wound on the spindle 63 of the safety device 1 to the portable urban object to be secured by using fastening means 51, pulling the gripping device 2 out of the
docking ports 7, pushing the activation button 3 to free the spindle 63, arranging the gripping arms 82, 85 of the gripping device 2 around a secure point 103, or leading the cable 64 around a secure point 103 and arranging the gripping arms 82, 85 of the gripping device 2 around a part 104 of the portable urban object to be secured.

In a fifteenth embodiment is provided a method according to the fourteenth embodiment, wherein the portable urban object to be secured may be a stroller.

In a sixteenth embodiment is provided a method according to the fourteenth or fifteenth embodiment, wherein the gripping device 2 key lock 5 may be locked by a key.

In a seventeenth embodiment is provided a method according to the sixteenth embodiment, wherein the key lock 5 may be operated by a key in the form of one of: physical key, electronic key, fingerprint, smartcard locking device, or code.

In an eighteenth embodiment is provided a system for securing a portable urban object that may comprise a portable urban object to be secured, a gripping device 1 according to any of the preceding first to thirteenth embodiments, a safety device 2 according to any of the preceding third to thirteenth embodiments, and a secure point 103 on a transport vehicle.

In a nineteenth embodiment is provided a system according to the eighteenth embodiment, further comprising a key for locking/unlocking the key lock 5.

In a twentieth embodiment is provided a system according to the eighteenth or nineteenth embodiment, wherein the portable urban object is a stroller.
Claims.

1. A security device assembly comprising a gripping device (2) for securing a portable urban object, the gripping device comprising:

   a first gripping arm (82) with a first base (870),
   a second gripping arm (85) with a second base (860), where

   the bases (870, 860) are designed to move around a pivot point in a manner such that the gripping arms (82, 85) can rotate in opposite directions to close and open a gap between the gripping arms (82, 85), the security assembly is characterized by comprising:

   a cable (64) having a first end securely fixed to the first or second base (870, 860) of the gripping arms (82, 85), and the cable further having a second end securely attached to a safety device (1), wherein

   the safety device (1) comprising:

   a spindle device (63) for securely attaching and winding the cable (64).

2. Device according to claim 1, where the first base (870) is designed to engage the second base (860) in a single pivot point in a manner such that the gripping arms (82, 85) can rotate in opposite directions to close and open a gap between the gripping arms (82, 85).

3. Device according to claim 1 or 2, where the safety device (1) further comprising:

   a spring (62) connected to the spindle device (63) for providing force to wind the cable onto the spindle,

   a spindle plate (65) attached to a first side of the spindle device (63),

   a stop plate (69) attached to a second side of the spindle device (63) for enclosing the cable (64) when wound up onto the spindle device (63),

   a top cover (61) and a bottom cover (4), designed to engage each other with fastening arrangements (602, 603) for thereby to enclose the spindle device (63), the spring (62), the spindle plate (65), the stop plate (69) and the part of the cable (64) being reeled onto the spindle device (63).
4. Device according to any of the preceding claims, wherein the gripping device (2) further comprising:

- a gripping gear (84), and a grip spring (83), the gripping gear (84) having a first side comprising a plurality of teeth for engaging of corresponding teeth (850) of the second base (860), the grip spring (83) and the gripping gear (84) being mounted onto a pipe formed section (810) protruding from the center of the first base (870) towards the second base (860) such that the grip spring (83) will bias the gripping gear (84) away from the first base (870) towards the second base (860) so the teeth of the gripping gear (84) contact the teeth (850) of the second base (850), the gripping device (2) further comprising:

- an end cap (86) slingly mounted on the outward facing side of the second base (860), the end cap having inward facing protrusions (87) for engagement with the first side of the gripping gear, such that when the end cap (86) is pushed into the second base (860), the gripping gear will be pushed towards the first base (870) and the engaged teeth of the gripping gear (84) will disengage the contact with the inward facing teeth (850) of the second base.

5. Device according to claim 4, wherein the gripping device (2) further comprising a key lock (5) mounted in the first base (870), the key lock (5) protruding into the pipe formed section (810) and engaging a second side of the gripping gear (84), such that when key lock (5) is either in a first locked state where the gripping gear is prohibited from sliding on the pipe formed section (810), engaging permanently the teeth of the gripping gear (84) with the teeth (850) of the second base (860), or a second open state where the gripping gear is able to slide on the pipe formed section (810).

6. Device according to any of the preceding claims, wherein the gripping device (2) further comprising:

- a cover (89) for surrounding the first and second gripping arm (82, 85), the cover being made of a flexible material providing a biased force working to open up the gripping arms (82, 83).
7. Device according to any of the preceding claims, wherein the gripping arms (82, 85) of the gripping device (2) are parallel displaced when the gap between the gripping arms (82, 85) is closed, enabling the outer ends of the gripping arms to pass each other when closing the grip.

8. Device according to any of the proceeding claims, wherein the gripping arms (82, 85) of the gripping device (2) are having an arched form inward pointing toward each other, enabling a better grip around objects such as poles or stroller frame.

9. Device according to any of claims 4 to 8, wherein the teeth of the gripping gear (84) and the teeth (850) of the second base (860) are designed to allow closing of the gripping arms (82, 85) and to prohibit opening the gripping arms (82, 85) when the gripping gear (84) is biased towards the second base (860), wherein the teeth have a first slanting side and a second perpendicular to the circular movement side, such that when the gripping arms are at rest the slanting side of the teeth of the gripping gear (84) and of the teeth of the second base (860) are in contact, and the corresponding perpendicular sides of the teeth of the gripping gear (84) and the teeth of the second base (860) are in contact.

10. Device according to any of claims 1 to 9, wherein the spindle plate (65) of the safety device (1) further comprising a plurality of teeth (66) at its periphery, and the safety device further comprising: a braking element (67) pivotally arranged around a center pin (71), the braking element (67) is arranged for controllably engaging the gear wheel teeth (66), and an activation button (3) for controlling the braking element (67) so that when pushed, the braking element (67) will pivot around the center pin (71) and disengage the gear wheel teeth (66).
11. Device according to any of claims 1 to 10, wherein the safety device (1) further comprising docking ports (7) for receiving and holding the outer tip of the gripping arms (82, 85) of the gripping device (2).

12. Device according to any of claims 1 to 11, wherein the safety device (1) further comprising a casing (604) surrounding the safety device (1).

13. Device according to any of claims 1 to 12, wherein the bottom cover (4) of the safety device (1) further comprising through holes or anchor points (8) for providing fixing arrangement of fastening means (51).

14. Method for securing a portable urban object, the method is characterized by comprising the following steps:
   fastening a safety device (1) according to any of the preceding claims 1 - 13 with a gripping device (2) according to any of the preceding claims 1 - 13 mounted in the docking ports (7), the safety device (1) and the gripping device (2) being bound to each other by a cable (64) wound on the spindle (63) of the safety device (1) to the portable urban object to be secured by using fastening means (51), pulling the gripping device (2) out of the docking ports (7), pushing the activation button (3) to free the spindle (63), arranging the gripping arms (82, 85) of the gripping device (2) around a secure point (103), or leading the cable (64) around a secure point (103) and arranging the gripping arms (82, 85) of the gripping device (2) around a part (104) of the portable urban object to be secured.

15. Method according to claim 14, wherein the portable urban object to be secured is a stroller.
16. Method according to claim 14 or 15, wherein the gripping device (2) key lock (5) is locked by a key.

17. Method according to claim 16, wherein the key lock (5) being operated by a key in the form of one of: physical key, electronic key, fingerprint, smartcard locking device, or code.

18. System for securing a portable urban object the system is characterized by comprising:
   a portable urban object to be secured,
   a gripping device (2) according to any of the preceding claims 1 - 13,
   a safety device (1) according to any of the preceding claims 1 - 13,
   a cable (64) connecting the gripping device (2) and the safety device (1), and
   a secure point (103) on a transport vehicle.

19. System according to claim 18, further comprising a key for locking/unlocking the key lock (5).

20. System according to claim 18 or 19, wherein the portable urban object is a stroller.
AMENDED CLAIMS
received by the International Bureau on 02 August 2016 (02.08.2016)

Claims.

1. A security device assembly comprising a gripping device (2) for securing a portable urban object, the gripping device comprising:
   a first gripping arm (82) with a first base (870),
   a second gripping arm (85) with a second base (860), where
   the bases (870, 860) are designed to move around a pivot point in a manner such that the gripping arms (82, 85) can rotate in opposite directions to close and open a gap between the gripping arms (82, 85), the security assembly is characterized by comprising:
   a cable (64) having a first end securely fixed to the first or second base (870, 860) of the gripping arms (82, 85), and the cable further having a second end securely attached to a safety device (1), wherein
   the safety device (1) comprising:
   a spindle device (63) for securely attaching and winding the cable (64),
   a spindle plate (65) attached to a first side of the spindle device (63), wherein the spindle plate (65) of
   the safety device (1) further comprises a plurality of teeth (66) at its periphery, and the safety device further comprising:
   a braking element (67) pivotally arranged around a center pin (71), the braking element (67) is arranged for controllably engaging the gear wheel teeth (66), and
   an activation button (3) for controlling the braking element (67) so that when pushed, the braking element (67) will pivot around the center pin (71) and disengage the gear wheel teeth (66).

2. Device according to claim 1, where the first base (870) is designed to engage the second base (860) in a single pivot point in a manner such that the gripping arms (82, 85) can rotate in opposite directions to close and open a gap between the gripping arms (82, 85).

3. Device according to claim 1 or 2, where the safety device (1) further comprises:
   a spring (62) connected to the spindle device (63) for providing force to wind the cable onto the spindle,
a stop plate (69) attached to a second side of the spindle device (63) for enclosing the cable (64) when wound onto the spindle device (63),
a top cover (61) and a bottom cover (4), designed to engage each other with fastening arrangements (602, 603) for thereby to enclose the spindle device (63), the spring (62), the spindle plate (65), the stop plate (69) and the part of the cable (64) being reeled onto the spindle device (63).

4.
Device according to any of the preceding claims, wherein the gripping device (2) further comprising:
a gripping gear (84), and a grip spring (83), the gripping gear (84) having a first side comprising a plurality of teeth for engaging of corresponding teeth (850) of the second base (860), the grip spring (83) and the gripping gear (84) being mounted onto a pipe formed section (810) protruding from the center of the first base (870) towards the second base (860) such that the grip spring (83) will bias the gripping gear (84) away from the first base (870) towards the second base (860) so the teeth of the gripping gear (84) contact the teeth (850) of the second base (850), the gripping device (2) further comprising:
an end cap (86) slidingly mounted on the outward facing side of the second base (860), the end cap having inward facing protrusions (87) for engagement with the first side of the gripping gear, such that when the end cap (86) is pushed into the second base (860), the gripping gear will be pushed towards the first base (870) and the engaged teeth of the gripping gear (84) will disengage the contact with the inward facing teeth (850) of the second base.

5.
Device according to claim 4, wherein the gripping device (2) further comprising a key lock (5) mounted in the first base (870), the key lock (5) protruding into the pipe formed section (810) and engaging a second side of the gripping gear (84), such that when key lock (5) is either in a first locked state where the gripping gear is prohibited from sliding on the pipe formed section (810), engaging permanently the teeth of the gripping gear (84) with the teeth (850) of the second base (860), or a second open state where the gripping gear is able to slide on the pipe formed section (810).

6.
Device according to any of the preceding claims, wherein the gripping device (2) further comprising:
a cover (89) for surrounding the first and second gripping arm (82, 85), the cover being made of a flexible material providing a biased force working to open up the gripping arms (82, 83).

7. Device according to any of the preceding claims, wherein the gripping arms (82, 85) of the gripping device (2) are parallel displaced when the gap between the gripping arms (82, 85) is closed, enabling the outer ends of the gripping arms to pass each other when closing the grip.

8. Device according to any of the proceeding claims, wherein the gripping arms (82, 85) of the gripping device (2) are having an arched form inward pointing toward each other, enabling a better grip around objects such as poles or stroller frame.

9. Device according to any of claims 4 to 8, wherein the teeth of the gripping gear (84) and the teeth (850) of the second base (860) are designed to allow closing of the gripping arms (82, 85) and to prohibit opening the gripping arms (82, 85) when the gripping gear (84) is biased towards the second base (860), wherein the teeth have a first slanting side and a second perpendicular to the circular movement side, such that when the gripping arms are at rest the slanting side of the teeth of the gripping gear (84) and of the teeth of the second base (860) are in contact, and the corresponding perpendicular sides of the teeth of the gripping gear (84) and the teeth of the second base (860) are in contact.

10. Device according to any of claims 1 to 9, wherein the safety device (1) further comprising docking ports (7) for receiving and holding the outer tip of the gripping arms (82, 85) of the gripping device (2).

11. Device according to any of claims 1 to 10, wherein the safety device (1) further comprising a casing (604) surrounding the safety device (1).
12. Device according to any of claims 1 to 11, wherein the bottom cover (4) of the safety device (1) further comprising through holes or anchor points (8) for providing fixing arrangement of fastening means (51).

13. Method for securing a portable urban object, the method is characterized by comprising the following steps:
   - fastening a safety device (1) according to any of the preceding claims 1 - 12 with a gripping device (2) according to any of the preceding claims 1 - 13 mounted in the docking ports (7), the safety device (1) and the gripping device (2) being bound to each other by a cable (64) wound on the spindle (63) of the safety device (1) to the portable urban object to be secured by using fastening means (51),
   - pulling the gripping device (2) out of the docking ports (7),
   - pushing the activation button (3) to free the spindle (63),
   - arranging the gripping arms (82, 85) of the gripping device (2) around a secure point (103), or
   - leading the cable (64) around a secure point (103) and arranging the gripping arms (82, 85) of the gripping device (2) around a part (104) of the portable urban object to be secured.

14. Method according to claim 13, wherein the portable urban object to be secured is a stroller.

15. Method according to claim 13 or 14, wherein the gripping device (2) key lock (5) is locked by a key.

16. Method according to claim 15, wherein the key lock (5) being operated by a key in the form of one of: physical key, electronic key, fingerprint, smartcard locking device, or code.

17. System for securing a portable urban object the system is characterized by comprising:
a portable urban object to be secured,
a gripping device (2) according to any of the preceding claims 1 - 12,
a safety device (1) according to any of the preceding claims 1 - 12,
a cable (64) connecting the gripping device (2) and the safety device (1), and
a secure point (103) on a transport vehicle.

18.
System according to claim 17, further comprising a key for locking/unlocking the key lock (5).

19.
System according to claim 17 or 18, wherein the portable urban object is a stroller.
STATEMENT UNDER ARTICLE 19 (1)

The Written opinion states that claim 4, 5, 9, 10, 14-17 defines claims having novelty and inventive step over the cited prior art. The applicant considers that including the inventive aspects of old claim 10 into claim 1 to give the most correct and broad protection scope of the claim set. One feature of old claim 3 had to be included to provide consistency with the features defined in new claim 1.
INTERNATIONAL SEARCH REPORT

International application No. PCT/NO2016/050031

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: E05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic database consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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“O” document referring to an oral disclosure, use, exhibition or other means
“P” document published prior to the international filing date but later than the priority date claimed

Date of the actual completion of the international search
07-06-2016

Date of mailing of the international search report
07-06-2016

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## DOCUMENTS CONSIDERED TO BE RELEVANT

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International Patent Classification (IPC)

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