A shopping trolley (11) that can be detachably coupled to a baby carriage (7) in the form of a trailer includes a chassis (5) having wheels (1, 2, 3) that run on a floor surface. The trolley also includes a coupling means (9) which is adapted to enable the trolley (11) to the detachably coupled to the pushing/pulling handle (81) of the baby carriage (7). The coupling means (9) is located in a position centrally above a polygon whose corner points are defined by the points (1, 2, 3, 55) at which the trolley is supported against the floor surface. The coupling means (9) is movable vertically in relation to the draw bar (4).
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A SHOPPING TROLLEY

The present invention relates to a shopping trolley that can be detachably connected to a baby carriage, or perambulator, and being of the kind defined in the preamble of Claim 1.

It is normally necessary for customers that shop in food stores, particularly so-called self-service stores, to use a trolley to transport goods to a pay counter.

Customers that also need to push a baby carriage, or perambulator, in the store at the same time are presented with a particular problem. It is not, as a rule, possible to push or pull both carriage and trolley side-by-side, because the passageways between the display shelves of self-service stores are relatively narrow and must accommodate traffic in both directions. It is also difficult to push a baby carriage while dragging the shopping trolley behind at the same time, or vice versa.

The object of the present invention is to provide a shopping trolley construction that enables the trolley to be detachably connected to a baby carriage or perambulator of different models and designs in the manner of a trailer. The object also includes the design or construction that will enable the user to stand behind the trolley and still be able to comfortably reach the pulling/pushing handle of the baby carriage so as to push the carriage and therewith pull the trolley. The objects also include a trolley construction which renders the trolley stable and less liable to tip. The object also includes a construction that will enable the direction of movement of the baby carriage coupled to the
shopping trolley to be changed by tipping the carriage onto its rear wheels and swinging the carriage handle so as to release engagement of the front wheels with the floor, in a conventional manner. The object also includes the ability of coupling the shopping trolley to different baby carriages in a beneficial and simple fashion. This object is achieved in accordance with the invention with a shopping trolley defined in the following independent Claim.

Further developments of the inventive shopping trolley are set forth in the following dependent Claims.

The inventive trolley is primarily intended to accommodate so-called shopping baskets, i.e. standard shopping baskets that are designed and dimensioned to enable them to be easily carried on the arm of a shopper.

Fundamentally, the invention comprises providing the trolley chassis with a draw bar or tow bar that includes at its outer end means for coupling the bar to a pushing/pulling handle on the baby carriage. The coupling means is located centrally above a polygon whose corner points are defined by the points on which the trolley is supported against the surface of the floor. The trolley will include a front wheel that will lie immediately behind the rear end of the carriage chassis. The handle of the baby carriage extends generally obliquely rearwards and upwards from the carriage chassis, wherein the front part of the loading surface can be placed in a region immediately behind the carriage and beneath the handle of the carriage, so that the shopping trolley will take up only a small amount of space behind a vertical plane that extends through the gripping part of the handle while enabling the
carriage to be easily tipped forwards at the same time. The
trolley draw bar is designed to allow the coupling means to
move vertically in relation to the trolley chassis. In this
respect, the coupling means may be connected to the carriage
handle by means of a telescopic and vertically orientated
connection.

The trolley will also preferably include a biasing spring
that functions to move the coupling means to a vertical upper
end position, and thus enable the coupling means to be
pressed down towards the trolley chassis against the action
of a spring force.

A wheel is also provided on each rear corner of the trolley,
and the trolley chassis will preferably include an edge beam
that extends along a path outwardly of said line so that a
support foot that is normally spaced a short distance from
the floor surface is able to provide a supportive point that
counteracts tipping of the trolley around said line.

It has surprisingly been found that a shopping trolley that
includes the inventive features is stable and can be swung
relative to the baby carriage, or perambulator, in the
horizontal plane, and the effective protrusion of which
behind the baby carriage handle is acceptably small at the
same time as the trolley is stable against tipping of the
trolley and the bottom goods carrying surface of the trolley
is able to support two conventional baskets side-by-side,
wherein a further basket can be placed at a higher level in a
basket holder placed on a generally vertical section of the
draw bar, wherein the upper basket holder enables a basket to
be placed behind the baby carriage handle, as seen in the forward direction of carriage movement.

The bottom basket supporting surface of the trolley may conveniently have the form of a platform whose front edge is hinged to the chassis so as to enable the platform to be lifted up against the draw bar. The upper basket carrier may have the form of a frame that can be lifted to a generally vertical position, this lifting facility enabling the inventive shopping trolleys to be stacked together in their pushing direction.

An exemplifying embodiment of an inventive shopping trolley will now be described with reference to the accompanying drawing, in which

Fig. 1 is a schematic side view of the inventive trolley coupled to a baby carriage;

Fig. 2 is a schematic view taken on the line II-II in Fig. 1; and

Fig. 3 illustrates schematically the free end-part of the trolley draw bar with means for coupling the draw bar to the baby carriage handle.

Figs. 1 and 2 illustrate a shopping trolley whose chassis, or undercarriage, includes three casters 1, 2, 3, wherein the front caster 1 lies in the longitudinal centre plane of the trolley and the casters 2 and 3 lie essentially on an axis that is perpendicular to the longitudinal centre plane. A draw bar 4 is connected to the front region of the trolley
chassis 5. The front part of the trolley/chassis 5 that connects with the caster 1 has a generally triangular flat shape so as to enable the trolley to be swung relative to the baby carriage 7 despite the front caster 1 lying close to the rear edge of the carriage chassis.

A draw bar 4 is connected to the front part of the chassis 5 and extends upwards to an extent at which its end-part 41 lies above a central region of the chassis 5. The upper end-part 41 of the draw bar is connected to the handle 8 of the baby carriage 7 by means of a coupling 9, and more particularly to a handgrip part 81 that extends generally horizontally and transversely of the direction in which the baby carriage 7 is pushed. The end-part 41 of the draw bar 4 is positioned so that the caster 1 will tend naturally to lie foremost in the towing direction of the shopping trolley 11 when drawn, or pulled, by the baby carriage 7. In order to prevent the shopping trolley from tipping around the line 14 when pulled, said line extending between the caster 1 and one of the rear casters 2, 3, the coupling 9 is located immediately above a centre part of the triangle defined by the lines 14 and the axis 15 between the rear casters 2 and 3. In order to counteract tipping tendencies of the trolley 11 still further, for instance when moving the trolley in a curved path, the chassis 5 extends along a contour that lies well outside respective lines 14. In practice, the chassis 5 forms a generally V-shaped element whose legs 51 include a bend 52 approximately in the longitudinal centre region, said bend 52 being spaced outwardly of respective lines 14 so that the leg end-parts 53 that carry the casters 2, 3 are generally parallel with one another.
Provided on the undersides of the legs 51 in the region of the bends 52 are support parts 55 that extend down to a level immediately above the floor surface 30 on which the casters 1, 2, 3 run.

By coupling the baby carriage handle 81 to the shopping trolley 11 in a position above a central position within the polygon defined by the casters 2, 3, the support parts 55 and the front caster 1, the trolley 11 is made particularly stable against tipping, both when moving the trolley in a curved path and when the trolley 11 is pulled straight forwards, by virtue of the caster 1 being located at a considerable horizontal distance in front of the handgrip 81.

The chassis 5 includes a loading platform 57 which is hinged by a front hinge 56 and on which two shopping baskets 12 can be placed side-by-side with the longitudinal axis of respective baskets extending in the longitudinal direction of the trolley. The bottom part of the draw bar slopes upwardly and rearwardly to provide space for the baskets 12 on the bottom platform. The upper part of the draw bar 4 carries a rectangular frame 44. The frame 44 is hinged so that it can be lifted to a vertical position. The frame 44 is configured to receive a shopping basket 12 in the illustrated position.

As evident from Fig. 3, the bar section 41 is tubular and has an inner bottom plate 49 which forms a support for a pressure spring 48 that acts on the bottom end of a shaft 47. The bottom part of the shaft 47 includes a shoulder 62 that grips beneath a plate 50 fixed to the upper end of the bar section 41 so as to prevent the shaft 47 from being lifted free from the tubular part 41. The shaft 47 carries the coupling 9,
which in the illustrated case is comprised of a horizontal plate 63 with upwardly facing recesses for accommodating the handgrip 81 of the carriage. An upper plate 65 is hinged at 64 to one end of the bottom plate 63. The plate 64 also includes recesses for accommodating the carriage handgrip 81, wherein the plates 63, 64 can together enclose the carriage handgrip 81 in any one of a number of selected positions at different horizontal distances from the axis of the shaft 47. The free end 66 of the upper plate 65 may have the form of a pin and an elastic rubber tensioning belt 67 may be attached to the bottom plate 63. The belt 67 may include one or more pin-receiving openings that are spaced from an attachment end, such as to enable the carriage handgrip 81 to be positively locked. When wishing to swing the shopping trolley 7, the front caster of the trolley 7 is lifted and the handle 8 swung down, wherein the shaft 47 of the coupling 9 is able to move downwards in the tubular part 41 against the pressure of the spring 48.

The shaft 47 is conveniently rotatable in the tubular part 41.
1. A shopping trolley that can be detachably coupled to a baby carriage (7) in the manner of a trailer, wherein the shopping trolley (11) includes a chassis (5) fitted with wheels (1, 2, 3) that run on a floor surface, and wherein the shopping trolley also includes coupling means (9) adapted to enable the shopping trolley to be detachably coupled to the baby carriage, characterized in that the trolley chassis (5) is provided with a draw bar (4) whose outer end carries said coupling means (9) for coupling the draw bar to the baby carriage pushing/pulling handle (8; 81); in that the coupling means (9) is located in a position centrally above a polygon whose corner points are defined by the trolley support points (1, 2, 3, 55) against the floor surface; and in that the coupling means (9) can be moved vertically in relation to the draw bar (4).

2. A shopping trolley according to Claim 1, characterized in that the trolley chassis (5), when seen in the horizontal plane, is configured to taper forwardly towards the longitudinal centre axis of the trolley; and in that the trolley has a front wheel (1) in the region of the forward area of the chassis.

3. A shopping trolley according to Claim 1 or 2, characterized in that the trolley includes spring means (48) adapted to bias the coupling means (9) towards a vertical upper end position that lies higher than the anticipated highest position of the coupling means (9) when coupled to a baby carriage handle (81); and in that the downward vertical coupling movement of the coupling means is adapted to enable
the coupling means (9) to be moved to a position that lies well beneath the lowermost anticipated level of the draw bar (81) on a baby carriage.

4. A shopping trolley according to any one of Claims 1 to 3, characterized in that the trolley has mounted on its rear end two laterally spaced wheels (2, 3) which together with the front wheel (1) on the trolley defines a generally isosceles triangle whose apex lies on the front wheel (1); and in that the trolley chassis has an edge beam (51) which carries a support foot (55) arranged to lie at a short distance above the floor surface at a point outwardly of respective sides (14) of the triangle between the apex and the base (15) of said triangle, so as to establish support points (52) that counteract tipping of the trolley around the side lines of the triangle.

5. A shopping trolley according to any one of Claims 1 to 4, characterized in that the chassis (5) carries a bottom load-carrying surface on a level in the proximity of the wheels, and an upper load-carrying device (44) which is carried by the vertical upper part (41) of the draw bar (4) behind said draw bar when seen in the towing direction of the trolley.

6. A shopping trolley according to any one of Claims 1 to 5, characterized in that the coupling means (9) includes at least two selectable coupling points for connection to the handle of the baby carriage, wherein said points lie at different horizontal distances from the axis (41) of the vertical draw bar end.
7. A shopping trolley according to Claim 6, characterized in that the coupling means (9) is rotatable about a vertical axis (41).

8. A shopping trolley according to any one of Claims 4 to 7, characterized in that the support feet (55) are located in a position that corresponds approximately to half the length of respective sides (14) of said triangle.

9. A shopping trolley according to any one of Claims 1 to 8, characterized in that the trolley wheels (1, 2, 3) are casters that can rotate about an associated vertical axis.

10. A shopping trolley according to any one of Claims 1 to 9, characterized in that the bottom load-carrying surface of the trolley has the form of a plate that is hinged at one end to the chassis (5) to enable the plate to be lifted up about a horizontal axis; and in that the load-carrying device on the upper loading level includes a shopping basket receiving frame (44), wherein the frame (44) can be lifted up to a vertical position; and in that the chassis is comprised of a generally V-shaped frame which enables trolleys to be driven into and stacked within one another with the load-carrying plates upwardly swung and the upper load-carrying frames lifted up.
INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 97/00227

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B62B 9/00, B62B 3/14
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)

IPC6: B62B

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Date of the actual completion of the international search: 14 May 1997

Authorized officer: Göran Carlström
Telephone No.: 46 8 782 25 00

Date of mailing of the international search report: 30-05-1997

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