Feb. 24, 1948. E. HAFNER 2,436,643

PERAMBULATOR

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Fig. 3

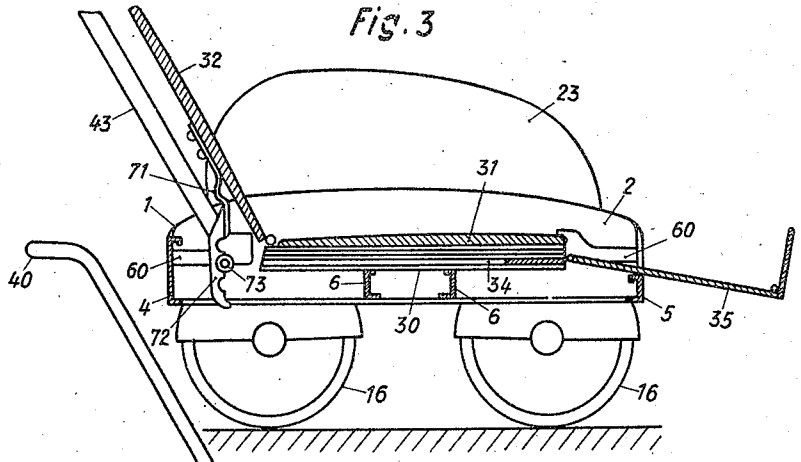


Fig. 8

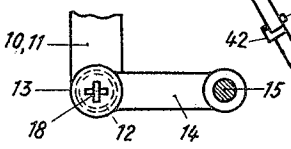


Fig. 7

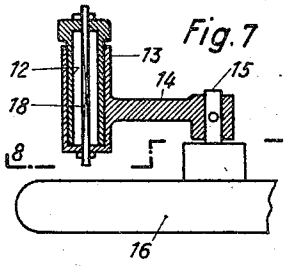


Fig. 1

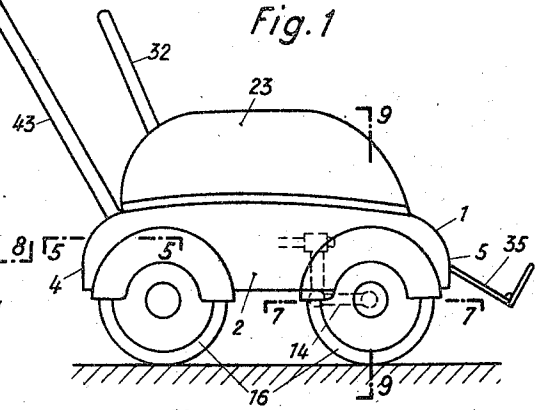
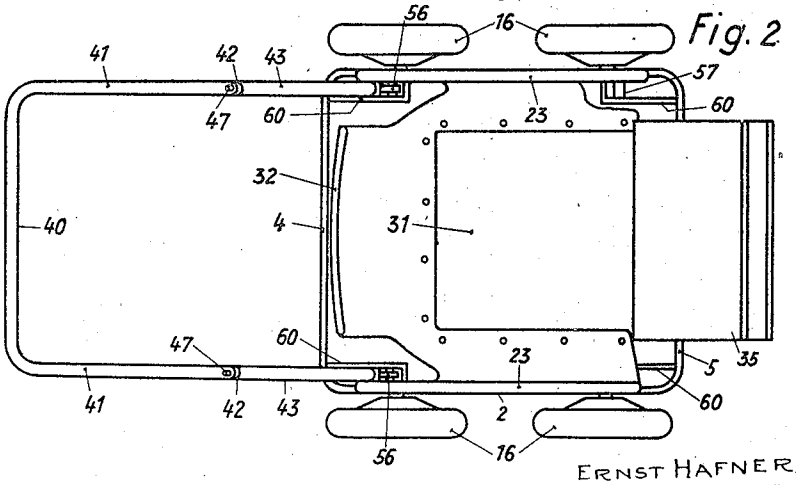


Fig. 2



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Fig. 5

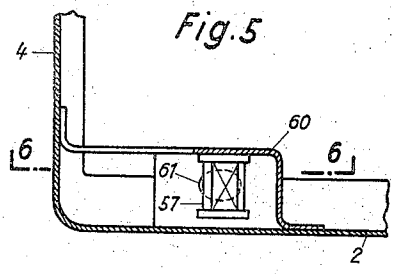


Fig. 6

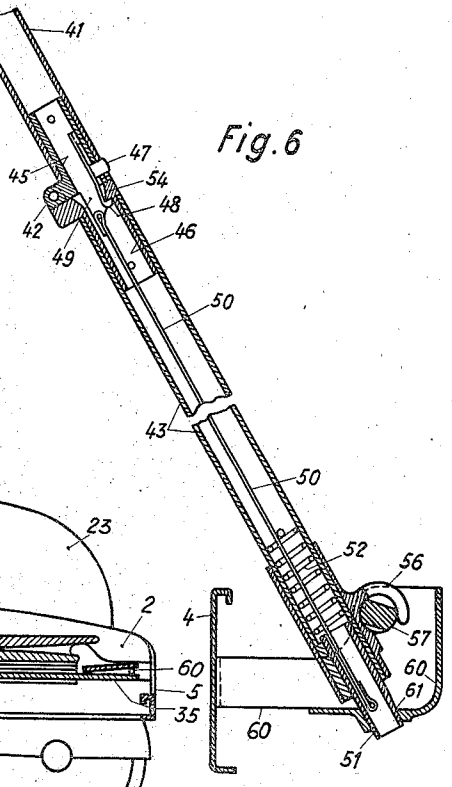
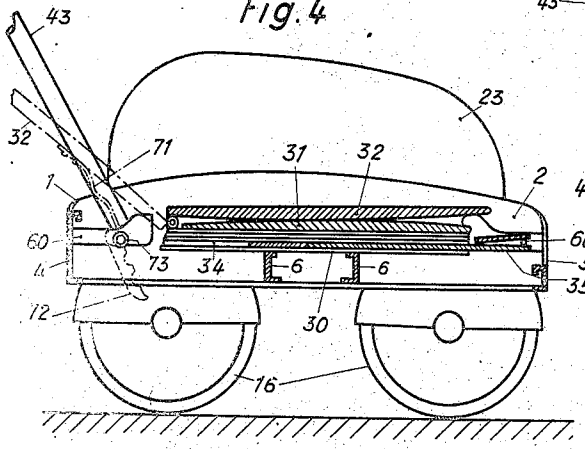


Fig. 4



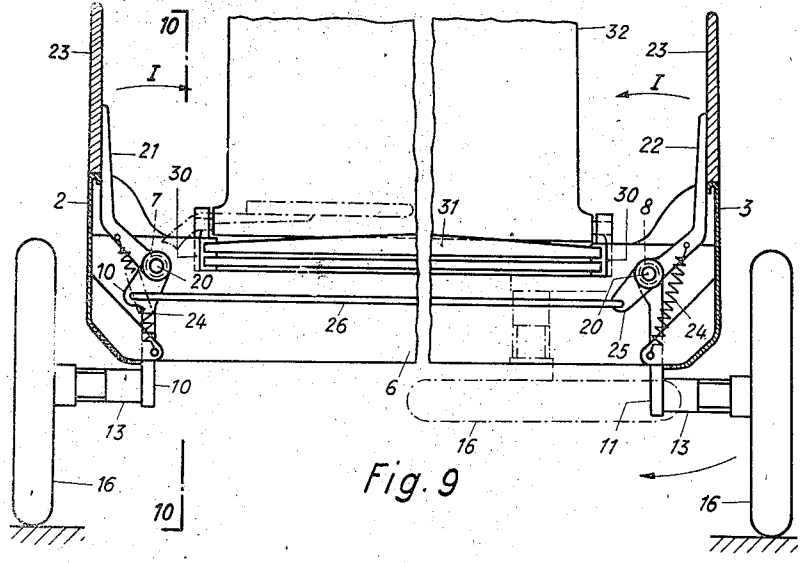


Fig. 9

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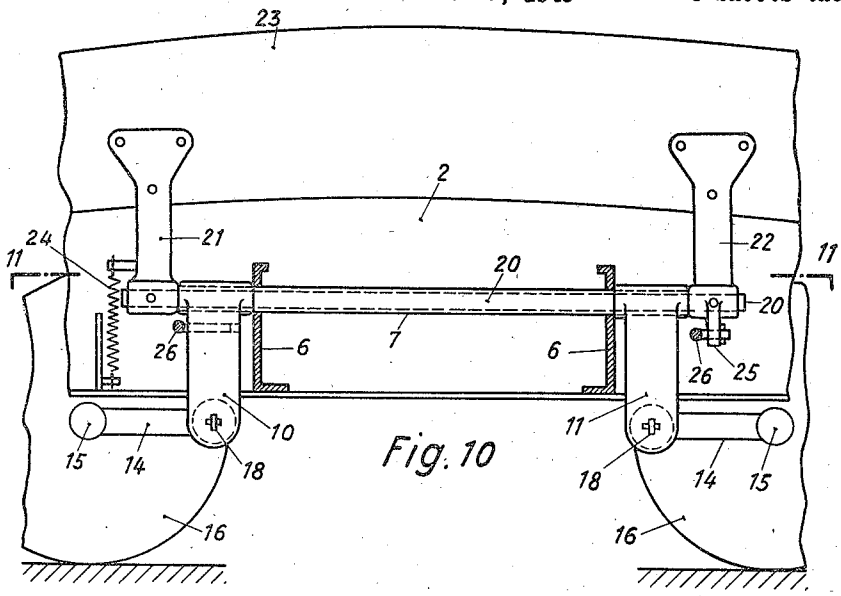
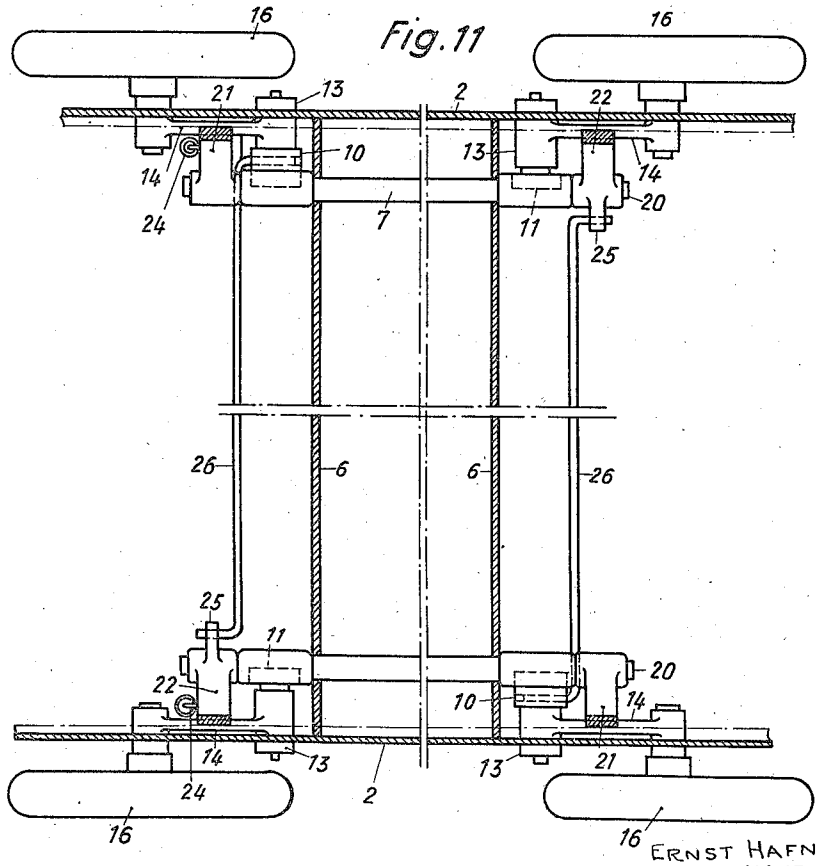


Fig. 10

Fig. 11



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UNITED STATES PATENT OFFICE

2,436,643

PERAMBULATOR

Ernst Hafner, Zurich, Switzerland

Application October 5, 1945, Serial No. 620,543
In Switzerland May 8, 1945

5 Claims. (Cl. 280—39)

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My invention relates to perambulators (known also as go-carts and also as babycarriages) used for small children; and my object is to provide a folding vehicle of this class which may be folded into a very compact form, and into the form of a rectangular case or trunk for the purpose of being conveniently and safely carried about or transported, similarly to a valise or other hand bag.

My invention consists of certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

Fig. 1 is a side elevation of the go-cart in its position for use.

Fig. 2 is a top view thereof corner-parts being cut-away.

Fig. 3 is a sectional elevation of the cart with all its parts in their position for use.

Fig. 4 is a sectional elevation of the cart the back-rest and the foot-rest being brought in their out-of-use position.

Figs. 5 to 11 are sections on the lines 5—5, 6—6, 7—7, 8—8, 9—9, 10—10, 11—11 of the Figs. 1, 5, 1, 7, 1, 9 and 10 respectively.

In the constructional embodiment of the invention, shown by way of an example and in no way to be taken as limitative, the new collapsible go-cart comprises a frame 1 of rectangular shape made of light sheet metal, for instance of aluminum. The frame comprises two side walls 2, 3 and two end walls 4, 5, the latter being lower than the side walls 2, 3. To stiffen the frame two stays 6 of sheet metal interconnect the side walls 2, 3. In the stays 6 two hollow shafts 7, 8 are rotatably mounted running parallel to each other and placed alongside the side walls 2, 3. The hollow shafts 7, 8 are provided near their ends with arms 10 and 11. Each arm 10, 11 is provided with a sleeve 12 (Figs. 7, 8). On each sleeve 12 an arm 14 is rotatably mounted by means of a long boss 13. The arm 14 is provided with a stud 15 on which the wheel 16 is rotatably mounted. The sleeve 12 and the boss 13 are provided each with a face wall. The two face walls are provided with aligned rectangular holes. Through the said aligned holes passes a blade spring 18 of steel having rectangular cross-section. The blade 18 acts as a torsional spring between the members 12 and 13 and provides a resilient support to the body of the car when running on the wheels 16. In each of the hollow

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shafts 7, 8 (Figs. 9, 10 and 11) a shaft 20 is rotatably mounted. Each shaft 20 carries at one of its ends a two armed lever 22, 25 and on the other end an arm 21. A side board 23 is fastened to the arms 21, 22 of each shaft 20. The dimensions and arrangement of the parts 21, 22, 23 is such that the board 23 comes to rest on the side walls 2, 3 on the top of the frame of the car. One end of a coiled spring 24 is connected to the arms 21, 22, the other end of said spring being fastened to the frame 1. The arms 25 of each lever 22 are connected by a rod 26 (Fig. 9) with the arm 10 (Fig. 11) carrying a wheel 16 on the opposite side of the frame. On the stays 6 bars 30 are fastened on which the seat 31 is arranged. On the one side of the seat 31 the back rest 32 is adjustably and tiltably mounted adapted to be laid upon the seat 31. The back rest 32 is provided with a support comprising a blade spring 71 and a member 72 fixed thereto having a plurality of notches each one being adapted to engage a cross rod 73 of the frame. The seat 31 is provided with grooves 34 in which a foldable leg rest 35 is slidably and adjustably arranged. To the leg rest 35 foot board 33 is linked which may be folded upon the leg rest 35. The handle 40 is U-shaped, each arm comprises the tubular members 41, 43 interconnected by a link. Each link comprises two sleeves 45, 46 (Fig. 6) connected by a pin 42. The sleeves 45, 46 are fastened within the members 41, 43 respectively. In the sleeve 45 a springy pawl 48 is fastened, the hooked end of which engages a nose 54 of the sleeve 46 fixed within the tubular member 43. By a press button 47 fixed to the pawl 48 and projecting through a bore of the member 41, the pawl 48 may be brought out of engagement with the nose 54 and the handle may be folded, the members 41, 43 turning about the pins 42. The sleeve 45 is provided with two lugs 49 carrying a pin to which the one end of a band 50 of steel is attached. The other end of said band 50 is connected with a tubular pin 51, the latter being slidably arranged in the tubular member 43. The pin 51 is urged downwardly under the action of a coiled spring 52 arranged within the member 43 abutting on a cross pin thereof and holding the band 50 taut. On the lower end of each member 43 of the handle 40 a hook 56 is fastened, engaging a stud 57 fastened to side walls of a casing 60 forming part of the frame of the car. The studs 57 have a reduced portion and two grooves diametrically opposite each other. The opening of the hook 56 corresponds with the thickness of the stud 57 between the grooves. In the bottom of

casing 60 a hole 61 is provided through which the pin 51 projects securing thereby the handle 40 in its position. In each corner of the frame of the car there is a casing 60, so that the handle 40 may be arranged at either wall 4 or 5 of the frame.

To fold the car the foot rest 33, 35 is folded and is pushed into the grooves 34 below the seat 31. The back-rest 32 is now turned down to rest on the seat 31. The two side boards 23 are now simultaneously turned about the shafts 20 against the action of the spring 24 in the direction of the arrow I until they come to rest on the back rest 32 previously turned down. The turning of each side board causes the hollow shaft 7 or 8 on the opposite side of the frame to rotate in the same direction, the movement being transmitted by the members 22, 25, 26 and 10. The rotation of the hollow shafts 7, 8 causes the arms 10, 11 to bring the wheels 16 into the position shown in broken lines in Fig. 9. By means of the press buttons 47 (Fig. 6) the pawls 48 are brought out of engagement with the noses 54. The upper portion 41 of the handle 40 is turned downwards on the pins 42. By this turning down movement the bands 50 are drawn upwardly, drawing thereby the pins 51 out of the holes 61 of the casings 60. The folded handle 40 is now turned down until it rests between the side walls 2, 3 of the frame of the car.

The completely folded car has substantially the volume of the frame 2, 3, 4, 5, the wheels 16 projecting but slightly. The folded car may be inserted in a cover of suitable fabric, the said cover being provided with a handle.

To bring the car in its position for use the described operations are performed in reverse order.

As shown in Fig. 1, the handle 40 is arranged at the wall 4 of the frame 1 and near the back rest 32. A child seated in the car looks in the direction in which the car moves. The handle 40 may be placed at the opposite wall 5 so that the person pushing the car is opposite the child in the car. To change the position of the handle 40 the press buttons 47 are pushed until the pawls 48 release the noses 54. The upper member 41 is now turned about the pins 42 until the pins 54 pass out of the holes 61. The whole handle 40 is now turned about the studs 57 until it abuts on the upper edge of the wall 4 (Fig. 6) of the frame. In this position of the handle 40 the hooks 56 may be withdrawn from the studs 57. The width of the opening of the hooks 56 corresponds to the thickness of the reduced section of the studs 57. To fasten the handle 40 on the opposite wall all the operations described are performed in a reversed sequence.

As it is evident that many changes in the construction form, proportion or relative arrangement of parts might be resorted to without departing from the spirit and scope of my invention, I would have it understood that I do not restrict myself to the particular construction, form, proportion, or relative arrangement of parts shown and described, but that such changes or equivalents may be substituted therefor as are included within the spirit and scope of my invention.

What I wish to secure by U. S. Letters Patent is:

1. In a perambulator, the combination of a rectangular frame having a side wall and end walls, a seat fixed in said frame, a tiltable back hinged to said seat, a foot rest adjustably connected with said seat, a collapsible handle removably attached to said frame and adapted to be folded on said seat, two wheels on each side of the frame, two side boards tiltably mounted at opposite sides of the frame, a wheel support hinged to each side wall of the frame for pivotal movement about an axis parallel to said side wall, each wheel support carrying the two wheels on its side of the frame, and a mechanical connection between each side board and the wheel support on the opposite side of the frame so that adjustment of each side board to its collapsed or its operative position causes a corresponding adjustment of the wheel support on the opposite side of the frame and vice versa.

2. In a perambulator the combination of a frame of substantially rectangular shape, two hollow shafts rotatably mounted and arranged parallel to each other in the frame, wheel supporting elements on said two hollow shafts near the ends thereof, a wheel connected to each of said wheel supporting elements, a shaft rotatably arranged within each of said hollow shafts, a double armed lever on one end of each of said two shafts, a single armed lever at the other end of each of said shafts, two side boards, each attached to the arm of one single armed lever and one arm of the corresponding double armed lever, and a link rod connecting the other arm of each double armed lever to one of the wheel supporting elements on the opposite side of the frame to simultaneously tilt the wheels while tilting the side boards.

3. In a perambulator, a frame, a support for a wheel, said support comprising two coaxial sleeves, one of said sleeves being fixed to said frame, an arm carrying a wheel fixed to the other sleeve, a resilient rod extending axially in said sleeves and being secured at one end to one sleeve and at the other end to the other sleeve, the said rod acting as a torsional spring.

4. In a perambulator, a frame including side members, a U-shaped handle having legs each including an upper and a lower part hingedly connected with each other, and projecting from the lower part of each leg a pin slidably mounted in each side member, a spring acting on said pin to urge it downwardly, a band interconnecting said pin with the upper portion of the corresponding leg, a hook on the lower portion of the handle, a stud at each corner of the frame adapted to receive said hook, and a hole at each corner of the frame to receive the said spring loaded pin.

5. In a perambulator the combination with a frame having two side walls, of two side boards hinged to said frame for pivotal movements about axes parallel to said side boards, each side board being adjustable to an operative position in which it extends substantially vertically upwards from one of said side walls and to a colapsed position in which it extends substantially horizontally between the vertical planes defined by said side walls, wheel supports hinged to said frame on opposite sides thereof, each wheel support having at least one wheel mounted thereon and being pivotally adjustable about an axis parallel to the side walls to an operative position in which the wheel is disposed in a vertical plane outside the vertical plane defined by the corresponding side wall and to a collapsed position in which the wheel is disposed in a horizontal plane between the vertical planes defined by the side walls, and a mechanical connection between each side board and the wheel support on the opposite side of

said frame to transmit pivotal movements of one of said elements to the other one whereby adjustment of each side board to its collapsed or its operative position causes a corresponding adjustment of the wheel support on the opposite side of the frame and vice versa.

ERNST HAFNER.

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