

# PATENT SPECIFICATION (11)

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 (72) Inventor YOSHITAKA HUSHIMOTO



## (54) A FOLDING PUSHCHAIR

(71) I, HOI-SHING YUEN, of Chinese nationality, a citizen of Hong Kong, trading as Chup Shing Trading Company, of 250-254 Chatham Road, 3rd Floor, Kowloon, Hong Kong, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a folding pushchair in which the locking part which maintains the pushchair in its unfolded or open state can be released without having to bend over, so that the pushchair can be easily folded away. The locking part is also positioned so that it is difficult for a child in the pushchair to reach it.

According to the invention, there is provided a folding pushchair having a main frame, a handle frame pivoted to the main frame, a pair of front leg rods supporting a pair of front wheels, a pair of rear leg rods supporting a pair of rear wheels, both pairs of leg rods being pivoted to the main frame, a pivoting linkage between the handle frame and the leg rods, and releasable means fixing the position the position of the handle frame relative to the main frame, said releasable means being operable by the foot from behind the pushchair.

Preferably, the front leg rods are pivoted to the rear leg rods, and the pivoting linkage connects the handle frame with the rear leg rods.

Preferably, the pushchair has a hammock-type seat which is suspended between two cross members. The back cross member, which forms the back rest, may be adjusted between two or more different positions.

Preferably the releasable means are biased by a spring into the position where they fix the handle frame relative to the main frame. The force of the spring can then be overcome by a person pressing down with a foot against a bar close to the bottom of the pushchair, to release the handle frame. The releasable means may be provided on both sides of the pushchair, with a transverse rod connecting the two means.

The rear wheels may be attached to the rear leg rods through a resilient suspension.

The invention will now be further described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a pushchair in accordance with the invention, in the unfolded state,

Figure 2 is a view of the main parts of the pushchair of Figure 1 on a larger scale,

Figure 3 is a side view of the pushchair, and

Figure 4 is a side view of the folded pushchair.

The main body 1 of the pushchair consists of a vehicle body frame 2, front leg rods 3, rear leg rods 4 and a push-handle frame 5. The vehicle body frame 2 is constructed by joining rear frame rods 2b and 2b to respective rear ends of the left side rod 2a<sup>1</sup> and the right side rod 2a<sup>2</sup> of the front frame rod 2a, which is formed bent in a "U" shape, by means of joint pins 6, in such a way that they are free to bend.

The front leg rod 3 on the left side and the front leg rod 3 on the right side respectively intersect with the left side rod 2a<sup>1</sup> and the right side rod 2a<sup>2</sup> of the vehicle body frame 2 in an "X" configuration. The joining is effected in such a way that the intersecting parts are free to rotate about pivot pins 7.

The upper end part of the front leg 3 intersects with a position on the rear leg rod 4 above that of the pivot pin 8, this intersecting part being free to rotate on a joint 9.

The intermediate portions of the left side rod 5a and the right side rod 5b of the push-handle frame 5, which is formed in a shape curved to that of an inverted "U" in front elevation, are freely rotatably joined to the respective upper parts of the right and left side rear frame rods 2b and 2b of the vehicle body frame 2.

A position on the push-handle frame 5 above the pivot point pin 8 with the rear frame rod 2b and a position on the rear leg rod 4 above the joint with the front leg rod

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3 are connected by an arm-rest rod 11. This arm-rest rod 11 and the push-handle frame 5 are freely rotatably joined by means of pivot pins 12 and the arm-rest rod 11 and rear leg rods 4 are freely rotatably joined by means of pivot pins 13.

Front vehicle wheels 14 are fitted at the lower ends of the said front leg rods 4 by means of a front vehicle axle 37, and rear wheels 15 are fitted at the lower ends of the rear leg rods 4 through a cushioning mechanism. The construction of this cushioning mechanism of the rear wheel is as follows. An axle-support rod 17 having a rear vehicle axle at its lower end is freely rotatably connected to the lower end of the rear leg rod 4 by means of a pin 18. The upper end of the said axle support rod 17 is supported by a cushioning tension spring 19. The rear wheel 15 contacts the ground and is under the influence of the force of this spring 19.

Fixed locking members 20 in the form of pins are respectively fixed on the vehicle body frame 2 at positions near to the left and right pivot parts with the rear leg rods 4, projecting outwardly. At the respective lower ends of the left side rod 5a and the right side rod 5b of the push-handle frame 5 there are fitted movable locking members 22 in the form of plate cams having notches 21 which engage and disengage with the said fixed locking members 20 at part of their periphery, these members 22 being freely rotatable about pivot pins 23. The rear end parts of these movable locking members 22, at positions offset to the rear side from the said pivot pin 23, are subjected to tension in an upwards direction by a tension spring 24. By means of this tension spring 24, the notches 21 of the movable locking members 22 are maintained in engagement with the fixed locking members 20. The erected state of the push-handle frame 5, or the unfolded state of the pushchair 1 is thereby maintained. A foot-operable rod 25 is arranged bridging corresponding rear end parts of the left and right side movable locking members 22, so that, by stepping on this foot-operable rod 25, the movable locking members 22 can be rotated about the pivot pins 23 in opposition to the tension of the tension spring 24. Thus the notches 21 of the movable locking members 22 can be disengaged from the fixed locking members 20 and the push-handle frame 5 can be tilted over forwardly (F in Figures 2 and 3), and the pushchair 1 can be folded up.

At positions on the said push-handle frame above the movable locking member 22 there are fixed by means of rivets 30 or the like, pieces 28 fitted with a back-rest frame rod and having in their periphery two front and rear notches 26 and 27 and further having approximately in the central regions thereof triangular through holes 29.

The back-rest frame rod 31 is provided with upper and lower pins 32, 33 projecting from the lower end thereof. When the lower pin 33 of these pins is freely fitted into the triangular through hole 29 of the pieces 28 which is fitted with the back-rest frame rod, and the upper pin 32 is engaged in the front notch 26, the back-rest frame rod is maintained in an inclined position. When the upper pin 32 is moved over to the rear notch 27, this inclination is considerably increased. (Chain-dotted line G in Figure 2). This piece 28 fitted with a back-rest frame rod also serves as a support member for the other end of the said tension spring 24, one end of which is connected to the movable locking member 22.

On the said left and right front legs 3 and running across between positions above the junctions with the vehicle body frame 2, there are respectively arranged a front hammock-receiving frame 34, and, between the left and right rear frame rods 2b of the vehicle body frame 2, a rear hammock-receiving rod 35. A hammock 36 is hung across between these front and rear hammock-receiving rods 34, 35 and back-rest frame rod 31.

In folding up this pushchair, a foot is placed on the foot-operated rod 25 and the movable locking member 22 is thus rotated about the pivot pin 23. The notch 21 of the movable locking member 22 is thus released from the fixed locking member 20, thereby releasing locking. The push-handle frame 5 can now be tilted over forwardly about the pivot pin 10. Due to the forwards inclination of this push-handle frame 5, the joints between the front frame rod 2a of the vehicle body frame 2 and the rear frame rod 2b are pivoted, and at the same time the front leg rod 3 and rear leg rod 4 approach each other. By further forwards tilting of the push-handle frame 5, the front frame rod 2a and the rear frame rod 2b of the vehicle body frame 2 completely overlap each other and the front leg rod 3 and the rear leg rod 4 also similarly overlap each other and the front and rear wheels move into proximity with each other. The low-bulk folded condition shown in Figure 4 is thus obtained.

To erect the pushchair from its folded condition, the push-handle frame 5 is moved away from the rear leg rod 2b and erected at the rear. By means of this erection, the overlying parts of the front frame rod 2a and the rear frame rod 2b are opened out. The front leg rod 3 and the rear leg rod 4 open out so that the front wheel 14 and the rear wheel 15 are separated. When the push-handle frame 5 is further erected, the periphery of the movable locking member 22 slides onto the fixed locking member 20, whereupon the notch 21 comes into engagement as before with the fixed locking mem-

ber 20 by means of the tension of the tension spring 24.

An operator can fold up this pushchair very easily by foot operation with a very small force. Moreover, because the foot-operated rod 25 is located in a position at the bottom of the push-handle frame 5 which is fitted with the movable locking member 22, that is, in a location where a child in the hammock 36, even if he turns round, cannot reach it with his hand, there is no fear that he may touch it and the pushchair is consequently very safe.

# WHAT I CLAIM IS:—

1. A folding pushchair having a main frame, a handle frame pivoted to the main frame, a pair of front leg rods supporting a pair of front wheels, a pair of rear leg rods supporting a pair of rear wheels, both pairs of leg rods being pivoted to the main frame, a pivoting linkage between the handle frame and the leg rods, and releasable means fixing the position of the handle frame relative to the main frame, said releasable means being operable by the foot from behind the pushchair.

2. A pushchair as claimed in claim 1, wherein the front leg rods are pivoted to the rear leg rods, and the pivoting linkage connects the handle frame with the rear leg rods.

3. A pushchair as claimed in claim 1 or claim 2, and including a hammock-type seat which is suspended between two cross members.

4. A pushchair as claimed in claim 3, wherein the back cross member forms a back rest and may be adjusted between two or more different positions.

5. A pushchair as claimed in any preceding claim, wherein the releasable means are biased by a spring into a position where they fix the handle frame relative to the main frame.

6. A pushchair as claimed in any preceding claim, wherein the releasable means are provided on both sides of the pushchair, with a transverse rod connecting the two means.

7. A pushchair as claimed in any preceding claim, wherein the rear wheels are attached to the rear leg rods through a resilient suspension.

8. A folding pushchair substantially as herein described with reference to the accompanying drawings.

MARKS & CLERK,  
Chartered Patent Agents,  
57—60 Lincoln's Inn Fields,  
London, WC2A 3LS.  
Agents for the Applicant.

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MARKS & CLERK,  
Chartered Patent Agents,  
57—60 Lincolns Inn Fields,  
London, WC2A 3LS.  
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