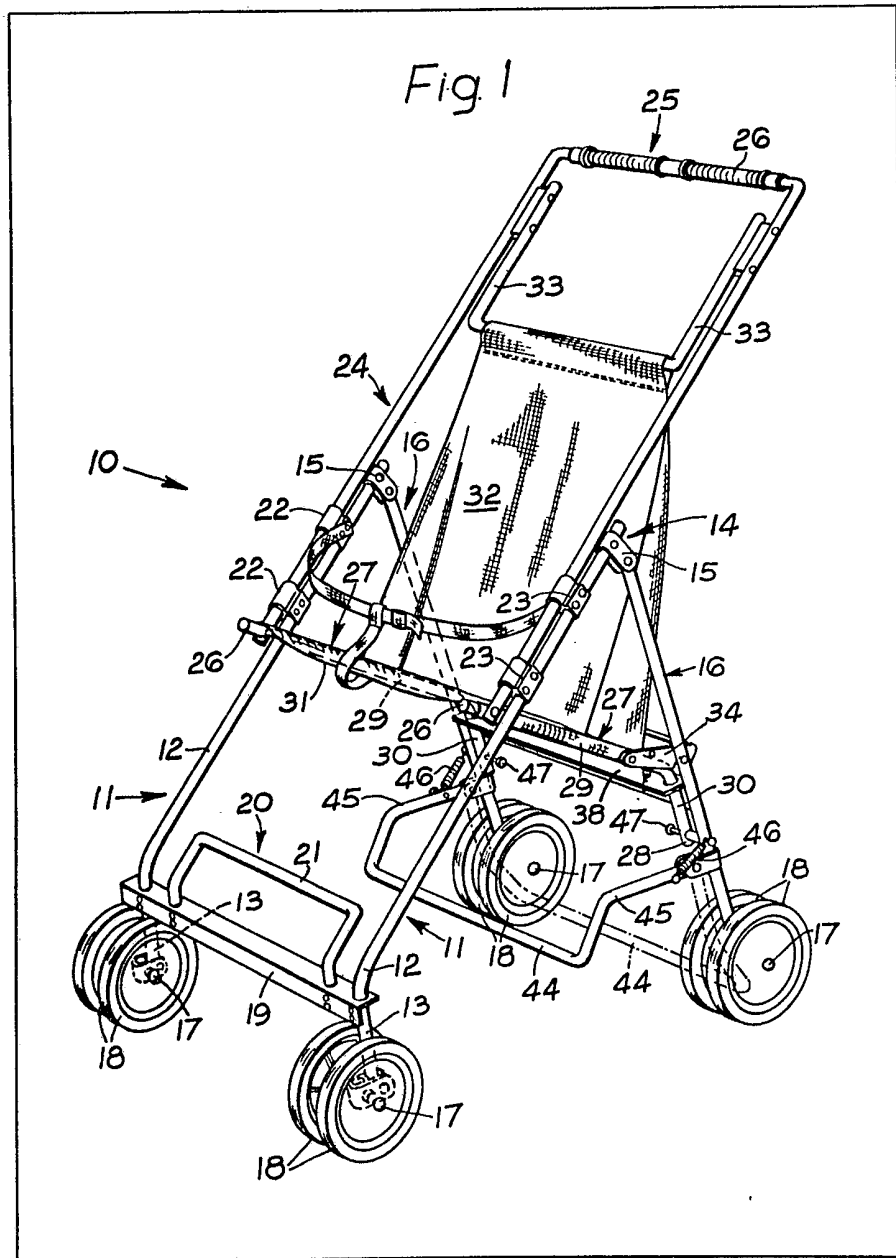


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(54) Collapsible framework for a pushchair, seat, or trolley

(57) The framework is of the 'fold flat' type and comprises four pairs of spaced apart parallel members 11, 16, 24 and 27, of which a first pair of members 11 and a third pair of members 24 are slidably connected together so that as they are brought into a position where they lie generally alongside each other they entrain

connected second and fourth pairs of members, 16 and 27 respectively, and bring them into a position where they are substantially parallel thereto so that the frame in this folded condition is just over half the length it is in its use condition and is a thickness substantially the diameter of wheels 18. The frame is provided with a locking arrangement to prevent it from folding when in its use condition.



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

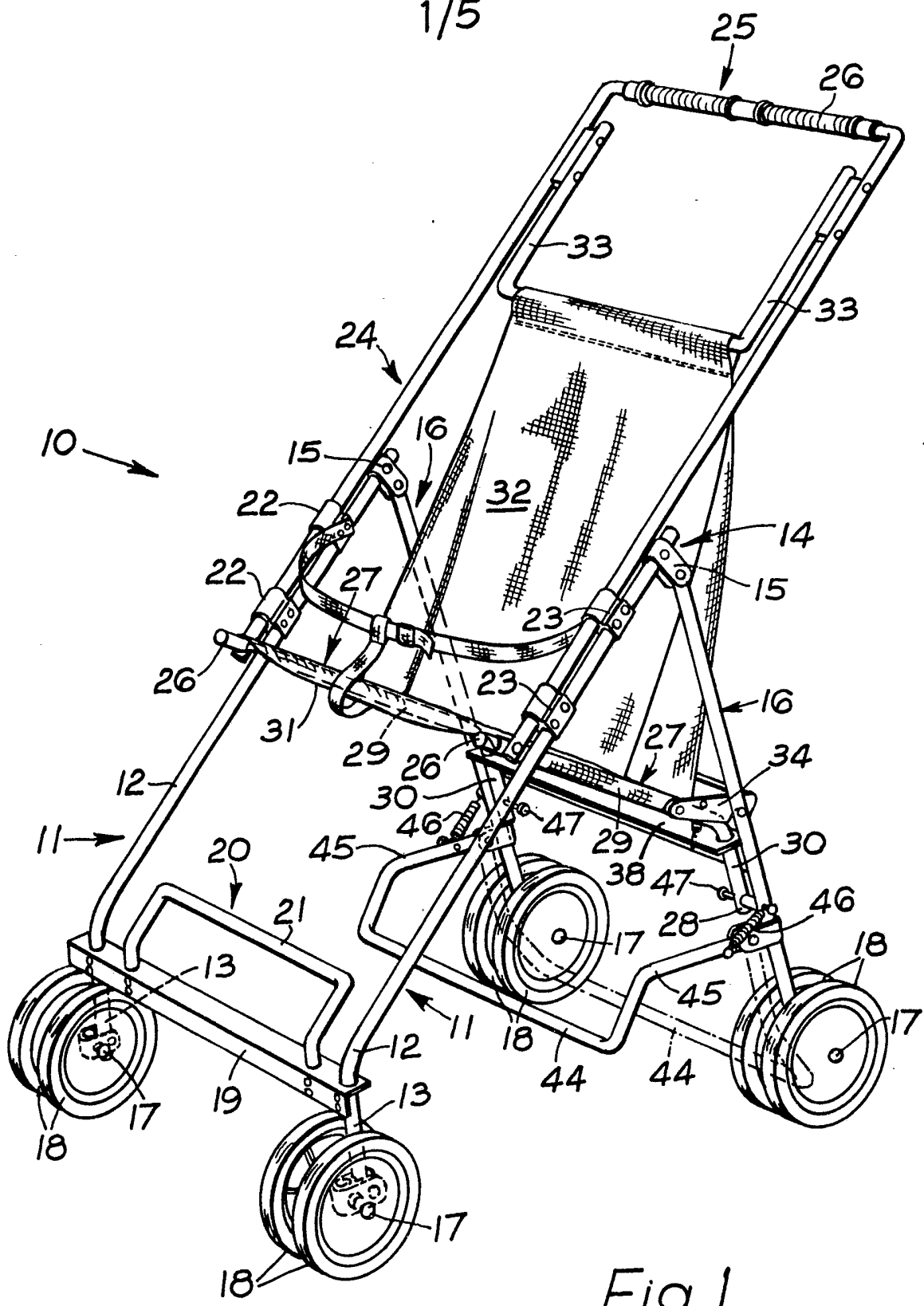


Fig. 1

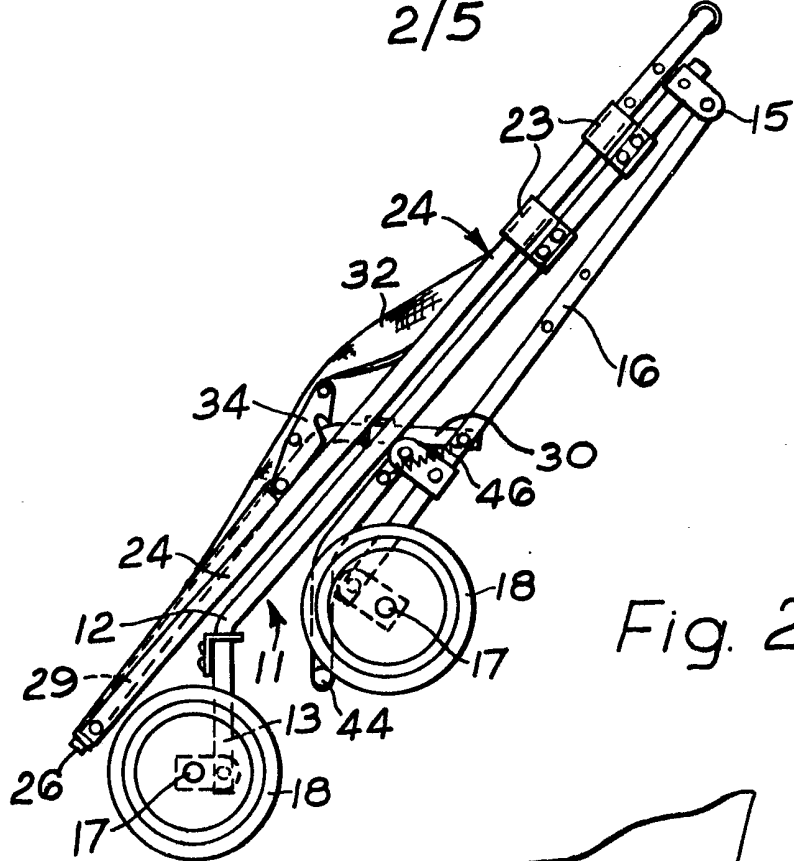


Fig. 2

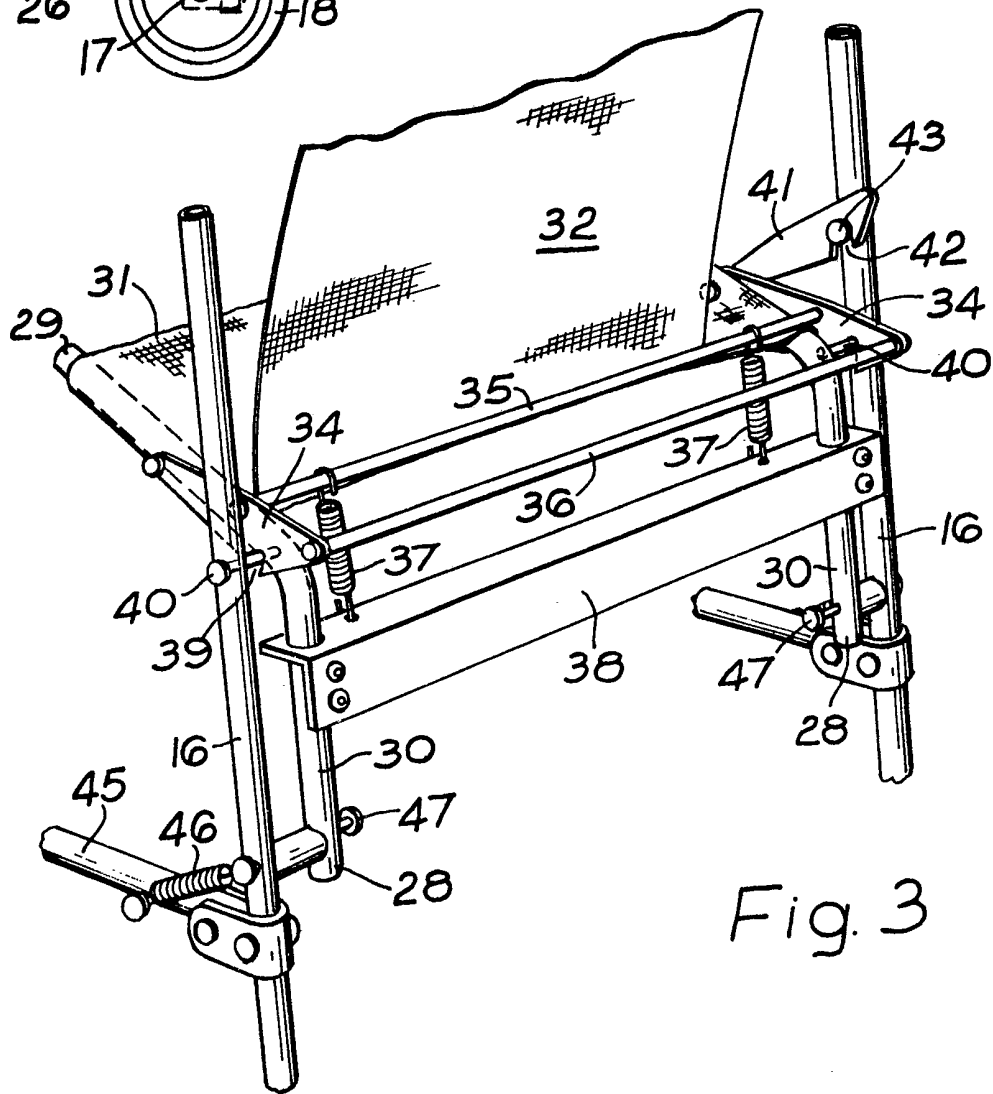


Fig. 3

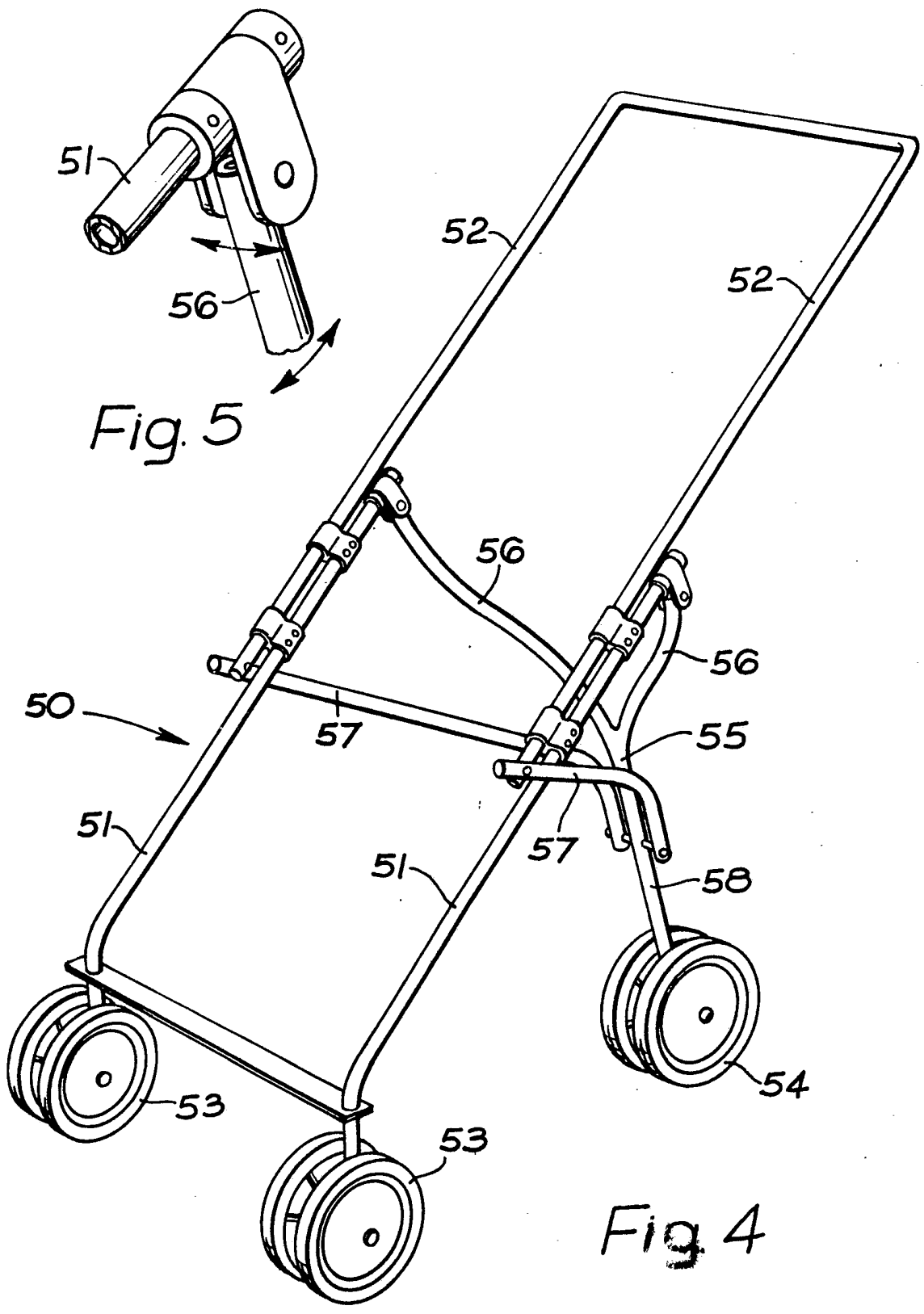


Fig. 5

Fig 4

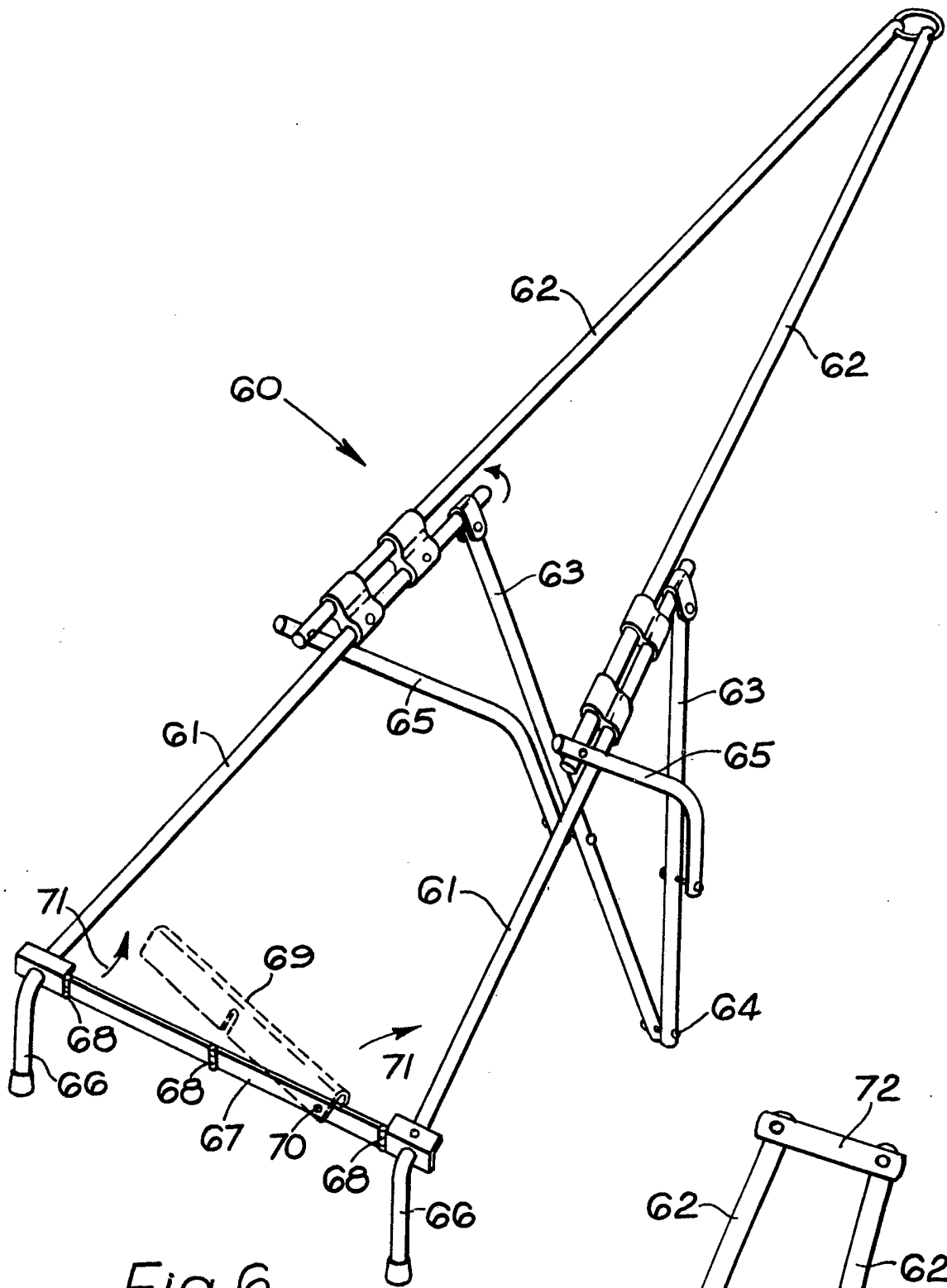


Fig. 6.

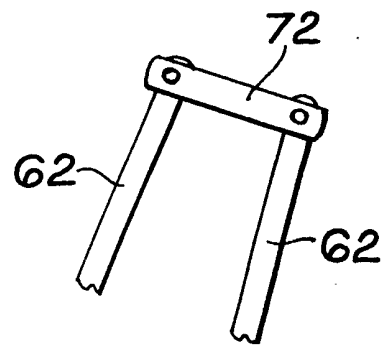


Fig. 7

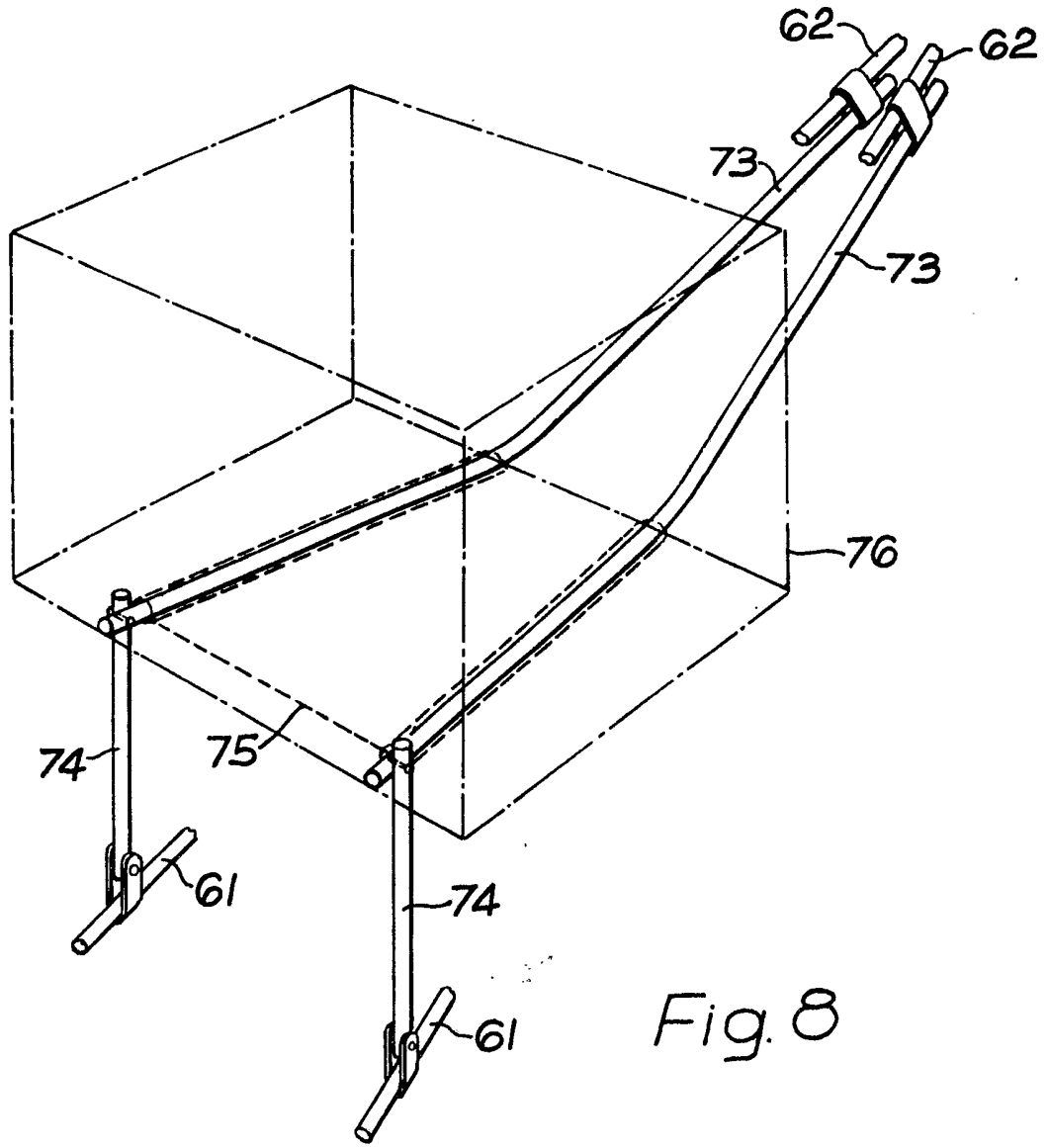


Fig. 8

SPECIFICATION

Collapsible framework

This invention relates to a collapsible framework which can form part of a collapsible seat, a collapsible pushchair for a child, a collapsible wheeled chair or a collapsible wheeled trolley for transporting articles such as a child's carry cot.

An object of the present invention is to provide an improved collapsible framework and accordingly the invention provides a collapsible framework comprising a first pair of elongate members each connected to and each longitudinally slidable relative to a respective one of a second pair of elongate members, lower ends of the first pair of members constituting or bearing feet, a structure pivotally attached at its upper end to the upper ends of the first pair of members and constituting or bearing a foot or feet at its lower end, and a second structure pivotally attached at its other end to the first structure at a position near to but spaced from the lower end thereof.

The various pairs of members are preferably parallel.

The third and fourth pairs of members can support a seat member which can be of fabric and have a sitting portion, mounted by tunnel hems enclosing front portions of the fourth pair of members and a backrest portion whose upper end has a tunnel hem enclosing a crosspiece interconnecting the third pair of members.

Preferably a carrying tray is pivotally attached by a front end to lower end portions of the first pair of members (or to a member attached thereto) and has upper side member slidably engaging lower end portions of the second or fourth pair of members enabling it to lie generally between the wheels and below the seat member when the frame is in its use condition, and parallel to the frame members in the folded condition.

The upper end of the third pair of members can constitute handles or can have a member interconnecting them and constituting a handle.

The invention will be described further, by way of example with reference to the accompanying drawings which illustrate preferred embodiments thereof, it being understood that the following description is illustrative and not limitative of the scope of the invention. In the drawings:—

Fig. 1 is a perspective view of a child's pushchair constituting a preferred embodiment of the invention;

Fig. 2 is a side view of the pushchair of Fig. 1 in its folded configuration;

Fig. 3 is a rear view of part of the pushchair of Figs. 1 and 2;

Fig. 4 is a perspective view of a second preferred embodiment of collapsible framework of the invention;

Fig. 5 is a detail of the framework of Fig. 4 on an enlarged scale;

Fig. 6 is a perspective view of a third preferred embodiment of framework of the invention;

Fig. 7 is a detail showing a possible

65 modification of the framework of Fig. 6; and

Fig. 8 is a sketch showing an accessory which can be attached to the framework of Fig. 6.

A pushchair 10, constituting a first preferred embodiment of the invention has a frame constructed principally of aluminium tubing. The frame comprises a first pair of parallel members 11 each having an upper major straight portion 12 and a lower minor straight portion 13 disposed at an angle to the major portion 12. At the upper end of each major straight portion 12 a plastics block 14 is secured and has a clevis 15 pivotally mounting an upper end of one of a pair of straight parallel members 16 constituting a first structure. The lower end of each of the members 11 and 16 mounts a stub axle 17 on which is mounted a pair of wheels 18, one on each side of the member. The minor portions 13 of the first pair of members 11 are interconnected by a transverse stiffening front member 19 from which upstands an inverted U-shaped member 20 whose cross-piece 21 constitutes a foot rest for the occupant of the pushchair 10.

Adjacent its upper end the major portion 12 of each of the first pair of members 11 mounts a pair of blocks 22 and 23 of plastics material preferably nylon having aligned cylindrical apertures parallel to and above said major portion 12. Slidably engaging each said pair of blocks 22, 23 is one of a second pair of members 24 which are the limbs of a U-shaped element whose cross-piece 25 constitutes a handle and is surrounded by a grip of plastics or rubber material 26.

The lower end of each member 24 is pivotally attached to a point near to but spaced from a front end 26 of a respective one of a pair of fourth or seat members 27, constituting a second structure, the other end 28 of which is pivotally attached to a respective one of the members 16 just above the wheels 18 thereon. Each member 27 has a forward straight major portion 29 and a rear straight minor portion 30 bent to lie at an angle thereto and parallel to the adjacent member 16 in the use condition of the frame.

A fabric seating member has a seat portion 31 supported by tunnel hems surrounding the major portions 29 of the members 27 and a backrest portion 32 extending upwardly from the seat portion 31 and terminating in a tunnel hem surrounding a cross-piece 33 extending between the second members 24.

In the use condition, with the wheels 18 resting on a horizontal surface the members 11 and 24 lie at approximately 45° to the horizontal, the members 16 are generally vertical, and the major portions 29 of the members 27 slope rearwardly at about 20° to 30° to the horizontal. A locking arrangement (to be later described) positioned on the members 16 and 27 prevents the members 24 from moving downward relative to the member 11. To bring the frame to its folded condition the locking arrangement is released and the second members 24 are slid downwards relative to the first members 11 until they lie side by side. The members 24 entrain the members 27 which in

turn entrain the members 16 and draw them towards the members 11 and 24 until, in the folded condition all the frame members lie generally parallel to produce a package whose length is approximately equal to the length of the first and second members 11 and 24 (just over half the length of the frame in the use condition) and whose thickness is substantially the diameter of the wheels 18.

The construction of the said locking arrangement is particularly important in view of the requirement that unintentional folding of the frame in use must be precluded. The locking arrangement, as illustrated more clearly in Fig. 3, comprises a pair of plates 34 each of which is pivotally connected to a respective major portion 29 of the members 27. The plates 34 are interconnected by two spaced apart, laterally extending rods 35 and 36. Rod 35 is connected by two springs 37 to a right-angle section or cross-bar 38, secured to and extending between each minor portion 30 of the members 27. The springs 37 bias the rod 35 toward the cross-bar 38 so that it rests on the major portion 39 of each member 27. For the engagement therewith of a pin 40, which projects inwardly from each of the second members 16, each plate 34 has a notch 39 positioned on the plate 34 between rod 35 and 36. When the frame is in its first, use, configuration each notch 39 engages with its respective pin 40 and prevents any collapse of the frame. When the frame is desired in its folded configuration, rod 36 serves as a handle for moving the plates 34 upwards, against the downward force of the springs 37 so that each pin 40 is no longer engaged by its respective notch 39. As a further safety feature, a safety catch is provided, having an arm 41 which is pivotally mounted to one of the major portions 29 of fourth members 27, at the same point as plate 34 is mounted. This arm 41 has a notch 42 which engages with a further pin 43 projecting inwardly at a point higher up on the member 16.

A carrying tray (not shown) in the form of a wire basket is pivotally attached to the front cross-piece 21 and has uninterrupted upper side rails resting on and slidable relative to pins 47. The basket lies between limbs 45 of the brake. Thus when the frame is in the use condition the basket lies generally parallel to the floor and between the wheels 18. In the folded condition the tray lies parallel to the frame members and does not materially increase the size of the folded article.

A brake for the pushchair comprises a U-shaped member 44 pivotally attached by the free ends of the limbs 45 of the U to the lower ends of the second members 16 and biased to be drawn upwardly by a tension spring 46. In the "off" condition the limbs 45 of the brake lie substantially parallel to the floor. In its "on" condition the U- is pivoted backwards beneath the wheels 18 and rests on the floor supporting the wheels 18 clear of the floor.

Referring now to Figs. 4 and 5, a second embodiment of framework of the invention is a

pushchair 50. This comprises a first pair of members 51, and a second pair of members 52 identical to the members 11 and 24 of the first embodiment. They are slidably connected in the same way and a similar seat structure and footrest (both not shown) are attached thereto. This pushchair 50 differs from the pushchair 10 in that it is a "tricycle" having two front pairs of wheels 53 and a rear pair 54, each pair 53, 54 is similar to pair 18 of the first embodiment. However here the first structure is in the form of a Y-shaped frame 55 whose upper limbs 56 are pivotally and rotatably attached to the upper ends of members 51 by the arrangement shown in more detail in Fig. 5. The second structure in this embodiment comprises a pair of members 57 each of which has one end probably attached to a lower end of a member 52 and its other end pivotally attached to a lever limb 58 of the frame 55. Operation of this embodiment is similar to that of the first embodiment, although the tray cannot be incorporated.

Referring now to Figs. 6 and 7 a third preferred frame work 60 is of "stick-fold" type and has a first pair of members 61 and a second pair of members 62 slidably interconnected in the same way as the members 11 and 24 of the first embodiment. These members 61 and 62 can support a flexible seat member (not shown) or an accessory such as that shown in Fig. 8. First structure of this embodiment is in the form of a pair of elongate members 63 probably and rotatably connected at their tops to the upper ends of members 61 and pivotally joined at their lower ends to form a foot 64. Second structure of this embodiment is constituted by a pair of members 65 each pivotally attached at one end to the lower end of one of members 62. The members 61 terminate in short straight portions 66 and at the tops thereof are interconnected by a foldable strut/footrest 67 hinged at 68 and lockable by means of an inverted U-section member 69 pivoted at 70. When folded the two halves of the strut 67 pivot as indicated by arrows 71.

This embodiment folds mainly in the same way as the first two embodiments, but in addition to the sliding movement, breaking of the strut 67 allows the sides of the framework to come together to form a "stick." Naturally, wheels can be added to the three feet of this embodiment in a manner similar to that shown in Fig. 4. The upper ends of members 62 can be connected by a crossbar 72 (Fig. 7) constituting a handle when wheels are provided.

Fig. 8 shows an accessory which can be added to the framework of Fig. 6. This basically comprises a pair of longer members 73 attached to members 62 near their upper ends or to cross bar 72 and pivotally attached to top ends of shorter leg members 74 whose lower ends are pivotally attached to members 61. The longer members 73 provide a platform which can support a seat 75 (shown in dotted lines) or a basket 76 (dot dash lines).

The invention is not limited to the precise

details of the foregoing and variations can be made thereto within the scope of the following claims.

CLAIMS

5 1. A collapsible framework comprising a first pair of elongate members each connected to and each longitudinally slidable relative to a respective one of a second pair of elongate members, lower ends of the first pair of members constituting or bearing feet. A structure pivotally attached at its upper end to the upper ends of the first pair of members and constituting or bearing a foot as feet at its lower end, and a second structure pivotally attached at its other end to the first structure at a the second pair of elongate members and pivotally attached to its other end to the first structure at a position near to but spaced from the lower end thereof.

20 2. A framework as claimed in claim 1 wherein each of said first and second structures is constituted by a pair of elongate members.

3. A framework as claimed in claim 2, wherein the members of each pair of elongate members are parallel.

25 4. A framework as claimed in claim 1 wherein the first structure is generally Y-shaped, the upper ends of each of its upper limbs being pivotally and rotatably connected to a respective upper end of one of the first pair of members.

30 5. A framework as claimed in claim 2, wherein the first and second pairs of members lie in a generally inverted U-shaped configuration, the members constituting the first said structure forming an upright V shape.

35 6. A framework as claimed in any preceding claim wherein the first and second pairs of members support a collapsible seat structure.

40 7. A framework as claimed in any of claims 1 to 5, wherein the first and second pairs of members support a platform structure.

8. A framework as claimed in claim 7 in combination with a seat or basket supported by the platform.

45 9. A framework as claimed in any preceding claim wherein each foot is in the form of a wheel or a pair of wheels.

50 10. A collapsible framework substantially as hereinbefore described with reference to and as illustrated in Figs. 6 or 6 and 7 or 6 and 8 of the accompanying drawings.

55 11. A pushchair having a frame which comprises a first pair of spaced apart parallel members mounting feet in the form of front wheels at lower ends thereof and pivoted at upper ends thereof to respective upper ends of a first structure in the form of a pair of spaced-apart members mounting rear wheels at lower ends thereof, second pair of spaced-apart parallel members being slidably attached to the first pair and being pivotally connected, at their lower ends

thereof, to respective ends of a second structure in the form of a pair of spaced-apart members whose rear ends are pivotally connected to the spaced-apart members of the first structure adjacent the rear wheels, and a flexible seat member supported by the second pair of parallel members and the parallel members of the second structure, the sliding relationship between the first and second pairs of members enabling the frame to be disposed in a first, use, configuration where the lower ends of the second pair of members and the upper ends of the first pair of members are adjacent and the first pair of members and the members of the first structure are disposed at an acute angle, and a second, folded configuration wherein the first and second pairs of members lie generally alongside each other with the members of the two structures generally parallel thereto.

65 12. A pushchair as claimed in claim 11 wherein the second pair of members are interconnected by a crosspiece.

13. A pushchair as claimed in claim 11 or 12 wherein the seat member is of fabric and has a sitting portion and a backrest portion.

85 14. A pushchair as claimed in claim 13 wherein the sitting portion is mounted by tunnel hems enclosing front portions of the members of the second structure and the backrest portion is mounted by its upper end having a tunnel hem which encloses the crosspiece.

90 15. A pushchair as claimed in any preceding claim wherein a carrying tray is pivotally attached to part of the first pair of members and has upper side members slidably engaging lower end portions of the second structure enabling it to lie generally between the wheels and below the seat member when the frame is in its use condition, and parallel to the frame members in its folded condition.

100 16. A pushchair as claimed in any preceding claim wherein the upper ends of the second pair of members constitute a handle.

105 17. A pushchair as claimed in claim 16 wherein the said upper ends have an interconnecting member which constitutes a handle.

110 18. A pushchair as claimed in any preceding claim wherein the frame is provided with a locking arrangement which is positioned on and acts between the first and second structures to prevent the frame from folding when in its use condition.

19. A pushchair as claimed in claim 18 wherein the locking arrangement is provided with a safety catch.

115 20. A pushchair as claimed in any preceding claim wherein each member is of aluminium tubing.

120 21. A pushchair substantially as hereinbefore described with reference to and as illustrated in Figs. 1 to 3 or 4 and 5 of the accompanying drawings.