

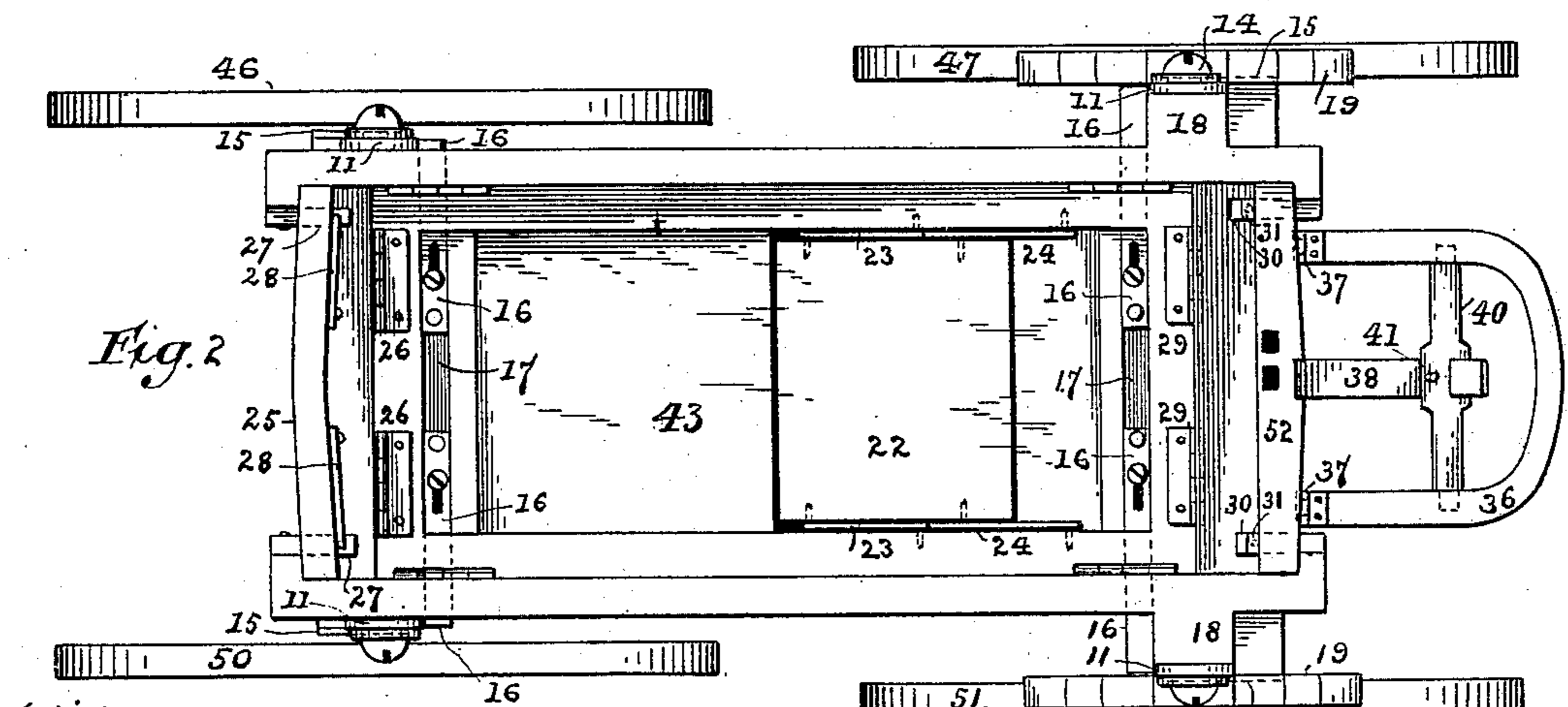
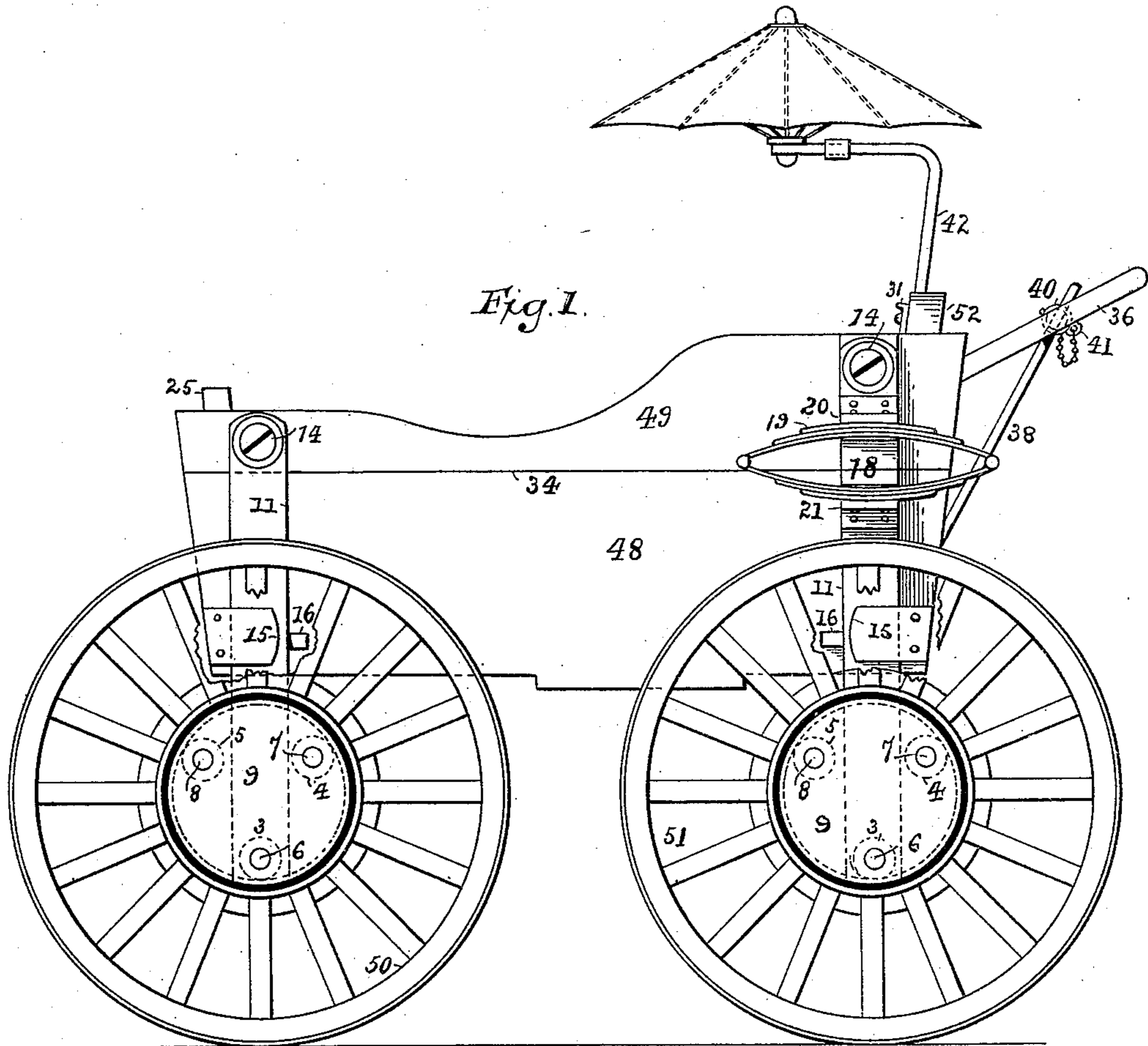
(No Model.)

3 Sheets—Sheet 1.

J. ELLIS.  
FOLDING BABY CARRIAGE.

No. 410,963.

Patented Sept. 10, 1889.



Witnesses  
Geo Wadman  
Fred Hemper

Inventor  
John Ellis  
By his attorneys  
Lufford & Brown

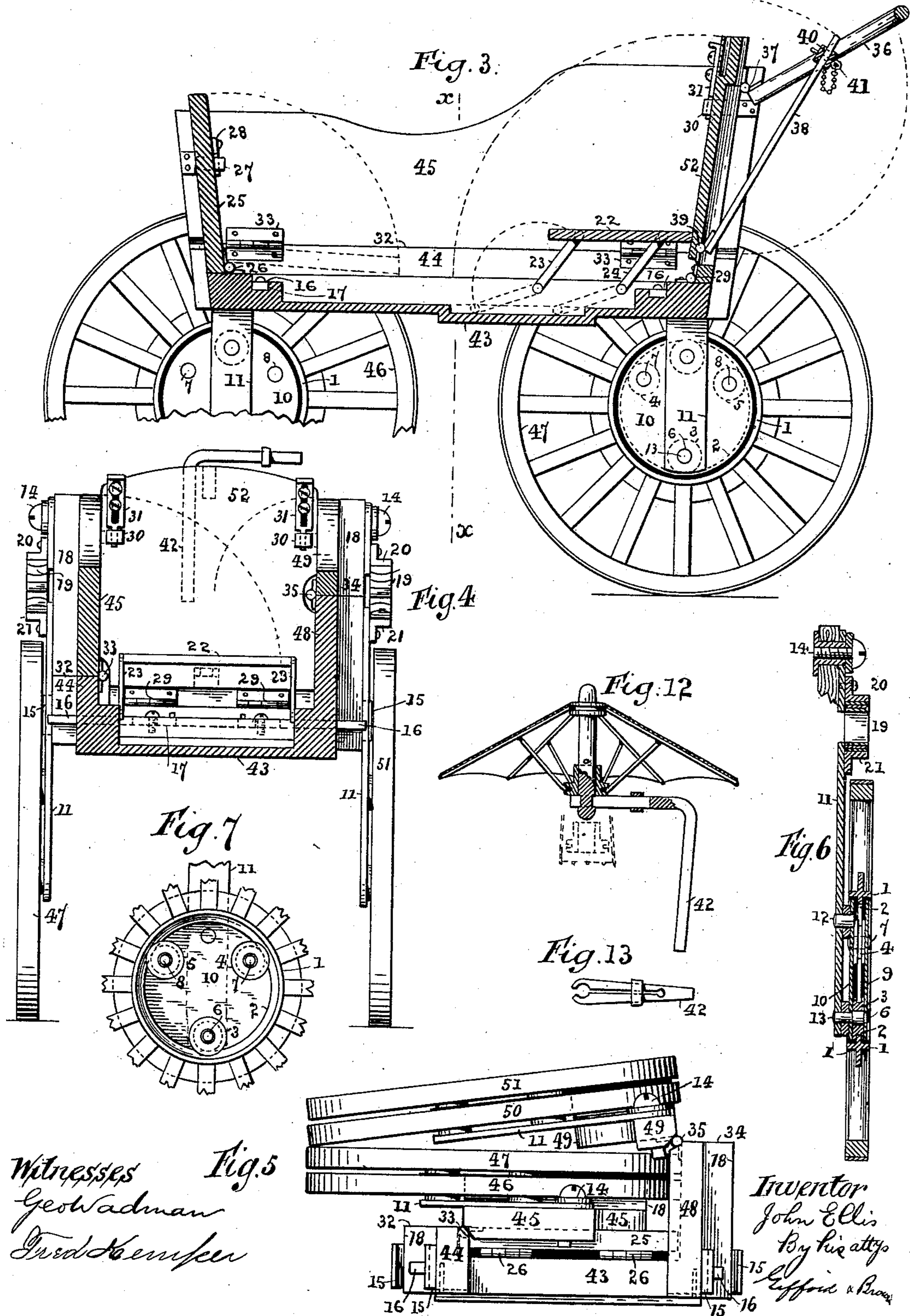
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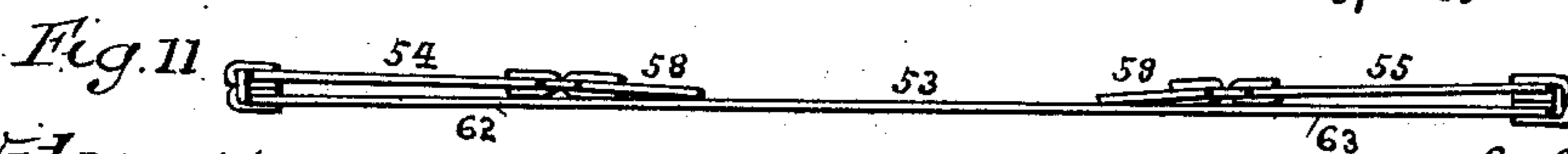
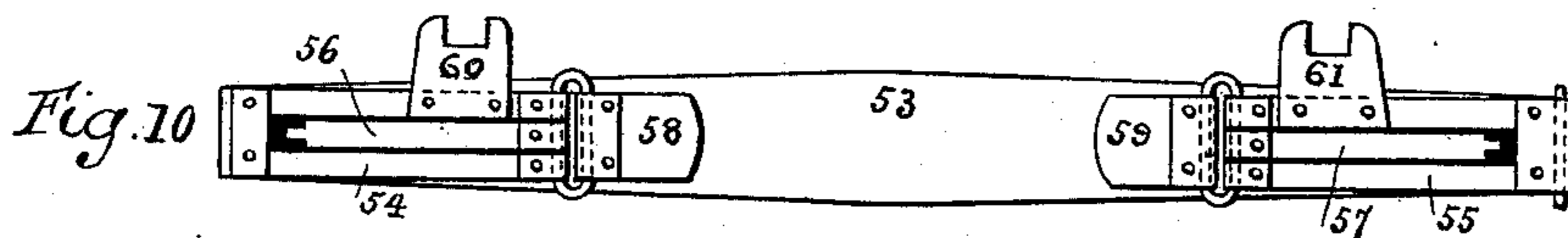
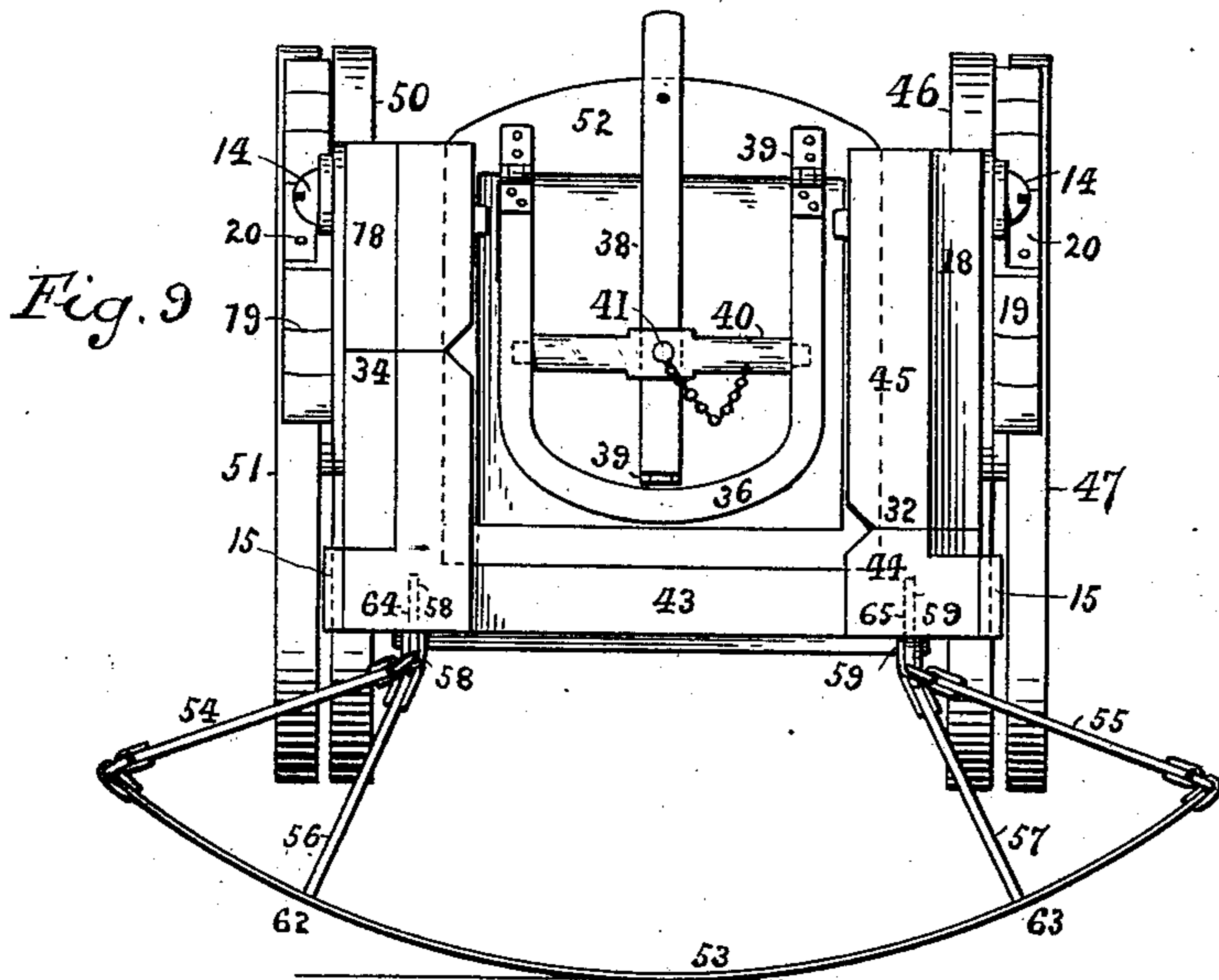
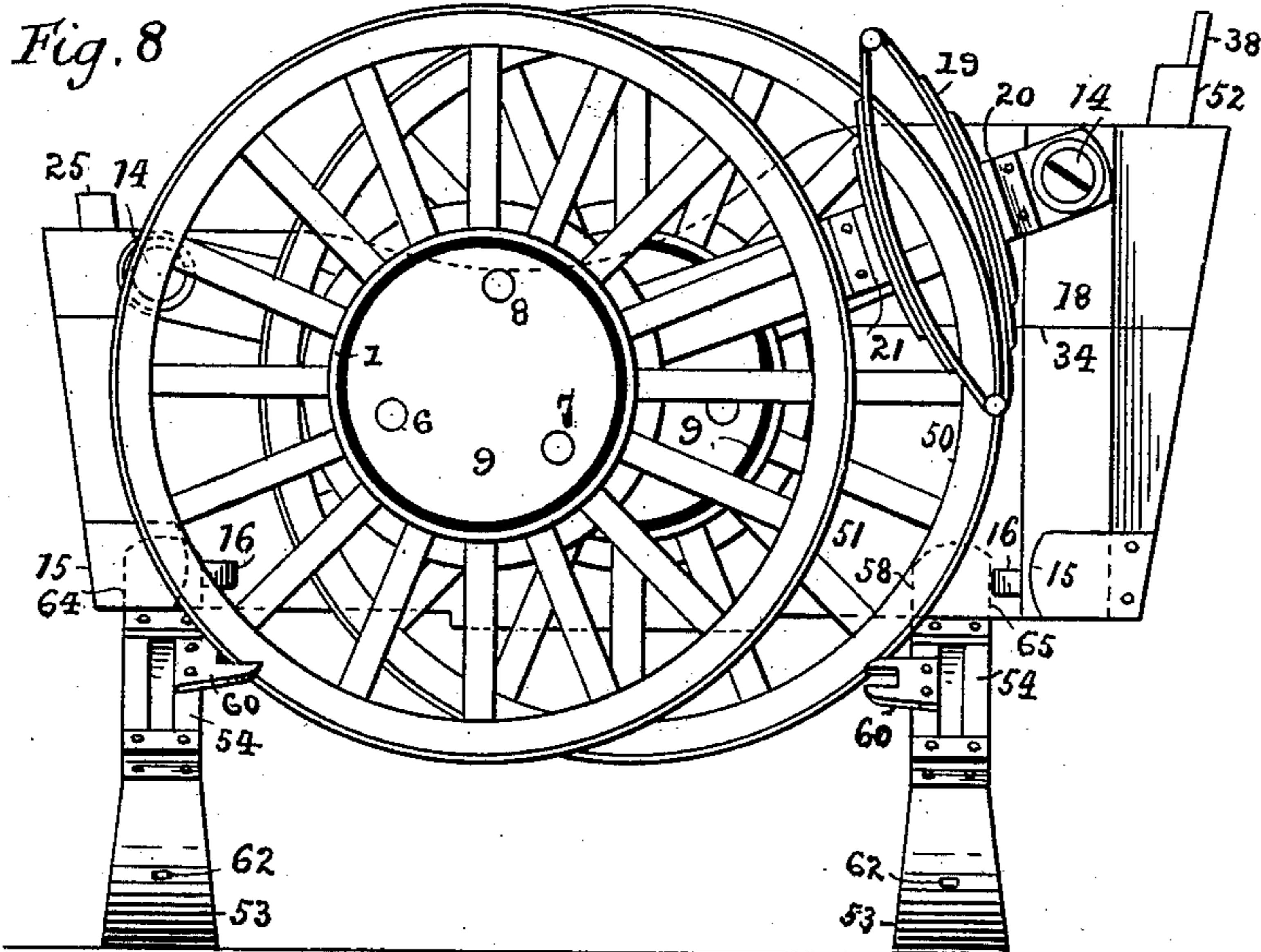
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# UNITED STATES PATENT OFFICE.

JOHN ELLIS, OF JERSEY CITY, ASSIGNOR OF ONE-HALF TO WILLIAM T. WALLIS, OF EAST ORANGE, NEW JERSEY.

## FOLDING BABY-CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 410,963, dated September 10, 1889.

Application filed September 29, 1888. Serial No. 286,720. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ELLIS, of Jersey City, New Jersey, have invented a new and useful Improvement in Folding Baby-Carriages, of which the following is a specification.

Figure 1 is a side view of the carriage in condition for use. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal section of the same. Fig. 4 is a transverse section of the same through the lines  $x x$ , Fig. 3. Fig. 5 is an end view from the foot of the carriage in its completely-folded condition. Fig. 6 is a detail view showing a vertical cross-section through one of the wheels. Fig. 7 is a detail of the central portion of the wheel. Fig. 8 is a side view showing the adaptation of the carriage to a cradle, being supplied with rockers and the wheels being folded. Fig. 9 is an end view of the same as Fig. 8. Figs. 10 and 11 are respectively a plan and side view of the rockers detached. Fig. 12 is a parasol detached, and Fig. 13 is a clip by which the same is secured in place.

An important part of my invention consists in the construction and arrangement of the wheels, which I will first describe.

The spokes of the wheel, as shown in Fig. 8, are secured at their inner ends to a ring 1, which contains an internal track 2, concentric with the rim of the wheel.

3, 4, and 5 are friction-wheels, upon which the track 2 runs and having their centers at the three points of a triangle. These wheels turn, respectively, upon the pivots 6, 7, and 8, each of which is secured on opposite sides of its wheel in the plates 9 and 10. The friction-wheels, of which the number may be varied, and the track serve to center the vehicle-wheel with respect to the plates 9 and 10, and it only remains to connect these plates with the object to be carried. This is accomplished by means of the arm 11, which extends at one side of the wheel a sufficient distance to clear the rim of the wheel, as shown in Figs. 4 and 6, and which may be rigidly secured to the plates 9 and 10 by any suitable connection, such as the studs 12 and 13, a continuation of the stud 13 forming in the example shown in the drawings a pivot 6 of the friction-wheel 3. The arm 11 of each wheel of the carriage extends vertically upward, and is connected with the carriage-body as follows: For

the front wheels the top of the arm is pivoted upon the outer end of a stud or bolt 14, which passes through the side of the body near the top thereof, so that the arm may swing upon this bolt or stud. The forward swing of the arm is limited by the stop 15, from which a lip extends backward outside of the arm 11, so as to hold that arm firmly against the side of the carriage.

16 is a bolt, which is provided with guide-ways 17 on the bottom of the carriage, and which may be shot out through the side of the carriage, as shown, so as to hold the arm 11 firmly against the stop 15 when desired.

The arrangement for connecting the arms 11 of the two rear wheels to the body are similar, and the parts are similarly numbered in the drawings; but in this case provision should be made for producing a greater distance between the two rear wheels than between the two front wheels, so that in folding two of the wheels will fold inside the other two. This may be accomplished, as shown in the drawings, by pivoting the arm 11 upon the stud 18, extending laterally from the side of the wagon, instead of pivoting it directly upon the side of the wagon. In the drawings are also shown springs 19, arranged in the arms 11 of the two rear wheels between the shoulders 20 and 21 upon the upper and lower sections of those arms. Now, it will be observed that when in position for use the wheels will be held securely at the lower ends of the arms 11, and will revolve upon the friction-wheels 3, 4, and 5, forming a firm and durable bearing for the wheel. The body will be supported vertically upon the arm by the pivotal bolt 14, and all lateral motion of the arm will be stayed by the lipped stop 15 in conjunction with the bolt 16. When, however, it is desired to fold the wheels by withdrawing the bolts 16, the front wheel on each side will be free to swing backward and upward, and the rear wheel on each side will be free to swing forward and upward outside of the front wheel, as shown in the drawings, so that they will occupy the position with respect to the body of the vehicle shown in Figs. 8 and 9. Having folded the wheels in this position, the structure may be used as a cradle by the addition of rockers, or it may be still further folded. For the latter purpose provision is made as follows: The

seat 22 may be pivoted upon the top of parallel links 23 and 24, so that when in position for use its rear end will abut against the rear end of the carriage-body, as shown in Fig. 3; but when not in use it may be swung forward and downward, as indicated by dotted lines in Fig. 3, where it may rest in a depression formed for that purpose in the bottom of the wagon. When in this position, it will be wholly below the level of the tops of the sills of the body. The foot 25 of the body is hinged to the bottom sill at 26, so that it may be swung backward and downward, as indicated in dotted lines in Fig. 3. When in its raised position, it may be held in place by any suitable connection with the sides of the body—as, for instance, by the lugs 27 and hooks 28. The other end may be held in place by the lugs 30 and bolts 31. The sides of the body are hinged at different points. Thus, as shown in Fig. 4, one side of the body is divided in two parts on the line 32, which is of sufficient height to admit of the folding of that side inwardly and downwardly above the two ends which have already been folded, and the one section of the side is hinged to the other section, as at 33. The other side of the body is divided into two parts on the line 34, which is sufficiently high to admit of the inward and downward folding of the upper section of that side above the other side, the two wheels on the other side and the two ends in their folded position. The two sections of the second side are hinged together, as at 35. The handle 36 may be hinged to the head or rear end of the carriage, as at 37, and when in its unfolded position may be held in place by the brace 38, hinged at 39 and passing through a slot in the rotatable cross-bar 40 of the handle, being held in position by a pin 41. When it is desired to fold the handle, this pin may be withdrawn, the handle swung downward against the head of the wagon, as shown in Fig. 9, and the brace 38 swung upward, projecting, in order to do so, through the slot in the rotatable cross-piece 40.

If desired, a parasol may be provided for of ordinary construction by having the detachable arm 42 project upward from the head of the wagon, and provided at its upper end with a horizontally-projecting clip (shown in Fig. 13) to grasp the handle of the parasol, as shown in Fig. 12, and secure the same in the position required. By detaching this clip from the parasol the same may be readily folded and the arm 42 may be detached from the body of the wagon.

When the wheels and body have been folded, as above indicated, they will be in position shown in Fig. 5, where 43 is the bottom of the body. 25 is the foot thereof, the head 52 being on the same horizontal plane as the latter. 44 is the lower section of one side thereof. 45 is the upper section of the same side. 46 is the front wheel on the same side. 47 is the rear wheel on the same side. 48 is the lower section of the opposite side of

the body. 49 is the upper section of the same side. 50 is the front wheel on the same side. 51 is the rear wheel on the same side. When in this folded position, it will be seen that the whole structure is reduced to a very small compass, so that it may be laid away or transported readily.

When it is desired to use the structure as a cradle, the wheels having been folded, as first described, the body is allowed to remain unfolded, and the rockers shown in Figs. 7 to 11, inclusive, are applied as follows: When not attached to the structure, these rockers are practically flat, as shown in Figs. 9 and 11, consisting of a flexible portion, preferably of metal, 53, to which are hinged at its ends the links 54 and 55, having hinged to them at their free ends the braces 56 and 57 and the pieces 58 and 59. Projecting laterally from the sides of the links 54 and 55 are the shoes 60 and 61. Tenons are provided on the free ends of the braces 56 and 57, as shown, adapted to fit into mortises in the piece 53 at the points 62 and 63. Now, when it is desired to attach this rocker to the structure of the carriage, vertical longitudinal slots 64 and 65 (shown in dotted lines in Figs. 8 and 9) are provided, into which are fitted the pieces 58 and 59. At the same time the tenons of the braces 56 and 57 are fitted into the mortises of the piece 53, thus springing that piece into the bowed form shown in Fig. 9, in which form it serves as a rocker of the cradle. A similar rocker is provided at the other end. The shoes 60 and 61, which are provided upon opposite sides of the two rockers, are so placed that they will serve as rests for the rims of the wheels when in their folded position to prevent the same from swinging downward, as is clearly shown in Fig. 8. By applying this form of rockers to the structure the carriage may be readily converted into a cradle, and at the same time, by reason of their flat form, the rockers, when detached, will occupy so little room that they may very readily be transported or stored.

It will be observed that the arms 11, by which the wheels are connected to the wagon-body, are so arranged that they do not occupy the space below the wagon-body, but are at the sides of that space. It will also be observed that they are attached to the sides of the wagon-body instead of to the bottom and that their point of attachment is above the level of the wheel in each case. It will also be observed that in the construction shown the track 2 is connected with the wheel, and the friction-wheels 3, 4, and 5 are mounted upon the arm 11, this arrangement having certain advantages over the reverse; but I do not desire to limit myself to this arrangement.

The utility of the structure which I have above described will be especially appreciated in traveling, and by persons living in apartments, where the facilities for keeping a baby-carriage are limited.

I wish it to be understood that I have in the foregoing description described the form of construction in which I at present prefer to embody my invention, but I am aware  
 5 that this form of construction may be varied to an indefinite extent without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself to the form of construction  
 10 described.

I do not in this application make any claim for the wheels as a separate part from the vehicle, since such claims are to be made the subject of a separate application.

15 I claim—

1. In combination, substantially as described, with the body of a vehicle and a wheel thereof, an arm pivoted at its upper end at or near the top of the vehicle-body,  
 20 upon the lower end of which arm the wheel is journaled, and mechanism connected with said body at or near its bottom, whereby the swinging motion of said arm is stayed.

2. In combination, substantially as described, with a vehicle-body and four wheels, the forward pair being arranged to have a different width of track from the rear pair, an arm for each wheel pivoted at its top to the  
 30 body of the vehicle and having at its bottom the journal of the wheel, and means connected with the body of the vehicle, whereby said arm is stayed from oscillation.

3. In combination, substantially as described, the body of a vehicle and its four  
 35 wheels, an arm for each wheel pivoted to the body of the vehicle and having at its lower end the journal for the wheel, the pivots for the two arms on each side of the vehicle being separated by a distance nearly equal to  
 40 the distance from each pivot to the ground.

4. In combination, substantially as described, with the body of a vehicle and a wheel thereof, an arm pivoted to the body and having at its lower end a journal for the  
 45 wheel, said arm being composed of two parts, a spring interposed between the upper and lower parts of said arm, and means whereby said arm may be stayed from oscillation.

5. In a vehicle, in combination, substantially as described, with a folding body and a wheel thereof, an arm pivoted to a side of  
 50 said body, so as to swing longitudinally, having the journal of the wheel at its lower end and adapted to be swung up at the side of  
 55 the body.

6. In combination, substantially as described, with a vehicle-body adapted to having its sides folded over upon one another, four arms, two of which are pivoted to each  
 60 side and swing in parallel longitudinal planes, and four wheels journaled at the ends of said arms.

7. The combination, substantially as described, of the bottom of a body, the ends  
 65 hinged thereto, the sides, each consisting of two sections hinged at different elevations above the bottom of the body, wheels, and

the arms upon which the wheels are journaled, and which are pivoted to the upper sections of the sides of the body. 70

8. The combination, substantially as described, of the bottom of the body, the sides thereof, each composed of two sections hinged together at different elevations above the  
 75 bottom, the wheels, and the arms upon which the wheels are journaled, and which are pivoted to the upper sections of the sides.

9. In a vehicle having a folding body, the combination, with each side of said body, of two arms pivoted thereto and a wheel jour-  
 80 naled upon the end of each arm and so arranged that the wheel upon one arm may be swung up to overlap the wheel upon the other arm, substantially as described.

10. In a vehicle having a folding body, the  
 85 combination, with each side of said body, substantially as described, of two arms pivoted thereto and swinging longitudinally, a wheel journaled to each arm, and mechanism whereby the oscillation of said arms may be  
 90 stayed.

11. In a vehicle having a folding body, the combination, with each side of said body, of a wheel, an arm pivoted to the body and upon  
 95 which the wheel is journaled, a stop, an overhanging lip, and a bolt, whereby the said arm may be held securely in a vertical position when required, substantially as described.

12. The combination, with the flexible strip  
 53, of a link pivotally connected with each end  
 100 thereof and braces adapted to extend from the free end of each of said links outward against the said flexible strip and having one end detachably secured, substantially as described, whereby, when in use, the flexible  
 105 strip is held in the bowed form adapted for a rocker and when not in use it may be permitted to straighten out and the links and braces folded thereon, as set forth.

13. In combination with a baby-carriage  
 110 having folding wheels to adapt it to be converted into a cradle-body, the flexible strip 53, a link hinged to each end of said flexible strip, means for detachably securing the end of each of said links to the bottom of the  
 115 cradle-body, and braces hinged to the free ends of said links and adapted to abut against the flexible strip, whereby the baby-carriage may be converted into a cradle, substantially  
 120 as described.

14. In combination, the vehicle-body, the wheels thereof, the arms pivotally connected to said body and upon which the said wheels are journaled, whereby the said wheels may be swung so as to overlap each other at the  
 125 sides of the body, and the rockers adapted to have attachment to said vehicle-body, whereby the same may be converted into a cradle, substantially as described.

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Witnesses:

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