



INTENDED

614500

COMMONWEALTH of AUSTRALIA

Patents Act 1952

APPLICATION FOR A STANDARD PATENT

We QUICKWHEEL HOLDINGS B.V.

of Beurs World Trade Center
Beursplein 37
3011 AA Rotterdam
The Netherlands

hereby apply for the grant of a Standard Patent for an invention entitled:

"Wheel Trolley"

which is described in the complete specification.

This address for service is care of DAVIES & COLLISON, Patent Attorneys, of 1 Little Collins Street, Melbourne, in the State of Victoria, Commonwealth of Australia.

Dated this 12th day of September, 1989

To: THE COMMISSIONER OF PATENTS

.....
(a member of the firm of
DAVIES & COLLISON for and
on behalf of the Applicant).

M 012403 150989

Davies & Collison, Melbourne and Canberra

COMMONWEALTH OF AUSTRALIA
PATENTS ACT 1952
DECLARATION IN SUPPORT OF CONVENTION OR
NON-CONVENTION APPLICATION FOR A PATENT

Insert title of invention.

In support of the Application made for a patent for an invention
entitled: "Wheel Trolley"

Insert full name(s) and address(es)
of declarant(s) being the appli-
cant(s) or person(s) authorized to
sign on behalf of an applicant
company.

I Alfred Langerak
Of Quick Wheel International B.V.
Of Beurs World Trade Center,
Beursplein 37,
3011 AA Rotterdam,
The Netherlands.

Cross out whichever of paragraphs
1(a) or 1(b) does not apply
1(a) relates to application made
by individual(s)
1(b) relates to application made
by company; insert name of
applicant company.

do solemnly and sincerely declare as follows:-

1. (a) ~~XXX the applicant XXXXX of the patent~~
or (b) I am authorized by

QUICK WHEEL INTERNATIONAL B.V.

Cross out whichever of paragraphs
2(a) or 2(b) does not apply
2(a) relates to application made
by inventor(s)
2(b) relates to application made
by company(s) or person(s) who
are not inventor(s); insert full
name(s) and address(es) of inven-
tors.

the applicant..... for the patent to make this declaration on ^{its} behalf.

2. (a) ~~Kank the actual inventor XXXXX of the invention~~
or (b) Jan SMEITINK
Of Henseniusstraat 11,
5801 AW Venray,
The Netherlands.

~~is~~ the actual inventor..... of the invention and the facts upon which the applicant.....
~~is~~ entitled to make the application are as follows :-

The actual inventor has assigned the invention
to the said applicant.

State manner in which applicant(s)
derive title from inventor(s)

3. The basic application..... as defined by Section 141 of the Act ^{was} made
in on the
by
in on the
by
in on the
by

4. The basic application..... referred to in paragraph 3 of this Declaration ^{was}
the first application..... made in a Convention country in respect of the invention the subject
of the application.

Insert place and date of signature.

Declared at Rotterdam this 26th day of October 1987

Signature of declarant(s) (no
attestation required)

Alfred LANGERAK
(Director)

Note: Initial all alterations.

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- (54) Title
WHEEL TROLLEY
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- (71) Applicant(s)
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- (72) Inventor(s)
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- (56) Prior Art Documents
GB 669560
GB 669555
AU 107318 1304/38 93.1 59.9
- (57) Claim

1. A trolley for supporting a vehicle wheel comprising:
 - a frame having a front part and a rear part, said parts having respective pairs of sides hingedly inter-connected so that the frame may be folded about a transverse axis for storage;
 - wheels rotatably attached to the front and rear parts of said frame for supporting the frame;
 - a first support member pivotably mounted to the front part of said frame in such a manner that said first support member can pivot about a first transverse axis;
 - a second support member comprising a drive-on ramp pivotably mounted to the rear part of said frame such that a vehicle wheel moving up said ramp and onto said trolley will cause said second support member to pivot about a second transverse axis; and
 - said first support member pivoting in response to the vehicle wheel coming into contact therewith such that the vehicle wheel is supported by said first and second support members.

11. A trolley for supporting a wheel comprising:
 - a frame having a front part and a rear part, said parts having respective pairs of sides hingedly inter-connected so that the frame may be folded about a transverse axis for storage;
 - a front wheel connected to the front part of the frame by a fork and

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rotatable about an axle in said fork;

two rear wheels, one rotatable about a first axle mounted on said rear part of said frame and the other rotatable about a second axle mounted on said rear part of said frame, said first and second axles mounted on opposite sides of said rear part of said frame in a coaxial manner;

a first support member having at least one side part, said first support member attached to said front part of said frame by a transverse axle in a manner that allows said first support member to tilt, and said side part having notches therein;

a second support member attached to said first and second axles of said rear wheels in a manner that allows said second support member to rotate between a first position, in which said second support member rests on the road surface and serves as a drive-on ramp, and a second position, in which said second support member serves to support a wheel driven thereon, said second support member having a front edge, from which a central groove extends rearwardly, and at least one side part which extends so that in the first position said trolley rests on said side part and said rear wheels are held above the road surface; and

a locking means for locking said first support member in place after a wheel has been driven onto the trolley.

COMMONWEALTH OF AUSTRALIA

PATENT ACT 1952

COMPLETE SPECIFICATION

614500

(ORIGINAL)

FOR OFFICE USE

CLASS

INT. CLASS

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Lodged:

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Related Art:

NAME OF APPLICANT: ~~QUICKWHEEL HOLDINGS~~
~~QUICKWHEEL INTERNATIONAL B.V.~~

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NAME(S) OF INVENTOR(S) Jan SMEITINK

ADDRESS FOR SERVICE: DAVIES & COLLISON, Patent Attorneys
1 Little Collins Street, Melbourne, 3000.

COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

"WHEEL TROLLEY"

The following statement is a full description of this invention,
including the best method of performing it known to us :-

Wheel trolley.

The invention relates to a trolley for supporting a wheel of a vehicle so that the latter can be moved without touching the road surface, said trolley consisting of a frame provided with three or more wheels, a ramp part which, under the influence of pressure exerted thereon at a certain distance from the initial portion thereof is adapted to tilt around an axis extending in a transverse direction with respect to the trolley, and, when in a tilted position to support, with its upper surface, a wheel, which has been driven onto the trolley at the rear side thereof and with means for supporting the wheel at its front side.

Such a trolley is described in GB-A 2 109 313. If a wheel of a vehicle, such as a motor-car or a trailer, has become unserviceable, for example as a result of a flat tyre, the trolley is used for supporting said wheel, after which the vehicle is now mobile again.

The wheel in question is driven onto the ramp part of the trolley, after which the wheel becomes immobilised, it being supported, at its rear side, by the tilted ramp part, and bearing, at the front side, against a supporting part which is also tiltable, while its lower side rests on the bottom of a tray which hangs below the frame. In order to ensure that the trolley remains in place when driving a wheel onto it, the ramp part is equipped on its lower side, with a protruding part which, in the non-tilted position, lifts the trolley so that its rear wheels are free from the road surface.

This known trolley has some disadvantages. If it hits an obstacle when in motion, the wheel supported thereon can easily slip off. A further disadvantage is formed by its relatively large dimensions, so that it needs much space, for example in the boot of a motor car.

It is an object of the invention to provide a trolley of the type described above which does not have the disadvantages thereof.

~~For that purpose the trolley according to the invention is characterised in that a vehicle wheel which has been driven onto it is supported in two points by means of~~



For that purpose the invention provides a trolley for supporting a vehicle
5 wheel comprising:

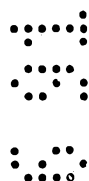
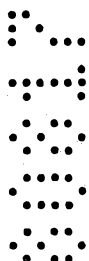
a frame having a front part and a rear part, said parts having respective
pairs of sides hingedly inter-connected so that the frame may be folded about a
transverse axis for storage;

wheels rotatably attached to the front and rear parts of said frame for
10 supporting the frame;

a first support member pivotably mounted to the front part of said frame
in such a manner that said first support member can pivot about a first transverse
axis;

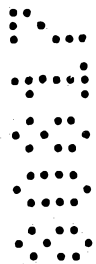
a second support member comprising a drive-on ramp pivotably mounted
15 to the rear part of said frame such that a vehicle wheel moving up said ramp and
onto said trolley will cause said second support member to pivot about a second
transverse axis; and

said first support member pivoting in response to the vehicle wheel coming
into contact therewith such that the vehicle wheel is supported by said first and
20 second support members.



~~two flat and transversely extending parts in front and behind the wheel respectively, which parts, in the operative position, form a downwardly converging wedge.~~

5 A wheel which has been driven onto the trolley is, then, only supported at its front and rear sides, and not at the bottom side. The wheel does not bear on a floor, but hangs between the two wedge-like converging supporting parts. A result thereof is that, due to the effect of gravity and the fact that the supporting parts are both flat, which is supported by means of wide supporting areas instead of narrow ones. Furthermore the wheel can be supported higher than with the known trolley, so that the risk that the wheel slips off when bumping at the front side is considerably smaller, and the trolley is, therefore, safer.



15 A further advantage of the construction according to the invention is that the traction exerted by the trolley is better. This is especially important when supporting a steered (front) wheel of a motor-car. As a result of the better traction effect the relatively expensive swivelling wheels at the front side of the trolley can be avoided.



20 When suitably selecting the distance between the supporting parts and the angle between them, it is possible to support wheels which vary considerably in size. In order to optimize this it is preferred, in the trolley according to the invention, to make the distance between the supporting parts adjustable. If, for example, the tilting axis of the ramp part coincides with the axles of the rear wheels, the longitudinally extending side parts of the frame are equipped with a series of supporting locations situated one behind the other, e.g. holes, for the wheel axles. By fixing the wheels, and thus the ramp parts, in a more forward position, the trolley becomes suitable for smaller wheels.



25 In order to ensure that the angle between the supporting parts is always the correct angle, it can be advantageous to make the front supporting part freely tiltable around an axis which extends in a transverse direction with respect to the trolley, so that it is self-adjustable. Under the influence of a wheel which is driven onto the trolley, the latter part is then automatically tilted into the correct



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position.

After a particular position has been reached, it is ~~important~~ ^{preferable} to ensure that the latter part is fixed in that position in order to keep the wheel optimally supported and clamped. For that purpose a mechanism can be used by means of which the ~~supporting part~~ ^{first support member} can be locked with respect to the frame. A simple and efficient way is to use notches or holes in that part, co-operating with a protruding part on the frame, the latter, for example, being connected to a spring blade mounted on the frame.

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Due to the fact that the trolley according to the invention has no floor on which the wheel to be supported will bear, the disadvantage of the large dimensions of the known trolleys can be avoided by making it collapsible. This can be effected by using longitudinal frame parts provided with hinges having a hinge axis extending in a transverse direction with respect to the trolley, so that, the front side of the trolley can be folded with its lower side against the lower side of the rear part.

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In a preferred embodiment of the trolley according to the invention the hinges in the frame parts are situated at such a distance from the axle(s) of the rear wheels that, when in the folded position, the or each front wheel is situated behind the rear wheels and below the ramp part. In this way a very compact and convenient product is obtained in which the wheels are situated between the supporting parts.

25

In another preferred embodiment according to the invention the trolley has three wheels, two coaxial rear wheels, each supported on an individual axle in a fork, and one central front wheel, also supported with an axle in a fork, said trolley being characterised in that the hinges in the frame part are located at such a distance from the axles of the rear wheels that, in the folded condition the front wheel is situated approximately between the two rear wheels, and in that the ramp part is provided with a groove which extends from the front edge thereof towards the rear end, which allows the front wheel with the fork to pass through.

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This trolley can be folded as an accordion; in doing so the rearmost frame part hinges both around the axles of



the two rear wheels and around the hinge which is present approximately half-way along in the frame parts. In doing so the front wheel is brought backwards, whereby it is moved together with the fork through the groove in the ramp part until it is located between the two rear wheels. In this manner too a compact and handy product is obtained.

If the trolley is used for supporting wheels with gutter-shaped flanges it is advantageous, according to a further embodiment of the trolley according to the invention, to provide the supporting surface of the ~~front supporting part~~^{first support member}, in the middle of its upper side, with a raised part. If such a wheel has been driven onto the trolley, movement thereof in a lateral direction is then prevented, since said raised part engaging the gutter-shaped flange holds the wheel in place.

This raised part preferably extends over the entire length of the supporting surface, thus forming a handle which can be used when folding the trolley or making it operational again.

If the trolley is being used for supporting wheels with flat tyres it is advantageous to provide, below the frame and approximately in the middle between the ~~supporting parts~~^{support members}, a rod which extends in a transverse direction and which is connected to the opposite lateral frame parts. This rod prevents a wheel dragging over the road with its tyre, or from approaching the road surface too closely. This rod must be mounted in such a way that the wheel flange does not bear on it, since, then, the above-mentioned advantages of a trolley according to the invention are lost. Said rod also contributes to the stability of the trolley and can serve as a handle for carrying it.

It will be clear that, depending on the application of the trolley, it can be designed in various ways, for example with one rear wheel and two front wheels, or with more wheels, if this is desirable in view of the weight to be carried, such as in the case of aeroplanes.

The invention will be elucidated below by reference to a drawing of an embodiment of the trolley according to the invention, showing in:

Fig. 1 a perspective view of said trolley;



Fig. 2 a view of the trolley from above;

Fig. 3 a side view of said trolley in cross-section according to the line B-B (rear side) and A-A (front side), showing the situation before and after a car wheel is driven on said trolley, and in the folded condition; and

Figs. 4 and 5 perspective views, showing how the trolley can be folded.

As shown in Fig. 1, the trolley comprises a ramp part 1 having lateral flanges 2 on which the trolley is supported before a wheel is driven on, rear wheels 3 then being free from the road surface, and in this position the trolley is kept in place by means of the edges 4 of the flanges 2 contacting the underlying road surface.

In the embodiment shown the rear wheels 3 have separate axles 5, which are fixed to frame parts 6. The holes 7 in the frame parts 6 can be used for fixing these axles 5.

The ramp 1 is tiltable around an axis which coincides with the axles 5 of the wheels 3. If a car wheel is driven onto the running surface of the ramp 1, the latter will, as soon as the wheel has arrived above the tilting axis, begin to tilt, and then the front side of said wheel will bear on the front supporting part 8 which is freely tiltable around its axle 18.

At the front end of the trolley a wheel 9 is provided, which is mounted on an axle 10, which is supported in a fork 20, see Figs. 2 and 3.

The supporting part 8 is provided with lateral flanges 11 with notches 12, the latter co-operating with lugs 19 mounted on the frame part 6 as shown in Fig. 2, and which can be pressed into a notch 12 by means of a spring blade 21. In this way the part 8 can be locked in the position into which it has been forced by the wheel pressure.

The frame parts 6 are, at 14, divided into two parts by means of hinges 15 with a hinge axis 16. A transverse frame part 17 interconnects the longitudinal frame parts 6.

Furthermore it appears from Fig. 2 that, when folding the trolley around the hinge axis 16, the front wheel 9 will, eventually be situated between the rear wheels 3.

Fig. 2 shows in continuous lines the situation be-



fore a car wheel has been driven on the trolley; the ramp 15 is in the position shown at 1, and the front supporting part in the position shown at 8.

When a wheel rolls along the ramp 1, the latter will begin to tilt towards the position 1'. The front end of the wheel which has been driven on thereupon brings the front supporting part into position 8', in which it will be arrested by the locking mechanism 12.

When the trolley is folded, the wheel 9 is situated in the position shown at 9" below the ramp 1; the front portion 8 is, then, situated at 8", the front parts of the longitudinal members then being situated in the position 6' below and against the rear portion thereof.

Figs. 4 and 5 show how a particular embodiment of the trolley according to the invention can be folded. The trolley shown comprises a ramp 1 having a groove 21, and the supporting part 8 comprises a central raised portion 22, extending over the entire length of this part, which can be used as a handle 23 when folded. Folding takes place by grasping the front supporting part 8, which can rotate around the axle 18, the folding of the frame parts 6 taking place an accordion-like fashion as shown around the axles 5 of the rear wheels 3 and the hinge 15, until the situation shown in Fig. 5 is reached. In doing so the front wheel 9 with its fork 20 is moved into the groove 21 until it is located between the two rear wheels 3. In order to turn the product into a convenient package the supporting part 8 is rotated around its axle 18 into the position shown in Fig. 5.

~~The reference numerals in the following claims do not in any way limit the scope of the respective claims.~~



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A trolley for supporting a vehicle wheel comprising:
 - a frame having a front part and a rear part, said parts having respective
 - 5 pairs of sides hingedly inter-connected so that the frame may be folded about a transverse axis for storage;
 - wheels rotatably attached to the front and rear parts of said frame for supporting the frame;
 - a first support member pivotably mounted to the front part of said frame
 - 10 in such a manner that said first support member can pivot about a first transverse axis;
 - a second support member comprising a drive-on ramp pivotably mounted to the rear part of said frame such that a vehicle wheel moving up said ramp and onto said trolley will cause said second support member to pivot about a second
 - 15 transverse axis; and
 - said first support member pivoting in response to the vehicle wheel coming into contact therewith such that the vehicle wheel is supported by said first and second support members.
- 20 2. A trolley according to claim 1 wherein the first support member has an upper surface, said surface having a center portion which is raised relative to the rest of said surface.
3. A trolley according to claim 1 wherein said support members are mounted
- 25 on respective axles attached to said frame in a transverse direction.
4. A trolley according to any preceding claim having three of said wheels.
5. A trolley according to claim 4 wherein one of said wheels is attached to
- 30 the front part of said trolley and two of said wheels are attached to the rear part of said trolley.
6. A trolley according to any preceding claim further comprising means for locking said first support member in one or more selectable positions.

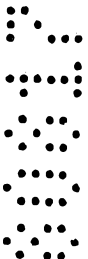


7. A trolley according to claim 6 wherein said first support member has a side part comprising one or more notches, and said frame has a protruding part located so that it may be pressed into the notch to lock said first support member in place.

5

8. A trolley according to any preceding claim wherein said drive-on ramp has a central groove running from a front edge of the ramp toward the rear of the ramp.

10 9. A trolley according to any preceding claim wherein said second support member further comprises a side part on which said trolley rests when said ramp is on the road surface, said side part extending far enough to hold the rear wheel or wheels of said trolley above the road surface as said second support member is rotating in response to a wheel being driven thereupon.



15

10. A trolley according to claim 3 wherein one or more of said wheel axles are mounted on forks attached to the frame, each wheel axle so mounted supporting a single wheel and mounted on a single fork.

20 11. A trolley for supporting a wheel comprising:



a frame having a front part and a rear part, said parts having respective pairs of sides hingedly inter-connected so that the frame may be folded about a transverse axis for storage;



25 a front wheel connected to the front part of the frame by a fork and rotatable about an axle in said fork;



two rear wheels, one rotatable about a first axle mounted on said rear part of said frame and the other rotatable about a second axle mounted on said rear part of said frame, said first and second axles mounted on opposite sides of said rear part of said frame in a coaxial manner;

30 a first support member having at least one side part, said first support member attached to said front part of said frame by a transverse axle in a manner that allows said first support member to tilt, and said side part having notches



therein;

a second support member attached to said first and second axles of said rear wheels in a manner that allows said second support member to rotate between a first position, in which said second support member rests on the road surface and serves as a drive-on ramp, and a second position, in which said second support member serves to support a wheel driven thereon, said second support member having a front edge, from which a central groove extends rearwardly, and at least one side part which extends so that in the first position said trolley rests on said side part and said rear wheels are held above the road surface; and

a locking means for locking said first support member in place after a wheel has been driven onto the trolley.

12. A trolley according to claim 11 wherein said locking means comprises a protruding part of said frame, located next to said part of said first support member, positioned to be pressed into said notches.

13. A trolley according to claim 12 wherein said front wheel and said groove are shaped and positioned so that when the trolley folds the front wheel passes through the groove and nests between said rear wheels.

14. A trolley substantially as hereinbefore described with reference to the drawings.

25 Dated this 24th day of June 1991

QUICKWHEEL HOLDINGS B.V.

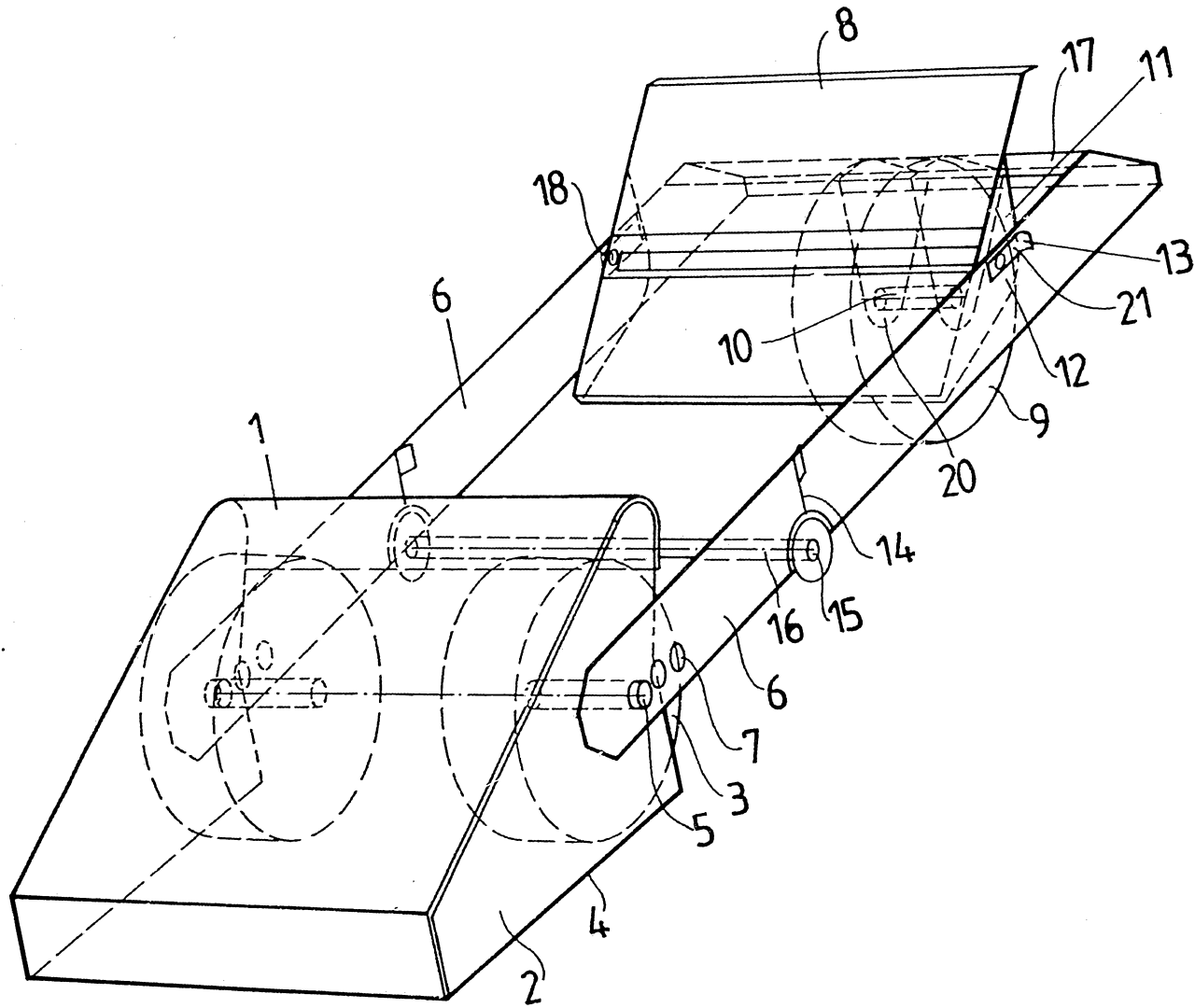
By its Patent Attorneys

30 **DAVIES & COLLISON**



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FIG 1



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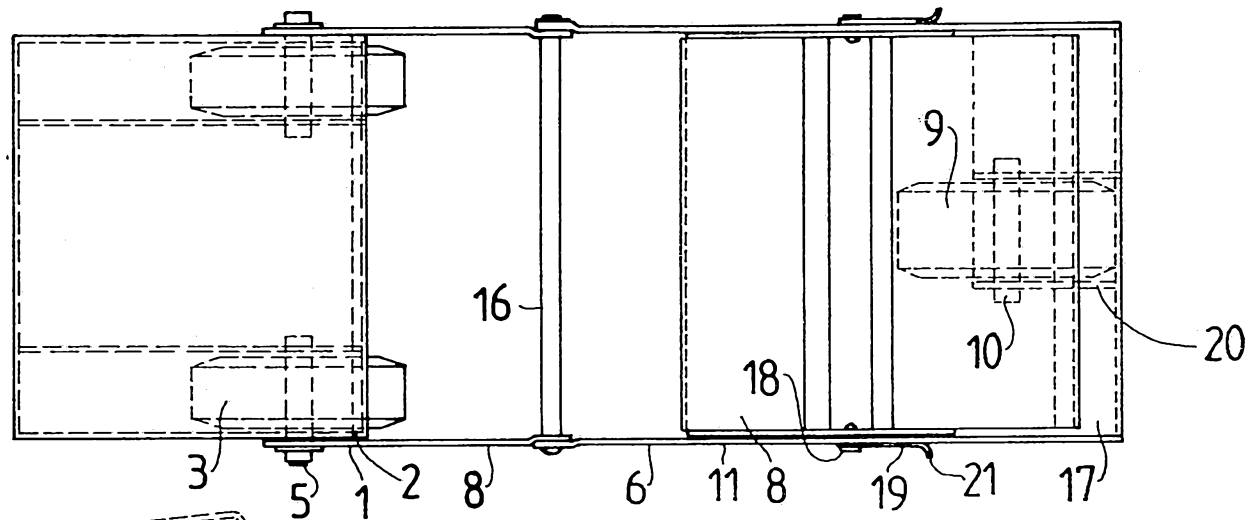


FIG 2

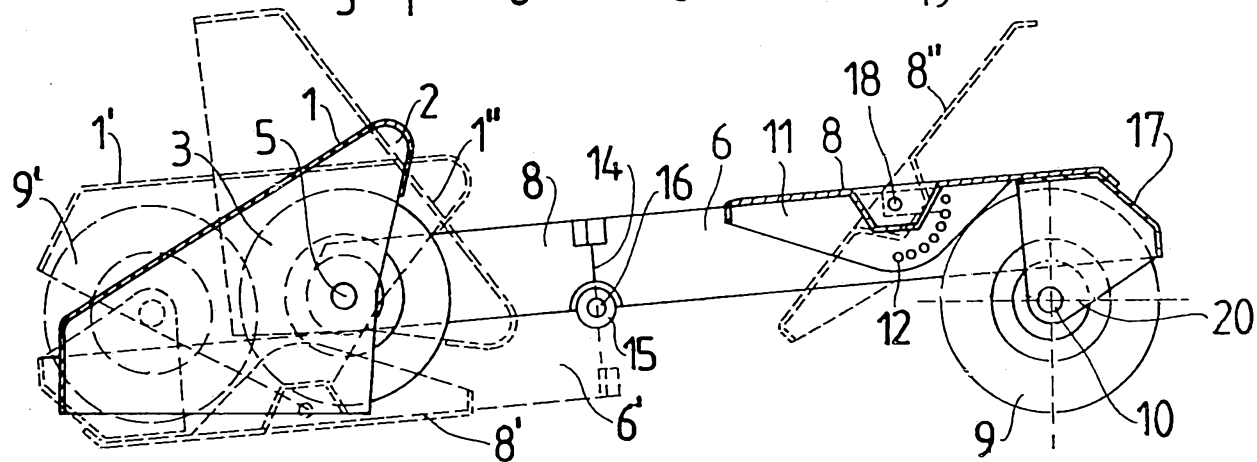


FIG 3

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FIG 4

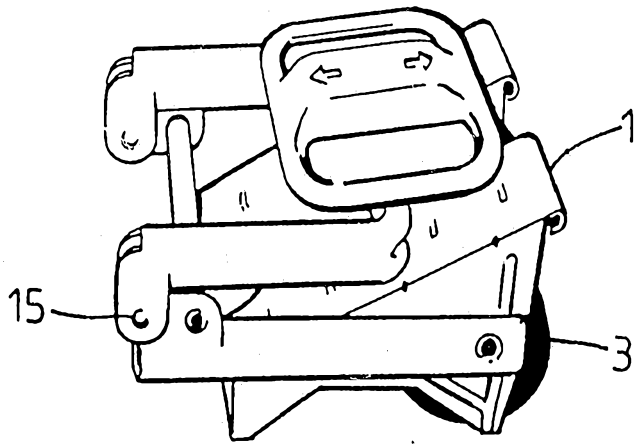
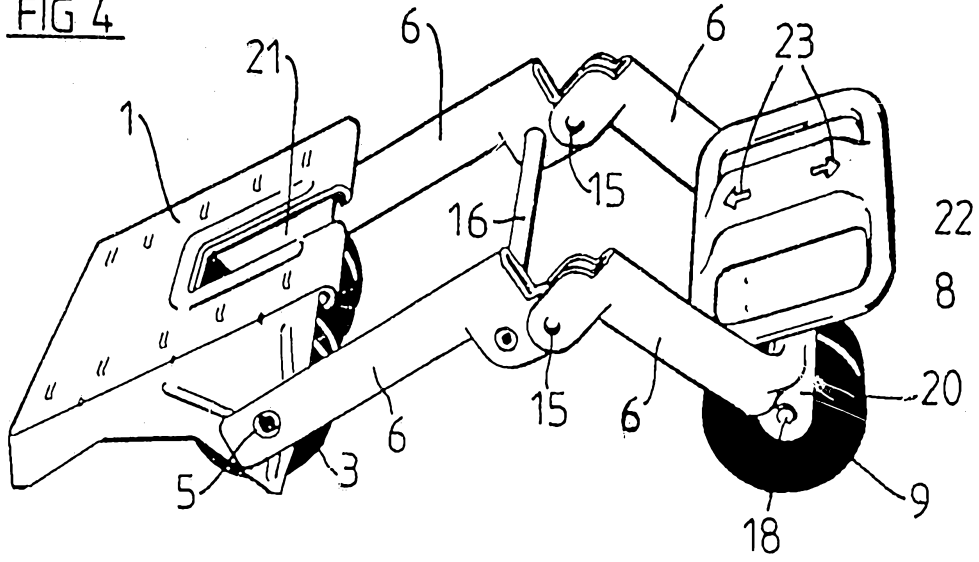


FIG 5

