



Industrial Consultancy & Sponsored Research (IC&SR)

HYBRID MANUAL ELECTRIC WHEELCHAIR ADD-ON

IITM Technology Available for Licensing

PROBLEM STATEMENT

Universal-Fit Power Drive/Steer Attachment for Wheelchair

Drawbacks:

- Counterintuitive steering method.
- Limitations on wheel size to avoid interference.
- Disadvantage of placing wheel close to rear wheels for increased traction.
- Uses a rake angle instead of an offset axis of rotation. Requires a motorized wheel offset from handle axis, causing physical displacement.
- Requires smaller wheels to prevent obstruction with castor wheels and foot rest.

Recommendations:

- Adjust transmission mechanism to attach a motorized wheel behind castor wheels.
- Use a single motor and steering handle for controlling the wheelchair.
- Uses a steering handle for minimal effort to control the wheelchair.

TECHNOLOGY CATEGORY MARKET

Technology: Hybrid manual electric wheelchair add-on

Category: Assistive, Test Equipment & Design Manufacturing

Industry: Biomedical/Rehabilitation

Application: Person with disabilities (PWD)

Market: The global market size valued at US\$ 162 million in 2023 and is anticipated to reach US\$ 375.3 million by 2030, witnessing a CAGR of 12.6% during the forecast period 2024-2031.

INTELLECTUAL PROPERTY

IITM IDF Ref. 1283, Patent No: IN 368005

TRL (Technology Readiness Level)

TRL-7, System prototype demonstrated in operational environment

Research Lab

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TECHNOLOGY

1

An attachable powered drive for a conventional wheelchair which has castor wheels, rear wheels and a seat, the said attachable drive means comprising:

2

A wheel disposed between the said castor-wheels and rear wheels, and

3

specifically behind the said castor wheels,

4

A motor coupled to power the wheel and attached to the said wheel to form a motorized wheel,

5

A battery to power the motor,

6

A brake coupled operably to the wheel for braking the motion of the said wheel and thereby the motion of the wheel chair.

7

An accelerator coupling operating to the wheel for accelerating the motion of the said wheel and thereby the motion of the wheel chair, and

Motorized wheel attached to manual wheelchair



CONTACT US

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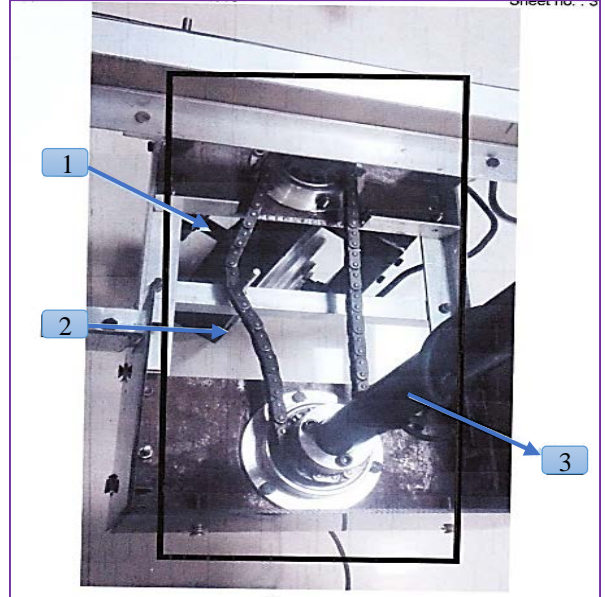
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Handle bar to control the wheelchair



Chain drive to transmit power from handle to motorized wheel



Numerals	Definition
1	Motorized Wheel
2	Chain drive connecting handle bar and motorized wheel
3	Handle bar

Key Features / Value Proposition

Attachable Power Drive in Wheelchairs

Motorized wheel

- Motorized wheel with **predetermined rake angle** for improved forward motion.

Steering

- Steering has **handle and sprockets** for improved sensitivity.
- **Removable attachment** of steering handle
- Steering can be **manual or actuator**.

Operable connection between steering and motorized wheel via a linking means.

Linking

- Linking may **include a handle bar and chain drive**.
- Wheel chair with **castor wheels, rear wheels, and seat** includes a powered attachable drive.

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