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The Next Generation Handkart

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Abstract - *In day-to-day life, vendors make an effort to push the hand trolley and walk together with the trolley miles away to sell products such as vegetables, goods, etc. To overcome the effort of pushing the trolley, we are adding gears to the trolley, which with the vendor will get a smooth ride and make the trolley pedal smoothly. The vendor can sell vegetables or other products under his supervision while driving. In other ordinary trolleys, people make modifications and attach the bicycle or bike in front of the trolley, and the driver has difficulties keeping the goods and products under watch while driving. The main objective of the project is to find an efficient and user-friendly method of selling products using minimum effort from the user. Because of this project, we designed the trolley in such a way that the vendor keeps watch on their products and goods during transportation and selling, and help him save from theft of products and financial losses. This hand-cart is advanced with modifications and attachments. While the cart is under drive or running, it will generate free electricity with the help of power generating mechanism. From that electricity, a vendor can also charge the battery and store electricity in it, and the vendor can use that electricity to light up the trolley at night.*

Key Words: **Handcart, Trolley, Steering, Renewable Energy, Supervision, Comfort.**

1. INTRODUCTION

The term "Handcart" is often used to refer to four-wheeled platform carts that are pushed or pulled by hand. In ancient times carts were often used for judicial punishments, both to transport the condemned – a public humiliation in itself. In present days, handcarts are widely used in a variety of trades, such as delivering parcels, selling goods, selling vegetables, and hauling materials in both urban and rural areas. The current cart which is we have designed have a platform over three wheels and pushed by the person who driving it with the help of steering which is attached to front wheel.

The major drawback of previous handcart which is not been able to turned around a bend. This happened because the wheels of the handcart are fixed on the front axle. As a result, the hand-cart can be turned around a bend only by physically lifting it by its rear wheels and turning the whole cart about the front wheels. Manually lifting the cart becomes extremely difficult for the person. Moving the cart needs to provide energy for pushing the cart, as well as to lift the cart while turning with the balancing the load on the front wheels. That becomes more challenging.

Pushing the previously used hand-cart was not only increases the efforts applied by the human who was operating it. Due to heavy load and there is no mechanism available to turn the handcart it needs too many effort to turn it. So, the load carrying capacity of the cart is directly proportional to the human's weight lifting capacity which they used to turn the hand-cart. On the other hand, the previous handcarts do not have any kind of safety equipment such as breaks and lighting.

To fix this issues, we need the handcart which will push and turn easily with less effort. We have done some modifications by enabling steering mode for reducing human effort such as weight lifting and pushing the load. We have attached a safety feature by providing breaks to handcart. However, other type of handcarts are working or operating on pulling criteria. The scooter or bicycle is attached in front of handcart. This type of handcart is widely used now a days for transporting appliances, raw materials, and heavy loads. Using this kind of carts are not suitable for selling products and vegetables. The user of such kind of handcart is unable to keep eye or spot on their products or vegetable.

To avoid this kind of issue, we have linked or attached the bicycle at the rare side of handcart. This modification is very useful for the vendor who are selling vegetables or other verities of products or items. The items will be under the supervision of the vendor. Apart from this, we have provided extra space beneath the handcart to store extra products or keep vegetable waste in that carriage space rather than throw vegetables or other wastes on the road.

On the other hand, in this handcart, a power generating mechanism is connected at the wheel. The power generating mechanism is used to generate electrical energy by converting rotatory motion of the wheel to electricity. The generated electricity will be used by vendor to give electric power to the speakers or other applications as per convenience. The vender can store this generated electricity in the battery. The stored electrical energy can be used by the vendor at night to lighting their handcart. This

modification has made this handcart more advanced. As per this modifications and innovations it is decided to give the title to this project as "THE NEXT GENERATION HAND-KART".

1.1 NEED OF THIS PROJECT

For making farmers, goods sellers and vegetable vendor's life comfortable during work, we are transforming the pushing handcart to riding handcart. This project will make the changes in development field of engineering and give benefits to farmers and sellers and retailers. The old mechanism of hand pushing trolley or cart is very hard to push and walk along with the trolley till the destination. We are fabricating the next generation riding trolley. On this trolley the seller can keep eye on the products in front of him and thus the chances of theft are reduced.

From this project the vendors will get relief from walking along with hand cart for selling their products and they will spot the products and items in front of them while riding the trolley and they can produce free electricity from the power generating mechanism which is mounted on this hand-cart. They will ride trolley with less effort and force and from that they will get health benefits too.

1.2 THE NEXT GENERATION HANDKART

To give relief to the vendors from walking along together with the trolley and keep eye on their products we are introducing the next generation hand kart where we are connecting steering mechanism for front wheel to give turning movement to the trolley by using bevel gear mechanism and attaching bicycle gears to the rear wheel of the bicycle. We are connecting rear wheel of bicycle to rear side of the cart for transmitting the power to ride the trolley with less efforts. The trolley we are making by using Ball bearings, Bevel gears, Connecting rod, trolley frame, trolley wheel, Sprocket, Steering, pedals, seat, brakes, etc. The vendor will get amazing experience while riding and selling products.

We are connecting power generation mechanism to the cart which will generate the electricity while cart is working or running. The generated electricity will charge the battery and store the electricity in the battery. That stored electricity can used by the vendor at night to lighting up the cart and other uses.

2. LITERATURE REVIEW

2.1 Dissertation On Product Design Approach For Design And Development Of "Hand-Cart" Submitted by Mr. Satish P. Lokhande

This project is a successful attempt to modify a conventional & "Hand- cart" The design and development approach in this Project had major focus on the issues like

a) Providing a steering mechanism.
b) Provision of seat along with paddling mechanism.
c) Provision of braking.

For fulfilling the above objective, a design taken into consideration is the conventional hand cart along with some changes. The major challenge to apply a steering mechanism to front two wheels, the front wheels are to be mounted independently so that a steering mechanism can be provided with a linkage. The operation of steering mechanism is nice and smooth with perfection of turning sensitivity. Handle provided is just like a handle of bicycle having provision of hand brake and horn the paddling mechanism was also provided on rear wheels of cart. However, it uses the fifth wheel during paddling which makes the operation complex.

The seating position of driver is outside the cart trolley (i.e. some inches away from the rear wheels shaft) that offsets the driver weight from rear axle making the cart tilt. For overcoming this issue, a fifth wheel has been provided that makes the cart unnecessary heavy and creating more resistance during paddling. Though the steering mechanism is sensitive independent axle front wheels give effective steering of hand cart. Some other issues which are not addressed in the existing design are,

1) Security and Safety; needs more attention on those issues.
2) Hygiene; the cart is open during the use; this leads to unhygienic conditions.
3) Aesthetic consideration in design so that it looks smart.
4) Efficient paddling, the efforts taken during the paddling are more and there is unnecessary increase in cost due to provision of fifth wheel.
5) Ergonomics, which can make the use of cart more comfortable and easier.

The survey has been conducted during this project; the major requirement of hawkers was change of storage unit size and shape i.e. to be modular.

The Market survey shows that the requirement of storage space must be different for different purposes for example the pani-puri stall needs wooden platform because steel get corroded due to acidic water of pani-puri and tea stall needs steel platform because of use of stove. So, the storage platform must be detachable from main chassis easily and also easily attachable One should take this modular approach on priority during modification of the hand-cart. During this project some on standardization of dimensions proposed which would be modified as per design requirement.

2.2 "FOOT STEP POWER GENERATION" Submitted by Sarat Kumar Sahoo, Shubham kumar, Pankaj Kumar Yadav and Rishav Kumar

In this project, electrical energy is generated by means of a non- conventional method just by walking on the footsteps. Non-conventional system for energies are very much required at this time.

Energy generation using footsteps has requires no fuel input to generate electricity. In this project, electricity is generated just with the help of rack and pinion arrangement along with alternator and chain drive mechanism.

For its proper functioning such that it converts Force into electrical energy, the mechanism consists of rack & pinion, chain drives, alternator and battery. We have discussed its various alternate applications with extension also. The power generation is much worthy but it has little initial cost effective factors.

Now, focusing on its working principle, this device if embedded in footsteps of railway platforms, city malls, city footpaths e.t.c. & can convert the weight impact of people into electrical energy. When a pedestrian will step on the top plate of this device, the plate will go down and this downward motion results in rotation of the shaft of the alternator which produces electrical energy. After removal of force the top plate returns to its original position due to springs.

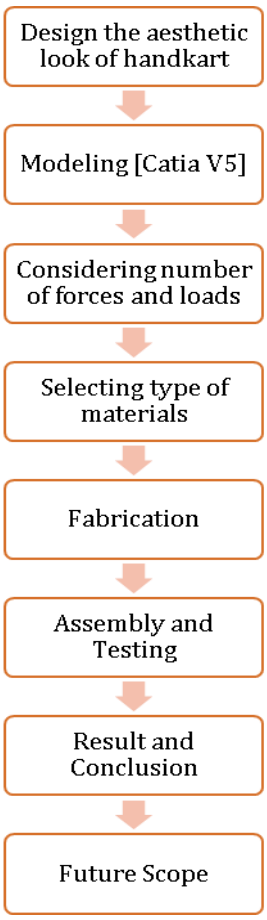
3. OBJECTIVES

1) To create a four-wheeled human-powered load-carrying cart assembly with an integrated steering system.
2) To develop a cart assembly that avoids the need to be lifted from behind when turning around a bend.
3) To provide a cart assembly that allows heavy loads to be transported without causing strain or injury to the person operating the cart whenever turning the cart over curves.
4) To furnish a four-wheeled, human-powered load-carrying cart assembly with good maneuverability and control on uphill surfaces and curves.
5) To add a structurally simple and cost-effective enhancement to the current hand-cart that allows it to be steered without any further physical effort.

4. METHODOLOGY

A methodology for pedalling, steering, and power generation mechanism of the Next Generation Handkart based on man powered which has been facilitated to move is demonstrated. This chapter also describes material selection based on technical factors that made the material eligible for utilization.

4.1 STEPS INVOLVED



Flow Chart-1

4.2. MATERIAL SELECTION

After doing research on the several material properties, the most feasible material is selected for the Next Generation Handkart. We investigated for the characteristics which are taken into account, which including machinability, durability, strength, weight, availability, and material cost. A material with sufficient strength is chosen to ensure that the frame of the Next Generation Handkart does not fail under the strain exerted. Cast iron alloy has been used for this project.

5. MODELLING

5.1 CATIA V5

The virtual model is created by using CATIA V5 modelling software to analyze the model. The dimensions are considered as per the physical model and a rough diagram of the Next Generation Handkart is drawn with designed handcart pattern, then in Catia V5. With the help of workbench a cross section is drawn using basis tools like spine, mirror, line, circle, trim and after that by using tools like pad, chamfer, revolve and hole to create a 3D model.

5.2 CATIA MODELLING

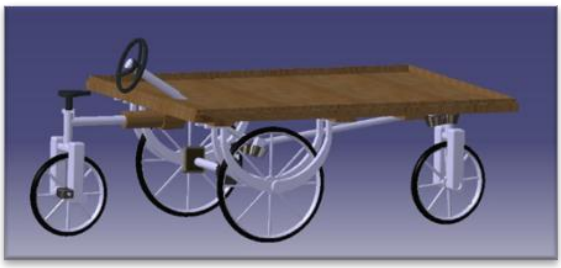


Fig. 01: 3D View of Handkart

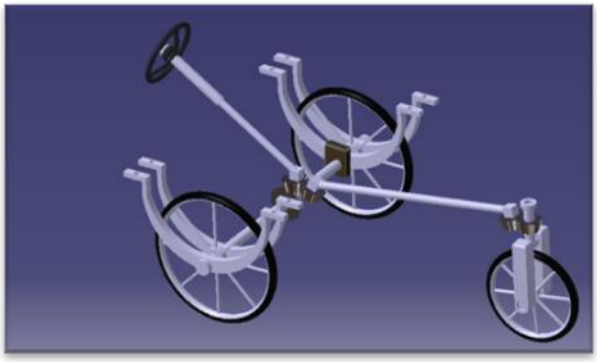


Fig. 02: Steering Mechanism

Fig 03: Uni-Cycle

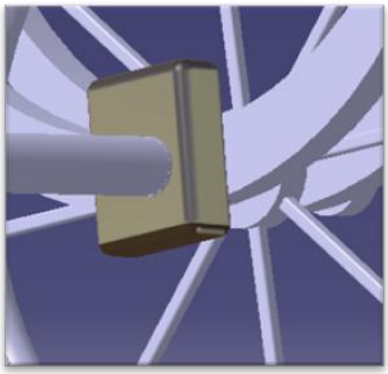


Fig 04: Power Generating Mechanism

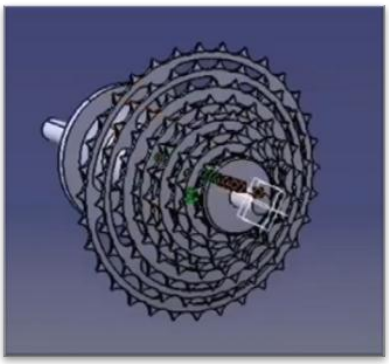


Fig. 05: 7 Speed Bicycle Gears

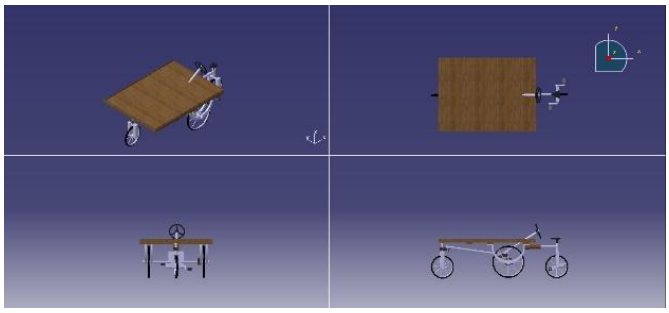


Fig. 06: Multi-View

6. DESIGN

The design of handcart was primarily divided into following aspect of design;

1. Kinetic Design
2. Kinematic Design

Following are the details of each design.

6.1 KINETIC DESIGN

The design of Kinetic is "of our relating to the motion of material bodies and the forces and energy associated therewith". So, the kinetic design means designing the motion, and calculating forces & energy required to pull or push the cart taking into consideration the load on vehicle. In the project following are the calculations of the wheel forces, rolling friction of bearing, the force used by driver (man).

A man can push 227 N [1] in the seated position and 251 N [2] in the standing position at his max potential.

6.1.1 ROLLING FRICTION (Fr)

The standard wheel size of handcart [3]

Wheel diameter = **70cm = 700mm = 0.7m**

Radius of wheel = **0.35m**

M = Overall weight

1. Considering live load on cart (200Kg)
2. Considering weight of man (100Kg)

W = m × g

= 300 × 9.81

= 2943 N

H(height) = 0.3m .....{Assumed}

$Fr = N \times \mu \times b / \sqrt{r^2 - b^2}$

Where;

Fr – Rolling Friction

N – Reaction at tangent

μ - Coefficient of Friction

b – Surface in contact = 0.03m

$$Fr = \frac{2943 \times 0.3 \times 0.03}{\sqrt{(0.35)^2 - (0.03)^2}}$$

Fr = 75.97 ~ 76 N

Hence, the force required to keep the cart rolling is **76 N.**

6.1.2 BEARING DESIGN

The bearing is subjected to pure radial load

Radial Force (Fr) = **1962N**

N = **80rpm**

Life (L) = **30000hrs**

Shaft diameter (d) = **15mm**

Bearing life million revolution:

L_{10} = **60 × N(L_{10}) hr/10^6**

= 144 million rev.

Dynamics load carrying capacity (C)

C = p(L10) ⅓

= 2943 × (144) ⅓

C = 15425.68 ≈ 15426 N

Hence as we got C = **15426 N**

From Manufacturing Catalogue;

Bearing Designation : 6302.

6.2 STRUCTURAL DESIGN

It is assumed that the 200kg load is uniformly distributed across the entire handcart.

Finding stress induced in frame under loading.

Assume frame been under UDL.

To find the reaction at A & B

Assume ∑Fy = 0 (↑ +ve, ↓ -ve)

RA + RB – 1962 × 1.6 = 0

RA + RB = 3139.2 N

∑M = 0 (↺ +ve, ↻ -ve)

Taking moment at point A

-RB × 0.8 + (1.6 × 1962) × 0.4 = 0

RB = 1569.6 N

RA = 3139 – 1569.6

RA = 1569.6 N

RA = RB = 1569.6

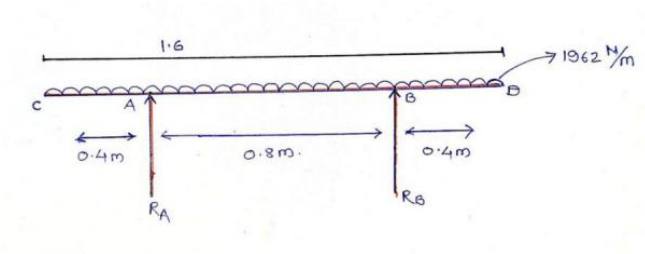


Fig 4.1: BEAM DIAGRAM

6.2.1 SF CALCULATION :

SF at point C = 0

SF just at the left of point A = - 1962 × 0.4 = -784.8 N

SF at point A = -784.8 + 1569.6

= 784.8 N

SF just at the left of point B = 784.8 – 1962 × 0.8

= 784.8 N

SF at point D = 784.8 – 1962 × 0.4

= 0 N

To find the point of zero shear;

$\frac{0.4}{784.8} = = \frac{(x-0.4)}{784.8}$

$\frac{0.4 \times 784.8}{784.8} = (x - 0.4)$

x = 0.8m

6.2.2 BM CALCULATION

BM at the point of zero shear

Zero shear is at x – x section at x = 0.8

BM at x – x = RA × (x – 0.4) – 1962 × x × $\frac{x}{2}$

= 1569.6 (0.8 – 0.4) – 1962 × $\frac{0.8^2}{2}$

= 0

BM at x – x at zero shear = 0

BM calculation for other points

BM at C = 0 (ↀ +ve, ↀ -ve)

BM at A = -1962 × x × $\frac{x}{2}$

BM at A = -1962 × $\frac{x^2}{2}$

At x = 0 → BM = 0

At x = 0 → BM = -1962 × $\frac{0.4^2}{2}$

BM = -156.96

BM at B = RAx (x_2 – 0.4) -1962 × x × $\frac{x}{2}$

At x_2 = 0.4

BM = -156.96

At x_2 = 0.8

BM = 1596.6 × (1.2 – 0.4) -1962 × $\frac{1.2^2}{2}$

BM = -156.96

BM at D = 0

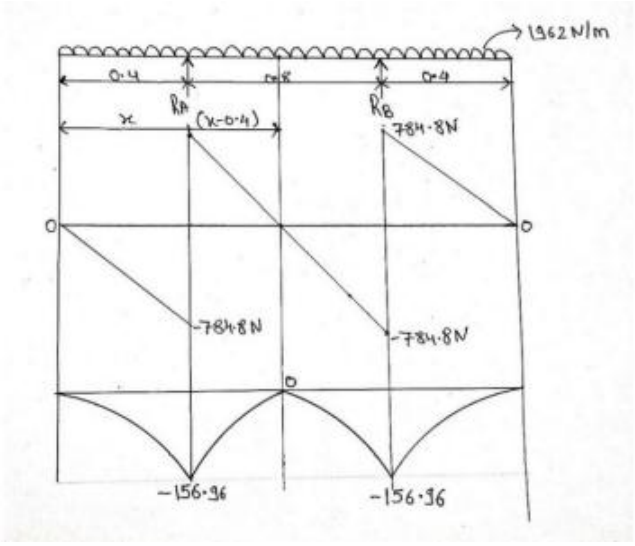


FIG. 6.2: SF & BM DIAGRAM

When x = 0.4; y = 0

C_2 = 115.104

M = 1569.6 × $\frac{(x-0.4)^2}{2}$ + $\frac{1962}{2}$ × $\frac{x^3}{3}$ + 292.992

Put x = 0.8

M = 585.984

For I of L section;

The area (A) = (h + b - t) × t

= (40 + 40 - 10) × 10

= 700 mm^2

Perimeter (P) = 2b + 2h

= 2 × 40 + 2 × 40

= 160 mm

The distance of the centroid from the left edge of the section (x_c), and from the bottom edge (y_c), can be found using the first moments of area of the two legs:

$x_c = \frac{1}{A}(\frac{t}{2}(h^2 + ht - t^2))$

x_c = 13.5714 mm

$y_c = \frac{1}{A}(\frac{t}{2}(h^2 + bt - t^2))$

y_c = 13.5714 mm

The moments of inertia I_{x0}, I_{y0} & I_{x0y0} of the angle section around the x_0 and y_0 axis are:

$$I_{x0} = \frac{t}{3}(bt^2 + h^3 - t^3)$$

$$= 223.33 \times 10^3 \text{ mm}$$

$$I_{y0} = \frac{t}{3}(ht^2 + b^3 - t^3)$$

$$= 223.33 \times 10^3 \text{ mm}$$

$$I_{x0y0} = \frac{t^2}{4}(b^2 + h^2 - t^2)$$

$$= 77.5 \times 10^3 \text{ mm}$$

$$I_{xy} = I_{x0y0} - Ax_cy_c$$

$$= (77.5 \times 10^3) - (700 \times 13.5714 \times 13.5714)$$

$$I_{xy} = -5142.8 \text{ mm}^4$$

$$Y = \frac{M}{EI}$$

$$= \frac{585.934}{200 \times (-5142.8)} \quad \ldots\ldots E_{steel} = 200\text{GPa}$$

$$Y = -5.69 \times 10^{-8} \text{ mm}$$

Now from flexure formula,

$$\frac{\sigma}{Y} = \frac{M}{I} \rightarrow \sigma = \frac{M \times Y}{I}$$

$$\frac{585.934 \times (-5.69 \times 10^{-8})}{-5142.8}$$

$$\sigma = 6.48 \times 10^{-10} \text{ N/mm}^2$$

6.2.3 Bevel gear ratio

$N_1 = 54$

$N_2 = 108$

$N_1 : N_2 = 54 : 108$

$= 1 : 2$

Where,

N_1 = Number of teeth on driven gear

N_2 = Number of teeth on driving gear

That is, if the driven gear is meshed to the driving gear installed on the front wheel. If the driven gear completes one revolution, the driving gear rotates 180° within the revolution.

7. WORKING AND MODIFICATION

To alleviate the hardship of walking with a handcart while somehow providing a safety aspect, we modified the conventional handcart to make the necessary improvements. The power transmission is provided by the unicycle, which is mounted to the rear portion of the handcart. The source of power transmission is the paddle mechanism, which drives the unicycle's wheel and generates pushing force for the handcart, allowing it to move. A bicycle gear is connected to offer seven speeds to the handcart, to reducing the amount of effort required for pedalling. The seven-speed gear system will aid in the operation of the handcart on incline surfaces such as hilly areas.

The steering mechanism is given to provide relief from weight lifting when moving the handcart on the turning and to reduce traffic conditions on the highway caused by the handcart. The steering mechanism works similarly to that of a car, using bevel gears and a connecting rod. With the aid of the connecting rod, the bevel gears revolve in tandem with the steering wheel. As a consequence, the front wheel will get the turn moment needed to turn the next generation handkart on the road.

The power producing mechanism is now positioned parallel to the wheel as the following change. The DC motor houses the power generation mechanism. The sprocket is connected to the shaft of the DC motor. The sprocket is attached to the wheel, and when the handcart moves, the wheel rotates, causing the shaft of the DC motor to revolve counter-clockwise. As a result, the DC motor will function as a power generator, producing electrical energy. The electrical energy will be stored in the battery for future free electricity usage.

The handcart is equipped with brakes for optimum safety. The brakes are attached to the wheel of the handcart, and when the brakes are applied, the rate of velocity decreases until it reaches zero, at which point the handcart stops. The brake lock also provided to keep the handcart stable or motionless.

Radium stickers are applied on the handcart's exterior surface for safety reasons. As a result, in a dark night scenario, the beams of light from other vehicles approaching the handcart will be incident on the surface of the radium sticker, allowing it to glow. As a consequence, other vehicles will see the handcart in the dark night, which will aid in saving the handcart from an accident.

8. FABRICATION

Following the selection of materials that are light in weight, durable, and readily available, such as cast iron alloy, teak wood, and steel alloy. Several machining processes are performed on the material. Clamps, steering wheels, supports, Bevel gear frames, and other elements are

manufactured. In the fabrication, we do cutting, drilling, welding, milling and shaping operations. Other operations on supports include a groove for the bevel gear frame and a grove on the support plate. Bench-wise clamping is used to prepare the clamps. A lathe machine is used to prepare the bevel gear frame. Following the fabrication of all pieces, they are assembled into the Next Generation Handkart utilising cutting and welding operations.

9. Advantages

1. Vendors may sell their wares under their supervision.
2. Vendors will be relieved of the hassle of travelling with the handcart.
3. Vendors will be relieved of their heavy peddling.
4. Vendors can use brakes to slow down their handcarts.
5. The merchants can use the hand brake to keep their handcart in place.
6. Vendors can direct the handcart in the desired direction.
7. The venders will receive free electricity.
8. Safety criteria such as radium stickers, brakes, and so on are furnished.

10. Disadvantages

1. The method for generating electrical power is dependent on the speed of the handcart.
2. The effort required to pedal and the velocity factor are directly proportional to the weight of the handcart.
3. Lubrication is necessary.
4. Maintainance required.

11. CONCLUSION

The Next Generation Handkart has been successfully designed, and it has the capacity to carry an average of 200 Kg of load or items that can be sold under the vendor's supervision. This handcart is more efficient than a traditional handcart. Vendors will be relieved of the burden of trekking kilometres with a handcart to sell their stuff. They can turn the handcart in the desired direction with the help of steering.

The bicycle gear is also installed or mounted on the rear wheel to make the pedal mechanism smooth and batter. This handcart can be driven with little effort by the vendor. This Next Generation Handkart includes built-in safety measures such as brakes, radium stickers, a horn, and brake-lock functions. With the assist of a DC motor, this handcart may produce free electricity from the movement of the wheel.

12. FUTURE SCOPE

Furthermore, if the pedalling mechanism fails, it may be powered by a battery-driven electric drive charged by a solar panel. This "The Next Generation Handkart" will be upgraded into an autonomous hand-cart with a safe anti-thief system in the future. It will reduce the amount of manual work required and, most likely, popularise the design. When necessary, a reverse gear also provided.

13. ACKNOWLEDGEMENT

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14. REFERENCES

[1] Gavriel Salvendy; Handbook of Human Factors & Ergonomics; 46 Edition; © John Wiley & Sons, Inc., 2012.

[2] Gnanvel Chokkalingam, Gopalalcrishnan T, Sivaganesan Selvaraju; Design & Fabrication of Pedal Powered Stair Climbing Trolley; DOI: 10.23883/ffrter.2018.4153.Afiwg; March-2018.

[3] Sun, Yun ; Effects of Load & Gradient on Musculoskeletal Loading During Dynamic Two Wheeled Cart Pushing &Pulling ; Graduate Theses , Dissertation & Problem Reports 4801; 2011. https://researchrespository.wvu.eduietd/4801.

[4] CCOHS: Pushing & Pulling Handcarts' https://www.ccohs.ca/

[5] https://www.quickcompany.in/patents/improved-hand-cart-haath-thela#documents

[6] Ergonomic & Fe Analysis of Smart Hand Cart W. S. Sheikh, B. B. Babre:

http://iosrjen.org/Papers/Conf.ICMPIR-2019/Volume-10/10.%2048-50.pdf

15. BIOGRAPHIES

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Mr. Meghraj Gowardhan, currently pursuin final year of Bachelor of Technology in th Mechanical Engineering at Rajiv Gandhi Colleg of Engineering Research and Technology Chandrapur, Maharashtra. with the technica knowledge he eager to work in automobil industry.

Mr. Manish Sonkusare, currently pursuing final year of Bachelor of Technology in the Mechanical Engineering at Rajiv Gandhi College of Engineering Research and Technology, Chandrapur, Maharashtra. He is also detail-oriented, precise, and has expertise doing technical designs.

Mr. Umesh Nannaware, currently pursuing final year of Bachelor of Technology in the Mechanical Engineering at Rajiv Gandhi College of Engineering Research and Technology, Chandrapur, Maharashtra. Apart from that He aims to obtain a deeper understanding of various automobile technologies by using his expertise and talents.