

FIRE FIGHTERNO (TWO WHEELER FIRE FIGHTING VEHICLE)

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Abstract

In the dilemma of fire and safety whenever a fire emergency or disaster occurs it is the responsibility of fire safety department to reach the destination of accident as soon as possible. Since India is a country where there are many narrow roads, small alleys, and numerous traffic problems too. In this scenario the major problem faced by fire fighters is that they are not able to reach accident location in minimum possible time due to the big size of the fire truck which is probably very difficult to travel through in those areas.

Hence our innovation eradicates the problem of reaching accident location in minimum possible time and many other problems too. As the name suggests fire fighterno ,it is a fire fighting vehicle built on eterno ,which is a heavy duty vehicle in two wheeler segment. It has all minimum mandatory supplies of firefighting equipment's needed for fire extinguishing and rescue purpose. As it is a two wheeler it is agile .Moreover it could take sufficient load and has plenty of space being a scooter.

I. INTRODUCTION

As each and every sector is developing these days there will always be a need of fire safety at houses , work places , industries..etc.

So there is a need of development in the sector of safety too. Because at whatever scale the development goes on, there will always be a need of safety to humans present at the particular place .

And whenever any of these places catch fire ,they call the fire brigade even if they have the fire safety system in there or not therefore the fire brigade needs to reach there as soon as possible.

As being a necessity of safety, whenever fire catches some place or any accident happens , no person present over there will go and wipe out the fire. Instead they will run for saving their life.

As it is known that the need of fire station will be there every time in every area, because an emergency can arrive at any moment.

II. Ease of use

So if an emergency arises the fire brigade is called immediately at the place of location, so when they are being called ,the fire fighters itself don't know that what the problem would be ,therefore they leave with a big truck equipped with all necessary equipments and supplies to overcome the problem at accident destination.

Taking these much supplies to the location takes more than expected time because of many problems, which are discussed in the report.

That is why there is a need of quick action two wheeler fire fighting vehicle, which could reach the accident location and get to know what the problem is and also control the problem at a greater rate until the bigger truck reaches there.

III. BACKGROUND OF THE INVENTION

People working in construction site and living in residential area encounter a plethora of fire hazards while performing their work. At present people who encounter such fire hazards have limited options for preparing for and handling fire hazards. The following patent literatures details on the fire extinguisher attachment assembly.

IV. Similar work

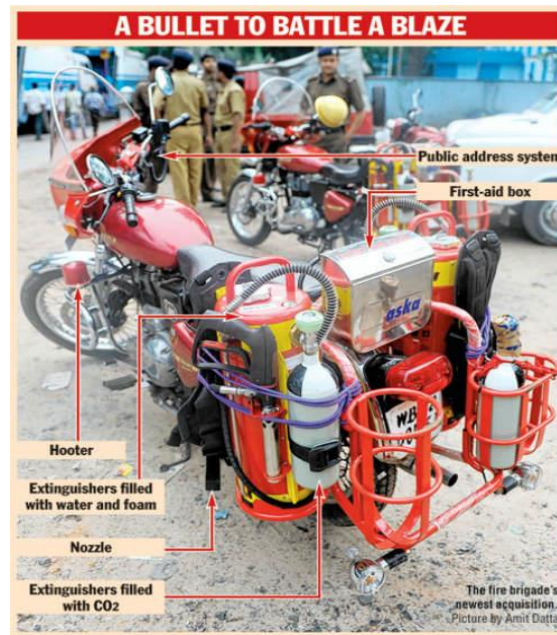
The Royal Enfield Bullet is now a 'Fire Engine' on two wheels Posted on October 4, 2016 by Shantonil Nag Most parts of India's major cities are very congested. This leads to emergency services like firefighting becoming cumbersome, and sometimes inaccessible. To resolve the problem, Vasai Virar Municipal Corporation has now got a fleet of Royal Enfield 'Fire Engine' motorcycles.

What's the 'Fire Engine Bullet' all about?

Firefighting equipment has been retrofitted on the Royal Enfield Bullet motorcycles, and this will allow fire men access even the smallest of nooks which would otherwise be inaccessible to large fire engines. There are two backpack type fire extinguishers that have a capacity of 10-litre each.

The system produces a mist that creates a water blanket over the fire, insulating it from the surrounding air. This cuts off oxygen supply to the fire, thereby extinguishing it. The water blanket also helps to prevent the fire from spreading to surrounding areas.





The mist created by the system uses very less water and the two 10-litre tanks are enough to tackle a moderate level of fire. Along with water, the system also throws out compressed air foam that enhances the capability to douse the fire quickly. The modified motorcycle also gets a hooter, a first aid box, and loud speaker to talk to address the crowd.

Why 2 wheels instead of 4?



The Royal Enfield Bullet based fire engines can be essential to tackle city traffic and narrow lanes to reach the affected area quickly. It would be used as the first line of defense against spreading fire and will give more time to the fire tending trucks that take more time to reach the spot.

Are more such 'Fire Engine Bullets' already in operation?

Yes, similar motorcycles are already in use in many parts of India including Uttar Pradesh, Tamil Nadu, Uttarakhand and West Bengal. The government deployed many of such specialized motorcycles during Kumbh Melas. The **specialised motorcycles with the equipment cost over Rs. 5.30 lakh** and have to get special clearance from Regional Traffic Office to operate on the road.

(Nag, 2016)

V. Similar patent

The invention CN206355473U relates to a novel multifunctional cart based fire extinguishers which comprises a telescopic push, push the hand lever, the bracket, the roller, the first hoop, the second hoop, bolts, brackets, lower fire extinguisher, head assembly, folding basket, protective cover, the upper end of the connection pipe holder frame has telescopic push handle bar is bent backward, the lower end of the telescopic pushing forward frame bracket turn, telescopic the lower end of the push frame through a shaft tube, the tube ends of the shaft are provided with rollers, telescopic stroller frame is provided with a first hoop and a second hoop, the hoop first and second hoop are a bolt is provided, wherein the first surface of the welding tip end with a hoop bracket, the front end of the welding surface of the second hoop has lower holder, retractable trolley frame extinguisher placed, and the first hoop, a second and bolted to the hoop, the top of the telescopic frame stroller extinguisher mounted head assembly, head assembly and the connecting pipe, the connection pipe is wound on the upper and lower brackets, pushing the back of the telescopic frame folding basket is mounted, the telescopic cover with anti stroller frame cover. (beads, 2016)

The invention CN208193430U provides a fire extinguisher trolley species which includes a frame with a rod shaped rack bar, the rack bar side extinguisher fixed frame, the other side affixed with the support rods wherein the support rods fixed to the lower frame bar has a diamond wheel carrier wheel connected to the wheel carrier. (Chunhe, 2018)

The invention US7171736B1 discloses a stand for a fire extinguisher that is portable. The invention disclosed primarily relates to a method of assembling and storing a portable stand for fire extinguisher having a case, pylon and a base. (kennon, 2003)

VI. Methodology

As we now know that the trolley is to be attached properly on the eterno ,its design is considered as follows:-

The design is divided into two parts ,

Part (A):- This part is attached on top of the vehicle seat at the rear portion.

It needs to be fixed tightly fixed over that seat, so that it doesn't fall off while riding the vehicle on uneven roads.

To get a tight grip over the vehicle we have made a mechanism of “sliding bars with screw tightening arrangement”.

Therefore whenever there is a need to fix this part , we just have to extend these barsput them on desired seat portion....then close it with the help of slider....and at last tighten the screw.

PART B- this is the actual trolley.

Over here the trolley is constructed in such a manner that it could be attached to PART A by sling over it very easily.

The angle made between the V of the trolley is shown by a simple calculation of trigonometry .

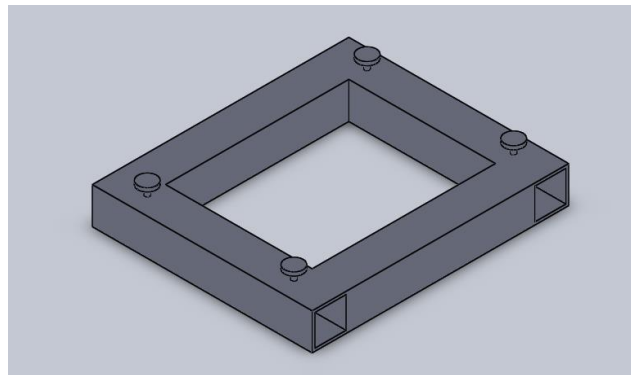
Also there is an angle between the horizontal base of trolley and the rods going down to wheels.

Hence this design makes the trolley much stable and easier to use.

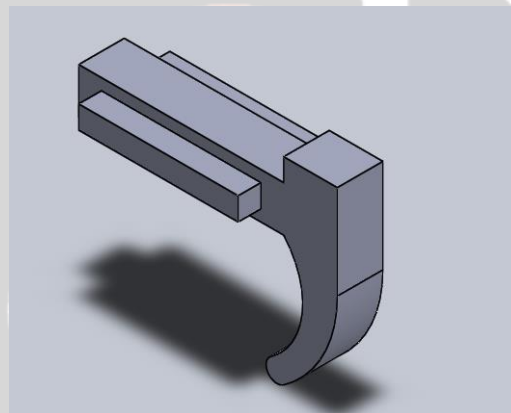
Also there will be a 3rd folding wheel for proper balance and handles to hold the trolley

VII. CAD MODEL

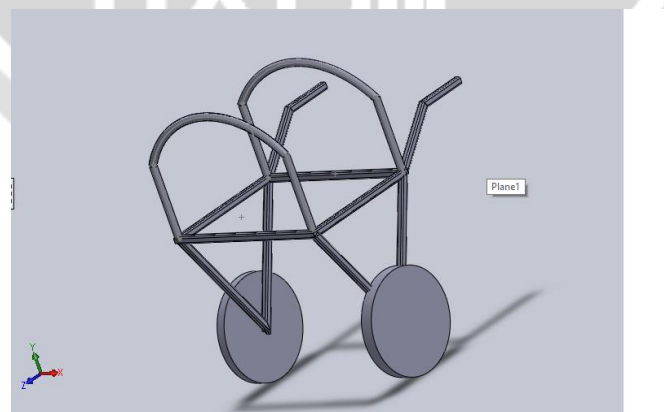
PART A- VEHICLE ATTACHMENT



PART AH- SLIDING COMPONENT

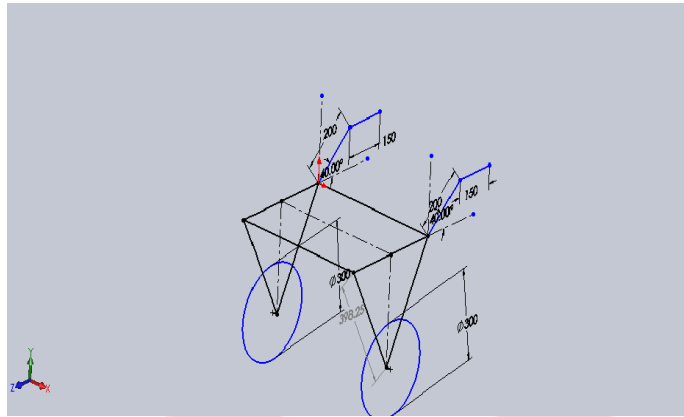


PART B- TROLLEY

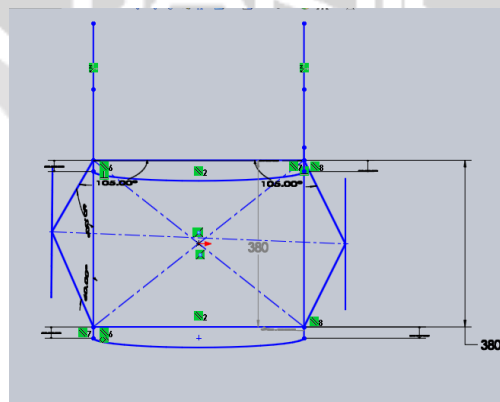
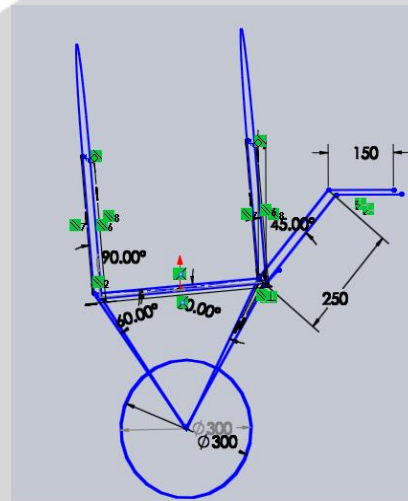


Front view

Side view



Top view



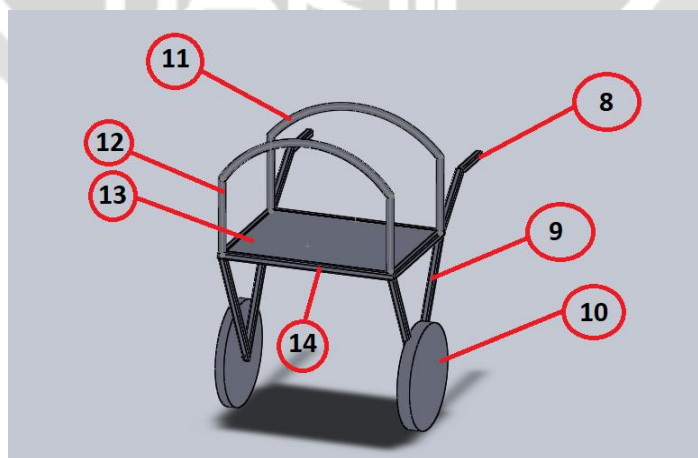
PART DESCRIPTION

List of all parts and sub-parts No. of parts

(The one with the notations of A,B, and AH are denoted as parts,

And the one with notations of 1,2,3,etc are denoted as sub-parts)

1. Main frame (Part-A)	1
2. Insertion hollow angle (Part-A)	4
3. Locking bolt (Part-A)	4
4. Slider body (Part-AH)	4
5. Channel slider (Part-AH)	8
6. Hook supporter (Part-AH)	4
7. Seat locking hook (Part-AH)	4
8. Trolley handle (Part-B)	2
9. Wheel support link (Part-B)	4
10. Trolley wheel (Part-B)	2
11. Top arch supporter (Part-B)	2
12. Vertical supporter (Part-B)	4
13. Trolley base plate (Part-B)	1
14. Base structure (Part-B)	1



Functions of each part and sub-part

1. Main frame (Part-A)- The main frame of part-A is the one which will bear the load of part B ie. The trolley and extinguishers in it. Also the main frame consists of sub parts -2,3 and Part-AH.
2. Insertion hollow angle (Part-A) –This is the hollow section of sub part-1 where the Part-AH is to be inserted for sliding and locking purpose.
3. Locking bolt (Part-A)- The bolts are used to lock the Part-AH which is to be inserted in sub part-2.Hence with the help of these bolts the main frame will be rigidly attached to seat of vehicle.
4. Slider body (Part-AH) – The slider body is the main body of Part-AH , where other sub parts -5,6,7 are attached.
5. Channel slider (Part-AH)- The slider channel is needed to easily slide the part-AH in and out of the insertion hollow section.
6. Hook supporter (Part-AH)- Hook support provides strength to the hook holding the seat.
7. Seat locking hook (Part-AH)- The function of this hook is to hold the seat and provide supportive linkage to the part-A along with part-B. It also provides better stability to the structure.
8. Trolley handle (Part-B)- Its function is to provide place to hold ,push ,pull and direct the trolley in the desired direction.
9. Wheel support link (Part-B) – These link provide support from trolley base structure to the trolley wheels.
10. Trolley wheel (Part-B)- the trolley wheels are used to drive the trolley
11. Top arch supporter (Part-B)- These support provide strength to the vertical supporters which are connected to the base structure of trolley.
12. Top arch supporter (Part-B)- These support provide strength to the vertical supporters which are connected to the base structure of trolley.
13. Trolley base plate (Part-B)- The trolley base plate is used to provide additional support to the base structure of the trolley from the weight of fire extinguisher.
14. Base structure (Part-B)- the base structure is the main sub part of trolley (Part-B),where every other part of trolley are interconnected. This portion is the first linkage to suffer the load of loaded extinguisher.