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Quad rear mount bike rack

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QUAD REAR TOWBAR MOUNT BICYCLE RACK

DESCRIPTION PAGE

The difference other than design with this bike rack is the way you can mount four bikes side by side at the rear of the vehicle regardless of the frame type or size. One other feature is that this rack can be used on a Sedan, Ute, Wagon or Four Wheel Drive with a spare wheel attached to the rear door. I have also included in Figure 6 Page 3 an additional number plate mount that can be sold separately as an optional extra, it can be folded down and extended as needed.

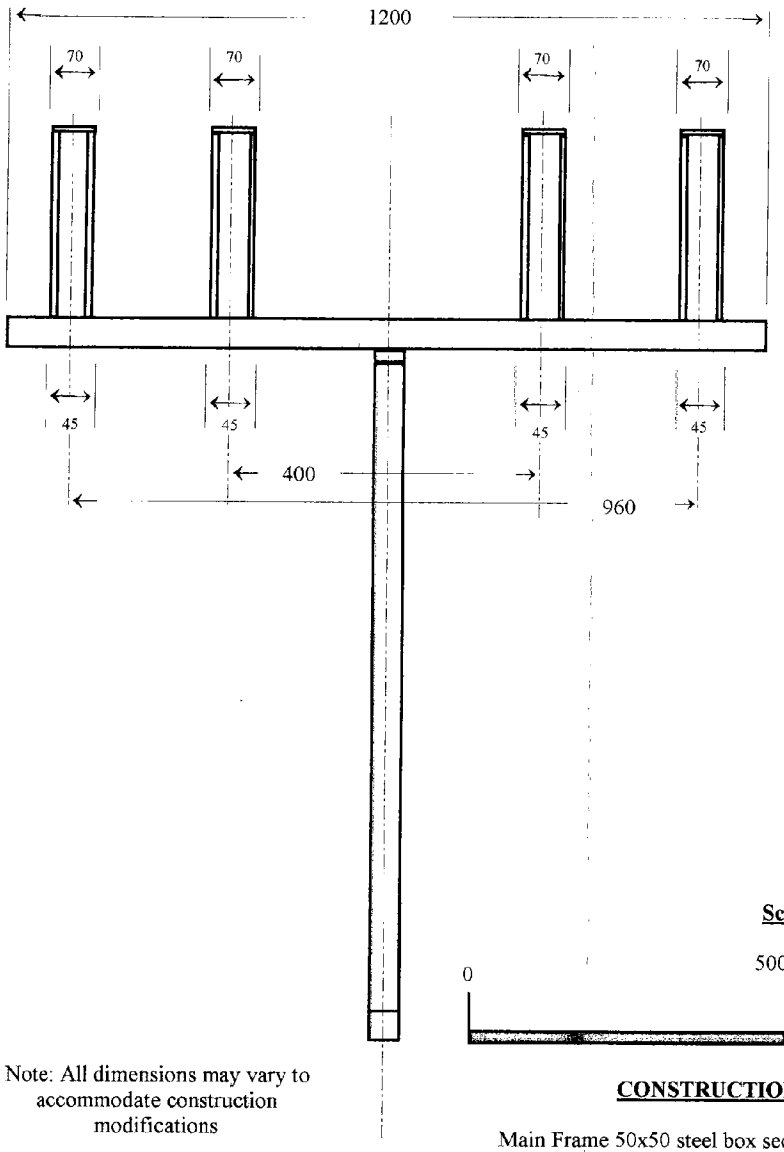
Usage Description

The rack is inserted into a square hitch type tow bar mount and locked into place with original pin. The best way to put the bikes into place is to start with the smallest bike first starting from the center, the bike is lifted vertical and the front wheel is lifted into the wheel cradle at the very top of the rack, the rear wheel on larger bikes may well rest on the rear bumper bar.

One of the two strap tie downs supplied can then be used at the base of the rack to secure the bike or bikes from swaying from side to side. The other tie strap is used at the top of the rack through all of the bike forks to secure them to the wheel cradle. The optional fold down number plate holder can then be lowered into place (ready to go). Note a number plate and stop light can be fitted to the holder and plugged into the trailer socket making the whole rack system road worthy and legal.

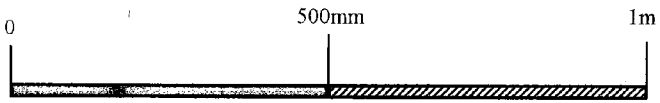
My investigations have indicated that there are not many if any bike racks available that can handle four bikes with different frame types, with the ease this design is capable of. The design of this rack ideally accommodates the larger type of modern bike frame such as the one shown in Figure 7 page 3 of the design plans supplied. One other note is if the vehicle is not fitted with the square mount type tow bar an adapter mount may be manufactured or purchased to suit.

Figure 1
FRONT VIEW



Note: All dimensions may vary to accommodate construction modifications

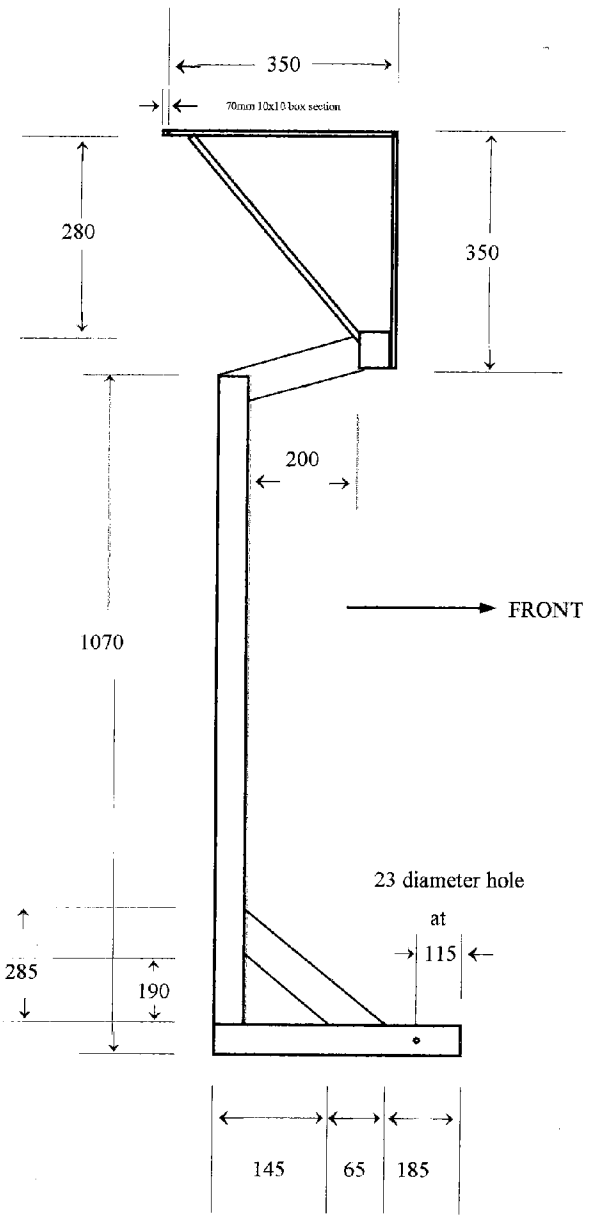
Scale



CONSTRUCTION MATERIALS

Main Frame 50x50 steel box section (gauge 1.5)
Bike Wheel Cradles 10x10 steel box section (gauge 1)

Figure 2
RIGHT HAND SIDE VIEW



QUAD REAR TOWBAR MOUNT BICYCLE RACK

AUSTRALIAN INOVATION PATENT NO-2002100033

FIELD OF THE INVENTION

This rack is designed to fit on the rear of vehicles fitted with a tow bar so as to transport bikes of all types of frame construction and size, and also to double as a storage unit for bikes with the use of the floor mount.

BACKGROUND ART

This bike rack has come about from the frustration of trying to get four bikes with different frame types to fit on a motor vehicle carry rack, this rack design enables a wide variety of frame types and size to be transported with ease and safety. There are numerous bike racks available but none able to carry bikes in the manner this of design. This rack can also fit most four wheel drives, utilities and sedans quickly and easily.

The optional floor mount also gives this design the versatility of a storage rack for bikes in the garage and a fold down number plate holder is also included in the design so as to comply with some Roads Authority regulations.

OBJECT OF THE INVENTION

The objectives aimed at in this rack is to design a bike rack that will mount to the rear of a motor vehicle and carry up to four bicycles of many different frame sizes and design in the one unit. Secondly as a storage system when not being used as a carry rack. (Figure 4 page 2) shows a three piece wheel cradle design for easier manufacture. To comply with Roads & Traffic Regulations an optional fold down number plate holder is also on the specifications (Page 3 Figure 6).

A DISCRIPTION OF FIGURES

A embodiment of the invention will be outlined with reference to the following figures.

FIGURE 1 Page 1/3 Shows a front plan view with approximate dimensions of the rack.

FIGURE 2 Page 1/3 Shows a side plan view of the rack with approximate dimensions.

FIGURE 3 Page 2/3 Shows the optional floor mount from a side view with the rack in position

FIGURE 4 Page 2/3 Shows three different views of the Alternative Three Piece Wheel Cradle

FIGURE 5 Page 3/3 Shows a top view of the Wheel Cradle

FIGURE 6 Page 3/3 Shows a diagram of the Optional Number Plate Holder

FIGURE 7 Page 3/3 Is a sketch picture of the rack fitted to the rear of a vehicle with a bike mounted in the Wheel Cradle

EMBODIMENT OF USAGE

The rack when being used for the transportation of bikes is mounted into the rear of a square hitch mount tow bar system by pulling out the original tow bar locking pin and removing the tow bar ball and stem assembly. The rack is then inserted in place (Figure 7) and secured with the original locking pin. The first bike would be then lifted on to the inner most front wheel cradle (Figure 5) in a vertical position adding any other bikes one at a time. Once the bikes are in place the fold down number plate holder (Figure 6) can be lowered into place. A rope tie down can be used as an extra safety to secure the bikes front wheels from falling out of the cradle assembly. An additional rope tie down can also be used at the base of the rack to stop sideways movement of the bikes.

The optional home storage mount (Figure 3) is secured to the garage floor permanently by the use of dynabolts or similar, then the rack can mounted in the same manner as when fitted to a motor vehicle. The bikes are then loaded in the same manner as previously described ready for storage.

The design of the four Wheel Cradles are the main feature when looking at this invention as it allows numerous frame styles and size bikes to be carried on the one rack (up to four bikes). Also the rack can be used as a storage unit when not in use .

Claims

1 A bicycle transportation system constructed from square steel tubes welded together and including:-

a lower tube having a 23mm diameter hole drilled horizontally so as to accept a locking pin

the lower tube having an upright tube attached at right angles having attached to it the top tube forming a T-shape with four front wheel cradles attached to that tube

four front wheel cradles each welded together and forming a triangular shape so as to form a cradle to fit the front wheel of a bicycle

2 A bicycle transportation system in accordance with claim 1, wherein a fold down number plate holder is fitted to the middle of the upright tube to facilitate the fitment of a number plate and tail light

3 A bicycle transportation system in accordance with claims 1 & 2, wherein a floor mount is added to enable the rack to be used as a storage system

4 A bike rack design substantially as hereinbefore described with reference to the accompanying drawings

Dated This Day
The 8th July 2002

Signed

David Brian Preston

Figure 1
FRONT VIEW

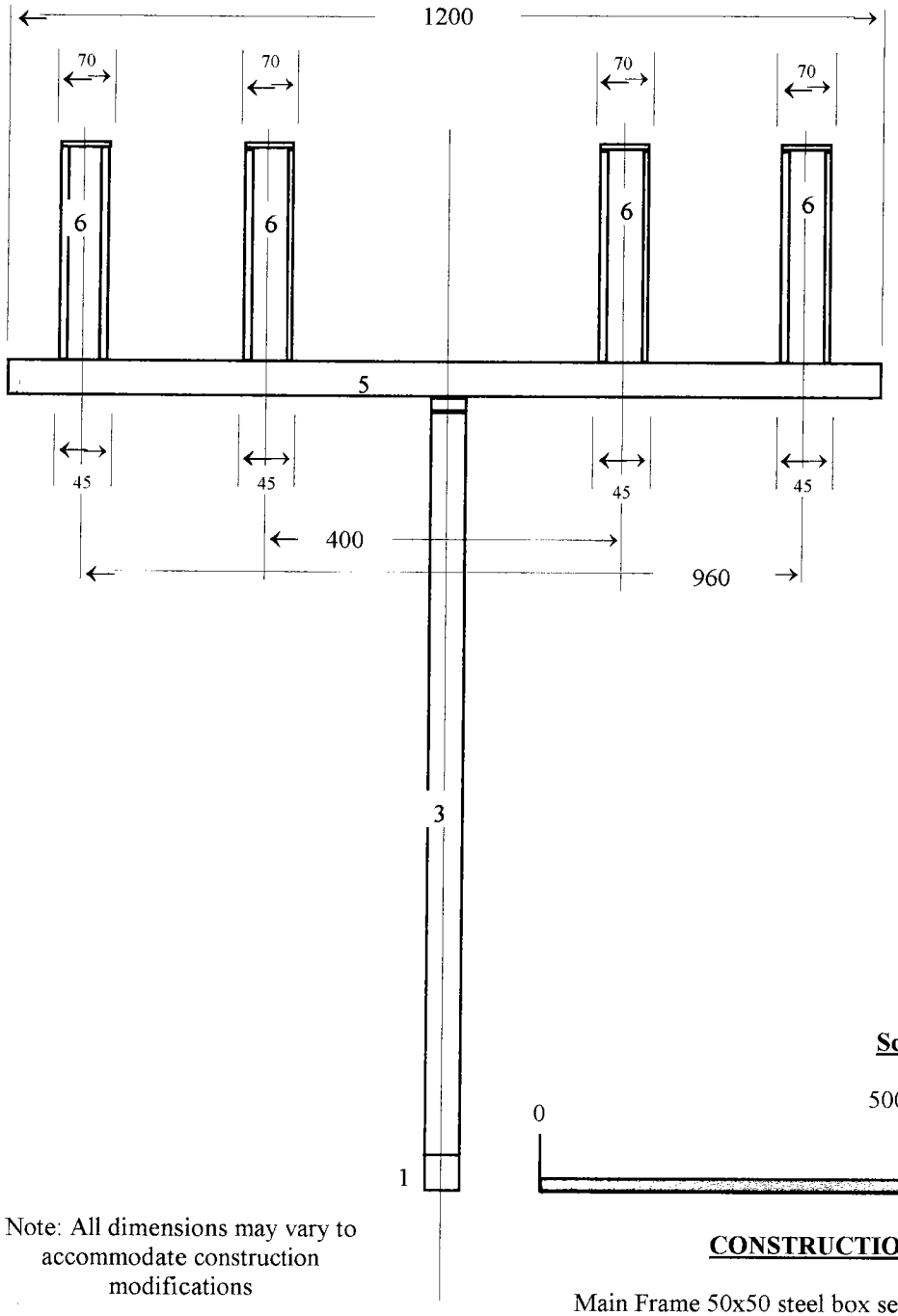
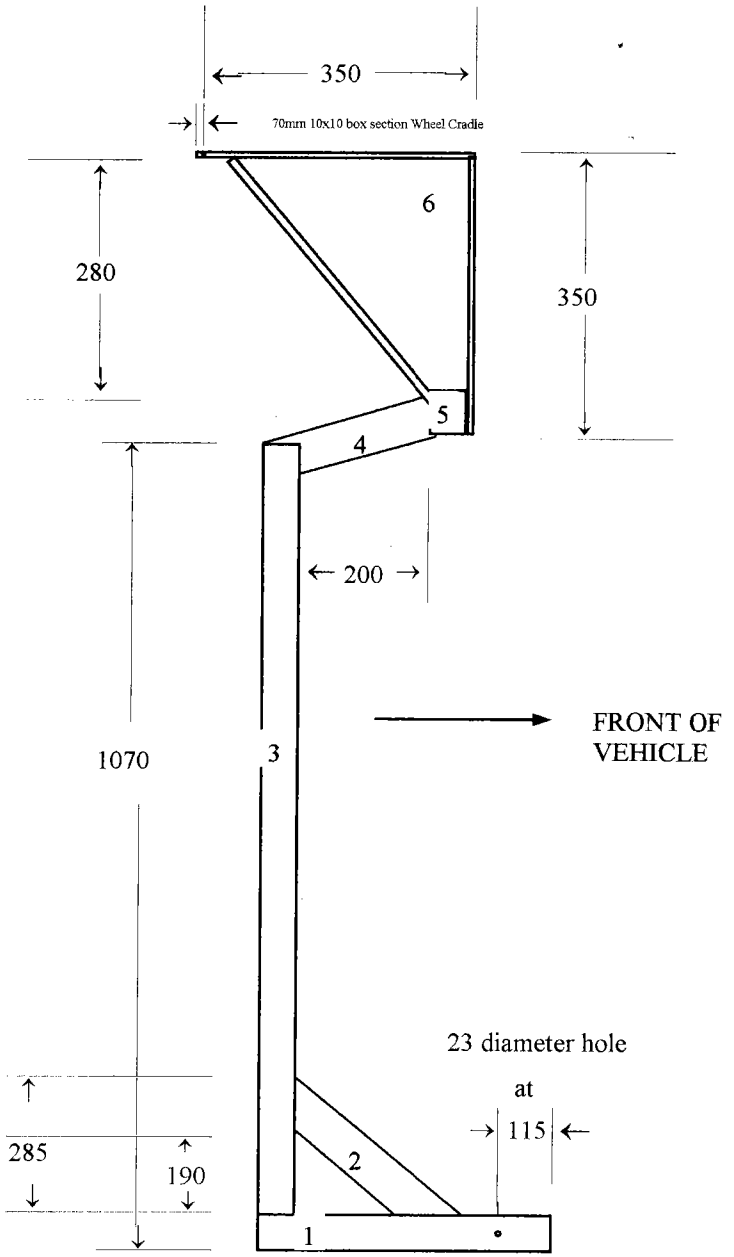


Figure 2
RIGHT HAND SIDE VIEW



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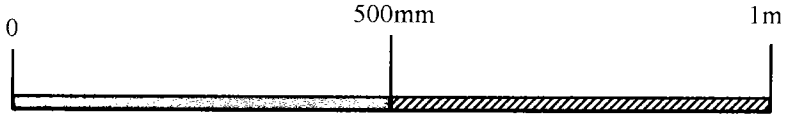

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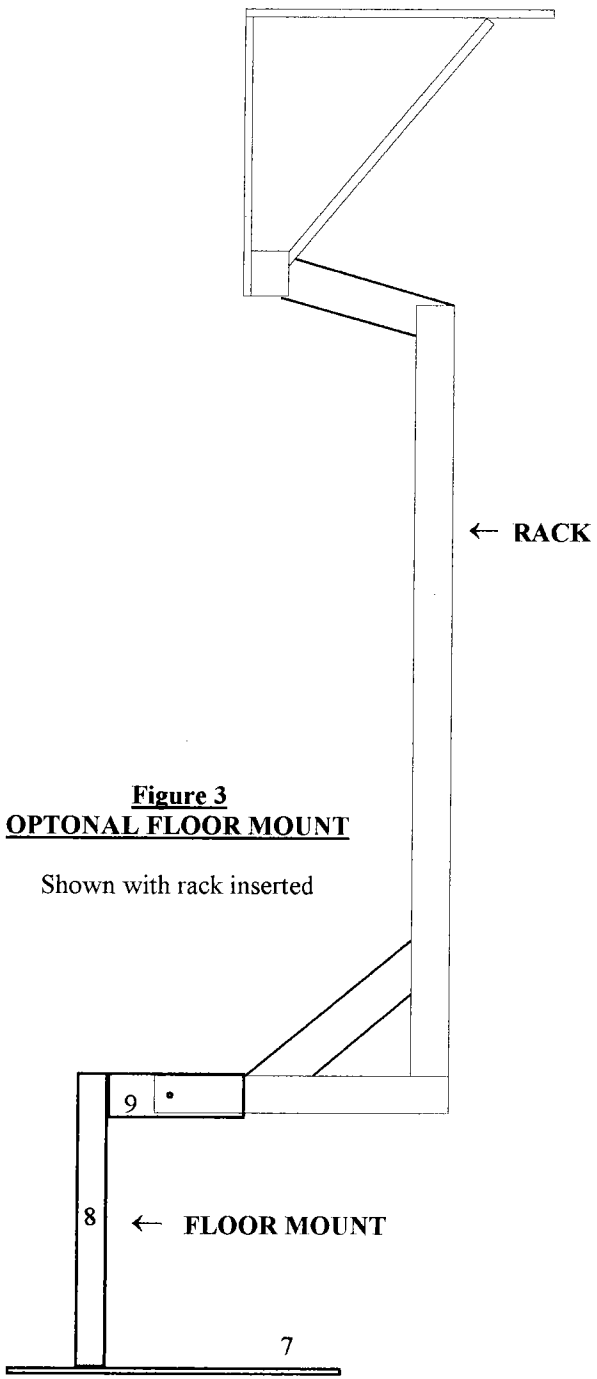

Figure 3
OPTONAL FLOOR MOUNT

Shown with rack inserted

Figure 4
Alternate Three Piece Wheel Cradle

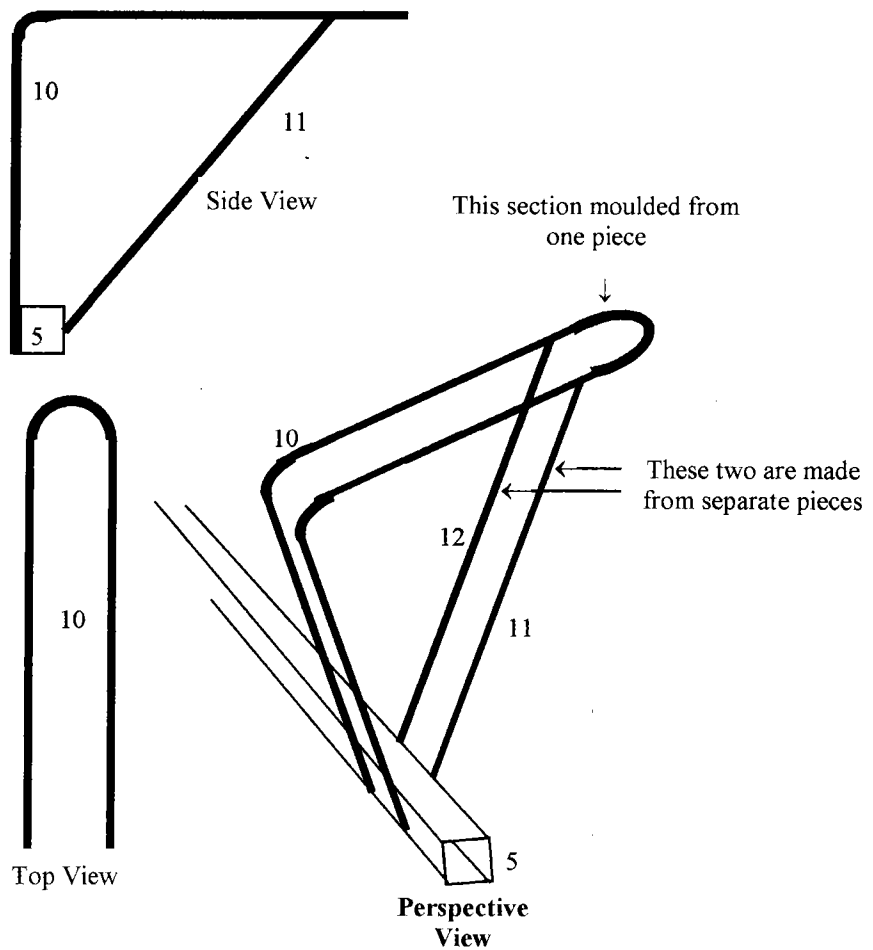

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Figure 5
TOP VIEW

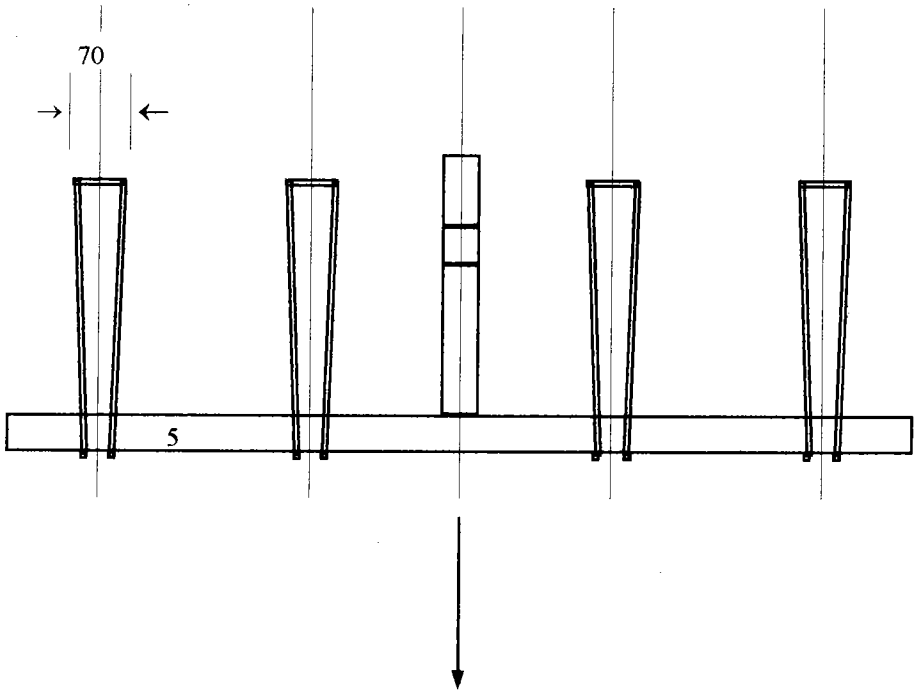
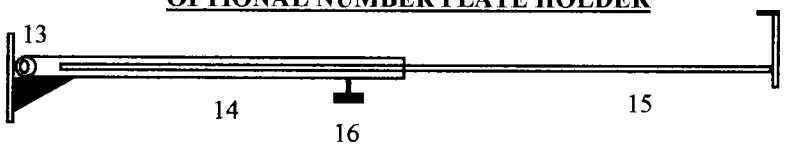


Figure 6
OPTIONAL NUMBER PLATE HOLDER



OPTIONAL ADJUSTABLE FOLD DOWN NUMBER PLATE HOLDER

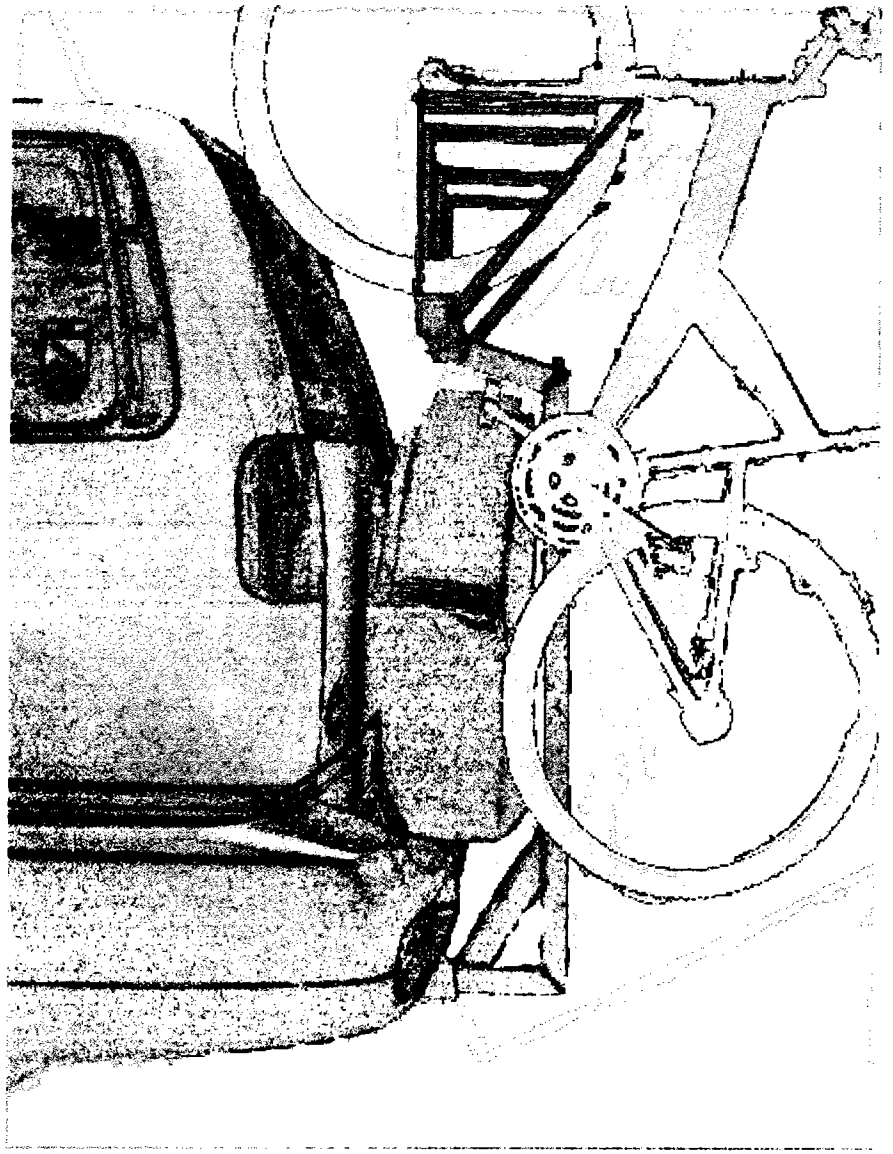


Figure 7

Note: All dimensions may vary to accommodate construction modifications