Invention is to create an equipment, which can be assembled easily and quickly.

The subject of the invention is a protecting and shielding arrangement for vehicles to be used for preventing damage and loss to vehicle bodies, that could caused by occurring hailstorm and against sunshine. Arrangement is shaped in a way, that pads are fastened to the top or the vehicle, thus forming the centre part or the arrangement, from which telescopic rods are extended and the ends of linkage are jointed to the side and edges of the vehicle and the protecting cover is placed on the linkage from the outside.

The net used as protecting cover is made of flexible plastic net reinforced with metal fibre or fabric and a netlike dense and strongly woven cover is placed on a linkage. Extension (14) is formed on the connecting end (8) of the telescopic rods (5), on which pins (15) are located. The pins (15) are fitted in grooves (13) of recesses (12) created in the supporting plate (9), that forms a part of central supporting unit (21). Extension (14) and pins (15) is are ensured by the connecting part (11) that form the lower part of the central supporting unit (21). Invention is to create an equipment, which can be assembled easily and quickly.
The subject of the invention is a protecting and shielding arrangement for vehicles to be used for preventing damage and loss to vehicle bodies, that could be potentially caused primarily by suddenly occurring hailstorm in the summer, and at the same time it is suitable for placing shielding cover against sunshine.

Weather in Central Europe is characterised by frequent hailstorms occurring in the summer period. The hailstorms usually cause extensive damage in the external environment, in nature, as well as in valuable objects, real estates and properties. The damage to vehicles is particularly significant, because hailstorms affect automobile parked in the open, as well as the automobiles on the roads, causing extensive aesthetic damage and loss to the automobiles.

The potential damage could be mitigated or prevented entirely, if the vehicle could be placed in properly protected location prior to the hailstorm, or by using a suitable protecting equipment, if placing the vehicle in a protected location is not possible.

Yet another problem is related to sunshine in the summer season, to which vehicles parked in the open are exposed to, and therefore the vehicle body and its internal spaces become hot. It is very desirable to provide protection to the vehicles that are parked for a long time, which can protect automobile from UV radiation in addition to preventing excessive warming.

According to the state of art various solutions are known for establishing canopies and shades for vehicles. The CN202278963 utility model makes known dual-purpose sunshade shed for vehicles and outing. The dual-purpose sunshade shed mainly consists of a connecting disc, a telescopic rod, sunshade cloth, support feet, a suction disc, a connecting head, a support rod S-shaped pipe, a support rod straight pipe and a support rod sharp head, and is characterized in that six connecting lugs hinged with the telescopic rod and the connecting head are arranged above the connecting disc and are formed through
stamping, four foot seats for installing the support feet are arranged under the connecting disc, the foot seats are welded with the connecting disc by a bending welding side through spot welding, the connecting disc is provided with a bowl-shaped inclined surface and an edge used for improving the intensity of the connecting disc, and the center of the connecting disc is provided with a connecting head installing hole.

The CN202439545 utility model makes known dual-purpose sunshade skeleton for automobiles and picnics. The dual-purpose sunshade skeleton for the automobiles and the picnics comprises an upper connection plate, a lower connection plate, telescopic pipes, inclined support rods, supporting feet, suckers, a middle upright pipe and a support pipe connector and is characterized in that a center hole used for connecting the middle upright pipe with a locking clamping piece of shade cloth is disposed at the center of the upper connection plate. Six telescopic pipe connection lugs used for hinging with the telescopic pipes are disposed on the outer edge of the upper connection plate. Reinforced ribs for enhancing intensity and chamfering Hangings are disposed on the surface of the upper connection plate.

The CN203358309 utility model makes known a portable automobile sunshade, which discloses a portable automobile sunshade which comprises a bottom plate (7), an adsorption body (2), a sunshade cloth (8) and a plurality of telescopic rods (1). The adsorption body (2) is arranged below the bottom plate (7), a connecting arm (3) is arranged between the adsorption body (2) and the bottom plate (7), one end of each telescopic rod (1) is fixedly installed on the upper surface of the bottom plate (7), the other end of each telescopic rod (1) extends out of the edge of the bottom plate (7), the sunshade cloth (8) is arranged among the telescopic rods (1), and after the telescopic rods stretch out, the sunshade cloth (8) forms a sunshade face.

The EP1522446 patent description makes known a new anti-hail protection for cars comprising a structure composed of a central rod (Sc) having at each end two diverging rods (Sc), pointing towards the comers of the car, and one or more pairs of side rods (Sm) joined to a closemeshed net (R). The central rod rests on bottom brackets (A) equipped with suckers or magnets (Av) for applying it on the roof of the car.
The GB304998 patent description makes known a tent covering is supported on a frame fixed to a motor car, so as to envelop the vehicle and leave ample space around it. The covering is supported on a tripod which is carried in sockets secured in the roof of the car by pintles, the rods of the tripod being hinged to the pintles and to the head. The covering is further supported by adjustable rods extending outwardly and upwardly and supported from sockets in the running boards of the car, the ends of the rods passing through eyeletted apertures in the covering and side screens, weather hoods being fitted over the apertures.

The Hungarian patent application HU P0900027 makes known a vehicle covering canvas, which has light and heat reflecting properties. The material of the vehicle covering canvas prepared with the procedure according to the invention can be any light and heat reflecting material, but primarily light and heat reflecting sheet made of aluminium, which protects the vehicle body, as well as its open or closed passenger spaces and loading spaces from the radiation causing warming, particularly from the sunshine. The vehicle covering canvas is produced by pleating light base material made of heat reflecting sheet, where the pleating is fixed at the ends, and is fixed with pull in yarn running partly or fully along the side of the canvas, or with bracing (frame) that take up the shape of the vehicle, which can be bent without breaking, and which has a material that remembers and assumes the shapes upon development.

The European patent application EP 0830490 makes known a foldable protecting canopy structure. The US patent US 4944321 makes known a portable garage and tent structure. The Russian patent RU 2215105 makes known a protecting shelter that can be erected on a temporary basis. The Hungarian HU 154 206 patent makes known a camping and garage structure, which consists of canvas fixable to the top of the vehicle. The US patent US 5890525 makes known an inflatable cover suitable for protecting cars. The German patent application DE 4038836 makes known protecting means made of extendible foil suitable for protecting against the effect of weather, including ice formation. The US patent US 5241977 makes known a portable cover system apparatus for vehicular and other outdoor use.
My goal with the invention is to create an equipment, which can be placed easily on the vehicle and transported conveniently with the vehicle, and at the same time, which can be assembled easily and quickly.

When developing the invention I recognised that if two or three pads are attached to the top of a vehicle by means of vacuum suction cups, which form the centre of the equipment on the top of the vehicle, from which telescopic rods are extended, with the help of which a suitable length and width can be achieved, so that it extends beyond the dimensions of the vehicle laterally and in longitudinal direction, then it forms a supporting structure, on which a dense net or air permeable strong fabric is placed from the outside for protecting against hailstorm, or light reflecting foil is placed for protecting against sunshine, then the set aim can be achieved.

The invention is a protecting and shielding arrangement for vehicles to be used for preventing damage and loss to vehicle bodies, that could be potentially caused primarily by suddenly occurring hailstorm in the summer, and at the same time the supporting structure of it is suitable for placing shielding cover against sunshine, the structure of which arrangement is shaped in a way, that two or three pads are fastened to the top of the vehicle by means of vacuum suction cups, thus forming the central part of the arrangement on the top of the vehicle, from which centre telescopic rods are extended, by which the desired length and width are achieved, and the ends of the linkage are joined to the side and edges of the vehicle by some method, in the given case by hooks, and/or vacuum suction cups, and a protecting cover is placed on the linkage from the outside, which is fixed to the telescopic rods at a number of points in know manner, and the net used as protecting cover is made of flexible plastic, plastic net reinforced with metal fibre, or fabric, and furthermore, recesses are created in the central supporting unit for receiving the ends of linkage, and the joining parts of the pads are fixed to the bottom of the central supporting unit with know method, and on which structure a netlike dense and strongly woven cover is placed on the linkage from the outside for protecting against hailstorm, the said cover being air permeable, so that the sailing effect of the wind force associated with hailstorms is mitigated, furthermore for
protecting against sunshine a protecting cover placed on the linkage from the outside is made of light reflecting foil or fabric, which reflects the strong sunshine, thus reducing the warming of the automobile significantly,

characterized by that

extension is formed on the connecting end of telescopic rods, on which two pins are located in perpendicular direction, and the pins are fitted in a shape closing manner in the grooves of recesses created in the supporting plate that forms a part of the central supporting unit, and the support of extensions and pins is are ensured by the connecting parts that form the lower part of the central supporting unit, being connected to the central supporting unit from below, where the joining of connecting parts and the supporting plate is accomplished by means of fastening elements, in the given case bolts or pins or rivets or lugs, placed in the holes of the connecting part and in the holes of the supporting plate.

In a preferred embodiment of the solution according to the invention recesses in the supporting plate are closed from above, and they are created from the material of the supporting plate by means of pressing or moulding.

In another preferred embodiment of the solution according to the invention the protecting cover is assembled together with the telescopic rods, and they are fixed to the telescopic rods, in the given case to its ends or intermediate parts already when manufactured.

In a further preferred embodiment of the solution according to the invention cords are joined to the ends of telescopic rods for ensuring a flexible tensioning and fastening, which are connected to the appropriate parts of the vehicle.

In a further preferred embodiment of the solution according to the invention the material of the telescopic rods are flexible plastic reinforced with glass fibre or plastic fibre.
In a further preferred embodiment of the solution according to the invention the material of the vacuum suction cups is plastic, rubber or silicone.

In a further preferred embodiment of the solution according to the invention the material of the supporting plate and the connecting parts constituting the central supporting unit, as well as that of the leg is metal, e.g. aluminium, or plastic.

In case of an advantageous preferred embodiment of the solution according to the invention, two or three pads are fastened to the top of the vehicle by means of vacuum suction cups. These parts form the centre of the equipment on the top of the vehicle. Telescopic rods extend from this centre, with the help of which the required length and width can be achieved, so that they extend beyond the dimensions of the vehicle laterally and in longitudinal direction. The ends of the linkage will be fastened to the sides and edges of the vehicle in some manner using hooks and/or vacuum suction cups.

When used as a protection again hails it is desirable to place a net-like cover on the linkage, which could be a dense but air permeable fabric with strong weaving, so that the sailing effect of the wind associated with hailstorms is mitigated. This net cover will catch the hails and will diminish their impact. This net structure has an elastic effect together with the linkage, so that the incoming hails will bounce or roll from it.

When used as a protection against sunshine, it is desirable to place a light reflecting foil or fabric on the linkage from the outside, which will reflect the strong radiation, thus mitigating the warming of the automobile significantly. This can be fixed similarly to the fixing of the protecting net.

The invention is furthermore set forth on the base of the enclosed figures:
The Fig. 1 shows the arrangement according to the invention as fixed to the top of the vehicle.
The Fig. 2 show the arrangement according to the invention as fixed to the top of a vehicle.
The Fig. 3 and Fig. 4 show lateral and front view of the arrangement according to the invention as fixed to the top of a vehicle in opened and extended condition.

The Fig. 5 and Fig. 6 show lateral and front view of the arrangement according to the invention while it is fixed on the top of the vehicle in open condition, as provided with protecting cover.

The Fig. 7 shows the arrangement according to the invention in folded condition.

The Fig. 8 and Fig. 9 show the arrangement according to the invention in open condition.

The Fig. 10 shows the telescoping rods according to the invention with the connecting ends 8 placed at their ends.

The Fig. 11 shows the lateral view of the arrangement according to the invention in opened condition.

The Fig. 12 shows the arrangement introduced already in Fig. 11 in the open condition without protecting cover in a perspective view.

The Fig. 13 shows a possible design of the pads and the central supporting unit.

The Fig. 14 shows the top view of the supporting plate with the telescopic rods.

The Fig. 15 shows the bottom view of the supporting plate with the telescopic rods.

The Fig. 16 shows the bottom view of pad.

The Fig. 17 shows the lateral view of pad.

Fig 1 shows the arrangement 1 according to the invention as fixed to the top of the vehicle. The arrangement 1 can be seen in the figure in folded condition as fixed to the top of the vehicle 2, together with the central supporting unit 21 and the telescopic rods 5.

Fig. 2 show the arrangement 1 according to the invention as fixed to the top of a vehicle. The arrangement 1 can be seen in the figure in folded condition and as fixed to the top of the vehicle 2, together with the telescopic rods 5, and the central supporting unit 21 with the pads 3 provided with vacuum suction cups 4.

Fig. 3 and Fig. 4 show lateral and front view of the arrangement according to the invention as fixed to the top of a vehicle in opened and extended condition. The
arrangement 1 can be seen in the figure as fixed to the top of the vehicle 2 in opened condition without protecting cover 7. It can be seen well in the figures, that in this case the telescopic rods 5 are in opened and extended condition. The central supporting unit 21 can be seen also in the figures, which has pads 3 with vacuum suction cups 4 for ensuring fastening to the top of the vehicle.

Fig. 5 and Fig. 6 show lateral and front view of the arrangement according to the invention while it is fixed on the top of the vehicle 2 in open condition, as provided with protecting cover 7. In the figures the arrangement 1 can be well seen in open condition as fixed to the top of the vehicle 2.

In Fig. 5 and Fig. 6 it can be well seen that in this case the telescopic rods 5 are fixed in opened and extended condition, and the protecting cover 7 is fixed to them. The figures also show the central supporting unit 21 together with the pads 3 that are provided with vacuum suction cups 4. Fixing cords 22 are attached to the ends of the telescopic rods 5 that ensure flexible tensioning and fastening, and are joined to the appropriate parts of the vehicle.

Fig. 7 shows the arrangement according to the invention in folded condition. The arrangement 1 can be seen in the figure in folded condition together with the telescopic rods 5 and the pads 3. In the present case, the telescopic rods 5 are arranged in parallel to one another, and are joined to the central supporting unit 21.

Fig. 8 and Fig. 9 show the arrangement according to the invention in open condition. The arrangement 1 can be seen in the figures in opened condition together with the telescopic rods 5 and the pads 3. In the present case, the telescopic rods 5 are already spread, and after having been extended in radial direction they join the central supporting unit 21.

Fig. 10 shows the telescoping rods 5 according to the invention with the connecting ends 8 placed at their ends. The extensions 14 created at the connecting ends 8 can be seen in the figure, on which extensions 14 there are two pins 15 installed in directions
perpendicular to the extensions 14. These pins 15 will ensure from here on the fixing of telescopic rods 5 in the central supporting unit 21.

Fig. 11 shows the lateral view of the arrangement according to the invention in opened condition. The arrangement 1 can be seen in the figure in opened conditions with the telescopic rods 5. In the figure it is possible to see the pads 3, which are provided with vacuum suction cups 4 and vacuum fixing levers 10. Furthermore, the figure shows the central supporting unit 21, as well as the telescopic rods 5 fastened into the central supporting unit 21 with their connecting ends 8. The arrangement according to the invention is fastened to the top of the vehicle 2 by means of vacuum suction cups 4 in a way, that the vacuum fixing levers 10 on the pads 3 are pressed down, and as a result of which a vacuum is produced in the vacuum suction cups 4 for fastening them to the top of the vehicle 2. As shown at the left side of the figure, the vacuum fixing levers 10 are in a condition before fastening, while at the right side of the figure, the vacuum fixing levers 10 are depressed in fastening position. In this way a safe, strong, but releasable connection is established between the arrangement 1 and the top of the vehicle 2, if suitably large vacuum suction cups 4 are used.

Fig. 12 shows the arrangement 1 introduced already in Fig. 11 in the open condition without protecting cover 7 in a perspective view. The arrangement 1 can be seen in the figure in opened conditions with the telescoping rods 5. In the figure it is possible to see the pads 3 which are provided with vacuum suction cups 4 and vacuum fixing levers 10. Furthermore, it is also possible to see the central supporting unit 21, as well as the telescopic rods 5, which are fixed in the central supporting unit 21 with their connecting ends 8. The telescopic rods 5 extend in lateral direction from the central supporting unit 21, and are connected to the central supporting unit 21 with the help of the connecting ends 8 which are at the end of the telescopic rods 5.

Fig. 13 shows a possible design of the pads 3 and the central supporting unit 21. The central supporting unit 21 consists of a supporting plate 9 and a connecting part 11 attached to it from below, which closes the supporting plate 9, as well as its recesses 12 from below. The central supporting unit 21 is connected by means of legs 18 to the pads
3, which are provided with vacuum suction cups 4 and vacuum fixing levers 10, which
fix them to the central supporting unit 21. Furthermore, the figure shows the recesses
12, which are formed with grooves 13 in the supporting plate 9 forming a part of the
central supporting unit 21, as well as the bracing ribs 16 created inside the supporting
plate 9, and the cutout 17. It can be seen well in the figure, the connecting part 11
attached to the legs 18 constitutes the lower part of the central supporting unit 21, and is
fixed to the supporting plate 9 with the help of holes 19, 20 in a known manner, such as
bolting or riveting.

Fig. 14 shows the top view of the supporting plate 9 with the telescopic rods 5. In the
figure the supporting plate 9 having recesses 12 can be seen from above, in one of the
recesses 12 of which the telescopic rod 5 is inserted with the extension 14 located at its
connecting end 8. The recesses 12 established with grooves 13 in the support plate 9 are
closed with nuts from the top. It is possible to see in the figure the cutouts 17 created in
the supporting plate 9, as well as the bracing ribs 16 created between the cutouts 17.
The holes 19 can also be seen which allows the joining of the components.

Fig. 15 shows the bottom view of the supporting plate 9 with the telescopic rods 5. The
figure shows the supporting plate 9 which is provided with recesses 12 at the bottom, in
one of the recesses of which the telescopic rod 5 is connected with the extension 14
located at its connecting end 8. The extension 14 at the end of the connector 8 is joined
by means of its pins 15 into the recess 12. The recesses 12 created with grooves 13 in
the supporting plate 9 can be seen in the figure, into which the rest of the telescopic rods
5 are connected in assembled condition. It is also possible to see in the figure the
cutouts 17 created in the supporting plate 9, as well as the bracing ribs 16 located
between the cutouts 17, and the holes 19.

Fig. 16 shows the bottom view of pad 3. In the figure it is possible to see the pad 3 with
its connecting part 11 and its leg 18. Furthermore, the figure shows the holes 20 created
in the connecting part 11.
Fig. 17 shows the lateral view of pad 3. In the figure it is possible to see the pad 3 with its connecting part 11 and its leg 18. The figure also shows the holes 20 formed in the connecting parts 11.

In case of a possible use of the solution according to the invention, the assembling and establishing the structure could be done as follows:

As can be seen in Fig. 15, an extension 14 is formed at the end of connector 8 located at the end of each telescopic rod 5, on which two pins 15 are located in perpendicular direction. The pins 15 are fitted in a shape closing manner into the groves 13 of recess 12, which is created in the support plate 9 forming a part of the central supporting unit 21. The bracing of extensions 14 and pins 15 is ensured by connecting parts 11 attached to the supporting plate 9 from below. The joining of connecting parts 11 and the supporting plate 9 is ensured by known fastening elements, in the given case by bolts or pins or rivets or lugs, etc., placed in the holes 20 formed in the connecting parts 11 and the holes 19 of the supporting plate 9. Bracing ribs 16 are created in a preferred way between the cutouts 17 formed in the supporting plate 9.

The placing and assembling is as follows when using the arrangement according to the invention. The arrangement 1 being in folded condition is erected on the pads 3 and then placed on the top of the vehicle 2, and fastened by means of vacuum suction cups 4. Then the telescoping rods 5 are unfolded and pulled out in radial direction. Simultaneously to that, the protecting cover 7 is also applied, which is preferably stored with and connected to the telescopic rods 5 in the given case. Then the ends of the telescoping rods 5 are fixed at the side of the vehicle or on suitable locations of the vehicle body, which ensure the stable fixing of the entire arrangement 1.

In case of a preferred actual embodiment of the solution according to the invention the material of the telescoping rods 5 is flexible plastic reinforced with glass fibre or plastic fibre. The material of the vacuum suction cups 4 is plastic, rubber or silicone. The material of the central supporting unit 21 is metal, e.g. aluminium, or plastic. In case of protection against hailstorm, the protecting cover 7 is a net made of flexible plastic, or plastic net reinforced with metal fibres or fabric. The telescopic rods 5 can also be used
as bracket for the sunshine protecting cover in the given case in another application. In this case the protecting cover 7 is not a net, but light reflecting foil or fabric is placed.

The advantage of the solution according to the invention is that it allows a much simpler assembling relative to other known solutions. It has a portable design, it can be used almost anywhere. It occupies only a small space in the automobile, and it can be transported together with the general accessories. It can be set up quickly before the hailstorm develops or during the hailstorm before it becomes strong. It can be set up by a single person without requiring special professional knowledge. The driver can sit back into the automobile after installation it. It is even possible to drive the vehicle slowly to a safe location with the arrangement mounted. The protecting arrangement could be erected on a vehicle standing along a street or in a parking lot, therefore, it might be desirable to provided it with protection against stealing.
List of references:

1 - arrangement
2 - top of vehicle
3 - pads
4 - vacuum suction cup
5 - telescopic rod
6 - ends of linkage
7 - protecting cover
8 - connecting end
9 - supporting plate
10 - vacuum fixing lever
11 - connecting part
12 - recess
13 - groove
14 - extension
15 - pin
16 - bracing rib
17 - cutout
18 - leg
19 - hole (opening)
20 - hole
21 - central supporting unit
22 - fixing cord
CLAIMS:

1. Protecting and shielding arrangement for vehicles to be used for preventing damage and loss to vehicle bodies, that could be potentially caused primarily by suddenly occurring hailstorm in the summer, and at the same time the supporting structure of it is suitable for placing shielding cover against sunshine,

the structure of which arrangement is shaped in a way, that two or three pads are fastened to the top of the vehicle by means of vacuum suction cups, thus forming the central part of the arrangement on the top of the vehicle, from which centre telescopic rods are extended, by which the desired length and width are achieved, and the ends of the linkage are joined to the side and edges of the vehicle by some method, in the given case by hooks, and/or vacuum suction cups, and a protecting cover is placed on the linkage from the outside, which is fixed to the telescopic rods at a number of points in know manner,

and the net used as protecting cover is made of flexible plastic, plastic net reinforced with metal fibre, or fabric,

and furthermore, recesses are created in the central supporting unit for receiving the ends of linkage,

and the joining parts of the pads are fixed to the bottom of the central supporting unit with know method,

and on which structure a netlike dense and strongly woven cover is placed on the linkage from the outside for protecting against hailstorm, the said cover being air permeable, so that the sailing effect of the wind force associated with hailstorms is mitigated,
furthermore for protecting against sunshine a protecting cover placed on the linkage from the outside is made of light reflecting foil or fabric, which reflects the strong sunshine, thus reducing the warming of the automobile significantly.

characterized by that

extension (14) is formed on the connecting end (8) of telescopic rods (5), on which two pins (15) are located in perpendicular direction, and the pins (15) are fitted in a shape closing manner in the grooves (13) of recesses (12) created in the supporting plate (9) that forms a part of the central supporting unit (21), and the support of extensions (14) and pins (15) is are ensured by the connecting parts (11) that form the lower part of the central supporting unit (21), being connected to the central supporting unit (21) from below, where the joining of connecting parts (11) and the supporting plate (9) is accomplished by means of fastening elements, in the given case bolts or pins or rivets or lugs, placed in the holes (20) of the connecting part (11) and in the holes (19) of the supporting plate (9).

2. Arrangement according to claim 1, characterised by that, recesses (12) in the supporting plate (9) are closed from above, and they are created from the material of the supporting plate (9) by means of pressing or moulding.

3. Arrangement according to claim 2, characterised by that, the protecting cover (7) is assembled together with the telescopic rods (5), and they are fixed to the telescopic rods (5), in the given case to its ends or intermediate parts already when manufactured.

4. Arrangement according to claim 1, characterised by that, cords (22) are joined to the ends of telescopic rods (5) for ensuring a flexible tensioning and fastening, which are connected to the appropriate parts of the vehicle.

5. Arrangement according to any of claims 1 - 4, characterised by that, the material of the telescopic rods (5) are flexible plastic reinforced with glass fibre or plastic fibre.
6. Arrangement according to any of claims 1 - 5, characterised by that, the material of the vacuum suction cups (4) is plastic, rubber or silicone.

7. Arrangement according to any of claims 1 - 6, characterised by that the material of the supporting plate (9) and the connecting parts (11) constituting the central supporting unit (21), as well as that of the leg (18) is metal, e.g. aluminium, or plastic.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B60J 11/00-1 1/10, B60P 7/00-7/04, B61D 39/00, E04H 15/00-15/28

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIPO, DEPATISNET, DWPI, EAPATIS, Espacenet, JORAL, K-PION, KIPRIS, PAJ, PatSearch (RUPTO internal), RUPAT, Scopus, SIPO, USPTO, Patentscope, VINITI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US 2012/0285588 A1 (JAMES SHEPPARD) 15.11.2012, paragraphs [0002]-[0010], [0026]-[0067], fig. 1-1</td>
<td>1-5</td>
</tr>
<tr>
<td>D, A</td>
<td>CN 202278963 U (WANG JUN) 20.06.2012, paragraphs [0023]-[0029], fig. 1-8</td>
<td>1-5</td>
</tr>
<tr>
<td>A</td>
<td>US 5401074 A (JERRY L. TIMERMAN) 28.03.1995, col. 1, line 9-col. 1, line 31, col. 2, lines 3-6, col. 3, line 19-col. 5, line 17, fig. 1-5</td>
<td>1-5</td>
</tr>
<tr>
<td>A</td>
<td>RU 41479 U1 (KUZNETSOV VITAL Y VASILIEVICH) 27.10.2004, abstract, fig. 1</td>
<td>1-5</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

03 June 2015 (03.06.2015)

Date of mailing of the international search report

09 July 2015 (09.07.2015)

Name and mailing address of the ISA/RU:

Federal Institute of Industrial Property, Berezhkovskaya nab., 30-1, Moscow, G-59, GSP-3, Russia, 125993

Facsimile No: (8-495) 531-63-18, (8-499) 243-33-37

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Form PCT/ISA/210 (second sheet) (January 2015)
INTERNATIONAL SEARCH REPORT
Classification of subject matter

PCT/HU 2015/000012

B60J 11/04 (2006.01)
B60P 7/04 (2006.01)
E04H 15/06 (2006.01)
E04H 15/28 (2006.01)
Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. □ Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. □ Claims Nos.:
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. X□ Claims Nos. 6, 7
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. □ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. □ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. □ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. □ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

□ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

□ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

□ No protest accompanied the payment of additional search fees.