

Aggregate of vehicles

Description

The invention relates to an aggregate of vehicles, comprising a number of manually displaceable transport carts that are pushed one into the other and form a row, and travelling towing device designed for towing the row and provided with a fixation strap for holding together the row. The two ends of said fixation strap comprise a fixation device for fastening on the first and last transport cart.

Aggregates of vehicles of this type are found at airports, railway stations and also in self-service shops, where it is necessary to place either luggage trolleys or shopping trolleys at the disposal of the persons in these locations. The aggregates are formed when these trolleys are collected together and transported away, for which purpose the aggregate of vehicles is held together by a fixation strap and pulled by a travelling towing device.

German utility model G 85 29 340.7 U1 describes a fixation arrangement for a row of nested shopping trolleys. Instead of a fixation strap, a longitudinally adjustable drawbar is used here which is provided at its ends with holding devices and which is able to hold together a row of shopping trolleys for the purpose of moving them or transporting them away. On account of the rigid drawbar, it is almost impossible for a row of shopping trolleys held together to negotiate a bend or a curve.

US 6,406,250 B2 relates to an aggregate of vehicles comprising nested shopping trolleys held together by a tensible traction rope. The traction rope, intended for use as a fixation strap, is tightened so that shopping trolleys located in the rear region of the row are partly lifted, with the result that an aggregate of vehicles thus produced can be moved around a bend relatively easily. The traction rope requires, at its rear end, a tensioning device which is specially formed for this purpose and by

means of which high tension forces can be generated. The high level of tension inevitably results in jamming of the nested shopping trolleys, which can consequently only be removed again from the aggregate of vehicles by applying considerable force. This is disadvantageous.

German utility model DE 299 09 798 U1 discloses an aggregate of vehicles with nested luggage trolleys which are held together in a row by a fixation strap and are pulled by a towing device. To ensure that luggage trolleys do not tip over as a result of centrifugal force when an aggregate of vehicles of this type is negotiating a bend, so-called guide wheels are inserted at intervals between the luggage trolleys and are intended to prevent the aforementioned tipping-over of the luggage trolleys. Therefore, to collect together and form a row of trolleys, a plurality of guide wheels, which are each a constituent of a chassis-type framework, also have to be carried along. This measure has proved to be laborious and a considerable amount of energy has to be expended to manufacture the guide wheels.

Lastly, aggregate of vehicles are known which have a fixation strap which is elastic under tension. This has the disadvantage that, when an aggregate of vehicles is started up, the trolley immediately following the towing device is pulled slightly out of the aggregate of vehicles by the towing device because the tractive force needed to set the aggregate of vehicles into motion is considerably greater than the force needed to extend the elastic strap slightly. As a result, an aggregate of vehicles of this type executes drifting rolling movements during motion.

The object of the invention is to improve an aggregate of vehicles of the initially mentioned type, avoiding the above-described disadvantages, so that it needs only a relatively simple and inexpensive fixation strap. The fixation strap should be formed so that the aggregate of vehicles can negotiate bends and curves without individual trolleys becoming detached or falling over or executing rolling movements.

The object is achieved by at least one further fixation device being arranged on the fixation strap between the two ends thereof.

The at least one further fixation device is fastened at intervals to individual trolleys of the aggregate of vehicles. This produces groups of trolleys held firmly together, the groups preferably being of equal length and being movable along curved paths like links of a chain. Accordingly, the aggregate of vehicles comprises small individual aggregates of vehicles which are supported against one another and thereby prevent individual trolleys from becoming detached or tipping over. Rolling of individual trolleys, in particular those at the end of the aggregate of vehicles, is also reliably prevented, as is uncontrolled swinging of the rear trolleys from side to side. As the fixation devices are formed by individual simple hooks and the fixation strap is the same as or similar to the strap of a vehicle safety belt, the fixation strap can be manufactured extremely cost-effectively. Within the context of the invention, the features described have proved extremely advantageous.

The invention will be further described with reference to the schematic drawing, wherein:

- Fig. 1 shows an aggregate of vehicles from the side;
- Fig. 2 shows a plan view of an aggregate of vehicles on a bend; and
- Fig. 3 shows a fixation strap.

Fig. 1 shows an aggregate of vehicles 1 with a plurality of nested, manually displaceable trolleys 2, 2a, 2b forming a row 3. A towing device 5 is coupled to the leading trolley 2a of the row 3. The arrow indicates the pulling direction. The row 3 of trolleys 2, 2a, 2b is spanned by a fixation strap 6 which is fastened to the front trolley 2a by means of a fixation device 10 at the front end 8 of the fixation strap 6 and to the rear trolley 2b by means of a fixation device 10 provided at the rear end

9. The row of trolleys 2, 2a, 2b is thus held together. At least one further fixation device 10 is provided on the fixation strap 6 between the two ends 8, 9 thereof. In the example, there are two further fixation devices 10. All the fixation devices 10 are preferably uniformly spaced and fastened to the trolleys 2, 2a, 2b so that a small separate mini-train 4 is formed in each case. The arrangement shown in fig. 1 produces three mini-trains 4 which are all connected in a row 3 by the fixation strap 6 and thereby form the aggregate of vehicles 1.

Fig. 2 shows a plan view of the aggregate of vehicles 1 shown in fig. 1 together with the towing device 5 in the process of travelling round a bend. The three mini-trains 4, which are held together by the fixation strap 6 and arranged at angles to one another, are clearly recognisable. Owing to the uniform spacing of the fixation devices 10, three mini-trains 4 of uniform length are formed. The arrow again indicates the pulling direction.

Fig. 3 shows a fixation strap 6. A fixation device 10 is provided at or near both ends 8, 9. Further fixation devices 10 are arranged between the ends 8, 9. It has proved advantageous to select the spacing between the fixation devices 10 so that each mini-train 4 is formed e.g. by five trolleys 2 or 2, 2a or 2, 2b. This does not, of course, exclude the possibility of selecting different spacing to form mini-trains 4 with more or fewer than five trolleys 2. In the example, the fixation devices 10 are formed by simple hooks 11 which are suspended e.g. from the pushing arrangements of the trolleys 2, 2a, 2b or from small baskets located below the pushing arrangements. Other advantageous points for fixing the fixation strap 6 may also be selected. This is dependent upon the form of the trolleys 2, 2a, 2b, which may be constructed preferably as luggage trolleys, as platform trolleys or also as known shopping trolleys and are fitted with or without a known handlebar brake. The fixation devices 10 can also be differently formed according to the respective intended purpose, for example as spring-loaded snap bolts of known construction. It is also possible to provide the fixation strap 6 with a tensioning

device 12, the same as or similar to that of a vehicle seat belt, in order that the fixation strap 6 may subsequently be tensioned when attached to a row 3 of trolleys 2, 2a, 2b. The strap 7 of the fixation strap 6 does not need to be extensible.

CLAIMS

1. An aggregate of vehicles (1) comprising a plurality of nested, manually displaceable trolleys (2, 2a, 2b) forming a row (3), a travelling towing device (5) intended to pull the row (3), and a fixation strap (6) provided for holding the row (3) together, wherein the two ends (8, 9) of the fixation strap (6) have a fixation device (10) for fastening the strap to the first and the last trolley (2a, 2b) of the row, characterised in that at least one further fixation device (10) is arranged on the fixation strap (6) between the two ends (8, 9) thereof.
2. An aggregate of vehicles according to claim 1, characterised in that the spacing of the fixation devices (10) is selected so that mini-trains (4) of equal length are formed when the fixation strap (6) is attached.
3. An aggregate of vehicles according to claim 1 or 2, characterised in that the fixation devices (10) are formed by hooks (11) or snap bolts.
4. An aggregate of vehicles according to any one of claims 1 to 3, characterised in that the strap (7) of the fixation strap (6) is not extensible.
5. An aggregate of vehicles according to any one of claims 1 to 4, characterised in that the fixation strap (6) is provided with a tensioning device (12).
6. An aggregate of vehicles according to any one of claims 1 to 5, characterised in that the trolleys (2, 2a, 2b) are fitted with or without a known handlebar brake.