Automatic Convoys

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PATENT STATUS: Filed

PRIORITY NUMBER: 102019000012120

PUBLICATION: -

PUBLISHED AS: WO

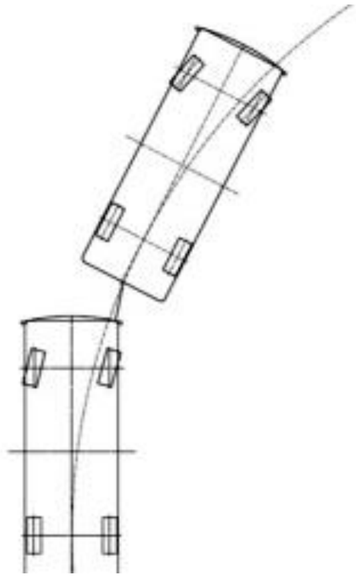
Invention

Logistics services and the road transport sector, including vehicle sharing companies, are constantly looking for technologies capable of making their operating mechanisms even safer and more efficient, in particular to avoid under-utilization of their fleet. which involves the sub-optimal reduction of the related fixed costs.

Likewise, the local authorities responsible for the organization of public road transport have long been extremely inefficient in the task of organizing - or having their own transport company organized - the public service actually necessary to support the real demand of users in the various time slots.

These problems have been particularly felt in the constancy of the Covid-19 pandemic, to the extent that these services have suffered, in one way or another, strong repercussions. The patent makes it possible to achieve a mechanical coupling between vehicles in order to guarantee the safety and operation of a convoy of up to 10 vehicles capable of circulating as if it were a single vehicle. This technology therefore allows a single driver in the leading vehicle to automatically control the vehicles connected to it, revolutionizing local transport systems with transport services otherwise not feasible. The patented mobile mechanical link pairs two vehicles and transforms them into a convoy that moves as a single unit. By means of an automatic steering system, the coupled vehicles are able to automatically synchronize with the movements of the leading vehicle, ensuring that the trajectory of the leading vehicle is respected. The mechanical connection also acts as a safeguard in case of malfunctions and a "harmonizer" of the motion. This system allows single vehicles to form convoys guided by the driver alone on the lead vehicle: free-flow car-sharing vehicles can be relocated from areas where they would be stationed for a long time to areas where there is demand, forming a convoy even for 10 vehicles and moving them with a single driver; the buses for the central sections of the transport lines with the highest demand can be extended without increasing the number of drivers; transport systems can be created in which small buses collect people on call in the suburbs and form a single convoy that crosses the center with a single driver. The coupling mechanism conceived and patented allows passenger transport companies to reorganize their service through convoys of vehicles that combine the maintenance of optimal passenger capacity and the needs of social distancing imposed by the COVID-19 pandemic and the containment measures adopted.

Drawings & pictures



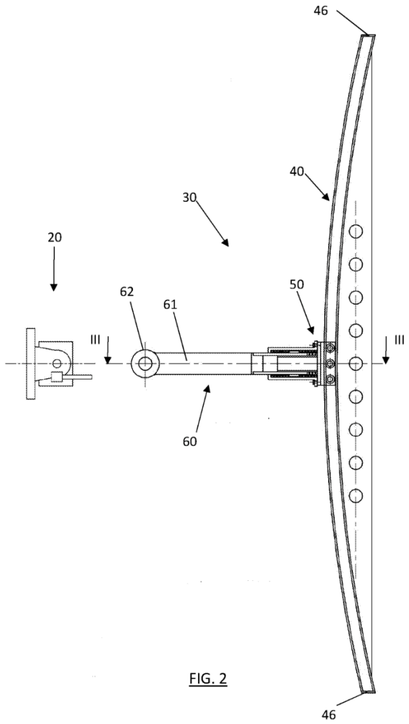


FIG. 2

Industrial applications

The patented technology can be implemented in public transport systems and optimal management of car-sharing fleets (or other types of fleets, such as those of logistics companies) through a business case created at vehicle manufacturers or companies of logistics, and conducting the last phase of R&D on the internal fleet of vehicles.

The system would become scalable in a short time, both because a working prototype has already been built with the use of small buses for local transport, and because the patented system is repeatable on even very varied types of fleets.

The advantages of the system allow the optimal allocation of vehicles belonging to a fleet, the improvement of the logistic options available to the fleet manager and the performance of more efficient services for the respective users (e.g. users of sharing vehicles, users of public transport).

Possible developments

The patent is available under an exclusive and non-exclusive license. The licenses are available for the entire remaining term of the patent titles.

The research group is available for new research activities in collaboration and on behalf of third parties, technical insights, scientific advice, also aimed at raising the TRL of technology.

The TRL of the invention is 5.

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