

RUBBISH COLLECTION VEHICLE WITH AN IMPROVED CONTAINER LIFTER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a National Stage Application of PCT International Application No. PCT/FR2013/052778 (filed on Nov. 19, 2013), under 35 U.S.C. §371, which claims priority to French Patent Application No. A 1261022 (filed on Nov. 20, 2012), which are each hereby incorporated by reference in their respective entirety.

TECHNICAL FIELD

[0002] This invention relates to a container lifter and a low-encumbrance rubbish collection bin that can be used for a rear loading rubbish collection vehicle.

BACKGROUND

[0003] There are many container lifter systems for rear loading rubbish collection vehicles (RCVS). French Patent Publication No. FR 1522813 A1 (Zöller) describes a container lifter allowing for the vertical raising of the container, but this raising is carried out by sliding on rails.

[0004] German Patent Publication No. DE 2920900 A1 (Stratmann), European Patent Publication No. EP 0122493 A1 (Schmitt), German Patent Publication No. DE 3500691 A1 (Schmitz), Slovenian Patent Publication No. SI 9900106 A, and European Patent Publication No. EP 0169558 A2 (Hermes) describe container lifters with four arms.

[0005] Patent application GS 2224261 (Allen) describes a container lifter that makes it possible to raise the container in vertical position, followed by a complete tipping. U.S. Pat. No. 5,513,937 (Automated Refuse Equipment) describes a container lifter which makes it possible to raise the container in vertical position and according to a substantially vertical trajectory, but the system is rather complex. U.S. Pat. No. 6,551,046 and WO 2000/66462 (Zöller) describe container lifters that allow for a vertical displacement with very little horizontal movement, but these systems are also of complex manufacture and operation.

[0006] French Patent Publication No. FR 1424273 (Zöller) and European Patent Publication No. EP 0820941 (C L G Inversiones) describe container lifters comprising a parallelogram geometry, which makes it possible to carry out the displacement of the container to be emptied in two phases: a phase of vertical raising followed by a tipping phase.

[0007] European Patent Publication No. EP 0512469 A1 (Waste Hoists) describes a compact container lifter that allows for a vertical raising of the container, then a tipping. It comprises two arms which make it possible to lift the container to its highest position, followed by a mechanical tipping. More precisely, this system comprises a main arm intended to be pivotably mounted on a frame about a first right-left axis (called here A1), intended to take a bottom position and a top position relative to a low-high direction, a reinforcement pivotably mounted on the main arm about a second right-left axis (called here A2), a seat mounted on the reinforcement and intended to receive a container so as to raise same, an auxiliary arm intended to be pivotably mounted on the frame about a third right-left axis (called here A3), and pivotably mounted on the reinforcement about a fourth right-

left axis (called here A4). In this system, the distance between the axes A2 and A4 is almost equal to the distance between the axes A1 and A3.

[0008] Furthermore, the distance between the axes A1 and A2 is almost equal to the distance between the axes A3 and A4. As such, this container lifter almost forms a parallelogram, which allows the reinforcement—and therefore also the seat—to always remain vertical. This has the disadvantage that it can be difficult to raise a container on the seat when the ground is on a slope towards the rear and the top of the container is towards the rear in relation to the bottom of the container. Indeed, the container is often attached to the seat from the top. It is then necessary for the loader to raise the container in order to nest it on the seat. Furthermore, as the reinforcement remains vertical in the top position of the main arms, it is necessary to provide a substantial pivoting of the seat in relation to the reinforcement, much higher than 90°. This requires substantial efforts and takes time.

[0009] Other container lifter systems are described in documents French Patent Publication No. FR 2461667 (SITA), U.S. Pat. No. 4,773,812 (Bayne Machine Works, Inc.) and French Patent Publication No. FR 2153053 (Sulo Eisenwerk).

[0010] In particular, the container lifter systems according to prior art are not well suited to be provided on rear loading RCVS of small size. Indeed, next to large-size RCVS, there is a real need for RCVS with a more reduced size. This need exists in particular for small municipalities, or in municipalities that have narrow and/or sloped streets, for example in mountain villages. In order to reduce the encumbrance of these vehicles and in order to adapt them to the operation in tight areas, it is sought to decrease the functional zone of the container lifter. In particular, it is desired that the projection of the functional zone over the horizontal be small, in order to not destabilize the RCV during the lifting of very heavy containers, and in order to reduce its encumbrance during operation. Moreover, such a container lifter system will have to be able to grasp waste bins of very different sizes. And finally, it must be of simple, light and robust construction. And finally, it would be advantageous for it to be able to be mounted, without undergoing any constructive modifications, on the side of the vehicle and not at the rear, as there is also a need for RCVS of small size with lateral loading.

[0011] In order to overcome at least partially the disadvantages of known container lifters, a container lifter for RCV with rear load is proposed, improved by a particular geometry. This container lifter is also suitable for a lateral loading RCV.

BACKGROUND

[0012] A first purpose of the invention is to propose a container lifter for RCV with rear loading that has a reduced encumbrance during operation.

[0013] Another purpose of the invention is to propose a container lifter for RCV with rear loading that is suitable for RCVS of small size, and which has a high degree of maneuverability.

[0014] Another purpose of the invention is to propose a container lifter for a RCV with rear loading that is suitable for RCVS of small size, and which has a high level of safety for the loaders. In particular, it is desired to prevent two risks: the crushing of the loader behind the container that is being raised (this risk is increased in the case of RCVS of small size that have to operate in alleys with a reduced lateral and/or rear