Patent Claims

1. Loading arm assembly (8) for a load-handling vehicle (1), having a main arm (9), having an auxiliary arm (11), having a crossbeam (19) and having two corner grippers (24, 25), wherein the auxiliary arm (11) is disposed on the main arm (9), wherein the crossbeam (19) is disposed on the end of the auxiliary arm (11), wherein the corner grippers (24, 25) are each disposed on the ends of the crossbeam (19), **characterized in that** the crossbeam (19) is pivotable relative to the auxiliary arm (11) about two axes (48, 49).

2. Loading arm assembly according to the preceding claim, **characterized in that** the crossbeam (19) is pivotable by means of a drive about two axes (48, 49) in particular in a motorized, pneumatic and / or hydraulic manner.

3. Loading arm assembly according to the preceding claim, **characterized in that** the crossbeam (19) is pivotable about a transverse axis (49), on the one hand, wherein the transverse axis (49) extends transversely, in particular perpendicularly, to the longitudinal axis of the crossbeam (19) and transversely, in particular perpendicularly, to the longitudinal axis (48) of the auxiliary arm (11), wherein the crossbeam (19) is pivotable about the longitudinal axis (48) of the auxiliary arm (11), on the other hand.

4. Loading arm assembly according to either of the preceding claims, **characterized in that** the crossbeam (19) and the auxiliary arm (11) are connected by way of a universal joint (27), wherein the universal joint (27) has a crosspiece (32)

having two axle stump pairs (34, 36, and 33, 35), wherein the auxiliary arm (11) is rotatably connected to one axle stump pair (34, 36), and the crossbeam (19) is rotatably connected to the other axle stump pair (33, 35).

5. Loading arm assembly according to one of the preceding claims, **characterized in that** the auxiliary arm (11) has a housing (28), wherein the crossbeam (19) engages through the housing, wherein one axle stump pair (34, 36) is rotatably disposed on the housing (28).

6. Loading arm assembly according to the preceding claim, **characterized in that** the axle stump pair (34, 36) that rotatably engages on the housing (28) extends perpendicularly to the crossbeam (19) and perpendicularly to the longitudinal direction of the auxiliary arm (11).

7. Loading arm assembly according to one of the preceding claims, **characterized in that** the main arm (9) is configured so as to be telescopic.

8. Loading arm assembly according to one of the preceding claims, **characterized in that** the auxiliary arm (11) is configured so as to be telescopic.

9. Loading arm assembly according to one of the preceding claims, **characterized in that** the crossbeam (19) has two crossbeam regions (20, 21), wherein each of the two crossbeam regions (20, 21) is configured so as to be telescopic.

10. Loading arm assembly according to one of the preceding claims, **characterized in that** the corner

grippers (24, 25) are pivotable about the longitudinal axis of the crossbeam (19).

11. Loading arm assembly according to one of the preceding claims, **characterized in that** furthermore a gripping hook (16) is disposed on the auxiliary arm (11).

12. Loading arm assembly according to the preceding claim, **characterized in that** the gripping hook (16) is disposed telescopically.

13. Loading arm assembly according to either of the preceding two claims, **characterized in that** the auxiliary arm (11) has two outer sleeves (12, 13), wherein the outer sleeves (12, 13) form a functional unit that is fastened to the main arm (9), wherein an internal part (14) having the crossbeam (19) and the respective corner grippers (24, 25) for gripping ISO containers (5) is disposed in the one outer sleeve (12), and the gripping hook (16) is disposed on another internal part (15) that is guided in the outer sleeve (13).

14. Load-handling vehicle (1) having a loading arm assembly (8) according to one of the preceding claims.

Patent Claims

1. A loading arm assembly for a load-handling vehicle, the loading arm assembly comprising:

a main arm,

an auxiliary arm connected with respect to the main arm,

a crossbeam connected with respect to an end of the auxiliary arm and is pivotable relative to the auxiliary arm about both a first axis extending perpendicularly to a longitudinal axis of the crossbeam, and a second axis extending perpendicularly to both the first axis and the longitudinal axis of the crossbeam, and

two corner grippers, each being disposed on opposite ends of the crossbeam;

wherein:

the crossbeam and the auxiliary arm are connected by way of a universal joint,

the universal joint has a crosspiece having two axle stump pairs,

the auxiliary arm is rotatably connected to one of the two axle stump pairs, and

the crossbeam is rotatably connected to the other of the two axle stump pairs.

2. The loading arm assembly according to claim 1, wherein the crossbeam is pivotable by means of a motorized, pneumatic and/or hydraulic drive about the first and second axes.

3. The loading arm assembly according to claim 1, wherein

the first axis extends perpendicularly to a longitudinal axis of the auxiliary arm.

4. The loading arm assembly according to claim 1, wherein:

the auxiliary arm has a housing,

the crossbeam engages through the housing, and

one axle stump pair is rotatably disposed on the housing.

5. The loading arm assembly according claim 4, wherein the axle stump pair that rotatably engages on the housing extends perpendicularly to the longitudinal axis of the crossbeam and perpendicularly to a longitudinal axis of the auxiliary arm.

6. The loading arm assembly according to claim 1, wherein the main arm is configured so as to be telescopic.

7. The loading arm assembly according to claim 1, wherein the auxiliary arm is configured so as to be telescopic.

8. The loading arm assembly according to claim 1, wherein:

the crossbeam has two crossbeam regions, and

each of the two crossbeam regions is configured so as to be telescopic.

9. The loading arm assembly according to claim 1, wherein the corner grippers are pivotable about the longitudinal axis of the crossbeam.

10. The loading arm assembly according to claim 1, further comprising a gripping hook disposed on the auxiliary arm.

11. The loading arm assembly according to claim 10, wherein the gripping hook is disposed telescopically.

12. The loading arm assembly according to claim 10, wherein:

the auxiliary arm comprises first and second outer sleeves and first and second internal parts,

the first and second outer sleeves form a functional unit that is fastened to the main arm,

the crossbeam and the two corner grippers are disposed on the first internal part that is guided in the first outer sleeve, and

the gripping hook is disposed on the second internal part that is guided in the second outer sleeve.

13. A load-handling vehicle comprising the loading arm assembly according to claim l.

14. The load-handling vehicle according to claim 13, wherein:
the auxiliary arm has a housing,
the crossbeam engages through the housing, and
one axle stump pair is rotatably disposed on the housing.

15. The load-handling vehicle according claim 14, wherein the axle stump pair that rotatably engages on the housing extends perpendicularly to the longitudinal axis of the crossbeam and perpendicularly to a longitudinal axis of the auxiliary arm.

16. The load-handling vehicle according to claim 13, wherein:
the crossbeam has two crossbeam regions, and
each of the two crossbeam regions is configured so as to be telescopic.

17. The load-handling vehicle according to claim 13, wherein the corner grippers are pivotable about the longitudinal axis of the crossbeam.

18. The load-handling vehicle according to claim 13, wherein the loading arm assembly further comprises a gripping hook disposed on the auxiliary arm.