CLAIMS

1. Lift drive for a rail-guided climbing system (10), which can be used, in particular, as a climbing formwork, climbing frame, climbing protective wall and/or a climbing working platform, comprising climbing shoes (32, 34, 36, 38) that can be arranged on a building (1) in a fixed manner, at least one climbing rail (18) which is guided by the climbing shoes (32, 34, 36, 38) and which can be integrated into a frame unit (11) or secured to the frame unit (11), a climbing lift rail (24) which can be moved relative to the climbing rail (18) and is guided by the climbing rail (18), wherein the climbing rail (18) and the climbing lift rail (24) can each be mounted in at least one of the climbing shoes (32, 34, 36, 38) in one direction and removed in a direction opposite said direction, and they can be moved in relation to the at least one of the climbing shoes (32, 34, 36, 38), and comprising a lift device (26) which is fixed to the climbing rail (18) at one end and to the climbing lift rail (24) at the other end in such a way that a length (3, 4, 5) of a stroke of the lift device (26) corresponds to a movement (3'; 3', 4'; 5', 5") of the climbing lift rail (24) relative to the climbing rail (18), wherein the length (4) of the stroke when the climbing lift rail (24) is mounted is sufficient to mount the climbing rail (18) such that it is offset by a mounting distance (20) of the climbing rail (18).

2. Lift drive according to claim 1, in which the length (4) of the lift is additionally sufficient to cover a mounting stroke distance (60) of the climbing lift rail (24).

3. Lift drive according to claim 1 or claim 2, in which the climbing shoe (34, 36), which guides the climbing rail (18) when the climbing lift rail (24) is mounted, is arranged above or below the climbing shoe (32), in which the climbing lift rail (24) is mounted.

4. Lift drive according to any of the preceding claims, in which the climbing shoe (32, 34, 36, 38) is designed for mounting either the climbing rail (18) or the climbing lift rail (24) or for mounting both the climbing rail (18) and the climbing lift rail (24).

5. Lift drive according to any of the preceding claims, in which the climbing lift rail (24) is mounted in the climbing shoe (32, 34, 36, 38) designed for mounting the climbing lift rail (24) by means of at least one latching/snap element and a plurality of retaining elements for holding the at least one latching/snap element or by means of a plurality of latching/snap elements and at least one retaining element for holding at least one latching/snap element of the plurality of latching/snap elements, wherein the one or more latching/snap elements are located on the climbing shoe (32, 34, 36, 38) designed for mounting the climbing lift rail (24)

and the one or more retaining elements are located on the climbing lift rail (24), or the one or more retaining elements are located on the climbing shoe (32, 34, 36, 38) designed for mounting the climbing lift rail (24) and the one or more latching/snap elements are located on the climbing lift rail (24).

6. Lift drive according to claim 5, in which the latching/snap element is designed as a movable element, which is designed in particular to be pivotable, foldable or moveable, in the form of a latch, in particular a locking latch or a climbing latch (32"), a detent, in particular a snap-in nose, or a bolt, in particular a locking bolt.

7. Lift drive according to claim 6, in which the latching/snap elements are present one behind the other on the climbing lift rail (24) in the form of climbing latches (32") or foldable snap-in noses.

8. Lift drive according to claim 6, in which the retaining elements are introduced into the climbing lift rail (24) one behind the other in the form of retaining recesses (61) for engaging with the at least one latching/snap element of the climbing shoe (32, 34, 36, 38), or retaining knobs can be applied, for example, welded, to the climbing lift rail (24).

9. Lift drive according to claim 8, in which the climbing lift rail (24) has the retaining recesses (61) on at least one side in such a way that the climbing lift rail (24) is present in the form of a profile with a hook-in contour, in particular with teeth, or, in particular, if there is only one latching/snap element on the climbing shoe (32, 34, 36, 38) designed for mounting the climbing lift rail (24), the climbing lift rail (24) can have the retaining recesses (61) in the form of completely edged holes, also called ears.

10. Lift drive according to claim 8 or claim 9, in which the climbing lift rail (24) is made, for example, pressed or embossed, of solid material or is present as a hollow profile, for example, in lasered form.

11. Lift drive according to any of claims 6 or 8 to 10, in which a latching/snap element in the form of a climbing latch (32") arranged in or on the climbing shoe (32, 34, 36, 38) is designed for mounting both the climbing rail (18) and the climbing lift rail (24).

12. Lift drive according to any of the preceding claims, in which the climbing rail (18) and the climbing lift rail (24) are arranged one inside the other or lying next to one another.

13. Lift drive according to any of the preceding claims, in which the climbing lift rail (24) has a rectangular profile or a cross-sectional profile in the form of an L, T or I, also called a double T.

14. Lift drive according to any of the preceding claims, in which the lift device (26) is designed as a hydraulic cylinder, a spindle drive or a rack and pinion drive, an actuator or a linear drive, wherein the spindle or rack and pinion drive can be driven, for example, by an electric motor.

15. Lift drive according to any of the preceding claims, in which the climbing rail (18) is designed to be pivotable by at least 4 degrees in relation to a vertical axis.

16. Rail-guided climbing system (10) with a lift drive according to any of the preceding claims, the frame unit (11), in which at least one of the climbing rails (18) is integrated or to which the at least one climbing rail (18) is secured, wherein a total length of the at least one climbing rail (18) is sufficient to guide the climbing rail (18) of at least two climbing shoes (32, 34, 36, 38) which are spaced apart from one another at a predetermined distance.

17. Rail-guided climbing system (10) according to claim 16, wherein the at least two climbing shoes (32, 34, 36, 38) are spaced apart from one another by a distance which corresponds approximately to a floor height (43, 47, 51, 55) of the building (1) or a fraction thereof.

18. Method for climbing a rail-guided climbing system (10), which can be used in particular as climbing formwork, climbing frame, climbing protective wall and/or a climbing working platform, with the lift drive according to any of claims 1 to 15 and the following steps:

- Extending the lift device (26) with the mounted climbing rail (18), wherein the climbing lift rail (24) is moved downwards relative to the climbing rail (18) until the climbing lift rail (24) is mounted,
- continuing the extension movement of the lift device (26), wherein a further downward movement of the climbing lift rail (24) is prevented by the mounting of the climbing lift rail (24) and the climbing rail (18) is removed and moved upwards by at least one mounting distance (20) of the climbing rail (20) relative to the climbing lift rail (24),

- retracting the lift device (26), wherein the climbing rail (18) is moved downwards relative to the climbing lift rail (24) until the climbing rail (18) is mounted moving upwards by at least the one mounting distance (20), and
- continuing the retraction movement of the lift device (26), wherein a further downward movement of the climbing rail (18) is prevented by the mounting of the climbing rail (18) and the climbing lift rail (24) is removed and moved upwards by at least the one mounting distance (20) of the climbing rail (18) relative to the climbing rail (18).

19. Method according to claim 18, in which the method steps according to claim 18 are defined as a cycle and the cycle is repeated until the frame unit (11) has reached a further or a plurality of further floors (43, 47, 51, 55) of the building (1) or a concreting portion of the building (1) to be concreted.

CLAIMS

1. A lift drive for a rail-guided climbing system (10), which can be used, in particular, as a climbing formwork, climbing frame, climbing protective wall and/or a climbing working platform, comprising climbing shoes (32, 34, 36, 38) that can be arranged on a building (1) in a fixed manner, at least one climbing rail (18) which is guided by the climbing shoes (32, 34, 36, 38) and which can be integrated into a frame unit (11) or secured to the frame unit (11), a climbing lift rail (24) which can be moved relative to the climbing rail (18) and is guided by the climbing rail (18), in which the climbing rail (18) and the climbing lift rail (24) can each be mounted in at least one of the climbing shoes (32, 34, 36, 38) in one direction and removed in a direction opposite said direction, and they can be moved in relation to the at least one of the climbing shoes (32, 34, 36, 38), and comprising a lift device (26) which is fixed to the climbing rail (18) at one end and to the climbing lift rail (24) at the other end in such a way that a length (3, 4, 5) of a stroke of the lift device (26) corresponds to a movement (3'; 3', 4'; 5', 5'') of the climbing lift rail (24) relative to the climbing rail (18), in which the length (4) of the stroke when the climbing lift rail (24) is mounted is sufficient to mount the climbing rail (18) such that it is offset by a mounting distance (20) of the climbing rail (18), in which the climbing lift rail (24) is mounted in the climbing shoe (32, 34, 36, 38) designed for mounting the climbing lift rail (24) by means of at least one latching/snap element and a plurality of retaining elements for holding the at least one latching/snap element or by means of a plurality of latching/snap elements and at least one retaining element for holding at least one latching/snap element of the plurality of latching/snap elements, in which the one or more latching/snap elements are located on the climbing shoe (32, 34, 36, 38) designed for mounting the climbing lift rail (24) and the one or more retaining elements are located on the climbing lift rail (24), or the one or more retaining elements are located on the climbing shoe (32, 34, 36, 38) designed for mounting the climbing lift rail (24) and the one or more latching/snap elements are located on the climbing lift rail (24).

2. A lift drive according to Claim 1, in which the length (4) of a stroke of the lift is additionally sufficient to cover a mounting stroke distance (60) of the climbing lift rail (24).

3. A lift drive according to Claim 1 or 2, in which the climbing shoe (34, 36), which guides the climbing rail (18) when the climbing lift rail (24) is mounted, is arranged above or below the climbing shoe (32), in which the climbing lift rail (24) is mounted.

4. A lift drive according to Claim 1, 2 or 3, in which the climbing shoe (32, 34, 36, 38) is designed for mounting either the climbing rail (18) or the climbing lift rail (24) or for mounting both the climbing rail (18) and the climbing lift rail (24).

5. A lift drive according to any preceding claim, in which the latching/snap element is designed as a movable element, which is designed in particular to be pivotable, foldable or moveable, in the form of a latch, in particular a locking latch or a climbing latch (32"), a detent, in particular a snap-in nose, or a bolt, in particular a locking bolt.

6. A lift drive according to Claim 5, in which the latching/snap elements are present one behind the other on the climbing lift rail (24) in the form of climbing latches (32") or foldable snap-in noses.

7. A lift drive according to Claim 5, in which the retaining elements are introduced into the climbing lift rail (24) one behind the other in the form of retaining recesses (61) for engaging with the at least one latching/snap element of the climbing shoe (32, 34, 36, 38), or retaining knobs can be applied, for example, welded, to the climbing lift rail (24).

8. A lift drive according to Claim 7, in which the climbing lift rail (24) has the retaining recesses (61) on at least one side in such a way that the climbing lift rail (24) is present in the form of a profile with a hook-in contour, in particular with teeth, or, in particular, if there is only one latching/snap element on the climbing shoe (32, 34, 36, 38) designed for mounting the climbing lift rail (24), the climbing lift rail (24) can have the retaining recesses (61) in the form of completely edged holes, also called ears.

9. A lift drive according to Claim 7 or 8, in which the climbing lift rail (24) is made, for example, pressed or embossed, of solid material or is present as a hollow profile, for example, in lasered form.

10. A lift drive according to any of Claims 5, 7, 8 or 9, in which a latching/snap element in the form of a climbing latch (32") arranged in or on the climbing shoe (32, 34, 36, 38) is designed for mounting both the climbing rail (18) and the climbing lift rail (24).

11. A lift drive according to any preceding claim, in which the climbing rail (18) and the climbing lift rail (24) are arranged one inside the other or lying next to one another.

12. A lift drive according to any preceding claim, in which the climbing lift rail (24) has a rectangular profile or a cross-sectional profile in the form of an L, T or I, also called a double T.

13. A lift drive according to any preceding claim, in which the lift device (26) is designed as a hydraulic cylinder, a spindle drive or a rack and pinion drive, an actuator or a linear drive, in which the spindle or rack and pinion drive can be driven, for example, by an electric motor.

14. A lift drive according to any preceding claim, in which the climbing rail (18) is designed to be pivotable by at least 4 degrees in relation to a vertical axis.

15. A rail-guided climbing system (10) with a lift drive according to any preceding claim, the frame unit (11), in which at least one of the climbing rails (18) is integrated or to which the at least one climbing rail (18) is secured, in which a total length of the at least one climbing rail (18) is sufficient to guide the or each climbing rail (18) of at least two climbing shoes (32, 34, 36, 38) which are spaced apart from one another at a predetermined distance.

16. A rail-guided climbing system (10) according to Claim 15, in which the at least two climbing shoes (32, 34, 36, 38) are spaced apart from one another by a distance which corresponds approximately to a floor height (43, 47, 51, 55) of the building (1) or a fraction thereof.

17. A method for climbing a rail-guided climbing system (10), which can be used in particular as climbing formwork, climbing frame, climbing protective wall and/or a climbing working platform, with a lift drive according to any of Claims 1 to 14 and the following steps:

- extending the lift device (26) with the mounted climbing rail (18), in which the climbing lift rail (24) is moved downwards relative to the climbing rail (18) until the climbing lift rail (24) is mounted,

- continuing the extension movement of the lift device (26), in which a further downward movement of the climbing lift rail (24) is prevented by the mounting of the climbing lift rail (24) and the climbing rail (18) is removed and moved upwards by at least one mounting distance (20) of the climbing rail (20) relative to the climbing lift rail (24),

- retracting the lift device (26), in which the climbing rail (18) is moved downwards relative to the climbing lift rail (24) until the climbing rail (18) is mounted moving upwards by at least the one mounting distance (20), and

- continuing the retraction movement of the lift device (26), in which a further downward movement of the climbing rail (18) is prevented by the mounting of the climbing rail (18) and the climbing lift rail (24) is removed and moved upwards by at least the one mounting distance (20) of the climbing rail (18) relative to the climbing rail (18).

18. A method according to Claim 17, in which the method steps according to Claim 17 are defined as a cycle and the cycle is repeated until the frame unit (11) has reached a further or a plurality of further floors (43, 47, 51, 55) of the building (1) or a concreting portion of the building (1) to be concreted.