CLAIMS

1. Method for moving a heavy load (L), in which method the heavy load (L) is lifted and/or lowered with an elevator, which elevator comprises an elevator car (1) and a hoisting machine (2), which hoisting machine (2) is arranged to move the elevator car (1) from one level to another in the normal operation of the elevator, in which method the heavy load (L) is moved to be supported by the elevator car and the elevator car is moved until the load (L) is at the desired height, and the load (L) is removed from the support of the elevator car, **characterized** in that in the method a hoist (3) that does not belong to the aforementioned hoisting machine (2) is temporarily connected to the elevator car (1) for the purpose of moving the heavy load (L), and the elevator car, which supports the heavy load (L), is moved by means of the aforementioned hoist (3) until the heavy load (L) is at the desired height, and the heavy load (L) is removed from the support of the elevator car (1).

2. Method according to any of the preceding claims, **characterized** in that the force pulling the elevator car (1), which is supporting the heavy load (L), upwards is taken at least during the moving of the elevator car (1) partly from the hoist (3) temporarily connected to the elevator car (1) and partly from the counterweight (5) connected to the elevator car (1) via the hoisting roping (4) of the elevator.

3. Method according to any of the preceding claims, **characterized** in that when moving the elevator car by means of a hoist (3), which elevator car is supporting the heavy load (L), a force pulling the elevator car

(1) upwards is not exerted on the elevator car (1) with the hoisting machine (2).

4. Method according to any of the preceding claims, **characterized** in that the weight of the heavy load (L) is greater than the nominal load of the elevator.

5. Method according to any of the preceding claims, **characterized** in that the heavy load (L) is the transformer of a building.

6. Method according to any of the preceding claims, **characterized** in that the hoist (3) is connected to the elevator car (1) such that the lifting capacity produced by it is in the temporary lifting arrangement greater than the lifting capacity that the hoisting machine (2) produces in the lifting arrangement of normal operation.

7. Method according to any of the preceding claims, **characterized** in that before the hoist (3) that does not belong to the aforementioned hoisting machine (2) is temporarily connected to the elevator car (1) for the purpose of moving the heavy load (L), the elevator is in normal operation, in which normal operation the elevator car is moved with the hoisting machine (2) from one floor to another.

8. Method according to any of the preceding claims, **characterized** in that before the heavy load (L) is moved to be supported by the elevator car, the elevator is removed from normal operation, in which case e.g. the reacting of the elevator to landing calls is prevented.

9. Method according to any of the preceding claims, **characterized** in that when the heavy load (L) or the heavy loads have been moved to the desired height/desired heights and moved away from the support of the elevator car, the hoist (3) that does not belong to the aforementioned hoisting machine (2) is detached from the elevator car (1) and the elevator is returned to normal operation, in which normal operation the elevator car is moved with the hoisting machine (2) from one floor to another and the elevator car (1) is available for passengers to use.

10. Method according to any of the preceding claims, **characterized** in that after the heavy load (L) has been moved away from the support of the elevator car (1) and after detachment of the hoist (3) from the elevator car (1), the elevator is switched back to normal operating mode.

11. Method according to any of the preceding claims, **characterized** in that the hoist (3) is connected to the elevator car (1) before moving the heavy load (L) to be supported by the elevator car (1).

12. Method according to any of the preceding claims, **characterized** in that before moving the heavy load (L) to be supported by the elevator car (1), the free plays of the hoist (3) connected to the elevator car (1) are removed, e.g. by lifting until the hoisting rope is taut, via which hoisting rope the hoist (3) is connected to the elevator car (1).

13. Method according to any of the preceding claims, **characterized** in that before transferring the machinery brake to the non-braking position an upwardly-directed force is exerted on the elevator car

(1) with the hoist (3), which force is preferably in its magnitude essentially the magnitude of the imbalance of the elevator.

14. Method according to any of the preceding claims, **characterized** in that when the heavy load (L) is being supported by the elevator car (1) before transferring the machinery brake to the non-braking position, an upwardly-directed force is exerted on the elevator car (1) with the hoist (3), which force is increased in steps.

15. Method according to any of the preceding claims, **characterized** in that before transferring the machinery brake to the non-braking position, an upwardly-directed force is exerted on the elevator car (1) with the hoist (3), which force is increased in steps by loosening the machinery brake intermittently and/or by intermittently driving the hoisting device upwards.

16. Method according to any of the preceding claims, **characterized** in that after the machinery brake has been transferred to the non-braking position the elevator car (1) is moved with the hoist (3) until the heavy load (L) is at the desired height.

17. Method according to any of the preceding claims, **characterized** in that the overspeed governor arrangement of the elevator is in use when the elevator car (1) is moved by means of a hoist (3) while the heavy load (L) is being supported by the elevator car (1), which overspeed governor arrangement is arranged to start emergency braking to slow the movement of the elevator car (1) after the limit value of the maximum permitted speed of the elevator car (1)

is exceeded, which limit value of the maximum permitted speed of the overspeed governor arrangement is preferably lower than in the normal operation of the elevator, when the elevator car (1) is moved by means of the hoisting machine (2) without a hoist (3).

18. Method according to any of the preceding claims, **characterized** in that when the heavy load (L) has been removed from the support of the elevator car (1), the next heavy load is moved to be supported by the elevator car (1), e.g. from the level to which the heavy load (L) has been moved in the previous phase, and the elevator car, which supports the next heavy load, is moved by means of the aforementioned hoist (3) until the next heavy load is at the desired height, and the next heavy load is removed from the support of the elevator car.

19. Elevator arrangement for moving a heavy load (L) by lifting and/or lowering the heavy load (L) with an elevator, which elevator comprises an elevator car (1) and a hoisting machine (2), which hoisting machine (2) is arranged to move the elevator car (1) from one level to another in the normal operation of the elevator, **characterized** in that a hoist (3) that does not belong to the aforementioned hoisting machine (2) is temporarily connected to the elevator car (1) for the purpose of moving the heavy load (L), by means of which hoist (3) the elevator car (1) is arranged to be moved until the heavy load (L) is at the desired height.

20. Elevator arrangement according to any of the preceding claims, **characterized** in that the weight of the heavy load (L) is greater than the nominal load of the elevator.

21. Elevator arrangement according to any of the preceding claims, **characterized** in that the hoist (3) is connected to the elevator car (1) with a 1:2 lifting ratio.

CLAIMS

1. Method for moving a heavy load (L), in which method the heavy load (L) is lifted and/or lowered with an elevator, which elevator comprises an elevator car (1) and a hoisting machine (2), which hoisting machine (2) is arranged to move the elevator car (1) from one level to another in the normal operation of the elevator, in which method the heavy load (L) is moved to be supported by the elevator car and the elevator car is moved until the load (L) is at the desired height, and the load (L) is removed from the support of the elevator car, **characterized** in that in the method a hoist (3) that does not belong to the aforementioned hoisting machine (2) is temporarily connected to the elevator car (1) for the purpose of moving the heavy load (L), and the elevator car, which supports the heavy load (L), is moved by means of the aforementioned hoist (3) until the heavy load (L) is at the desired height, and the heavy load (L) is removed from the support of the elevator car (1), wherein before transferring the machinery brake to the non-braking position an upwardly-directed force is exerted on the elevator car (1) with the hoist (3), which force is preferably in its magnitude essentially the magnitude of the imbalance of the elevator, and wherein before moving the heavy load (L) to be supported by the elevator car (1), the free plays of the hoist (3) connected to the elevator car (1) are removed, e.g. by lifting until the hoisting rope is taut, via which hoisting rope the hoist (3) is connected to the elevator car (1).

2. Method according to any of the preceding claims, **characterized** in that the force pulling the elevator

car (1), which is supporting the heavy load (L), upwards is taken at least during the moving of the elevator car (1) partly from the hoist (3) temporarily connected to the elevator car (1) and partly from the counterweight (5) connected to the elevator car (1) via the hoisting roping (4) of the elevator.

3. Method according to any of the preceding claims, **characterized** in that when moving the elevator car by means of a hoist (3), which elevator car is supporting the heavy load (L), a force pulling the elevator car (1) upwards is not exerted on the elevator car (1) with the hoisting machine (2).

4. Method according to any of the preceding claims, **characterized** in that the weight of the heavy load (L) is greater than the nominal load of the elevator.

5. Method according to any of the preceding claims, **characterized** in that the heavy load (L) is the transformer of a building.

6. Method according to any of the preceding claims, **characterized** in that the hoist (3) is connected to the elevator car (1) such that the lifting capacity produced by it is in the temporary lifting arrangement greater than the lifting capacity that the hoisting machine (2) produces in the lifting arrangement of normal operation.

7. Method according to any of the preceding claims, **characterized** in that before the hoist (3) that does not belong to the aforementioned hoisting machine (2) is temporarily connected to the elevator car (1) for the purpose of moving the heavy load (L), the elevator is in normal operation, in which normal operation the

elevator car is moved with the hoisting machine (2) from one floor to another.

8. Method according to any of the preceding claims, **characterized** in that before the heavy load (L) is moved to be supported by the elevator car, the elevator is removed from normal operation, in which case e.g. the reacting of the elevator to landing calls is prevented.

9. Method according to any of the preceding claims, **characterized** in that when the heavy load (L) or the heavy loads have been moved to the desired height/desired heights and moved away from the support of the elevator car, the hoist (3) that does not belong to the aforementioned hoisting machine (2) is detached from the elevator car (1) and the elevator is returned to normal operation, in which normal operation the elevator car is moved with the hoisting machine (2) from one floor to another and the elevator car (1) is available for passengers to use.

10. Method according to any of the preceding claims, **characterized** in that after the heavy load (L) has been moved away from the support of the elevator car (1) and after detachment of the hoist (3) from the elevator car (1), the elevator is switched back to normal operating mode.

11. Method according to any of the preceding claims, **characterized** in that the hoist (3) is connected to the elevator car (1) before moving the heavy load (L) to be supported by the elevator car (1).

12. Method according to any of the preceding claims, **characterized** in that when the heavy load (L) is being supported by the elevator car (1) before transferring the machinery brake to the non-braking position, an upwardly-directed force is exerted on the elevator car (1) with the hoist (3), which force is increased in steps.

13. Method according to any of the preceding claims, **characterized** in that before transferring the machinery brake to the non-braking position, an upwardly-directed force is exerted on the elevator car (1) with the hoist (3), which force is increased in steps by loosening the machinery brake intermittently and/or by intermittently driving the hoisting device upwards.

14. Method according to any of the preceding claims, **characterized** in that after the machinery brake has been transferred to the non-braking position the elevator car (1) is moved with the hoist (3) until the heavy load (L) is at the desired height.

15. Method according to any of the preceding claims, **characterized** in that the overspeed governor arrangement of the elevator is in use when the elevator car (1) is moved by means of a hoist (3) while the heavy load (L) is being supported by the elevator car (1), which overspeed governor arrangement is arranged to start emergency braking to slow the movement of the elevator car (1) after the limit value of the maximum permitted speed of the elevator car (1) is exceeded, which limit value of the maximum permitted speed of the overspeed governor arrangement is preferably lower than in the normal operation of

the elevator, when the elevator car (1) is moved by means of the hoisting machine (2) without a hoist (3).

16. Method according to any of the preceding claims, **characterized** in that when the heavy load (L) has been removed from the support of the elevator car (1), the next heavy load is moved to be supported by the elevator car (1), e.g. from the level to which the heavy load (L) has been moved in the previous phase, and the elevator car, which supports the next heavy load, is moved by means of the aforementioned hoist (3) until the next heavy load is at the desired height, and the next heavy load is removed from the support of the elevator car.

17. Elevator arrangement for moving a heavy load (L) by lifting and/or lowering the heavy load (L) with an elevator, which elevator comprises an elevator car (1) and a hoisting machine (2), which hoisting machine (2) is arranged to move the elevator car (1) from one level to another in the normal operation of the elevator, **characterized** in that a hoist (3) that does not belong to the aforementioned hoisting machine (2) is temporarily connected to the elevator car (1) for the purpose of moving the heavy load (L), by means of which hoist (3) the elevator car (1) is arranged to be moved until the heavy load (L) is at the desired height, wherein before transferring the machinery brake to the non-braking position an upwardly-directed force is exerted on the elevator car (1) with the hoist (3), which force is preferably in its magnitude essentially the magnitude of the imbalance of the elevator, and wherein before moving the heavy load (L) to be supported by the elevator car (1), the free plays of the hoist (3) connected to the elevator car (1) are removed, e.g. by lifting until the hoisting

rope is taut, via which hoisting rope the hoist (3) is connected to the elevator car (1).

18. Elevator arrangement according to claim 17, **characterized** in that the weight of the heavy load (L) is greater than the nominal load of the elevator.

19. Elevator arrangement according to claim 17 or 18, **characterized** in that the hoist (3) is connected to the elevator car (1) with a 1:2 lifting ratio.