CLAIMS

1. A pile driving system (1), comprising a lifting element (2) attached or attachable to a hoisting cable (3) of a crane (4), a pile driver (6) which is mounted to the lifting element (2) and movable with respect to the lifting element (2) in a pile driving direction (X) and a brake for braking a movement of the pile driver (6) with respect to the lifting element (2), **characterized in that** the brake comprises cooperating sliding members (8, 10, 18, 19, 23, 24) at the lifting element (2) and the pile driver (6), which sliding members are pressed against each other in a direction extending transversely to their mutual sliding direction (X).

2. The pile driving system (1) according to claim 1, wherein the sliding members (8, 10, 18, 19, 23, 24) are configured such and the force between the sliding members (8, 10, 18, 19, 23, 24) is selected such that the brake keeps the pile driver (6) at a fixed position with respect to the lifting element (2) by static friction between the sliding members (8, 10, 18, 19, 23, 24) up to a predetermined force level of the pile driver (6) on the lifting element (2) in their mutual sliding direction (X).

3. The pile driving system (1) according to claim 2, wherein the predetermined force level is at least 1.1, and preferably at least 1.4, times the weight of the pile driver (6).

4. The pile driving system (1) according to one of the claims 1-3, wherein at least one of the sliding members (8, 10, 18, 19, 23, 24) is pressed against the other by a hydraulic cylinder.

5. The pile driving system (1) according to one of the claims 1-3, wherein at least one of the sliding members (18) is pressed against the other by a spring (20).

6. The pile driving system (1) according to one of the claims 1-3, wherein at least one of the sliding members (8, 10, 18, 19, 23, 24) is made of a resilient material, for example rubber.

7. The pile driving system (1) according to any one of the preceding claims, wherein one of the pile driver (6) and the lifting element (2) is provided with a rod (8, 24) extending in the pile driving direction (X) and guided by the other one of the pile driver (6) and the lifting element (2), wherein said rod (8, 24) forms the sliding member at said one of the pile driver (6) and the lifting element (2) which cooperates with the sliding member (10, 23) at said other one of the pile driver (6) and the lifting element (2).

8. The pile driving system (1) according to claim 7, wherein the sliding member at said other one of the pile driver (6) and the lifting element (2) comprises a pair of friction blocks (10, 23) which engage the rod (8) at opposite sides thereof.

9. The pile driving system (1) according to claim 8, wherein the rod (8) is tapered such that the distance between the friction blocks (10, 23) increases during a movement of the pile driver (6) away from the lifting element (2).

10. The pile driving system (1) according to any one of the claims 1-6, wherein the lifting element (2) comprises a cylindrical outer surface which is at least partly accommodated within a cylindrical inner surface of the pile driver (6), wherein one of said inner surface and said outer surface is provided with at least a protruding rib (19) extending in the pile driving direction (X) and the other one of said inner surface and said outer surface is provided with a pair of friction blocks (18) which exert a clamping force on the rib (19).

11. The pile driving system (1) according to claim 10, wherein the rib (19) is tapered such that the distance between the friction blocks (18) increases during a movement of the pile driver (6) away from the lifting element (2).

12. The pile driving system (1) according to any one of the preceding claims, wherein the mutual sliding direction of the sliding members (8, 10, 18, 19, 23, 24) and the pile driving direction (X) are the same.