CLAIMS

1. A composite lifting stage, comprising a main stage, sub-stages and a main control system, characterized in that, the main stage comprises a base structure, fixed guiding means for the main stage, and driving means for the main stage, wherein the base structure is a steelwork, the fixed guiding means for the main stage are arranged at the both ends of the base structure, and the driving means for the main stage comprises symmetrically arranged hydraulic cylinders and hydraulic drivers; the hydraulic cylinders are secured to a primary truss under the base structure on their top, the base structure is supported and driven to move vertically using hydraulic jacking; the hoistable sub-stages are fixed on the platform surface of the main stage; while the main stage moves vertically, the sub-stages relatively move in a vertical direction, or, otherwise, the sub-stages move independently; and the sub-stages can move either all synchronously, separately, or in group.

2. The composite lifting stage according to claim 1, characterized in that the fixed guiding means for the main stage comprises a fixed support and guide rails arranged thereon, while the base structure has its both ends designed to have guide shoes matching with the guide rails.

3. The composite lifting stage according to claim 1, characterized in that the sub-stages have a sub-stage supporting structure, a sub-stage framework structure, and sub-stage driving means, wherein the sub-stage supporting structure is fixed on the platform surface of the base structure, the sub-stage framework structure is situated outside the sub-stage supporting structure, the sub-stage framework structure is rectangle-shaped, on frames of whose four inner corners guiding wheels are secured, at four outer corners of the sub-stage supporting structure guiding rails are arranged to match the guiding wheels, and the sub-stage driving means is mounted on the platform surface of the base structure to drive using a winch with steel wire ropes which are connected to four frameworks of the sub-stage framework structure.

4. The composite lifting stage according to claim 3, characterized in that both inner sides of each corner of the sub-stage framework structure are provided with the guiding

wheels, and both outer sides of each corner of the sub-stage supporting structure are provided with the guiding rails.

5. The composite lifting stage according to claim 3 or 4, characterized in that a motor of the winch with steel wire ropes is arranged in the middle position, whose power is divided into two parts by means of a power division gear box and transmission shafts, and then distributed to an end steel wire rope roller through a double-stage reduction box.

6. The composite lifting stage according to claim 3, characterized in that four sides of the sub-stage framework structure all have a depth of 150 mm, on which four sides LED screens are mounted.

7. The composite lifting stage according to claim 1, characterized in that the driving means for lifting the main stage uses 8 hydraulic cylinders which are balanced by means of position encoders and load sensors, travel switches are installed to set up limited positions to which the lifting stage can reach and different positions within the travel range for the lifting stage to stop, and safety side detector devices are arranged beneath lateral sides of the base structure.

8. The composite lifting stage according to claim 1, characterized in that the main stage has a length of 18m to 36m, a width of 3m to 6m, and a lifting travel range of the main stage of 15.5m.

9. The composite lifting stage according to claim 8, characterized in that the sub-stages are separated into two rows with 11 in each row, a cross section of 3m×3m, and a lifting travel range with respect to the main stage of 4m.

10. The composite lifting stage according to claim 1, characterized in that the sub-stages are secured on the platform surface of the main stage in a chessboard-like manner.

CLAIMS

1. A composite lifting stage, comprising a main stage, sub-stages and a main control system, characterized in that, the main stage comprises a base structure, fixed guiding means for the main stage, and driving means for the main stage, wherein the base structure is a steelwork, the fixed guiding means for the main stage are arranged at the both ends of the base structure, and the driving means for the main stage comprises symmetrically arranged hydraulic cylinders and hydraulic drivers; the hydraulic cylinders are secured to a primary truss under the base structure on their top, the base structure is supported and driven to move vertically using hydraulic jacking; the hoistable sub-stages are fixed on the platform surface of the main stage; while the main stage moves vertically, the sub-stages relatively move in a vertical direction, or, otherwise, the sub-stages move independently; and the sub-stages can move either all synchronously, separately, or in group, wherein on sides of each sub-stages LED screens are mounted, and on the LED screens video can be played during performance according to story.

2. The composite lifting stage according to claim 1, characterized in that the fixed guiding means for the main stage comprises a fixed support and guide rails arranged thereon, while the base structure has its both ends designed to have guide shoes matching with the guide rails.

3. The composite lifting stage according to claim 1, characterized in that the sub-stages have a sub-stage supporting structure, a sub-stage framework structure, and sub-stage driving means, wherein the sub-stage supporting structure is fixed on the platform surface of the base structure, the sub-stage framework structure is situated outside the sub-stage supporting structure, the sub-stage framework structure is rectangle-shaped, on frames of whose four inner corners guiding wheels are secured, at four outer corners of the sub-stage supporting structure guiding rails are arranged to match the guiding wheels, and the sub-stage driving means is mounted on the platform surface of the base structure to drive using a winch with steel wire ropes which are connected to four frameworks of the sub-stage framework structure.

4. The composite lifting stage according to claim 3, characterized in that both inner

sides of each corner of the sub-stage framework structure are provided with the guiding wheels, and both outer sides of each corner of the sub-stage supporting structure are provided with the guiding rails.

5. The composite lifting stage according to claim 3 or 4, characterized in that a motor of the winch with steel wire ropes is arranged in the middle position, whose power is divided into two parts by means of a power division gear box and transmission shafts, and then distributed to an end steel wire rope roller through a double-stage reduction box.

6. The composite lifting stage according to claim 3, characterized in that four sides of the sub-stage framework structure all have a depth of 150 mm, on which four sides the LED screens are mounted.

7. The composite lifting stage according to claim 1, characterized in that the driving means for lifting the main stage uses 8 hydraulic cylinders which are balanced by means of position encoders and load sensors, travel switches are installed to set up limited positions to which the lifting stage can reach and different positions within the travel range for the lifting stage to stop, and safety side detector devices are arranged beneath lateral sides of the base structure.

8. The composite lifting stage according to claim 1, characterized in that the main stage has a length of 18m to 33m, a width of 3m to 6m, and a lifting travel range of the main stage of 15.5m.

9. The composite lifting stage according to claim 8, characterized in that the sub-stages are separated into two rows with 11 in each row, a cross section of 3m×3m, and a lifting travel range with respect to the main stage of 4m.

10. The composite lifting stage according to claim 1, characterized in that the sub-stages are secured on the platform surface of the main stage in a chessboard-like manner.