CLAIMS

1. A method for inspecting objects stored in a three-dimensional warehouse, comprising the following steps:

under a set condition, controlling a shuttle to move to an inspection position;

calculating whether an attitude of a stored object corresponding to the inspection position has been changed; and

if the attitude of the stored object has been changed, using the shuttle to take away the stored object and then place the stored object back to its original position;

wherein the inspection positions are positions within the passage, and the stored objects are placed on at least one side of each inspection position;

wherein the number of the stored objects located on each side of the inspection position is two or more, and whether the attitudes of the plurality of stored objects located on one side of the inspection position have changed is determined by the following step:

if the attitude of a stored object located on the one side of the passage has not changed, determining that the attitude of each stored objects located on a side of the stored object away from the passage has not changed.

2. The method for inspecting objects stored in a three-dimensional warehouse according to claim 1, wherein whether the attitude of the stored object corresponding to the inspection position has been changed is calculated by the following steps:

calculating deviation amounts and/or a tilt angle of the stored object;

determining whether neither the deviation amounts nor the tilt angle exceeds a set value; and

if any of the deviation amounts and the tilt angle exceeds the set value, determining that the attitude of the stored object has been changed.

3. The method for inspecting objects stored in a three-dimensional warehouse according to claim 2, wherein the tilt angle of the stored object is calculated by the following steps:

detecting a first distance between a first corner of the stored object corresponding to the inspection position and the shuttle, a second distance between a second corner of the stored object

and the shuttle, and a third distance the shuttle moves from corresponding to the first corner of the stored object to corresponding to the second corner of the stored object; and

calculating the tilt angle of the stored object based on the first distance, the second distance and the third distance.

4. The method for inspecting objects stored in a three-dimensional warehouse according to claim 3, wherein the deviation amounts of the stored object are calculated by the following step:

calculating the deviation amounts of the stored object based on coordinates of the shuttle in a coordinate system of the stored object under inspection, dimensions of the stored object, the tilt angle of the stored object, the first distance, and the second distance.

5. The method for inspecting objects stored in a three-dimensional warehouse according to claim 3 or 4, wherein the first corner is a corner of the stored object facing toward a passage where the shuttle is located, and the first corner is a corner where the shuttle passes for the first time.

6. The method for inspecting objects stored in a three-dimensional warehouse according to any one of claims 3 to 5, wherein the second corner is a corner of the stored object facing toward the passage where the shuttle is located, and the second corner is a corner where the shuttle passes for the second time.

7. The method for inspecting objects stored in a three-dimensional warehouse according to any one of claims 3 to 6, wherein a same distance detection element is configured to detect the first distance and the second distance.

8. The method for inspecting objects stored in a three-dimensional warehouse according to claim 7, wherein the distance detection element comprises a laser ranging module.

9. The method for inspecting objects stored in a three-dimensional warehouse according to any one of claims 3 to 8, wherein each side of the shuttle is provided with a distance detection element, and each distance detection element is configured to detect stored objects corresponding to

inspection positions on one side of the passage.

10. The method for inspecting objects stored in a three-dimensional warehouse according to claim 1, further comprising the following steps:

if the attitude of a stored object located on one side of the passage has been changed, taking the stored object located in the row;

determining whether the attitude of the stored object located in the next row has been changed; and

repeating the above steps until determination for every stored object on the one side of the passage is completed.

11. The method for inspecting objects stored in a three-dimensional warehouse according to claim 1 or 10, further comprising the following steps:

using the shuttle to take away a stored object, in the last row, the attitude of which is determined to have changed, and then place the same back to its original position to implement attitude correction of the stored object; and

placing back the stored objects located on the one side of the passage one by one to complete attitude correction of every stored object on the one side of the passage.

12. The method for inspecting objects stored in a three-dimensional warehouse according to any one of claims 1 to 11, further comprising the following step:

after attitude correction of every stored object corresponding to the inspection position is completed, running the shuttle to the next inspection position with respect to the inspection position to accomplish attitude determination of stored objects for every inspection position.

13. The method for inspecting objects stored in a three-dimensional warehouse according to any one of claims 1 to 12, wherein the set condition is when the shuttle does not receive an operation command.

14. A system for inspecting objects stored in a three-dimensional warehouse, comprising:

a shuttle;

a controller mounted on the shuttle;

a distance detection element mounted on the shuttle and communicatively connected to the controller to detect a distance from the shuttle to a stored object to be inspected;

a positioning element mounted on the shuttle and communicatively connected to the controller so that the shuttle stops to a set inspection position; and

a displacement detection element mounted on the shuttle and communicatively connected to the controller to detect a third distance moved by the shuttle.

15. The system for inspecting objects stored in a three-dimensional warehouse according to claim 14, wherein the distance detection element is mounted on each side in a width direction of the shuttle.