

FORMWORK CONSTRUCTION METHOD FOR INNER WALL AND DEVICE THEREOF

BACKGROUND OF THE INVENTION

Field of the Invention

5 The present invention relates to an interior wall formwork, and more particularly to a formwork construction method for inner wall and device thereof.

Description of the Prior Art

 During construction of a building, the interior and exterior wall
10 formworks should be erected in advance and set apart at a specific distance, so as to allow the concrete to be poured in the space between the interior and exterior wall formworks. After the concrete hardens, the exterior wall formwork can be removed easily without the constraint of working space. However, the removal of the interior wall formwork is difficult due to the
15 constraint of space and usually requires the worker to pry the formwork open, and thus it will likely generate side pressure against the wall that hasn't hardened completely, causing damage to the wall. The removal of the interior wall generally needs 24 hours after the concrete hardens, and it is really time consuming.

20 The present invention has arisen to mitigate and/or obviate the afore-described disadvantages.

SUMMARY OF THE INVENTION

 The primary objective of the present invention is to provide an

interior wall formwork construction method for enabling the interior wall formwork to be constructed more easily and quickly.

The secondary objective of the present invention is to provide an interior wall formwork construction device that is easily operated and simple
5 structured.

An interior wall formwork construction method in accordance with the present invention comprises the steps of: stripping the formwork, hoisting the formwork, supporting and spreading the formwork. The interior wall formwork 1 is hoisted by a crane.

10 The stripping and spreading of the interior wall formwork are achieved by a transverse motion machine whose drive part doesn't move with the formwork, and the driven part is connected to the formwork and makes the formwork move transversely.

The interior wall formwork is supported by a bracket that stands on a
15 bearing block of the interior wall and is hinged to the lower portion of the interior wall formwork.

The stripping of the interior wall formwork is achieved by the rotation of the driving part of the transverse motion machine and the linear movement of the driven part.

20 After stripping, the interior wall formwork can be hoisted, and during the hoisting of the interior wall formwork, the bracket will spread automatically and negotiate the obstacles on the interior wall, and will stand at a higher bearing block on the interior wall after reaching the predetermined

position.

After being well positioned, the interior wall formwork can be spreaded by an opposite rotation of the driving part of the transverse motion machine and an opposite linear movement of the driven part.

- 5 After spreading to a predetermined position, the interior wall formwork can be connected to the exterior wall formwork, so as to allow the pouring of concrete.

The bracket is hinged to a bottom of the interior formwork.

- The transverse motion machine is a screw driven device comprising a
10 screw shaft and a nut, and the nut is connected to the interior wall formwork via a connecting board, between the nut and the connecting board is disposed an adjusting mechanism that comprises a press board and a connecting member, the nut is formed at an end thereof with a flange, the connecting board is mounted on an outer periphery of the nut and a side of the connecting
15 board is located at a side of the flange, the press board is mounted on the screw shaft, a side of the press board is located at another side of the flange, and the press board is connected to the connecting board via the connecting member.

- The screw shaft is provided with an abutting assembly that is used to
20 abut against an interior wall, and the abutting assembly includes a left block and a right block that are disposed at both sides of a flange formed at the end of the screw shaft.

An upper end of the interior wall formwork is connected to a

transverse motion machine via another connecting member, and a drive part of transverse motion machine is connected to the screw shaft via a driven part, the transverse motion machine is a screw driven device comprising a screw shaft and a nut, the upper end of the interior wall formwork is mounted to the
5 nut by the another connecting member.

The bracket is provided with an automatic spreading device for spreading the bracket outward, and the spreading device includes moment driven device, elastic-force driven device, manpower driven device, and electric driven device.

10 A lower end of the bracket is fixed to the bearing block of the inner wall by a positioning member that has a locking groove for engaging with a locking protrusion of the bearing block.

The present invention will become more obvious from the following description when taken in connection with the accompanying drawings, which
15 show, for purpose of illustrations only, the preferred embodiments in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an illustrative view of showing the stripping of the interior wall formwork in accordance with the present invention;

20 Fig. 2 is an enlarged view of the part P of the Fig. 1;

Fig. 3 is an illustrative view of showing the hoisting of the interior wall formwork in accordance with the present invention;

Fig. 4 is a cross sectional view taken along the line D-D of Fig. 1;

Fig. 5 is a cross sectional view taken along the line D'-D' of Fig. 1;

Fig. 6 is an enlarged view of the part Q of the Fig. 1;

Fig. 7 is a cross sectional view taken along the line E-E of Fig. 1;

Fig. 8 is an illustrative view of showing the transverse spreading of
5 the interior wall formwork in accordance with the present invention;

Fig. 9 is an enlarged view of the part M of the Fig. 8;

Fig. 10 is an illustrative view of showing the hoisting of the interior
wall formwork of Fig. 9;

Fig. 11 is a cross sectional view taken along the line C-C of Fig. 8;

10 Fig. 12 is a cross sectional view taken along the line C'-C' of Fig. 8.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the respective drawings, an interior wall formwork construction method in accordance with the present invention comprises the steps of: stripping the formwork, hoisting the formwork, supporting and
15 spreading the formwork outward. The interior wall formwork 1 is hoisted by a crane.

The stripping and spreading of the interior wall formwork 1 are achieved by a transverse motion machine A whose drive part doesn't move with the formwork, and the driven part is connected to the formwork and
20 makes the formwork move transversely.

The interior wall formwork 1 is supported by a bracket 21 that stands on a bearing block B of the interior wall and is hinged to the lower portion of the interior wall formwork 1.

The stripping of the interior wall formwork 1 is achieved by the rotation of the driving part of the transverse motion machine A and the linear movement of the driven part.

After stripping, the interior wall formwork 1 can be hoisted by a
5 crane. During the hoisting of the interior wall formwork 1, the bracket 21 will spread automatically and negotiate the obstacles on the interior wall, and will stand at a higher bearing block B on the interior wall after reaching the predetermined position.

After being well positioned, the interior wall formwork 1 can be
10 pushed outward by an opposite rotation of the driving part of the transverse motion machine A and an opposite linear movement of the driven part.

After spreading to a predetermined position, the interior wall formwork 1 can be connected to the exterior wall formwork, so as to allow the pouring of concrete.

15 For a better understanding of the present invention, its operation and construction, references should be made to the following descriptions:

1. transverse motion machine

The aforementioned transverse motion machine A is a screw driven device comprising a screw shaft 2 and a nut 3, and the nut 3 is connected to
20 the interior wall formwork 1 via a connecting board 4. For enabling the interior wall formwork 1 to be moved to the predetermined position, between the nut 3 and the connecting board 4 is disposed an adjusting mechanism that comprises a press board 5 and a connecting member 6. The nut 3 is formed at

an end thereof with a flange 31. The connecting board 4 is mounted on the outer periphery of the nut 3 and a side of the connecting board 4 is located at a side of the flange 31. The press board 5 is mounted on the screw shaft 2, a side of the press board 5 is located at another side of the flange 31, and the press board 5 is connected to the connecting board 4 via the connecting member.

The screw shaft 2 is provided with an abutting assembly 7 that is used to abut against the interior wall, and the abutting assembly 7 includes a left block 71 and a right block 72 that are disposed at both sides of the flange formed at the end of screw shaft 2.

10 In order to make the upper and lower ends of the interior wall formwork 1 move synchronously and stably, the upper end of the interior wall formwork 1 is connected to a transverse motion machine 9 via a connecting member 8, and the drive part of transverse motion machine 9 is connected to the screw shaft 2 via a driven part. The transverse motion machine 9 in this
15 embodiment is a screw driven device comprising a screw shaft and a nut. The upper end of the interior wall formwork 1 is mounted to the nut by the connecting member 8.

In this embodiment, the rotary wheels 10 and 11 are chain wheels, the transmitting belt 12 between the rotary wheels 10 and 11 is a chain, and on the
20 screw shaft 2 is arranged a manual spin handle 13.

The nuts 3 and 3A are disposed at both ends of the screw shaft 2, forming a screw driven mechanism, and the two nuts 3 and 3A rotate reversely and are connected the interior wall formworks 1 and 1a, respectively, so that

two opposite interior walls can be constructed simultaneously. In addition, the transverse motion machine can be constructed both in longitudinal and transverse directions of a building, so that four walls can be constructed simultaneously.

5 2. bracket:

the number of the bracket 21 hinged to the bottom of the interior wall formwork 1 at least corresponds with that of the interior wall formworks 1, the bracket 21 stands on the bearing block B of the interior wall, and in this embodiment, the bracket 21 is a supporting rod.

10 If a building has three walls, there should be at least three brackets 21. In this embodiment, the building includes four walls, and there should be at least four brackets 21, the brackets 21 can be supporting rod or supporting board.

In this embodiment, the bracket 21 is provided with an automatic
15 spreading device for spreading the bracket 21 outward, and the spreading device in this embodiment is a weight rod 22, so that the bracket 21 can spread and stand on the bearing block B of the interior wall 1 automatically after being hoisted up.

3. bearing block B:

20 the bearing block B is a positioning member mounted to the interior wall and can be arranged at the interior wall of a lower floor.

For easy construction, the lower end of the bracket 21 can be fixed to the bearing block B by a positioning member 23 that has a locking groove

23A for engaging with the locking protrusion of the bearing block B. in this embodiment, the positioning member 23 is an independent structure mounted to the bracket 21.

Due to the self servo action, the drive part of the screw driven device
5 only needs a very small torque, the driven part can produce a large axial force. Therefore, the interior wall formwork can be stripped and moved easily. Besides, the screw driven device has a self lock function, it ensures that the interior wall formwork can be locked at a predetermined position after stripping. The screw shaft is provided with an abutting assembly for abutting
10 against the interior wall, so that the interior wall formwork can be moved stably.

In addition, the interior wall formwork is supported by the bracket, and there is no friction force when spreading the inner wall formwork, so that the drive force necessary for stripping and spreading the interior wall
15 formwork is relatively small, and accordingly the operation is easy. Furthermore, the bracket for supporting the interior wall formwork stand on the bearing block B of a lower floor, therefore, the time for construction of interior wall formwork and the construction of the wall can be reduced effectively, and the interior wall formwork can be supported directly on the
20 bearing block of the inner wall without any suspension device.

While we have shown and described various embodiments in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope

of the present invention.

WHAT IS CLAIMED IS:

1. An interior wall formwork construction method comprising:
stripping an interior wall formwork; hoisting the interior wall formwork;
supporting the interior wall formwork; and spreading the interior wall
5 formwork transversely; wherein the interior wall formwork is hoisted by a
crane;

the stripping and unfolding of the interior wall formwork are
achieved by a transverse motion machine that is connected the interior wall
formwork;

10 the interior wall formwork is supported by a bracket that stands on a
bearing block of an interior wall;

the stripping of the interior wall formwork is an inward movement of
the interior wall formwork achieved by the transverse motion machine, after
stripping, the interior wall formwork is hoisted up, and during hoisting of the
15 interior wall formwork, the bracket will stand on the bearing block of the
interior wall after reaching a predetermined position; after being well
positioned, the interior wall formwork will be moved transversely by an
opposite rotation of the transverse motion machine, and after transversely
spreading to a predetermined position, the interior wall formwork is connected
20 to an exterior wall formwork.

2. The interior wall formwork construction method as claimed in
claim 1, wherein the bracket is hinged to a bottom of the interior wall
formwork.

3. The interior wall formwork construction method as claimed in claim 1, wherein the transverse motion machine is a screw driven device comprising a screw shaft and a nut, and the nut is connected to the interior wall formwork via a connecting board, between the nut and the connecting
5 board is disposed an adjusting mechanism that comprises a press board and a connecting member, the nut is formed at an end thereof with a flange, the connecting board is mounted on an outer periphery of the nut and a side of the connecting board is located at a side of the flange, the press board is mounted on the screw shaft, a side of the press board is located at another side of the
10 flange, and the press board is connected to the connecting board via the connecting member.

4. The interior wall formwork construction method as claimed in claim 3, wherein the screw shaft is provided with an abutting assembly that is used to abut against an interior wall, and the abutting assembly includes a left
15 block and a right block that are disposed at both sides of a flange formed at the end of the screw shaft.

5. The interior wall formwork construction method as claimed in claim 1, wherein an upper end of the interior wall formwork is connected to a transverse motion machine via another connecting member, and a drive part of
20 transverse motion machine is connected to the screw shaft via a driven part, the transverse motion machine is a screw driven device comprising a screw shaft and a nut, the upper end of the interior wall formwork is mounted to the nut by the another connecting member.

6. The interior wall formwork construction method as claimed in claim 2, wherein the bracket is provided with an automatic spreading device for spreading the bracket outward, and the spreading device includes moment driven device, elastic-force driven device, manpower driven device, and
5 electric driven device.

7. The interior wall formwork construction method as claimed in claim 1, wherein a lower end of the bracket is fixed to the bearing block of the inner wall by a positioning member that has a locking groove for engaging with a locking protrusion of the bearing block.