bending moment of the end portion of the beam and the bending moment of the span center. Accordingly, compared to the cases of the rigid joint and the pin joint, like the following Expression (5), it is possible to decrease the maximum moment.

[0015]

$$M_A = M_C = \frac{wl^2}{16} = M_{\max} \qquad (5)$$

[0016]

Patent Document 5 or Patent Document 6 is an example in which the column-beam joint is a semi-rigid joint. However, Patent Document 5 and Patent Document 6 are not intended for a composite structure building configured of a PCaRC column and a steel beam, and in Patent Document 5 and Patent Document 6, the configuration of the column-beam joint is complicated. In Patent Document 5 and Patent Document 6, any design method is not disclosed or suggested.

Solution to Problem

[0017]

The present invention adopts the following aspects in order to solve the above-described problems.

[0018]

(1) According to one aspect of the present invention, there is provided a joint structure of a reinforced concrete column and a steel beam, in which the reinforced concrete column and the steel beam is configured to insert an end portion of the steel beam into a recess formed in the reinforced concrete column and fill the recess with a concrete so as to join the reinforced concrete column and the steel beam, in which a degree of fixation of the steel beam is adjusted by adjusting an

crimping of the tubular body serving as a coupling member. Accordingly, it is possible to easily install the shear reinforcement of the joint of the reinforced concrete column and the steel beam.

[0027]

(6) There is also disclosed a joint structure of a reinforced concrete column and a steel beam, in which in a joint of the reinforced concrete column and the steel beam, a shear reinforcement of the reinforced concrete column is configured of a first shear reinforcement and a second shear reinforcement, and a tubular body in which the first shear reinforcement is inserted from one end portion and the second shear reinforcement is inserted from the other end portion is provided, the first shear reinforcement is inserted into a hole portion formed in the steel beam, the second shear reinforcement is arranged between the first shear reinforcements adjacent to each other around an axis of the reinforced concrete column, and the tubular body is crimped to the first shear reinforcement and the second shear reinforcement to surround outer circumferences of the first and second shear reinforcements.

[0028]

(7) There is also disclosed a method of joining a reinforced concrete column and a steel beam, in which in a joint of the reinforced concrete column and the steel beam, a shear reinforcement of the reinforced concrete column is configured of a first shear reinforcement and a second shear reinforcement, and a tubular body in which the first shear reinforcement is inserted from one end portion and the second shear reinforcement is inserted from the other end portion is provided, the first shear reinforcement is inserted into a hole portion formed in the steel beam, and the second shear reinforcement is arranged between the first shear

[0035]

(9) In the joint structure of a reinforced concrete column and a steel beam described in (6), the first shear reinforcement and the second shear reinforcement may be arranged to overlap each other inside the tubular body.

[0036]

In this case, since any shape may be adopted as long as the tubular body is crimped to the portion in which the first shear reinforcement and the second shear reinforcement overlap each other, compared to the case where the first shear reinforcement and the second shear reinforcement are arranged such that the tip portions abut on each other, it is possible to decrease the length (length of the coupling) of the tubular body.

Advantageous Effects of Invention

[0037]

According to the joint structure of a reinforced concrete column and a steel beam and the method of joining a reinforced concrete column and a steel beam in embodiments of the present invention, processing of the steel frame can be easily carried out, and the joining of the reinforced concrete column and the steel beam can be easily carried out.

[0038]

In addition, according to the joint structure of a reinforced concrete column and a steel beam and the method of joining a reinforced concrete column and a steel beam in embodiments of the present invention, semi-rigid joining may be carried out with respect to the column-beam joint, and it is possible to decrease the maximum moment and to rationally (suitably) configure the column-beam joint.

5. A joint structure of a reinforced concrete column and a steel beam,

wherein an end portion of a steel beam is inserted into a recess formed in a reinforced concrete column,

wherein a first shear reinforcement which is connected to the steel beam and is arranged in the recess and a second shear reinforcement of the reinforced concrete column which protrudes toward the recess are connected to each other using a coupling member,

wherein a concrete is placed in the recess, and the end portion of the steel beam, the first shear reinforcement, the second shear reinforcement, and the coupling member are embedded in the concrete, and

wherein the coupling member is a tubular body which is provided to surround outer circumferences of the first shear reinforcement and the second shear reinforcement arranged in the recess and is crimped to each of the first shear reinforcement and the second shear reinforcement.