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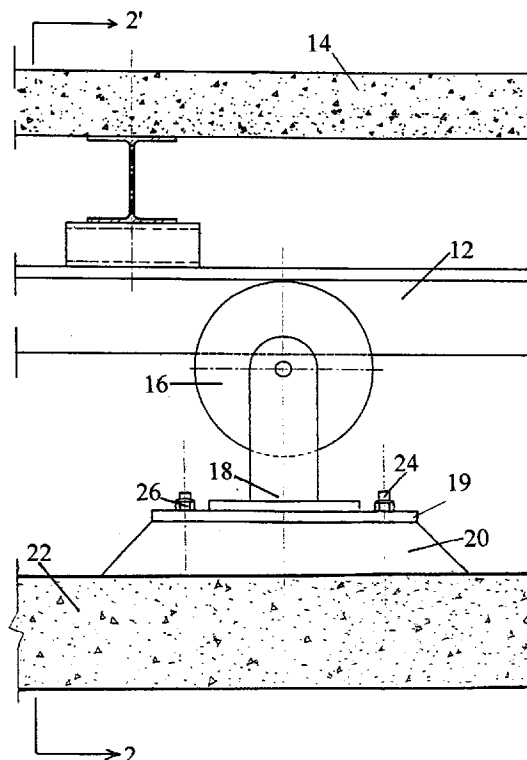
(72) OLESZKIEWICZ, Stefania, CA

(73) O&O STRUCTOR LIMITED, CA

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(54) **METHODE DE TRANSFORMATION D'UN SUPPORT RIGIDE**

(54) **METHOD FOR TRANSFORMING RIGID SUPPORT**



(57) Fixation améliorée de plaque tournante dans laquelle les roues supportant la plate-forme rotative sur une base sont équipées de ressorts les inclinant vers la plate-forme afin de compenser pour les irrégularités. Il est possible de modifier les plaques tournantes existantes comprenant des fixations de roues séparées de la base par du mortier en enlevant le mortier et en installant des ressorts dans l'espace ainsi libéré.

(57) An improved mount for a turntable in which wheels supporting the rotating platform on a base are provided with springs biasing the wheels into the platform to compensate for irregularities. A method is provided for retrofitting existing turntables with wheel mounts spaced from the base by mortar involving removal of the mortar and providing springs in the space occupied by the mortar.

ABSTRACT OF THE DISCLOSURE

An improved mount for a turntable in which wheels supporting the rotating platform on a base are provided with springs biasing the wheels into the platform to compensate for irregularities. A method is provided for retrofitting existing turntables with wheel mounts spaced from the base by mortar involving removal of the mortar and providing springs in the space occupied by the mortar.

METHOD FOR TRANSFORMING RIGID SUPPORT

The present invention relates to an improved resilient turntable support and to a method for transforming turntable rigid supports into resilient ones. Although applicable to all sizes of rotary structures, the new support and method is particularly beneficial for transforming supports of large existing structures like rotating theatre scenes, revolving restaurants or industrial rotating platforms. In this description and in the appended claims, such rotary structures are called turntables.

A turntable consists of a rotating platform carried by a plurality of supporting wheels above a stationary base. The wheels are held by brackets fixed to the stationary base and provide a support for rolling over tracks mounted to the rotating platform. Alternatively, the tracks can be mounted to the stationary base and provide support for rolling wheels fixed to the rotating platform. In both cases, the rotating platform is held in position by a number of wheels supported by rigid brackets.

Due to unavoidable construction tolerances, both the wheels and the tracks deviate from their theoretical contact lines. When the platform rotates, some of the wheels carry little load or even lose contact with the tracks while the other wheels are considerable overloaded. Bridging over the not loaded wheels, the tracks are under significant reversal bending and develop serious fatigue failures that require constant repairs. Carried out in a confined space under the rotating platform, such repairs are expensive and interrupt the turntable operations. The present inventor has appreciated that it is desirable to have a method for improving the support system of existing turntables to make the system capable of

compensating for the inevitable construction tolerances and preventing the track fatigue failures.

The present invention provides an improved resilient support for turntable rotating platforms and a simple method for transforming rigid supports of the existing turntables into resilient supports which reduces the effects of construction tolerances and the high cost of frequent repairs.

5 The improved resilient support provides support wheels for the rotating platform mounted so as to be biased by resilient devices into the platform such that the resilient devices can compensate for irregularities without unduly stressing individual supports.

10 The method for transforming existing rigid supports to resilient ones comprises the following steps of:

 providing a space and freedom for an individual movement of each wheel along its axis of support by removing mortar underlying the wheel brackets and detaching fasteners;

 supporting the wheel bracket by resilient devices capable of compensating for construction tolerances.

15 In one aspect the present invention provides an improved turntable construction comprising:

 a horizontal platform supported above a stationary base for rotation about a vertical axis,

a platform supported above the base by an array of wheels each journalled for rotation about a horizontal axis,

each wheel journalled on a wheel mount, each wheel mount provided in a space between the base and the platform coupled to one of the base and the platform for relative vertical movement of the wheel mount relative said one of the base and the platform and with resilient devices disposed between the wheel mount and said one of the base and the platform biasing the wheel mount vertically away from said one of the base and the platform,

wherein the cumulative strength of the plurality of said resilient devices is sufficient to support the turntable rotating platform.

In another aspect the present invention provides a method for transforming an existing turntable structure:

the existing turntable structure comprising a horizontal platform supported above a stationary base for rotation about a vertical axis by an array of wheels each wheel journalled for rotation about a horizontal axis,

each wheel journalled on a wheel mount having a horizontal bedplate below the wheels

secured to the stationary base spaced vertically from the base by vertically extending threaded fasteners,

the fasteners having a lower end secured in the stationary base and having an upper end passing through the bedplate,

5 a threaded nut means carried on the fasteners to fix the bedplate at a height above the base to the space therebetween,

a mortar layer or other spacer filling the space between the base and the bedplates;

the method comprising the steps of:

10 removing the mortar layer supporting the bedplate and releasing the bedplate from the fasteners by at least repositioning of the nut means to permit vertical movement of the bedplate on the fasteners within a desired range,

15 providing resilient devices between the bedplates and the base in the space therebetween to individually bias the support wheels upwardly towards the rotating platform, wherein the cumulative support of the resilient devices of the various wheels provide sufficient upwardly directed forces to support the turntable rotating platform.

In another aspect the present invention provides a method for transforming an existing turntable structure:

the existing turntable structure comprising: a horizontal rotating platform supported above a stationary base for rotation about a vertical axis by an array of wheels each journalled for rotation about a horizontal axis,

each wheel journalled on a wheel mount having a horizontal bedplate below the wheels, the bedplate secured to the base spaced vertically from the base with a space between the bedplate and the base, the bedplate supported on vertically extending threaded fasteners,

each of said fasteners having a lower end secured in the base below the bedplate and having an upper end above the bedplate, each fastener passing through the bedplate from its lower end to its upper end,

threaded nut means carried on each fastener threadably positioned on each fastener to fixedly couple the bedplate to each fastener at a height above the base with the space between the base and the bedplate,

a mortar layer on the base filling the space between the base and each bedplate,

the method comprising the steps of:

removing the mortar layer between each bedplate to open the space between the base and each bedplate, and repositioning the nut means relative the fasteners to release the bedplate from being fixedly coupled on the fasteners and to permit vertical movement of the bedplate on the fasteners within a desired range,

providing resilient devices between the bedplate and the base in the space therebetween to bias the bedplate upwardly towards the turntable platform,

wherein the cumulative support of the resilient devices of the various wheels provide sufficient upwardly directed forces to support the turntable rotating platform.

The invention, as exemplified by a preferred embodiment, is described below with reference to the accompanying drawings wherein:

Figure 1 is a schematic cross-sectional view of an existing turntable structure showing a vertical wheel support in side view;

5 Figure 2 is a schematic cross-sectional end view of the structure shown in Fig. 1 along the section line 2-2' however portraying the structure after the method's first step with the mortar removed and the nuts repositioned;

Figure 3 is a schematic cross-sectional side view similar to Fig. 1 portraying the structure after the method's second step with sleeves and helical springs installed ;

10 Figure 4 is a schematic cross-sectional side view of a new resilient lateral support;

Figure 5 is a schematic cross-sectional end view of the support shown in Fig. 4 along the line 5-5'.

Fig. 1 shows a conventional vertical support of an existing turntable, wherein a circular track angle 12 mounted to the rotating platform 14 is rolling over a plurality of wheels 16. Each wheel is held
15 by a bracket 18 with a bed plate 19 resting on a mortar layer 20 and anchored to the stationary base 22 by

bolts 24 and nuts 26 carried on the bolts. Instead of the mortar layer 20 other rigid spacers like metal shimming are also used. Such assembly represents a conventional rigid support of existing turntables. The present invention provides a resilient support and a method for transforming the rigid support into a resilient one capable of compensating for construction tolerances.

5 The method first step of providing a space 28 for a movement of the wheel bracket 18 along its axis of support includes removing the existing mortar layer 20 and repositioning of the nuts 26, as shown in Fig. 2. If required, the movement may be limited by adjusting accordingly the existing or adding new stop nuts 26. A sleeve 30 may be placed between the upper and lower stop nuts 26 to facilitate the bracket movement and to protect the thread of anchor bolts against damage by the moving bracket bedplate 19.

10 The next step includes supporting the wheel bracket 18 by springs 32 as shown in Fig. 3. The springs 32 resting on the base 22 and enclosing the anchor bolts 24 supports the wheel bracket 18. The springs can also be placed in other locations within the support assembly as well as pneumatic cushions, elastic pads or other springy devices can be used instead of the springs. Wheels mounted on brackets with springy devices constitutes resilient support which can compensate for construction tolerances.

15 The present invention also provides a method for construction of turntable new resilient supports. For example, a new lateral support for keeping the rotating platform 14 in a required horizontal position is shown in Figs 4 and 5. A horizontal wheel 161 held in position by a vertical bracket 181 forms the lateral support for the rotating platform. To provide a freedom of movement for the wheel 161 along its horizontal

axis of support 341, the bracket 181 has a hinged connection 361 to the stationary base 22.

One side of the bracket is bearing on the hinge 361 and the other is anchored to the base 22 by means of anchor bolts 241 through springs 321. The springs 321 attached to the bolts 241, pressing eccentrically the bracket 181 downwards and causing its tilting, provide a resilient horizontal support for the rotating platform. The horizontal force can easily be adjusted by the nuts 381. If required, the wheel horizontal movement can be limited by installing additional nuts 261 which limit the bracket tilting movement.

While the invention has been described with reference to preferred embodiments, many modifications and variations will now occur to persons skilled in the art. For a definition of the invention, reference is made to the appended claims.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method for transforming an existing turntable structure;

the existing turntable structure comprising:

a horizontal rotating platform supported above a stationary base for rotation about a vertical axis by an array of wheels each journalled for rotation about a horizontal axis,

each wheel journalled on a wheel mount having a horizontal bedplate below the wheels, the bedplate secured to the base spaced vertically from the base with a space between the bedplate and the base, the bedplate supported on vertically extending threaded fasteners,

each of said fasteners having a lower end secured in the base below the bedplate and having an upper end above the bedplate, each fastener passing through the bedplate from its lower end to its upper end,

threaded nut means carried on each fastener threadably positioned on each fastener to fixedly couple the bedplate to each fastener at a height above the base with the space between the base and the bedplate,

a mortar layer on the base filling the space between the base and each bedplate,

the method comprising the steps of:

removing the mortar layer between each bedplate to open the space between the base and each bedplate, and repositioning the nut means relative the fasteners to release the bedplate from being fixedly coupled on the fasteners and to permit vertical movement of the bedplate on the fasteners within a desired range,

providing resilient devices between the bedplate and the base in the space therebetween to bias the bedplate upwardly towards the turntable platform,

wherein the cumulative support of the resilient devices of the various wheels provide sufficient upwardly directed forces to support the turntable rotating platform.

2. A method as claimed in claim 1 wherein the step of providing resilient devices comprises locating helical springs disposed about each fastener between the base and the bedplate.
3. A method as claimed in claim 2 wherein the step of repositioning the nut means relative the fastener comprises positioning at least one threaded nut means on each threaded fastener between the base and the bedplate spaced above the bedplate.
4. A method as claimed in claim 2 or 3 wherein the step of locating helical springs includes selecting helical springs of an internal diameter greater than an outer diameter of the nut means and positioning such springs such that the spring encloses the nut means extending radially outwardly about such nut and axially about the fastener between the base and the bedplate.

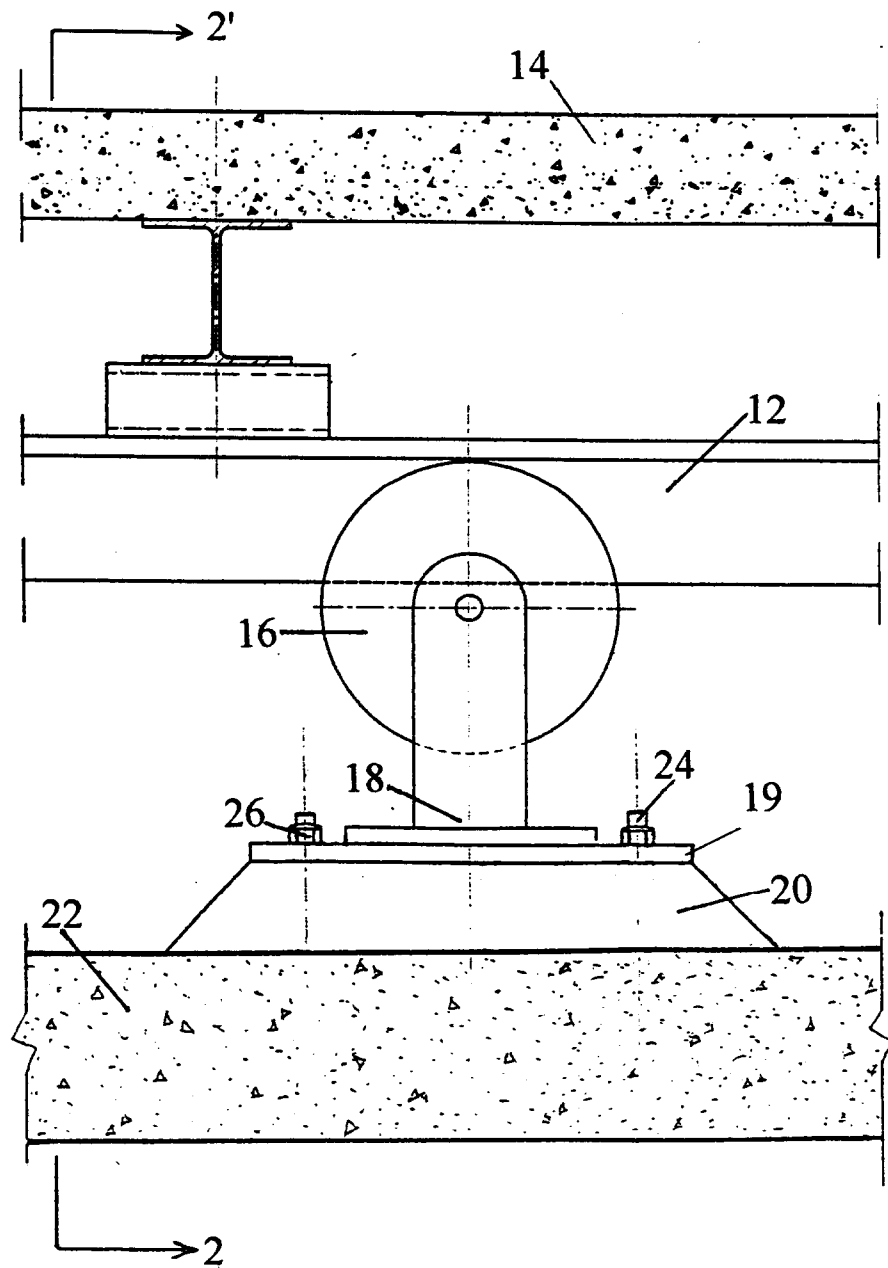


FIGURE 1

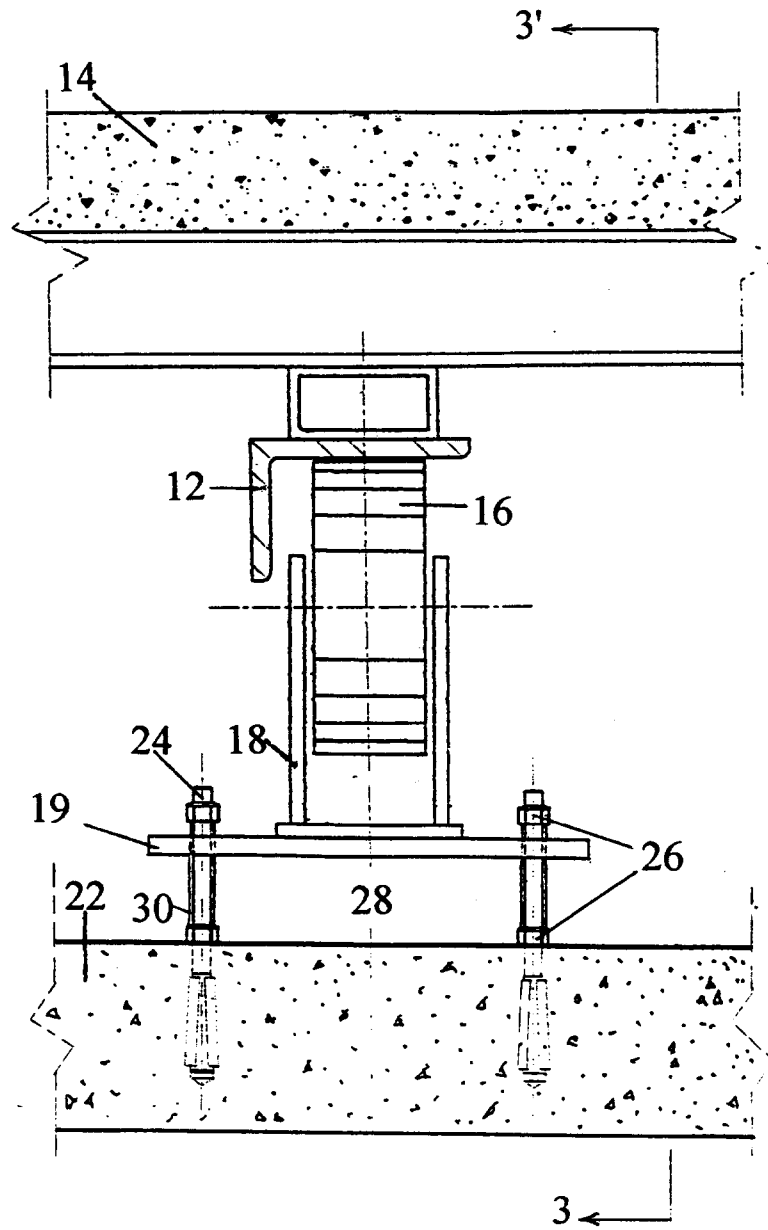


FIGURE 2

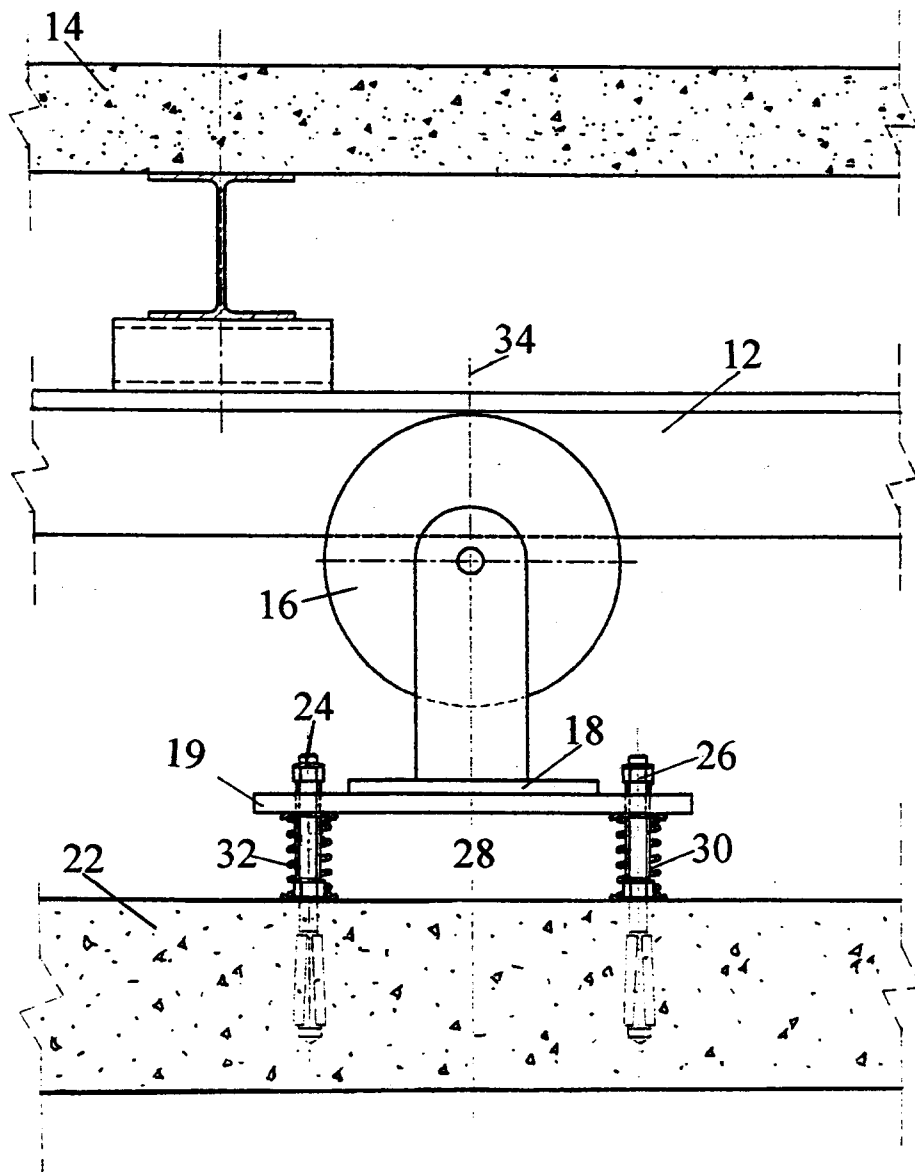


FIGURE 3

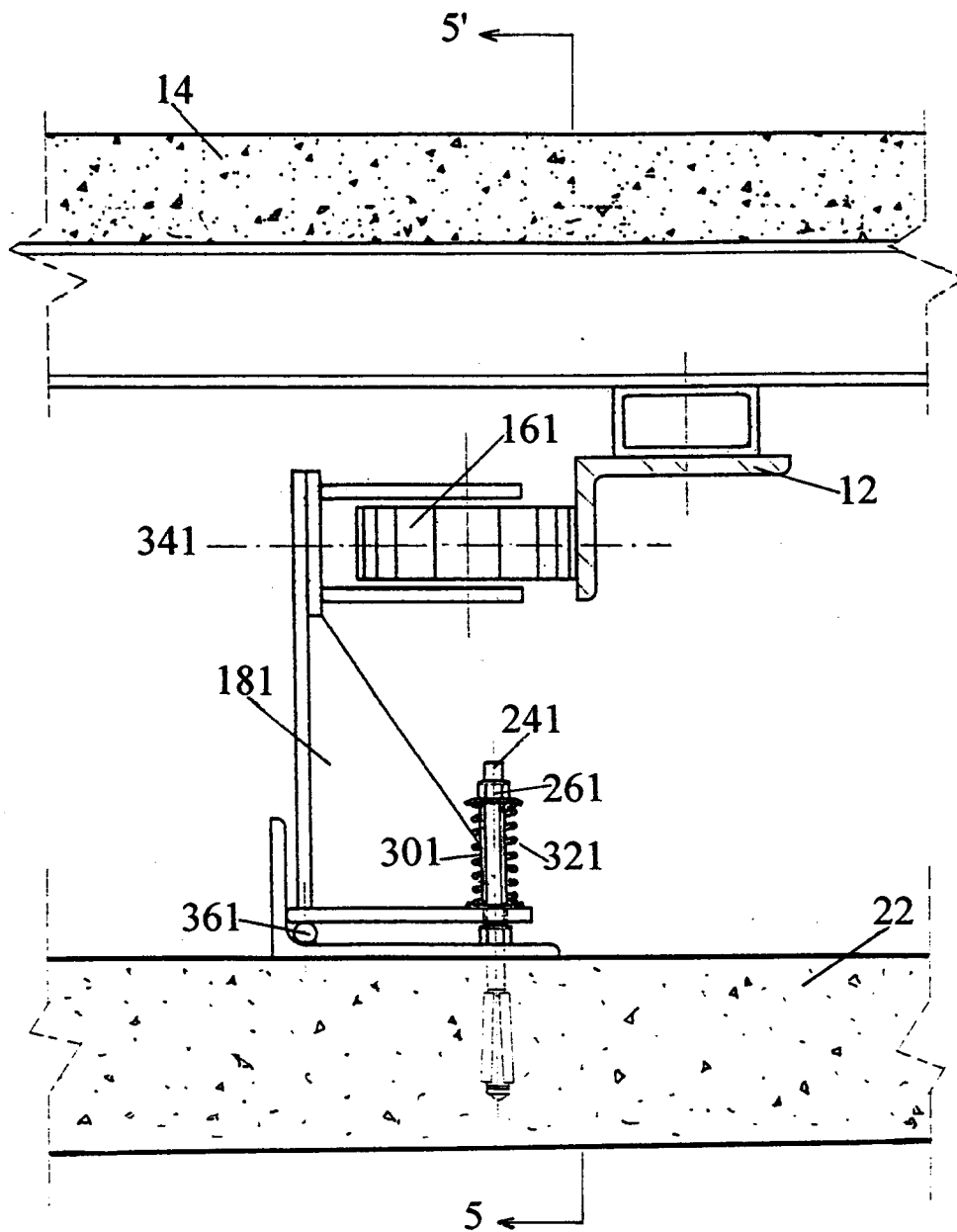


FIGURE 4

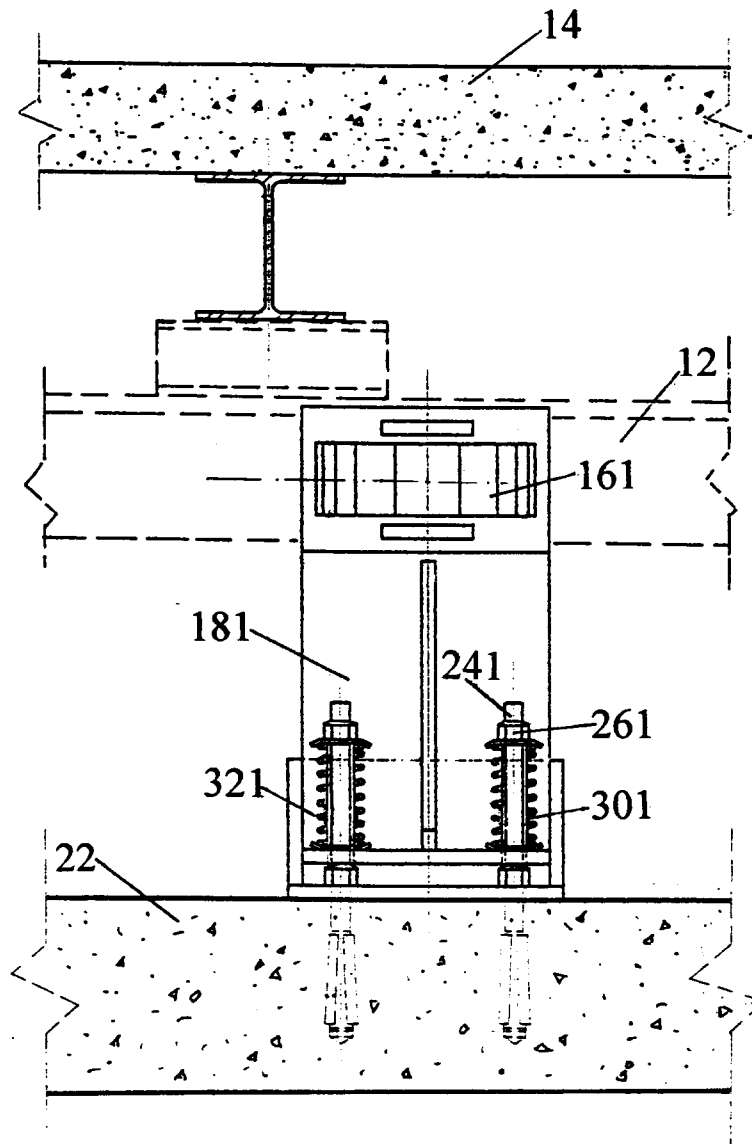


FIGURE 5

