one of its sides. By making some of these parts identical, manufacturing and inventory can be reduced.

[0008a] In view of the above, according to an aspect of the present invention, there is provided a pipe gripping apparatus for placement in a rotary table opening, comprising: a base having a lower passage for the pipe to pass through, said base shaped to enter said opening; a plurality of spaced members extending from said base and terminating in upper ends with interconnecting members therebetween, adjacent said upper ends, to define a closed segmented ring structure with an outer periphery having the shape of said opening for direct torque resistance transmitted from the pipe when supported by movable slips that are supported by said spaced members; said interconnecting members separating said spaced members to form said closed segmented ring structure while enabling dimensional change of said ring structure with interconnecting members of different dimensions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIGS. 1 and 1a show a perspective view of a complete assembly as it goes into the rotary table and an enlarged view of an alignment dovetail;

[0010] FIG. 2 is a plan view of the view in FIG. 1 in the pipe gripping position;

[0011] FIG. 3 is a section view along lines 3-3 of FIG. 1 in the pipe gripping position;

[0012] FIG. 4 is a plan view of FIG. 1 in the pipe released position; and

[0013] FIG. 5 is a section view along lines 5-5 of FIG. 1 in the pipe released position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] In FIG. 1 the complete assembly **109** fits the recess in the rotary table **14**. The pipe **15** is placed through the center of the assembly **109** and rotary table **14**. When lowered, outer surface **91** is radially restrained by surface **141** of rotary table **14**. The detailed view shows the tongue and groove design **66** used to keep the timing plate **3** in time, but allows easy separation, if disassembly is required. Other means of removable communication can be used.

[0015] In FIG. 2 the non- circular recess **114** fits the non- circular geometry **151** made by the assembly **109** that will transmit torque.

[0016] The assembly **109** is made up from slip carriers **5** and **9** and intervening mounting structures **1** and **11**. The slip carriers **5** and **9** and mounting structure **1** and **11** are held together by a T- Slot **57**, where slot surface **205** and **101** restrict each other. These t-slots can be formed in different orientations. Other methods of removable joining can be used such as bolts or pins. The pipe **15** is fixed by the dies **8** or **7** depending on the size. When in use all the dies would be the same size but in FIG. 2 die **7** and die **8** are shown as different sizes demonstrating the size variation available by only changing dies.

[0017] In FIG. 3 the slip carrier **5** has inward sloped ramps **105** that mate with slip **2** on slip surface **102**. There is a dovetail grove, t-slot, or other means to keep the surfaces coincident as would be familiar to those skilled in the art.

CLAIMS

1. A pipe gripping apparatus for placement in a rotary table opening, comprising:

a base having a lower passage for the pipe to pass through, said base shaped to enter said opening;

a plurality of spaced members extending from said base and terminating in upper ends with interconnecting members therebetween, adjacent said upper ends, to define a closed segmented ring structure with an outer periphery having the shape of said opening for direct torque resistance transmitted from the pipe when supported by movable slips that are supported by said spaced members;

said interconnecting members separating said spaced members to form said closed segmented ring structure while enabling dimensional change of said ring structure with interconnecting members of different dimensions.

2. The apparatus of claim **1**, wherein:

said interconnecting members have guided opposed ends at said spaced members.

3. The apparatus of claim **1**, wherein:

said interconnecting members are secured to said spaced members with a projection and depression.

4. The apparatus of claim **1**, wherein:

said interconnecting members have a top surface in a common plane with said upper ends of said spaced members.

5. The apparatus of claim **1**, wherein:

said spaced members supporting slip guides with a guide orientation skewed with respect to a vertical axis of said base.

6. The apparatus of claim **5**, wherein:

said slips each connected to an operating ring with at least one pivoting link.

7. The apparatus of claim **6**, wherein:

said spaced members further comprising a hydraulic piston operably connected to said operating ring.

8. The apparatus of claim **1**, wherein:

said interconnecting members are longer than the pipe diameter to be selectively retained by said slips such that said segmented ring without one of said interconnecting members can be slipped over the pipe diameter and completed around the pipe by adding said one interconnecting member.

9. The apparatus of claim **1**, wherein:

said spaced members contact a wall that defines the rotary table opening.

10. The apparatus of claim **1**, wherein:

said outer periphery of said segmented ring structure can be changed with substitution of interconnecting members of a different length.

11. The apparatus of claim **1**, wherein:

said outer periphery of said segmented ring structure can be changed with substitution of spaced members of a different dimension.

12. The apparatus of claim **1**, wherein:

said outer periphery of said segmented ring structure can be changed with substitution of spaced members of a different dimension and interconnecting members of a different length.

13. The apparatus of claim **5**, wherein:

said slip guides selectively support slips of different dimension to selectively engage pipes of different diameters.

14. The apparatus of claim **1**, wherein:

said slips further comprise a removable die for selective engagement of the pipe.

15. The apparatus of claim **6**, wherein:

said operating ring is made of at least one segment.

16. The apparatus of claim **1**, wherein:

said segmented ring structure outer periphery directly opposes radial forces from the pipe when supported by movable slips that are supported by said spaced members.