CLAIMS

1. A positive lock system for restrained joints of ductile iron spun pipes and fittings comprising:
   - a bell shape socket (1) and a plain ended spigot (2) provided on ductile iron pipes such that the plain ended spigot (2) is pushed in said bell shape socket (1) to do the jointing of two pipes;
   - an elastomeric/rubber gasket (5) placed in a gasket chamber (7) provided in said bell shape socket (1);
   - a weld bead (4) provided on the circumferential periphery of the plain ended spigot (2);
   - a series of lock segments (3) inserted through a cutout window (8) provided in the bell shaped socket and rotated in between the weld bead (4) and the inner surface (9) of a circumferential chamber (6) of said bell shape socket (1); wherein said inner surface (9) is circumferential;
   - a chamber (12) , said chamber providing clearance between the plain ended spigot (2) and said chamber (12) and the bell shape socket (1) inner wall; and

     wherein the inner diameter of the gasket (5) is less than the plain ended spigot (2) outer diameter to enable plain ended spigot (2) to compress the gasket (5) radially to make the joint water tight;

     wherein the bell shape socket (1) is further provided with a ring (10), to act as mechanical stopper to limit the angular deflection at maximum allowed and work as a design safety feature at higher fluid pressures.

     wherein said lock segments (3) have a front face (15) at a suitable angle to dissipate all the axial forces in required direction and a rear face (14), which is circular/spherical, to match to the inner surface (9) of the circumferential chamber (6) for smooth sliding during axial angular deflection at the joint; said required direction being directed from front face (15) towards rear face (14); wherein the radius and center of the inner surface (9) and rear face (14) is calculated such that the maximum axial forces can be transferred to said bell shape socket (1) at the required angular deflection of two axis; and

     wherein the thrust loads generated due to transmitting fluid pressure is transferred from the weld bead (4) to the lock segment (3) and from the lock segment (3) to the circumferential chamber (6) of the bell shape socket (1);

     characterized in that it moreover comprises a tying belt (18);

     in that the series of lock segments (3) remains on the outer periphery of the plain ended spigot (2) with the help of the tying belt (18);

and in that the lock segment (3) are provided with end stoppers (17) projected outwards to give housing for the tying belt (18) and facilitate lock rotation during assembly.

2. The positive lock system as claimed in claim 1, wherein the lock segment (3) is arranged on the outer periphery of the plain ended spigot (2).

3. The positive lock system as claimed in claim 1, wherein the radius of the bottom face (16) of lock segment (3) is equal to or under required limits to the outer radius of the plain ended spigot (2) periphery.

4. The positive lock system as claimed in claim 1, wherein both the rear face (14) and the inner surface (9) have same radii to enable better match and smooth sliding during the joint axial deflection and load transmission.

5. The positive lock system as claimed in claim 1, wherein a clearance (6A) is provided between front face (15) of the lock segment (3) and circumferential chamber (6) end face to facilitate the angular deflection of the joint.

6. The positive lock system as claimed in claim 1, wherein the height of the protruded block and rear face (14) of lock segment (3) is configured to transmit the loads in the required direction and minimum magnitude.

7. The positive lock system as claimed in claim 1, wherein the plain ended spigot (2), bell shape socket (1) and lock segments (3) are made of ductile iron.