Claims

1. An apparatus (1) to support a tubular member such as pipes, in particular in the field of oil and gas production, comprises:

a carrying structure (6) that can be mechanically attached to a handling apparatus extends annularly around a central opening (18) along an axis (20) and has an inner circumferential surface (22) bounding that central opening (18), wherein said inner circumferential surface (22) tapers conically at a cone angle (α) relative to said axis (20),

a plurality of clamp elements (24, 26, 28, 30) that are arranged movably relative to that carrying structure (6) in said central opening (18), wherein each of that clamp elements (24, 26, 28, 30) has an inclined surface (50) on a radially outer side thereof, said inclined surface (50) is inclined at said cone angle (α) relative to said axis (20) and is configured and arranged to slide along said inner circumferential surface (22), and wherein each of that clamp elements (24, 26, 28, 30) has a clamp surface (52) being parallel to said axis, and

a plurality of linear actuators (32, 34, 36, 38), wherein each of that linear actuators (32, 34, 36, 38) respectively has first and second actuator components (66, 68) that can be driven linearly relative to one another along an actuator axis (70) that is inclined at said cone angle (α) relative to that axis (20), wherein said first component (66) is attached to said carrying structure (6), and wherein the second component (68) is attached to a respective one of said clamp elements (24, 26, 28, 30), wherein both the first and the second components (66, 68) are positioned in a recess (40) of the inclined surface (50) the respective clamp element (24, 26, 28, 30),

wherein the linear actuators (32, 34, 36, 38) are cylinder-piston-arrangements, and wherein said first components (66) are the

cylinders and the second components (68) are the pistons which are movable guided in the cylinders (66) along the actuator axis (70).

wherein, each piston (68) divides a respective cylinder space into a first pressure chamber (110) and in a second pressure chamber (112),

wherein the cylinder-piston-arrangements (32, 34, 36, 38) are connected in series such that the fluid pressed out of a first pressure chamber (110) of one cylinder-piston arrangement (32, 34, 36, 38) is pressed into the second pressure chamber (112) of the subsequent cylinder-piston-arrangement (32, 34, 36, 38) and vice versa,

wherein the pressure chambers (110, 112) of each cylinder-piston-arrangement (32, 34, 36, 38) are connected with each other by a bypass conduit (163, 164, 166, 168) having a constricted opening (170), and

wherein a valve element (172) is positioned in each bypass conduit (163, 164, 166, 168) preventing a fluid flow through the bypass conduits (163, 164, 166, 168) when the clamping elements (24, 26, 28, 30) are moved down.

2. Apparatus according to claim 1, wherein the pistons (68) are attached to the clamp elements (24, 26, 28, 30) by a holding element (86) that extends through the piston rod (88) along the actuator axis (70).

3. Apparatus according to claim 2, wherein each cylinder (66) has a positive form fit element (72) which engages with a counter element (73) of the carrying structure (6).

4. Apparatus according to claim 3, wherein the cylinders (66) are secured to the carrying structure (6) by screws (74) being in thread engagement with the positive form fit elements (72).

5. Apparatus according to claim 2 or 3, wherein each piston (68) divides the respective cylinder space into a first pressure chamber (110) and in a second pressure chamber (112).

6. Apparatus according to any of claims 3 to 5, wherein each piston has chamfers (174) on its outer circumferential surface (176) providing a minimum volume of each pressure chamber (110, 112) when the piston (68) is in one of its end positions.

7. Apparatus according to any of the preceding claims, wherein a first signal is generated when a clamp element (24, 26, 28, 30) is lowered position and a second signal is generated when a clamp element (24, 26, 28, 30) is in a lifted position.