EmbodimentsThe object of the invention seekis to eliminate or reduce at least one of the drawbacks of the prior art.

This object is achieved according to the invention by the features described in the description below and in the claims that follow.

The pipe clamping device according to the invention comprises a housing which has a tubular centre in which a pipe is to be positioned. The pipe clamping device comprises at least three gripping devices for synchronous movement in towards the pipe, each gripping device disposed with a direction of movement in towards the tubular centre, where each gripping device is arranged in order, in contact with the pipe, to provide a holding force. The gripping devices may beare arranged to move synchronously or simultaneously towards the pipe with the aid of elongate flexible transmission elements. The pipe clamping device is provided with at least two elongate flexible transmission elements. Each elongate flexible transmission element is attached to one of the gripping devices and runs in contact with at least one support means to attachment to anotherwith each of the other gripping devices, such that a gripping device is attached to the at least two elongate flexible transmission elements, while each of the remaining gripping devices are connected to one of the elongate flexible transmission elements. Upon movement of at least one of the gripping devices, this movement is transmitted to at least oneeach of the other gripping devices by the associated elongate transmission element. Upon movement of at least one of the gripping devices, this movement is transmitted to each of the other gripping devices by the associated elongate transmission element.

The at least one support means is connected to the at least one safety device for controlled displacement of this support means. The number of safety devices used for the invention depends on the number of support means with which the pipe clamping device is equipped and on how the arrangement is configured. In some embodiments of the pipe clamping device, a selection of the support means are equipped with safety devices and in other embodiments all the support means are equipped with safety devices.

By arranging the safety devices so as to obtain controlled displacement of the individual support means, an elasticity is provided in the pipe clamping device which means that damage to the pipe clamping device is prevented in the event that a pipe becomes jammed between two of the gripping devices.

In an embodiment of the invention, each safety device has a portion that is fastened to the pipe clamping device housing, whilst another portion of the safety device will be fastened to the support means.

The safety device may be constituted of means that can be arranged to have a pre-defined resistance to movement, the safety device being capable of being arranged so that it can exert motion when the pre-defined resistance to movement is over-come. The safety device will also be arranged so that it can move the support means back to its starting position after movement has been made.

The safety device may be constituted of a compressible elastic means. The stiffness of the elastic means may constitute the safety device's resistance to movement. Movement of the support means will be provided by compression or extension of

PATENT CLAIMS

1. A pipe clamping device ~~(1)~~ comprising a housing ~~(1a)~~ which has a tubular centre in which a pipe is to be positioned, the pipe clamping device ~~(1)~~ comprising at least three gripping devices ~~(5, 6, 7)~~ for synchronous movement in towards the pipe, each gripping device ~~(5, 6, 7)~~ being disposed with a direction of movement in towards the tubular centre, where each gripping device ~~(5, 6, 7)~~ is arranged in order, in contact with the pipe, to provide a holding force, characterised in that the pipe clamping device ~~(1)~~ is provided with at least two elongate flexible transmission elements ~~(8, 9)~~ for the gripping devices ~~(5, 6, 7)~~, each of the at least two elongate flexible transmission elements ~~(8, 9)~~ being attached to one of the gripping devices ~~(5, 6, 7)~~ and running in contact with at least one support means ~~(10, 11)~~ and to attachment to another of the gripping devices ~~(5, 6, 7)~~, such that a gripping device ~~(5)~~ is attached to the at least two elongate flexible transmission elements ~~(8, 9)~~, while each of the remaining gripping devices ~~(6, 7)~~ are connected to one of the elongate flexible transmission elements ~~(8, 9)~~, and upon movement of at least one of the gripping devices ~~(5, 6, 7)~~, this movement is transmitted to at least one of the other gripping devices ~~(5 ,6 ,7)~~ via the associated elongate transmission element ~~(8, 9)~~.

2. A pipe clamping device according to claim 1, characterised in that the movement of the at least one gripping device ~~(5, 6, 7)~~ is transmitted via the elongate flexible transmission elements ~~(8, 9)~~ as a pulling force to each of the other gripping devices ~~(5, 6, 7)~~.

3. A pipe clamping device according to one of the preceding claims, characterised in that a set comprising two elongate flexible transmission elements ~~(8a, 8b)~~, where each elongate flexible transmission element ~~(8a, 8b)~~ is in contact with at least one support means ~~(10a, 10b)~~, is arranged so that each set runs from attachment to one of the gripping devices ~~(5, 6, 7)~~ to each of the other gripping devices ~~(5, 6, 7)~~.

4. A pipe clamping device according to one of the preceding claims, characterised in that at least one of the elongate flexible transmission elements ~~(8, 9)~~ runs from one of the gripping devices ~~(5, 6, 7)~~ and in contact with two support means ~~(10, 11)~~ before attachment to each of the other gripping devices ~~(5, 6, 7)~~

5. A pipe clamping device according to one of the preceding claims, characterised in that the at least one support means ~~(10, 11)~~ is disposed so that the run-out direction of the elongate flexible transmission ele-

ment ~~(8, 9)~~ from this support means ~~(10, 11)~~ is oppositely directed to the run-in direction towards this support means ~~(10, 11)~~.

6. A pipe clamping device according to one of the preceding claims, characterised in that the at least one support means ~~(10, 11)~~ positions the end portion of each belt towards attachment to the gripping devices ~~(5, 6, 7)~~.

7. A pipe clamping device according to one of the preceding claims, characterised in that the elongate flexible transmission element ~~(8, 9)~~ is given a change in direction by contact with the at least one support means ~~(10, 11)~~, thereby giving the elongate flexible transmission element ~~(8, 9)~~ a movement for transmission to each of the other gripping devices ~~(5, 6, 7)~~ with a movement component that is oppositely directed to the movement of the at least one gripping device ~~(5, 6, 7)~~.

8. A pipe clamping device according to one of the preceding claims, characterised in that each of the gripping devices ~~(5, 6, 7)~~ is equipped with means for providing movement in towards the tubular centre and generating holding force in contact with the pipe.

9. A pipe clamping device according to one of the preceding claims, characterised in that the gripping devices ~~(5, 6, 7)~~ are actuated by force-providing means, preferably linear actuators.

10. A pipe clamping device according to one of the preceding claims, characterised in that the at least one support means ~~(10, 11)~~ is positioned in such a way that a movement component of the movement of the elongate flexible transmission element ~~(8, 9)~~ is transmitted to each of the other gripping devices ~~(5, 6, 7)~~ in a direction that coincides with the direction of movement thereof.

11. A pipe clamping device according to one of the preceding claims, characterised in that the at least one support means ~~(10, 11)~~ is positioned so that the movement of the elongate flexible transmission element ~~(8, 9)~~ is transmitted to each of the other gripping devices ~~(5, 6, 7)~~ in a direction that coincides with the direction of movement thereof.

12. A pipe clamping device according to one of the preceding claims, characterised in that the at least one support means ~~(10, 11)~~ is a roller means.

13. A pipe clamping device ~~(1)~~ according to claim 1, characterised in the at least one support means ~~(11)~~ being connected to at least one safety device ~~(12)~~ for controlled displacement of this support means ~~(11)~~ .

14. A pipe clamping device according to claim 13 characterised in that the at least one safety device ~~(12)~~ has a portion that is fastened to the pipe clamping device ~~(1)~~ housing ~~(1a)~~.

15. A pipe clamping device according to claim 13 or 14, characterised in that the movement of the at least one gripping device ~~(5, 6, 7)~~ is transmitted by the elongate flexible transmission elements ~~(8, 9)~~ as a pulling force to each of the other gripping devices ~~(5, 6, 7)~~.

16. A pipe clamping device according to one of the preceding claims 13-15, characterised in that a set comprising two elongate flexible transmission elements ~~(8a, 8b)~~, where each elongate flexible transmission element is in contact with at least one support means ~~(10a, 10b)~~, is arranged so that each set runs from attachment to one of the gripping devices ~~(5, 6, 7)~~ to each of the other gripping devices ~~(5, 6, 7)~~, such that a gripping device ~~(5)~~ is attached to the two elongate flexible transmission elements ~~(8a, 8b)~~, while each of the remaining gripping devices ~~(6, 7)~~ are connected to one of the elongate flexible transmission elements ~~(8a, 8b)~~.

17. A pipe clamping device according to one of the preceding claims 13-16, characterised in that at least one of the elongate flexible transmission elements ~~(8, 9)~~ runs from one of the gripping devices ~~(5, 6, 7)~~ and in contact with two support means before attachment to each of the other gripping devices ~~(5, 6, 7)~~

18. A pipe clamping device according to one of the preceding claims 13-17, characterised in that the elongate flexible transmission element ~~(8, 9)~~ is given a change in direction upon contact with the at least one support means ~~(10, 11)~~ so that the elongate flexible transmission element ~~(8, 9)~~ is given a movement for transmission to each of the other gripping devices ~~(5, 6, 7)~~ with a movement component that is oppositely directed to the movement of the at least one gripping device ~~(5, 6, 7)~~.

19. A pipe clamping device according to one of the preceding claims 13-18, characterised in that the at least one safety device ~~(12)~~ comprises a compressible elastic means.

20. A pipe clamping device according to one of the preceding claims 13-19, characterised in that the at least one safety device ~~(12)~~ comprises a spring means.

21. A pipe clamping device according to one of the preceding claims 13-20, characterised in that the at least one safety device ~~(12)~~ comprises a pressure-controlled piston cylinder.

22. A pipe clamping device according to one of the preceding claims 13-21, characterised in that the pipe clamping device ~~(1)~~ further comprises

a detection means comprising at least one safety device ~~(12)~~ and at least one sensor device, where the at least one support means is connected to the at least one safety device, the at least one safety device being provided with the at least one sensor device, which is arranged to detect the displacement of the support means.

23. A pipe clamping device according to claim 22 characterised in that the sensor device is connected to a switch.

24. A pipe clamping device according to one of the preceding claims 13-23, characterised in that the safety device supports at least one support means, where at least one elongate flexible transmission element runs over the at least one support means, the at least one elongate flexible transmission element connecting a first and a second gripping device and transmitting movement between them, wherein the safety device is arranged in such a way that the support means it supports can be displaced controllably if movement of one of the gripping devices is prevented.