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(21) International application number: PCT/CH98/00332 (22) International filing date: 7 August 1998 (07.08.98) (30) Data relating to the priority: 98102683.4 17 February 1998 (17.02.98) EP (71) Applicant (for all designated States except US): KA-TE SYSTEM AG [CH/CH]; Leimbachstrasse 38, CH-8041 Zurich (CH). (71)(72) Applicant(s) and Inventor(s): HECHT, Reinhard [DE/DE]; Maximilianstrasse 14, D-93047 Regensburg (DE). MANSTORFER, Karl [DE/DE]; Maximilianstrasse 14, D-93047 Regensburg (DE). (72) Inventors; and (75) Inventors/Applicants (US only) ULRICH, Hanspeter [CH/CH]; Novita Engineering, Isenrietstrasse 20, CH-8617 Mönchaltorf (CH). WYDER, Hans [CH/CH]; Novita Engineering, Isenrietstrasse 20, CH-8617 Mönchaltorf (CH). BUNSCHI, Hans [CH/CH]; Ka-te System AG, Leimbachstrasse 38, CH-8041 Zurich (CH). WEINGARTEN, Marco [CH/CH]; Ka-Te System AG, Leimbachstrasse 38, CH-8041 Zurich (CH).	(74) Attorney: SCHAAD, BALASS, MENZL & PARTNER AG; Dufourstrasse 101, CH-8034 Zurich (CH). (81) Designated states: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO Patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW). Eurasian Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IB, IT, LU, MC, NL, PT, SE), OAPI Patent (BF, BJ, CF, CG, CL, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With the International Search Report.	

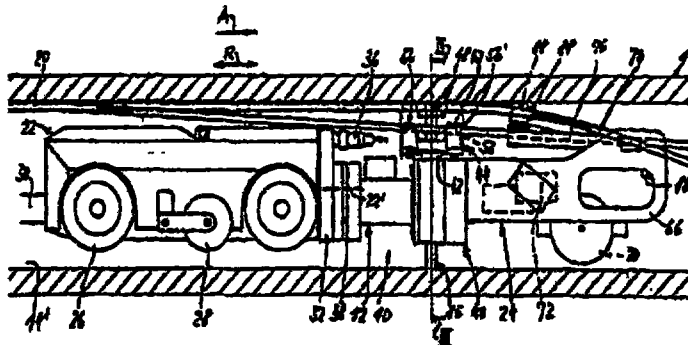
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(54) Title: DEVICE FOR INSERTING ELONGATED OBJECTS INTO CLAMPS

(54) Bezeichnung: VORRICHTUNG ZUM EINSETZEN VON LANGGESTRECKTEN GEGENSTÄNDEN IN KLAMMERN

(57) Abstract

The present invention relates to a device (10) used for inserting elongated objects (20), such as cables or pipes, into clamps (18) which are arranged within a tube (14) that cannot be accessed. The device comprises a channel robot vehicle (22) having a working unit (24) mounted thereon. The working unit is provided with a placing head (44) which is capable of radial displacement thanks to a drive system (46, 48). The placing head (44) comprises two rows (56, 56') each including three longitudinally-extending reception grooves (58, 58') which are each intended for receiving one object (20). The central reception grooves (58') are arranged on a placing member (62) that protrudes onto the adjacent reception grooves (58) and that can be urged against the force of a pressure spring (64). The working unit (24) is further provided with a guiding device (74) for guiding the objects in an essentially parallel direction. Thanks to this device (10), it is possible to introduce up to three objects (20) at a time into the clamps (18) during a single operation.



(57) Zusammenfassung

Die Vorrichtung (10) ist zum Einsetzen von langgestreckten Gegenständen (20), wie Kabel oder Rohre in Klammern (18) bestimmt, die im Innern eines nichtbegehbaren Rohres (14) angeordnet sind. Die Vorrichtung weist ein Kanalroboterfahrzeug (22) mit einer daran angeordneten Arbeitseinheit (24) auf. Diese ist mit einem Setzkopf (44) versehen, der mittels eines Antriebs (46, 48) in radialer Richtung bewegbar ist. Der Setzkopf (44) weist zwei Reihen (56, 56') von je drei in Längsrichtung verlaufenden Aufnahmeboiten (58, 58') auf. Diese sind zum Aufnehmen je eines Gegenstandes (20) bestimmt. Die mittleren Aufnahmeboiten (58') sind an einem Setzelement (62) angeordnet, das über die benachbarten Aufnahmeboiten (58) vorsieht und entgegen der Kraft einer Druckfeder (64) zurückdringbar ist. Weiter ist die Arbeitseinheit (24) mit einer Führungseinrichtung (74) zum wenigstens annähernd parallelen Führen der Gegenstände (20) ausgerüstet. Mit der Vorrichtung (10) können bis zu drei Gegenstände (20) zusammen in einem einzigen Arbeitsgang in Klammern (18) eingesetzt werden.

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