

Title (en)

Multi-stage actuator with at least three sliding elements and telescopic jib incorporating this actuator.

Title (de)

Mehrstufiger Zylinder mit mindestens drei verschiebbaren Teilen und dessen Anwendung in Teleskopauslegern.

Title (fr)

Vérin multiple à au moins trois éléments coulissants et flèche télescopique en faisant application.

Publication

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Application

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Priority

FR 8708297 A 19870615

Abstract (en)

The invention relates to a multi-stage actuator with at least three elements mounted so as to slide relative to each other, comprising one first piston (4), slidably mounted in a first cylinder (1) where it defines a first large chamber (5) and a first small chamber (6); one second piston (9) slidably mounted in a second cylinder (7) integral with the first piston (4) where it delimits a second large chamber (10) and a second small chamber (11); one piston rod (12) fixed to the second piston (9); one first passage (13) providing permanent communication between the first small chamber (6) and the second large chamber (10); and two pipe couplings (20, 21) to two external pipes (28, 29) connected to a fluid delivery device (23) and a fluid outflow (22). The pipe couplings (20, 21) are placed on the piston rod (12); and the first large chamber (5) is connected to one (20) of the two pipe couplings by a first pipe (14) fixed to the first piston (4), leading to the first large chamber (5) and mounted for sealed telescopic sliding relative to a second pipe (16) fixed to the second piston (9), leading into the second large chamber (10) and positioned inside the piston rod (12), the second small chamber (11) being connected to the other pipe coupling (21) by a third pipe (18) formed in the piston rod (12) and leading into the second small chamber (11). One application is the construction of a telescopic crane jib. <IMAGE>

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IPC 8 full level

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CPC (source: EP)

B66C 23/705 (2013.01); **F15B 15/16** (2013.01)

Citation (search report)

- [Y] US 3624979 A 19711207 - PRZYBYLSKI DANIEL F
- [A] US 3603207 A 19710907 - PARRETT JOHN T
- PATENT ABSTRACTS OF JAPAN, vol. 7, no. 31 (M-192)[1176], 8 fevrier 1983; & JP-A-57 184 709 (YUNITSUKU K.K.) 13-11-1982

Cited by

CN102678662A; CN105782160A; KR100597531B1; US5435228A; EP0849824A1; US5850713A; EP0551716A1; CN101900150A; CN110296262A; EP0446115A1; FR2659398A1; US5111733A; FR3013744A1; EP3199485A3; ITUB20160363A1; AU2016269490B2; US10017363B2

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