УДК 677.05-52

GLOVE AUTOMAT TYPE PA DRIVE WITH REDUCING DYNAMICAL LOADS DEVICE WITH COIL SPRING AND FREEWHEEL

O.V.Chaban, postgraduate
Kyiv national university of technology and design

Keywords: glove automat, glove automat drive, dynamical loads of drive, reducing dynamical loads, reducing dynamical loads device, freewheel.

In basis of researches placed task to develop drive of glove automat type PA with effective reducing dynamical loads device which are arising on the launch.

How researches showing reducing dynamical loads which are arising on the launch of glove automat could be reached by using in drive reducing dynamical loads device (RDLD). At the same time preference should be given to RDLD with coil spring.

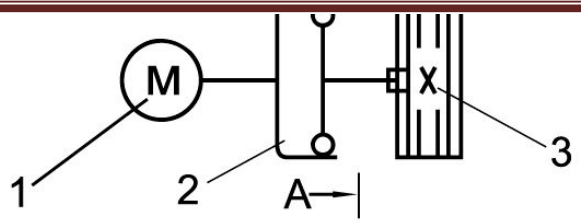
Consider possibility and efficiency of using similar RDLD for reducing dynamical loads which are arising on the launch of glove automat type PA.

Kinematical scheme of glove automat type PA drive with reducing dynamical loads device with coil spring and freewheel that was offered by author showed on the drawing 1.

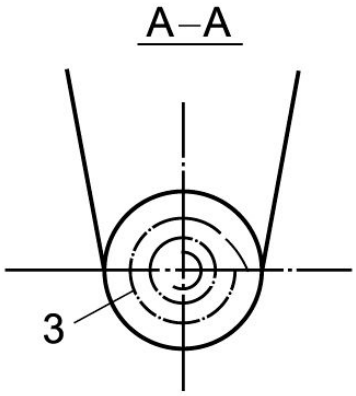
Work principle of glove automat drive is as follows. At switching on electric motor 1 rotating of its axle by using freewheel 2 transmitted to coil spring 3 that installed in leading pulley of belting 4. With increasing rotate angle of electric motor axle coil 3 twists. At the same time its elasticity moment creating prestressing of elastic binding of drive gears. With increasing rotate time of electric motor axle its launch moment decreasing to the value due coil stiffness. At full twist of the coil movement gets to leading pulley of gear 4 and by belts transmitting movement to reducer 5. Rotating movement of the reducer 5 output axle by belting 6 transmitting to the driving axle 7 with fixed on him asterisks 8 and 9, rotating of which makes to move appropriate mechanisms that define glove automat launch. Availability coil spring as part of glove automat drive support executing of following conditions that making positive influence on reducing launch dynamical loads: limitation electric motor launch moment, creation prestressing of elastic binding of drive.

On stop of glove automat moment of spring elastic forces 3 transmitting to electric motor rotor 1 and makes it rotate in reverse direction. In order to twisting of spring in reverse direction won't arise, that makes negative influence on its efficiency, provided freewheel 2, that separate spring from electric motor on its stop.

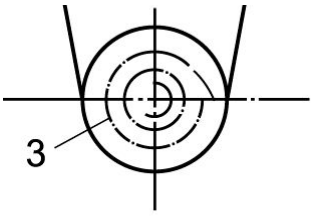
Executed calculations [1] show that using as equipment of glove automat PA-8-33 drive proposed RDLD by prestressing binding of drive and reducing launch dynamical loads of electric motor allows to reduce launch dynamical loads in elastic binding of drive from 2,52 to 2,76 times. Herewith coefficients of elastic bindings of drive overloads on launch not exceed 1,1.



Фіг.1



Фіг.2



Фіг.2

Drw. 1. Kinematical scheme of glove automat type PA drive with RDLD with coil spring and freewheel: 1 – electric motor; 2 – freewheel; 3 – coil spring; 4 – belting; 5 – reducer; 6 – belting; 7 – driving axle; 8, 9 - asterisk

Proposed construction of drive could be used not only in upgrading and creation new constructions of glove automats, but also and other types of knitting machines and general purpose machines.

List of used sources

1. Pipa B.F., Chaban, O.V., Muzychyshyn S.V. Drives of knitting machines and automats with reducing dynamical loads devices. - K.: KNUTD, 2015 - 280 p.

2. Pat. of Ukraine on utility model #94299, MPK: D04 B 15/16, D04 B 15/96. Glove automat drive / B.F. Pipa, O.V. Chaban, Publ. 10.11.2014, Bull. #21, 3 p.