

EXPERIENCE USING THE RESULTS, OF STAND TESTS FOR RESOURCE PROGNOSIS

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Improvements of the stand which expand its functionality, using results of tests of wheeled tractors for resource prognosis

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Introduction. World experience [1] shows, that the problems of the optimal planning of machines and equipment can be solved faster and qualitatively in the case of theoretical pre-conditions are confirmed or are corrected on the base of experimental research and testing of machines. Results of testing are analyzed and are generalized on the basis of theoretical positions. This is the "method of shuttle", which accelerate development of high-performance machinery, enrich and find new application of theoretical researches, improve the methods of testing.

Problem. The important constituents of acceleration of development of mobile transport vehicles are improvement of testing methods, research of the dynamic loading in the real conditions of exploitation and on the stands of experienced models and prototypes and resource prognosis. It is especially important, that these constituents were qualitative and gave an opportunity to estimate the resource of pre-production models with high probability on the base of being and application of new theoretical researches.

Analysis of the last researches and publications. Well-known method is simultaneous test of two transport vehicles, carried out on one band stand with the foot-pace location of obstacles by continuous influence on the lever of serve of fuel in their engines and braking of stand ribbon.

Testing by this method does not recreate sufficiently full oscillation of the dynamic system of transport vehicles and oscillation of hauling effort on the hook of transport vehicle, caused by the unevenness of soils resistance during the fields processing, as a result the intensive loading of examinee transport vehicles is not recreated in full operating loading.

With the aim of reduction of the tests duration by expansion of loading spectrum and increase of exactness with synchronous test of two transport vehicles, continuous influence is produced on the lever of serve of fuel in engines and braking of stand ribbon [2]. But this stand has low longevity at the tests of tractors with the large hauling loading. There is a well-known stand [3], that contains basis, brake as the rails located in parallel to longitudinal axle of stand, tension wheels joint set on basis, caterpillar contour that embraces tension wheels, friction elements as the protective straps, related to caterpillar contour and rails that form with a pair, air ducts, air forcing setting connected with the indicated channels. Examined transport vehicles are set on caterpillar contours (endless

ribbons) that have shoes of certain height. With the rotation of transport vehicles driving wheels the caterpillar contour begin to turn around, and a collision of shoes with wheels imitates the cross-over of the unevenness of the road.

The aim of researches is expansion of functional possibilities of stand for a speed-up tests of the wheeled tractors and improvement of resource prognosis method.

Results of researches. This aim is achieved by using the stand [4] that is additionally equipped by two lateral longitudinal directing envisaged on basis, by the bearing supports, set on the lateral longitudinal directing with possibility of moving and fixing the transversal billow set in bearing supports, central running drum envisaged on a transversal billow along the longitudinal axis of stand, and asterisks envisaged on a transversal billow for both sides from a central running drum and hooked with corresponding caterpillar contours.

On the basis of the 1st stand (pict. 1) a brake 2 is mounted as rails 3, located in parallel to longitudinal axle of stand. Tension wheels 4 and 5, joint set on the basis of 1, overcame by caterpillar contours 6 and 7, that consist of caterpillar chain 8 and shoes 9. To the shoes 9 by means of resilient elements 10 friction protective straps are fastened 11, that co-operate with the pair of rails 3. On the basis of 1 the air forcing setting is placed 12, united by means of collectors 13 with channels 14 -17. On the lateral longitudinal directing 18 and 19, envisaged on the basis of 1, bearing supports are set 20 - 23 with possibility of moving and fixing in that transversal billows are mounted 24 and 25 with envisaged on them along the longitudinal axis of stand by central running drums 26 and 27 and by asterisks 28 - 31, placed on a transversal billow for both sides from central running drums 26, 27 and hooked with corresponding caterpillar contours 6 and 7.

Examined wheel tractors 32 and 33 of the three-wheeled construction is set by back driving wheels on caterpillar contours 6 and 7, and front (slave) - on running drums 26, 27 and hold out by traction(link) 34, related to the bars 35.

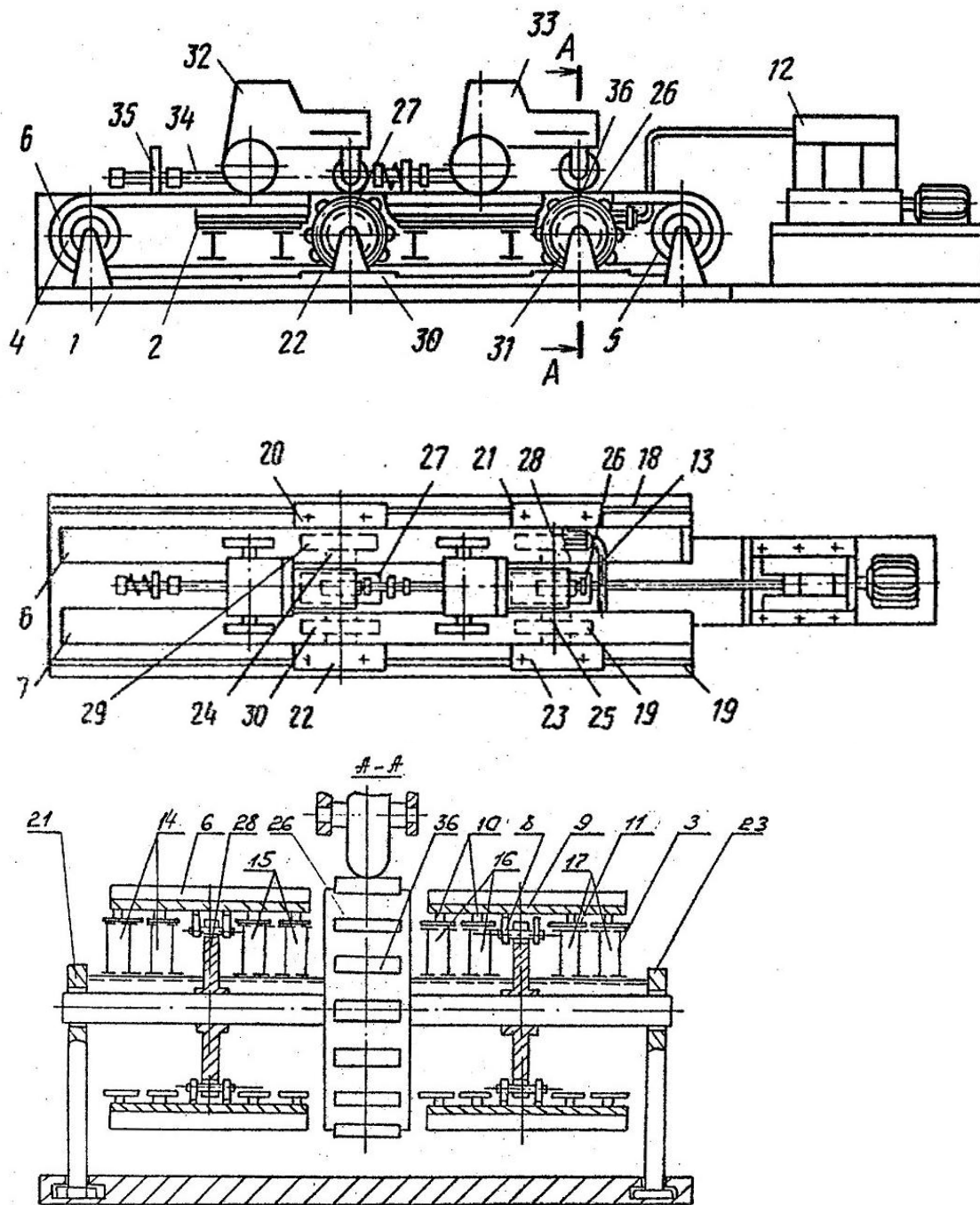
A stand works in this way. At the rotation of back driving wheels of tractors 32 and 33 caterpillar contours 6 and 7 begin to turn around, driving to the rotation drums 26 and 27. At moving of friction protective straps 11 on the heads of rails 3 there are forces of friction, that create resistance to the rotation of driving wheels.

Resilient elements 10 pin friction protective straps 11 to the heads of rails 3. Co-operating of fore wheels of tractors with obstacles 36, located on drums 26, 27 and executed with a certain height and form. causes the imitation of moves of inequalities that meet at run of tractor in exploitation, By means of the lateral directing 18 and 19 move running drums 26 and 27 end-on during setting on the stand of the wheeled tractors with different distance between axes front and back wheels.

Turning on the air forcing setting 12 air is directed on longitudinal channels 14 - 17 and cools the surfaces of rails heads 3, and friction protective straps 11, providing a normal temperature condition

Thus, due to applying the running drums and possibility of their transferring to longitudinal direction the test of transport vehicles of the three-wheeled construction of different modifications, that extends functional possibilities of stand, is provided. A height, form and number of obstacles, is determined on results

researches by the dynamic linking of transport vehicles in exploitation [5]. The calculation of prognosis size of resource performs by the methods of statistical dynamics [6], and speed-up estimation of descriptions of tiredness resistance according to the results of tests of constructions by methodology of work [7].



1 - basis of stand; 2 - a brake flag; 3 - a rail; 4, 5 - tension wheels; 6, 7 - caterpillar contour; 8 - a caterpillar chain; 9 - a boot; 10 - a resilient element; 11 - a friction protective strap; 12 - the air forcing setting; 13 - a collector; 14, 15, 16, 17 - channels; 18, 19 - the lateral longitudinal directing; 20, 21, 22, 23 - bearing supports; 24, 25 - transversal billows; 26, 27 - central running drums; 28, 29, 30, 31 - asterisks; 32, 33 - examined tractors; 34 - traction; 35 - a bar; 36 - an obstacle

Picture 1 - Is a stand for a speed-up tests of the wheeled tractors

Conclusions. Due to the improvement of stand by applying of running drums and possibility of their transferring to longitudinal direction the test of transport vehicles of the three-wheeled construction of different modifications, that extends functional possibilities of stand, is provided.

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