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Materials of the conference devoted to the place and role of the city of Perm in the development of the Russian economy, industry and science. The article deals with diverse aspects of industrial history as well as current social and economic problems are analyzed and determined prospects of development of the city. The publication is recommended for students, teachers and professionals in the fields of history, economics, urban studies, cultural studies, political science, sociology, and for all who care about the history and present-meline life of the city of Perm.

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Motor saws 220 MB - 180 MB PRODUCTION PLANT MI. Dzerzhinsk.

ORIGIN, DEVELOPMENT,

USE IN USSR forest industry

Annotation. We consider the initial stage of the use of chain saws in the domestic forest industry and compared the two primary O plans five-year plans with the real state of the forest industry in the late 1930s. On the example of the chain saw is the MP-220 and plant them. Dzerzhinsky shows the difficulties faced by the designers in the development and production. Comparison of structural osoennostey otechest--governmental saws MP-220 and foreign chain saws.

Keywords: chain saws, wood industry, industrialization tion, five-year plan, Plant. Dzerzhinsky TSNIIME.

Abstract. This work covers an early stage of using motor saws in Soviet forestry and compares plans of the first two five-year plans with the real state of Soviet forest industry at the end of the 1930s. Motor saw MP-220 and plant named after FE Dzer- zhinsky are used as an example to show the difficulties that designers faced in motor saw design and production. It also compares the design features of Soviet saw MP-220 and foreign motor saws.

Key words: chainsaws, forestry, industrialisation, five-year plans, plant named after FE Dzerzhinsky, CNIIME.

Research on the issue of using chain saws on the harvesting began in 1926 in conventional logging enterprises [2, p. 17], and later moved to the specialized experimental stations. At the same time used as foreign publications, as well as the real motor saws, procured for experimentation.

Initially we considered different designs of motor saws. It was not only chainsaws but chain saws, hacksaws. In addition, various options were considered handsaws, which could be used by one person.

It was a very thorough research, which analyzed all aspects of the use of motor saws. Was measured as the timing of certain operations and the entire work shift. distributed

It was read, and the economic feasibility of individual blades, and a timber company in its entirety. The results of these studies inspire much optimism, and chain saws are widely expected to use.

Thus, according to the development plan of the Soviet Far East for the second five-year period to 1937 the use of chain saws felling and bucking was to reach 52% of the program [5, p. 115]. A project to build the Kotlas Pulp and Paper Mill says that the program will need to Kotlas area 285 chain saws "Rinko" 4200 spring and drank "Kompis" [6, p. 60].

These plans are fully in line with the place of the forest sector in the national economy. Wood was the fuel, building materials, raw materials for the pulp and paper industry, as an export commodity, foreign exchange earner. Therefore, despite the desire and attempts to create their own design of the chain saw, the Soviet Union in the autumn 1930 the competition of foreign chain saws and begins to bulk purchases. And if in 1928-1929 in the forest industry was seven chain saws, and in 1929-1930 - 47, their number amounted to 310 units in 1931, and in 1932 - 386 [7, p. 39].

By modern standards, 300-400 chain saws it is very small, but in 1930 the market of motor chain saws only formed, and this amount was very high. Although chain saws produced in the US and Europe, they were not used in the process of felling trees, and attended mostly in warehouses for bucking.

The best illustration of this situation is the information box on the official historical web site Stihl, created for the 90th anniversary of the company. There shows the cover of the Russian-language instructions (probably not true) and there is a text entitled so: «Stihl struggling with the crisis.» In the text it is reported that in 1931 by Andreas Stihl went to the Soviet Union, where he received an order to "several hundred felling machines Stihl». Ibid Set the amount of the monthly release saws Stihl - 28 pieces.

Thus, the plans for the use of chain saws in the USSR, not only exceeded the corresponding figures in other countries, but also very calm Adreasu helped in the development of the production of his own chainsaw.

CREATING chainsaw MP-220

Despite the start of the purchase of foreign chain saws, it remained a need for the production of domestic models. This question tried to solve since the late 1920s. There were various prototypes Gasoline and electric chainsaws, some of which went into series production. One of the serial drinking has become a model "TSNIIME-2", produced at Perm plant them. Dzerzhinsky under the designation "MP-220".

Designer of the blade was TSNIIME Officer (Central Research Institute of Mechanization and Energy, Forest Industry) Nikolai Uvarov, before working in VNII (All-Union Scientific Research Institute of the timber) and took part in the study of foreign chain saws. And before you consider its design, it is necessary to return to foreign saws.

In the early 1930s, there were two types of chain saws:

- with a rotary saw part - design like the chainsaw "Friendship", when the engine does not change the inclination;
- tselnopovorotnym - design as the most modern chainsaws, when the motor rotates together with the guide bar.

Uvarov two variants of chain saws, respectively, have been developed:

- TSNIIME-1 - with a rotary saw part,
- TSNIIME-2 - tselnopovorotnym.

That embodiment TSNIIME-2 was the basis of the MP-220 national chain saw (hereinafter, MP-220-A, MP-180 and MP-180 "Ural"). In order to understand what it was for drinking, it is necessary to consider foreign tselnopovorotnym chain saws, who participated in the competition in 1930, namely the model Rinco A and Stihl A. Despite the external differences, is very similar in blade design.

The basis of the chain saw Rinco A (Fig. 1) lying motorcycle engine BEKAMO. The engine crankcase was inserted gear transmitting rotation of the chain, aggregation magneto and place the fuel tank mounting. Located around the engine chamfered metal frame serves as both the motor support block and handles, allowing the saw to work in different positions. Very quickly it appeared that motorcycle engine overheats due to lack of air flow (produced when the motorcycle is ridden). The manufacturer tried to resolve this issue by adding the pipe that supplies air to the engine cooling fins, but fundamentally it has not changed the situation.

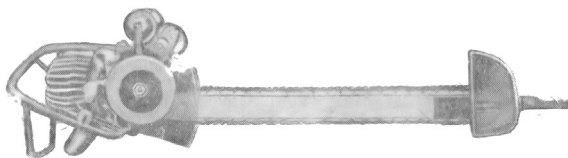


Fig. 1. Chain saw Rinco A (model 1927)

Stihl A (Figure 2.) - a model that began to produce Andreas Stihl before are manufacturer of chainsaws Rinco. In fact, this model is an improved version Rinco A. In the crankcase just reducer for driving the chain has been built, the magneto aggregation and place the fuel tank attachment (Fig. 3). Also beveled frame has been saved.

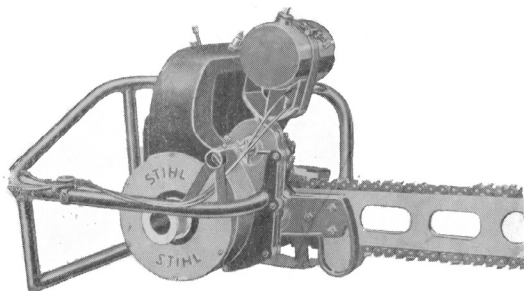


Fig. 2. Chain saw Stihl A (model 1930)

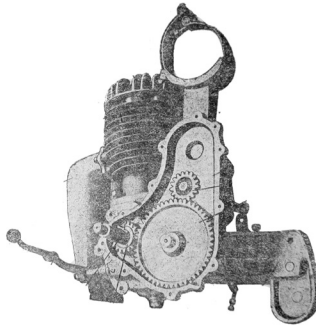


Fig. 3. The chain saw engine Stihl A
(Model 1931)

Stihl A principal difference from Rinco A was the position of the engine and a cooling mechanism - present an impeller and a casing, guiding the air flow from the impeller (there were also other differences, but in principle these saws apparatus was the same).

In 1931 there is a new modification of the Stihl A (Fig. 4), among other things, having a beveled "bike" handle instead of the frame. Structurally, being close to Rinco A, this modification has almost no outward resemblance to her, and that this modification of the company Stihl calls his first chainsaw.

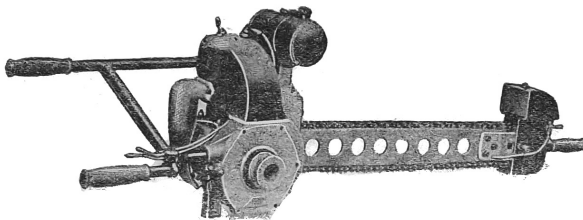


Fig. 4. Chain saw Stihl A (model 1931)

One would assume that domestic designers will follow the same path - take someone else saw it and change the capabilities of the industry. In the cases of experimental saw "Pioneer" and the series saw the MP-300 and it was, but with 2-TSNIIME

the situation was different. The main reason for this was that the foreign samples do not meet the requirements for motor saws from the Soviet timber industry leadership.

On the 7th Conference of the CPSU (b) Semyon Lobov, the first People's Commissar of the People's Commissariat for the wood industry, said the following: "We must find ways of mechanization sawing, felling and cutting it. And this is not an easy task. Saws, which are still used abroad, did not give such a result that to some of them could stop and put the production at these saws. We currently have around 400 chain saws in the woods, but we have not yet achieved such results, to be able to build a plant for the production of one or another blade "[1, p. 41].

It was a sober assessment of the current state of the world market of gasoline-powered saws. The paradox is that the production of chain saws was included in the five-year plan, but no one in the world at that time still did not saw with the desired characteristics. It unleashes Uvarov hands, and he designs the world's best gasoline-powered saw.

As a result, the project saw tselnopovorotnym TSNIIME-2 [11] is obtained:

- gearless - drive sprocket the chain is driven directly from the engine crankshaft;
- with the flywheel magneto.

This design allows you to do the heavy crankcase, like Rinco A and Stihl A, which immediately leads to a weight gain. Further, due to the lack gear, the speed of the chain increases. In TSNIIME-2 it becomes more than 10 m / s, compared to about 4 m / s from Rinco A and Stihl A. Project saw the weight of fuel should be almost 25.5 kg, but the actual weight of the prototype was smaller - 21 kg in the filled state . With such a set of design features and characteristics of the 2-TSNIIME it does not just become better foreign tselnopovorotnym drank and moved to the next generation of saws and could compete with models that were only 10-15 years.

But it is in theory but in practice is more complicated. In the years 1935-1936 there are articles in which the Perm Plant. Dzerzhinsky was accused that during the development of the production chain saw made changes to the structure, as a result of which it was produced a few dozen are not suitable for use chain saws [12, 13] According to Uvarov, took part executives commissariats forestry and heavy industry in order to plant began working with TSNIIME [10, p. five].

As well as the history of the timber industry wrote TSNIIME, rather than plant them. Dzerzhinsky, the canonical form it was read as follows: "But, without any grounds for doing so, the plant them. Dzerzhinsky saw increased weight from 19.7 kg to 32.6 TSNIIME project, and in the latest models of "Ural" even to 34.2 kg "[4, p. 74] (in this case, refers to the "dry" weight - without fuel).

Despite the fact that the apparent cause of weight gain is a complete serial saws unrealistic projected weight, we have the opportunity to understand what happened and to determine the degree of guilt of the plant.

In the summer of 1936 he published an article [12], in which the very same changes that made the plant described. Nine of them:

1) Replacement of the needle bearing on the ball - this is strange act and then the plant is completely wrong;

2) Mount the fuel tank on the heels of two instead of four - take into account Vai the fact that in the struggle with the weight of the stud is attached directly to the engine, it can be said that all of the two sides are wrong;

3) the saw handle changed frame on the bevelled cycling "of type blade Calm "- flat frame is one of the main elements of ergonomic TSNIIME-2. She let stand straight (Fig. 5), without bending your back and not with one hand straightened and the other bent, as was the drink Rinco A (Fig. 6). Despite the seeming evidence of wrong plant, saws MP-220 and MP-220A was just such a "cycle" starts located at different heights. The MP180 their custom made, but to the option "frame", and did not return. That is, the plant had been right;

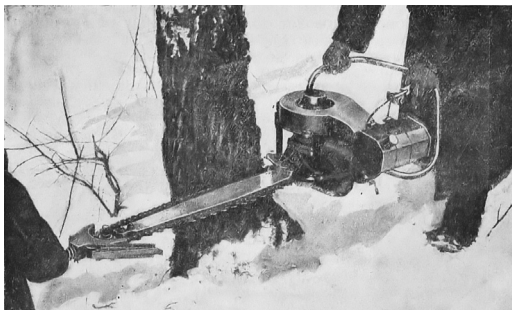


Fig. 5. Tree felling chain saw TSNIIIME-2 (prototype)



Fig. 6. Cutting wood saw motnoy Rinco A

4) in the clutch spring has been removed - the plant is not right;

5) changes in the clutch control, a Bowden cable on the lever -

Bowden cable has been a weak point in the prototype saw TSNIIIME-2, and was subsequently used the same principle as that used plant. But set against this is a definite plus in the plant does not allow it, it is this principle has been implemented: Rod held next to the saw chain and be damaged in its cliffs, as there was no possibility of a quick disconnect coupling without lowering the saw on the ground;

6) brass tube was placed instead of the flexible fuel pipe compensator - then the plant is completely wrong - this implementation does not normally allowed to rotate the carburetor to convert the saw into position harvester;

7) Plant amended the carburetor design - Plant non-rights;

8) replacing the saddles chain saw chain, which Gorkovsky za-Water released to our existing motor saws Stihl - Uvarova wish to use to saddle chain was not so unreasonable. Moreover, after the war, such chains have proliferated on saws for one person. Therefore, there is wrong plant. This wrongness is compounded by two facts. First: Stihl chain was low speed and do not conform to TSNIIME-2. Second, the wider the chain saw is not only increased weight, but also gave a heavy load on the engine;

9) the most with an increase in weight. Then the plant is charged with something, instead of 21 kg in the filled state of the prototype, serial saw began to weigh 27.5 kg.

However, if we recall that the project saw had to weigh 25.5 kg, 27.5 kg weight not exceeding looks strong. In the end, after all the modifications involving TSNIIME, MP-220 saw the year 1936 already weighed 35 kg, and in the next 20 years, it had modified the weight of 30 kg.

Thus, two conclusions can be drawn. Firstly, to increase the weight of the series saw compared to blame the author of the project (TSNIIME and Uvarov NV) overly optimistic project. And as a whole is currently overly dramatized. Secondly, part of the changes made to plant them. Dzerzhinsky saw in design, it has taken root, and this makes it a co-author of the MP-220 chain saw.

And even after the Plant. Dzerzhinsky "landed" overly optimistic project TSNIIME-2, for the mid-1930s, it was quite a good drink. In the future, this saw has passed a series of upgrades and performed before the start of the 1950s. That this saw in the MP-220A modification can be seen in the movie "Moscow Strikes Back", which received in 1942 "Oscar" award.

To see that same saw, referred to earlier, it is possible in the Perm Museum. It is written on the label "MP-50", apparently, is the designation of the length of the cut, not the volume of the engine, but this is the very model of the saw, which was criticized Uvarov in 1936 (Fig. 7).

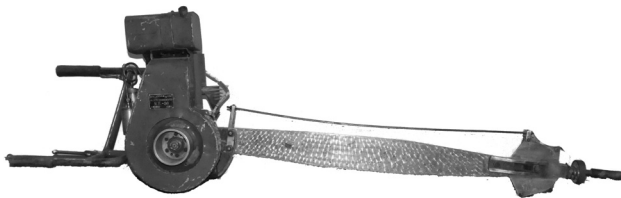


Fig. 7. The chain saw is the MP-50 (Model 1935)

The features of this model are:

- beveled bike handles;
- Clutch lever switch in which the rod extends in close proximity to the chain;
- metal tube as the fuel pipe.

Thus, if we compare the three all-moving blade, it turns out that, despite the differences in appearance, Stihl A structurally close to Rinco A, MP-220 but is fundamentally different from the superficially similar to it Stihl A.

It can be argued that the saw MP-220 - is a private development TSNIIME and plant them. Dzerzhinsky. It not only is a copy of the design and Stihl A Rinco A, but also structurally superior to them. Moreover, the issue of lack of gearbox between the engine and saw chain saws this ahead of the global market for 15 years. Foreign models, claiming the title of "the world's first gearless chainsaw" refer to the end of 1940 - beginning of 1950. (It is impossible to say with certainty that the "MP-220" was the world's first gearless chainsaw is rightly said: "The earliest known".)

INTRODUCTION chain saws in forestry

Thus, in the 1930s in the USSR:

- large state plans to use chain saws in harvesting;
- chain saw, which, even after the "landing" in the process of mass production was good and in some ways ahead of foreign models.

There remained only the question of the introduction of chain saws in the forest industry.

Abroad, attempts to use chain saws in the forest industry observed since the early 1900s. They were mostly stationary or mobile machines, and their practical application is limited bucking. Despite the fact that by the mid-1930s there have been significant changes in the design of chainsaws, they were heavy and awkward to use in the forest. Time-consuming to switch the saw from one tree to make their use on cutting area uneconomical [9, p. 14]. Despite some improvements in this area that have occurred during the Second World War and the related need to increase the production of wood, finally the situation has changed only in the 1950s, along with the massive spread of chainsaws for one person.

The situation in the Soviet Union had a similar, but with its own characteristics. Besides the ergonomic factor associated with the weight of motor saws, personnel problem existed. The fact is that in those years worked at logging sites temporary workers from the peasants. They were harvesting using hand tools and cartage. These people not only can not cope with such a complex mechanism as a chain saw, but in general have low qualifications as the loggers. In its report in 1932 and is noted Commissar Lobov: "It is not a question that our lumberjack lazy to work, and the Canadian diligently works, but we are often low-skilled people are working with bad tools. Comes village lad, who for several years in the woods, and the other - the year there. Canadian - he is constantly working, it is his profession" [1, p. 41].

As one of the solutions to this problem was proposed to include "skilled factory workers" in the brigade of mechanized felling [3, p. 134], but given the shortage of skilled workers in the factories themselves rely on their massive use was not possible during logging.

Another important issue in terms of both personnel and the economy, has been pay. All planned to methods of using chain saws expected transition to teams numerically

Stu 5-10 people with rigid division of labor. These changes put the income of workers depending on the quality of the work of other actors in the chain and cause resentment and fear.

If we add to this staffing problems in the industry, the result of which there were problems with the implementation of the plan for the production of chain saws, connected with their quality, that there was no chance for the execution of the original plans for the mechanization of the rolls by means of chain saws.

Conditional completion time trying to mass use of chain saws (both gasoline and electricity) can be considered as 1938, when instead of going to the motor and the spring blade SNK decree on November 15, 1938 has been fixed transition to luchkovye.

Although this document mentions the chain saws, there is a clear order "to fully translate the logging in 1939 in the Bow saws" [8, p. 324]. Also in the second half of the 1930s in the forest profile press already was a wide propaganda campaign about how to properly operate a bow-shaped saws. Thus, by the beginning of the third five-year plan for the implementation of chain saws in the forest industry not only been met, but were canceled after the fact.

FINDINGS

Despite the complete failure of mechanization plans felling trees using chain saws, the experience was not as straightforward. For most forest industry, this situation is rather negative - go to Bow saws can begin at the end of the 1920s. Neither the absence of permanent staff in the lumber or pay system that does not interfere. Moreover, that such ideas were heard at the top. At the session of the Central Executive Committee in 1929, Nikolai Pakhomov (chairman of the Nizhny Novgorod regional executive committee) said: "In America, especially not drinking too much," Rinko ", but there is a hand saw, which works fine and you just have to know how to manage it." However, the desire of rapid and radical changes took precedence.

In matters of design and gasoline electromotive drank was formed backlog, which subsequently played a positive role:

- those people who in the 1930s developed the domestic petrol and electric saw, electric saw created after the war, K-5 and a chainsaw "Friendship";
 - It has accumulated experience in the development of mechanized felling technology;
 - sections on motor saws, appeared in the curricula of forestry schools. This has contributed to the formation of cadres ready to work with motor saws;
 - and, finally, we had a factory that since 1935 engaged in the development and serial production of chainsaws.
- Thus, when the technology matured, and it is time to mass production of lightweight chainsaws for one person in our country have been scientific, educational and production staff, which allowed to solve the problem of real mechanization of harvesting. And Perm Plant. Dzerzhinsky played in this very important role.

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