Automation of the technological process of processing parts of the "Fork" type

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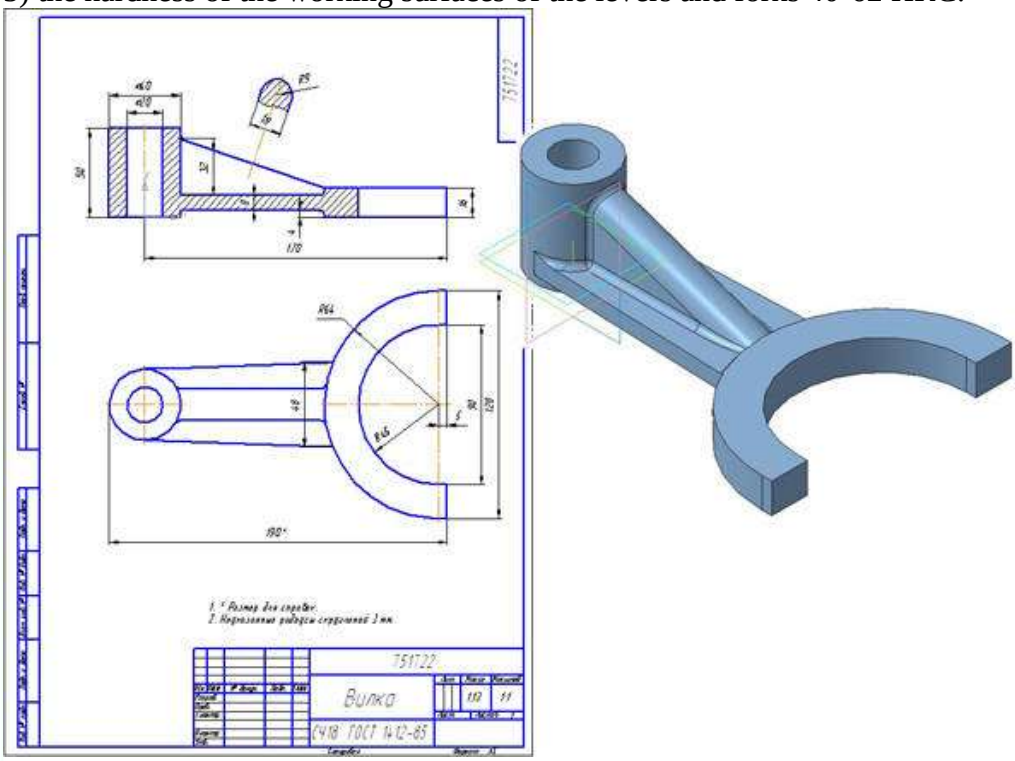
Annotation: This article analyzes the design of the fork part, its design features, methods for obtaining this part, a study was made aimed at automating the process of obtaining this part.
Keywords: fork, machining process, cardan shaft, forging stamping

The fork belongs to the class of levers and is a body with a central groove of rectangular section. It is part of the gimbal section, which serves to transmit torque.

The main specifications for levers and forks are:

1) holes, the surfaces of which the levers and forks mate with the rollers, are made according to 7-8 accuracy and Ra - 0.6-3 microns;
2) the accuracy of the distances between the axes of the holes is ±0.1–±0.3 mm;
3) non-parallelism of the axes of the holes is not more than 0.05-0.3 mm per 100 mm;
4) permissible perpendicularity of the machined ends of the bosses of the levers to the axes of the holes 0.1-0.3 mm per 100 mm;
5) the hardness of the working surfaces of the levers and forks 40-62 HRC.



Based on the official purpose, technical requirements, design complexity and other factors, the method and material for obtaining the workpiece is selected. The material for obtaining the workpiece of this part can be either from cast iron of a number of grades, or several grades of steel.

For example, blanks of cast iron forks are obtained by casting into sand molds. And steel billets of forks are usually made by forging or stamping.

According to the machinability of surfaces, the surfaces of the forks can be divided into: machined holes, mounting surfaces and side surfaces. Thus, the approximate processing route is clear, and consists of: grinding or milling flat surfaces, drilling holes.

The next stage in the design of the technological process for manufacturing a fork-type part will be the choice of equipment. This stage of this process plays an important role in improving production efficiency. Because when choosing equipment, it is necessary to take into account a number of factors that affect time consumption, product quality, labor costs, etc.

The task in this study is to automate the process of manufacturing parts such as forks, to achieve this goal, careful selection of both equipment for processing workpieces and measuring instruments, as well as automation of transitions of operations, is necessary.

For complete automation of the process, it would be advisable to choose automated production equipment, for example, a universal CNC machining center is suitable for this type of part.

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This equipment will allow to obtain parts with high accuracy, while saving working time, minimizing the cost of human labor.

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