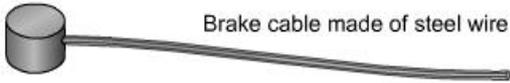


Product Analysis: Bicycle Brake Lever

Introduction

A bicycle brake lever is illustrated in Photo No. 1 opposite. Three important parts have been labelled A, B and C.

A brake cable is connected to point B by a linkage and a brake cable toggle.



A bicycle brake is illustrated in Photo No. 2. This part of the brake system also utilises levers. These levers hold brake pads that stop the wheel when forced against the wheel rim. Three important parts of the lever have been labelled D, E and F.

Brief

Analyse the photographs of the brake levers in Photo No. 1 and Photo No. 2, then use notes and sketches to explain how this bicycle brake system works.

Suggestions

Looking at Photo No. 1

- Determine the class of lever used in the brake lever in Photo No. 1.
- Draw the lever, labelling the fulcrum, the point at which the load is applied and the point where the effort is applied.
- Explain what happens to the steel brake cable when the brake lever is pulled.
- Explain the function of the black outer casing covering the brake cable after point C.
- The silver coloured component at point C has a screw thread, explain the function of part C.
- The silver coloured component at point C has grooves around called knurling cut into the part. Describe the function of the knurling.

Looking at Photo No. 2

- Determine the class of lever labelled DEF in Photo No. 2
- Draw the lever, labelling the fulcrum, the point at which the load is applied and the point where the effort is applied.
- Draw the other brake lever that works with lever DEF and use notes and sketches to illustrate how the brakes stop a rotating wheel.



General

- Draw a systems diagram showing the INPUT, PROCESS, OUTPUT (there may be more than one process box/stage).
- Name a suitable material for the brake levers giving reasons for your choice.
- Describe the finish used on the brake levers.
- The brake lever in Photo No. 1 only appears long enough for two or three fingers to pull it. Explain the reason for this.
- Name a suitable material for the brake pads giving reasons for your choice.
- Name the type of screw used at point D and the special tool used to tighten and loosen it.
- Name a suitable material for the screw, giving reasons for your choice.