INSTALLING AND A REMOVING DEVICE FOR AN ENGINE CLUTCH OF A REMOTE-CONTROLLED TOY CAR

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Abstract

An installing and a removing device for an engine clutch of a remote-controlled toy car respectively install and remove an engine clutch easily, quickly and safely, not hurting a hand of a person or damaging the engine itself, clutch leaves or clutch springs.
INSTALLING AND A REMOVING DEVICE FOR AN ENGINE CLUTCH OF A REMOTE-CONTROLLED TOY CAR

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to an installing and a removing device for an engine clutch of a remote-controlled toy car, particularly to one easily and quickly install and remove respectively a clutch on or from an engine of a toy car, not giving any wound or harm to a player's hand, or damaging the clutch itself or the engine at all.

[0003] 2. Description of the Prior Art

[0004] A conventional engine clutch 100 of a remote-controlled toy car shown in FIG. 9 is installed on one side of an engine 200, having a torque spring 101, which produces outward elastic force, giving rise to resistance every time when the engine clutch 100 is installed on or removed from an engine, so a player has to use very strong force for doing it only with a slotted blade screwdriver. Then it takes much time and work to install or remove the clutch, and if worse, the screwdriver may slip down to hurt a hand of the player or to collide with the clutch or the engine, which may be damaged unintentionally.

SUMMARY OF THE INVENTION

[0005] The purpose of the invention is to offer an installing and a removing device for an engine clutch of a remote-controlled toy car, which can easily install or remove a clutch on or from an engine with quickness, taking little time and not hurting a hand of a player or the clutch itself.

BRIEF DESCRIPTION OF DRAWINGS

[0006] This invention will be better understood by referring to the accompanying drawings, wherein:

[0007] FIG. 1 is a perspective view of a removing device for an engine clutch of a remote-controlled toy car in the present invention; FIG. 2 is an exploded perspective view of the removing device for an engine clutch of a remote-controlled toy car in the present invention;

[0008] FIG. 3 is a cross-sectional view of the removing device for an engine clutch of a remote-controlled toy car in the present invention;

[0009] FIG. 4 is a perspective view the removing device being used to remove a clutch off an engine in the present invention;

[0010] FIG. 5 is a perspective view of the removing device in removing a clutch off an engine in the present invention;

[0011] FIG. 6 is a perspective view of an installing device for an engine clutch of a remote-controlled toy car in the present invention;

[0012] FIG. 7 is a perspective view of the installing device used to install a clutch on an engine in the present invention;

[0013] FIG. 8 is a perspective view of the installing device installing a clutch on an engine in the present invention; and,

[0014] FIG. 9 is a perspective view of a clutch separated from an engine.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0015] As shown in FIG. 7, a common remote-controlled toy car engine 1 has a spindle 11, a round base 12 fitting around the spindle 11, and an annular groove 13 formed in a circumferential surface of the round base 12, and three rods 14 standing upright and spaced apart on the side surface of the engine around the round base 12.

[0016] Then, as shown in FIG. 4, a clutch has three leaves 2 positioned on the side surface of the engine 1, respectively having an intermediate groove 21 in an intermediate portion for a torque spring 3 to fit therein, and a through hole 22 at one end. Then each rod 31 fits through the through hole 22 and further through the torque spring 3, with one end of the torque spring 3 sandwiched by the rear edge of the clutch leaf 2 and with the other end of the spring 3 sticking in the annular groove 13 of the round base 12. Thus, the torque spring 3 produces strong torque force, so the engine clutch is very hard to install on or remove off the engine.

[0017] A removing device for an engine clutch of an remote-controlled toy car in the present invention, as shown in FIG. 1 and 3, includes a body 4, a thumb screw 5 as main components combined together. The body 4 is shaped to have a lower round portion and a cone-shaped upper portion, and an upper smaller diameter cylindrical end 42 and a center lengthwise threaded hole 41 for the thumb screw 5 to screw therein from under. The thumb screw 5 has a large head 51 for easy gripping by fingers to rotate. The upper cylindrical end 42 has an inner hollow 421 and three sloped walls 422 spaced apart around the center hollow 421, and an engage groove 423 formed in a lower portion of each sloping wall 422.

[0018] As shown in FIG. 4 and 5, when a clutch on an engine 1 is to be removed off, fit the inner hollow 421 of the upper cylindrical end 42 of the body 4 on the three clutch leaves 2, rotate the thumb screw 5 to separate the body 4 off the annular groove 13, with the three sloping walls 422 pushing the three torque springs 3 off the annular groove 13. When the body 4 continues to be pushed toward the engine 1, the torque springs 3 are hooked in the engage grooves 423, with the body 4 possible to be pulled outward together with the clutch leaves 2, which then separate from the engine 1, removing the clutch off the engine with easiness and quickness.

[0019] Next, as shown in FIG. 6, an installing device for an engine clutch of a remote-controlled toy car includes a cone-shaped body 6 provided with an upper cylindrical end 61 with an actuating member 62 standing upright on its annular wall, and an engage groove 63 formed in lower portion of the actuating member 62. The center hole 611 of the upper cylindrical end 61 fits around the spindle 11 of the engine 1, with the engage groove 63 hooks with the clutch leaf 2. As shown in FIGS. 7 and 8, the clutch leaves 2 are installed one by one separately on the engine, using fingers gripping the body 6, with the actuating member 62 pushing open the torque spring 3, forcing the clutch leaf 2 push toward the round base 12 of the engine 1 into the annular groove 13, and then the actuating member 62 is made to
push the torque spring 3 fit in the annular groove 13 stably. Thus the three clutch leaves 2 are one by one installed on the engine 1.

[0020] While the preferred embodiment of the invention has been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such modifications that may fall within the spirit and scope of the invention.

What is claimed is:

1. A removing device for an engine clutch of a remote-controlled toy car, said engine having a spindle provided at one side, a round base fitting around said spindle and having an annular groove in a circumferential surface, three rods provided to stand upright on the side of the engine around said round base, said clutch having three leaves to be positioned on the side of said engine, each said clutch leaf provided with an intermediate groove in an intermediate portion for a torque spring to extend therein and a through hole bored at one end, said rods of the engine fitting through said through hole of each said clutch leaf and further through a center space of each said torque spring, each said torque spring having one end sandwiched in a back edge of each said clutch leaf and the other end sticking in said annular groove;

   Said removing device comprising a body and a thumb screw;

   Said body having a lengthwise center threaded hole for said thumb screw to engage movably with, and a smaller diameter cylindrical upper end than a lower portion of said body, said upper cylindrical end having a center hole, three sloped walls formed around said center hole and spaced apart, and an engage groove formed in a lower portion of each said sloped wall; and,

   Said center hole of said body of said removing device made to fit with said three clutch leaves in case of removing said clutch, with said three sloped walls clamping said torque springs and pushing said springs to hook in said engage grooves, said body then possible to be pulled out together with said three clutch leaves.

2. The removing device for an engine clutch of a remote-controlled toy car as claimed in claim 1, wherein said thumb screw has a large head for easily gripping by fingers for rotating.

3. An installing device for an engine clutch of a remote-controlled toy car, said engine having a spindle provided at one side, a round base fitting around said spindle and having an annular groove in a circumferential surface, three rods provided to stand upright on the side of said engine around said round base, said clutch having three clutch leaves positioned on the side of said engine, each said clutch leaf having an intermediate groove in an intermediate portion for a torque spring to extend therein and a through hole bored in an end, each said rod of said engine fitting through said through hole of each said clutch leaf and further through a center space of each said torque spring, each torque spring having one end sandwiched in a back edge of each said clutch leaf and the other end sticking in said annular groove:

   Said installing device comprising a body having an upper cylindrical end, an actuating wall standing up on the upper end, an engage groove provided in a lower portion of said actuating wall, said upper cylindrical end having a center hole for said spindle of said engine to fit therein; and,

   Said actuating wall made to push open said torque spring and forced to let said engage groove hook said clutch leaf in case of installing a clutch leaf one by one on said engine with said installing device, said clutch leaf moved to said annular groove of said round base, position said clutch leaf stably on said engine.

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