

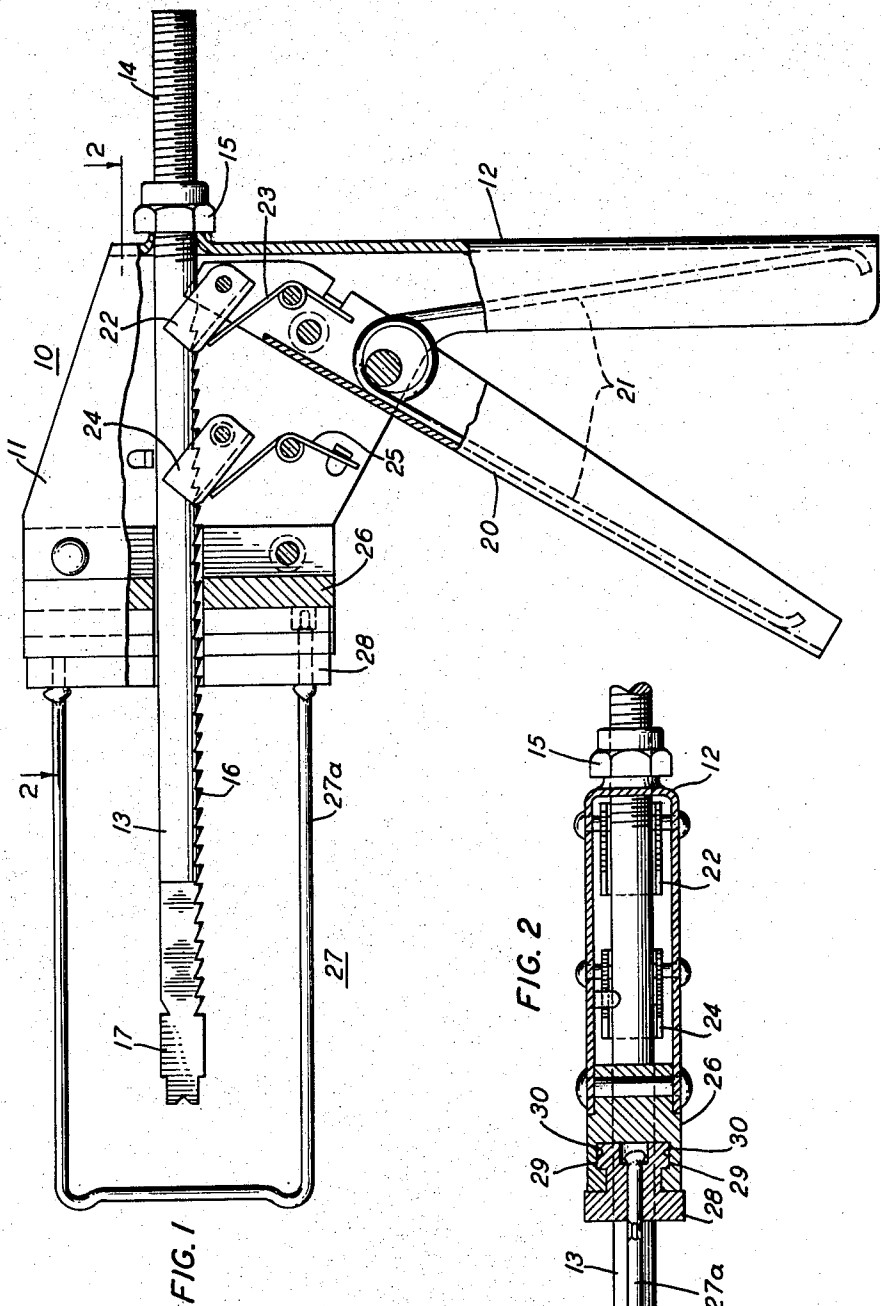
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I. H. HIESTAND
DISMANTLING TOOL

3,144,707

Filed June 13, 1962

2 Sheets-Sheet 1



INVENTOR
I. HIESTAND
BY John C Morris
ATTORNEY

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FIG. 3

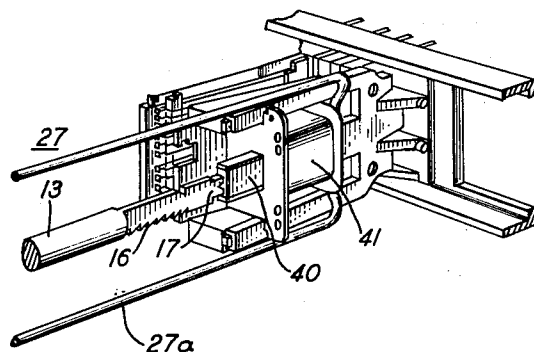
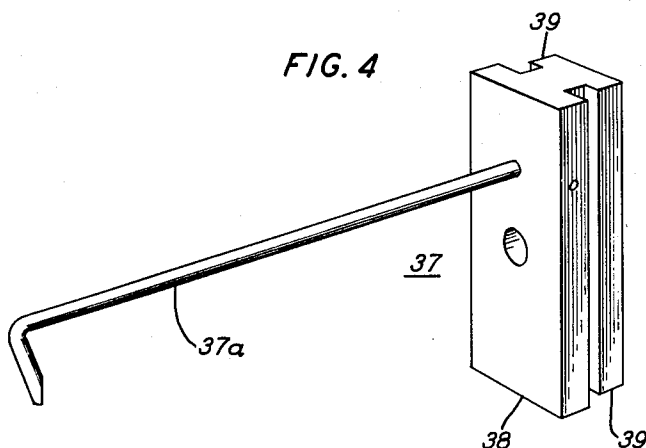


FIG. 4



INVENTOR
BY **I. HIESTAND**
John C. Morris
ATTORNEY

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DISMANTLING TOOL

Irvin H. Hiestand, Lutherville, Md., assignor to American Telephone and Telegraph Company, New York, N.Y., a corporation of New York

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1 Claim. (Cl. 29—203)

This invention is concerned with the maintenance of devices which may be repaired by replacement of certain of their parts and deals more particularly with a means for the removal of a defective part in order that a suitable repair part may be substituted for it. For example, the dismantling tool herein contemplated may be used advantageously to remove operating coils from electromagnetic relays.

An object of this invention is to improve the repair and maintenance of devices, such as the noted relays, by expediting the removal of parts that require replacement. This object contemplates the removal of a part in such a manner that the remaining parts are not damaged and may be reused.

Thus, a feature of this invention is embodied in a tool for relay repair, that will remove both the end plate and the coil of an electromagnetic operator. This tool comprises a housing in the bearings of which is journaled a reciprocable rod or plunger, and to which a cooperating holding or pulling member may be secured. The housing includes a grip or handle. Pivoted in the housing is an operating lever so oriented that it may be gripped along with the handle and pulled toward the handle. The rod is serrated along one side and the lever bears pawl means for cooperating with the notches or teeth to drive the rod in one direction when the lever is pulled. The lever and the pawl means are biased to a ready position by suitable springs. The housing has a fitting on one side adjacent to one of the rod bearings and into which may be fitted a pulling member. Pulling members of various shapes may be attached to the tool housing in order that different particular jobs may be done with the same tool.

Other and further objects of this invention will appear more fully and clearly from the ensuing description of an exemplary embodiment thereof taken with the accompanying drawings in which:

FIG. 1 is a view in side elevation of the chosen illustrative embodiment with a part of the housing wall removed;

FIG. 2 is a sectional view taken on the line 2—2 of FIG. 1;

FIG. 3 is a perspective view of portions of the tool as applied for pulling the coil from a partly dismantled relay; and

FIG. 4 is a perspective view of a different pulling member than that shown in FIG. 1.

As shown in FIG. 1, the basic tool comprises the housing 10 having a body portion 11 and a handle or grip portion 12. A push rod 13 is mounted for reciprocation in bearings at the front and the rear of the housing body. The rear end of the rod is threaded as at 14 and bears an adjustable stop nut 15. A portion of the rod 13 has teeth 16 along one side and the front end 17 may be shaped as shown or otherwise to cooperate with the device upon which work is being done.

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The lever 20 is pivoted near the bottom rear of the housing body 11 and is biased away from the handle 12 by a spring 21. A driving pawl 22 is pivoted to the inner end of the lever 20 and has its projecting end biased toward the rod 13 by a spring 23. A holding pawl 24 and a cooperating biasing spring 25 are pivoted to the housing forward of the lever 20.

The forward end of the housing body 11 has a block 26 secured thereto. This block is shaped to mate with a base element 28 on a pulling member 27. As shown in FIG. 2, the pulling member 27 is secured to the block 26 by its base 28, the flanges 29 of which fit into the grooves 30 of the block 26. The bail or loop portion 27a may be shaped as illustrated or otherwise if so required.

As shown in FIG. 4, a different pulling member 37 with a hook member 37a has a base 38 with flanges 39 to fit into the grooves 30 of the housing block 26.

In FIG. 3 the rod 13 and the loop or bail 27a are shown applied to a partly dismantled relay. The end of the rod rests against the outer end of the core 40 and the bail fits behind the inner head of the coil 41. When the lever 20 is pulled toward the grip portion 12 against the bias of the spring 21, the pawl 22 drives the rod 13 by virtue of its engagement with the teeth 16. (See FIG. 1.) This pushing and pulling operation removes the coil 41 from the core 40.

If a given pulling job requires more than one operation of the lever, it may be "pumped" as many times as needed. The holding pawl 24 prevents retrograde movement of the rod 13 while the lever is being returned to its initial position.

The rod 13 may be released from the pawls and manually retracted by turning it about its axis a sufficient amount to release the teeth 16 from the pawls. It may be noted that in FIG. 1 the parts are shown with the rod 13 projected as far as the nut 15 will permit. The next indicated operation would therefore be rotation and retraction of the rod as just noted. The rod may then be returned to normal engaging position with the pawls in readiness for the next operation.

What is claimed is:

A dismantling tool comprising a housing including a handle portion, a push rod journaled for reciprocation in bearings in the housing walls, said rod having teeth on one side, a lever pivoted in the housing adjacent to the handle portion and having a driving pawl pivoted to its inner end, a holding pawl pivoted to the housing, both pawls located and oriented to cooperate with the teeth on the rod to drive or to hold the rod, springs for biasing the lever and the pawls each to a ready position, means for limiting the movement of the rod in its driven direction, and a pulling member secured to the housing, having arms extending in parallel relation to the push rod and a lateral member connecting the arms, said rod being rotatable to release its teeth from the pawls to permit retrograde movement thereof.

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