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(54) Apparatus for applying/removing anti-theft devices

(57) An apparatus (10) for applying/removing anti-theft devices constituted by a base (12) to which a bridge-like assembly (13) is applied. The ends of the assembly are suitable to enter corresponding seats (18) of the base (12) and remain locked therein by means of an engagement mechanism of the type with interlocking teeth. The apparatus comprises, on a contoured composite body (19) provided with a portion that can be gripped by an operator, two tools (22,24) associated with actuation means (21) suitable to produce their alternating movement, a first tool (22) being suitable, in cooperation with a corresponding and complementarily shaped first base (23), to lock closed a corresponding

anti-theft device, a second tool (24) being suitable, in cooperation with a corresponding and complementarily shaped second base (25), to open the device. The first tool (22) comprises two parallel plates (27), which are mounted on a common stem (26) in contact with the actuation means; the free edges of the plates are shaped complementarily to the outer back of the bridge-like assembly (13). The first base is shaped so as to keep the base in a corresponding position. The second tool comprises, on a common stem (29) which is also associated when aligned with the actuation means, two parallel C-shaped contoured elements (30), whose arms are suitable to enter and push within the seats of the base in which the ends of the bridge-like assembly are locked.

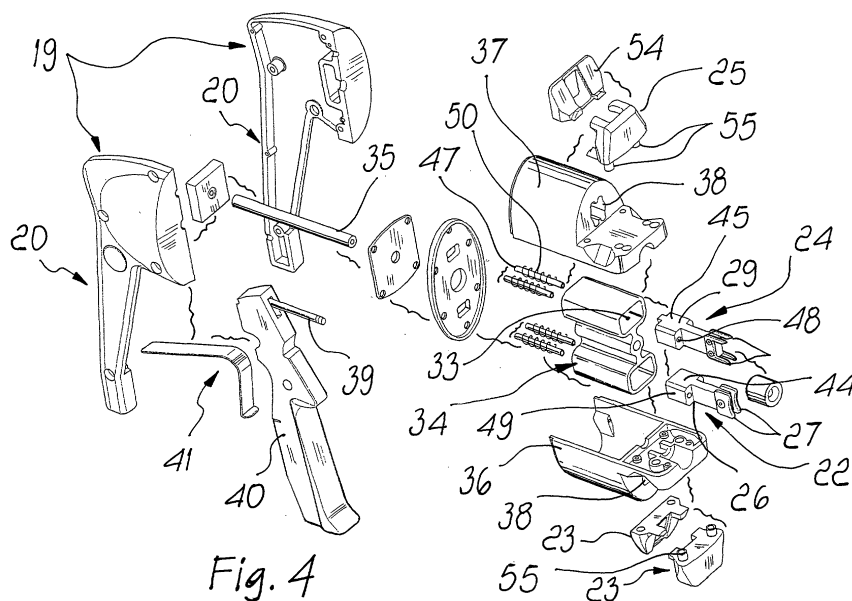


Fig. 4

Description

[0001] The present invention relates to an apparatus for applying/removing anti-theft devices.

[0002] It is known that anti-theft devices are increasingly used, thanks to their effectiveness in application and to their low cost, which substantially consist of a base for anchoring to an item to be protected, to which an assembly is applied which is typically bridge-shaped, although other shapes are possible, and contains a sensitive alarm element in an appropriate receptacle.

[0003] Usually, the sensitive elements are constituted by a circuit, or an equivalent electronic element, that is sensitive to immersion in electromagnetic fields usually generated by gates located at the exits.

[0004] However, these devices can be applied effectively if they can also be easily removed from the item to which they are applied without damaging the item.

[0005] Moreover, a strategic factor in the application of such devices is the speed and ease of their application, which must be feasible even by personnel that is not particularly skilled in the technical field.

[0006] Separate apparatuses are currently provided for applying such devices and for removing them; moreover, currently commercially available apparatuses are particularly complicated to use and are not always quick in performing their tasks.

[0007] Moreover, it has been found that during application/removal the sensitive element is often damaged, thus rendering unusable the anti-theft devices, which must therefore be replaced frequently.

[0008] The aim of the present invention is to provide an apparatus for applying/removing anti-theft devices that solves the drawbacks noted above in apparatuses having a similar functionality, particularly by ensuring simplicity and speed of use and by including both the action for applying the anti-theft devices and the action for removing them.

[0009] Within this aim, an object of the present invention is to provide an apparatus that can be used without particular problems even by personnel that has no technical skills.

[0010] Another object of the present invention is to provide an apparatus that is particularly flexible in relation to the type of item to which the device is to be applied.

[0011] Another object of the present invention is to provide an apparatus whose action, both during application and during removal, does not damage the sensitive element, thus ensuring long reusability of the anti-theft devices.

[0012] Another object of the present invention is to provide an apparatus that is ergonomic, can be manufactured at costs that are competitive with respect to conventional apparatuses having a similar functionality, and can be produced by means of known technologies and systems.

[0013] This aim and these and other objects that will

become better apparent hereinafter are achieved by an apparatus for applying/removing anti-theft devices constituted by a base with a sensitive alarm element to which a bridge-like assembly is applied whose ends are suitable to enter corresponding seats of the base and remain locked therein by means of an engagement mechanism of the type with interlocking teeth, characterized in that it comprises, on a contoured composite body provided with a portion that can be gripped by an operator, two tools associated with actuation means suitable to produce an alternating movement of said tools, a first one of said tools being suitable, in cooperation with a corresponding and complementarily shaped first base, to lock closed a corresponding anti-theft device, a second one of said tools being suitable, in cooperation with a corresponding and complementarily shaped second base, to open said device, said first tool comprising two parallel plates, which are mounted on a common stem in contact with said actuation means, the free edges of said plates being shaped complementarily to the outer back of said bridge-like assembly, said first base being shaped so as to keep in a corresponding position said base of the anti-theft device, said second tool comprising, on a common stem associated with said actuation means, two parallel C-shaped contoured elements with arms that are suitable to enter and push within the seats of said base of the anti-theft device in which said ends of said bridge-like assembly are locked.

[0014] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a perspective view of an apparatus according to the invention;

Figure 2 is another perspective view of an anti-theft device that can be locked or released by the apparatus of Figure 1;

Figure 3 is another perspective view of the anti-theft device of Figure 2;

Figure 4 is an exploded view of the apparatus of Figure 1;

Figure 5 is a partially sectional view of a portion of the apparatus of Figure 1;

Figures 6 and 7 are partially sectional views, in two similar operating steps, of the tools of the apparatus of Figure 1;

Figures 8 and 9 are two partially sectional views of the tools of Figures 6 and 7;

Figure 10 is a partially sectional view of the apparatus of Figure 1.

[0015] With particular reference to Figures 1 to 10, an apparatus for applying/removing anti-theft devices, according to the invention, is generally designated by the reference numeral 10.

[0016] In particular, the apparatus 10 is particularly

suitable to apply and remove devices such as the one shown in Figures 2 and 3 and generally designated by the reference numeral 11.

[0017] The device 11 is constituted by a base 12, to which a bridge-like assembly 13 is applied.

[0018] The base 12 contains, in an appropriate seat 14, a sensitive alarm element 15 (shown schematically in dashed lines in Figure 2).

[0019] The bridge-like assembly 13 has ends 16 that are suitable to enter corresponding seats 18 and remain locked therein by means of an engagement mechanism of the type with interlocking teeth, which is partially visible in the figures and is designated by the reference numeral 17; the seats are formed by walls 18a of the base 12, whose surfaces are contoured appropriately.

[0020] The apparatus 10 comprises two tools on a contoured and composite body 19, which will be described in greater detail hereinafter and is provided with a portion that can be gripped by an operator and is generally designated by the reference numeral 20. The tools are associated with actuation means, generally designated by the reference numeral 21, which are suitable to move them alternately. A first tool 22 is suitable to open a corresponding anti-theft device 11 in cooperation with a corresponding and complementarily shaped first base 23, and a second tool 24 is suitable to open said device in cooperation with a corresponding and complementarily shaped second base 25.

[0021] The first tool 22 comprises two mutually parallel plates 27, which are mounted on a common stem 26 in contact with the actuation means 21; the free edges 28 of the plates are shaped complementarily to the back of the bridge-like assembly 13.

[0022] The first base 23 is shaped so as to keep in position the corresponding base 12 of the device 11.

[0023] The second tool 24 comprises, on a common stem 29 associated with the actuation means 21, two mutually parallel C-shaped elements 30, whose arms 31 have chisel-like free ends 32 and are suitable to enter, through corresponding holes 18b, and push within the seats 18 of the base 12 of the anti-theft device 11 in which the ends 16 of the bridge-like assembly 13 are locked in order to flex them and disengage the coupling provided by the interlocking teeth.

[0024] In particular, the two tools, designated by the reference numerals 22 and 24 respectively, are arranged parallel to each other so as to cantilever out from the body 19 and with corresponding stems 26 and 29 which are slidably inserted in corresponding seats 33 formed in a rotor 34, which is pivoted, so that its axis is parallel to the axis of stems 26 and 29, to the body 19 by means of a dedicated shaft 35.

[0025] The rotor 34 is contoured and contained between two half-shells, designated by the reference numerals 36 and 37 respectively, which are mutually reversibly associated and are provided with through holes 38 that constitute openings for the passage of the corresponding tools 22 and 24.

[0026] The actuation means 21 are constituted, for the apparatus 10, by a pusher rod 39, which is moved forward/backward by a lever control 40, which is provided with first means 41 for providing an elastic contrasting thrust, is pivoted to the body 19, and is available to the action of the operator.

[0027] The pusher rod 39 is suitable to enter appropriately provided holes 42 and 43 formed in the body 19 and in the corresponding half-shell 36 or 37, so as to push, at a base tang 44 or 45 of the stem 26 or 29, aligned so as to accordingly expel the corresponding first or second tool 22 or 24.

[0028] Each one of the stems 26 or 29 is provided with second elastic contrasting thrust means, generally designated by the reference numeral 46, which are constituted, for each one of the stems, by pins 47 inserted in suitable holes 48 formed in a corresponding base block 49 of the respective stem 26 or 29.

[0029] A corresponding elastic element, constituted by a helical spring 50, is inserted in each one of the pins 47.

[0030] In particular, the first contrasting thrust means, designated by the reference numeral 41, are instead constituted by a laminar spring 51 whose base is fixed on the body 19.

[0031] In this embodiment, the body 19 is substantially gun-shaped, with a handgrip 52 for the operator.

[0032] Furthermore, the lever control 40 is substantially trigger-shaped.

[0033] Corresponding spacer plates, designated by the reference numerals 53 and 54 respectively, for the first base 23 and the second base 25, are applied and are associated with the half-shells 36 and 37, at the openings for the passage of the first tool 22 and of the second tool 24.

[0034] More specifically, the first and second bases 23 and 25 are reversibly associated with corresponding half-shells 36 and 37 by means of insertion pins 55.

[0035] In practice, the operation of the apparatus 10 is as follows: the operator, depending on whether he has to close or open a device 11, presets, by rotating the entire rotor 34 and the core composed of the half-shells 36 and 37, the first tool 22 or, as an alternative, the second tool 24 into alignment with the pusher rod 39.

[0036] At this point, pressing on the lever control 40 pushes outward the pusher rod 39 and consequently causes the protrusion of the aligned tool 22 or 24 (in order to compress the bridge 13 on the base 12, Figure 6, or pull the bridge 13 away from the base 12, loosening the coupling provided by the interlocking teeth, Figure 7, by flexing with the ends 32 the ends 16, moving them away from the walls 18a).

[0037] The operator correspondingly places beforehand, on the first base 23 or on the second base 25, the base 12 or the bridge-like assembly 13.

[0038] In practice it has been observed that the present invention has achieved the intended aim and objects.

[0039] In particular, attention is called to the extreme simplicity of application of the apparatus according to the invention, which in no case requires the operator to have technical skills.

[0040] The positioning, especially in relation to the shapes of the bases and tools, is in fact greatly guided and in practice the only working action of some complexity is simply the operator's choice of the correct alignment of the first tool or of the second tool.

[0041] This can be easily facilitated by applying appropriate lettering, as shown by the proposed figures.

[0042] It is also noted that the apparatus according to the invention allows to combine the application function and the disengagement operation, without however having excessive overall dimensions and without having particularly complicated technical and constructive solutions.

[0043] It should also be noted that the apparatus according to the invention is particularly flexible and adaptable both to the items to which it is applied and optionally to different anti-theft devices.

[0044] The present invention is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0045] The technical details may be replaced with other technically equivalent elements.

[0046] The materials and the dimensions may be any according to requirements.

[0047] The disclosures in Italian Patent Application No. PD2000A000297 from which this application claims priority are incorporated herein by reference.

[0048] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An apparatus for applying/removing anti-theft devices constituted by a base with a sensitive alarm element to which a bridge-like assembly is applied whose ends are suitable to enter corresponding seats of the base and remain locked therein by means of an engagement mechanism of the type with interlocking teeth, **characterized in that** it comprises, on a contoured composite body provided with a portion that can be gripped by an operator, two tools associated with actuation means suitable to produce an alternating movement of the tools, a first one of the tools being suitable, in cooperation with a corresponding and complementarily shaped first base, to lock closed a corresponding anti-theft device, a second one of the tools being suitable, in cooperation with a corresponding and complemen-

tarily shaped second base, to open said device, said first tool comprising two parallel plates, which are mounted on a common stem in contact with said actuation means, the free edges of said plates being shaped complementarily to the outer back of said bridge-like assembly, said first base being shaped so as to keep in a corresponding position said base of the anti-theft device, said second tool comprising, on a common stem associated with said actuation means, two parallel C-shaped contoured elements with arms that are suitable to enter and push in the seats of said base of the anti-theft device in which said ends of said bridge-like assembly are locked.

2. The apparatus according to claim 1, **characterized in that** said two tools are arranged so as to be mutually parallel, so as to cantilever out from said body, and so that their stems are slidingly inserted in corresponding seats formed in a rotor which is pivoted, so that its axis is parallel to the axis of said stems, to said body by means of a dedicated shaft.
3. The apparatus according to claim 2, **characterized in that** said rotor is shaped and contained between two half-shells, which are mutually reversibly associated and are provided with through holes for the passage of the corresponding tools.
4. The apparatus according to claim 1, **characterized in that** said actuation means are constituted by a pusher rod, which is associated so as to be moved back and forth by a lever control, which is provided with first elastic contrasting thrust means and is available to the action of the operator, said pusher rod being suitable to enter holes formed in said body and in the corresponding half-shell, so as to push at the base tang of said aligned stem and accordingly expel the corresponding first or second tool.
5. The apparatus according to one or more of the preceding claims, **characterized in that** each one of said stems has second elastic contrasting thrust means.
6. The apparatus according to one or more of the preceding claims, **characterized in that** for each one of said stems said second elastic contrasting thrust means are constituted by pins inserted in suitable holes formed in a corresponding base block of the respective stem, a corresponding elastic element being fitted on each one of said pins.
7. The apparatus according to claim 6, **characterized in that** said elastic element is constituted by a helical spring.
8. The apparatus according to one or more of the pre-

ceding claims, **characterized in that** said first contrasting thrust means are constituted by a laminar spring whose base is fixed on said body.

9. The apparatus according to one or more of the preceding claims, **characterized in that** said second tool has a chisel-shaped free end of said arms. 5
10. The apparatus according to one or more of the preceding claims, **characterized in that** said first tool has a concave free edge. 10
11. The apparatus according to one or more of the preceding claims, **characterized in that** said body is gun-shaped, with a handgrip for the operator. 15
12. The apparatus according to one or more of the preceding claims, **characterized in that** said lever control is trigger-shaped. 20
13. The apparatus according to one or more of the preceding claims, **characterized in that** it comprises corresponding spacer plates for said first and second bases which are associated with said half-shells at the tool exit openings. 25
14. The apparatus according to one or more of the preceding claims, **characterized in that** said first and second bases are reversibly associated with corresponding half-shells by means of insertion pins. 30

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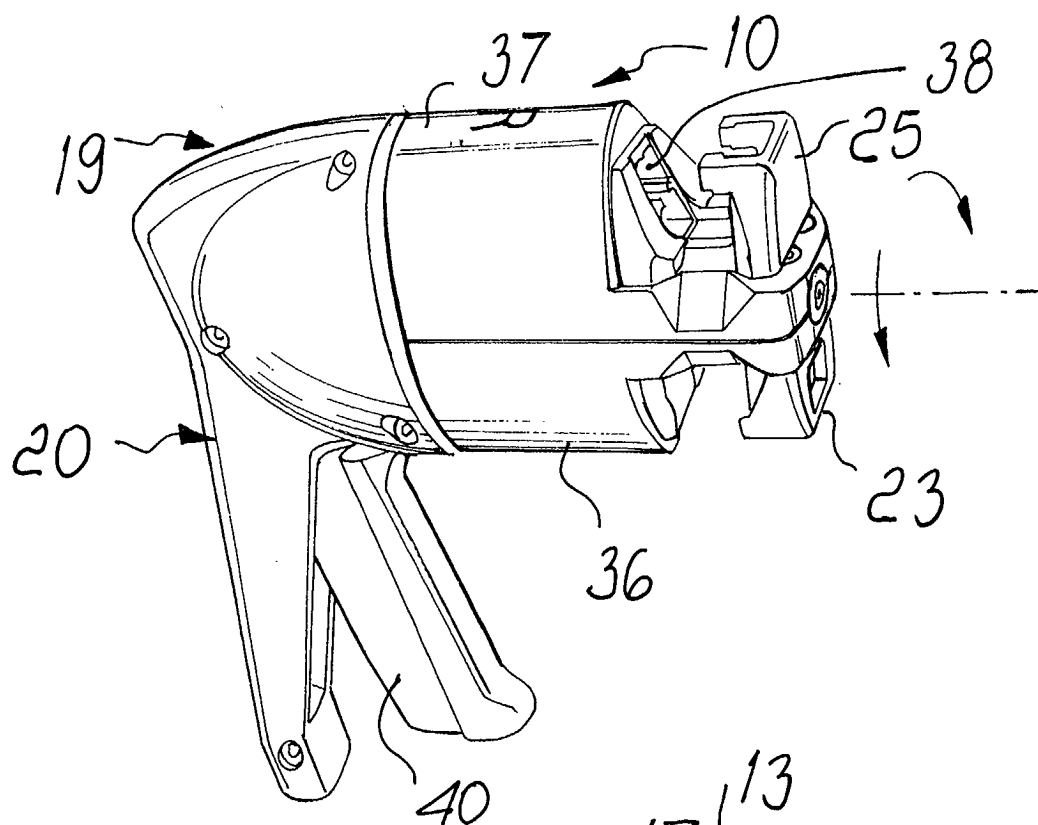


Fig. 1

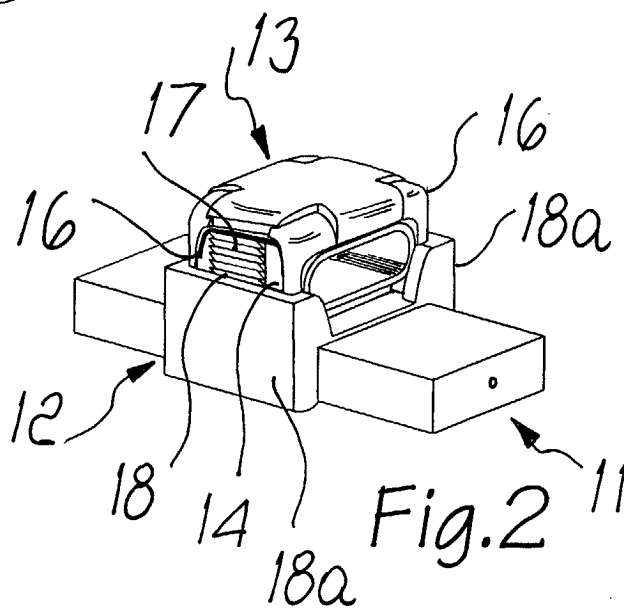
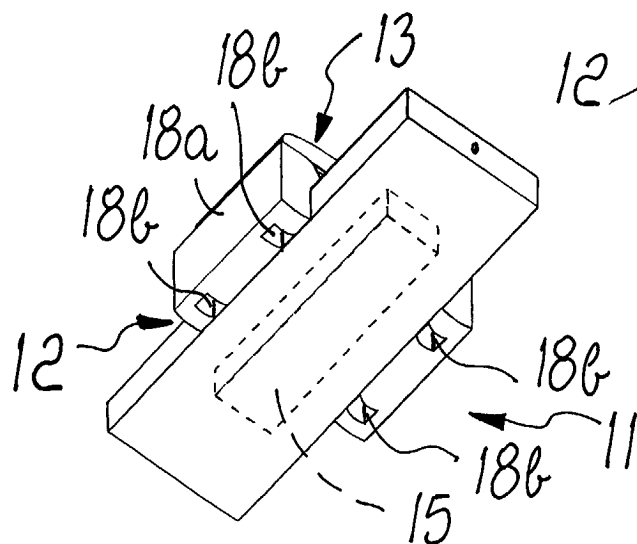


Fig. 2



Fi. 3

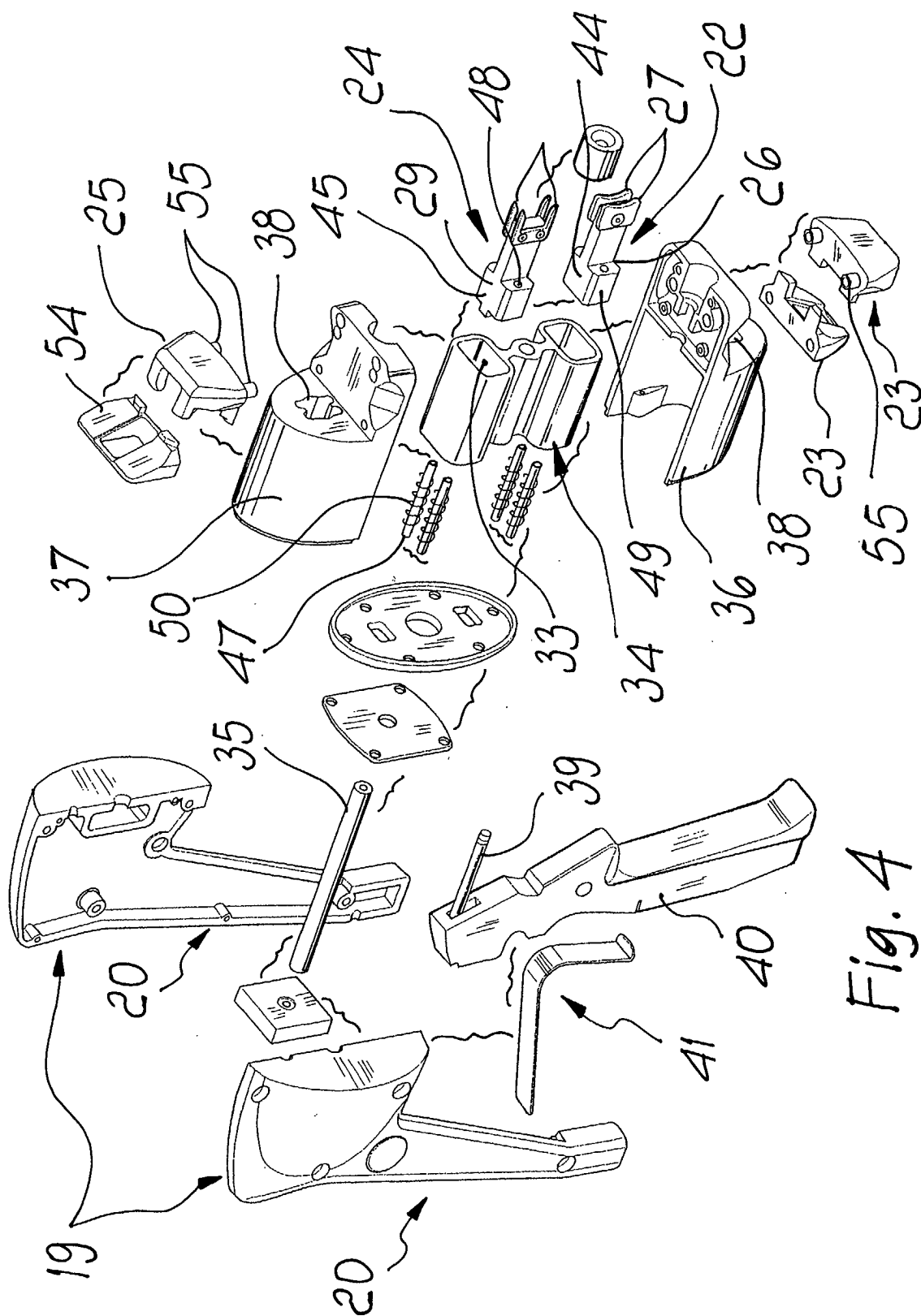


Fig. 4

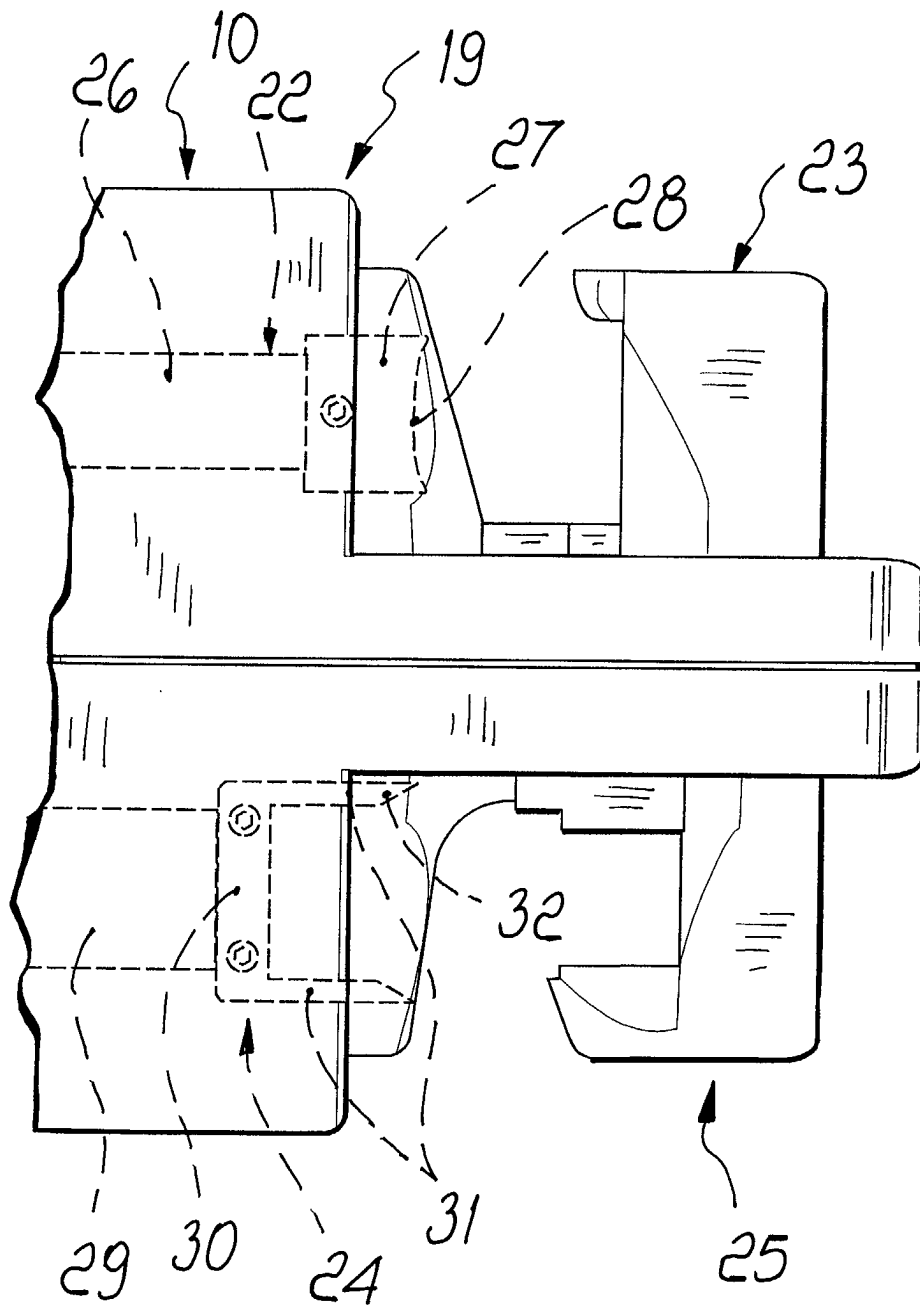


Fig. 5

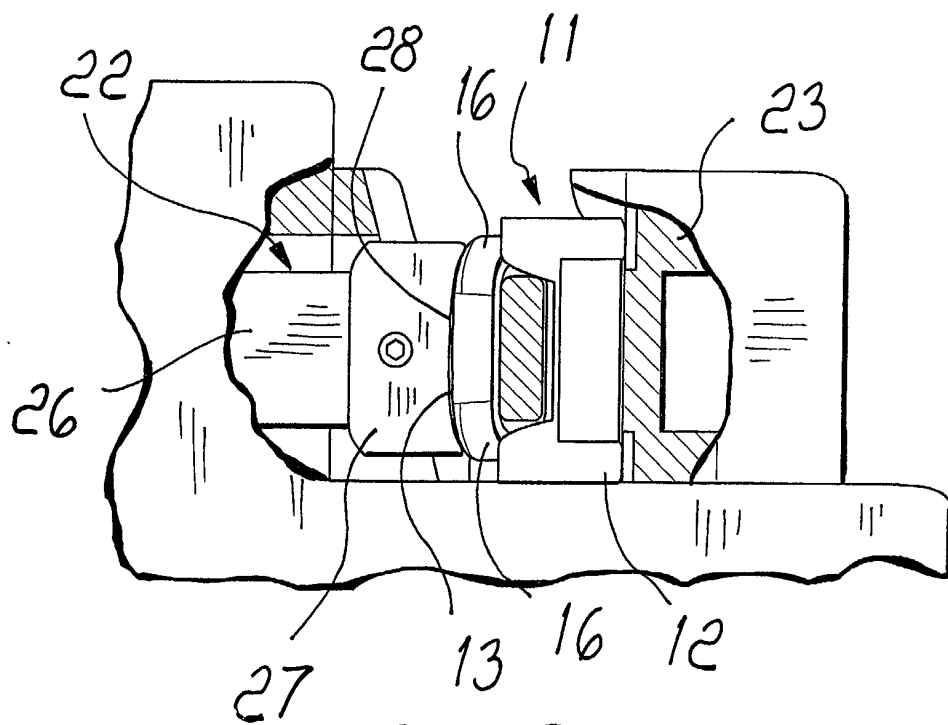


Fig. 6

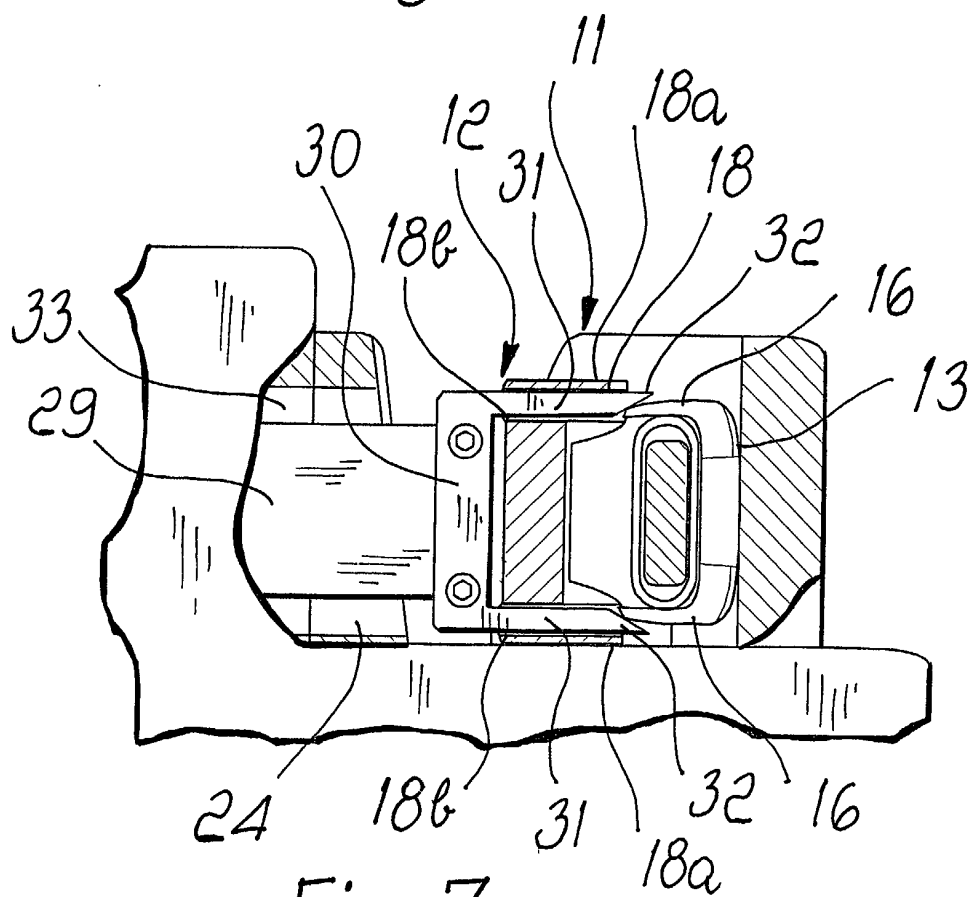
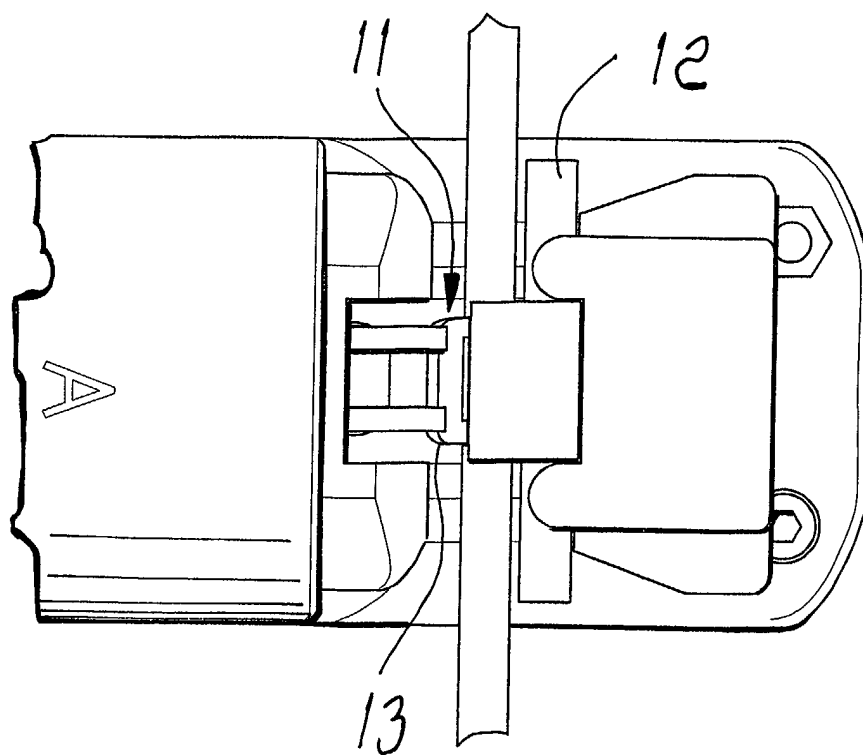
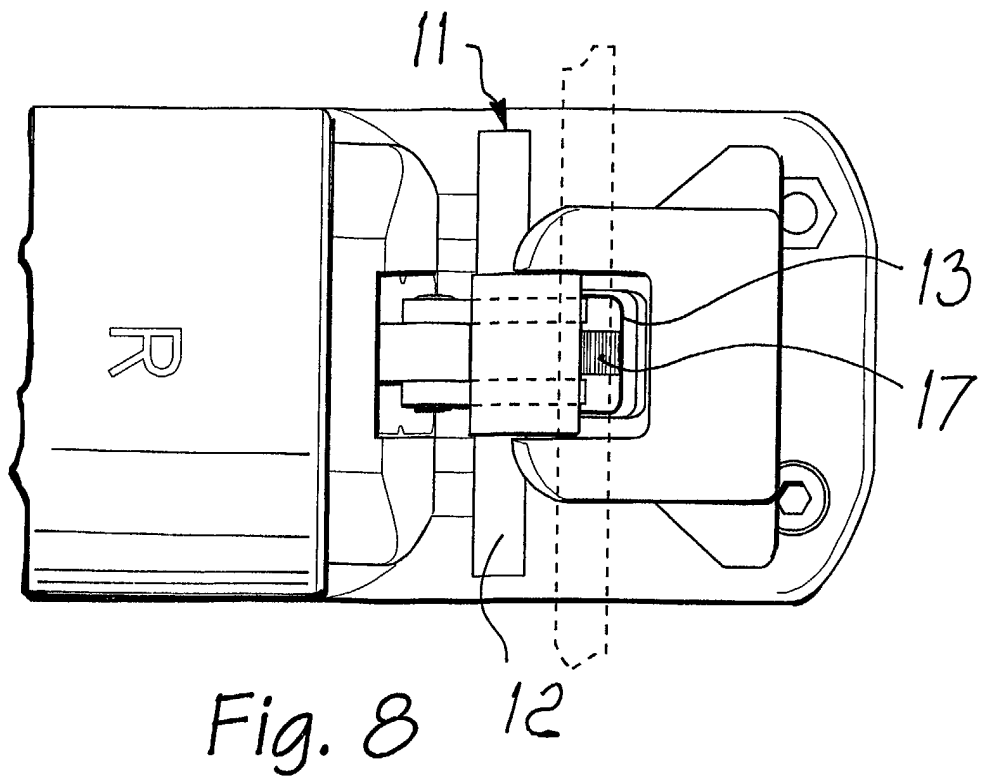


Fig. 7



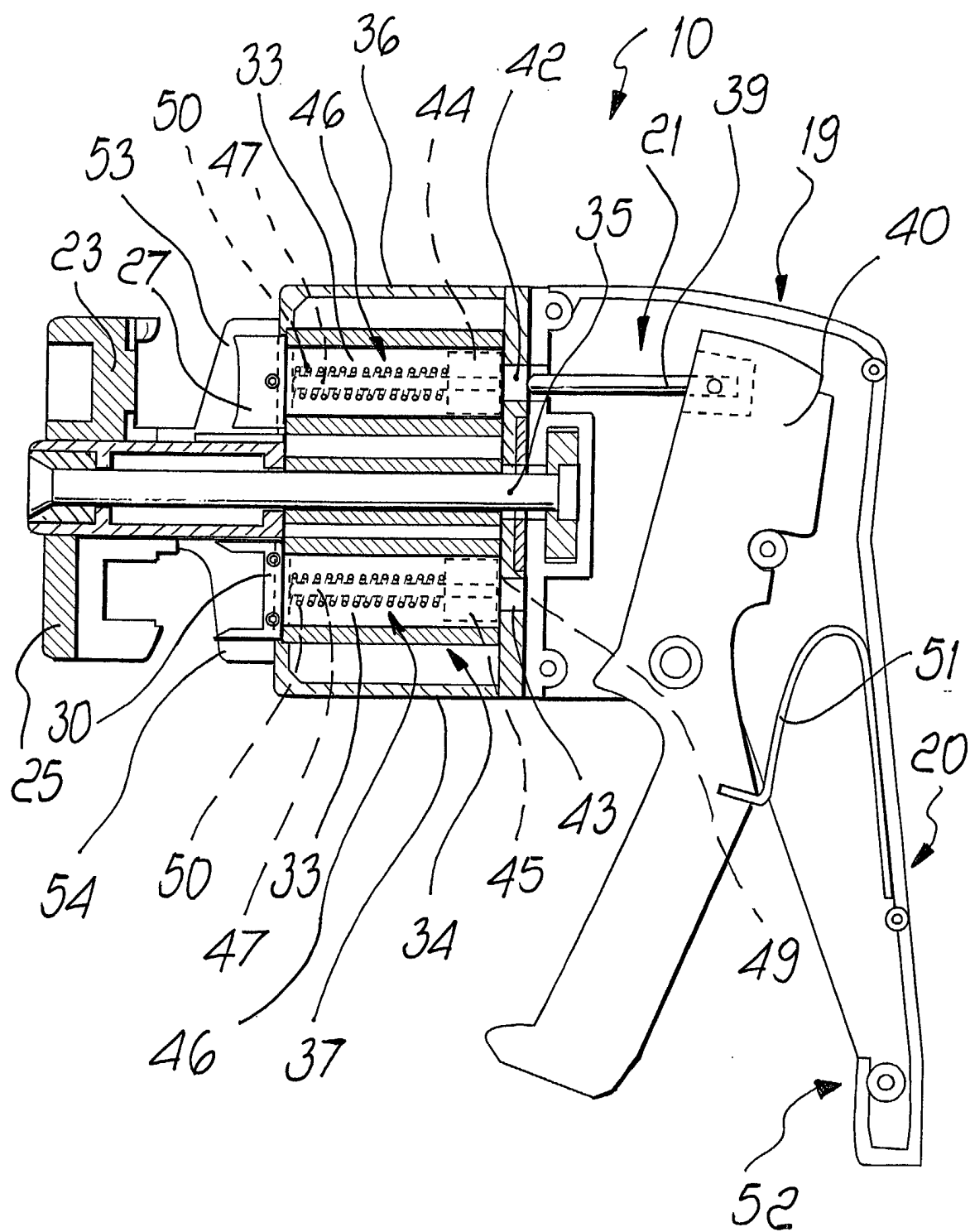


Fig. 10