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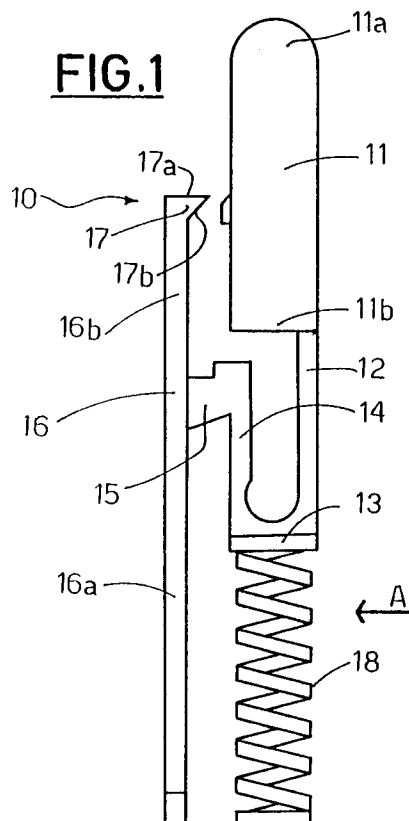
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I-10128 Torino (IT)(54) **A writing instrument with a push button, a clip and a spring in one piece.**

(57) The writing instrument comprises a conventional writing tip (33), a tubular hollow body (20) slidably accommodating a push button (11) for extracting the writing tip and provided with a return spring (18) and an outer clip (16).

The push button (11), the spring (18) and the clip (16) are obtained in a whole piece as a unit (10), preferably plastic.

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The present invention relates to a writing instrument, particularly a ball pen, composed by three parts only: a conventional writing tip or refill, an outer hollow body and a unit that is advantageously obtained in one piece and comprises a clip, a spring and a relevant push button.

It is an object of the invention to cut down to a minimum the number of parts forming a writing instrument, by employing an inexpensive material, such as plastic, to form a unit capable of carrying out operations that are usually distributed to several components.

It is another object of the invention to provide a pen constituted by few components having a simple structure and easy to assemble.

The above and other objects, that will be more apparent hereinafter, are attained according to the invention by a writing instrument comprising a conventional writing tip, a tubular hollow body slidably accommodating a push button for extracting the writing tip and provided with a return spring, and an outer clip, characterised in that the push button, the spring and the clip are obtained in a whole piece as a unit.

The substantial characteristics of two preferred but not limiting embodiments of the writing instrument according to the invention are described hereinafter with reference to the accompanying drawings, in which:

- Fig. 1 is a side elevation view of one of the components of a pen according to the invention;
- Fig. 2 is a view of the component of Fig. 1 looking in the direction of arrow A of Fig. 1;
- Fig. 3 shows the cylindrical outer body of a writing instrument which is for coupling to the component of Figs. 1 and 2;
- Figs. 4 and 5 are two longitudinal cross section views of the writing instrument in an operative and unactuated arrangement, respectively; and
- Figs. 6 and 7 are two longitudinal cross section views of two distinct operational arrangements of a different embodiment of a writing instrument according to the present invention.

Referring initially to Figs. 1 and 2, numeral 10 indicates overall a unit comprising a push button, a spring and a clip. According to the invention, the unit 10 is constituted by a single piece obtained in a plastic material, preferably through pressing.

The unit 10 is designed to couple to a tubular hollow body 20, shown in Fig. 3, that forms the main outer body of the writing instrument. The

latter is further provided with an interchangeable refill, if the writing instrument is a ball pen, or another writing means such as a lead, if it is a propelling pencil. The illustrated example refers to a ball pen in particular.

Still referring to Fig. 1, unit 10 comprises a longitudinal elongated push button 11, the transverse cross-section of which must have a size and shape congruent with the inside of the tubular hollow body 20 in which the unit 10 is slidably accommodated. The upper end portion 11a of the push button 11 normally sticks out so as to be pressed by the user. A longitudinal rib 12 extends from the lower end portion 11b ending with a base 13 having a shape congruent with the internal cross-section of the tubular hollow body 20. Parallel to the first rib 12 is a second rib 14 protruding from the base 13. The second rib is folded back facing the first rib 12. A transverse tongue 15 projects outwardly from the upper end of the rib 14. The tongue 15 is joined to a substantially rectangular clip 16, at a point intermediate the ends thereof. The lower portion 16a of clip 16 is the part for hooking the pen to a breast-pocket, and it also has another function, as described hereinafter. The upper portion 16b is provided with an upper tooth 17 facing the push button 11. Tooth 17 comprises an upper transverse wall 17a and an oblique wall 17b inclined towards the top of the push button 11.

The unit 10 further incorporates a helicoidal spring 18 longitudinally extending from the base 13 on the opposite side of ribs 12 and 14. When released, the free end of spring 18 is substantially flush with the lower end of the clip 16.

Referring now to Figs. 3 to 5, the multi-functional unit 10 is adapted for coupling to the hollow tubular hollow body 20, the internal cross-section of which can take various shapes, it being indifferently circular, polygonal, etc.. However, the internal cross-section is designed so as to accommodate the push button 11, the base 13 and the spring 18 with a slight radial clearance allowing longitudinal sliding of the unit 10.

The hollow body 20 has an upper opening 21 through which unit 10 is inserted. A vertical slot 22 extends from the edge of opening 21. A pair of opposite protrusions 23 are provided at a mid point of slot 22, thereby dividing the slot 22 in an open upper chamber 22a and a lower closed chamber 22b. The protrusions 23 are spaced so as to allow the passage, with a slight interference, of the transversal tongue 15 connecting the clip 16 to the rib 14, as more clearly specified hereafter.

Two retaining teeth 24 are provided proximate to the opening 21 and adjacent to the slot 22. The teeth 24 have an upper oblique surface 24a substantially parallel to the oblique wall 17b of tooth 17 on the clip, and a lower surface 24b substantially

perpendicular to the direction of the relative motion (longitudinal translation) allowed by the coupling of members 10 and 20.

Referring to Fig. 4, the unactuated or passive arrangement is shown, wherein the writing tip (not shown) of a refill 33 (dashed line) is retracted. The refill is located on the longitudinal axis of the hollow body 20 with its upper end abutting the base 13.

To assemble the pen and reach this arrangement, the spring 18 has to be inserted in the opening 21 of the tubular hollow body 20, also inserting the tongue 15 in the slot 22.

By pressing down the push button 11, the tongue 15 is forced to pass through the protrusions 23. The slot 22 divaricates elastically, letting the tongue 15 into chamber 22b, and then narrows again. The spring 18 reacts on an annular projection 34 on the inside of the hollow body 20 and biases the tongue 15 against the protrusions 23 that stop the spring from extending any further.

In this arrangement, the tooth 17 is located immediately above the tooth 24, with the two oblique surfaces facing.

To write, the push button 11 should be normally pressed, compressing the spring 18 (Fig. 5) and forcing the whole unit 10 to translate downwardly along the axis of the hollow body 20. By releasing the push button, the spring 11 tends to bias the rest of the unit upwards, until the surface 17b of tooth 17 abuts the surface 24b of tooth 24. This contrast locks the writing tip in the extended writing arrangement and bears the reaction that is transmitted during operation by the writing tip.

After writing, to retract the writing tip the lower portion 16a of clip 16 has to be pressed in the direction of arrow P of Fig. 5. The teeth 17 and 24 disengage and the spring 18 pushes the rest of the unit 10 upwards, so the pen recovers its retracted arrangement of Fig. 4.

Referring now to Figs. 6 and 7, an alternative construction of the writing instrument according to the invention is shown.

According to this variant, a tooth 40 is provided on the inner face 16a of the clip 16. In its unactuated position (Fig. 6), the tooth 40 is accommodated in a bore 41 obtained in the hollow body 20 underneath the slot 22. A retaining tooth 42 radially projecting from the hollow body 20 is located underneath the bore 41.

In this embodiment, the teeth 40 and 42 have the same function of the teeth 17 and 24, that are now missing, of the previously described embodiment.

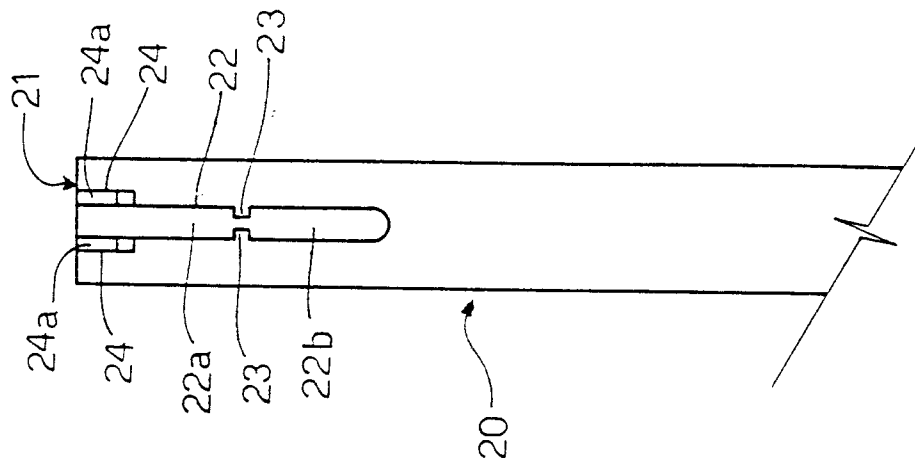
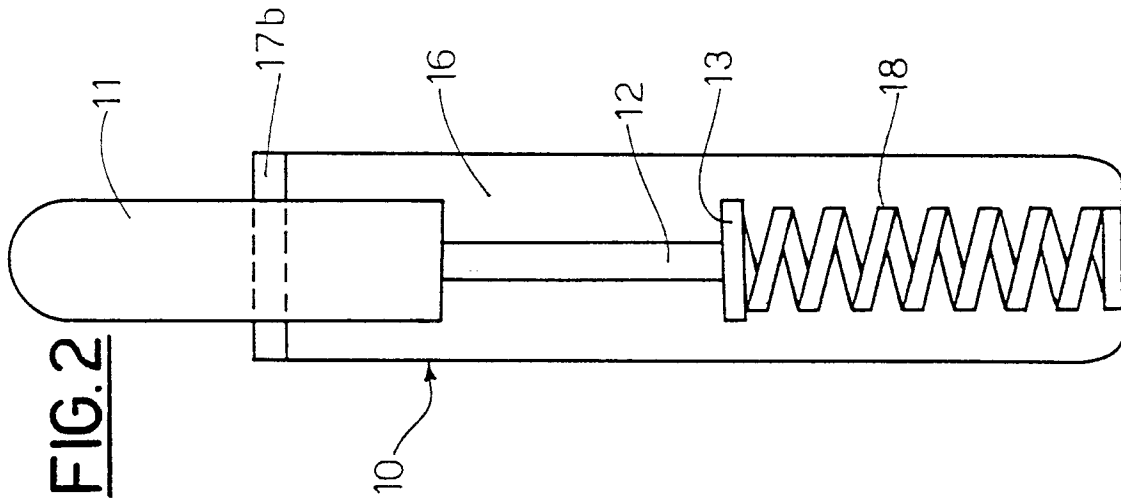
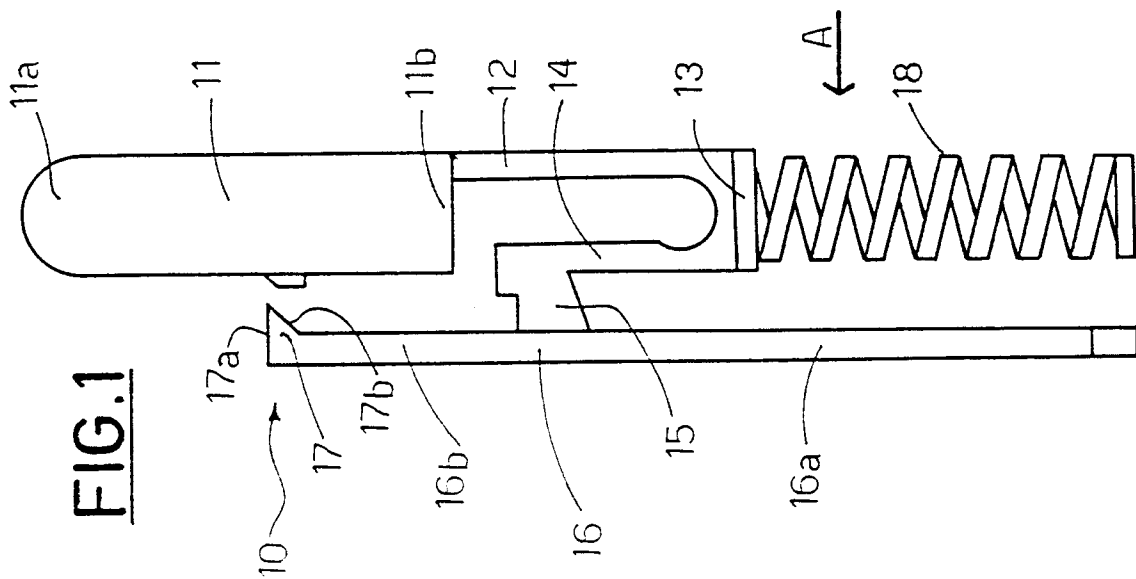
To write, from the unactuated position of Fig. 6, the end portion 16a of the clip 16 has to be lifted as shown by arrow S in Fig. 7, to disengage the teeth and allow the spring 18 to lift the unit 10 until the tongue 15 abuts the protrusions 23.

As it can be appreciated, the present invention provides a writing instrument which is extremely simple and inexpensive to construct, as being formed by three units only: a spring-push button-clip unit, a tubular hollow body, and a writing tip. Particularly, the above spring-push button-clip unit alone substitutes a plurality of separate members, with all the advantages normally attained by reducing the number of components of any device.

The invention is not limited to the foregoing description, which is to be considered purely as an illustration of the best mode of implementing the writing instrument, and which is susceptible of modification of form, size, arrangement of the parts and details of operation. The invention rather is intended to encompass all such modifications which are within its spirit and scope as defined by the claims.

Claims

1. A writing instrument comprising a conventional writing tip (33), a tubular hollow body (20) slidably accommodating a push button (11) for extracting the writing tip and provided with a return spring (18), and an outer clip (16), characterised in that the push button (11), the spring (18) and the clip (16) are obtained in a whole piece as a unit (10).
2. A writing instrument according to claim 1, characterised in that the unit (10) is constituted by a single plastic material.
3. A writing instrument according to claim 1, characterised in that a fixed seat (34) for contrasting the spring (18) is provided inside the hollow body (20).
4. A writing instrument according to claim 1, characterised in that the clip (16) is connected to the rest of the unit (10) by means of a tongue (15) slidable in a seat (22) obtained in the hollow body (20) and open at one end of said hollow body.
5. A writing instrument according to claims 1 and 4, characterised in that said seat (22) is provided with locking means (23) for locking the tongue (15) when the spring (18) extends.
6. A writing instrument according to claim 1, characterised in that the clip (16) is provided with means (17, 40) for contrasting the release of the spring (18), said means (17, 40) being adapted to releasably secure to corresponding locking means integral with the hollow body (20).



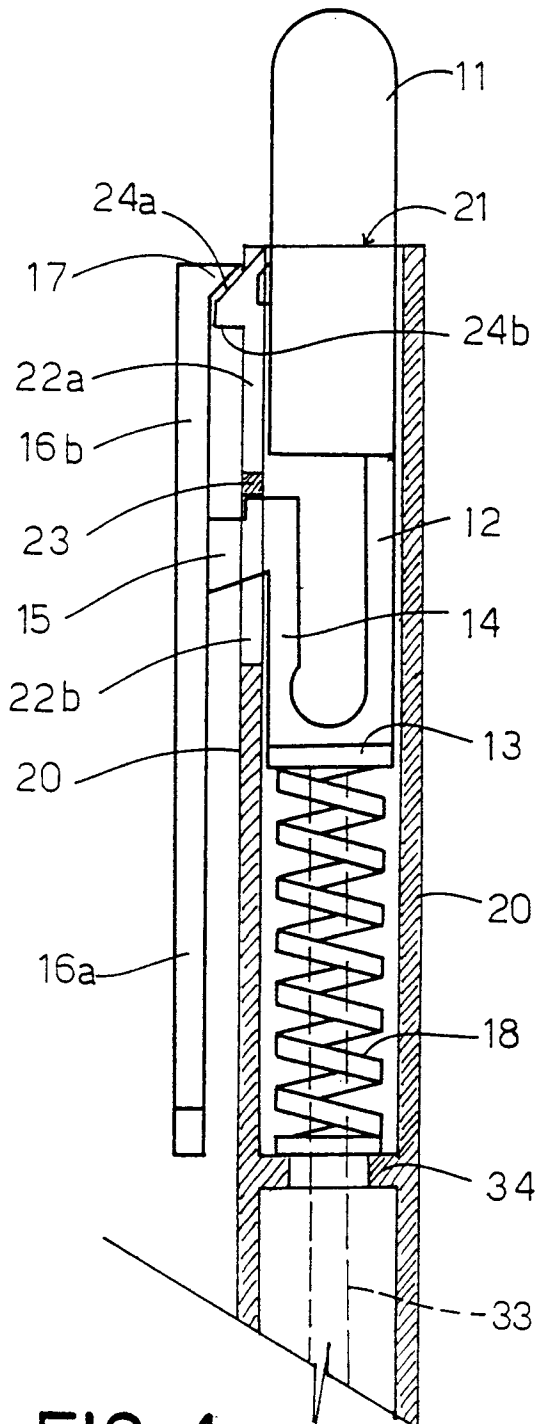


FIG. 4

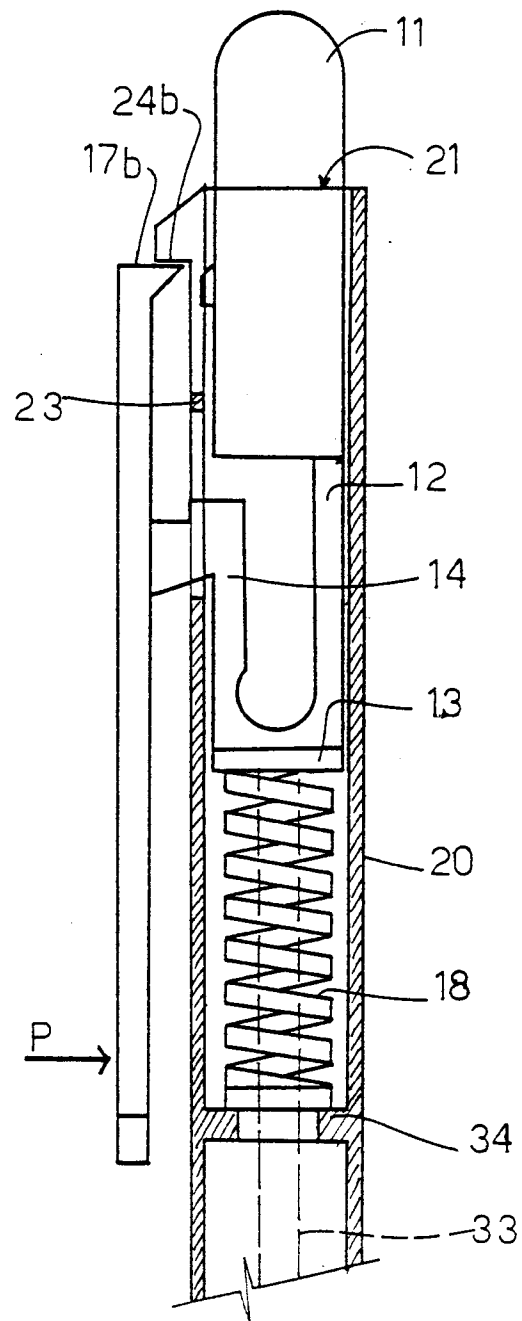
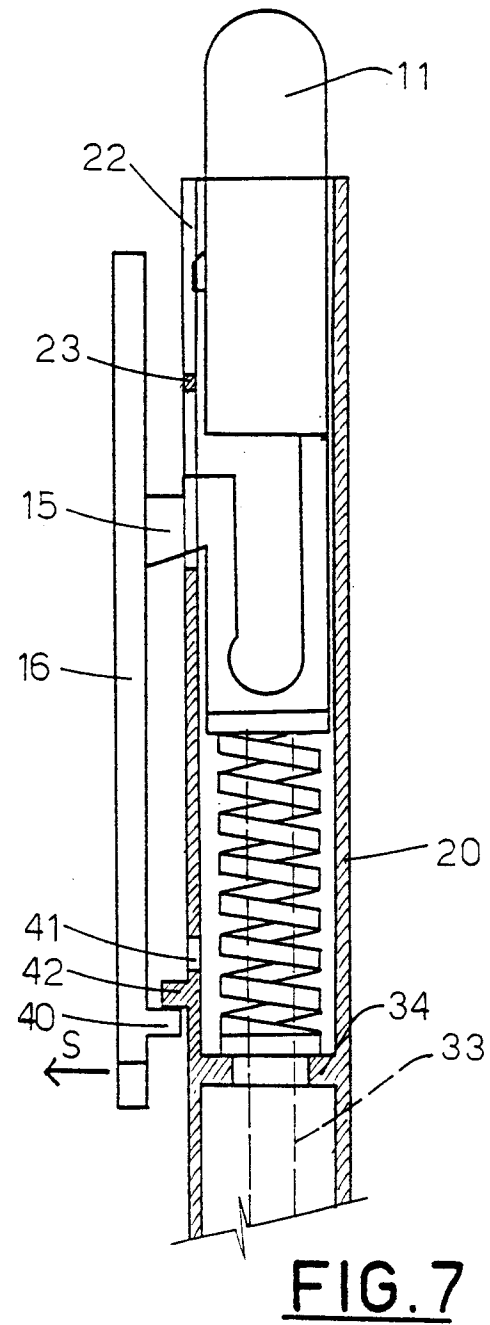
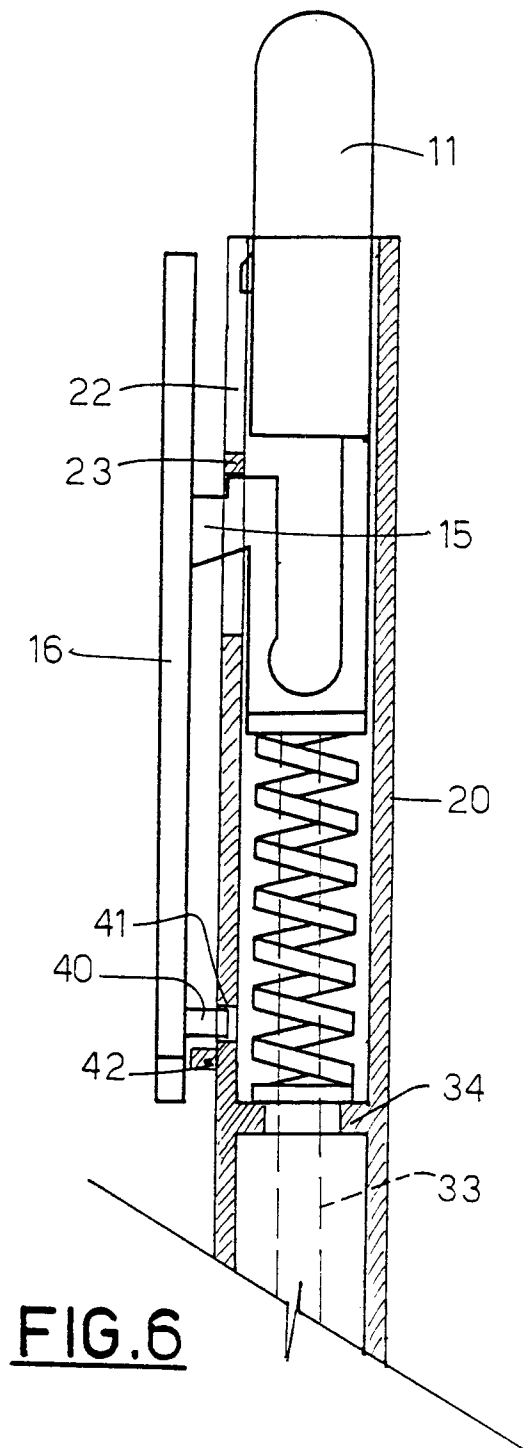


FIG. 5





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EUROPEAN SEARCH REPORT

Application Number
EP 94 10 8612

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	DE-A-15 11 333 (BUSSE RIDO) * the whole document *	1,2,6	B43K25/00 B43K24/08
Y	---	3-5	
Y	EP-A-0 430 387 (KABUSHIKI KAISHA PILOT) * column 4, line 1 - column 9, line 22; figures *	3-5	
X	---		
X	US-A-4 717 275 (BURKHARDT) * column 2, line 40 - column 4, line 58; figures *	1-3	
A	---		
A	EP-A-0 421 937 (MURPHY) * column 2, line 47 - column 3, line 12; figures 2,3,10 *	1-3,6	

			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			B43K
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 September 1994	Examiner Perney, Y
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