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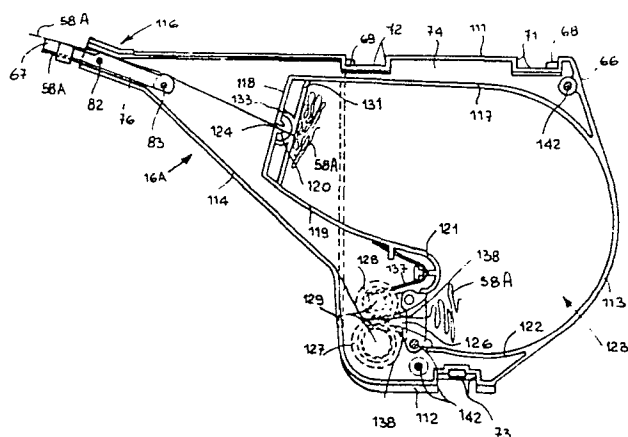
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Cartridge for a typewriter typing ribbon.

A cartridge for a typewriter typing ribbon comprises a container 66 for the ribbon 58 and a lateral arm 67 for guiding the ribbon between the container and the typing point. The container comprises on a first side inclined abutment surfaces 68, 69 arranged for engagement by a corresponding pair of hooks of a swivelling support, reaction surfaces 71, 72 adjacent to the opposition surfaces, and a third abutment surface 73 provided on a second side opposite the first and arranged for engagement by a pressure spring on the support. The spring presses the cartridge down on the support at the front end against stops engaged by the reaction surfaces 71, 72. The hooks hold down the rear part of the container. The container comprises a drive roller 127 for the unidirectional feed of the ribbon, rotatable between the base 74 and a cover adjacent to the third abutment surface 73 and engageable with a drive pin rotatable on the support. The Figure shows a constriction for an endless ink ribbon held in random folds in a magazine 123. An alternative constriction for a non-reusable carbon ribbon uses feed and take-up spools, one above the other, and the drive roller bears against the ribbon wound on the take-up spool, which is spring biased towards the roller



CARTRIDGE FOR A TYPEWRITER TYPING RIBBON

This invention relates to a cartridge for a typing ribbon for a typewriter of the hammer type, and according to the introductory part of claim 1.

5 A cartridge of this type is known, in particular for portable typewriters, comprising a magazine of elongated shape which terminates in a lateral arm extending on one side of the cartridge to the typing zone. A cartridge of this type can be easily handled and is adequate for a portable machine. However, it is not suitable for typewriters of standard type with a typing
10 capacity for which the ribbon contained in the elongated magazine of the known cartridge does not suffice.

The object of the present invention is to provide a cartridge for a typing ribbon which has a high typing capacity, which is reliable in use and can be easily replaced in the machine.

15 The object is met by the cartridge of the present invention, which is defined in the characterising part of claim 1. The invention further provides cartridges specially for ink and carbon ribbons, as defined in claims 10 and 11 respectively.

The invention will now be described in more detail, by way
20 of example, with reference to the accompanying drawings, in which:

Figure 1 is a partial plan view of a typing ribbon cartridge embodying the invention mounted on a support in a hammer typewriter;

25 Figure 2 is a partial side view of Figure 1 to an enlarged scale;

Figure 3 is a partial rear longitudinal view, to an enlarged scale, of the cartridge and support of Figure 1 especially provided for an ink ribbon;

30 Figure 4 is a partial front longitudinal view of the cartridge of Figure 3;

Figure 5 is a partial rear longitudinal view, to an enlarged scale, of the cartridge and support of Figure 1 especially provided for a carbon ribbon;

Figure 6 is a partial front longitudinal view of the cartridge of Figure 5;

Figures 7 and 8 are partial plan views of the cover of the cartridge of Figure 3 and of the cartridge;

5 Figures 9, 10 and 11 are partial plan views of the cartridge of Figure 5; and

Figure 12 is a partial longitudinal view of the cartridge of Figure 11.

10 With reference to Figure 1, a cartridge 16 containing a typing ribbon 58 may be a cartridge 16A (Fig 3) for an inked ribbon 58A or a cartridge 16B (Fig 5) for a carbon ribbon 58B, and is mounted on a support 17 in a hammer typewriter, comprising a paper support platen 18 and a type guide fork 19. The support 17 swivels about an axis perpendicular to the platen 18 for the
15 purpose of raising and lowering the ribbon at the printing point, and comprises a flat base and two upstanding stop strips 21 and 22 adjacent to the roller 18. On each strip 21, 22 there is pivoted a hook 23, 24 (Figures 3 and 5), held flat against the strip at the top by a tongue 26, 27 bent out of the respective strip
20 21, 22. A spring 28 fitted to the lower ends 31 and 32 of the hooks 23 and 24, tends to rotate them in opposite senses until they are stopped by respective tongues 33, 34 against fixed stops 36, 37. Each strip 21, 22 comprises two shoulders or bearing surfaces 38, 39 on which the cartridge 16 (Figure 1) normally
25 rests when mounted on the support 17.

30 The support 17 comprises a third strip 41 (Figures 3 and 5) projecting from the base of the support 17 on the opposite side to the strips 21 and 22. A pressing element or leaf spring 42 is pivoted on a pin 43 on the lower part 47 of the strip 41, and is guided by a tongue 44 housed in a slot 46 in the lower part 47 of the strip 41. The leaf spring 42 comprises an L
35 shoulder 48 (Figure 2) arranged to seat in an upper opening or slot 49 in the strip 41. The strip 41 also has two shoulders or bearing surfaces 51 (Figures 3 and 5) similar to and in the same horizontal plane as the bearing surfaces 38 and 39 of the strips 21 and 22 for supporting the cartridge 16.

The base of the support 17 carries a pin 56 (Fig 2) on which a drive wheel 57 is rotatable for feeding the ribbon 58. The drive wheel 57 is a gear wheel with a toothed bush 59 normally engaged with a gear collar 61 in the cartridge 16. A pawl 62
5 cooperates with the teeth of the gear 57 to feed the ribbon 58 in each typing cycle.

The cartridge 16 for the ribbon comprises a container 66 and a lateral arm 67 for guiding the ribbon 58 between the container 66 and the typing point on the horizontal axis of the paper support
10 platen 18. The container 66 comprises a pair of abutment surfaces 68 (Figures 3 and 5) and 69 provided on that side of the container which is adjacent to the platen 18 when the cartridge is mounted on the support 17, these being inclined in opposite
15 senses and spaced from the lateral arm 67 and lying in planes substantially parallel to the swivel axis of the support 17. The abutment surfaces 68 and 69 are arranged for engagement by the hooks 23 and 24 in order to fix the cartridge on the support 17.

The container 66 comprises a pair of reaction surfaces 71 and 72, which are adjacent to the abutment surfaces 68 and 69 and
20 are arranged to cooperate with the strips 21 and 22 to determine the lateral position of the cartridge 16 relative to the typing point. The container 66 comprises a third abutment surface 73 provided on the side of the container 66 opposite the abutment
25 surfaces 68 and 69 and arranged for engagement by the L shoulder 48 of the leaf spring 42, to ensure contact between the reaction surfaces 71 and 72, and the strips 21 and 22. The container 66 comprises a base part 74, in which the opposition surfaces 68 and 69 are provided, and which is closed at the top by a cover 75.

The lateral arm 67 (Figures 4 and 6) comprises a support
30 76 with two bores 77 and 78 receiving two pins 78 and 81 of the base 74 and two pins 82 and 83 of the cover 75 in such a manner that the arm 67 is fixed between the base 74 and cover 75.

The arm 67 (Figures 4 and 6) is constituted by a strip rigid at one end with the support 76 and at the other end with a U fork
35 86 comprising a striking zone 87 for the ribbon. The U fork 86 comprises a terminal part 88 provided with two edges 89 and 91 disposed to form a V with an angle of 90° , the surface of which

reverse the direction of the ribbon through 180° . A plate 92 is fixed by pins 93 to bores 94 on the terminal part 88.

5 With reference to Figures 4 and 8, the ink ribbon 58A leaves the container 66 behind the arm 67, passes into the striking zone 87 and then engages with the edges 89 and 91, reverses its direction by 180° , passes below the striking zone 87 and engages with two deviation surfaces 96 and 97 inclined at 45° , arranged to turn the ribbon 58A firstly upwards and then horizontal, in order to convey it guided by a strip 98 into the container 66,
10 at the same level as the ribbon emerging from the container.

With reference to Figure 6, the carbon ribbon 58B leaves from a lower part 99 of the container 66, passes below the striking zone 87, engages with the edges 91 and 89 so that it reverses its direction through 180° , passes into the striking
15 zone 87 and is then conveyed behind the arm 67 to re-enter the container 66 above the emerging part of the ribbon.

With reference to Figures 7 and 8, the container 66 of the cartridge 16A, especially provided for the ink ribbon 58A, comprises a base 74, a rear wall 111, in which the abutment
20 surfaces 68 and 69 and the reaction surfaces 71 and 72 are provided, a front wall 112, in which the abutment surface 73 is provided, a semi-cylindrical side wall 113 which connects the rear wall 111 to the front wall 112, and an inclined wall 114. The end parts of the walls 114 and 111 define a zone 116, into
25 which the lateral arm 67 is fixed and through which the ribbon 58A enters and leaves the container 66.

Partitions 117, 118, 119, 121 and 122, constituted by internal walls of the container 66, define a magazine zone 123, in which the endless ink ribbon 58A is disposed in turns
30 distributed in bulk. The magazine zone 123, defined by the walls 121 and 122, is provided with an inlet aperture 126 for the ribbon 58A, adjacent to a pair of toothed drive rollers 127 and 128 for the unidirectional feed of the ink ribbon 58A. Starting from the zone 126, the magazine 123 widens out in the form of a
35 substantially spiral section, and proceeds by way of the two walls 117 and 119, which are bounded by the end wall 118. The wall 118 is provided in its turn with an outlet slot 124 for the ribbon adjacent to the lateral arm 67.

The slot 124 is bounded by two inclined walls 120 which project into the magazine 123 and define a narrow passage for the ribbon aligned with the zone 116. About the slot 124 there is provided a constriction for the ribbon constituted by steps or ribs 131, 133 and 132, 134 of substantially rectangular cross-section, projecting from the base 74 and from the cover 75. The two steps 131 and 132 are substantially parallel to the wall 118 and the two steps 133 and 134 are substantially semi-circular, surround the walls 120 and are tangential to the steps 131 and 132. A segment 135 of the cover 75, having a height less than the steps 131, 132 and the projections 133, 134 closes the top of the slot 124 and rests on the edge of the wall 118. The steps 131, 132 and 133, 134 and the segment 135 exert a constricting effect for the emerging ribbon, to prevent the extraction of unwanted turns from the magazine 123.

The toothed roller 127 is rigid at the bottom with the gear bush 61 (Figure 2) which is arranged for engagement by the teeth 59 of the drive element 57, and is rigid at the top with a disc 136 (Figure 7) provided with a knurled edge for the manual feeding of the ribbon and its tensioning after mounting the cartridge on the support 17.

The two gears 127 and 128 (Figure 8) are each constituted by two equal gear wheels spaced apart by a sleeve 129. The toothed roller 128 is idly mounted in the cartridge, and by the action of a spring 137 on its sleeve 129 is normally engaged with the drive roller 127, and pinches a portion of the ribbon. Finally, two tongues 138 embrace the sleeves 129 of the two rollers 127 and 128, and convey the ribbon towards the magazine zone 123.

The cover 75 (Figures 7 and 8) is fixed to the container 66 by welding, and also by three pins 141 inserted into three bores 142 in the container 66.

With reference to Figures 8 to 11, the cartridge 16B especially provided for the carbon ribbon 58B comprises the container 66 with a support or lower part 149 (Figure 11) in which a feed spool 151 for the carbon ribbon is housed. The lower part 149 comprises a rear wall 152 and a front wall 153 connected together by a semi-cylindrical side wall 154 and two

side walls 156 and 157 which are shaped so as to define a corridor 158 for the outlet of the carbon ribbon.

A core 161 of the feed spool 151 is rotatable about a sleeve 162 projecting from the lower part 149. The spool 151 normally rests on a ring of foam rubber 164 held in a recess 163 in the lower part 149. A bore 166 allows passage of the teeth 59 of the drive element 57 (Fig 2) which engage with the gear bush 61 for the unidirectional feed of the ribbon. The ribbon unwinds from the feed spool 151, bears against a roller 167 rotatable about a pin 168 in the lower part 149, and is conveyed towards the corridor 158. The support 149 is fixed to the container 66 by welding and by means of three pins 169 fitted into three bores (not shown) of the container 66.

The container 66 is constituted by the base 74, a rear wall 171 in which the abutment surfaces 68 and 69 and the reaction surfaces 71 and 72 are provided, a front wall 172 in which the abutment surfaces 73 is provided, a semi-circular side wall 173 which connects the rear wall 171 to the front wall 172, and an inclined wall 174 which with the rear wall 171 defines a zone 176 into which the lateral arm 67 is fitted and where the ribbon enters the container 66.

The container 66 houses a take-up spool 181 on the which the carbon ribbon is wound after it has been used in the striking zone. The take-up spool 181 is constituted by a core 182 rotatably mounted on a support 183 which has a bridge part pivoted on a pin 184 fixed to the base 74 and retained by the cover 75. The cover 75 is fixed in its turn to the container 66 by two pins 197 which are fitted into two bores 198 in the container 66.

Between the walls 172 and 174, the container 66 rotatably supports a feed roller 186, and the support 183 causes the core 182 to move along a trajectory substantially perpendicular to the axis of the roller 186. A tension spring 187 normally keep the support 183 rotated in a clockwise direction and arrested by the take-up spool 181 acting against a gear wheel 188 of the feed roller 186. The support 183 comprises two projecting hemispherical pips 189 which slide on the base 74, which has a recess 191 of sector form to house the end of a pin 192, about which the sleeve 182 of the collection spool 181 is rotatable.



At its top, the feed roller 186 comprises the knurled disc 136 for manually operating the roller. In addition, guide means project from the base 74 of the container 66, these comprising a pin 193 and a roller 194 rotatable about a pin 196, and arranged
5 to convey the carbon ribbon from the zone 176 in proximity to the lateral arm 67 towards the take-up spool 181.

Under the action of the spring 187, the teeth of the gear wheel 188 engage the outer most turns of the ribbon wound on the spool 181, in proximity to the central part of the carbon ribbon.
10 Rotation of the roller 186, by means of the teeth 59 of the drive element 57 causes the take-up spool 181 to rotate, and the carbon ribbon to wind in incremental steps on to the sleeve 182.

Both the cartridge 16A for the ink ribbon and the cartridge 16B for the carbon ribbon are mounted on the hammer typewriter
15 in the same manner. For this purpose, the cartridge 16 is disposed above the plate 17, taking care to keep the strips 21, 22 and 41 aligned with the relative reaction surfaces 71, 72 and 73. On lowering the cartridge towards the plate 17, the lower parts of the opposition surfaces 68 and 69 engage with the upper
20 parts of the hooks 23 and 24, causing them to rotate one clockwise and the other anticlockwise against the action of the spring 28.

Simultaneously, the lower edge of the opposition surface 73 (Figure 2) engages the L shoulder 48, causing the leaf spring 42 to deflect and thus enable the cartridge to be lowered until it is
25 halted with its base 74 against the bearing surfaces 38, 39 and 51. This enables the teeth 59 of the drive element 57 to engage with the ring gear 61. When the cartridge is stopped by the bearing surfaces 38, 39 and 51, the spring 28 rotates the hooks 23 and 24 until they become engaged with the respective abutment surfaces 68
30 and 69. Likewise, the L shoulder 48 engages the respective abutment surfaces 73, thus urging the reaction surfaces 71 and 72 of the cartridge against the respective strips 21 and 22, so removably locking the cartridge on the support 17. If during this operation the ribbon should become slightly slack, the knurled disc 136
35 is manually rotated clockwise until the ribbon is again under tension.

CLAIMS

1. Cartridge for a typing ribbon for a hammer typewriter comprising a paper support platen and a support which swivels about an axis perpendicular to the roller for raising and lowering the ribbon at the typing point and is provided with two stop parts adjacent to the platen, and in which the cartridge comprises a container for the ribbon and a lateral arm for guiding the ribbon between the container and the typing point, characterised by a pair of abutment surfaces (68, 69) provided on a first side of the container which, in use, is adjacent to the platen, these surfaces being inclined in opposite senses and spaced from the lateral arm (67) and lying in planes substantially parallel to the swivel axis of the support (17) and arranged for engagement by a corresponding pair of support hooks (23, 24) adjacent to the stop parts (21, 22), a pair of reaction surfaces (71, 72) on the said first side which are adjacent to the abutment surfaces (68, 69) and a third abutment surface (73) provided on a second side of the container opposite the first side and arranged for engagement by a support pressing element (42) in order to ensure contact between the reaction surfaces (71, 72) of the said first side and the stop elements (21, 22) of the said support (17).
2. A cartridge as claimed in claim 1, characterised in that the container (66) comprises a base (74) and a cover (75) and the abutment surfaces (68, 69, 73) are provided on parts of the base.
3. A cartridge as claimed in claim 2, characterised in that the lateral arm (67) is fitted between the base (74) and the cover (75).
4. A cartridge as claimed in claim 3, characterised by a roller (127, 188) for the unidirectional feed of the ribbon rotatable between the base (74) and cover (75) adjacent to the third abutment surface (73) and engageable with a drive pin (56) rotatable on the swivelling support (17).

5. A cartridge as claimed in claim 4, characterised in that the ribbon (58A) is of the endless type, and the container comprises a magazine (123) for the ribbon, provided with an outlet slot (124) adjacent to the lateral arm (67) and an inlet opening (126) adjacent to the drive roller (127).

6. A cartridge as claimed in claim 5, characterised in that the lateral arm (67) is provided with a pair of deviation members (96, 97) for transferring the ribbon entering the magazine to the same level as that emerging.

7. A cartridge as claimed in claim 4, 5 or 6, characterised in that the outlet slot (124) is provided with a constriction for the ribbon comprising steps (131, 132) on the base (74) and cover (75) of the container tangential to circular projections (133, 134) which surround the slot.

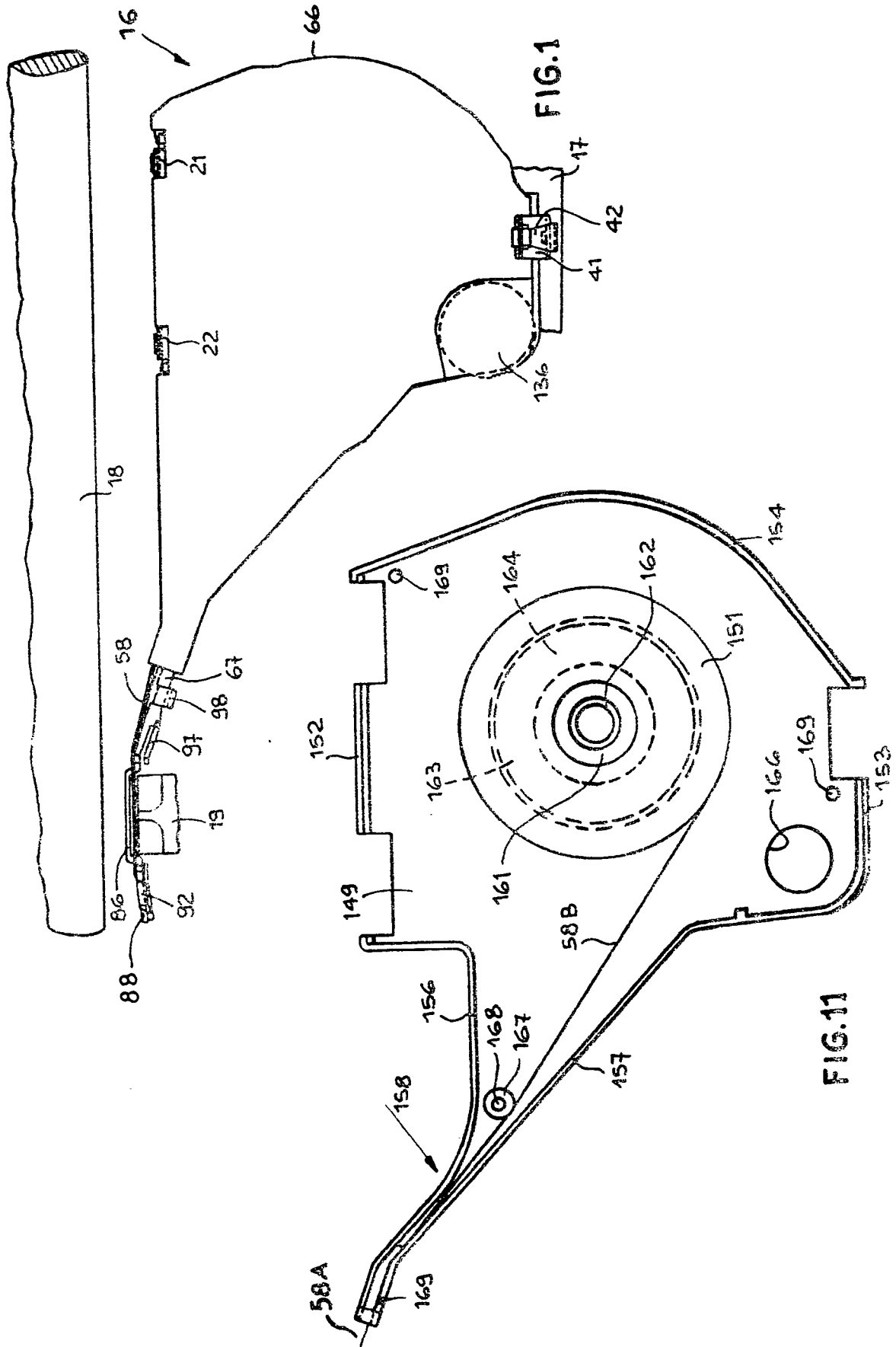
8. A cartridge as claimed in claim 4, characterised in that the ribbon (58B) is of the carbon type, and the container comprises a take-up spool (182) rotatable on a support (183) which is urged by a spring (187) against the feed roller (188).

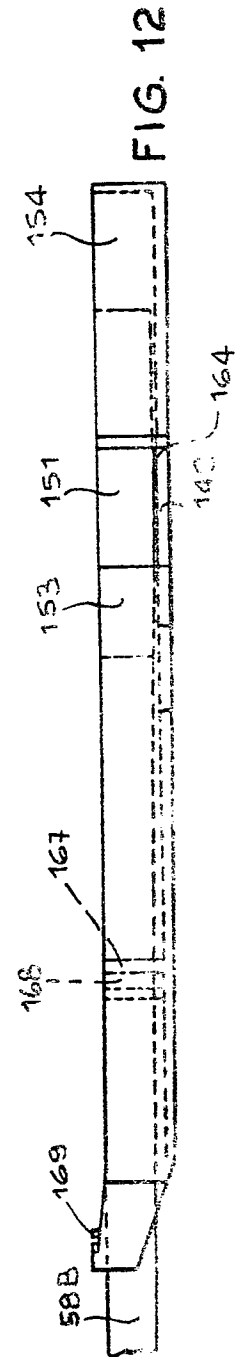
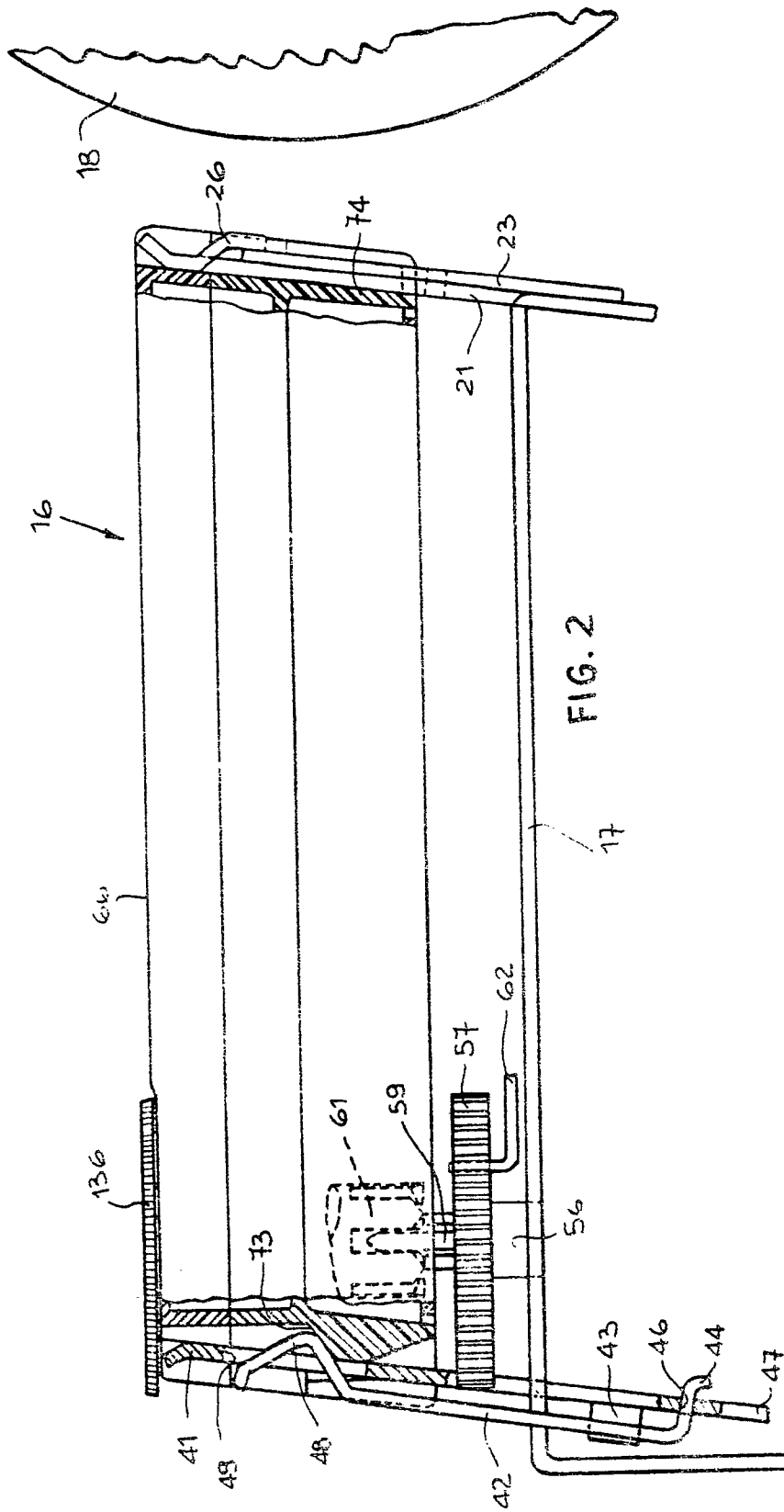
9. A cartridge as claimed in claim 8, characterised in that the container comprises a support (149) underneath for a feed spool (161) for the carbon ribbon.

10. Cartridge for an ink ribbon for a hammer typewriter, of the endless type with a magazine bounded by an end wall with an outlet slot, and provided with a lateral arm for guiding the ribbon between the magazine and the typing point, characterised in that the outlet slot (124) is provided in a central zone of the end wall (118) bounded by two adjacent surfaces (120) which define a corridor extending into the magazine (123), and defined by two acute angled surfaces substantially aligned with the lateral arm of the cartridge, and in that from the base and cover of the magazine there project first ribs (131, 132) parallel to the end wall (118) and two substantially semi-circular ribs (133, 134)

disposed about the said adjacent surfaces and tangential to the first ribs to exert a constricting effect on the emerging ribbon in order to prevent the extraction of unwanted turns from the magazine.

11. Cartridge for a carbon ribbon for a hammer typewriter, comprising a feed spool and a take-up spool for the ribbon and a lateral arm which guides the ribbon between the spool and the typing point, characterised by a container comprising a base (74) and a cover (75) which fix the lateral arm (67), and in which there is mounted a support (183) for the take-up spool (182) which urges the take-up spool into engagement against a toothed drive wheel (188) which is rotatable between the base and cover, and in that the feed spool (161) is carried by a closed support (149) fixed underneath the base (74) and provided with a corridor (158) which guides the ribbon as far as an end part of the lateral arm which, when in use, is disposed below the typing point.





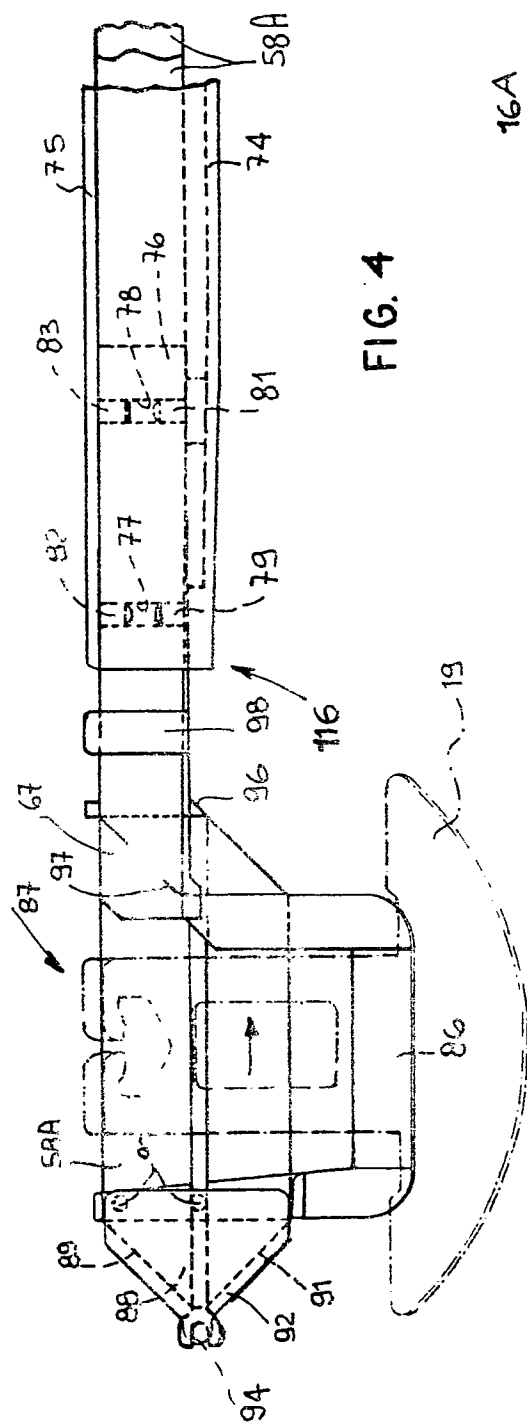
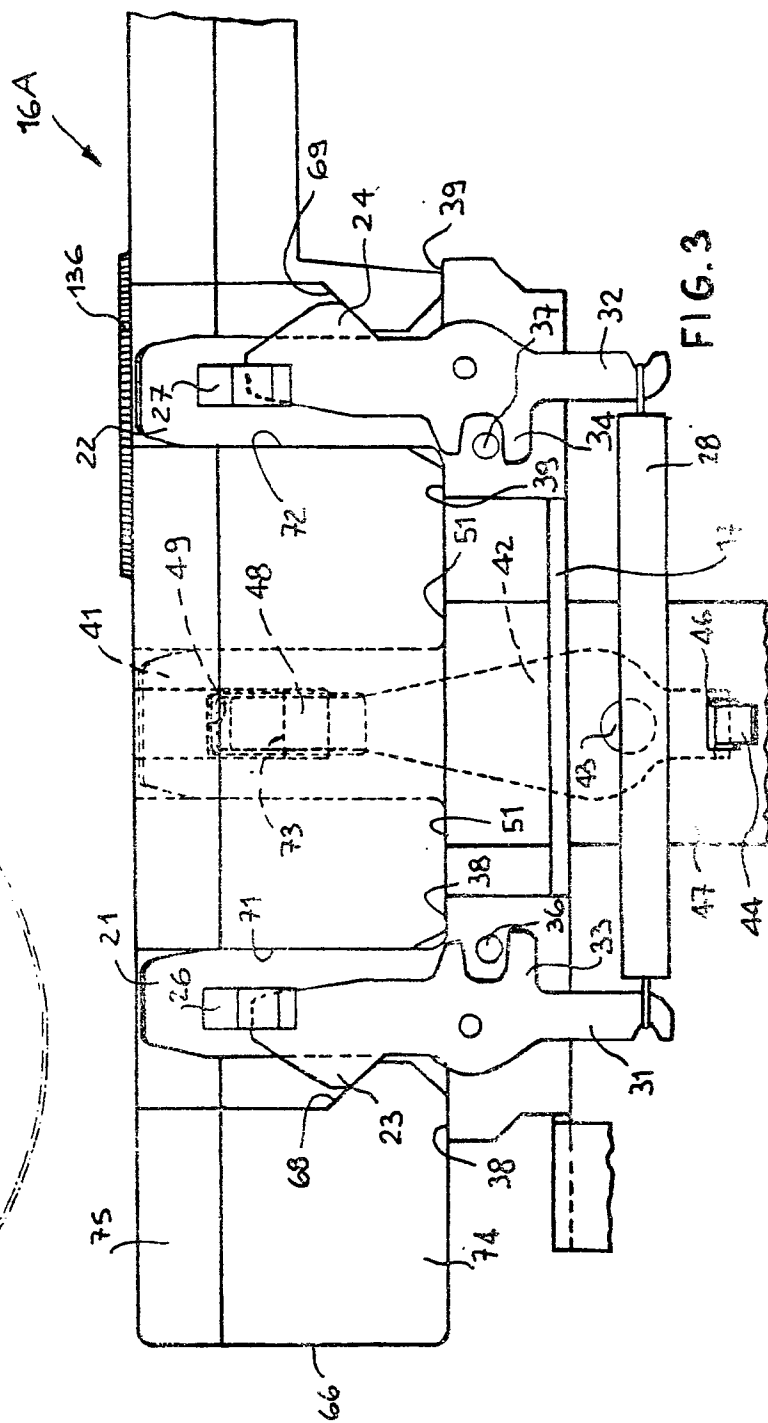
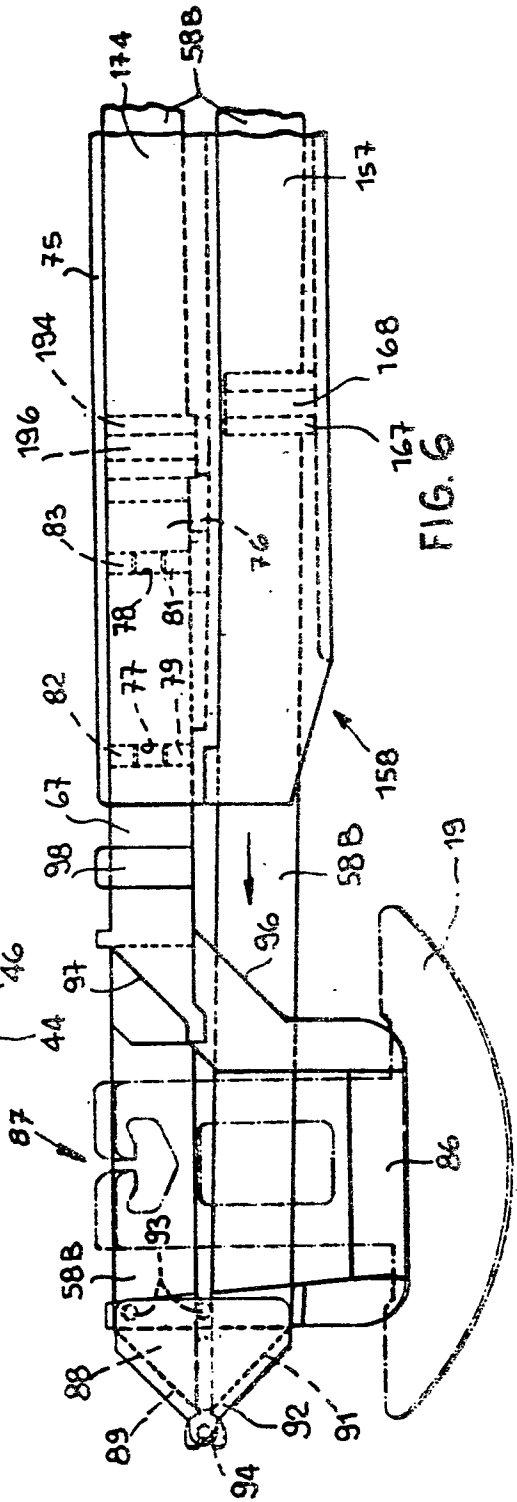
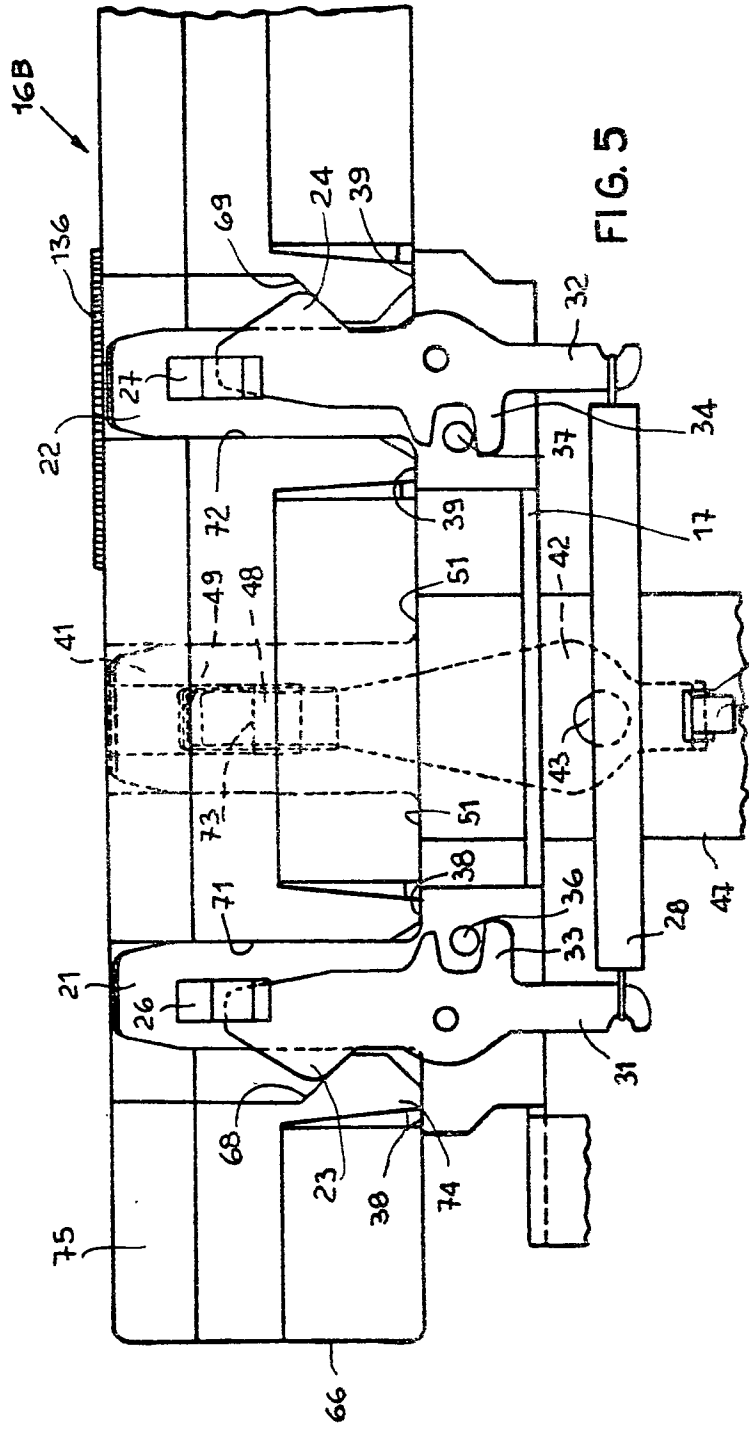
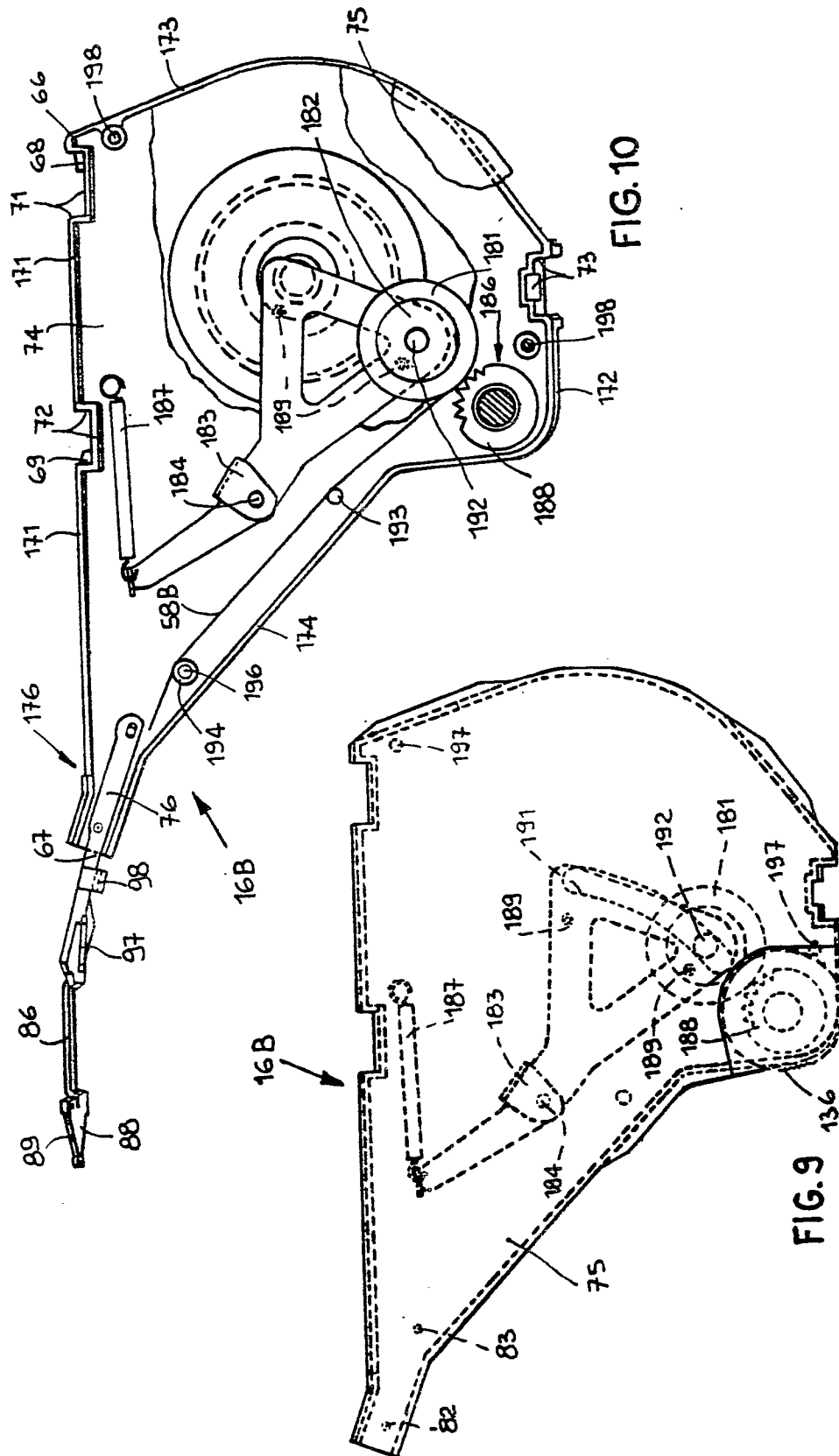


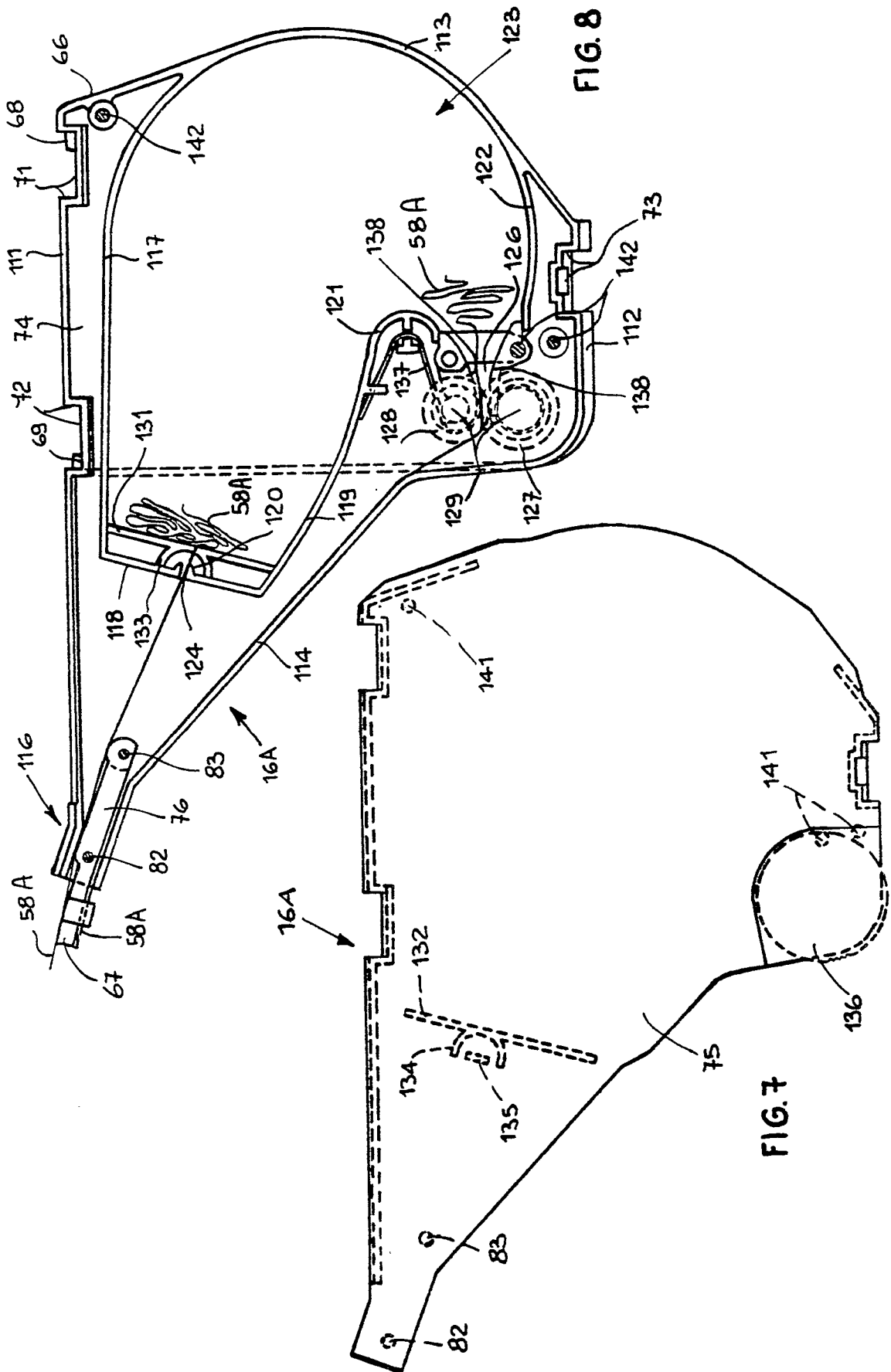
FIG. 4



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European Patent
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EUROPEAN SEARCH REPORT

0034026
Application number

EP 81300407.4

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>US - A - 3 897 866</u> (MUELLER) + Column 2, lines 54-67; fig. 2 + --	5	B 41 J 35/00
	<u>GB - A - 1 416 777</u> (SCM COR- PORATION) + Fig. 4 + --	6	
	<u>GB - A - 1 419 899</u> (SCM COR- PORATION) + Page 2, lines 56-60 + --	7	TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
	<u>US - A - 4 010 839</u> (GUERRINI- CORNIA) + Column 2, lines 7,8; column 2, lines 45-57; fig. 1 + ----	8,9	B 41 J 33/00 B 41 J 35/00
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
X	The present search report has been drawn up for all claims		&: member of the same patent family, corresponding document
Place of search VIENNA		Date of completion of the search 12-05-1981	Examiner KIENAST