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(54) **A ribbon informative barrel for writing instruments**

(57) The ribbon informative barrel (1) for writing instruments provided with a ribbon (10) set inside a barrel (3) for scrolling in front of a window (4) of the barrel (3) itself, and with two shafts (11), which are mounted so that they can turn about their own axes inside the barrel (3) and are fixed to respective end portions (12) of the ribbon (10) for taking up complementary portions of the ribbon (10) itself; a kinematic chain (13) for movement

of the shafts (11) themselves being in turn provided with a pinion (14) for each shaft (11) and with a control pinion (15), which is co-planar with respect to the pinions (14) of the shafts (11) and which is mobile on a selection plane (P) for being selectively engaged with the pinions (14) of the two shafts (11) themselves under the action of a ring, which is supported, in such a way as to enable its rotation, by the barrel (3) and provided with an internal toothing engaged with the control pinion (15).

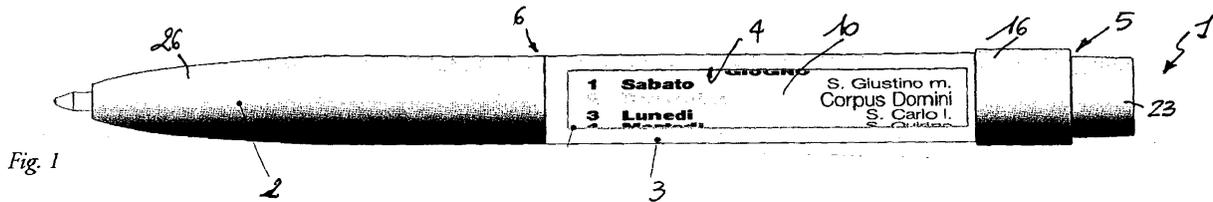


Fig. 1

Description

[0001] The present innovation relates to a ribbon informative barrel for writing instruments.

[0002] From the U.S. patent No. 2,191,662 there is known a ribbon informative barrel for writing instruments comprising: a barrel provided with a window; a ribbon set inside the barrel for scrolling in front of the window; two shafts, which are mounted so that they can turn about their own axes inside the barrel and are fixed to respective end portions of the ribbon for taking up complementary portions of the ribbon itself; and a kinematic chain for movement of the shafts themselves, which is set in the barrel and which in turn comprises: a pinion for each shaft fitted on the corresponding shaft in a position axially fixed and staggered with respect to the pinion of the other shaft; a control pinion, which can move axially against the action of a helical spring and which can selectively engage with the pinions of the two shafts; and a control element, which is axially and radially fixed to the control pinion and is designed to be actuated manually from outside the barrel.

[0003] The ribbon informative barrel for writing instruments described in the U.S. patent cited above presents some drawbacks, which are basically due to the axially staggered position of the pinions of the shafts. In fact, the axial staggering of these pinions necessarily implies the adoption both of a barrel having a considerable axial dimension and of the helical spring for re-positioning the control pinion in one of its initial positions, as well as leading to wear of the pinions owing to the coupling of an axial type, to which they are subjected whenever it is necessary to bring about scrolling of the ribbon in front of the window.

[0004] The purpose of the present innovation is to provide a ribbon informative barrel for writing instruments, which will be free from the drawbacks described above.

[0005] According to the present innovation, there is provided a ribbon informative barrel for writing instruments comprising: a barrel provided with a window; a ribbon set inside the barrel for scrolling in front of the window; two shafts, which are mounted so that they can turn about their own axes inside the barrel and are fixed to respective end portions of the ribbon for taking up complementary portions of the ribbon itself; and a kinematic chain for movement of the shafts themselves, which in turn comprises: a pinion for each shaft; a control pinion, which can be selectively engaged with the pinions of the two shafts; and a control element fixed to the control pinion and designed to be actuated manually from outside the barrel; the informative barrel being characterized in that the pinions of the two shafts and the control pinion are set on one and the same plane of selection transverse to a longitudinal axis of the barrel, the control pinion being angularly mobile about said axis for engaging the pinions of the two shafts at the front.

[0006] The innovation will now be described with reference to the attached drawings, which illustrate a non-

limiting example of embodiment thereof and in which:

- Figure 1 illustrates, in side elevation, a preferred embodiment of a ribbon informative barrel for writing instruments according to the present innovation;
- Figures 2 and 3 are views, in longitudinal median section according to two respective planes transverse with respect to one another, of the ribbon informative barrel of Figure 1;
- Figures 4, 5 and 6 illustrate, at an enlarged scale and with parts in cross-sectional view and parts removed for reasons of clarity, three operating positions of an item of the ribbon informative barrel of Figure 1;
- Figures 7-10 are cross-sectional views according to the lines VII-VII and X-X of Figure 3; and
- Figures 11 and 12 are side elevations of two details of the ribbon informative barrel of Figure 2.

[0007] With reference to Figures 1, 2 and 3, the number 1 designates as a whole a ribbon informative barrel for a writing instrument 2.

[0008] The informative barrel 1 comprises a barrel 3 provided with a side window 4 and with two end portions 5 and 6, which are set in positions opposite to one another and on opposite sides of the window 4 along a longitudinal axis A of the barrel 3 itself, and of which the portion 6 can be assembled on the writing instrument 2. Each portion 5 and 6 is closed by a respective flange 7 and 8, which is transverse to the axis A and has two holes 9 made on each flange 7, 8 on opposite sides of the axis A.

[0009] The informative barrel 1 moreover comprises: a ribbon 10, which is set inside the barrel 3 for scrolling in front of the window 4; and two shafts 11, which are mounted parallel to one another and to the axis A, with their own opposite ends inserted in such a way that they can turn inside the holes 9, and are glued to respective end portions 12 (Figure 7) of the ribbon 10 for taking up on themselves complementary portions of the ribbon 10 itself.

[0010] For scrolling of the ribbon 10, according to what is illustrated more clearly in Figures 7-10, the informative barrel 1 moreover comprises a kinematic chain 13 for movement of the shafts 11, which in turn comprises: a pinion 14 for each shaft 11; a control pinion 15, which can be selectively engaged with the pinions 14; and a control element 16, which is fixed to the control pinion 15 and is designed to be actuated manually from outside the barrel 3.

[0011] According to what is also illustrated in Figure 11, the pinions 14 form a single structure with the corresponding shafts 11 and are set in one and the same selection plane P, which is transverse to the axis A and is identified by a supporting flange 17, which is set substantially in a position corresponding to the portion 5 directly facing the flange 7, and is provided with a semi-circular slot 18 and with two through holes 19, which are

engaged by the shafts 11 in such a way as to enable rotation thereof.

[0012] According to what is also illustrated in Figure 12, the pinion 15 is also set in the plane P and has two axial end portions 20, engaged in a slidable way in the slot 18 and in a slot 21, which is similar to the slot 18, and is made in the flange 7. The shape of the slots 18 and 21 is such as to enable angular movement of the pinion 15 about the axis A in such a way as to cause the pinion 15 itself to engage the pinions 14 at the front, so enabling selective rotation of the two shafts 11.

[0013] The control element 16 is defined by a ring, which is mounted in such a way as to enable its rotation on the portion 5 of the barrel 3, and has an internal toothing 22, which always remains engaged with the pinion 15.

[0014] The ring 16 may have an external knurling for facilitating gripping thereof and is axially blocked on the portion 5 by a closing plug 23, which forms part of the informative barrel 1, and comprises a bottom wall defined by the flange 7, and a tenon 24 axially inserted in the flange 17.

[0015] According to what is illustrated in Figures 4, 5 and 6, free rotation of the ring 16 about the axis A both in the clockwise direction and in the counterclockwise direction brings about sliding in the plane P of the pinion 15 and drawing of the same pinion 15 between two alternative positions of arrest (illustrated in Figures 4 and 6), in which the pinion 15 is selectively engaged with just one of the pinions 14, and through an intermediate neutral position (illustrated in Figure 5), in which the pinion 15 is free from the pinions 14. In addition, when the pinion 15 is set in either alternative position of arrest, further rotation of the ring 16 about the axis A also brings about rotation of the pinion 15 about its own axis, as well as, consequently, rotation of the shaft 11, the pinion 14 of which meshes with the pinion 15.

[0016] Since the two shafts 11 are set in rotation in directions opposite to one another and since, when one first shaft 11 is angularly engaged with the pinion 15 the second shaft 11 is instead idle, the rotation of the first shaft 11 brings about winding of the ribbon 5 onto the first shaft 11 and simultaneous unwinding of the ribbon 5 off the second shaft 11, so enabling reading through the window 4 of what appears on the surface of the ribbon 5.

[0017] In particular, the ribbon 5 is defined by a film of plastic material, such as polypropylene or polyvinyl chloride, of a thickness smaller than 25 μm , whilst the window 4 is obtained by rendering a rectangular portion of the barrel 3 transparent, and, in order to facilitate reading of the ribbon 5, the window 4 may also take the form of a cylindrical lens.

[0018] Alternatively, according to one embodiment, which is not illustrated but is readily inferable from what is described above, the window 4 may also be defined by a rectangular opening made through the barrel 3 to enable direct writing of the ribbon 10.

[0019] From the foregoing description, it emerges that the informative barrel 1 can be assembled on any writing instrument 2, such as, for example, a pencil, a fountain pen, or else a ball-point pen having a refill 25 and a tubular body 26, which contains the refill 25, and is connected to the informative barrel 1 at the end 6 of the informative barrel 1 itself.

[0020] In addition, the informative barrel 1 may also form an integral part of a writing instrument 2 and be provided together with the writing instrument 2 itself.

[0021] It is understood that the innovation is not limited to the embodiments described and illustrated herein, which are to be considered as examples of embodiment of the ribbon informative barrel for writing instruments, which may, instead, undergo further modifications regarding the embodiments and arrangements of parts, and details of construction and assembly.

20 Claims

1. The ribbon informative barrel (1) for writing instruments (2) comprising: a barrel (3) provided with a window (4); a ribbon (10) set inside the barrel (3) for scrolling in front of the window (4); two shafts (11), which are mounted so that they can turn about their own axes inside the barrel (3) and are fixed to respective end portions (12) of the ribbon (10) for taking up complementary portions of the ribbon (10) itself; and a kinematic chain (13) for movement of the shafts (11) themselves, which in turn comprises: a pinion (14) for each shaft (11); a control pinion (15), which can be selectively engaged with the pinions of the two shafts (11); and a control element (16), which is fixed to the control pinion (15) and is designed to be actuated manually from outside the barrel (3); the informative barrel (1) being **characterized in that** the pinions (14) of the two shafts (11) and the control pinion (15) are set on one and the same selection plane (P) transverse to a longitudinal axis (A) of the barrel (3); the control pinion (15) being angularly mobile about said axis (A) for engaging the pinions (14) of the two shafts (11) at the front.
2. The ribbon informative barrel according to Claim 1, **characterized in that** the barrel (3) comprises a supporting flange (17), which is set coplanar with said selection plane (P) and is provided with a semi-circular slot (18), which supports in a slidable way the control pinion (15), and with two through holes (19), which are set on opposite sides of said axis (A) and are engaged by said shafts (11) in such a way as to enable rotation thereof.
3. The ribbon informative barrel according to Claim 2, **characterized in that** the control element (16) is defined by a ring, which is mounted in such a way

as to enable its rotation at a first end (5) of the barrel (3) and has an internal toothing (22) that always remains engaged with said control pinion (15).

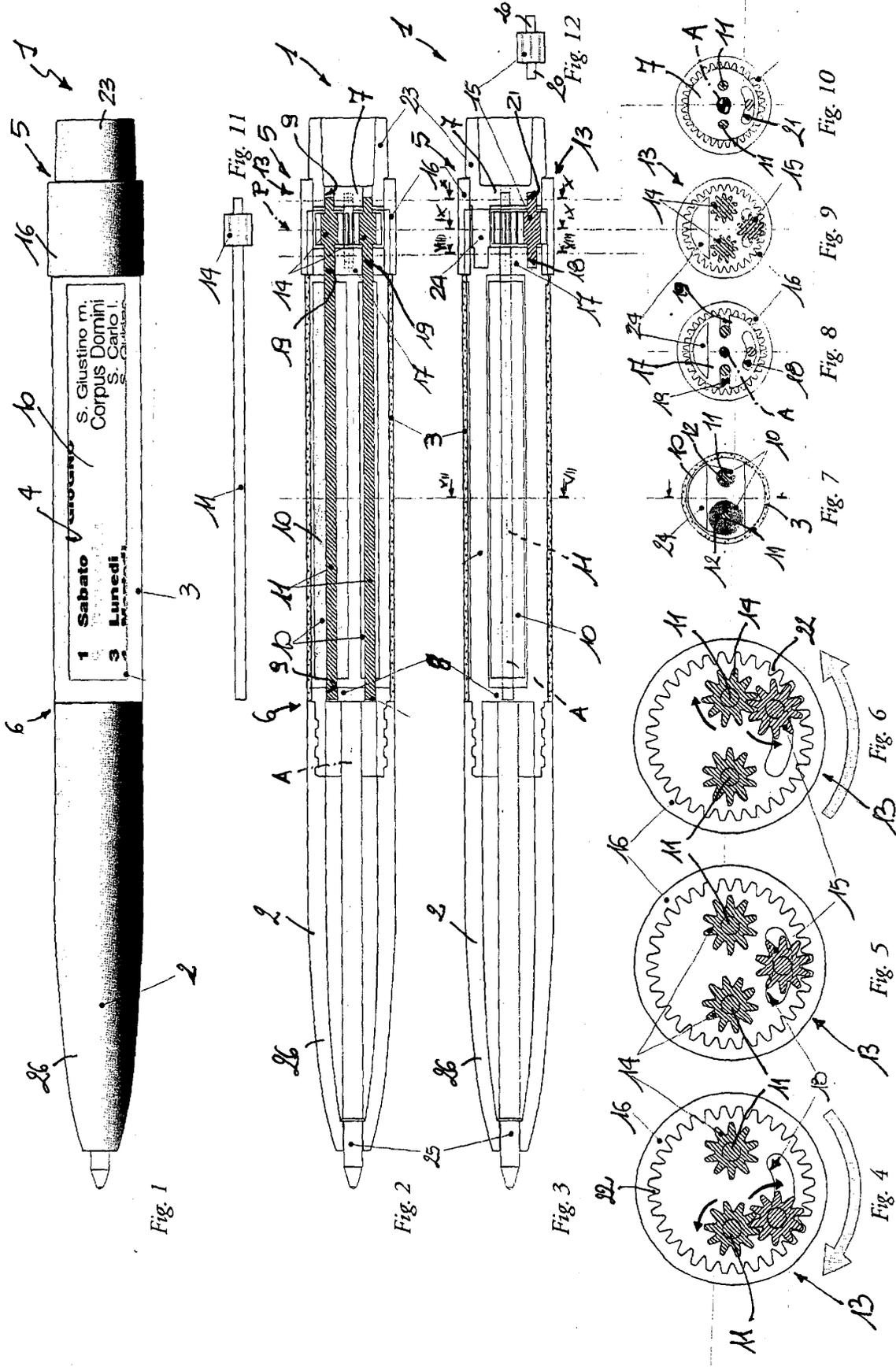
4. The ribbon informative barrel according to Claim 3, **characterized in that** it comprises a closing plug (23), mounted on said first end (5) of the barrel (3) for axial blocking of said ring (16). 5
5. The ribbon informative barrel according to Claim 4, **characterized in that** the closing plug (23) comprises a tenon (24) axially inserted in said supporting flange (17). 10
6. The ribbon informative barrel according to Claim 5, **characterized in that** the closing plug (23) has a bottom wall (7) provided with a respective semicircular slot (21), which supports the control pinion (15) in a slidable way, and two holes (9), which are set on opposite sides of said axis (A) and are engaged by said shafts in such a way as to enable rotation thereof. 15
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7. The ribbon informative barrel according to any one of the preceding claims, **characterized in that** said ribbon (10) is defined by a film of plastic material of a thickness smaller than 25 μm , and has the said end portions (12) glued on said shafts (11). 25
8. A writing instrument, **characterized in that** it comprises a tubular body (25) assembled with the ribbon informative barrel (1) according to any one of the preceding claims. 30
9. The ribbon informative barrel for writing instruments, substantially as described with reference to the attached drawings. 35

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EUROPEAN SEARCH REPORT

Application Number
EP 03 01 6778

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
D,A	US 2 191 662 A (YANCEY HUFFAKER LILLIAN) 27 February 1940 (1940-02-27) * the whole document * -----	1
		CLASSIFICATION OF THE APPLICATION (Int.Cl.7) B43K29/007 B43K29/00 B43K29/08
		TECHNICAL FIELDS SEARCHED (Int.Cl.7) B43K
The present search report has been drawn up for all claims		
Place of search	Date of completion of the search	Examiner
MUNICH	3 November 2003	Louvion, B
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 01 6778

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2191662 A	27-02-1940	NONE	

EPO FORM P0469

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82