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— *of inventorship (Rule 4.17(iv))*

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— *with international search report*

(54) Title: SELF-LOCKING SPRING PUSHER

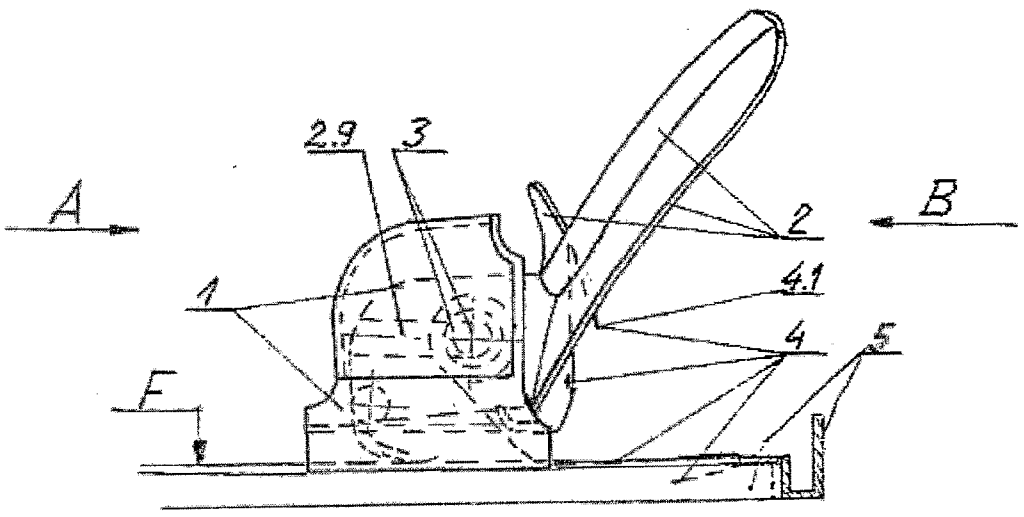

Fig. 1

(57) Abstract: The self-locking spring pusher which consists of a body (1) in which a pusher stop (2) and a roll (3) are mounted in a self-aligning way and additionally the body (1) has side walls (1.1) joined with an arc vault (1.5) at the top, and a connector (1.6) at the bottom and additionally the side walls (1.1) have flat inner cavities and additionally the stop (2) is mounted in the body (1) through mandrels (2.4) of a hook-shaped connector (2.3) and additionally has side walls (2.1) with inner slide recesses (2.2) and additionally the side walls (2.1) are connected at the bottom to mandrels (2.4) with a hook-shaped connector (2.3) and the hook-shaped connector (2.3) has an operational undercut (2.8) and furthermore the stop (2) has a forked rest (2.5) or a flat rest (2.5.1).

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Self-locking spring pusher

The subject of the invention is a self-locking spring pusher used in merchandizing as an element of horizontal product feeders placed on racks or near cash desks.

A horizontal cigarette packet feeder, in which a pusher with a guide and a spring are mounted between vertical walls on the bottom of the body is known from Polish utility model No. 59657. A spring feeder in which there is a horizontally situated spring and a pusher placed ahead of the spring is known from Polish patent application No. 346080. A merchandising system which has an element with a path with a pusher pushed with a string is known from a Polish patent application. Similar solutions are known from publications of US patent descriptions US 2004/0065630, US 2006/0273053 and US 2007/0029270.

According to the invention, the self-locking spring pusher consists of a body in which a stop and a roll are mounted in a self-aligning way and additionally the body has side walls joined with an arc vault at the top, and a connector at the bottom which connects top slides, and additionally the side walls have flat inner cavities with limiting arches and additionally the stop has side walls with inner slide recesses and additionally the side walls are connected at the bottom to the mandrels with a hook-shaped connector and the hook-shaped connector has an operational undercut and furthermore the stop has a forked rest or a flat rest and additionally the stop is mounted in flat front inner recesses in the body through mandrels of the hook-shaped connector and additionally the roll is mounted in the inner slide recesses of stop through its bearing mandrels.

Exemplary embodiment of the subject of invention is presented in the drawing, where Fig. 1 shows a side view of the pusher positioned on a known guide, Fig. 2 - the front view of the pusher designated as A on Fig. 1, Fig. 3 - the rear view of the pusher designated as B in Fig. 1, Fig. 4 - the side view of the pusher, Fig. 5 - the rear view of the pusher body designated as D in Fig. 4, Fig. 6 -

the front view of the pusher body designated as C on Fig. 4, Fig. 7 - the A-A axial section of the pusher body designated on Fig. 6, Fig. 8 the B-B section of the pusher body wall designated on Fig. 7, Fig. 9 - a side view of the pusher stop, Fig. 10 the E view of the pusher stop designated on Fig. 9, Fig. 11 - an expanded assembly drawing of pusher assemblies, Fig. 12 - a top view of a part of the known guide showing a catch for flat tape spring wound up inside the pusher.

The self-locking spring pusher has a body 1 consisting of side walls 1.1 joined with arc vault 1.5 at the top, and a connector 1.6 at the bottom with a nose 1.11 and additionally the connector 1.6 connects top slides 1.4 on guide 1.2. Side walls 1.1 have flat inner cavities 1.13 which make it easier to mount stop 2 in body 1. In the side view, body 1 has flat outer cavities 1.12, a top arc recess 1.9, a rear arc recess 1.8 and a front arc recess 1.7. In the front view, body 1 has a longitudinal handling recess. The axial section of body 1 shows on the inner surface of side wall 1.1 a flat front inner recess 1.15 with a stopper arch 1.16 and a flat inner cavity 1.13 with a limiting arch 1.14. Stop 2 has side walls 2.1 with inner slide recesses 2.2 and additionally side walls 2.1 are connected at the bottom to mandrel 2.4 with a hook-shaped connector 2.3 and additionally connector 2.3 has an operational undercut 2.8. Additionally, stop 2 has a forked rest 2.5 or flat rest 2.5.1. The forked rest 2.5 has an angular wall 2.6 and a handling grip 2.7. Between side walls 2.1 there is a roll 3 with bearing mandrels 3.1 inserted in slide recesses 2.2. A flat spring 4 with a hook-shaped bend 4.1 at the end is wound around roll 3. Body 1 is mounted by its guide 1.2 on slides 5.1 of guide 5 and spring 4 is engaged in guide 5 by its hook-shaped bend 4.1.

In its initial position, the self-locking spring pusher is at the mounting point of the spring 4 in guide 5. Stop 2 has a fixed position and the hook-shaped connector 2.3 of its side walls 2.1 is supported by its operational undercut 2.8 against the surface of slide 5.1 of guide 5. On pressing the operating grip 2.7, stop 2 is inclined backwards, which allows to move the pusher to guide 5. On releasing, operating grip 2.7, stop 2 returns to its former position and the pusher is

locked by seizing hook-shaped connector 2.3 at the butting of operating undercut 2.8 and the surface of slide 5.1 of guide 5, which allows positioning the pusher at any place of guide 5. The design ensures the movement of stop 2 with relation to body 1 by mounting mandrels 2.4 of stop 2 in inner recesses 1.15 in the walls of body 1. The pressure of product units placed on guide 5 causes forked rest 2.5 of stop 2 to incline and move the pusher backwards, with a simultaneous unwinding of spring 4. Each time a product unit is taken off, a part of spring 4 is wound up and all the other product units are moved towards the front of guide 5 under the pressure of the returning pusher.

Patent claims

1. The self-locking spring pusher mounted on a guide and equipped with a spring characterized in that it consists of a body (1) in which a pusher stop (2) and a roll (3) are mounted in a self-aligning way.

2. The self-locking spring pusher in accordance with claim 1, characterized in that the body (1) has side walls (1.1) joined with an arc vault (1.5) at the top, and a connector (1.6) which connects top slides (1.4) and additionally the side walls (1.1) have flat inner cavities (1.13) with limiting arches (1.14) and flat front inner recesses (1.15) with limiting arches (1.14).

3. The self-locking spring pusher in accordance with claim 1, characterized in that the stop (2) has side walls (2.1) with inner slide recesses (2.2) and additionally the side walls (2.1) are connected at the bottom to mandrel (2.4) with a hook-shaped connector (2.3) and the hook-shaped connector (2.3) has an operational undercut (2.8) and additionally the stop (2) has a forked rest (2.5) or a flat rest (2.5.1).

4. The self-locking spring pusher in accordance with claim 3, characterized in that the stop (2) is mounted in flat front inner recesses (1.15) in the body (1) through mandrels (2.4) of the hook-shaped connector (2.3).

5. The self-locking spring pusher in accordance with claim 1, characterized in that the roll (3) is mounted in the inner slide recesses (2.2) of stop (2) through its bearing mandrels (3.1).

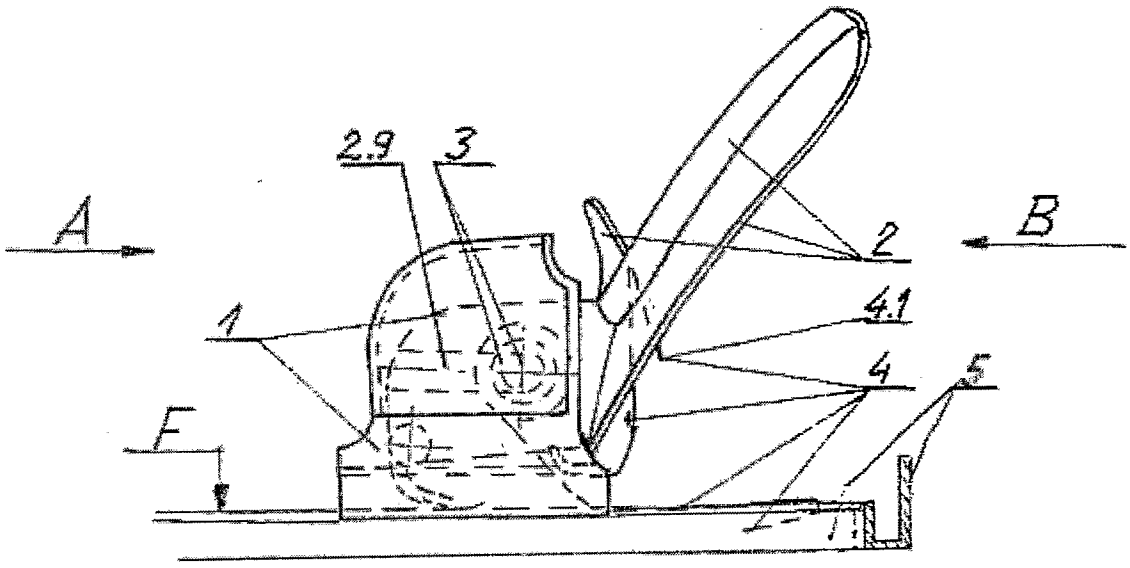

Fig. 1

View A

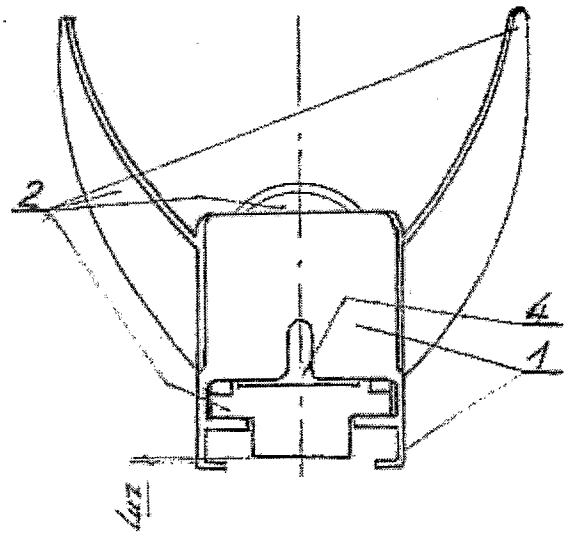

Fig. 2

View B

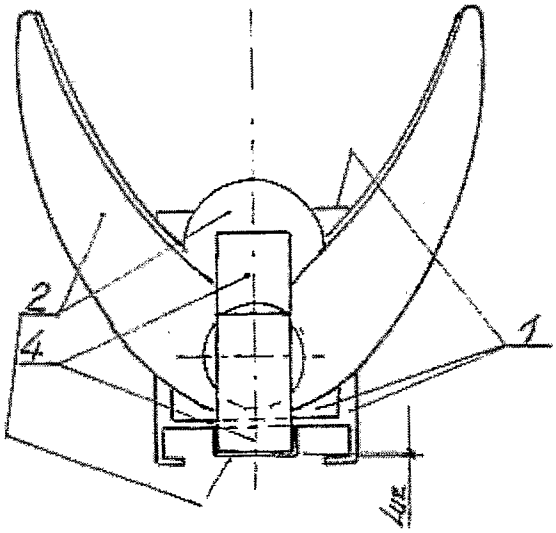

Fig. 3

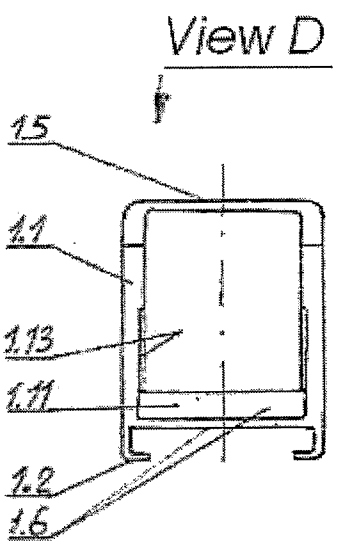

Fig. 5

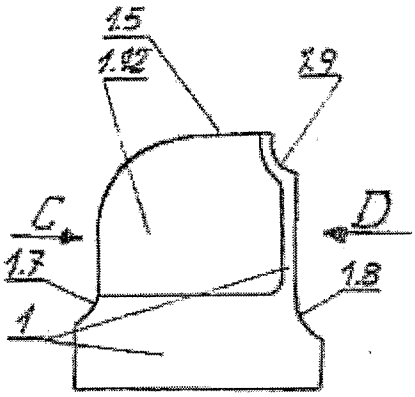

Fig. 4

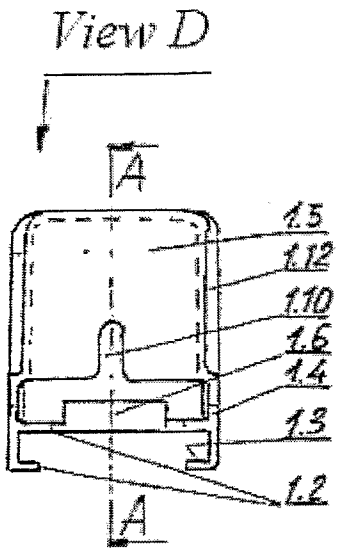

Fig. 6

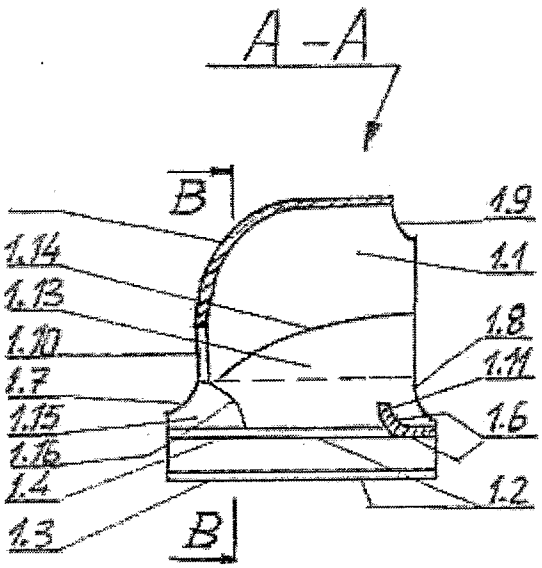

Fig. 7

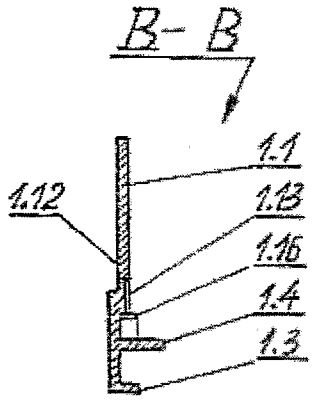

Fig. 8

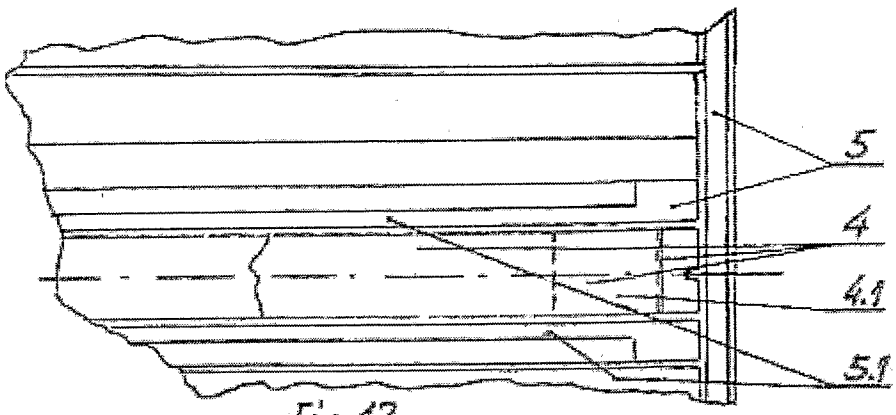

Fig. 12

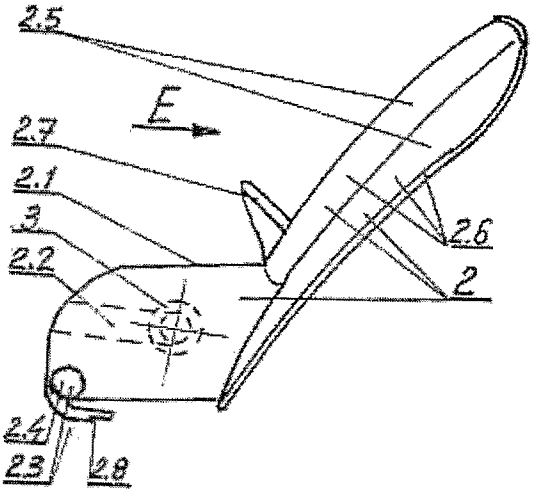

Fig.9

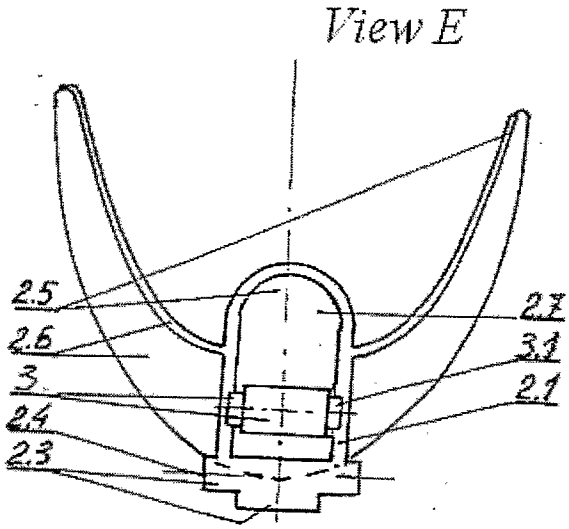

Fig.10

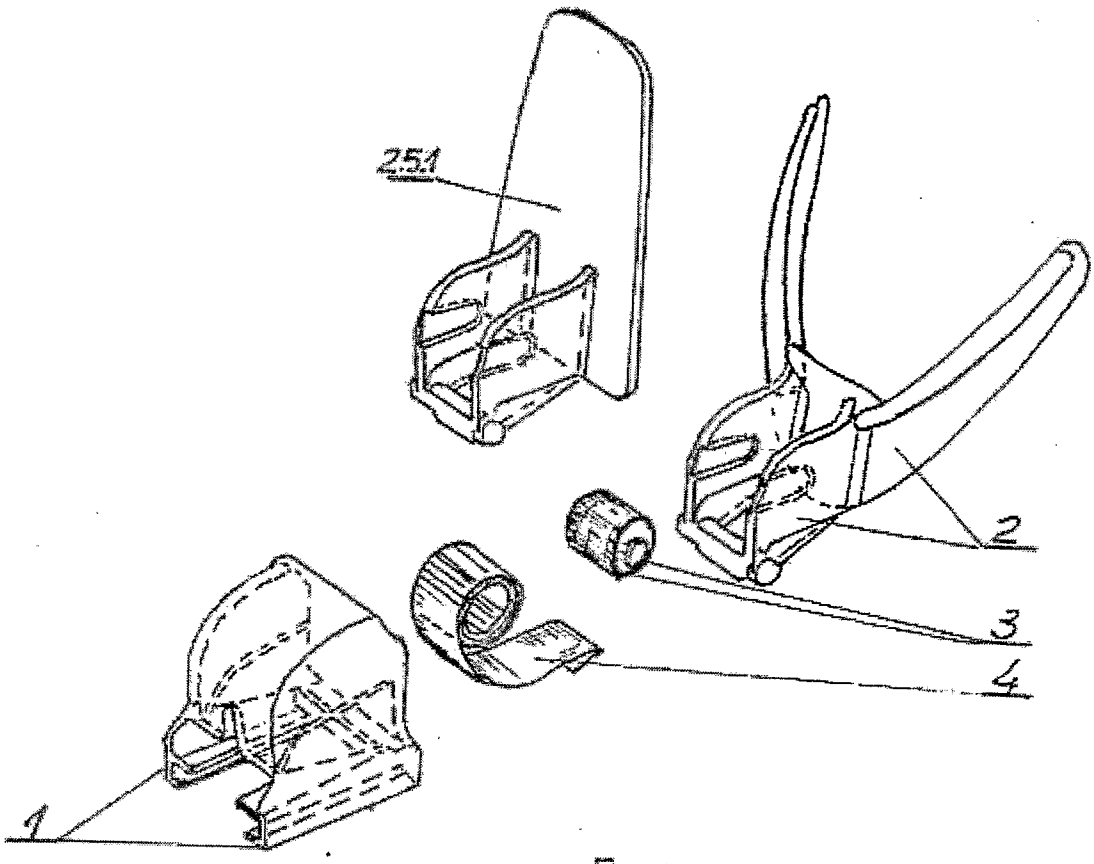

Fig. 11

INTERNATIONAL SEARCH REPORT

International application No
PCT/PL2007/000075

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47F1/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2004/065630 A1 (ONDRASIK V JOHN) 8 April 2004 (2004-04-08) cited in the application figures 5,6	1
A	US 5 450 969 A (JOHNSON TERRY ET AL) 19 September 1995 (1995-09-19) figures 5-7	1
A	EP 0 986 980 A (FINANCIERE INTERNATIONALE SITOUR) 22 March 2000 (2000-03-22) figures 6-12	1
A	US 6 752 277 B1 (SEMPLINER ARTHUR T) 22 June 2004 (2004-06-22) figures 3-5	5

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☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
14 May 2008	28/05/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Reichhardt, Otto

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/PL2007/000075

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004065630 A1	08-04-2004	NONE	
US 5450969 A	19-09-1995	NONE	
EP 0986980 A	22-03-2000	FR 2783144 A1	17-03-2000
US 6752277 B1	22-06-2004	NONE	