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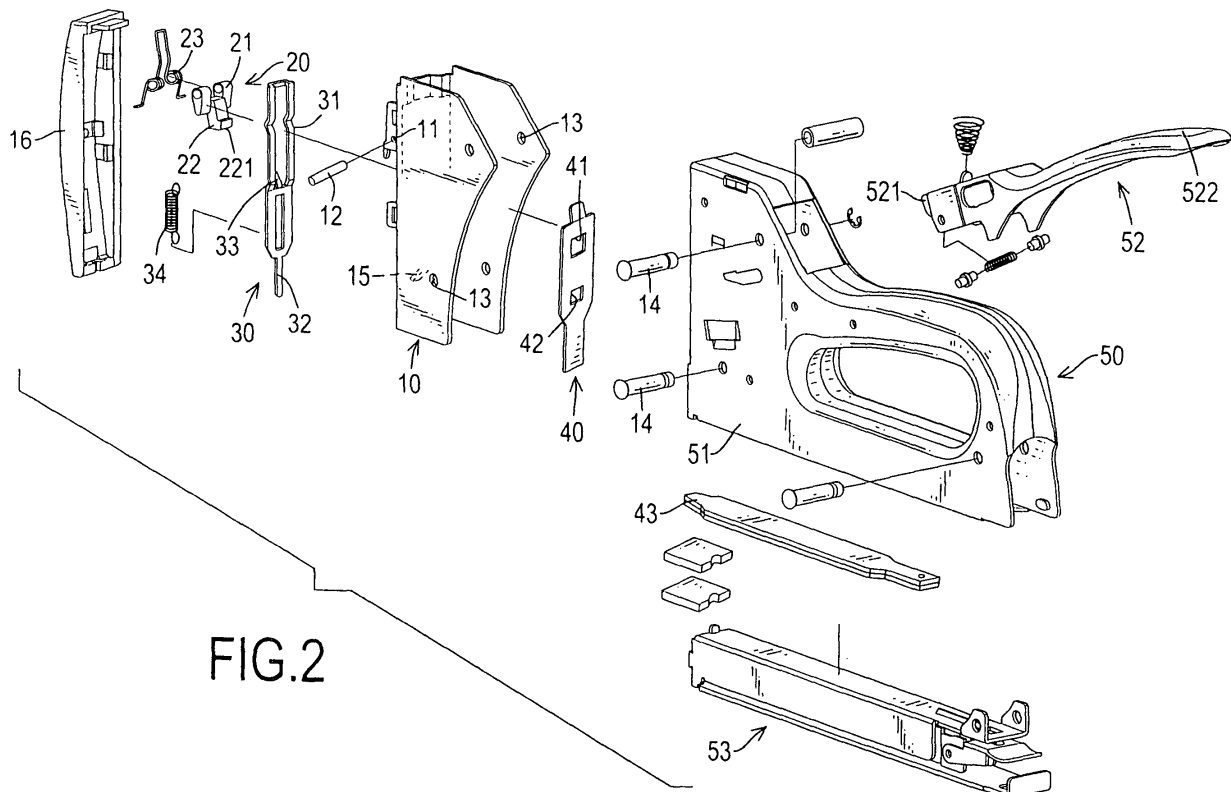
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et al****Kilburn & Strode LLP****20 Red Lion Street****London WC1R 4PJ (GB)****(54) Latch assembly for a staple gun**

(57) A latch assembly for a staple gun (50) has a front cover (10), a locking element (20), a pushing element (30) and a staple driver (40). The front cover (10) has a connecting bolt (12). The locking element (20) is mounted on the front cover (10) and has two cams (21), a torsion spring (23) and a locking block (22). The cams (21) and the torsion spring (23) are mounted around the connect-

ing bolt (12). The pushing element (30) is mounted in the front cover (10) and has a pushing lever (31) and a pressing pin (32). The pushing lever (31) abuts the cams (21). The staple driver (40) is mounted in the front cover (10) and has a locking hole (41), a through hole (42) and an elastic panel (43). The locking hole (41) is formed through the staple driver (40) and engages the locking block (22).

**FIG.2****EP 2 223 776 A1**

Description

1. Field of the Invention

[0001] The present invention relates to a latch assembly, and more particularly relates to a latch assembly for a staple gun that can hold a handle of the staple gun conveniently and safely when the staple gun is not being used.

2. Description of Related Art

[0002] A conventional staple gun is used extensively with decorations, shoemaking and leatherwear and drives staples into objects. Accordingly, the staple is ejected from the staple gun at a high speed. This may be dangerous if a handle of the staple gun is thoughtlessly squeezed, which ejects a staple from the staple gun and may injure someone. Consequentially, conventional staple guns usually have a protection device to hold the handle against the staple gun when the staple gun is not being used to prevent the staples from being shoot from the staple gun.

[0003] However, the protection device for the conventional staple gun has a complicated structure and locking the handle to the staple gun by the protection device rubbing against the staple gun isn't easy so the conventional staple gun is inconvenient to use. In addition, the protection device will wear down and will not hold the housing securely after a long time and may get someone hurt.

[0004] To overcome the shortcomings, the present invention provides a latch assembly for a staple gun to mitigate or obviate the aforementioned problems.

[0005] The main objective of the present invention is to provide a latch assembly for a staple gun can hold a handle of the staple gun conveniently and safely when the staple gun is not being used.

[0006] A latch assembly for a staple gun in accordance with the present invention has a front cover, a locking element, a pushing element and a staple driver. The front cover is detachably mounted on the staple gun and has two bolt holes and a connecting bolt. The locking element is pivotally mounted on the front cover and has at least one cam, a locking block and a torsion spring. The at least one cam is rotatably mounted around the connecting bolt. The locking block is formed with the at least one cam below the connecting bolt. The torsion spring is mounted around the connecting bolt to push the locking block moving backward to the front cover. The pushing element is slidably mounted in the front cover and has a pushing lever and a pressing pin. The pushing lever abuts the at least one cam. The pressing pin extends out of the front cover. The staple driver is mounted slidably between the front cover and the staple gun and has a locking hole, a through hole and an elastic panel. The locking hole is formed through the staple driver and engages the locking block. The through hole is formed through the staple driver. The elastic panel engages the through hole.

[0007] Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

IN THE DRAWINGS:

[0008]

Fig. 1 is a perspective view of a latch assembly for a staple gun in accordance with the present invention, shown mounted on a staple gun;

Fig. 2 is an exploded perspective view of the latch assembly and the staple gun in Fig. 1;

Fig. 3 is a side view in partial section of the latch assembly mounted in the staple gun in Fig. 1; and
Figs. 4 to 6 are operational side views in partial section of the latch assembly mounted in the staple gun in Fig. 1.

[0009] With reference to Figs. 1, 2 and 3, a latch assembly in accordance with the present invention is mounted in a staple gun (50) having a housing (51), a handle (52) and a staple magazine (53) and the latch assembly comprises a front cover (10), a locking element (20), a pushing element (30) and a staple driver (40).

[0010] The housing (51) is hollow, may be formed by two half-casings and has a front side, a top edge and a bottom edge.

[0011] The handle (52) is connected pivotally to the housing (51), protrudes from the top edge of the housing (51) and has an acting end (521) and a pressing end (522). The acting end (521) of the handle (52) is pivotally mounted inside the housing (51) and extends to the front side of the housing (51). The pressing end (522) of the handle (52) extends out of the top edge of the housing (51).

[0012] The staple magazine (53) is mounted in the housing (51) at the bottom edge, holds multiple staples and pushes the staples to a front of the staple magazine (53).

[0013] The front cover (10) may be U-shaped, is detachably mounted on the front side of the housing (51) and has a top, a bottom, a front side, two sidewalls, two bolt holes (11), a connecting bolt (12), multiple mounting holes (13), multiple fasteners (14), a first spring mount (15) and a protecting cap (16).

[0014] The bolt holes (11) are transversally formed through the front side of the front cover (10) near the top and align with each other.

[0015] The connecting bolt (12) is mounted in the bolt holes (11) of the front cover (10).

[0016] The mounting holes (13) are formed through the sidewalls of the front cover (10) and align with each other.

[0017] The fasteners (14) are mounted in the mounting holes (13) of the front cover (10) to connect the front cover (10) with the housing (51) of the staple gun (50).

[0018] The first spring mount (15) is formed on and protrudes from the front side of the front cover (10) near the bottom.

[0019] The protecting cap (16) is detachably mounted on the front side of the front cover (10) to form a mounting recess (17) between the front cover (10) and the protecting cap (16).

[0020] The locking element (20) is pivotally mounted on the front cover (10) and has at least one cam (21), a locking block (22) and a torsion spring (23). The at least one cam (21) may be water drop shaped, is rotatably mounted around the connecting bolt (12) of the front cover (10). Preferably two cams (21) are rotatably mounted around the connecting bolt (12).

[0021] The locking block (22) is formed with the at least one cam (21) below the connecting bolt (12), may be formed between the two cams (21) and has a locking end (221). The locking end (221) of the locking block (22) is extended to the front side of the front cover (10).

[0022] The torsion spring (23) is mounted around the connecting bolt (12) of the front cover (10) to push the locking block (22) to the front side of the front cover (10).

[0023] The pushing element (30) is slidably mounted in the mounting recess (17) between the front cover (10) and the protecting cap (16) and has an upper end, a lower end, a pushing lever (31), a pressing pin (32), a second spring mount (33) and a pushing spring (34).

[0024] The pushing lever (31) is formed on the upper end of the pushing element (30) and abuts the at least one cam (21).

[0025] The pressing pin (32) is formed on the lower end of the pushing element (30) and extends out of the bottom of the front cover (10).

[0026] The second spring mount (33) is formed on and protrudes from the pushing element (30) above the first spring mount (15) of the front cover (10).

[0027] The pushing spring (34) is mounted between the spring mounts (15, 33) to press the pressing pin (34) downward to extend out of the bottom of the front cover (10).

[0028] The staple driver (40) is mounted slidably between the front cover (10) and the housing (51) of the staple gun (50) and has a lower end, an upper end, a locking hole (41), a through hole (42) and an elastic panel (43).

[0029] The lower end of the staple driver (40) extends over the staple magazine (53) of the staple gun (50).

[0030] The locking hole (41) is formed through the staple driver (40) near the upper end, engages the locking end (221) of the locking block (22) and aligns with the acting end (521) of the handle (52).

[0031] The through hole (42) is formed through the staple driver (40) below the locking hole (41).

[0032] The elastic panel (43) engages the through hole (42) of the staple driver (40) in the housing (51) of the staple gun (50) to provide an impulsive force to the staple driver (40) to eject the staples in the staple magazine (53) out of the staple gun (50).

[0033] With reference to Figs. 4 to 6, when a user wants to use the staple gun (50) that has the latch assembly in accordance with the present invention to drive staples into an object, first the pressing pin (32) of the pushing element (30) is placed on a surface of the object to make the pushing lever (31) move upward relative to the front cover (10) and the housing (51) to push the at least one cam (21). When the at least one cam (21) is pushed by the pushing lever (31) of the pushing element (30), the locking element (20) will rotate relative to the connecting bolt (12) and the locking end (221) of the locking block (22) will separate from the locking hole (41) of the staple driver (40) and the acting end (521) of the handle (52) will engage in the locking hole (41) of the staple driver (40). Then, pressing the pressing end (522) of the handle (52) relative to the housing (51) of the staple gun (50), and the staple driver (40) will move upward relative to the front cover (10) and the elastic panel (43) that engages the through hole (42) of the staple driver (40) will be bent by the staple driver (40). When the pressing end (522) of the handle (52) moves close to the top edge of the housing (51), the acting end (521) of the handle (52) will separate from the locking hole (41) of the staple driver (40). Then, the bent elastic panel (43) will provide an impulsive force to the staple driver (40) to eject the staples in the staple magazine (53) out of the staple gun (50) into the object.

[0034] When moving the staple gun (50) away from the surface of the object, the pushing spring (34) between the spring mounts (15, 33) will push the pressing pin (32) of the pushing element (30) out of the bottom of the cover (10) and the locking element (20) will be rotated relative to the connecting bolt (12) of the cover (10) by the torsion spring (23) to make the locking block (22) move back to an original position and make the locking end (221) of the locking block (22) securely engage the locking hole (41) of the staple driver (40) so preventing staples being shoot from the staple gun (50) when the handle (52) of the staple gun (50) is thoughtlessly squeezed.

[0035] By simplifying design of the latch assembly in accordance with the present invention for the staple gun (50), manufacture and assemble are cheaper and quicker.

[0036] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and features of the invention, the disclosure is illustrative only. Changes may be made in the details, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

Claims

1. A latch assembly for a staple gun (50) having a housing, a handle (52) connected pivotally to the housing

(51) and a staple magazine (53) mounted in the housing (51) below the handle (52), and **characterized in that** the latch assembly comprises:

a front cover (10) being adapted to detachably mount on the housing (51) and having

a top;
a bottom;
a front side;
two sidewalls;
two bolt holes (11) being transversally formed through the front side of the front cover (10) near the top and aligning with each other; and
a connecting bolt (12) being mounted in the bolt holes (11) of the front cover (10);

a locking element (20) being pivotally mounted on the front cover (10) and having

at least one cam (21) being rotatably mounted around the connecting bolt (12) of the front cover (10);
a locking block (22) being formed with the at least one cam (21) below the connecting bolt (12) and having a locking end (221) extending to the front side of the front cover (10); and
a torsion spring (23) being mounted around the connecting bolt (12) of the front cover (10) to push the locking block (22) to the front side of the front cover (10);

a pushing element (30) being slidably mounted in front side of the front cover (10) and having

an upper end;
a lower end;
a pushing lever (31) being formed on the upper end of the pushing element (30) and abutting the at least one cam (21); and
a pressing pin (32) being formed on the lower end of the pushing element (30) and extending out of the bottom of the front cover (10); and

a staple driver (40) being mounted slidably between the front cover (10) and the staple gun (50) and having

a lower end extending to over the staple magazine (53) of the staple gun (50);
an upper end;
a locking hole (41) being formed through the staple driver (40) near the upper end, engaging the locking end (221) of the locking block (22) and being adapted to align

with the handle (52);
a through hole (42) being formed through the staple driver (40) below the locking hole (41); and
an elastic panel (43) engaging the through hole (42) of the staple driver (40) in the staple gun (50) to provide an impulsive force for the staple driver (40).

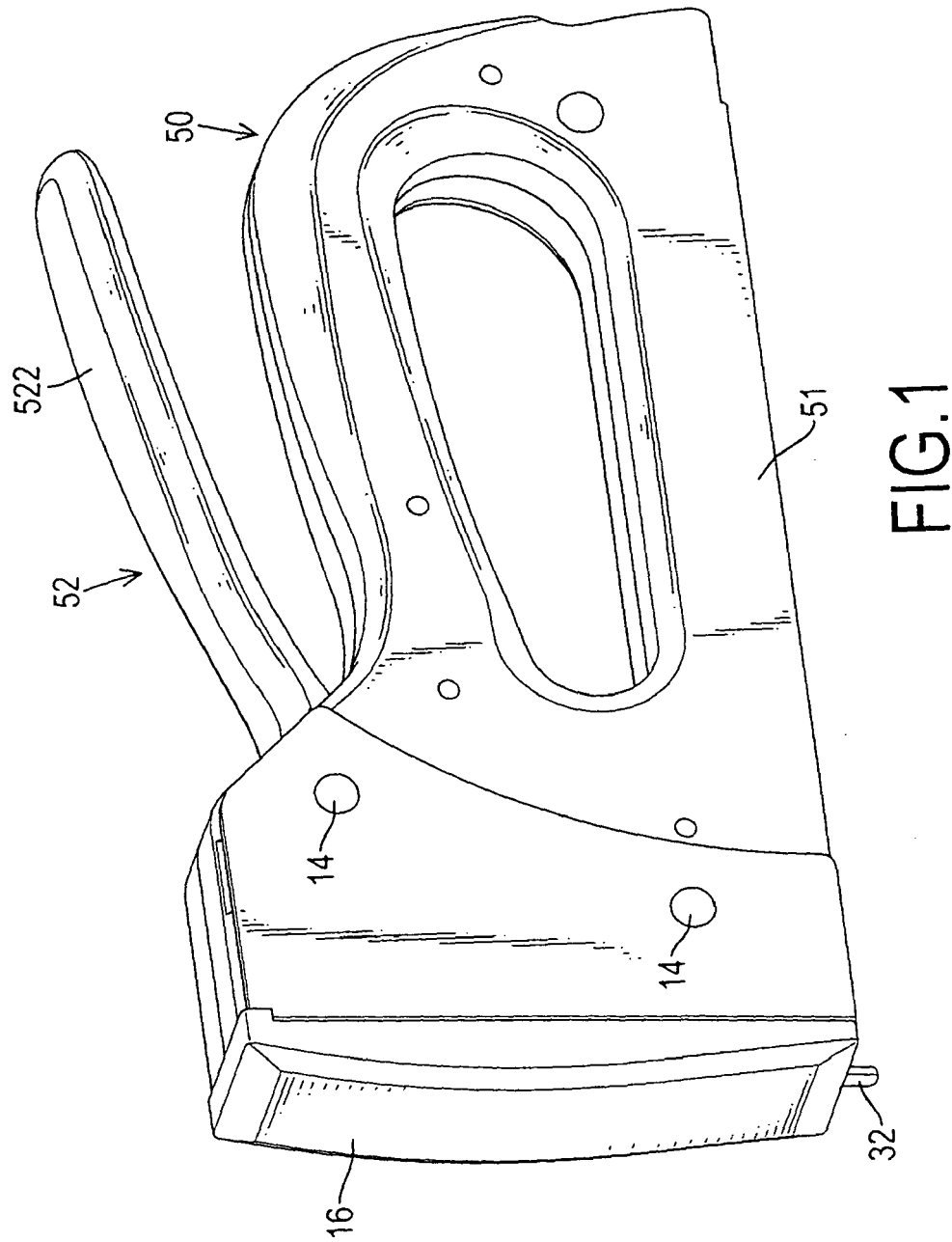
2. The latch assembly for a staple gun (50) as claimed in claim 1, wherein the front cover (10) has a protecting cap (16) being detachably mounted on the front side of the front cover (10) to form a mounting recess (17) between the front cover (10) and the protecting cap (16), wherein the pushing element (30) is slidably mounted in the mounting recess (17) between the front cover (10) and the protecting cap (16).

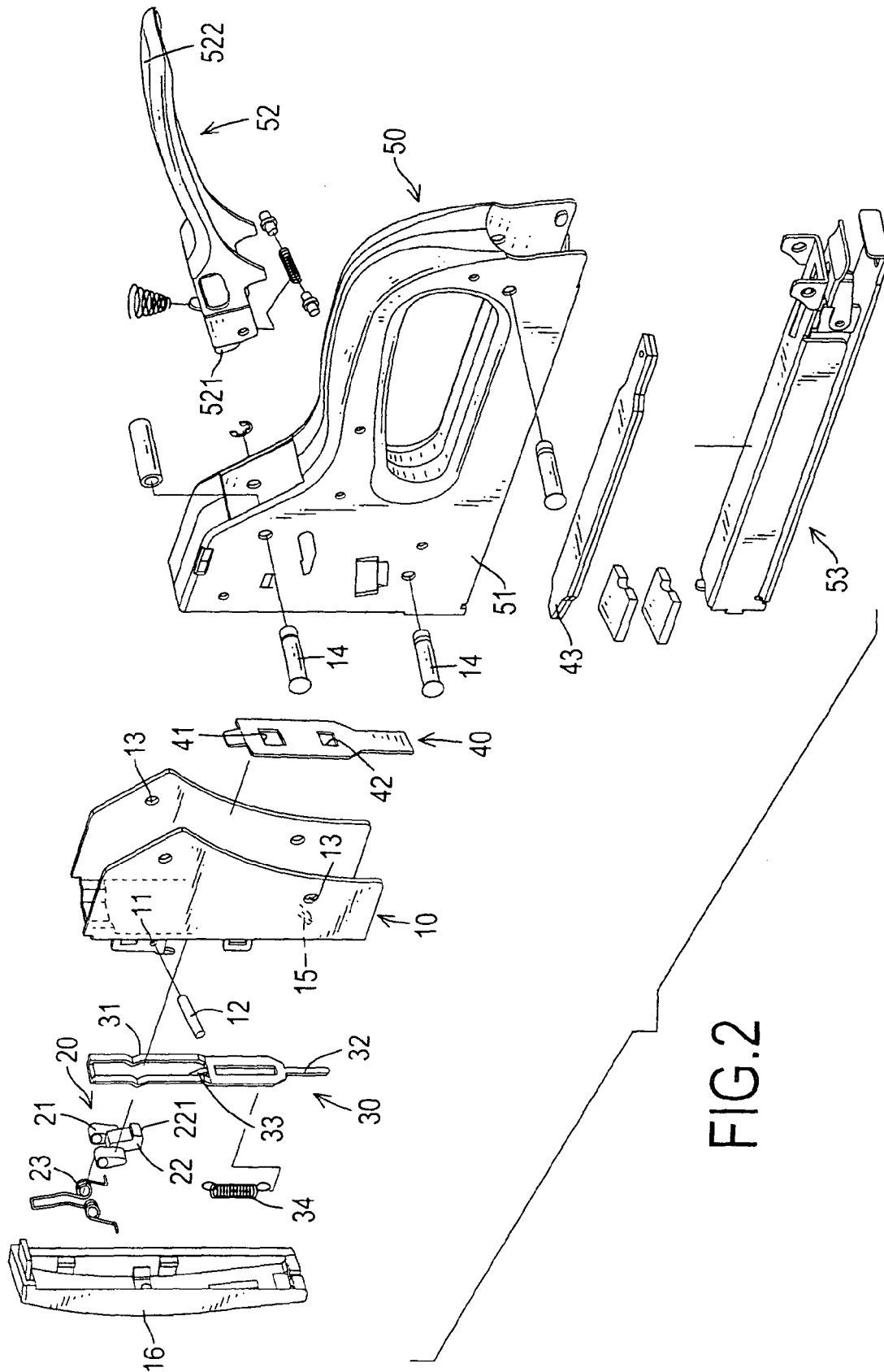
3. The latch assembly for a staple gun (50) as claimed in claim 1 or 2, wherein the front cover (10) has a first spring mount (15) being formed on and protruding from the front side of the front cover (10) near the bottom; and the pushing element (30) has a second spring mount (33) being formed on and protruding from the pushing element (30) above the first spring mount (15) of the front cover (10); and a pushing spring (34) being mounted between the spring mounts (15, 33) to press the pressing pin (32) downward and extending out of the bottom of the front cover (10).

4. The latch assembly for a staple gun (50) as claimed in claim 1 or 3, wherein the locking element (20) has two cams (21) being rotatably mounted around the connecting bolt (12); and the locking block (22) is formed between the two cams (21).

5. The latch assembly for a staple gun (50) as claimed in claim 1 or 4, wherein the front cover (10) is U-shaped and has multiple mounting holes (13) being formed through the sidewalls of the front cover (10) and aligning with each other; and multiple fasteners (14) being mounted in the mounting holes (13) of the front cover (10) to connect the front cover (10) with the housing (51) of the staple gun (50).

6. The latch assembly for a staple gun (50) as claimed in claim 1 or 5, wherein each cam (21) of the locking element (20) is water drop shaped.





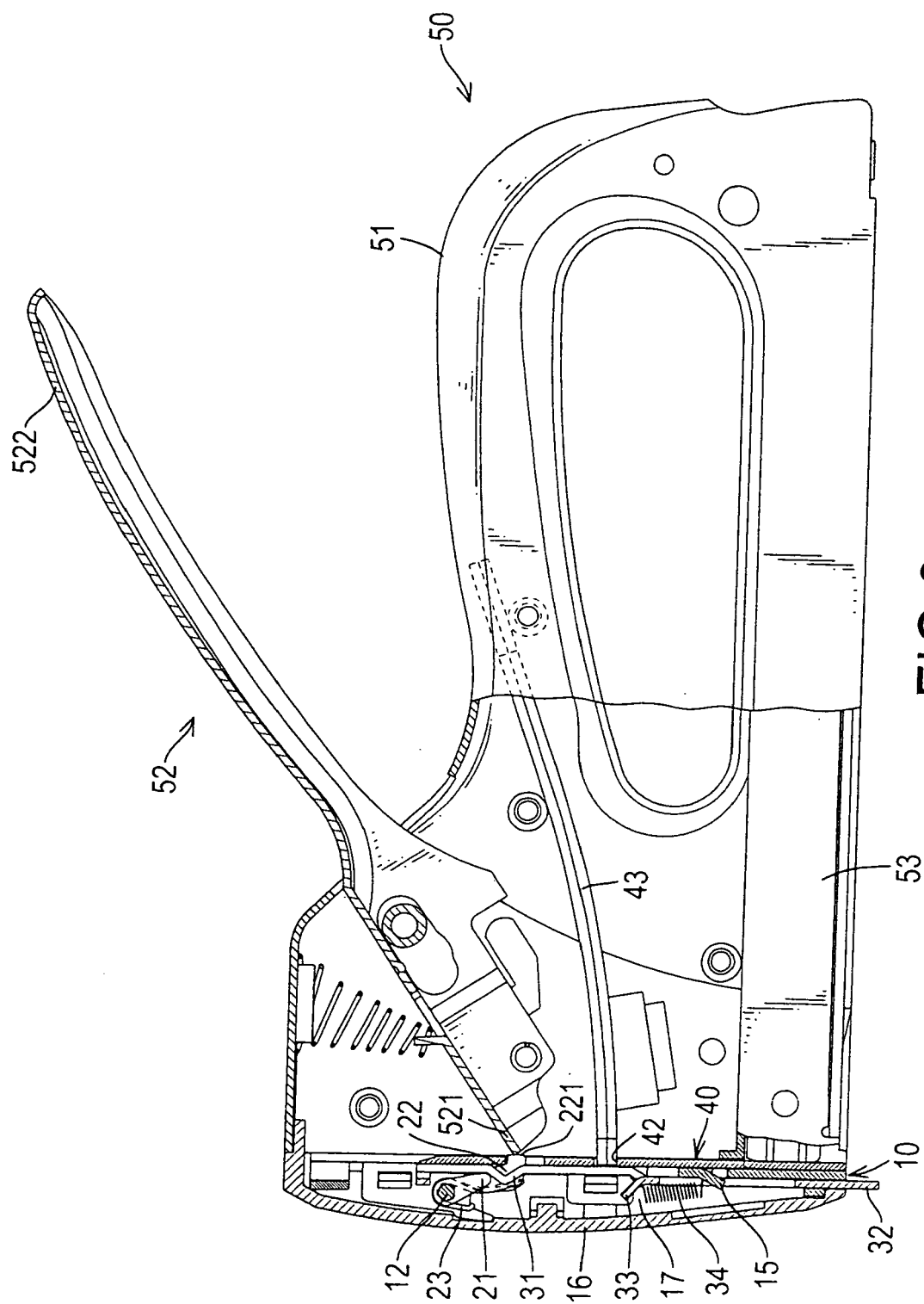
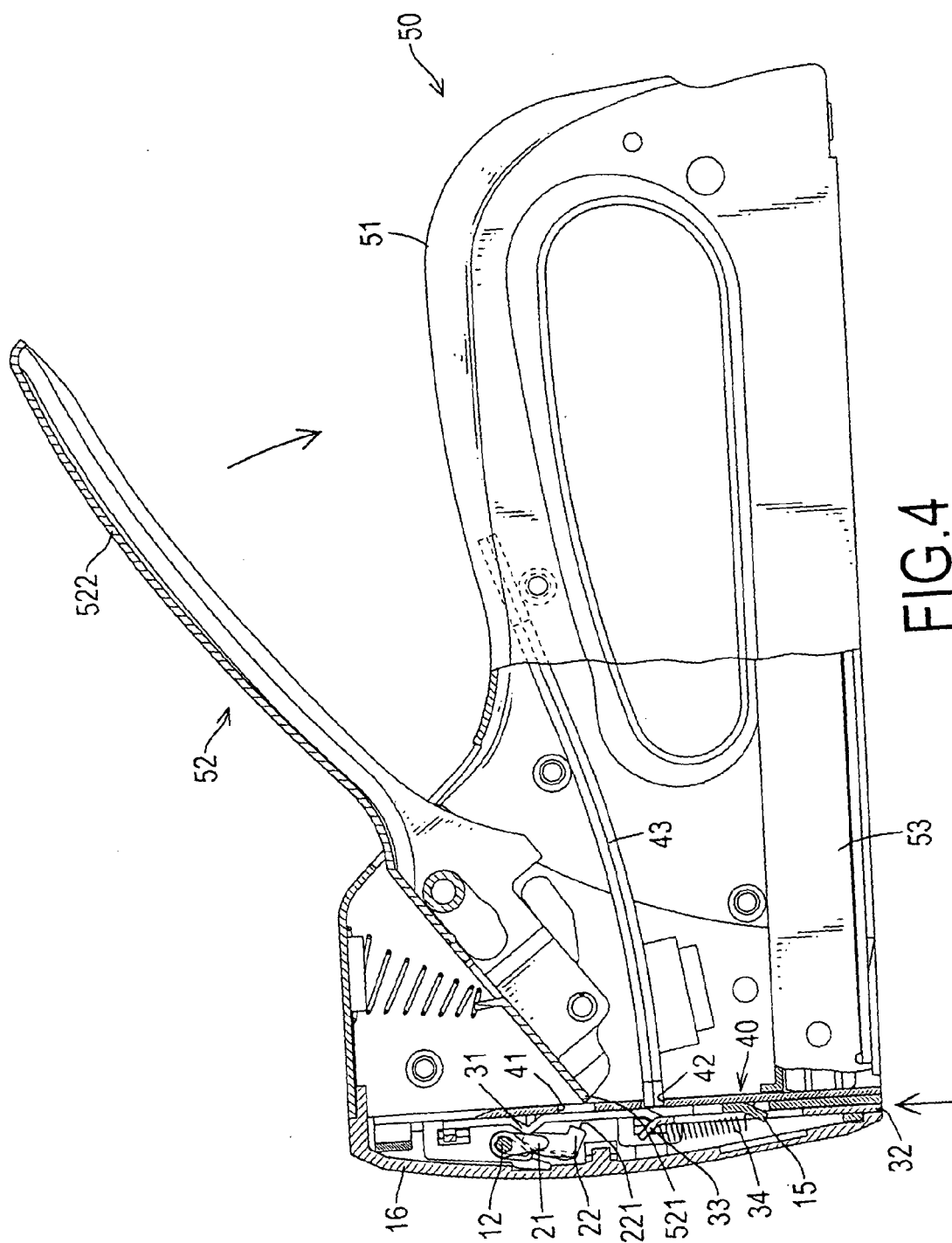


FIG. 3



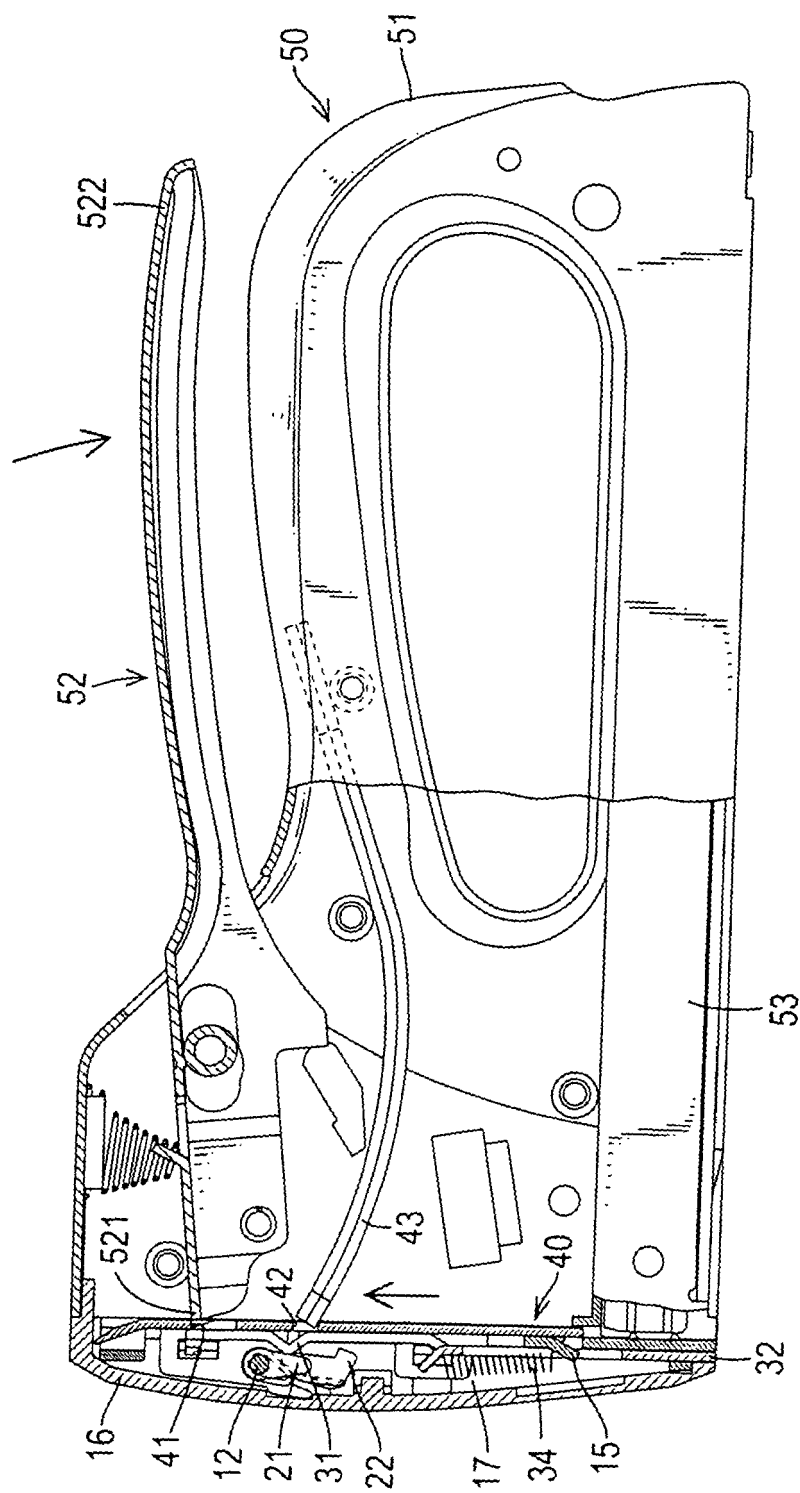


FIG. 5

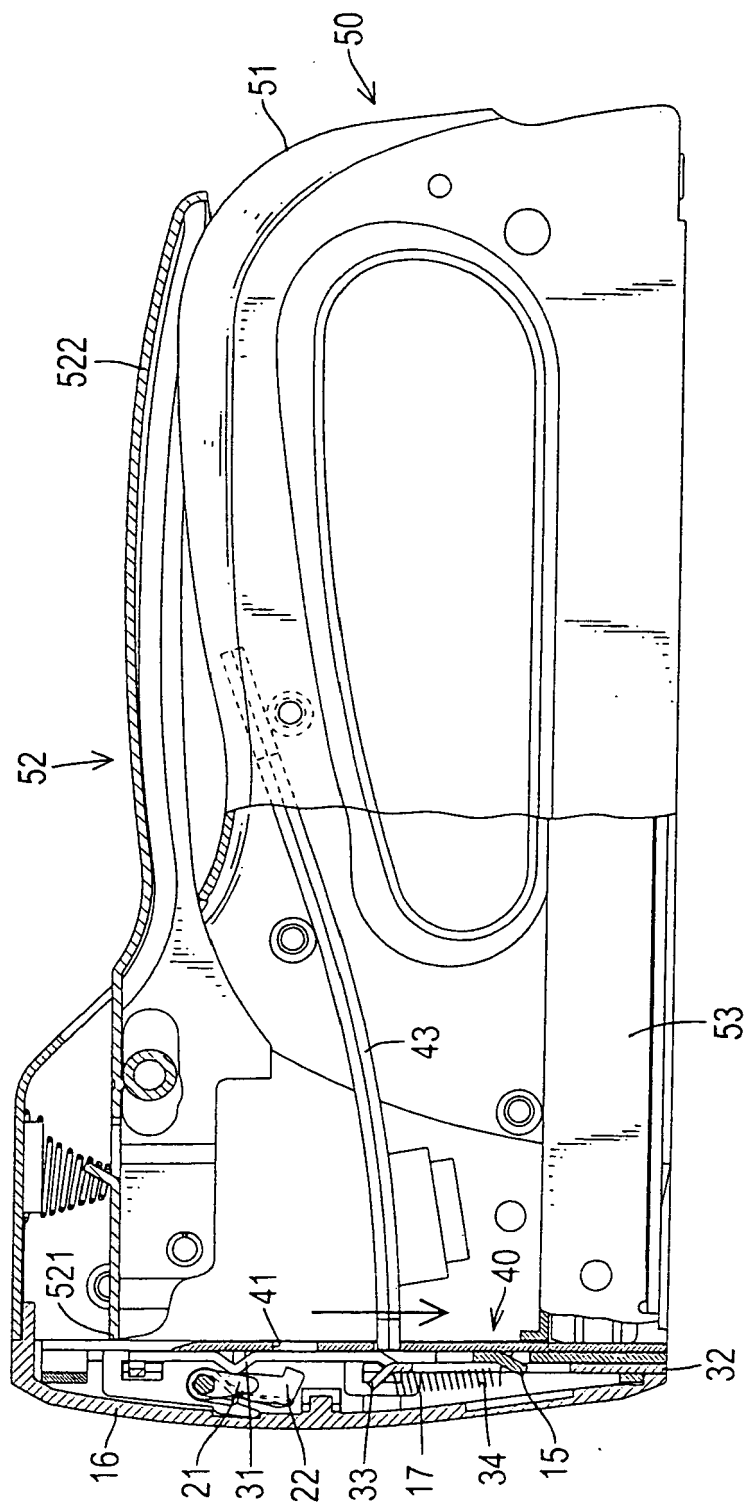


FIG. 6



EUROPEAN SEARCH REPORT

Application Number
EP 09 25 0558

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 1 839 818 A (LIN JUI-YUAN [TW]) 3 October 2007 (2007-10-03) * paragraphs [0005] - [0012]; figures 1-7 * * paragraphs [0023] - [0028] * -----	1-6	INV. B25C5/06 B25C5/11
A	DE 20 2008 006249 U1 (JANN YEI INDUSTRY CO LTD [TW]) 11 September 2008 (2008-09-11) * paragraphs [0010] - [0015]; figures 1-8 * -----	1-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			B25C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 3 July 2009	Examiner Swiderski, Piotr
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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03-07-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1839818 A	03-10-2007	AT 407772 T	15-09-2008
DE 202008006249 U1	11-09-2008	NONE	

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