(19) Europäisches Patentamt
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(11) **EP 2 087 966 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.08.2009 Bulletin 2009/33

(51) Int Cl.:
B25C 5/11 *(2006.01)*

(21) Application number: **08002107.4**

(22) Date of filing: **05.02.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

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(54) Tack device for multi-purpose fastening tool

(57) This invention relates to the fastening tool, more especially to the tack device for multi-purpose fastening tool based on the improvement of normal tack device, including the elongated nose plate (34) connected to the elongated base (30), slidable part (38), and the urging part (32) pushing a plurality of fasteners (8,9,10). It's characteristic in the elongated projection that cooperates with the fastener-supporting members separates the inner space of slidable part into two passages including nail passage (335) and U-shaped staple passage (353), and the urging part (32) perfetly covers on both the fastener-supporting members and elongated projection, and the nail-discharging opening are set on the elongated nose plate in the vertical direction. The present invention is capable of fastening the U-shaped staples, U-shaped staples with a flat crown, and nails to realize the multi-purpose fastening tool. This invention which can be a broad application and conveniently took is advantagous in simple device construction, steady functions and low cost of production.

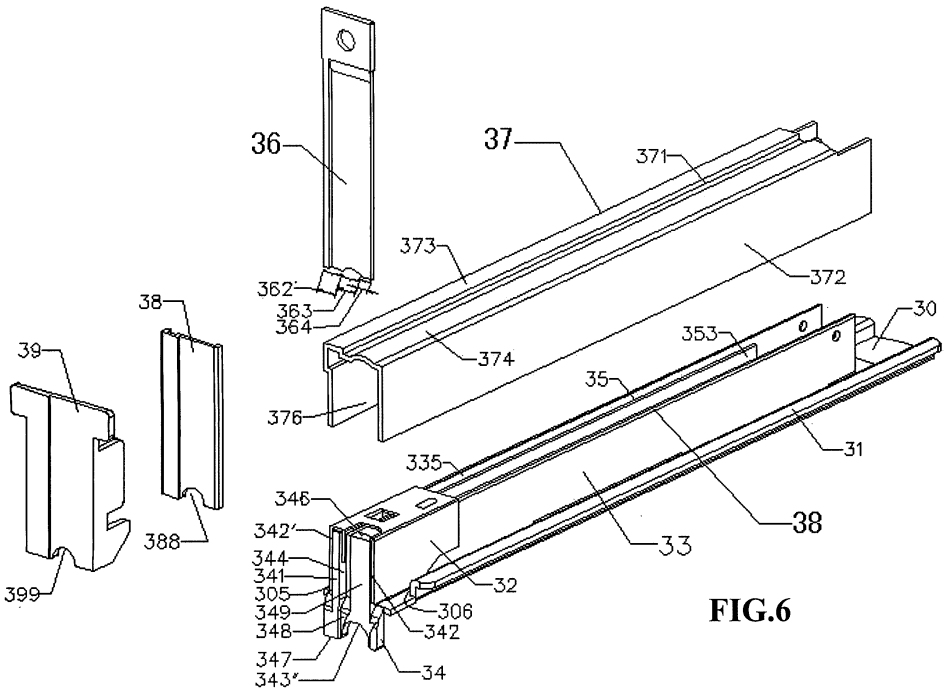

FIG.6

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Description

Field of the invention

[0001] The invention relates to a tack device, more particulary to a tack device for multi-purpose fastening tool.

Background and Prior Art

[0002] Referring to FIG. 1,2,3,and 4, a conventional tack device includes a stationary part, a slidable part, a fastener-impelling plunger, and a first and second cover plate 22 23. The elongated nose plate16 has opposite front and rear faces 163 165, and extends in a vertical direction from the distal end166 in the slidable part 20. The second cover plate 22 is mounted to the front face 231 of the first cover plate 23 that is also mounted to the front face of elogated nose plate 16 to define a fastener-impelling track 162 therebetween. The first and second cover plates are coupled to the stationary part 14 by welding such that the fastener-impelling track 162 is in alignment with the stationary part 14.The fastener-impelling plunger 15 that drivers and discharges a fastener from which proximate to the first cover plate 23 and on the elongated base 12 ,is inserted between the first cover plate 23 and the front face 163 of stationary part 14 therebetween, and goes through from downwardly from distal end that forms a fastener-impelling track 162 to the discharging end 168. The fastener-supporting members 18 extending rearwardly from the rear face of elongated nose plate 16 in the transverse direction are disposed on the elongated base 12 and inside of the elongated rails 13 of slidable part 20 and are received in the inner space 144 of stationary part 14 and are in spatial communication with the stationary part 14 when cooperating with the fastener-holding members 146 and peripheral wall 145, to define the fastener-impelling track 162 of elongated nose plate 16 therebetween. A plurality of inverted U-shaped staples 8 are perfectly covered on the fastener-supporting members 18 , and slidable in the inverted nail-receiving channel and inverted staple-receiving channel 27 28 that are formed with the spatial communication of the fastener-supporting members 18 of slidable part 20 and fastener-holding members 146 of stationary part 14. (SEE FIG. 2). A plurality of inverted nails are disposed and slidable in the conveted nail-receiving channel 27 of slidable part 20 ,that received in the straight branch portion for nail 143 of stationary part 14 and discharged by the fastener-impelling plunger 15 on the front face 163 of elongated nose plate 16. (SEE FIG.3). A urging part 17 of slidable part 20 includes bar 171, fastener-pushing member 175 and hook 172. The fastener-pushing members 175 of urging part 17 that are pulled by the hook 172 and that push a plurality of U-shaped staples 8 and nails 9 by the bar 171 are properly covering on the fastener-supporting members 18 of slidable part 20.(SEE FIG.5)

[0003] The conventional tack device is disadvantageous in that the inverted U-shaped staples 7 (SEE FIG. 9); aren't slidable on the inveted nail-receiving channel 27 and staple-receiving channel 28 when using a multi-purpose fastening tool according to the above descriptions, which is mainly because the side thickness and crown size are a bit different between the U-shaped staple 8 and U-shaped staple that fixed the cable. Thus, for a same conventional multi-purpose fastening tool, the worker can not operate successfully to load and fasten the U-shaped staples 8 and U-shaped staples 7 and nails 9 at the worksite and which results in undesirably increasing the cost of construction and non-convenient bringing different machines.

Summary of the Invention

[0004] Therefore, the object of this invention is to provide a tack for a multi-purpose fastening tool which can overcome the aforementional disadvantages of the convenrtional tack device.

[0005] Accordingly. A tack device of present invention includes a stationary part, a fastener-impelling plunger, a slidable part.The stationary part has a straight branch portion for nails receiving a plurality of inverted nails and a branch portion for U-shaped staples cooperates with the peripheral wall and fastener-holding members receivng a plurality of inverted U-shaped staples, and has the first and second cover plates respectively includes a converted U-shaped flute, are in alignment with the front face of the stationary part in a vertical direction ; The slidable part includes elongated nose plate has opposite front and rear faces, extending in the vertical direction , and elongated base extending rearwardly from the rear face in the transverse direction, and urging part extending rearwardly from elongated nose plate in transverse direction and are perfectly covering on the fastening-supporting membersThe elongated nose plate has U-shaped staple impelling track,U-shaped staple impelling track and nail-impelling track respectively for a plurality of U-shaped staples, U-shaped staples and nails being discharge; and has a Hign-Low gap called "H"between the flat of nail impelling track and U-shaped impelling track, which is about 0.3-0.5mm and a Hign-Low gap called "2H"between the flat of U-shaped staple-impelling track and U-shaped staple- impelling track,which is also about 0.3-0.5mm. The elongated base extending rearwardly from the elongated nose plate in transverse direction, which has the fastener-supporting members and elongated rails formed with the right and left grooves therebetween, and has elongated projection to cooperate with the the fastener-supporting members that formed with nail passage and U-shaped staple passage thereinto. The urging part extending rearwardly from the elongated nose plate in transverse direction, which includes bar, hook and pushable bar together with fastener-pushing members and cooperates with the fastener-supporting members to define the nail passage and U-shaped staple passage;The fastener-impelling plunger drives

downwardly from the distal end to the discharging end of slidable part in the vertical direction, which is adapted to discharge the U-shaped staple through both left and right section and to discharge the nails through right section and the U-shaped staples through the middle section.There is a nail-discharging opening is disposed adjacent to distal end of elongated nose plate and that extends through the front and rear faces of elongated nose plate in the vertical direction ,which separates the total fastener-impelling_track into U-shaped staple-impelling track, nail-impelling track, and U-shaped staple-impelling track.

Brief Description of the Drawings

[0006] Other features and advantages of this invention will become more apparent in the following detailed descroption of the preferred embodiment of this invention, with reference to the accompanying drawings, in which:

FIG. 1 is a fragmentary perspective view of the conventional tack device.

FIG.2. is a schematic partly sectional view of the conventional slidable part, illustrating how a plurality of inverted U-shaped staples are slidable in the nail-receiving channel and are dicharged from the slidable part.

FIG.3. is a schematic partly sectional view of the conventional slidable part, illustrating how a plurality of inverted nails are slidable in the nail-receiving channel and are dicharged from the slidable part.

FIG.4 is a planform of the conventional slidable part, showing the components in the conventional slidable part.

FIG.5. is a schematic view of the pusher of the conventional urging part.

FIG.6, is a fragmentary perspective view of the present tack device of the present invention.

FIG.7 is a schematic partly sectional view of the present slidable part, illustrating how a plurality of inverted U-shaped staples are slidable in the nail-receiving channel and are dicharged from the slidable part.

FIG.8 is a schematic partly sectional view of the present slidable part, illustrating how a plurality of inverted nails are slidable in the nail-receiving channel and are dicharged from the slidable part.

FIG.9 is a schematic partly sectional view of the present tack device, illustrating how a plurality of inverted U-shaped staples are slidable in the nail-receiving channel and are dicharged from the slidable part.

FIG.10 is a cross sectional view of elogated nose plate of present invention,illustrating the High-Low gaps of "H" and "2H".

FIG.11 is a cross section view of the slidable part of present invention, illstrating the left and right grooves and the nail passage and U-shaped staple passgae.

FIG. 12 is a schematic view of the urging part of present invention.

FIG.13 is a planform of present slidable part,showing the components in the present slidable part.

Detailed Description of the Preferred Embodiment of the Invention

[0007] Refdrring to **FIG6,** the present invention includes a slidable part, a stationary part 37, a fastener impelling plunger 36, and the first and second cover plates. As Illustrated, the slidable part 38 includes elongated nose plate 34 that has opposite front and rear faces 342' 342, extending in the vertical direction , and elongated base 30 extending rearwardly from the rear face 342 in the transverse direction, and urging part 32 extending rearwardly from elongated nose plate 34 in transverse direction and are perfectly covering on the fastening-supporting members 33.The elongated nose plate 34 has U-shaped staple impelling track 341,U-shaped staple impelling track 349 and nail-impelling track 348 respectively for a plurality of U-shaped staples 8, U-shaped staples 7 and nails 8 being discharged,which is separated by the a nail-discharging opening 344 that is disposed adjacent to distal end 346 of elongated nose platee 34 and that extends through the front and rear faces 342' 342 of elongated nose plate 34 in the vertical direction, and has a Hign-Low gap called "H" 340 between the flat of nail-impelling track 348 and U-shaped staple-impelling track 349, which is about 0.3-0.5mm and has a Hign-Low gap called "2H" 3400 between the flat of U-shaped staple-impelling track 341 and U-shaped staple- impelling track 349,which is also about 0.3-0.5mm. **(SEE FIG.10)** The elongated base 30 extending rearwardly from the elongated nose plate 34 in transverse direction, which has the fastener-supporting members 33 and elongated rails 31 formed with right and left grooves 305 306 therebetween, and has elongated projection 35 to cooperate with the the fastener-supporting members 33 that formed with nail passage 335 and U-shaped staple passage 353 thereinto .The urging part 32 extending rearwardly from the elongated nose plate 34 in transverse direction, which includes bar 322, hook 325 and pushable bar 321 together with fastener-pushing members 328 and cooperates with the fastener-supporting members 33 to define the nail passage 335 and U-shaped staple passage **353**

(SEE FIG12); The stationary part 37 has a straight branch portion for nails 373 receiving a plurality of inverted nails 9 and a branch portion for U-shaped staples 374 that cooperates with the peripheral wall 371 and fastener-holding members 372 receivng a plurality of inverted U-shaped staples 7, and has the first and second cover plates 38 39 respectively includes an inverted U-shaped flute 388 399 that are in alignment with the front face of the stationary part 37 in the vertical direction ; The fastener-impelling plunger 36 drives downwardly from the distal end 346 to the discharging end 347 of slidable part 38 in the vertical direction, which is adapted to discharge the U-shaped staple 8 through both left and right sections 362 364, and to discharge the nails 9 through right section 362 and to discharge the U-shaped staples 7 through the middle section 363. In order to fix the cable with U-shaped staples 7, the first and second cover plates 38 39 and the fastener-impelling plunger 36 are all set an inverted U-shaped flutes that are in alignment with and the same as the inverted U-shaped flute 343" of discharging end 347 of elongated nose plate 34.

[0008] A plurality of inverted U-shaped staples 7 that perfectly cover on fastener-supporting members 33 of slidable part 38 in transverse direction,are received in the inner space 376 of stationary part 37 and cooperates with the peripheral wall 371 and fastener-holding members 372 to define the the left and right grooves 306 305 as the U-shaped staple passage. The U-shaped staples , pushed by the fastener-pushing members 328 of urging part 32 ,are slidable in the left and right grooves 306 305 of slidable part 38 and are discharged by the left and right sections 362 364 from the distal end 346 to the discharging end 347 through the U-shaped staple-impelling track 341 of the elongated nose plate 34 in vertical direction **(SEE FIG.7).**

[0009] A plurality of inverted nails 9 that stand in the right groove 305 of slidable part 38 in transverse direction, are received in the straight branch portion for nails 373 of stationary part 37 and cooperate with the peripheral wall 371 and fastener-holding members 372 to define the nail passage 335. The nails , pushed by the fastener-pushing member 328 of urging part 32 ,are slidable in the right groove 305 of slidable part 38 and discharged by the right section 362 from the distal end 346 to the discharging end 347 through the nail-impelling track 348 of the elongated nose plate 34 in vertical direction**(SEE FIG.8).**

[0010] A plurality of inverted U-shaped staples 7 perfectly covering on the elogated projection 35 and fastener-supporting member 33 of slidable part 38 in transverse direction,received in the straight branch portion for U-shaped staples 374 of stationary part 37 and cooperates with the peripheral wall 371 and fastener-holding members 372 to define the U-shaped staple passage 353. The U-shaped staples , pushed by the fastener-pushing members 328 and pushable bar 321 of urging part 32 , are slidable in the nail passage 335 and right groove 305 of slidable part 38 and discharged by the middle section 363 from the distal end 346 to the discharging end 347 through the U-shaped staple-impelling track 349 of the elongated nose plate 34 **(SEE FIG.9)**.

[0011] With this invention thus explained. It is apparent that numberous modifications and variations can be made without departing from the scope and spirit of this invention. It is therefore intended that this invention be limited only as indicated in the appended claims.

Claims

1. A tack device for multi-purpose fastening tool having a stationary part and slidable part and fastener -impelling plunger, comprising:

a stationary part adapted to be connected to said first and second dover plates, extending in said transverse direction, having a said straight branch portion for nails and for said U-shaped staples either in transverse direction that cooperated with said fastener-holding members to define the said inner space and to be in spatial communication with said slidable part, and

a slidable part including

an elongated nose plate has said U-shaped staple-impelling track, said U-shaped staple-impelling track and said nail-impelling track respectively for a plurality of said U-shaped staples, said U-shaped staples and said nails being discharged; and has a said Hign-Low gap called "H"between the flat of said nail-impelling track and said U-shaped impelling track, which is about 0.3-0.5mm and a said Hign-Low gap called "2H"between the flat of said U-shaped staple-impelling track and said U-shaped staple- impelling track,which is also about 0.3-0.5mm. Said elongated base extending rearwardly from said elongated nose plate in transverse direction, which has said fastener-supporting members and said elongated rails formed with said right and left grooves therebetween, and has said elongated projection to cooperate with the the said fastener-supporting members that formed with said nail passage and said U-shaped staple passage thereinto, and

an elongated base extending rearwardly from said rear face of said elongated nose plate in said transverse direction,are disposed an said elongated projection inside of said fastener-supporting members and are formed with a said nail passage receiving a plurality of inverted nails and U-shaped staple passage supporting the U-shaped staples and said left and right grooves for

U-shaped staples slidable,and
an urging part extending rearwardly from said elongated nose plate in transverse direction, which includes said bar, hook and pushable bar together with said fastener-pushing members and cooperates with said fastener-supporting members to defined said nail passage and said U-shaped staple passage,the said fastener-pushing members are disposed to push the said U-shaped staples and said nails and said faster-pushing member together with said pushable bar are disposed to push the U-shaped staples.
a fastener-impelling plunger drives downwardly from said distal end to said discharging end of said slidable part in the vertical direction, which is adapted to discharge said U-shaped staple through both said left and right section, and to discharge said nails through said right section and to discharge said U-shaped staples through said middle section.
Wherein said slidable part received said inner space to cooperate with said peripheral wall and said fastener-holding member to define a said nail passage and said U-shaped staple passage and said U-shaped staple passage, said fastener-impelling plunger drives downwardly from the said distal end to said discharging end of said slidable part in said vertical direction, which is adapted to discharge the said U-shaped staple through said both left and right sections, and to discharge said nails through said right section and to discharge said U-shaped staples through the said middle section.

2. The tack device as defined in claim 1,wherein said stationary part has a said straight branch portion for nails and a branch portion for U-shaped staples, and has said first and second cover plate respectively includes a said inverted U-shaped flute that is in alignment with and the same as the one of elongated nose plate to fix the cable.

3. The tack device as defined in claim 1, wherein said fastener-impelling plunger drives downwardly from the said distal end to the said discharging end of said slidable part in the vertical direction, and is adapted to fasten the said U-shaped staple through both said left and right sections, and to fasten the said nails through said right section and to fasten said U-shaped staples through the said middle section.

4. The tack device as defined in claim 1, wherein said elongated base extending rearwardly from said rear face of said elongated nose plate in said transverse direction,are disposed an said elongated projection inside of said fastener-supporting members and are formed with a said nail passage receiving a plurality of inverted nails and U-shaped staple passage supporting the U-shaped staples and said left and right grooves for U-shaped staples slidable,

5. The tack device as defined in claim 1, wherein said urging part extending rearwardly from said elongated nose plate in said transverse direction, which includes said bar, hook and pushable bar together with said fastener-pushing members and cooperates with said fastener-supporting members to defined said nail passage and said U-shaped staple passage,the said fastener-pushing members are disposed to push the said U-shaped staples and said nails and said faster-pushing member together with said pushable bar are disposed to push the U-shaped staples.

6. The tack device as defined in claim 1, wherein said elongated nose plate has said U-shaped staple-impelling track, said U-shaped staple impelling track and said nail-impelling track respectively for a plurality of said U-shaped staples, said U-shaped staples and said nails being discharged; and has a said Hign-Low gap called "H"between the flat of said nail impelling track and said U-shaped impelling track, which is about 0.3-0.5mm and a said Hign-Low gap called "2H"between the flat of said U-shaped staple-impelling track and said U-shaped staple-impelling track,which is also 0.3-0.5mm. Said elongated base extending rearwardly from said elongated nose plate in said transverse direction, which has said fastener-supporting members and said elongated rails formed with said right and left grooves there- between, and has said elongated projection to cooperate with said fastener-supporting members that formed with said nail passage and said U-shaped staple passage thereinto.

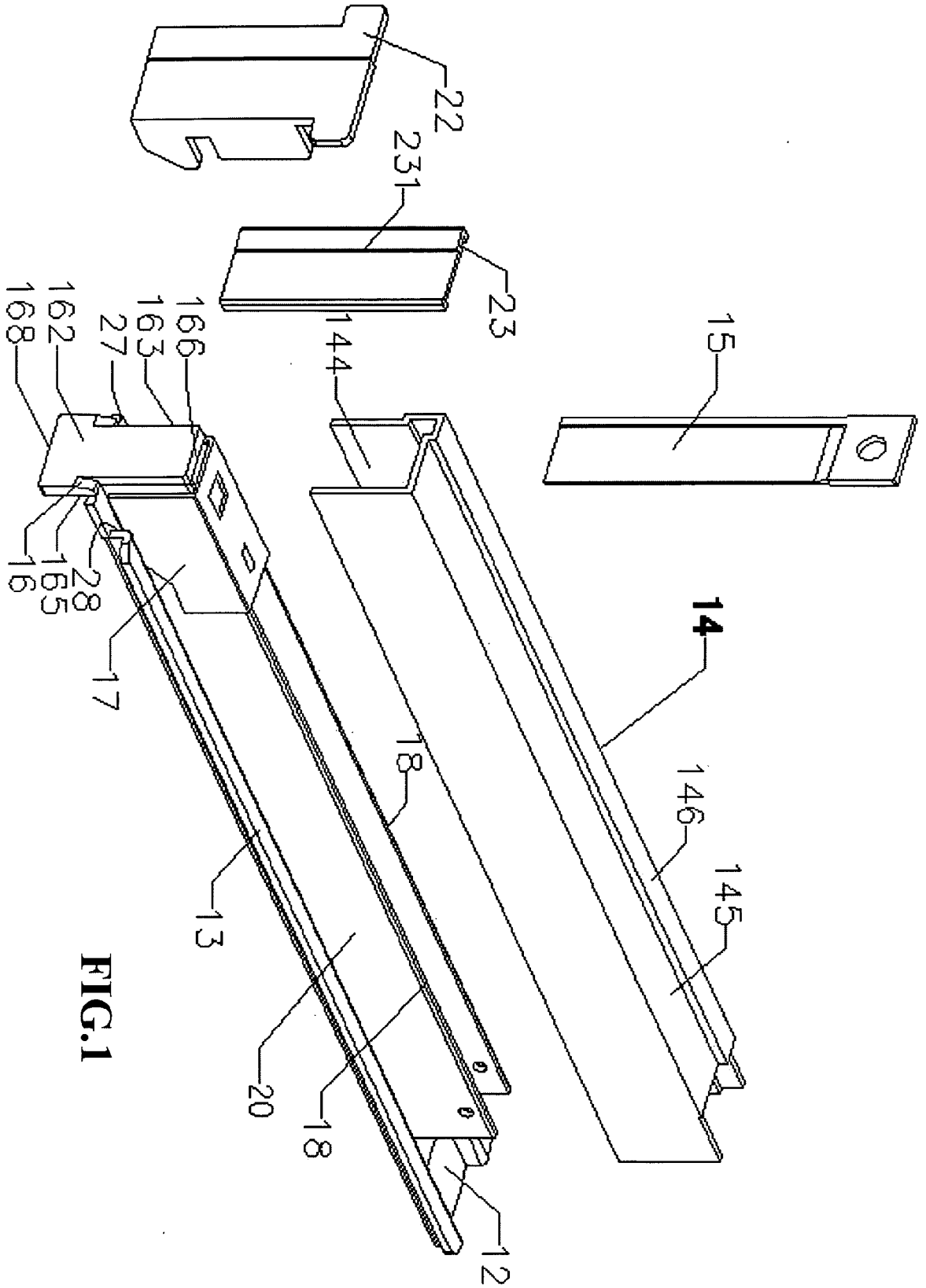
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FIG.1

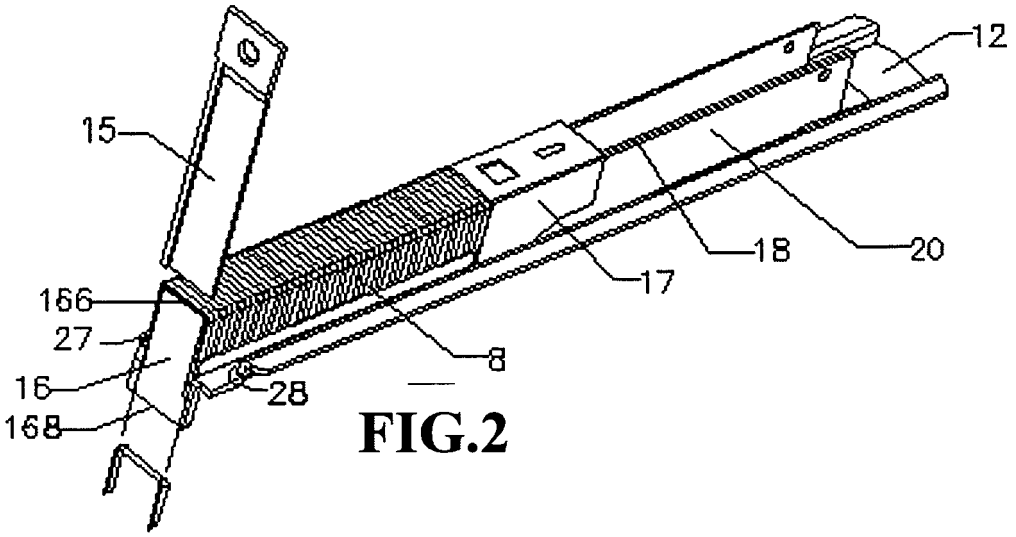

FIG.2

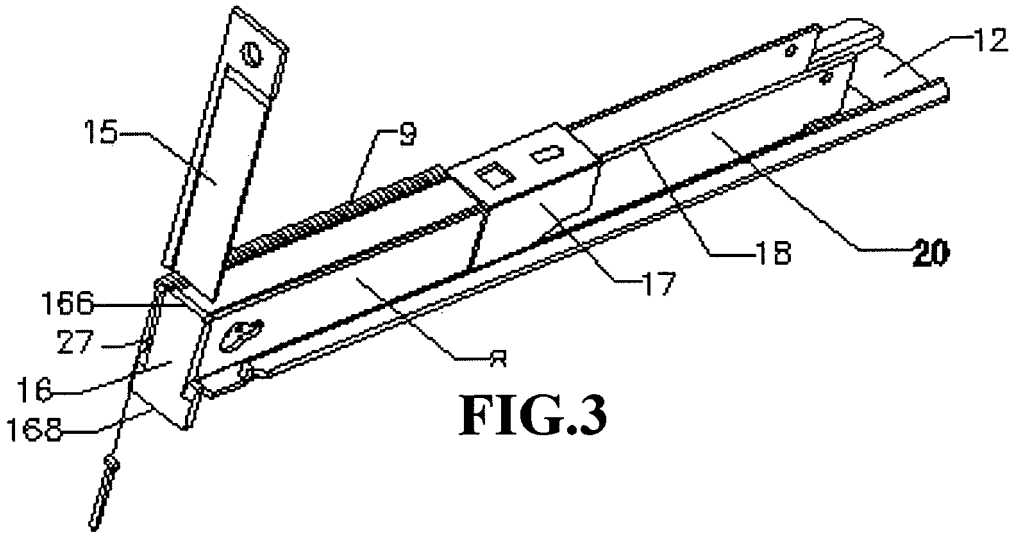

FIG.3

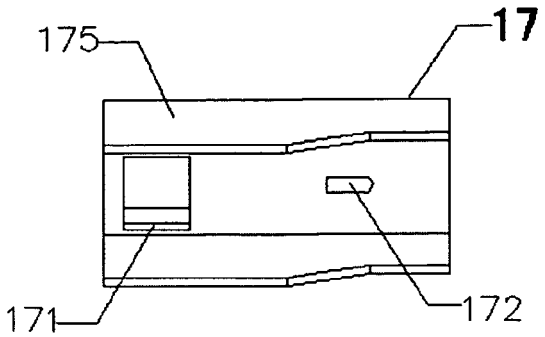

FIG.5

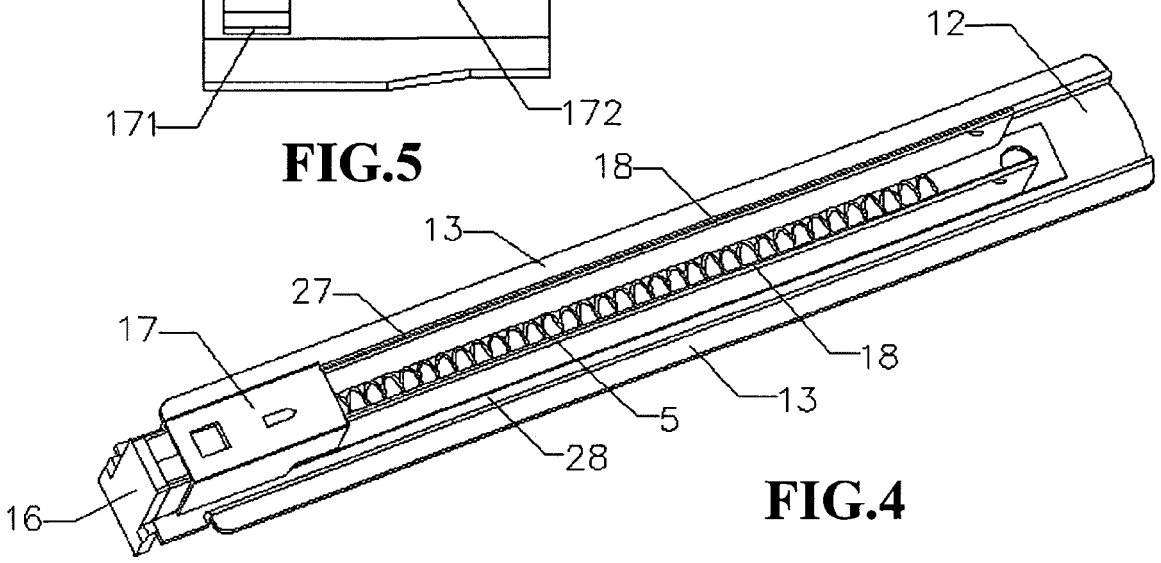

FIG.4

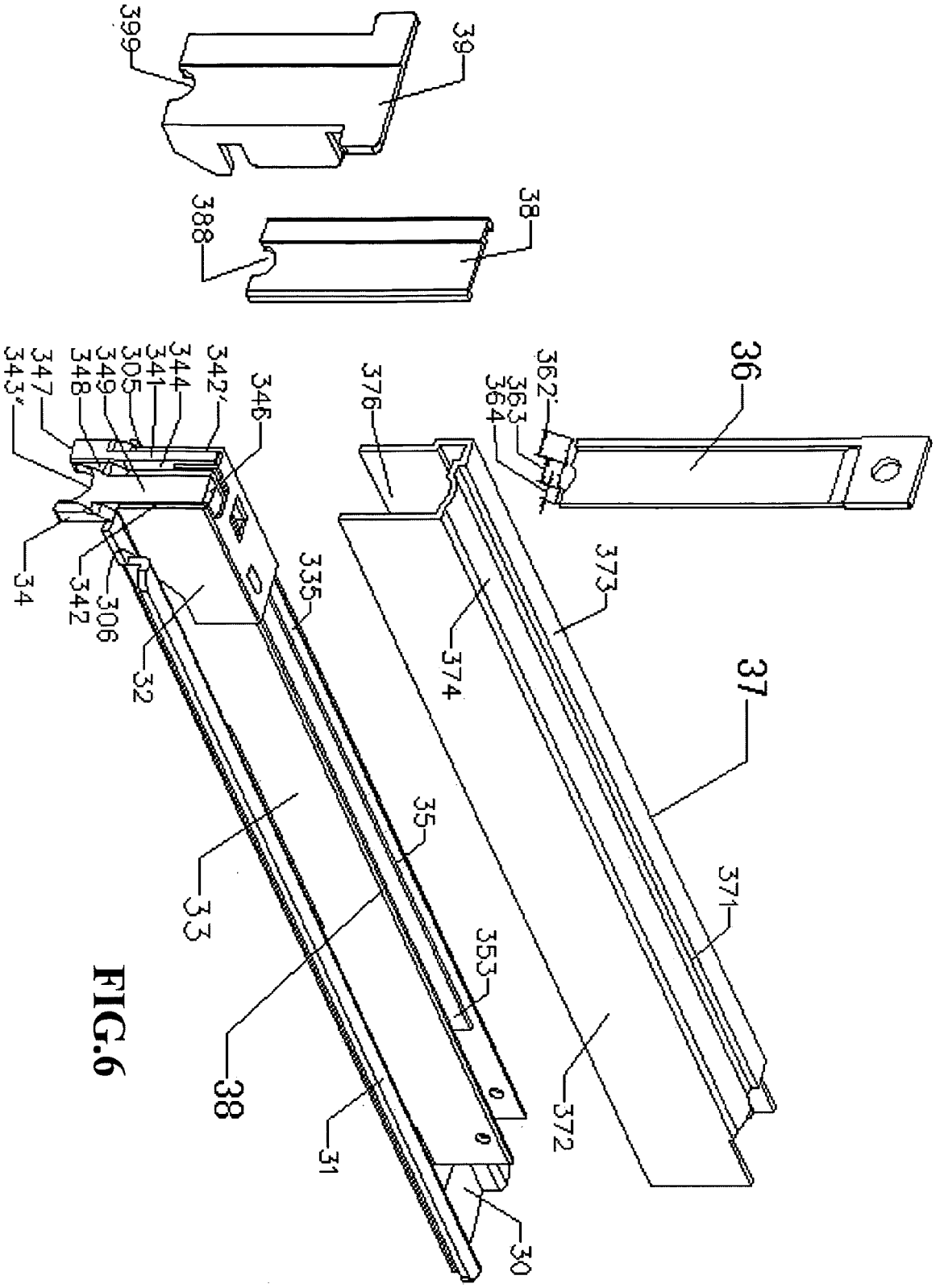
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FIG.6

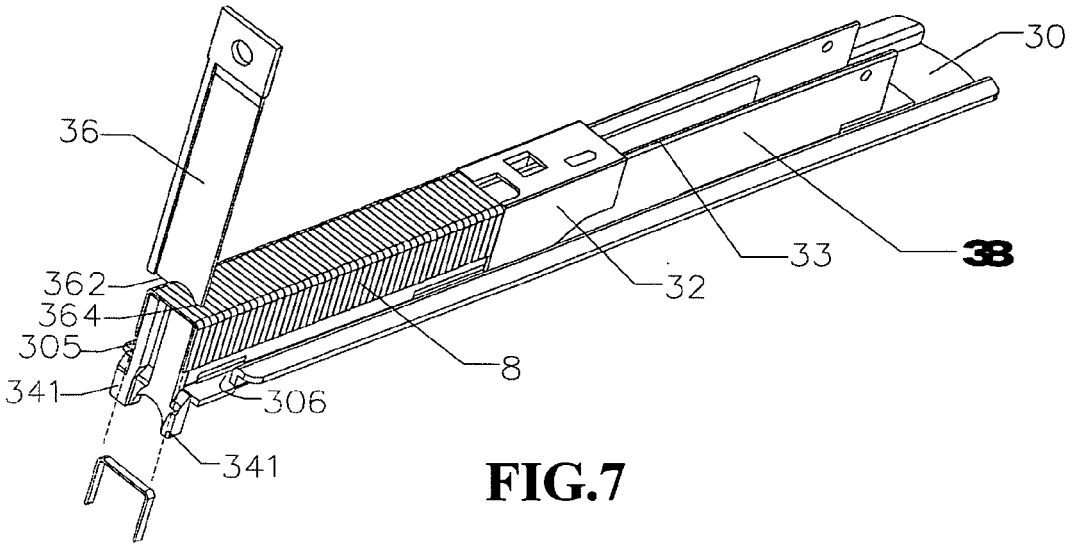

FIG.7

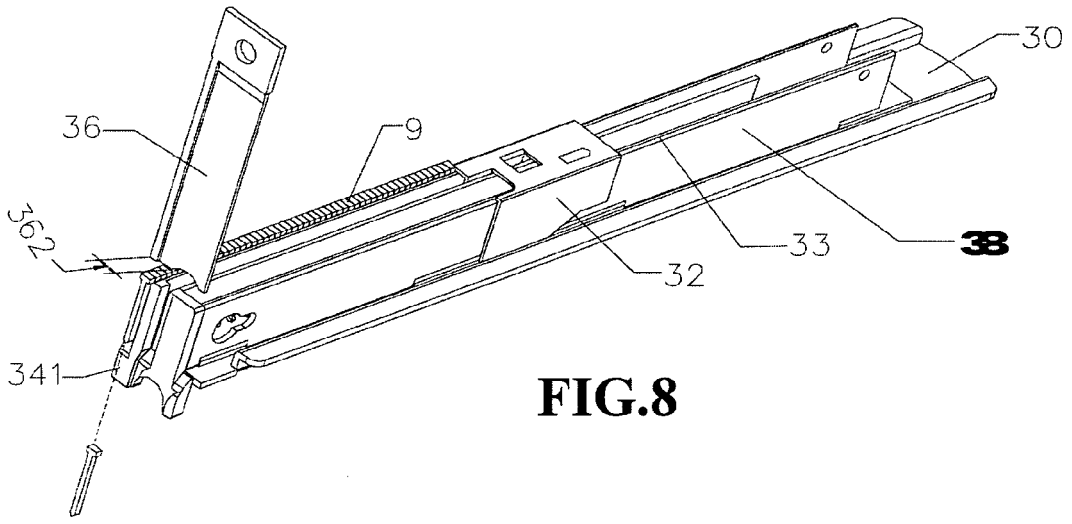

FIG.8

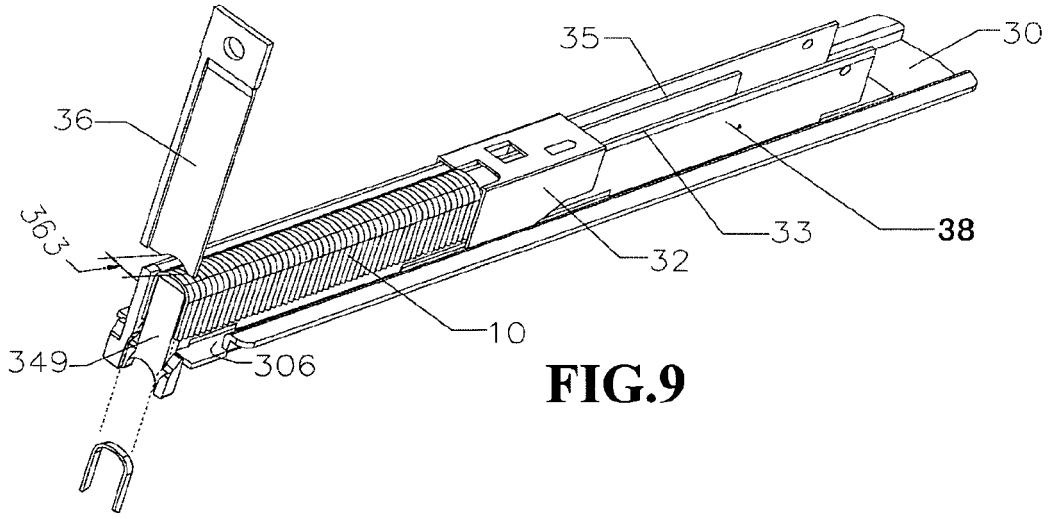

FIG.9

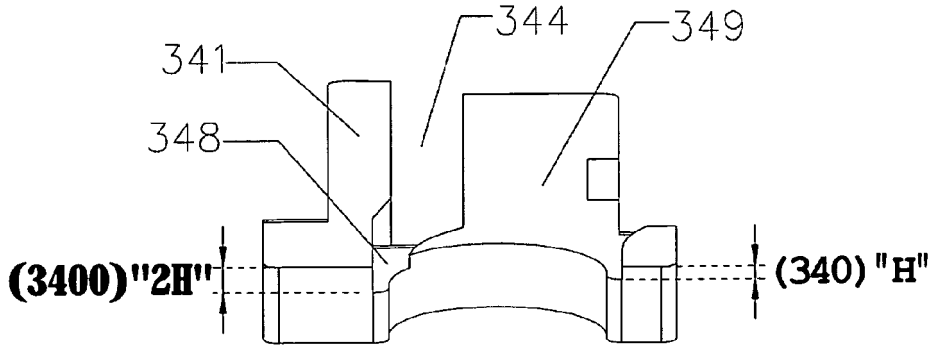

FIG.10

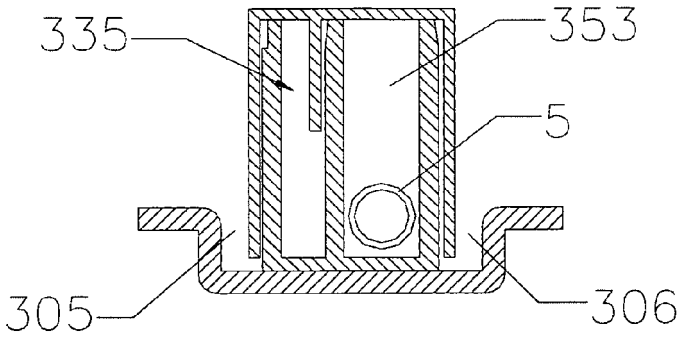

FIG.11

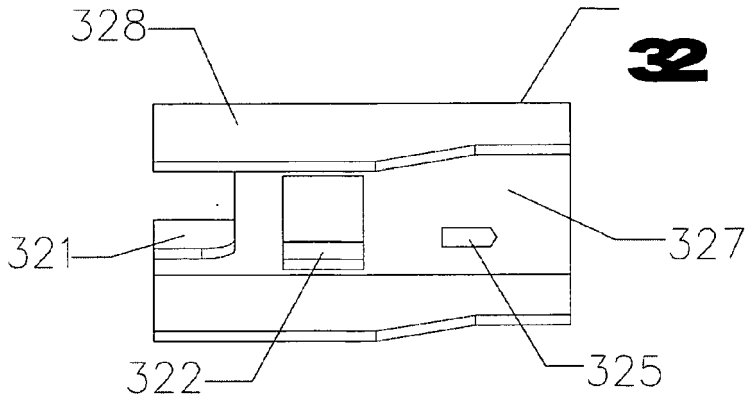

FIG.12

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 00 2107

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	US 3 633 811 A (PLOEN GUNTHER) 11 January 1972 (1972-01-11) * columns 1-2; figures 4-10 * -----	1-6	
A	US 6 345 754 B1 (JENG LIH-RONG [TW]) 12 February 2002 (2002-02-12) * columns 2-3; figures 3-5 * -----	1-6	
			TECHNICAL FIELDS SEARCHED (IPC) B25C

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	28 May 2008	Swiderski, Piotr

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 00 2107

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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28-05-2008

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