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(54) **Tool display rack having holding and rotation test functions**

(57) The present invention relates to a tool display rack (20) which includes a main body (21), a mounting portion (211) mounted on the main body (21) to allow passage of the drive stud (110) of a tool (10) and having an inner edge closely urged on a peripheral wall of the drive stud (110) of the tool (10) to produce a contact friction therebetween, and a pressing member (22) pivotally

mounted on the main body (21) and urged on the neck portion (12) of the tool (10). Holding portions (213) of the mounting portion (211) are deformed and urged on the peripheral wall of the drive stud (110) of the tool (10) closely so as to clamp the drive stud of the tool thereby securing the drive stud (110) of the tool (10) in the mounting portion (211) rigidly and stably.

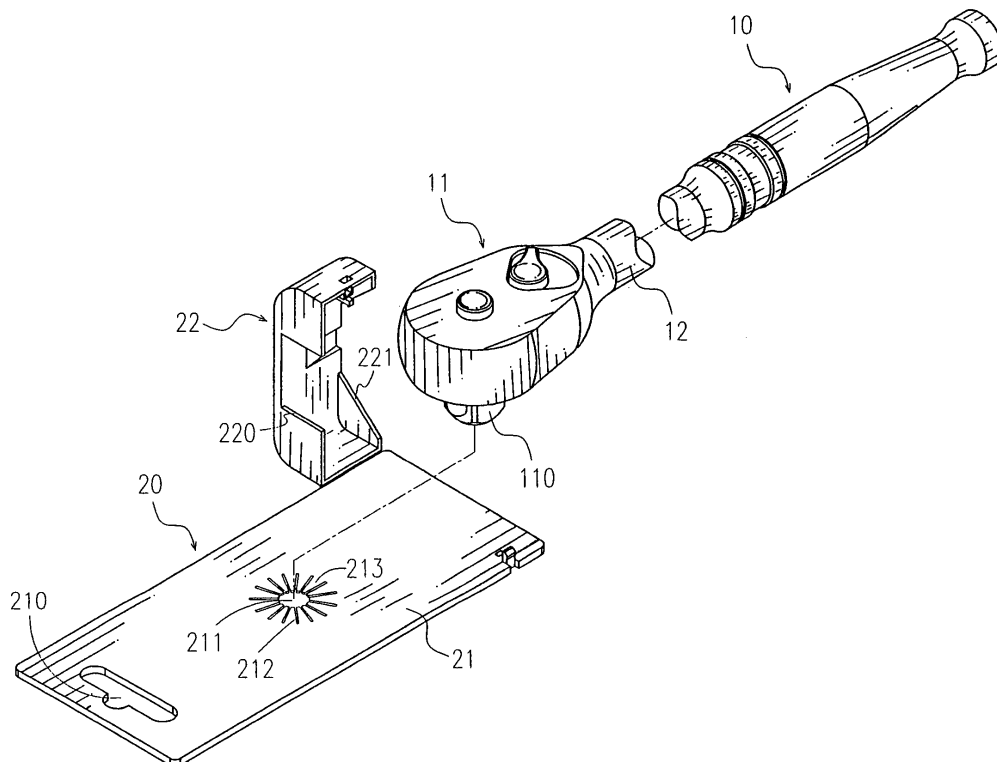


FIG. 1

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a tool display rack, and more particularly to a tool display rack having holding and rotation test functions.

2. Description of the Related Art

[0002] A conventional tool display rack in accordance with the prior art shown in Figs. 6 and 7 comprises a main body 40 formed with a circular hole 41 for mounting the square drive stud 310 of the drive head 31 of a wrench 30, and a pressing member 42 secured on the main body 40 and urged on the neck portion of the wrench 30. However, the wrench 30 cannot be rotated relative to the main body 40 of the tool display rack to test the rotation angle of the drive stud 310 of the wrench 30.

[0003] Another conventional tool display rack in accordance with the prior art shown in Figs. 8 and 9 comprises a main body 40 formed with a square hole 43 for mounting the square drive stud 310 of the drive head 31 of the wrench 30. Thus, the square drive stud 310 of the wrench 30 is mounted in the square hole 43 of the main body 40, and the wrench 30 is rotated relative to the main body 40 of the tool display rack to test the rotation angle of the drive stud 310 of the wrench 30. However, the square hole 43 of the main body 40 is larger than the drive stud 310 of the wrench 30, so that the rotation angle of the drive stud 310 of the wrench 30 is not tested exactly.

[0004] Another conventional tool display rack in accordance with the prior art shown in Figs. 10-12 comprises a main body 40 formed with a circular hole 41, and a locking member 50 extended through the drive head 31A of a wrench 30A and having a first end formed with a hexagonal positioning portion 52 secured in the ratchet wheel 32A of the drive head 31A of the wrench 30A and a second end formed with a locking hook 51 extended through the circular hole 41 and locked on a bottom of the main body 40 to secure the drive head 31A of the wrench 30A on the main body 40. In such a manner, the hexagonal positioning portion 52 of the locking member 50 is secured in the drive head 31A of the wrench 30A, and the wrench 30A is rotated relative to the main body 40 of the tool display rack to test the rotation angle of the ratchet wheel 32A of the drive head 31A of the wrench 30A. However, the tool display rack needs to provide a locking member 50, so that the tool display rack has a complicated construction, thereby increasing costs of fabrication. In addition, the locking hook 51 of the locking member 50 cannot hold the main body 40 closely, so that the locking member 50 is easily rotated with the drive head 31A of the wrench 30A, thereby decreasing the testing precision.

SUMMARY OF THE INVENTION

[0005] The primary objective of the present invention is to provide a tool display rack having holding and rotation test functions.

[0006] Another objective of the present invention is to provide a tool display rack, wherein the main body of the tool display rack is integrally formed with the mounting portion, the elastic portions and the holding portions, so that the tool display rack has a simplified construction, thereby decreasing costs of fabrication.

[0007] A further objective of the present invention is to provide a tool display rack, wherein the holding portions of the mounting portion are deformed and urged on the peripheral wall of the drive stud of the tool closely so as to clamp the drive stud of the tool, so that the drive stud of the tool is secured in the mounting portion rigidly and stably.

[0008] A further objective of the present invention is to provide a tool display rack, wherein the drive stud of the tool is closely secured on the mounting portion and cannot be rotated relative to the main body of the tool display rack, so that the drive head of the tool is rotated relative to the main body of the tool display rack to test the rotation angle of the drive stud of the tool exactly.

[0009] A further objective of the present invention is to provide a tool display rack, wherein the passage of the pressing member has a side having two ends each formed with an oblique limit portion to increase the testing travel of the tool, so that the rotation angle of the drive stud of the tool is tested more exactly.

[0010] Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

Fig. 1 is an exploded perspective view of a tool display rack in accordance with the preferred embodiment of the present invention;

Fig. 2 is a bottom perspective view of the tool display rack as shown in Fig. 1;

Fig. 3 is a partially cut-away cross-sectional assembly view of the tool display rack as shown in Fig. 1;

Fig. 4 is an operational view of the tool display rack as shown in Fig. 3;

Fig. 5 is an exploded perspective view of a tool display rack in accordance with another embodiment of the present invention;

Fig. 6 is an exploded perspective view of a conventional tool display rack in accordance with the prior art;

Fig. 7 is a plan cross-sectional assembly view of the conventional tool display rack as shown in Fig. 6;

Fig. 8 is an exploded perspective view of another

conventional tool display rack in accordance with the prior art;

Fig. 9 is a plan cross-sectional assembly view of the conventional tool display rack as shown in Fig. 8;

Fig. 10 is an exploded perspective view of another conventional tool display rack in accordance with the prior art;

Fig. 11 is a plan cross-sectional assembly view of the conventional tool display rack as shown in Fig. 10;

Fig. 11A is a locally enlarged view of the conventional tool display rack as shown in Fig. 11; and

Fig. 12 is an exploded perspective view of the conventional tool display rack as shown in Fig. 10.

DETAILED DESCRIPTION OF THE INVENTION

[0012] Referring to the drawings and initially to Figs. 1-4, a tool display rack 20 in accordance with a first embodiment of the present invention is used for mounting a tool 10. The tool 10 has a drive head 11 and a neck portion 12. The drive head 11 of the tool 10 has a square drive stud 110.

[0013] The tool display rack comprises a main body 21, a mounting portion 211 mounted on the main body 21 to allow passage of the drive stud 110 of the tool 10 and having an inner edge closely urged on a peripheral wall of the drive stud 110 of the tool 10 to produce a contact friction therebetween, and a pressing member 22 pivotally mounted on the main body 21 and urged on the neck portion 12 of the tool 10.

[0014] The main body 21 has a first end formed with a hanging portion 210 for hanging the main body 21. The mounting portion 211 is mounted on a mediate portion of the main body 21 and is preferably a through hole having a diameter slightly smaller than a size of the drive stud 110 of the tool 10. Preferably, the main body 21 is integrally formed with the mounting portion 211.

[0015] The mounting portion 211 has a peripheral wall provided with a plurality of elastic portions 212 each radially extended outward therefrom. Preferably, each of the elastic portions 212 of the mounting portion 211 is an elongated slit. The peripheral wall of the mounting portion 211 is provided with a plurality of elastically deformable holding portions 213 located between the elastic portions 212. Preferably, the mounting portion 211 is integrally formed with the elastic portions 212 and the holding portions 213.

[0016] As shown in Fig. 3, the drive stud 110 of the tool 10 is inserted into the mounting portion 211 of the tool display rack 20. At this time, the mounting portion 211 has a diameter slightly smaller than a size of the drive stud 110 of the tool 10, so that when the drive stud 110 of the tool 10 is inserted into the mounting portion 211 of the tool display rack 20, the drive stud 110 of the tool 10 is urged on the holding portions 213 of the mounting portion 211 to deform the holding portions 213 of the mounting portion 211. As shown in Fig. 4. In such a man-

ner, the deformed holding portions 213 of the mounting portion 211 are urged on the peripheral wall of the drive stud 110 of the tool 10 closely so as to clamp the drive stud 110 of the tool 10 rigidly and stably, so that the drive stud 110 of the tool 10 is secured in the mounting portion 211 and cannot be rotated relative to the main body 21 of the tool display rack 20.

[0017] As shown in Fig. 1, the pressing member 22 is pivotally mounted on a second end of the main body 21 and has an inside formed with a passage 220 to allow passage of the neck portion 12 of the tool 10. Preferably, the passage 220 of the pressing member 22 has a side having two ends each formed with an oblique limit portion 221 to limit a further movement of the neck portion 12 of the tool 10.

[0018] In such a manner, the neck portion 12 of the tool 10 is movable in the passage 220 of the pressing member 22 between the limit portions 221 of the passage 220, so that the drive head 11 of the tool 10 is rotated relative to the main body 21 of the tool display rack 20 to test the rotation angle of the drive stud 110 of the tool 10.

[0019] Accordingly, the main body 21 of the tool display rack 20 is integrally formed with the mounting portion 211, the elastic portions 212 and the holding portions 213, so that the tool display rack 20 has a simplified construction, thereby decreasing costs of fabrication. In addition, the holding portions 213 of the mounting portion 211 are deformed and urged on the peripheral wall of the drive stud 110 of the tool 10 closely so as to clamp the drive stud 110 of the tool 10, so that the drive stud 110 of the tool 10 is secured in the mounting portion 211 rigidly and stably. Further, the drive stud 110 of the tool 10 is closely secured on the mounting portion 211 and cannot be rotated relative to the main body 21 of the tool display rack 20, so that the drive head 11 of the tool 10 is rotated relative to the main body 21 of the tool display rack 20 to test the rotation angle of the drive stud 110 of the tool 10 exactly. Further, the passage 220 of the pressing member 22 has a side having two ends each formed with an oblique limit portion 221 to increase the testing travel of the tool 10, so that the rotation angle of the drive stud 110 of the tool 10 is tested more exactly.

[0020] Referring to Fig. 5, the mounting portion 211 is provided with three elastic portions 212 and three holding portions 213.

[0021] While the preferred embodiment(s) of the present invention has been shown and described, it will be apparent to those skilled in the art that various modifications may be made in the embodiment(s) without departing from the spirit of the present invention. Such modifications are all within the scope of the present invention.

Claims

1. A tool display rack for a tool having a drive head and a neck portion, the drive head having a drive stud,

the tool display rack comprising:

a main body;
a mounting portion mounted on the main body to allow passage of the drive stud of the tool and having an inner edge closely urged on a peripheral wall of the drive stud of the tool to produce a contact friction therebetween; and
a pressing member pivotally mounted on the main body and urged on the neck portion of the tool.

2. The tool display rack in accordance with claim 1, wherein the main body is integrally formed with the mounting portion. 15
3. The tool display rack in accordance with claim 1, wherein the mounting portion has a peripheral wall provided with a plurality of elastic portions each radially extended outward therefrom. 20
4. The tool display rack in accordance with claim 3, wherein the mounting portion is integrally formed with the elastic portions. 25
5. The tool display rack in accordance with claim 3, wherein each of the elastic portions of the mounting portion is an elongated slit.
6. The tool display rack in accordance with claim 3, wherein the peripheral wall of the mounting portion is provided with a plurality of elastically deformable holding portions located between the elastic portions. 30
35
7. The tool display rack in accordance with claim 6, wherein the mounting portion is integrally formed with the holding portions.
8. The tool display rack in accordance with claim 1, wherein the pressing member has an inside formed with a passage. 40
9. The tool display rack in accordance with claim 8, wherein the passage of the pressing member has a side having two ends each formed with an oblique limit portion. 45
10. The tool display rack in accordance with claim 1, wherein the main body has an end formed with a hanging portion. 50
11. The tool display rack in accordance with claim 1, wherein the mounting portion is a through hole. 55
12. The tool display rack in accordance with claim 11, wherein the mounting portion has a diameter slightly smaller than a size of the drive stud of the tool.

13. The tool display rack in accordance with claim 4, wherein the mounting portion is provided with three elastic portions.

5 14. The tool display rack in accordance with claim 6, wherein the mounting portion is provided with three holding portions.

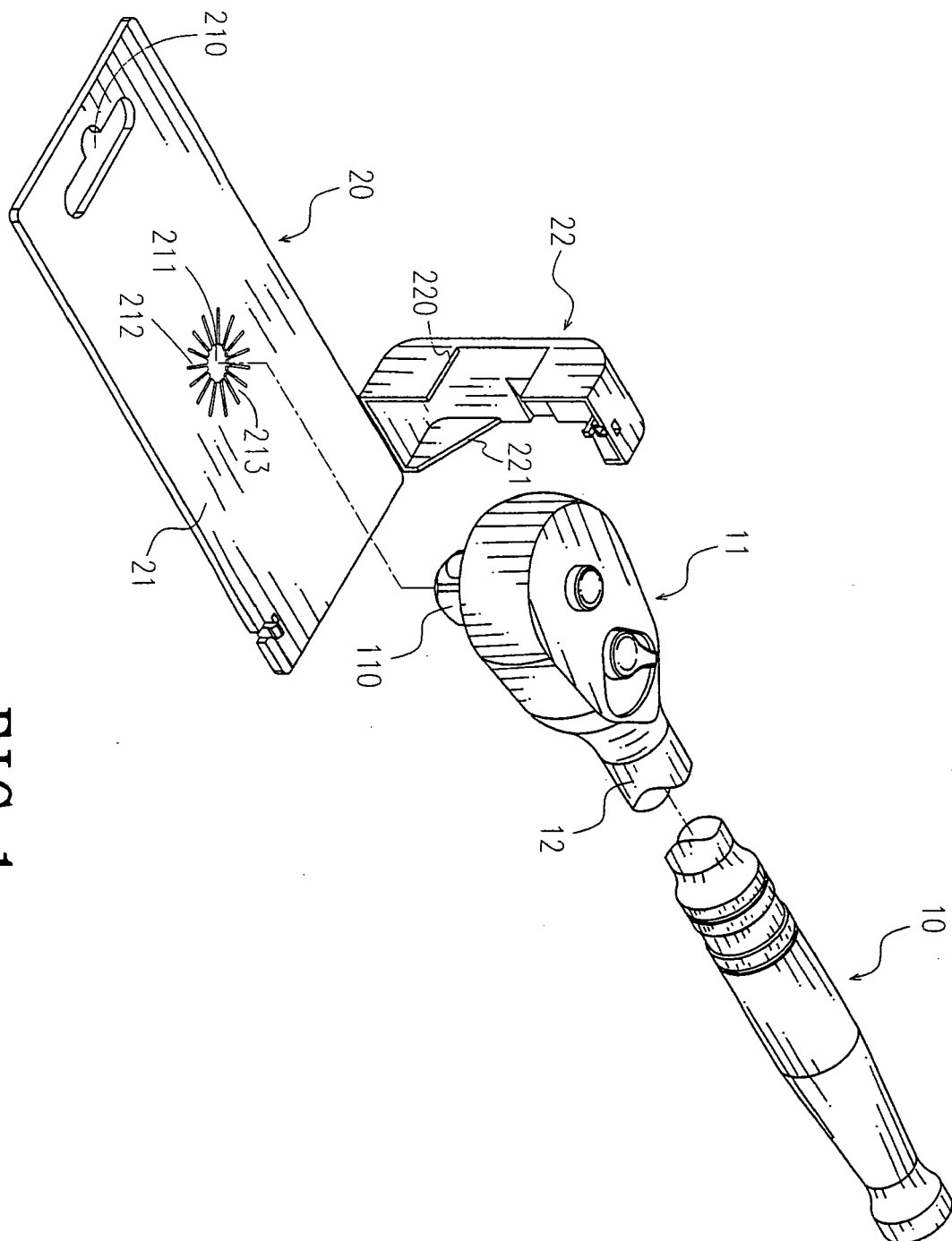


FIG. 1

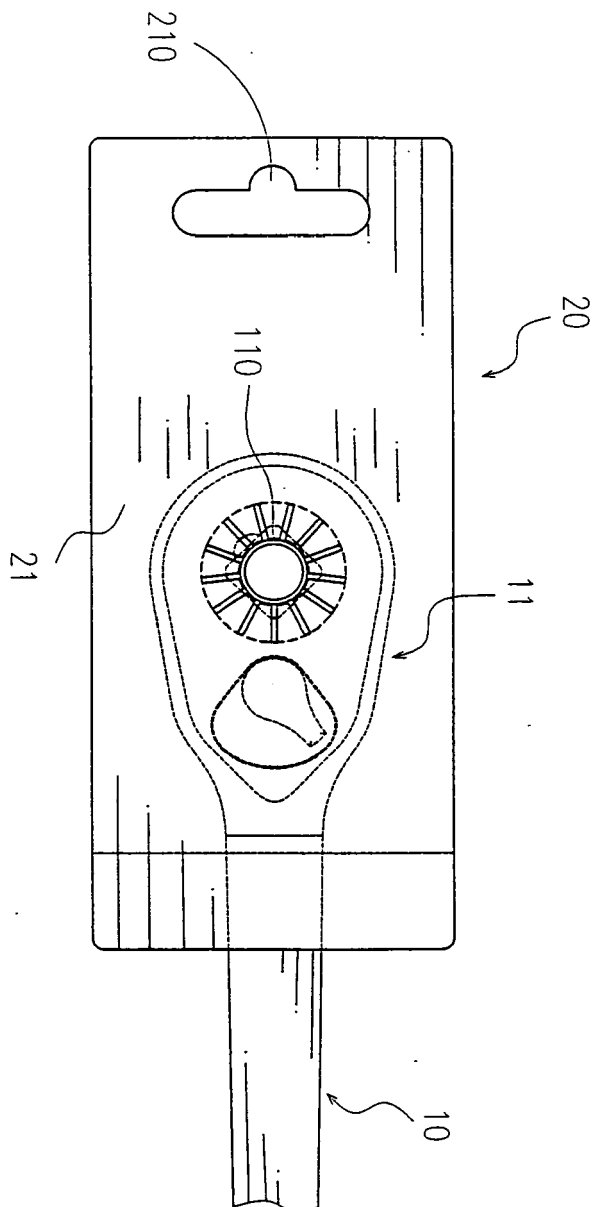


FIG. 2

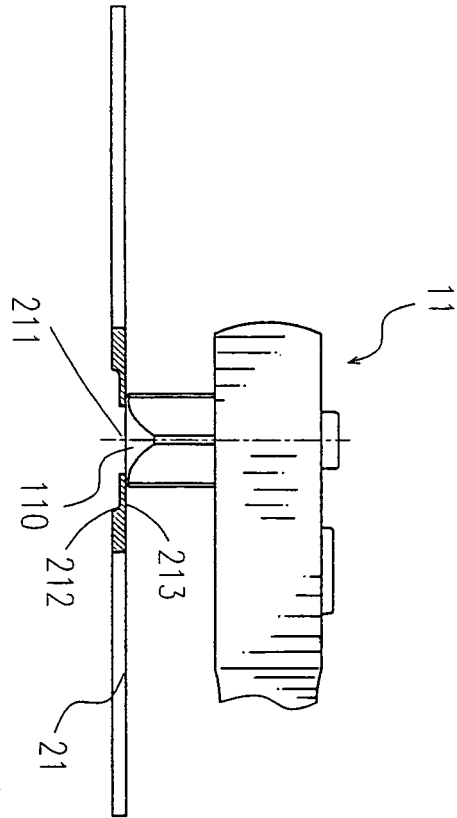


FIG. 3

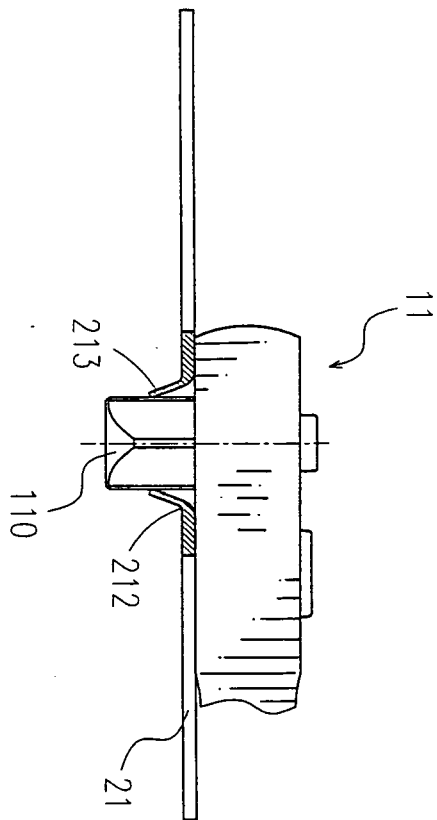


FIG. 4

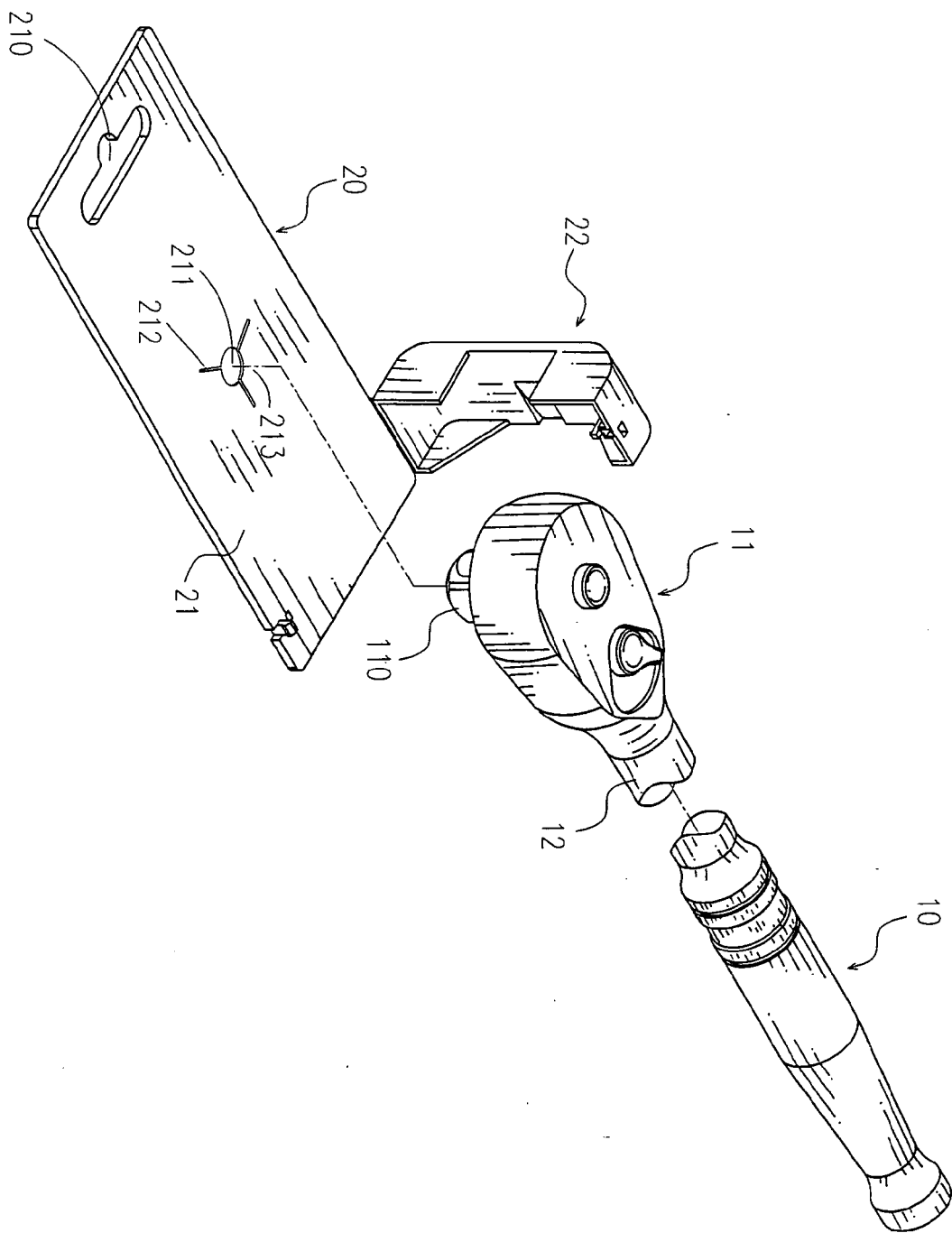
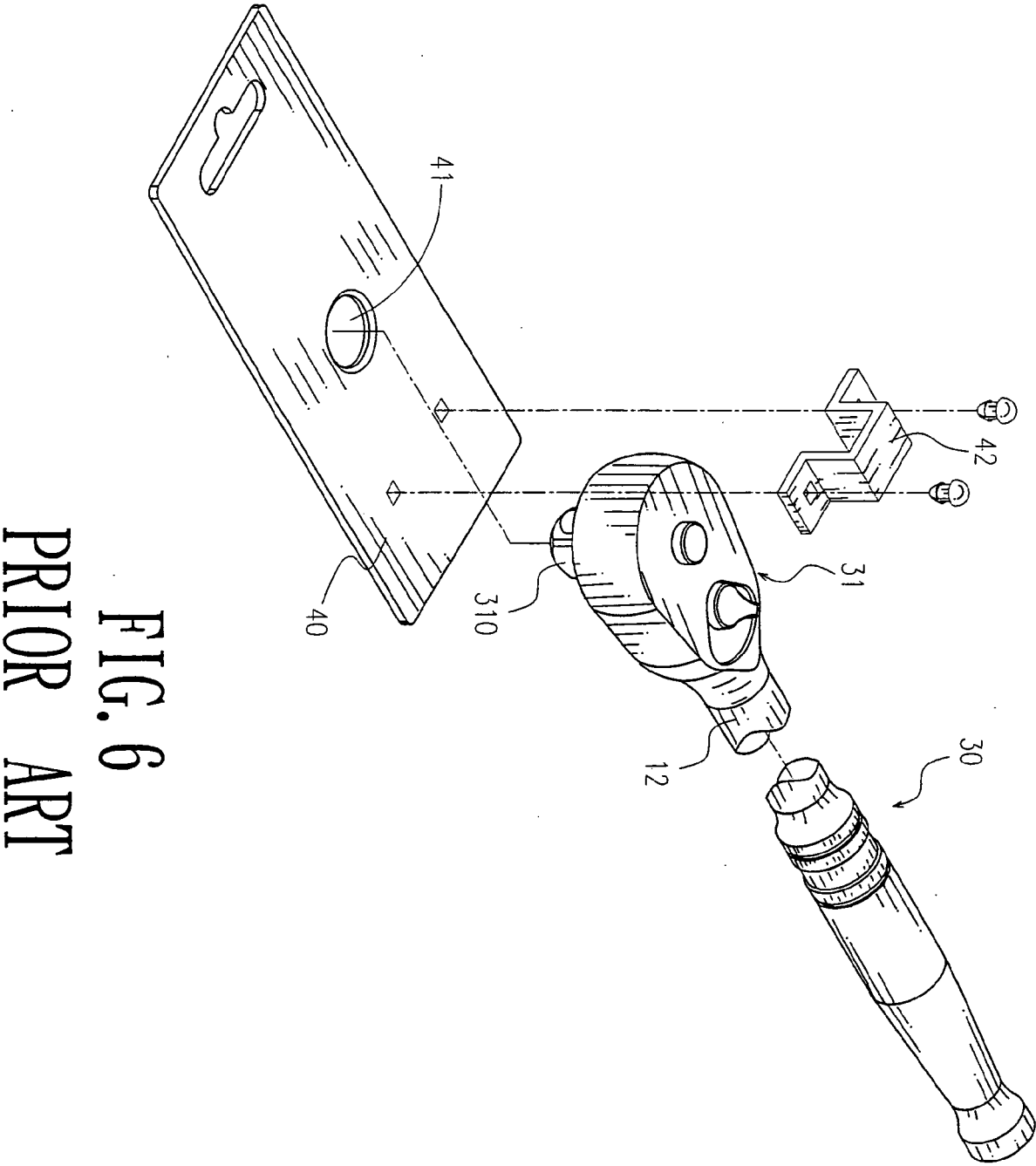


FIG. 5



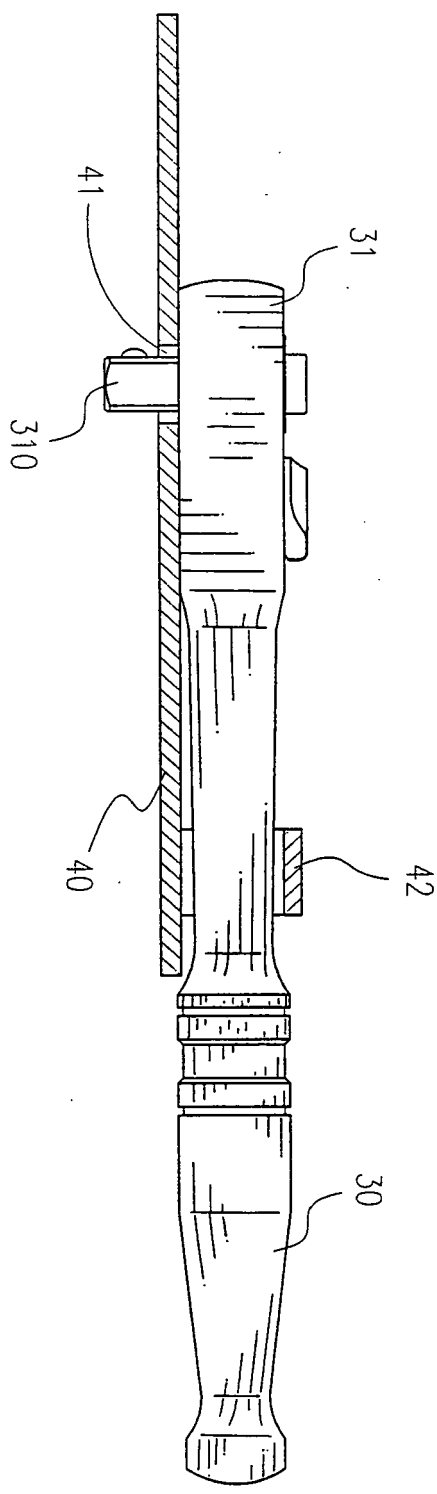
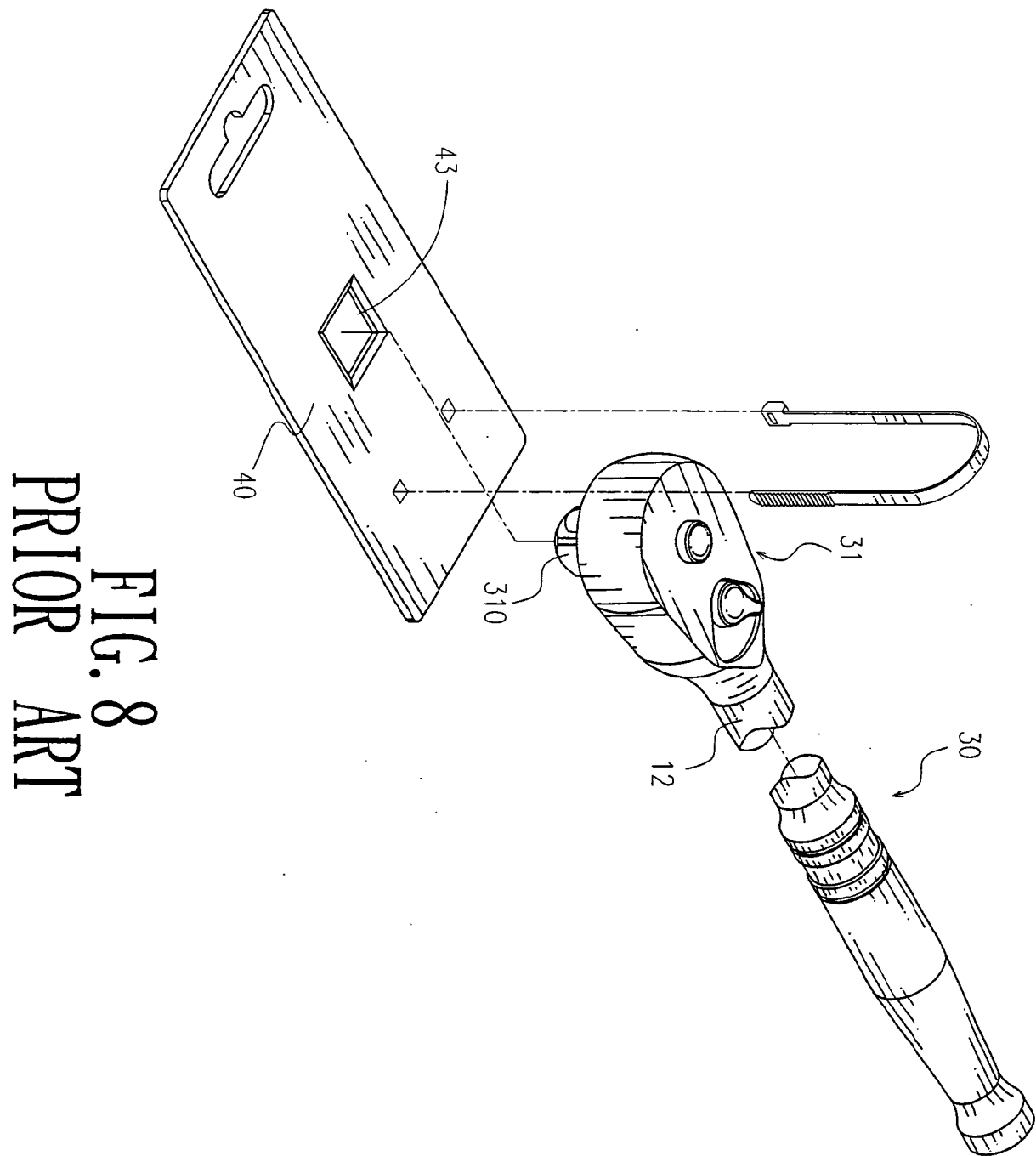


FIG. 7
PRIOR ART



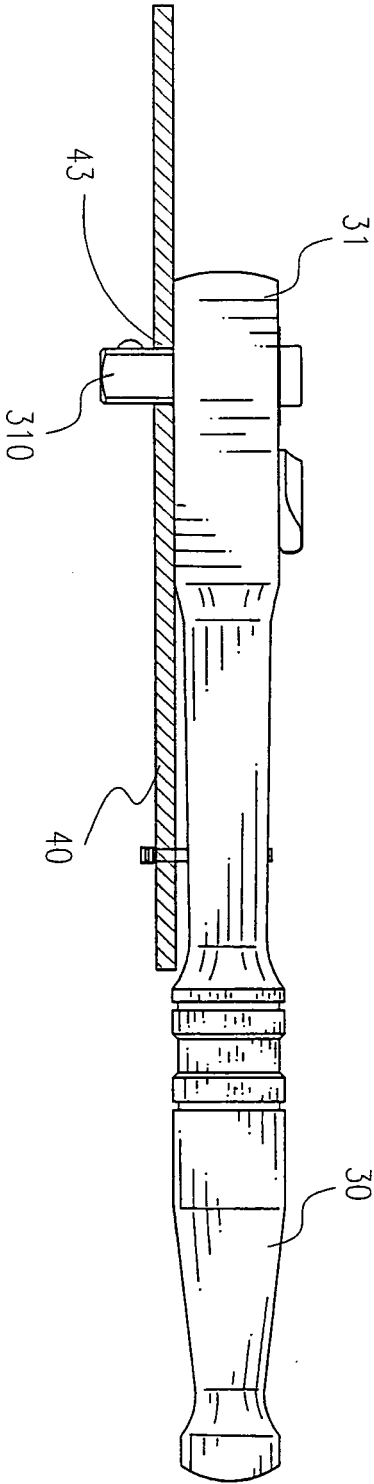


FIG. 9
PRIOR ART

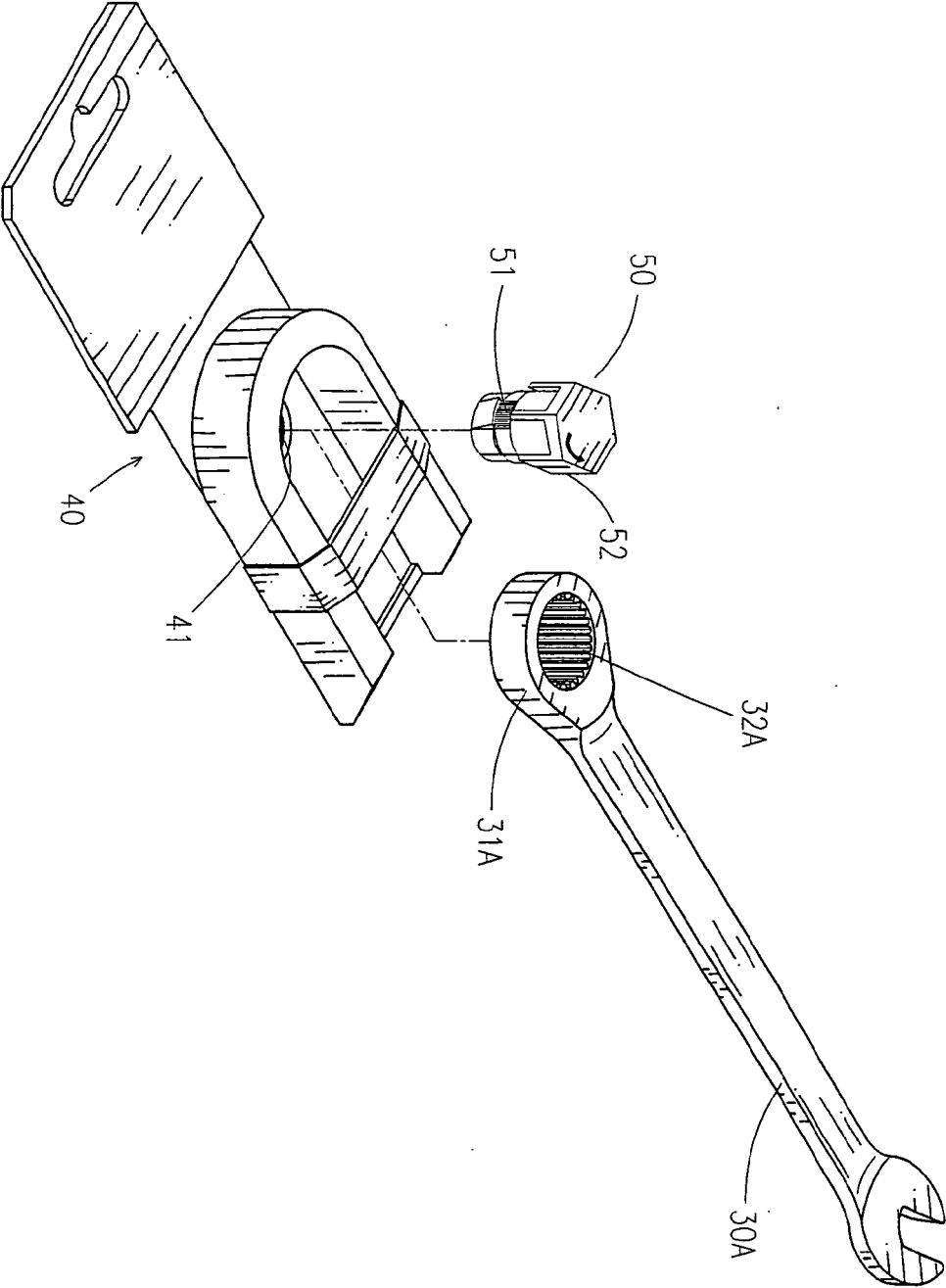


FIG. 10
PRIOR ART

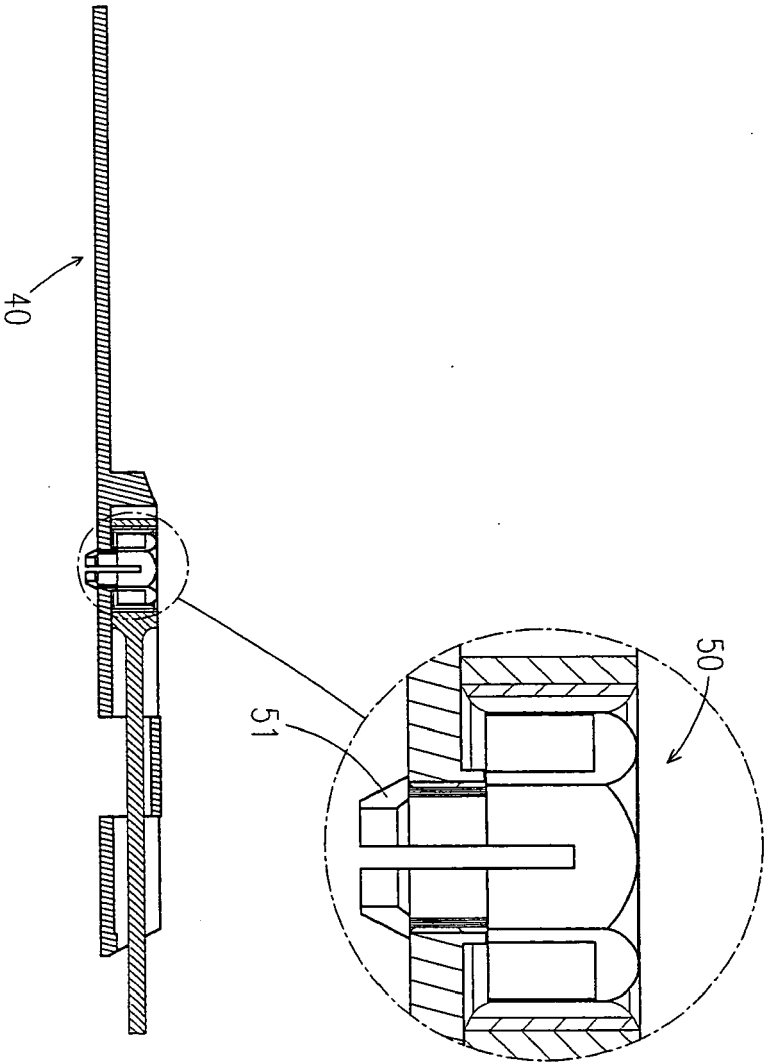


FIG. 11A
PRIOR ART

FIG. 11
PRIOR ART

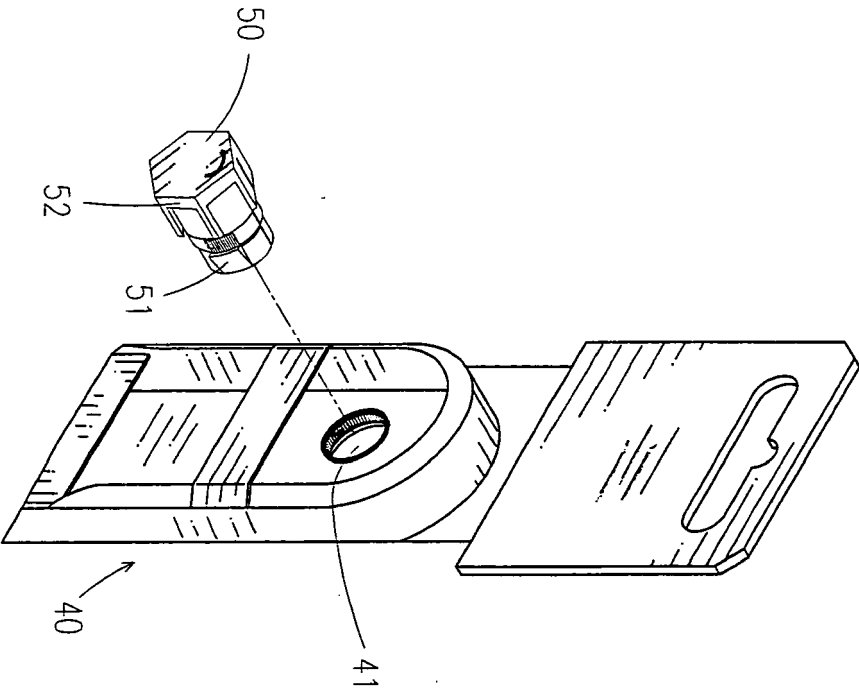


FIG. 12
PRIOR ART



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	US 4 650 074 A (VOSBIKIAN ET AL) 17 March 1987 (1987-03-17) * abstract; figure 1 * * column 3, line 13 - line 50 * -----	1,2, 10-12	
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A	US 6 186 323 B1 (JANSSON CONNY ET AL) 13 February 2001 (2001-02-13) * figures 4-6 * -----	1,8-10	
A	US 2004/173485 A1 (HUANG HSIN-TE) 9 September 2004 (2004-09-09) * paragraph [0027] - paragraph [0028]; figure 1 * -----	9	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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A	US 2002/162763 A1 (CHOW JESSIE) 7 November 2002 (2002-11-07) * abstract; figure 4 * * paragraph [0020] * -----	1-14	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 February 2005	Examiner Seegerer, H
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	

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

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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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11-02-2005

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