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(71) Applicant: **Chuang, Wei Chih**
8, Lane 69 Hsin Road Sec. 7
Taipei, R.O.C.(TW)

(72) Inventor: **Chuang, Wei Chih**
8, Lane 69 Hsin Road Sec. 7
Taipei, R.O.C.(TW)

(74) Representative: **Säger, Manfred, Dipl.-Ing. et al,**
Patentanwälte Dipl.-Ing. Otto Flügel Dipl.-Ing. Manfred Säger Postfach 810540
D-8000 München 81(DE)

(54) Lifting device for stool cover.

(57) The present invention relates to a lifting device 100 for stool cover, and in particular to one comprising a bracket 1 having a lug 15 at one end and a supporting portion 11 at the other end, an upper rack 2 slidably fitted with the upper part of the supporting portion 11, a lower rack 3 slidably fitted with the lower part of the supporting portion 11, an outer shaft 4 inserted into the bracket 1, an inner shaft 5 inserted into the outer shaft, a driving arm 6 pivoted on the lower part of the supporting portion 11, a tubular member 7 secured to the lower part of the driving arm 6, a controlling lever 8 fixedly connected with the tubular member 7 at the lower end, a stool lid 10 having a square hole 111 adapted to the outer shaft and a stool seat 9 having a square hole 91 adapted to the inner shaft 5.

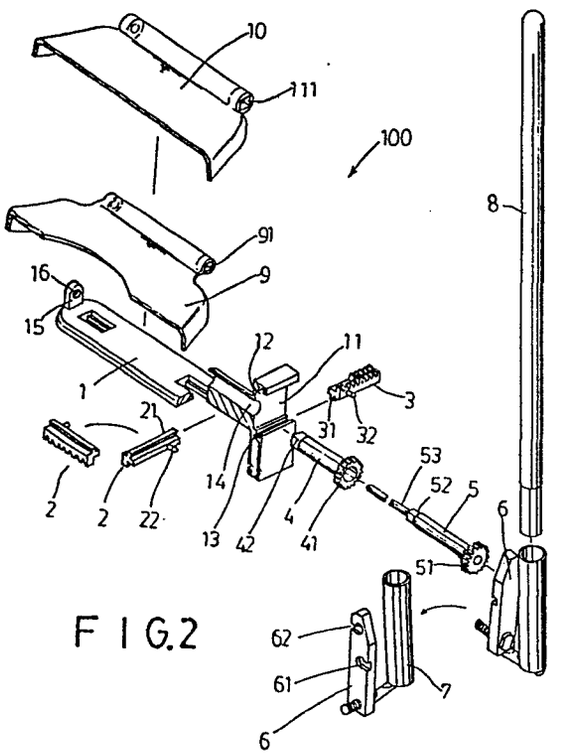

FIG.2

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TITLE: LIFTING DEVICE FOR STOOL COVER

The present invention relates to a lifting device for stool cover.

Almost all stool covers used nowadays are operated by hand, that is, it is very inconvenient to use. Furthermore, the hand might be stained with sewage. Hence, many attempts have been made to eliminate such drawbacks, but none of them can lead to satisfactory results.

It is, therefore, an object of the present invention to provide a lifting device for stool cover which may obviate and mitigate the above-mentioned drawbacks.

The present invention relates to a lifting device for stool cover which utilizes pinions in association with racks to control a stool cover.

It is the primary object of the present invention to provide a lifting device for stool cover which is simple in construction.

It is another object of the present invention to provide a lifting device for stool cover which is easy to use.

It is still another object of the present invention to provide a lifting device for stool cover which is economic to produce.

It is still another object of the present invention to provide a lifting device for stool cover which can be quickly assembled.

It is a further object of the present invention to

provide a lifting device for stool cover which is facile to manufacture.

Other objects and merits and a fuller understanding of the present invention will be obtained by those having ordinary skill in the art when the following detailed description of the best mode contemplated for practicing the invention has been read in conjunction with the accompanying drawings wherein like numerals refer to like or similar parts and in which:

FIG. 1 shows an application of a lifting device for stool cover actording to the present invention;

FIG. 2 is an exploded view of the lifting device;

FIG. 3 shows the relative positions of the component parts of the lifting device when the stool lid is closed;

FIG. 4 shows how to open the stool lid of the lifting device;

FIG. 5 shows how to open the stool seat of the lifting device;

FIG. 6 shows another preferred embodiment of lifting device according to the present invention; and

FIG. 7 shows the function of the driving arm.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other

embodiments and of being practiced or carried out in various ways. Also, it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring to the drawings and in particular to FIG. 2 thereof, the lifting device 100 according to the present invention comprises a bracket 1 which may be fastened on the bowl of a stool in known manner. The bracket 1 has a lug 15 at one end and a supporting portion 11 at the other end. The lug 15 is provided with a center hole 16. The supporting portion 11 has a hole 14 in alignment with the center hole 16 of the lug 15, an upper dovetail slot 12 and a lower dovetail slot 13. An upper rack 2 having a dovetail 21 on its top and a pin 22 extending outwardly from the outer side thereof is slidably fitted with the upper dovetail slot 12 of the supporting portion 11 of the bracket 1. The bottom of the upper rack 2 is longitudinally divided into two parts and only the inner one of the parts is provided with teeth. A lower rack 3 having a dovetail 31 on its bottom and a pin 32 extending outwardly from one side thereof is slidably fitted with the lower dovetail slot 13. The top of the lower rack 3 is longitudinally divided into two parts and only the outer part and one-half of the inner part are provided with teeth. An outer shaft 4 having a pinion 41 at one end and a square portion 42 at the other end is inserted into the hole 14 of the

supporting portion 11 of the bracket 1, with the square portion 42 adapted to a square hole 111 of a stool lid 10. The outer shaft 4 is hollow in structure. Inserted into the outer shaft 4 is an inner shaft 5 having at one end a pinion 51 and at the other end a square portion 52 adapted to a square hole 91 of a stool seat 9. The inner shaft 5 further has an axle 53 extending through the center hole 16 of the lug 15 of the bracket 1. As a result, the stool lid 10 and the stool seat 9 will be rotated in unison with the outer shaft 4 and the inner shaft 5, respectivefully. A driving arm 6 is pivoted on the lower part of the supporting portion 11 of the bracket 1 by means of a screw. The driving arm 6 is formed at one side with a first slot 61 adapted to the pin 32 of the lower rack 3 and at the other side with a second slot 62 adapted to the pin 22 of the upper rack 2. With reference to FIG. 7, when the driving arm 6 is turned clockwise from the normal position, the pin 32 of the lower rack 3 will engage with the first slot 61 of the driving arm 6 while the pin 22 of the upper rack 2 will disengage from the second slot 62, thereby pushing the lower rack 3 to the right. Similarly, when the driving arm 6 is turned counter-clockwise from the normal position, the pin 32 of the lower rack 3 will disengage from the first slot 61 of the driving arm 6 while the pin 22 of the upper rack 2 will engage with the second slot 62 of the driving

arm 61, thus pushing upper rack 3 to the left. A tubular member 7 is welded or otherwise secured to the lower part of the driving arm 6. A controlling lever 8 is fixedly connected with the tubular member 7 at its lower end. Hence the driving arm 6 will be rotated with the controlling lever 8.

Turning to FIG. 3, there is shown the relative positions of the component parts of the lifting device according to the present invention. As can be seen, the upper rack 2 and the lower rack 3 are positioned so that the pin 22 of the upper rack 2 and the pin 32 of the lower rack 3 are respectivefully located at the middle of the upper dovetail slot 12 and the lower dovetail slot 13 of the supporting portion 11 of the bracket 1.

Turning to FIG. 4, when the controlling lever 8 is pushed in the direction of arrow A, the driving arm 6 will be moved in the direction of arrow B. Then, the driving arm 6 will drive the upper rack 2 to move in the direction of arrow C, which in turn will rotate pinion 41 of the outer shaft 4 in the direction of arrow D. Consequently, the outer shaft 4 will raise the stool lid 10. Meanwhile, the lower rack 3 and the inner shaft 5 remain stationary. Hence, it is only necessary to push the controlling lever 8 in the direction of arrow A to open the stool lid 10. When desired to close the stool lid 10, simply pull back the controlling

lever 8 to its original position.

Referring to FIG. 5, there is shown the way how the stool seat 9 is raised. As illustrated, when the controlling lever 8 is pulled in the direction of arrow F, the driving arm 6 will be moved in the direction of arrow G. Then, the driving arm 6 will carry the lower rack 3 to move in the direction of arrow H which in turn will rotate the pinion 51 of the inner shaft 5 and the pinion 41 of the outer shaft 4 thereby lifting the stool lid 10 and the stool seat 9. To close the stool lid 10 and the stool seat 9, simply push the controlling lever 8 back to its original position.

With reference to FIG. 6, there is shown another preferred embodiment of the present invention. As shown, the upper rack 2, the lower rack 3 and the driving arm 6 are replaced with a sector member 20. The top surface of the sector member 20 is divided into four parts and only two diagonally opposite parts are provided with teeth. When the controlling lever 8 is pulled to rotate the sector member 20 in the direction of arrow L, the pinion 41 of the outer shaft 4 will be rotated thereby lifting the stool lid 10. As the sector member 20 is further rotated in the direction of arrow L, the pinion 51 of the inner shaft 5 will be rotated to lift the stool seat 9. To lower the stool lid 10 and/or the stool seat 9, it is only necessary to push the controlling lever 8 in reverse direction.

Although this invention has been described with a certain degree of particularity, it is understood that the present disclosure is made by way of example only and that numerous changes in the detail of construction and the combination and arrangement of parts may be resorted to without departing the spirit and scope of the invention as hereinafter claimed.

CLAIMS:

1/. A lifting device 100 for stool cover, comprising:

a bracket 1 having a lug 15 at one end and a supporting portion 11 at the other end, said lug 15 having a center hole 16, said supporting portion 11 having a hole 14 in alignment with the center hole 16 of said lug 15, an upper dovetail slot 12, and a lower dovetail slot 13;

an upper rack 2 slidably fitted with the upper dovetail slot 12 of the supporting portion 11 of said bracket 1, said upper rack 2 having on its top a dovetail 21 adapted to the upper dovetail slot 12 of the supporting portion 11 of said bracket 1, a pin 22 extending outwardly from the outer side thereof, and a plurality of teeth longitudinally provided on the inner half of the bottom thereof;

a lower rack 3 slidably fitted with the lower dovetail slot 13 of the supporting portion 11 of said bracket 1, said lower rack 3 having on its bottom a dovetail 31 adapted to the lower dovetail slot 13 of the supporting portion 11 of said bracket 1, and a pin 32 extending outwardly from the outer side

thereof, said lower rack 3 being designed so that the top thereof is longitudinally divided into two parts and only the outer part and one-half of the inner part are provided with teeth;

an outer shaft 4 inserted into the hole 14 of the supporting portion 11 of said bracket 1, said outer shaft 4 being provided at one end with a pinion 41 and at the other end with a square portion 42;

an inner shaft 5 inserted in said outer shaft 4 and rotatable with respect thereto, said inner shaft 5 being provided with a pinion 51 at one end, a square portion 52 at the other end, and an axle 53 extending therethrough;

a driving arm 6 pivoted on the lower part of the supporting portion 11 of said bracket 1, said driving block 6 having at one side a first slot 61 adapted to the pin 22 of said upper rack 2 and at the other side a second slot 62 adapted to the pin 32 of said lower rack 3;

a tubular member 7 secured to the lower part of said driving arm 6;

a controlling lever 8 fixedly connected with said driving arm 6 at the lower end;

a stool lid 10 having a square hole 111 adapted to the square portion 42 of said outer shaft 4; and

a stool seat 9 having a square hole 91 adapted to the square portion 52 of said inner shaft 5.

2/. A lifting device 200 for stool cover, comprising:

a bracket 1 having a lug 15 at one end and a supporting portion 11 at the other end, said lug 15 having a center hole 16, said supporting portion 11 having a hole 14 in alignment with the center hole 16 of said lug 15, an upper dovetail slot 12, and a lower dovetail slot 13;

an outer shaft 4 inserted into the hole 14 of the supporting portion 11 of said bracket 1, said outer shaft 4 being provided at one end with a pinion 41 and at the other end with a square portion 42;

an inner shaft 5 inserted in said outer shaft 4 and rotatable with respect thereto, said inner shaft 5 being provided with a pinion 51 at one end, a square portion 52 at the other end, and an axle 53 extending therethrough;

a sector member 20 pivoted on the supporting portion 11 of said bracket 1, said sector

member 20 being designed so that the top surface thereof is divided into four parts and only two diagonally opposite parts of the four parts are provided with teeth;

a controlling lever 8 fixedly connected with said sector member 20;

a stool lid 10 having a square hole 111 adapted to the square portion of said outer shaft 4; and

a stool seat 9 having a square hole 91 adapted to the square portion 52 of said inner shaft.

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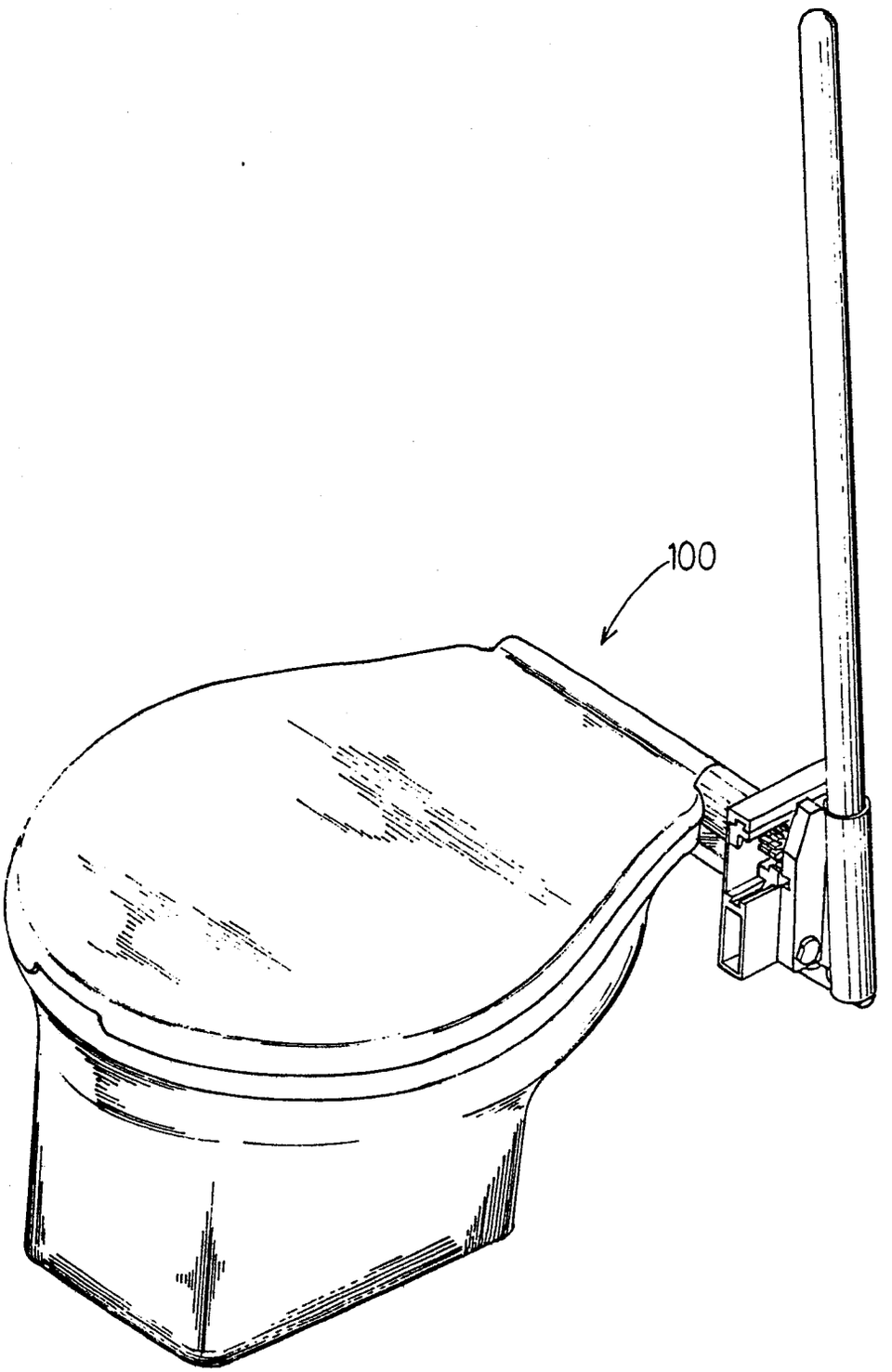

FIG.1

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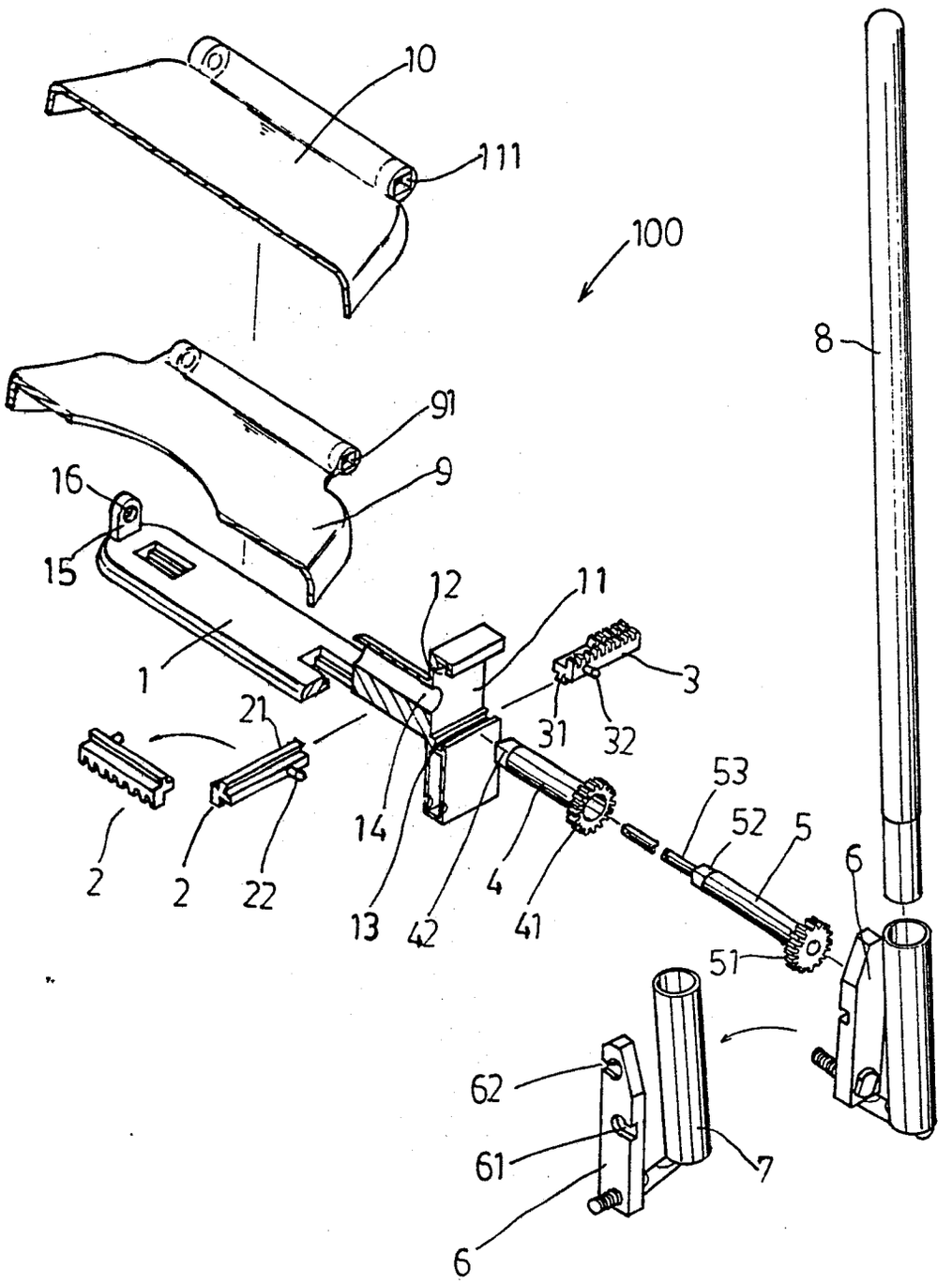

FIG.2

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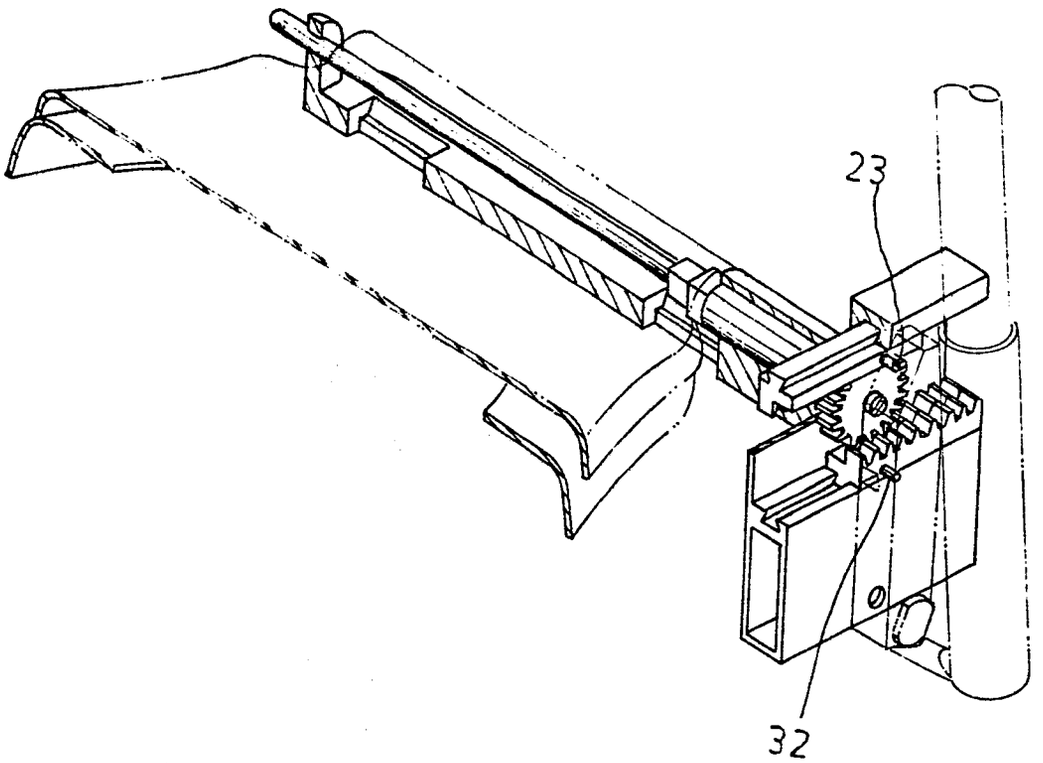

FIG.3

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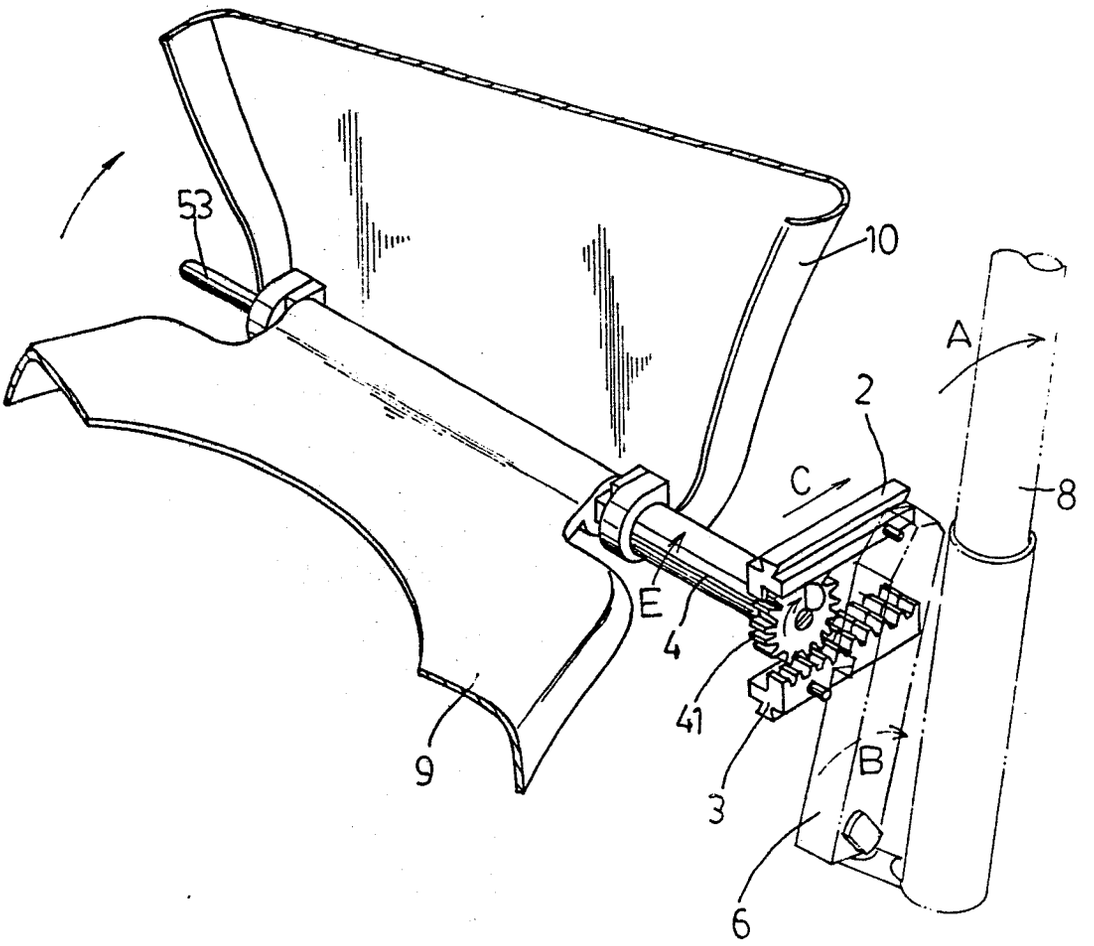

FIG.4

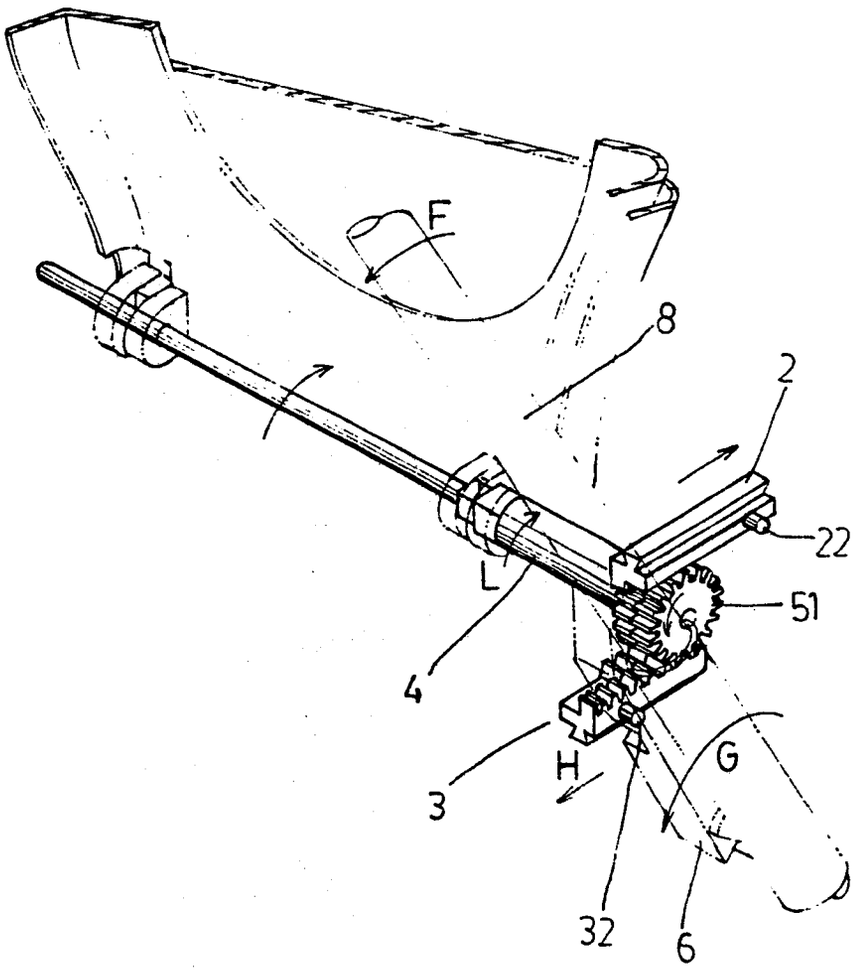

FIG.5

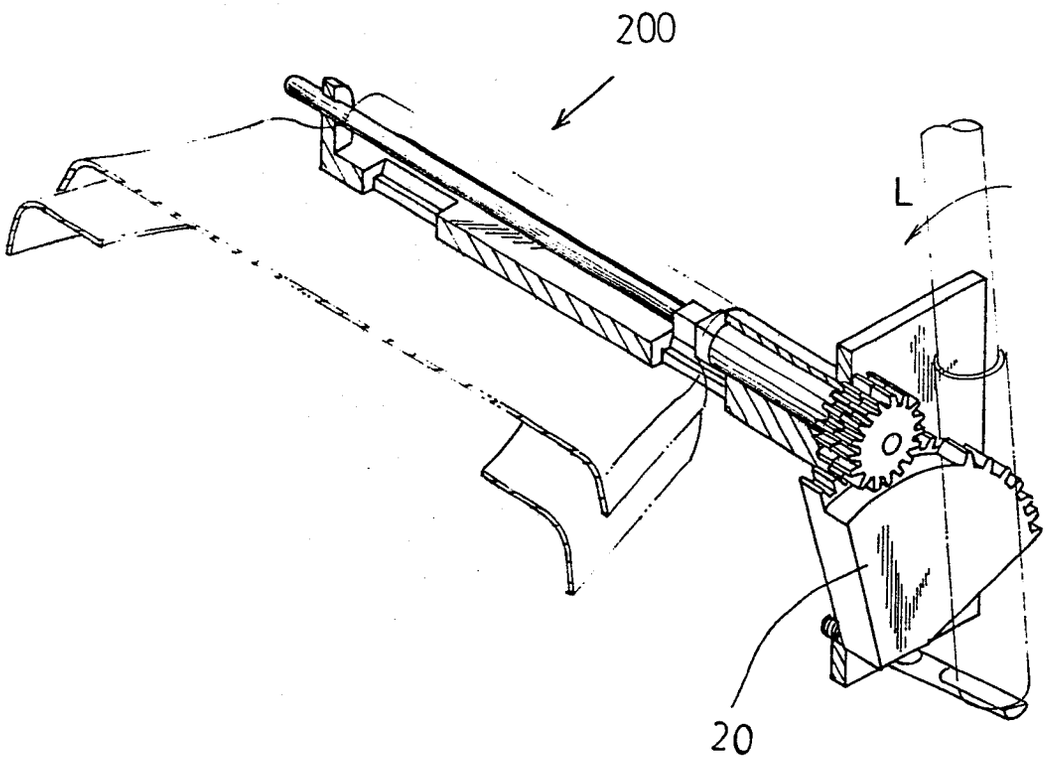

FIG.6

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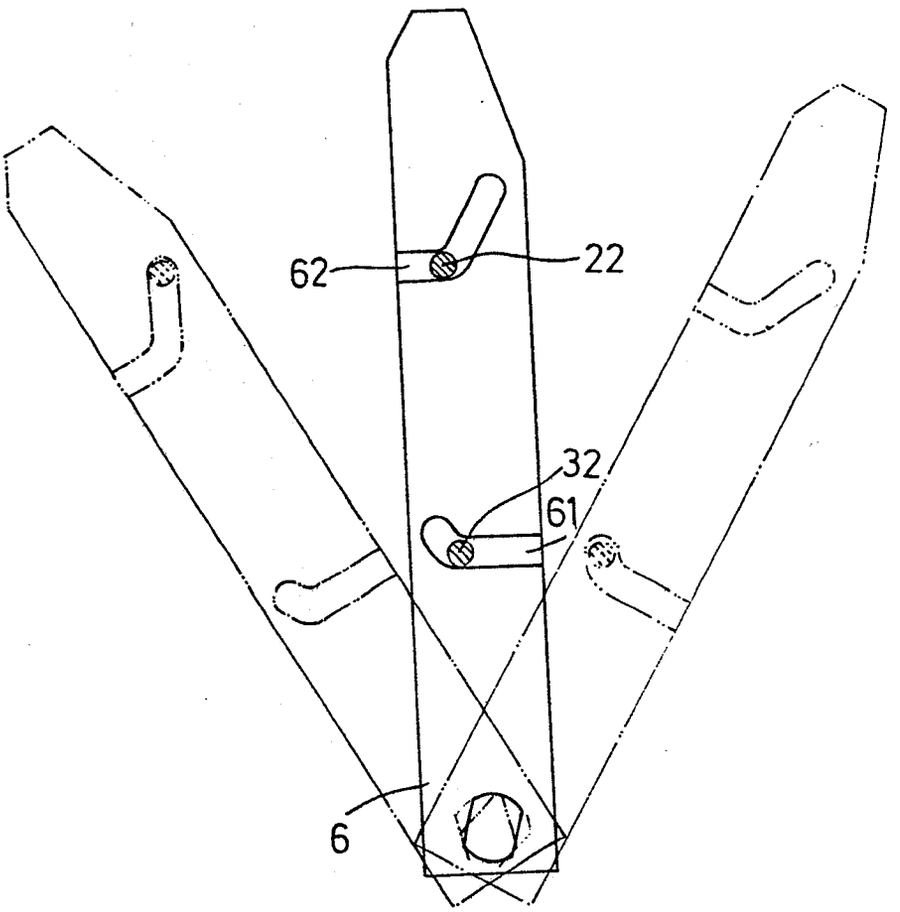

FIG.7

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EUROPEAN SEARCH REPORT

Application number 0191880

EP 85 10 1850

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 4)
A	US-A-3 404 411 (NEWKIRK)		A 47 K 13/10
A	DE-C- 313 205 (HEIL)		

TECHNICAL FIELDS SEARCHED (Int Cl 4)

A 47 K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21-10-1985	LAUE F.M.

CATEGORY OF CITED DOCUMENTS

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