



EUROPEAN PATENT SPECIFICATION

Date of publication of patent specification :
02.03.94 Bulletin 94/09

Int. Cl.⁵ : **A47C 20/04, A47C 1/026**

Application number : **90911898.6**

Date of filing : **09.08.90**

International application number :
PCT/NL90/00112

International publication number :
WO 91/01667 21.02.91 Gazette 91/05

LOUNGER.

Priority : **11.08.89 NL 8902054**
06.08.90 NL 9001768

Date of publication of application :
27.05.92 Bulletin 92/22

Publication of the grant of the patent :
02.03.94 Bulletin 94/09

Designated Contracting States :
BE DE ES FR GB IT NL

References cited :
DE-A- 2 728 022
US-A- 4 801 177

Proprietor : **LAWN COMFORT S.A.**
Parc Industriel, 12 rue Wallonie
B-4430 Ans-Alleur (BE)

Inventor : **WESTERBURGEN, Josephus,**
Petrus, Maria
Belenbroeklaan 34
NL-6093 BT Heythuysen (NL)

Representative : **Bleukx, Lucas Lodewijk**
Maria, Ir.
OCTROOIBUREAU DSM Postbus 9
NL-6160 MA Geleen (NL)

EP 0 486 547 B1

Note : Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

The invention relates to a lounge comprising
a) a first part, consisting of a lying or seating part,
b) a second part, consisting of a backrest or leg

rest which is hinged to the first part,
one of the parts being connected to a first toothed
segment which interacts with a second toothed seg-
ment which is connected to the other part, the second
toothed segment being coupled to a cam which is
movable between two positions, in the first position
the two toothed segments being locked together.

Such a lounge is known from the German Offen-
legungsschrift 2.728.022.

The lounge according to this Offenlegungss-
chrift, too, employs meshing toothed segments that
are connected to the first and the second part of the
lounge and that are mutually locked in a first position
and that are completely disengaged from each other
in a second position so that the one part can be read-
justed in relation to the other and subsequently
locked again.

Locking and unlocking of the toothed segments
is effected by operating a handle which co-operates
with an eccentric cam. With this lounge the toothed
segments come completely clear of each other in the
second position, whereupon the backrest, for in-
stance, can be readjusted in relation to the seat with-
out any hindrance.

In order to prevent the backrest from suddenly
fully reclining as a result of the toothed segments be-
ing fully disengaged from each other, a spring has
been provided, urging the backrest in the most up-
right position. This spring is necessary in order to
avoid that the backrest, after disengaging of the
toothed segments, being allowed to make uncontrol-
led movements with respect to the remainder of the
lounge, but otherwise constitute an element which
makes the construction and assembly of the chair
more complicated.

The object of the invention is to provide a lounge
as described in the opening lines that overcomes the
disadvantages mentioned.

In the invention this is accomplished in that the
first and second toothed segments are resiliently
urged into engagement with each other, by a spring
member and that in the second position of the cam,
the two toothed segments can be disengaged from
each other against the force of the spring member by
rotating the one part with respect to the other parts.

In the second position, or, in other words, the un-
locked position, in the embodiment according to the
invention, the toothed segments do not entirely disen-
gage from one another but some force must be exert-
ed by, for instance, pushing one's back against the
backrest so as to tilt the backrest or by pulling the
backrest with one or both hands to place it in upright
position.

In the embodiment according to the invention,
when the toothed segments are in unlocked position,
the backrest is prevented from moving by gravity for-
ces only and, so, the risk of accidents is avoided.

Readjustment is now effected in a safe manner
and can take place from the lying or seated position.

In US patent specification 4801177 there is dis-
closed a lounge according to introductory part. In
this known construction the two toothed segments
are urged against each other by means of a spring,
disengaging being done by pressing the one toothed
segment from the other against the spring force, by
actuating a press button. In this case the two ele-
ments of the lounge are completely disengaged, with
the risk of suddenly moving of one part to the other.

According to the invention, the teeth of the tooth-
ed segments are shaped in such a way as to ensure
that, when the cam is in the second position and the
one part is rotated with respect to the other part, the
second toothed segment is pushed away from the
first toothed segment against the force of the spring
member. When the one part is readjusted relative to
the other the teeth of the second toothed segment
move jerkily, as it were, over those of the first toothed
segment. As a result, on unlocking the toothed seg-
ments, the backrest cannot of its own accord fold
down to the fully reclined position since, as mentioned
earlier, some force needs to be exerted for readjust-
ment.

The embodiment according to the invention af-
fords a safe manner of changing the position of the
lounge.

The angle of inclination of the tooth flanks to the
line connecting the tips of the teeth lies between 30
and 85 degrees.

The tips of the teeth are radiused so as to further
facilitate the teeth of the toothed segments to clack
past one another when the position of the lounge is
changed.

The cam for locking and unlocking the toothed
segments is eccentrically linked to the second tooth-
ed segment.

Preferably, the lounge is provided with a cam on
both sides, both cams being fitted with operating
hand grips. The cams at both sides of the lounge are
connected to each other by means of a through-going
shaft so that the position can be changed from either
side.

In the embodiment according to the invention,
the first toothed segment is integral with the first or
the second part of the lounge. Preferably, the lounge
is manufactured in a plastics material.

Other characteristics and advantages will be evi-
dent from the following description with reference to
the attached drawings.

Herein is:

Fig. 1 a side elevation of a lounge according to
the invention fitted with an adjusting mechanism

located within the area indicated by the dotted line I;

Fig. 2 a rear elevation of the lounge according to fig. 1;

Fig. 3 a schematic side elevation along line II-II in fig. 2 of the adjusting mechanism with the toothed segments in locked position; and

Fig. 4 a schematic side elevation of the adjusting mechanism along the line II-II with the toothed segments in unlocked position.

The lounge 1 shown in fig. 1 comprises a seat 2 to which are hinged a backrest 3 and a leg rest 4 via hinges 5 and 6, respectively.

The lounge is further provided with folding supports 7, 8 and 9 and hinged arm rest parts 10 and 11, which are also hinged to the back rest 3 and the seat 2, respectively.

The adjusting mechanism is located within the area indicated by the dotted line I in fig. 1. In this case, an adjusting mechanism is fitted on both sides of the lounge, as will appear from the following.

The adjusting mechanism is substantially accommodated in U-shaped reinforcing sections along the sides of the seat 2; the reinforcing sections are open on the outside.

Fig. 2 shows the rear elevation of the lounge. The parts have the same reference numbers as those in fig. 1 except that they are accentuated.

Fig. 3, the side elevation along line II-II in fig. 2, is a schematic representation to a larger scale of the construction of the adjusting mechanism.

To the backrest 3 is rigidly connected a first toothed segment 12 and a second springing toothed segment 13. Toothed segment 13 forms part of an element 14, which can rotate around a pin 15, which is connected as a fixed point to the seat 2, which is schematically represented by line III. Element 14 ends in a resilient ear 16 which at its extremity is arrested by stop pin 17 connected to the seat 2. The springing ear 16 is integral with the element 14. The element 14 is further provided with a recess 18 with an inner wall 19. Within the recess is located a rotatable cam 20, which is eccentrically placed on a shaft 21 connected to the seat 2.

Handgrips 27 and 27' may be fitted onto the cams 20 (see figures 1 and 2).

Backrest 3 is readjusted as follows. It is first pointed out that the readjusting mechanism is designed so that, when the element 14 with the springing ear 16 is in the central position, toothed segment 13 is in full mesh with toothed segment 12 as shown in fig. 3.

In fig. 3, the cam 20, in the position as drawn, acts in concert with the inner wall 19 of recess 18 so that the longer eccentric side 22 of the cam with its free end 23 is firmly pushed against the element 14 so that the toothed segments are meshed and locked. In this position it is not possible to readjust the backrest 3 around hinge 5 in relation to the seat 2.

When the cam 20 is moved to the position shown in fig. 4 enough clearance will be created between the cam 20 and the element 14 for toothed segment 13 to be pushed clear of toothed segment 12 against the spring force of ear 16 when the backrest 3 is moved around the hinge 5. During readjustment, the teeth successively jump one tooth relative to each other. The teeth are shaped so that, when the cam 20 is in the position shown in fig. 4 and the backrest 3 is readjusted, the toothed segment 13 is pushed clear of toothed segment 12.

The angle of inclination of the tooth flanks to the line connecting the tips of the teeth lies between 30 and 85 degrees.

The tooth flanks on one side have the same angle of inclination as those on the other side.

Cam 20 is eccentrically coupled to the toothed segment 13. A cam may be provided on both sides of the lounge. Operating handgrips may be fitted to the cams. The cams may be connected to one another by means of a through-going shaft so that the lounge may be readjusted from either side.

The toothed segment 12 may be integral with the backrest 3.

Preferably, the lounge is manufactured in plastic and is, thus, especially suited as a garden lounge.

In readjusting the backrest, when the cam 20 has been moved to the position shown in fig. 4, some force needs to be exerted on the backrest 3 in order to push the toothed segment 13 clear of the toothed segment 12 against the spring force. Consequently, on unlocking the toothed segments, it is not possible for the backrest to recline under its own weight. The method of readjusting the backrest according to the invention prevents accidents and affords a safe manner of readjusting the backrest without the need for the user to rise from the lounge.

Claims

1. Lounge comprising

a) a first part (2), consisting of a lying or seating part,

b) a second part (3,4), consisting of a backrest or leg rest which is hinged to the first part,

one (3) of the parts being connected to a first toothed segment (12) which interacts with a second toothed segment (13) which is connected to the other part (2), the second toothed segment (13) being coupled to a cam (20) which is movable between two positions: in the first position the two toothed segments (12,13) being locked together, characterized in that the first and second toothed segments (12,13) are resiliently urged into engagement with each other, by a spring member (16) and that in the second position of the cam (20), the two toothed segments

(12,13) can be disengaged from each other against the force of the spring member (16) by rotating the one part (3) with respect to the other parts (2).

2. Lounger according to claim 1, characterized in that the teeth of the toothed segments are shaped in such a way as to ensure that, when the cam (20) is rotated with respect to the other part, the second toothed segment (13) is pushed away from the first toothed element (12) against the force of the spring member (16).
3. Lounger according to claim 2, characterized in that the angle of inclination of the tooth flanks to the line connecting the tips of the teeth lies between 30 and 85 degrees.
4. Lounger according to claims 1 or 3, characterized in that the teeth flanks on either side have the same angle of inclination.
5. Lounger according to claims 2-4, characterized in that the tips of the teeth are radiused.
6. Lounger according to one claims 1-5, characterized in that the cam (20) is eccentrically linked to the second toothed segment (13).
7. Lounger according to one of the claims 1-6, characterized in that it is provided with a cam (20) on each side.
8. Lounger according to one of the claims 1-7, characterized in that the cams (20) are fitted with operating handgrips (27,27').
9. Lounger according to claim 7 or 8 characterized in that the cams (20) on both sides of the lounger are connected by means of a through-going shaft (26) so that the lounger can be readjusted from either side.
10. Lounger according to one of the claims 1-9, characterized in that the first toothed segment (12) is integral with the first (2) or the second part (3,4).
11. Lounger according to one of the claims 1-10 characterized in that it is manufactured in plastics material.

Patentansprüche

1. Liegestuhl, umfassend
 - a) einen ersten Teil (2), bestehend aus einem Liege- oder Sitzteil,
 - b) einen zweiten Teil (3, 4), bestehend aus ei-

ner Rückenstütze oder Fußstütze, der mit dem ersten Teil gelenkig verbunden ist, wobei einer (3) der Teile mit einem ersten Zahnsegment (12) verbunden ist, das mit einem zweiten Zahnsegment (13) zusammenwirkt, das mit dem anderen Teil (2) verbunden ist, wobei das zweite Zahnsegment (13) mit einem Nocken (20) gekuppelt ist, der zwischen zwei Positionen bewegbar ist: in der ersten Position sind die beiden Zahnsegmente (12, 13) miteinander verriegelt, dadurch gekennzeichnet, daß die ersten und zweiten Zahnsegmente (12, 13) durch ein Federelement (16) elastisch in Eingriff miteinander gedrückt werden und daß in der zweiten Position des Nockens (20) die beiden Zahnsegmente (12, 13) gegen die Kraft des Federelements (16) durch Drehung des einen Teils (3) in bezug auf die anderen Teile (2) voneinander gelöst werden können.

2. Liegestuhl nach Anspruch 1, dadurch gekennzeichnet, daß die Zähne der Zahnsegmente so ausgestaltet sind, daß sichergestellt ist, daß, wenn der Nocken (20) in bezug auf den anderen Teil gedreht wird, das zweite Zahnsegment (13) gegen die Kraft des Federelements (16) vom ersten Zahnsegment (12) weggedrückt wird.
3. Liegestuhl nach Anspruch 2, dadurch gekennzeichnet, daß der Neigungswinkel der Zahnflanken zu der die Spitzen der Zähne verbindenden Linie zwischen 30 und 85 Grad liegt.
4. Liegestuhl nach Anspruch 1 oder 3, dadurch gekennzeichnet, daß die Zahnflanken auf jeder Seite denselben Neigungswinkel haben.
5. Liegestuhl nach den Ansprüchen 2-4, dadurch gekennzeichnet, daß die Spitzen der Zähne abgerundet sind.
6. Liegestuhl nach den Ansprüchen 1-5, dadurch gekennzeichnet, daß der Nocken (20) an das zweite Zahnsegment (13) exzentrisch angelenkt ist.
7. Liegestuhl nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß er auf jeder Seite mit einem Nocken (20) versehen ist.
8. Liegestuhl nach einem der Ansprüche 1-7, dadurch gekennzeichnet, daß die Nocken (20) mit Betätigungshandgriffen (27, 27') ausgestattet sind.
9. Liegestuhl nach Anspruch 7 oder 8, dadurch gekennzeichnet, daß die Nocken (20) auf beiden Seiten des Liegestuhls mittels einer durchgehen-

den Welle (26) verbunden sind, so daß der Liegestuhl von jeder Seite verstellt werden kann.

10. Liegestuhl nach einem der Ansprüche 1-9, dadurch gekennzeichnet, daß das erste Zahnsegment (12) mit dem ersten (2) oder dem zweiten Teil (3, 4) einstückig ausgebildet ist.

11. Liegestuhl nach einem der Ansprüche 1-10, dadurch gekennzeichnet, daß er aus Kunststoff hergestellt ist.

Revendications

1. Fauteuil de relaxation comprenant

a) une première partie (2), constituée d'une partie allongée ou formant siège

b) une seconde partie (3, 4), constituée d'un dossier ou repose-jambes qui est articulé sur la première partie,

l'une (3) de ces parties étant raccordée à un premier segment denté (12) qui agit mutuellement avec un second segment denté (13) lequel est raccordé à l'autre partie (2), le second segment denté (13) étant accouplé à une came (20) qui est mobile entre deux positions, dans la première position, les deux segments dentés (12, 13) étant verrouillés ensemble, caractérisé en ce que les premier et second segments dentés (12, 13) sont poussés de façon élastique en prise l'un avec l'autre par un élément formant ressort (16) et en ce que, dans la seconde position de la came (20), les deux segments dentés (12, 13) peuvent être séparés l'un de l'autre en opposition à la force de l'élément formant ressort (16) en faisant tourner la première partie (3) par rapport à l'autre partie (2)

2. Fauteuil de relaxation selon la revendication 1, caractérisé en ce que les dents des segments dentés sont réalisées de manière à garantir que, lorsque la came (20) est tournée par rapport à l'autre partie, le second segment denté (13) est poussé hors du premier segment denté (12), en opposition à la force de l'élément élastique (16).

3. Fauteuil de relaxation selon la revendication 2, caractérisé en ce que l'angle d'inclinaison des faces des dents sur la ligne joignant les extrémités des dents se situe entre 30 et 85 degrés.

4. Fauteuil de relaxation selon les revendications 1 ou 3, caractérisé en ce que les faces des dents ont le même angle d'inclinaison sur l'un ou l'autre côté.

5. Fauteuil de relaxation selon les revendications 2

à 4, caractérisé en ce que les extrémités des dents sont arrondies

6. Fauteuil de relaxation selon l'une des revendications 1 à 5, caractérisé en ce que la came (20) est reliée de façon excentrique au second segment denté (13).

7. Fauteuil de relaxation selon l'une des revendications 1 à 7, caractérisé en ce qu'il est équipé d'une came (20) de chaque côté.

8. Fauteuil de relaxation selon l'une des revendications 1 à 7, caractérisé en ce que les comes (20) sont munies de poignées de manoeuvre (27, 27').

9. Fauteuil de relaxation selon les revendications 7 ou 8, caractérisé en ce que les comes (20) sur les deux côtés du fauteuil de relaxation sont raccordées au moyen d'un axe traversant (26) de sorte que le fauteuil de relaxation peut être réglé à nouveau depuis l'un ou l'autre côté.

10. Fauteuil de relaxation selon l'une des revendications 1 à 9, caractérisé en ce que le premier segment denté (12) fait partie intégrante de la première partie (2) ou de la seconde partie (3, 4).

11. Fauteuil de relaxation selon l'une des revendications 1 à 10, caractérisé en ce qu'il est fabriqué en matière plastique

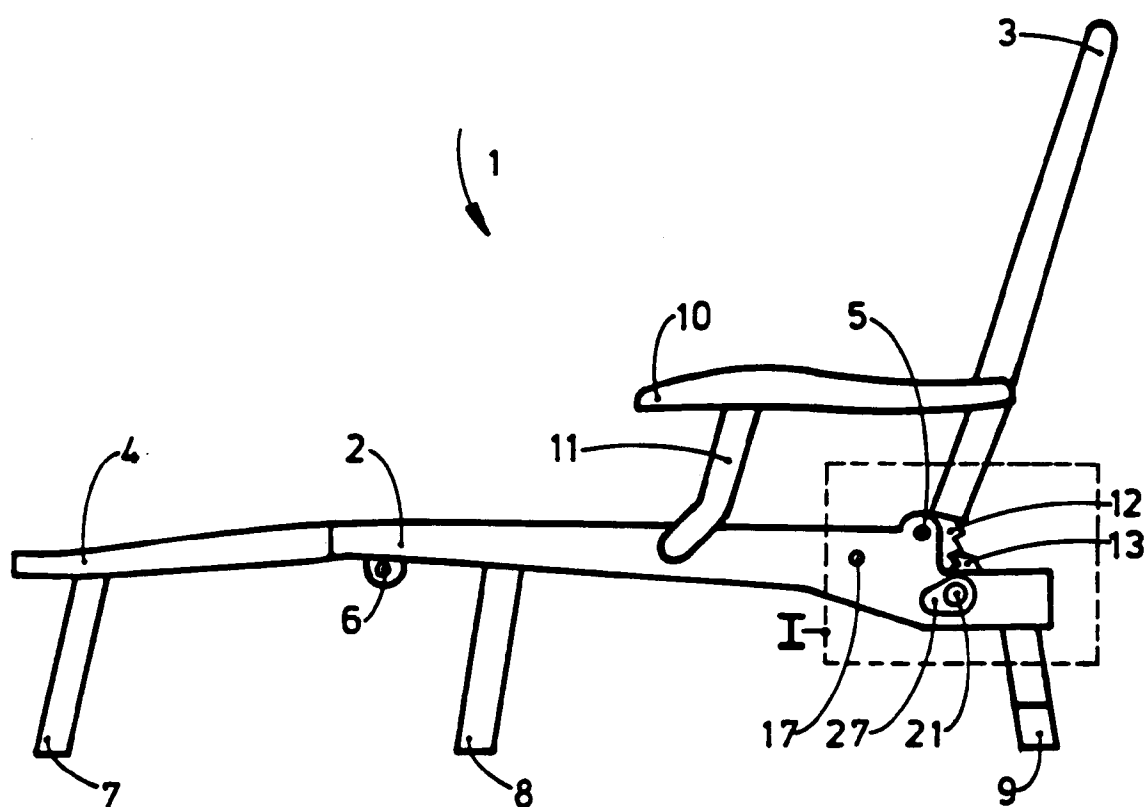


FIG. 1

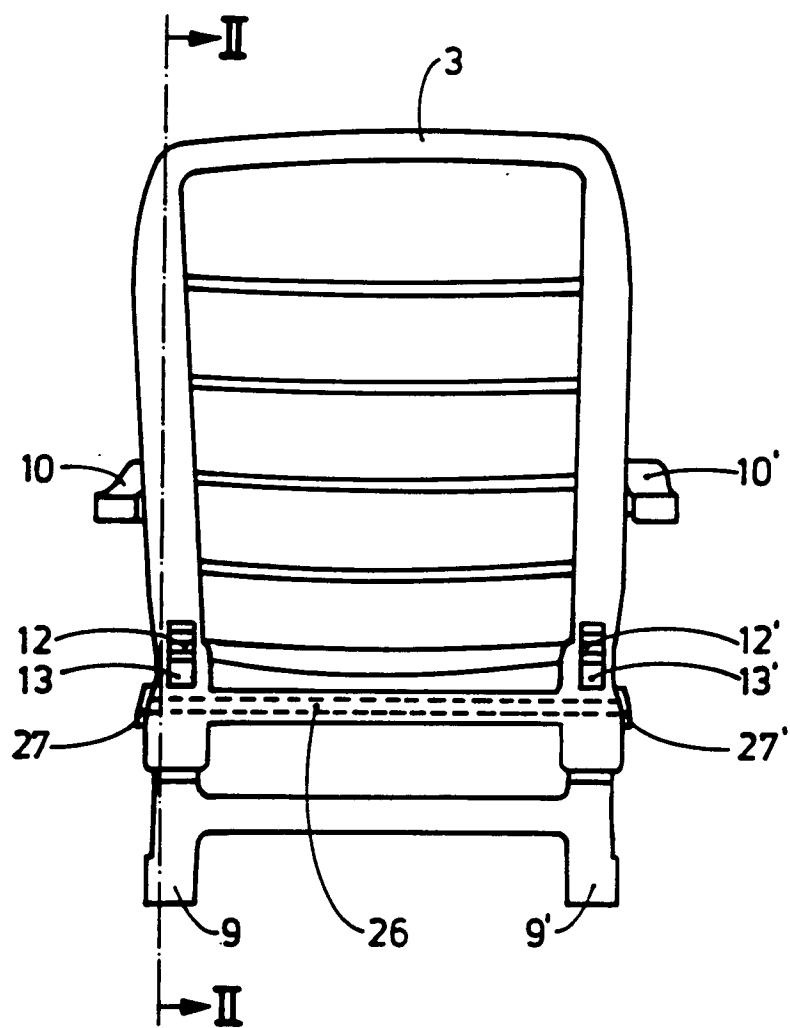


FIG. 2

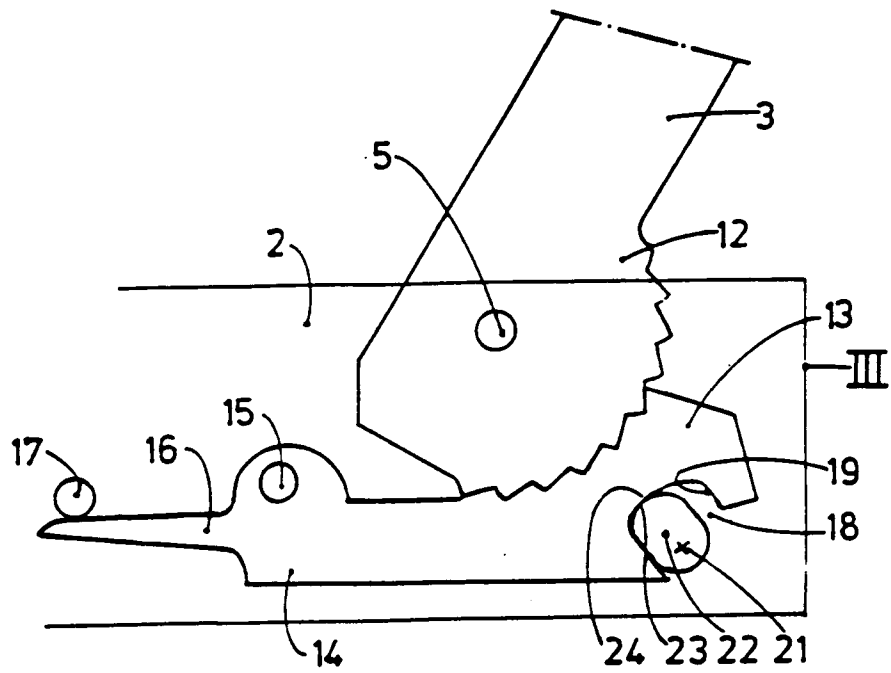


FIG. 3

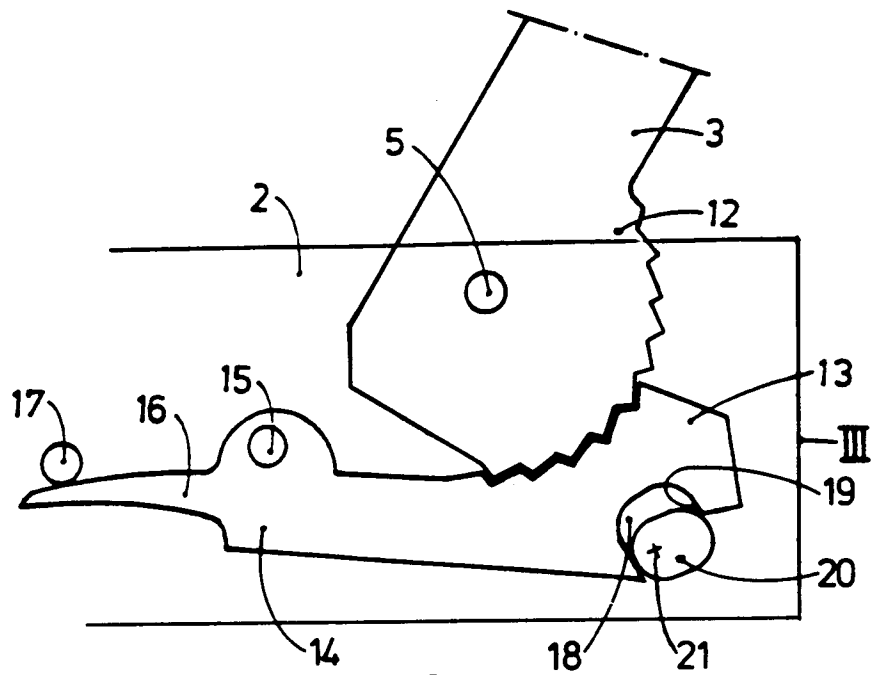


FIG. 4