(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 604 920 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.06.2013 Bulletin 2013/25

(51) Int Cl.:
F23L 11/00 *(2006.01)* ***F23M 11/02*** *(2006.01)*

(21) Application number: **12386016.5**

(22) Date of filing: **01.06.2012**

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

(30) Priority: **06.06.2011 GR 20110100335**

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(54) **Adjustable flue damper**

(57) This invention is an adjustable fume (**Figure 8**) damper (**Figure 1,2**).

The mechanism of this invention is divided in two functions. The first one is the automatic opening and closing of the damper, which is adjusted to the opening and the closing of the fireplace door. The second one is the adjustment of the damper tendency during the burning if the fuel with the fireplace door closed.

The damper tendency of this invention ranges in an operating range of 90 degrees and its positions are the open position, the closed position and the intermediate ones.

The place of the damper of this invention can be seen from the indication on the upper part of the door canvas.

The rotation of the screw of this invention (**Figure 6**) leads to the linear vertical movement of the nut (**Figure 23**). As a result, the quadrature axis (**Figure 21**) transmits motion through the cross-traffic link (**Figure 19**) to the stopper link (**Figure 15**) and thus through the rotating shaft (**Figure 14**) to the dumper (**opening and closing, Figure 7**).

This invention can be used to any kind of fireplaces.

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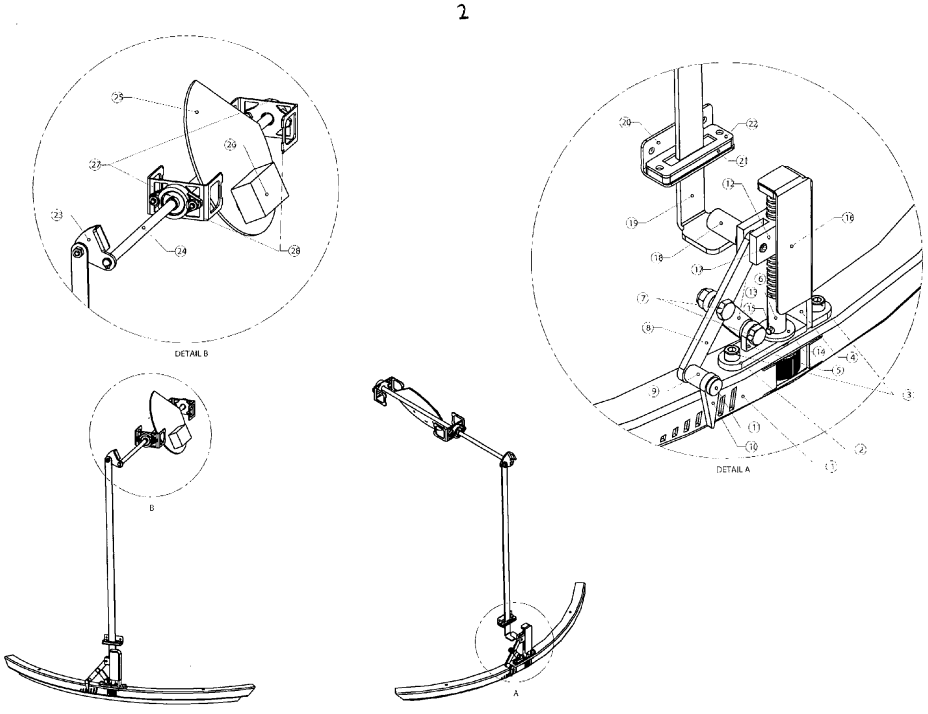


EP 2 604 920 A2

Description

[0001] This invention is an adjustable fume (**Figure 8**) damper (**Figure 1,2**).

[0002] Conventionally, for the exit of the fume of a fireplace people used either a chain or a cable. But both these features were manual. One day, an automatic chain was invented but it could be used only for the opening and the closing of the fireplace. As a result, either the air in the room, where the fireplace was built, was stuffy because of the fume, or the heat could not be kept in the room and the user was obliged to use more fuel, which was a high economic burden.

[0003] Now, this invention ensures that the exit of the fume will be adjusted in proper regular intervals so that it can be also ensured that there will be no heat loss.

[0004] This invention consists of a damper (**Figure 9**), a nail index **(Figure 10),** a maverick index **(Figure 11),** the support bearings **(Figure 12),** a counterweight dumper **(Figure 13),** a rotational transmission axis **(Figure 14),** a link stopper **(Figure 15),** a containment blade **(Figure 16),** an alignment flange **(Figure 17),** a flange restraint angle **(Figure 18),** a cross-traffic link **(Figure 19),** an antivibration ring **(Figure 20),** a cross-motion axis **(Figure 21),** a line nut **(Figure 22),** a drive nut **(Figure 23),** an adjustment screw dumper **(Figure 24),** an index **(Figure 25),** a transfer indication link **(Figure 26),** a compensation link **(Figure 27),** a base link **(Figure 28),** a support screw **(Figure 29),** the upper part of the door canvas **(Figure 30)** and the basis for the mechanism of the dumper.

[0005] The mechanism of this invention is divided in two functions. The first one is the automatic opening and closing of the damper, which is adjusted to the opening and the closing of the fireplace door. The second one is the adjustment of the damper tendency during the burning if the fuel with the fireplace door closed. During the automatic opening of the dumper together with the opening of the fireplace door, the switch for the automatic opening and the closing of the damper is on the upper part of the door canvas and works with the transverse motion of it. When the fireplace door opens, the switch releases a link, which rotates the damper axis and, as a result, the door opens. This allows the exit of the fume from the exit of the chimney and prevents their restitution to the room, where the fireplace is built. When the door of the fireplace closes, then the switch drifts the link which rotates the damper axis and, as a result, the link restitutes to its initial position. During the adjustment of the damper tendency at the time, when the fuel is burning, the switch helps to the adjustment of the quantity, which is going to be removed from the fireplace. As a result, there can be an exploitation of a part of the temperature of the burning fuel for the heat of the room and together a reduction of the fuel needed to be burnt for the heat of this room. The user also has the chance to control the rhythm of the burning fuel. This can be succeeded with the fluctuation of the content of oxygen and exhaust, which lies in the fireplace. The more exhaust is kept in the fireplace, having in mind that at the same time this invention is kept closed, the less oxygen enters the fireplace and, as a result, the burning time is reduced. The damper tendency ranges in an operating range of 90 degrees and its positions are the open position, the closed position and the intermediate ones. When the damper is in the open position, it is vertically positioned and has the best exhaust removal intersection. This can be succeeded by turning the screw **(Figure 24)** to the left, until it reaches the final point **(Figure 3).** In its closed position the damper is horizontally positioned and has the smaller intersection for the removal of the exhaust. This can be succeeded by turning the screw **(Figure 24)** to the right until it reaches the final point **(Figure 4).** The intermediate positions of the damper are these, which the damper can take between the opened one and the closed one. This can be succeeded by inducing the intersection of the damper and as a result the user can control the rhythm of the burning according to his wish. This adjustment can be succeeded by turning the screw **(Figure 24)** to the right for smaller intersection or to the left for larger intersection. Another advantage of this invention is that it can compensate for the difference of the fuel tension, which is seen when we have different types of chimneys.

[0006] The place of the damper can be seen from the indication on the upper part of the door canvas **(Figure 5).** This indication helps us to know the place of the damper so that the user can adjust it the way he likes. On the upper part of the door canvas there are notches, each one of them with different height. Their indication is given by a vertical index **(Figure 25).** The first notch is the one with the smaller height, which indicates the closed position of the damper and the last notch indicates its opened position. The rotation of the screw **(Figure 6)** leads to the linear vertical movement of the nut **(Figure 23).** As a result, the quadrature axis **(Figure 21)** transmits motion through the cross-traffic link **(Figure 19)** to the stopper link **(Figure 15)** and thus through the rotating shaft **(Figure 14)** to the dumper **(opening and closing, Figure 7).** Also the same motion of the screw has the result that the combination of the transport indicator in conjunction with the compensation link transmit linear horizontal movement to the index.

[0007] This invention can be used to any kind of fireplaces.

Claims

1. This invention is an adjustable fume **(Figure 8)** damper **(Figure 1,2,).**

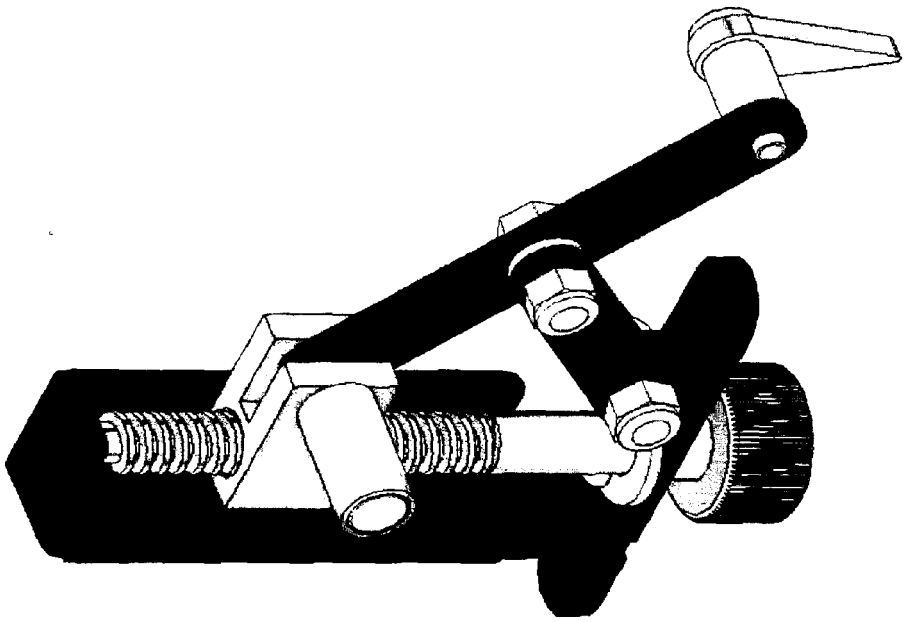
2. The mechanism of this invention is divided in two functions. The first one is the automatic opening and closing of the damper, which is adjusted to the opening and the closing of the fireplace door. The second one is the adjustment of the damper tendency during the burning if the fuel with the fireplace door closed.

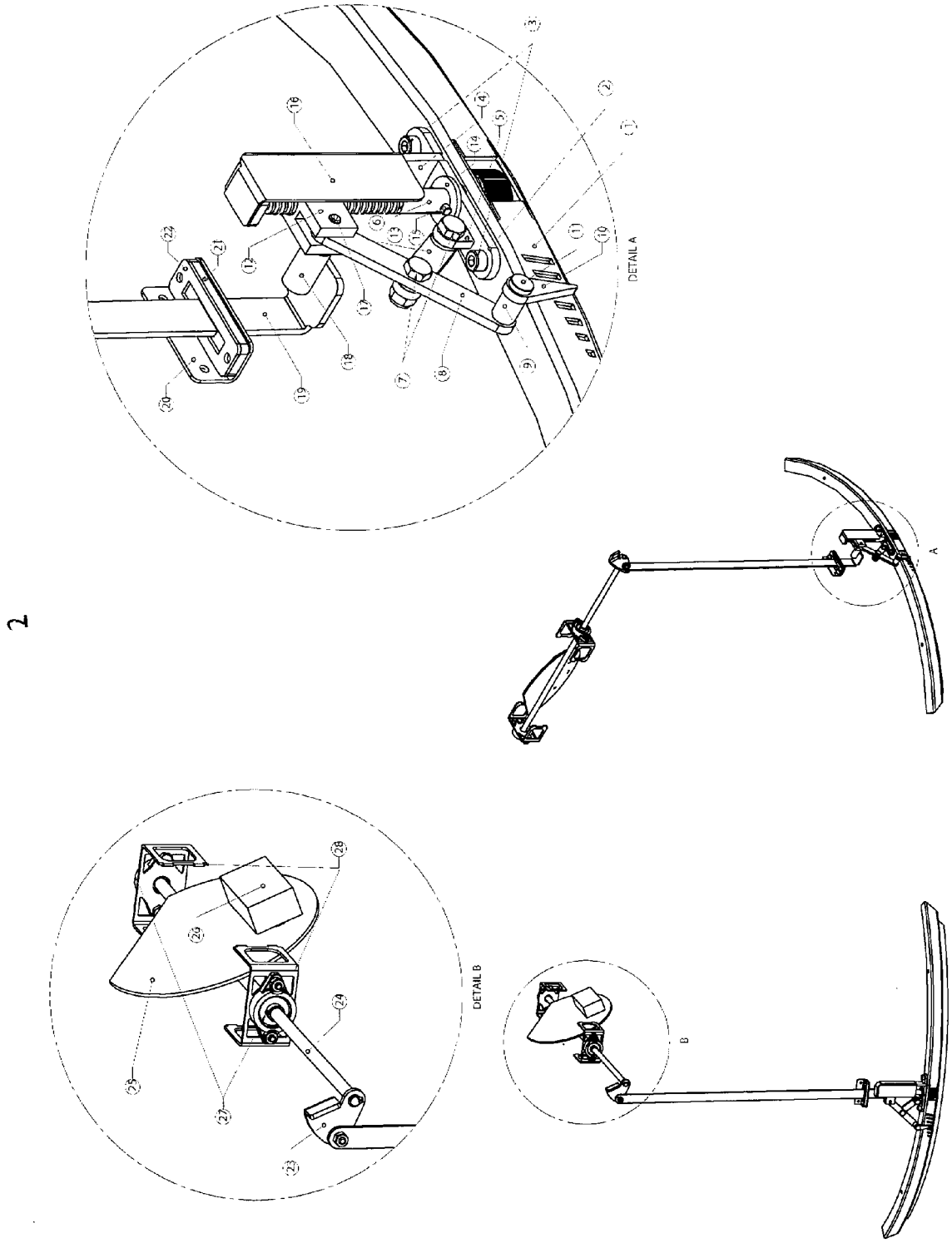
3. The user of this invention also has the chance to control the rhythm of the burning fuel.

4. The damper tendency of this invention ranges in an operating range of 90 degrees and its positions are the open position, the closed position and the intermediate ones.

5. The place of the damper of this invention can be seen from the indication on the upper part of the door canvas.

6. The rotation of the screw of this invention leads to the linear
vertical movement of the nut **(Figure 23).** As a result, the quadrature axis **(Figure 21)** transmits motion through the cross-traffic link **(Figure 19)** to the stopper link **(Figure 15)** and thus through the rotating shaft **(Figure 14)** to the dumper **(opening and closing, Figure 7).**





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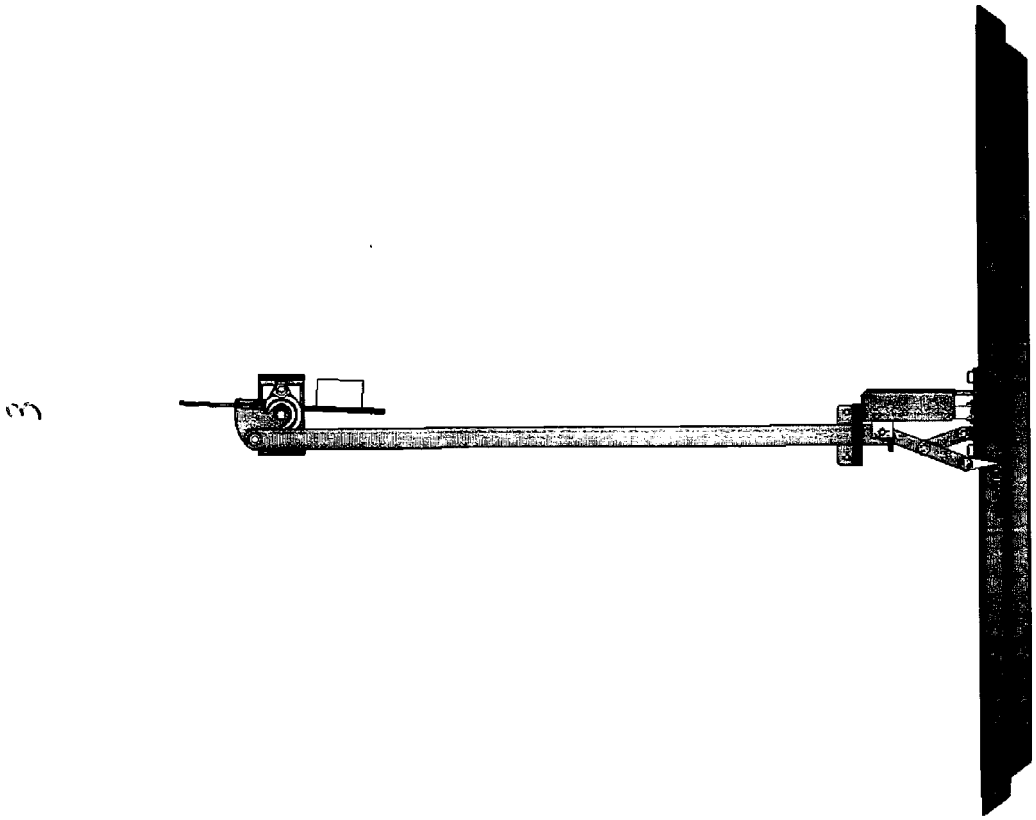

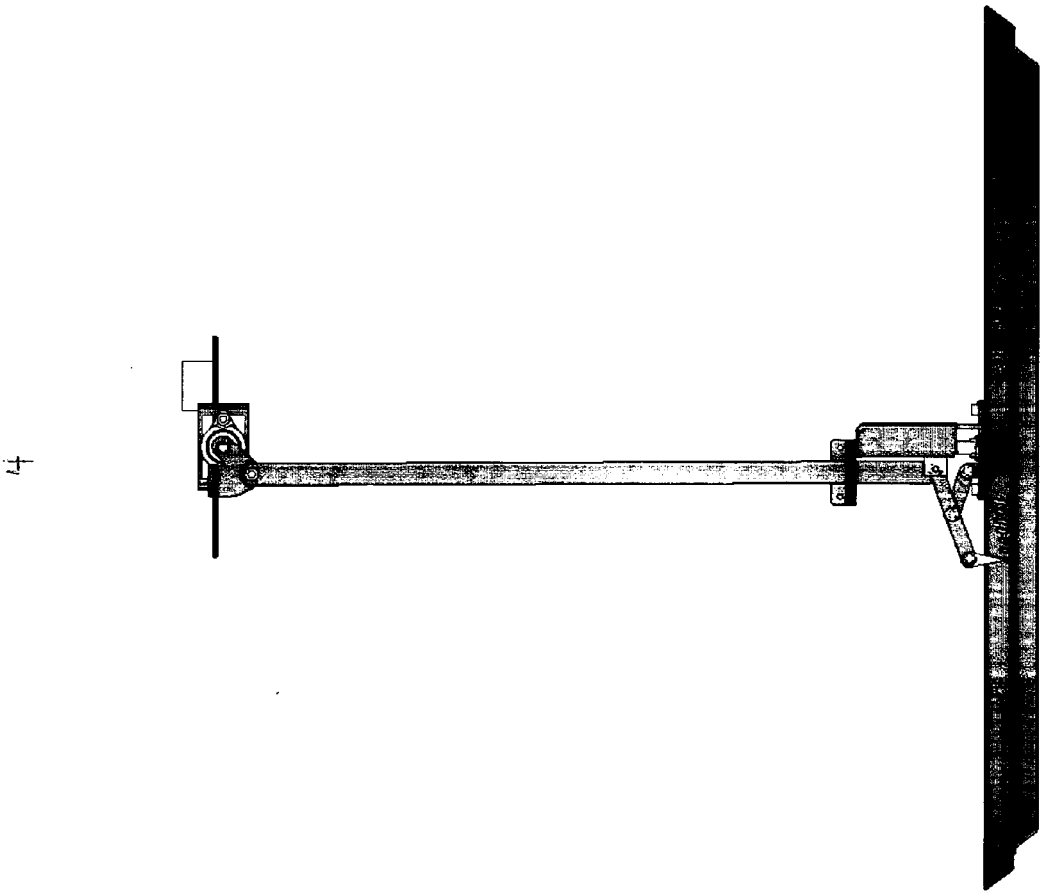

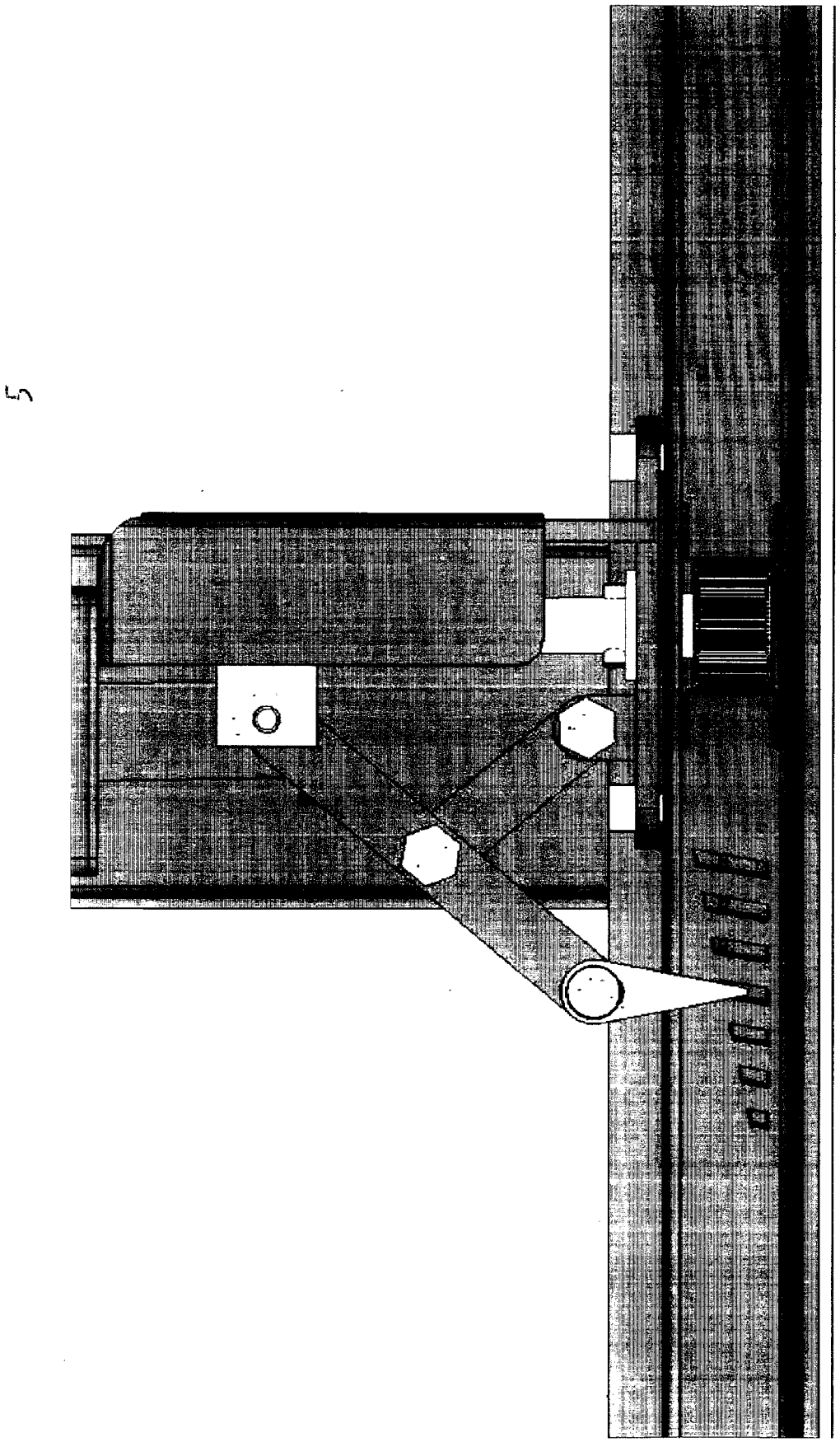

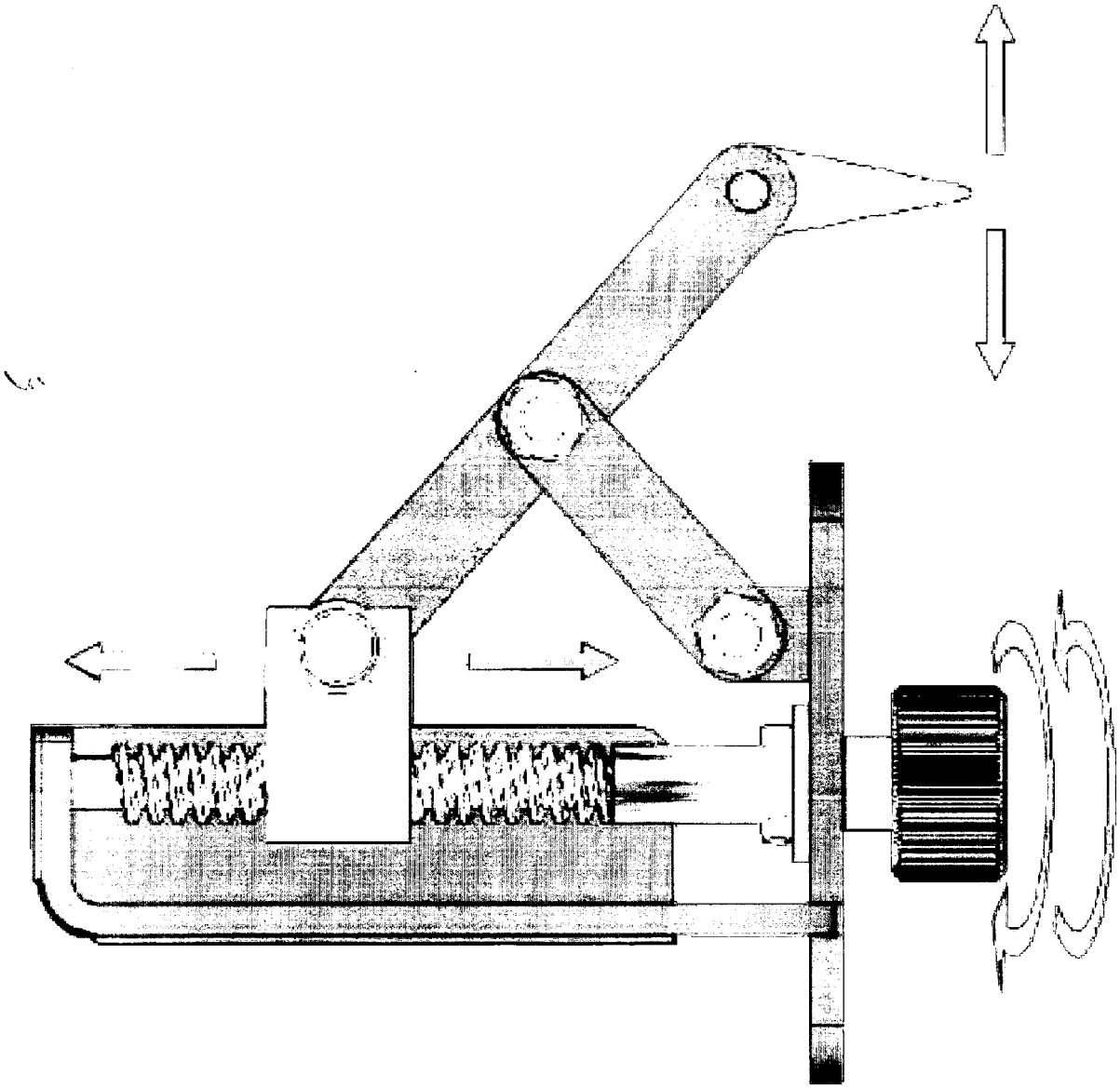

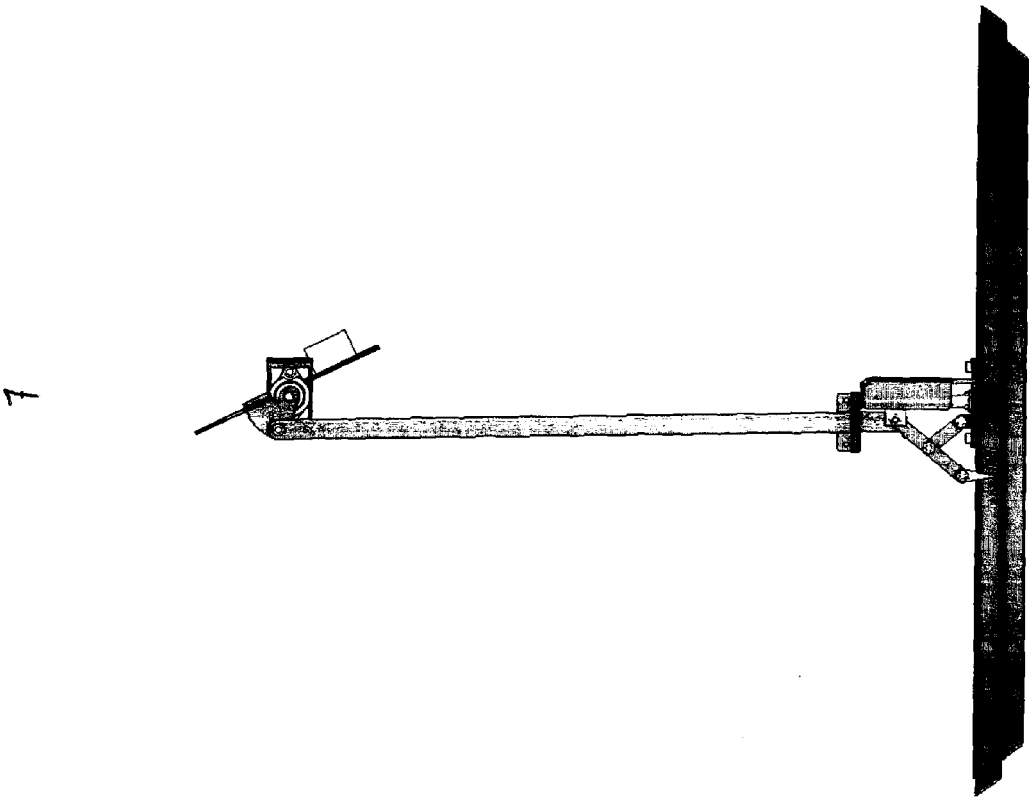


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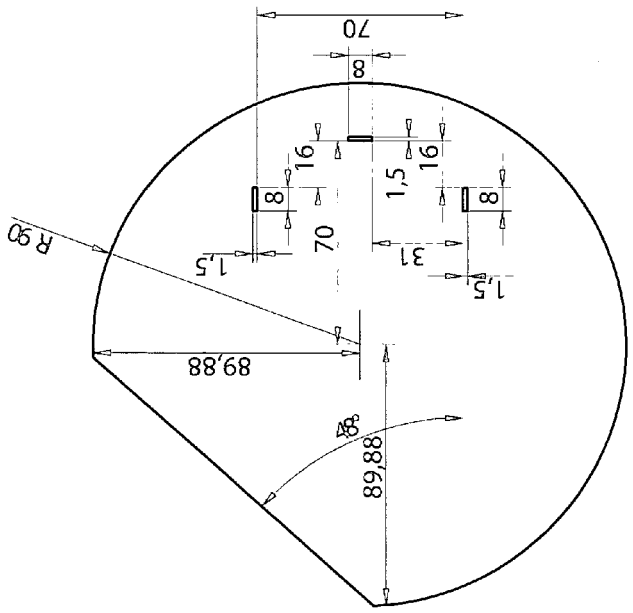
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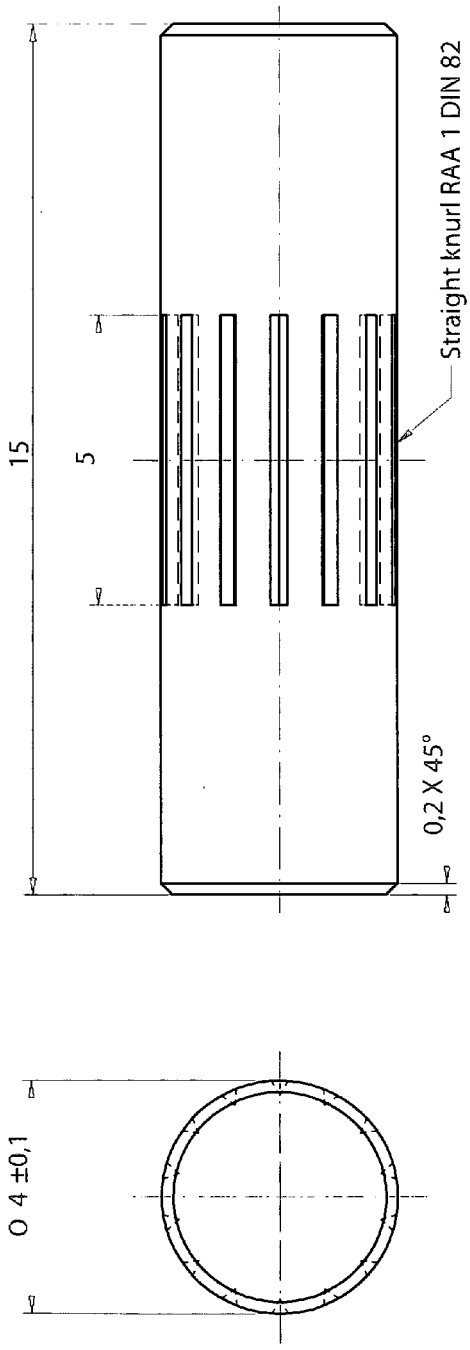
8
16
16
1,5
8
8
70
31
1,5
1,5
R90
89,88
48°
89,88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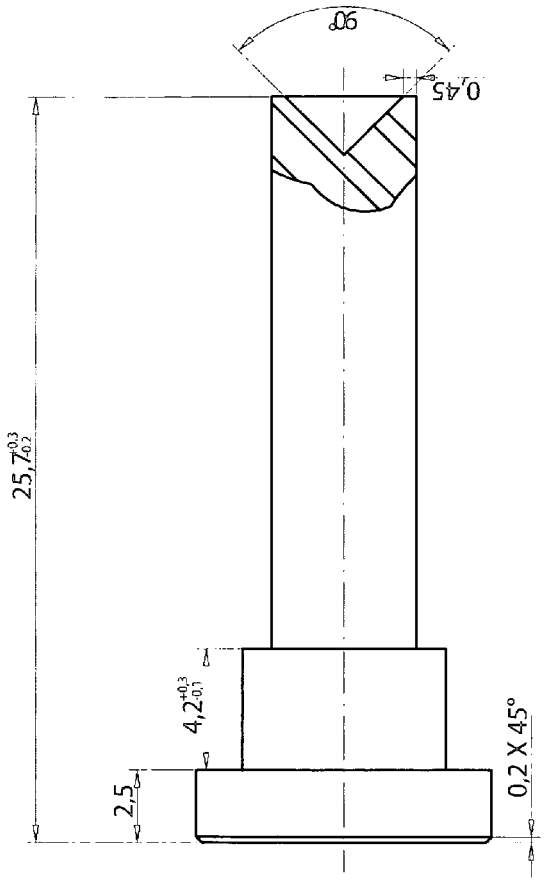
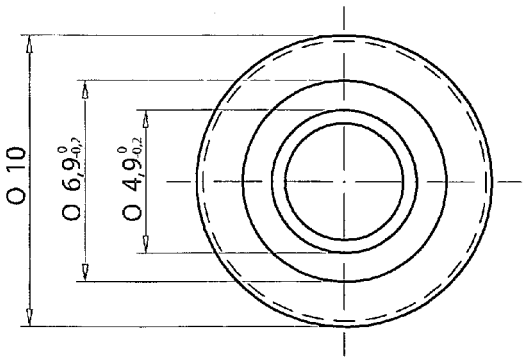
5
0,2 X 45°
O 4 ±0,1

1o





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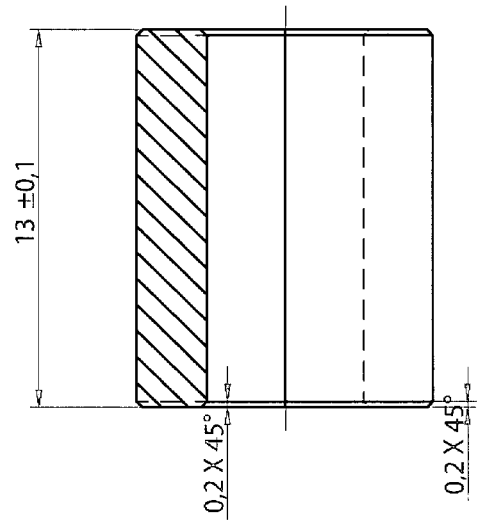

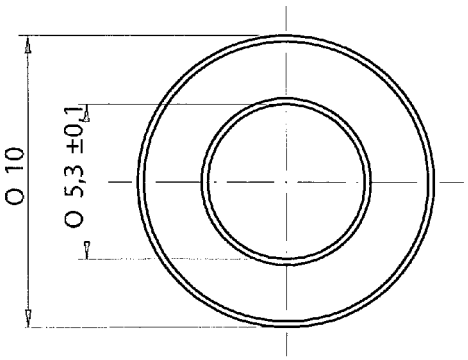

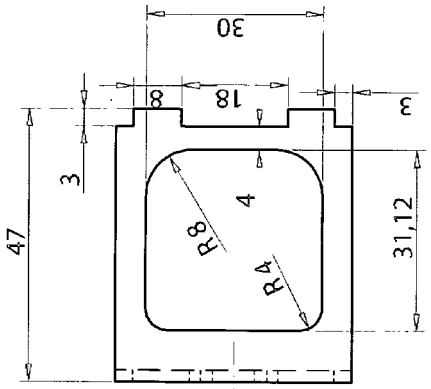

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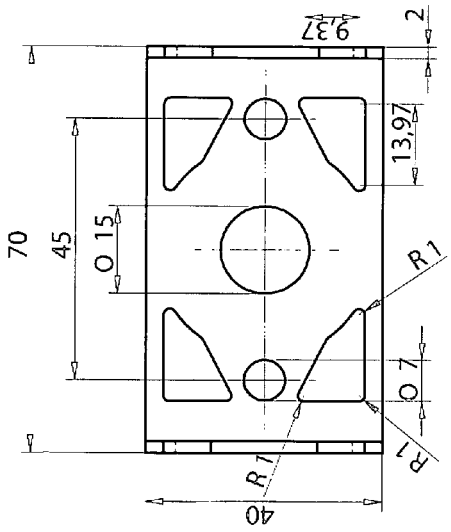

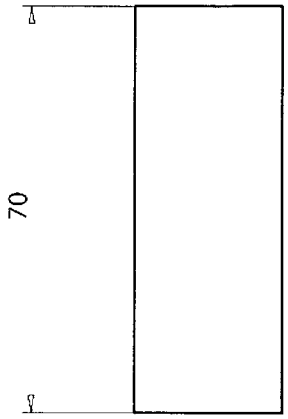
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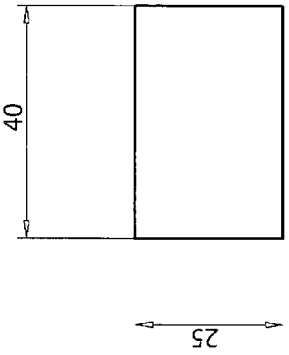
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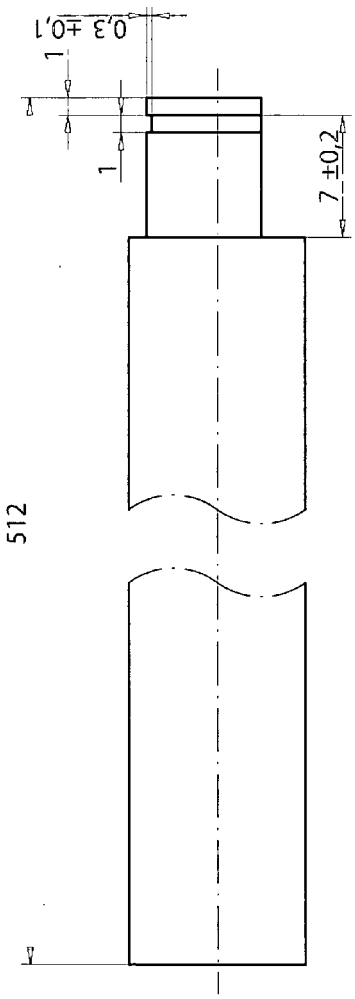
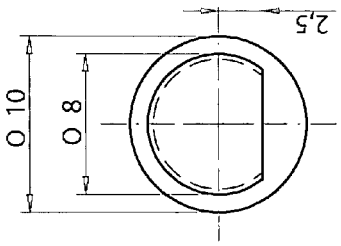
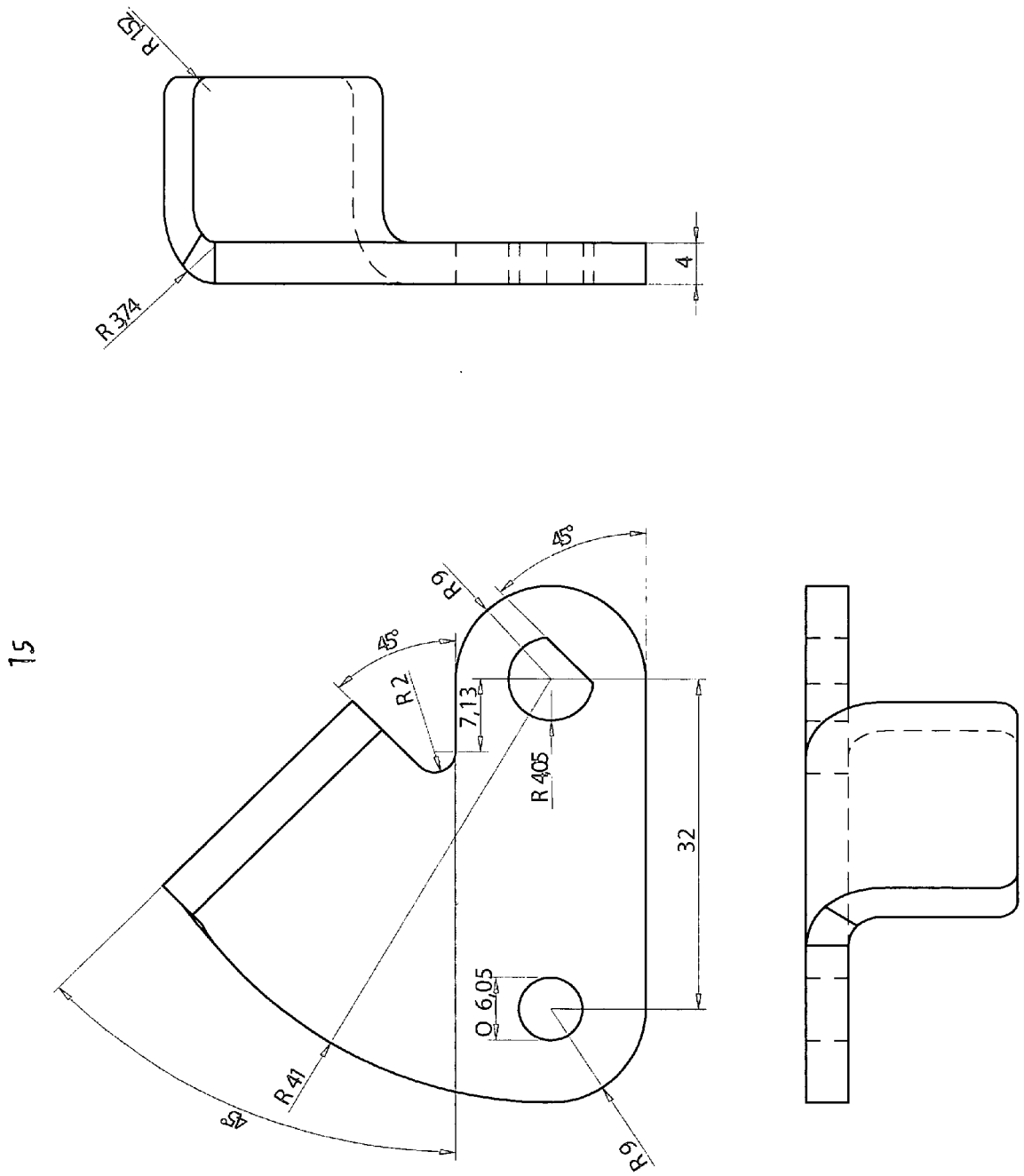
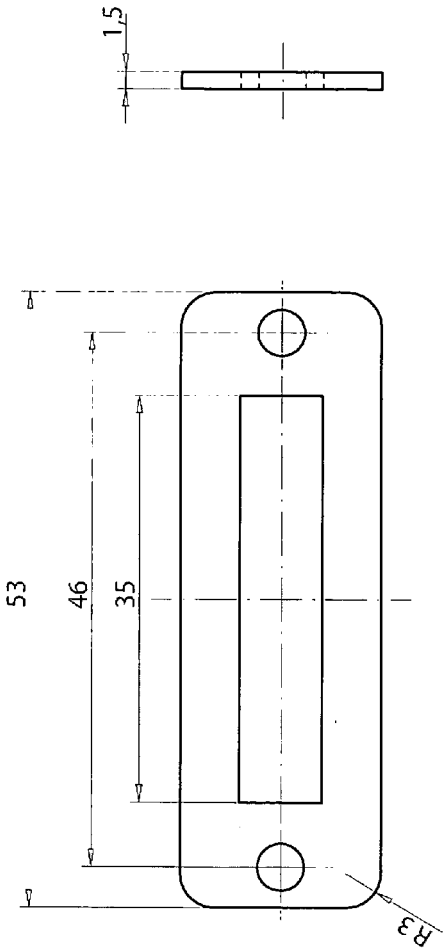
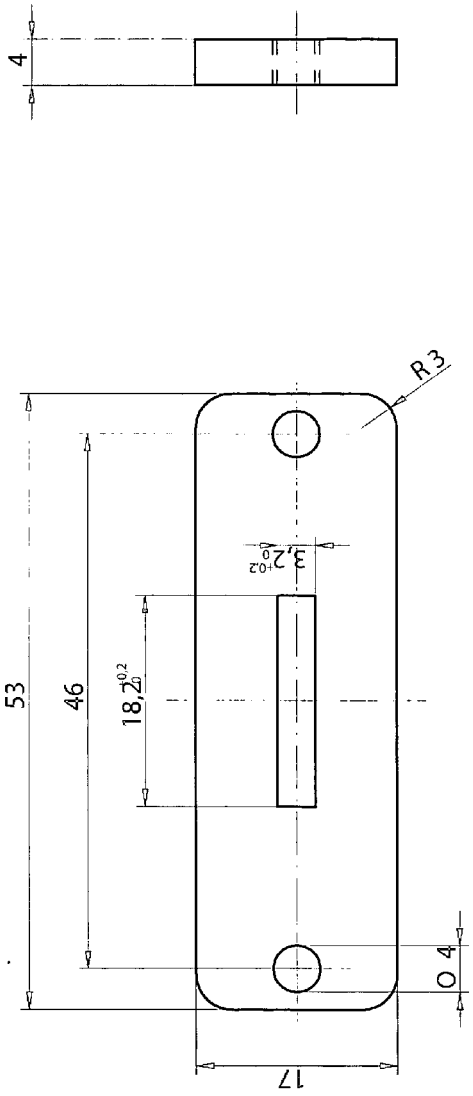





R 152
R 374
4
45°
R 6
45°
R 2
7,13
R 405
32
O 6,05
R 41
45°
R 6
1,5

16




4
R3
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53
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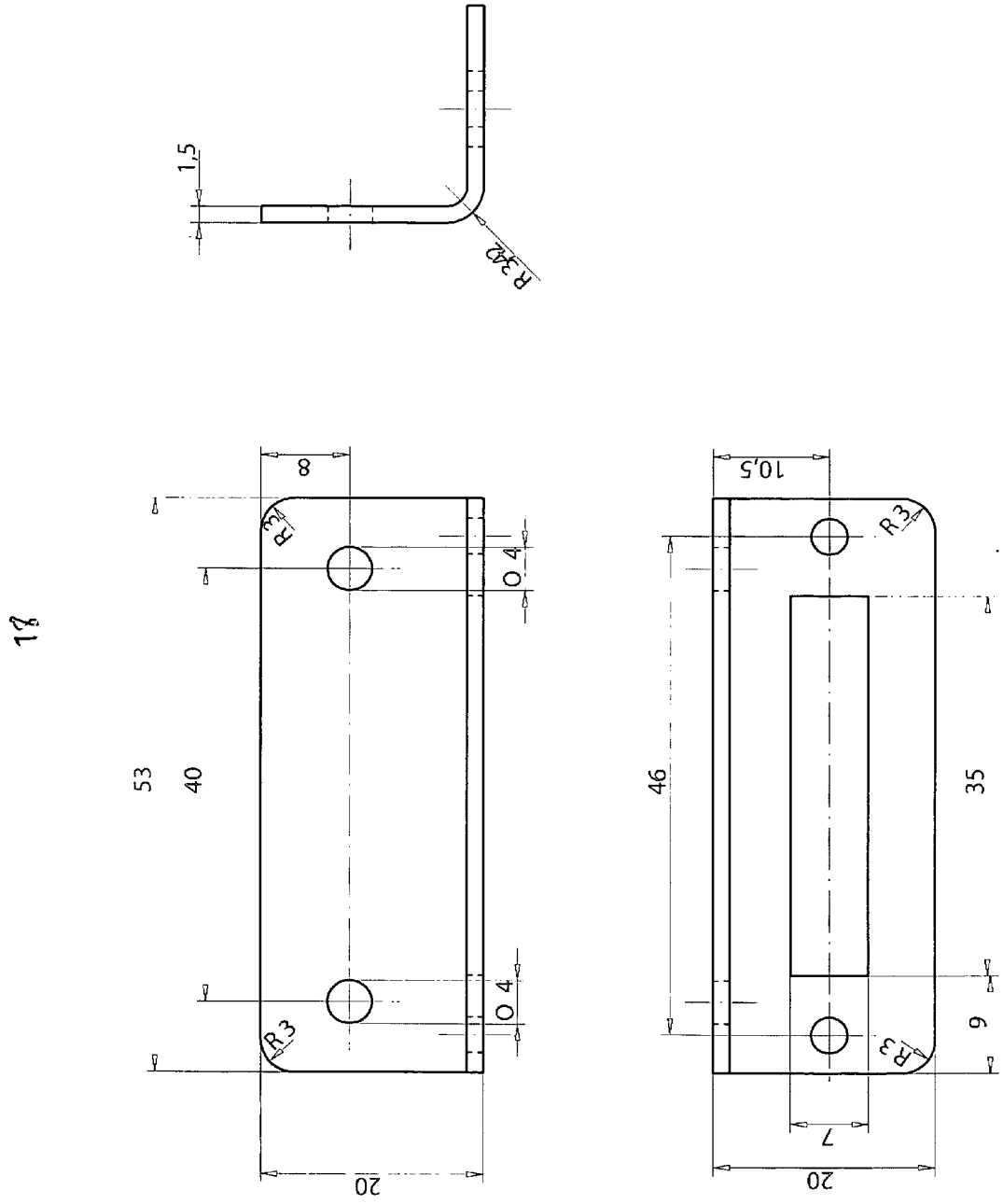

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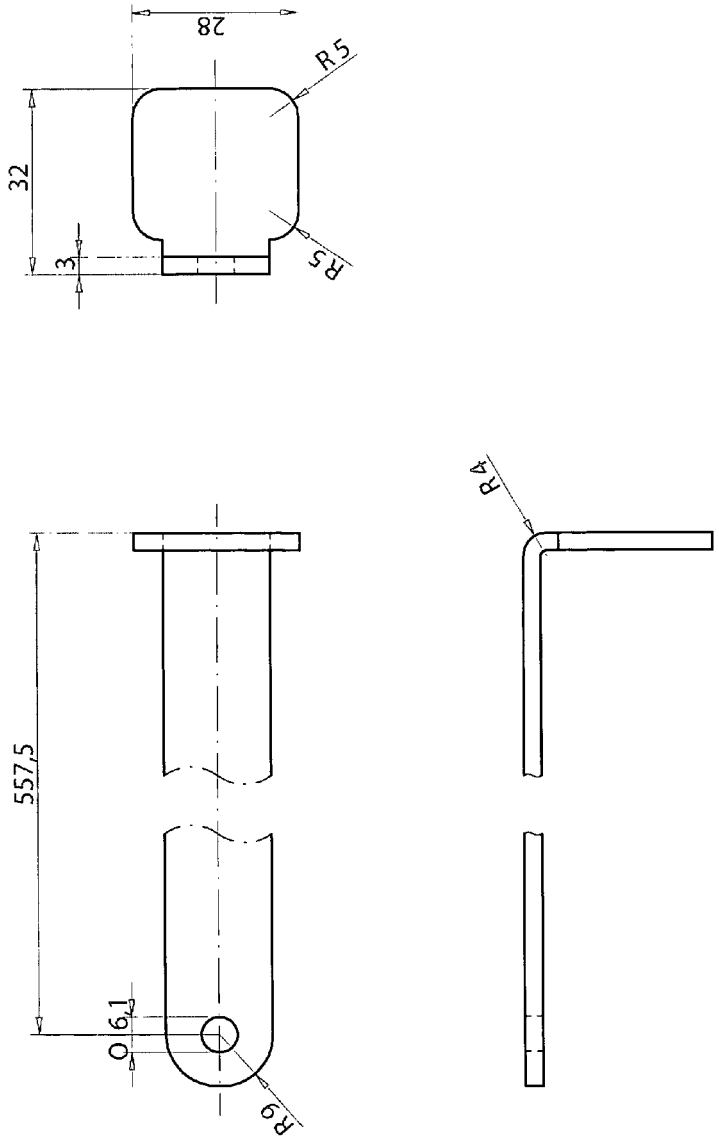

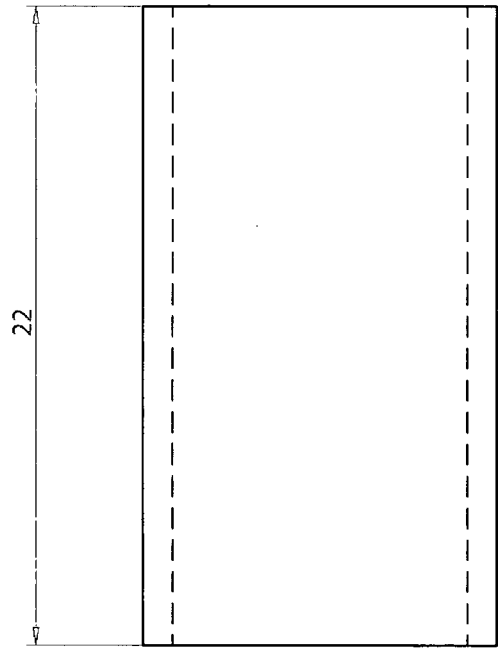

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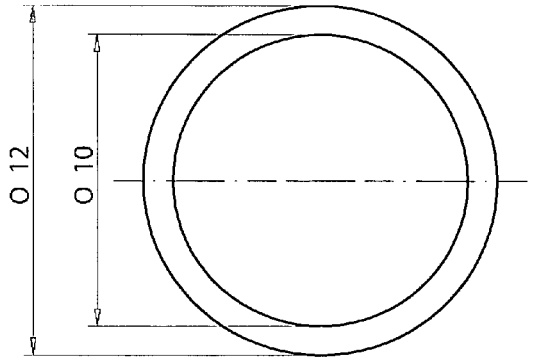

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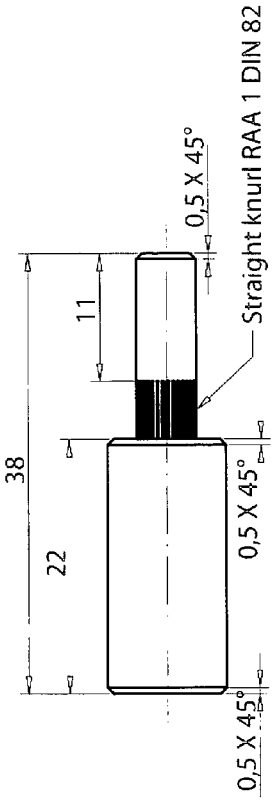
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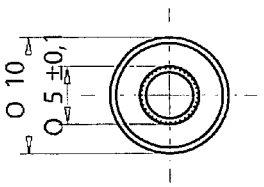

O 10
O 5 ±0,1

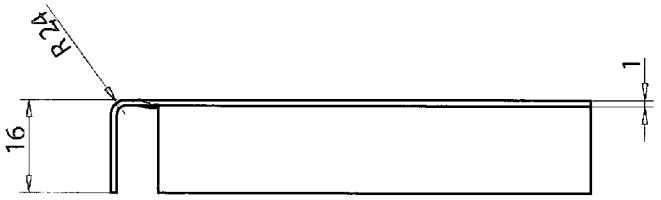
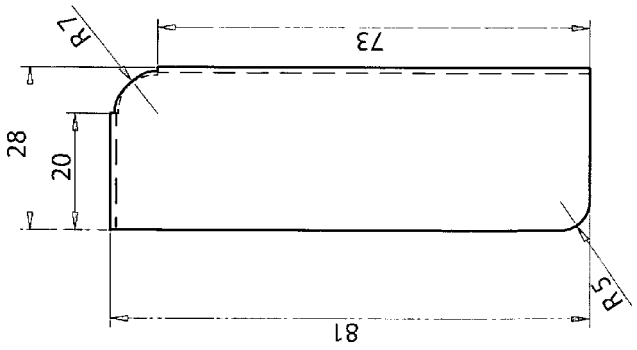
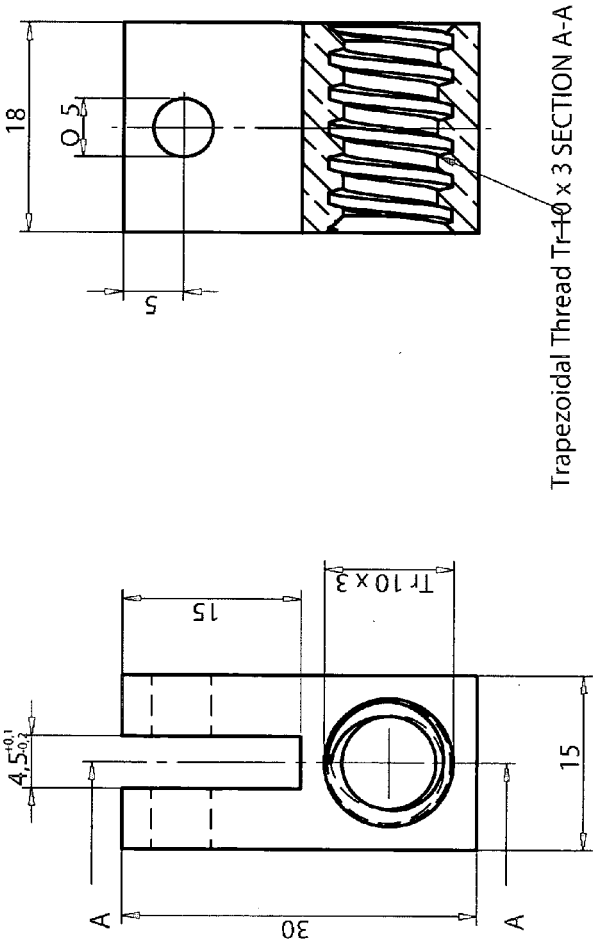
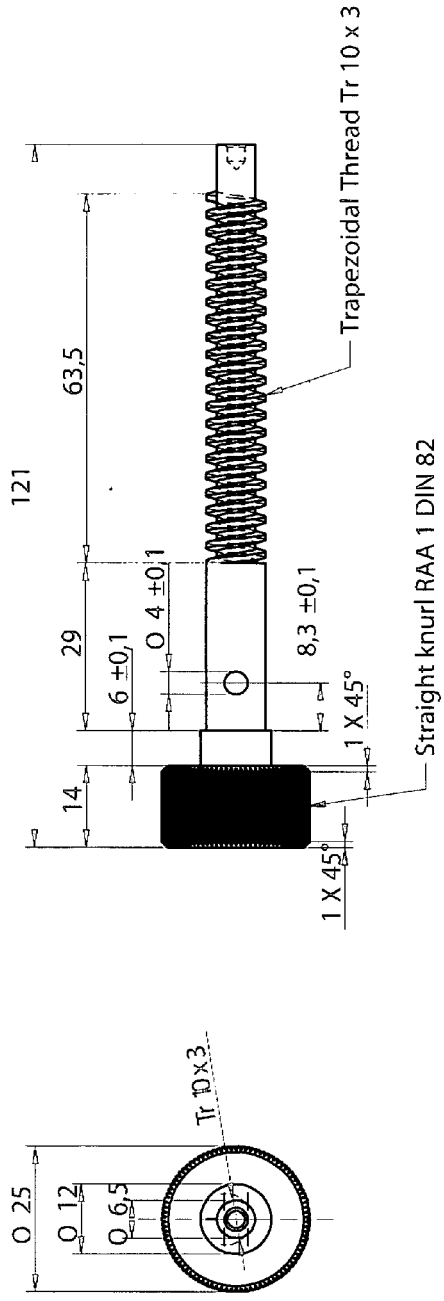


Fig. 2




18
Ø 5
5
Trapezoidal Thread Tr 10 x 3 SECTION A-A
Tr 10 x 3
15
4,5 +0,1 -0,2
15
A
30
A

24


Trapezoidal Thread Tr 10 x 3
121
63,5
29
6 ±0,1
Ø 4 ±0,1
8,3 ±0,1
1 X 45°
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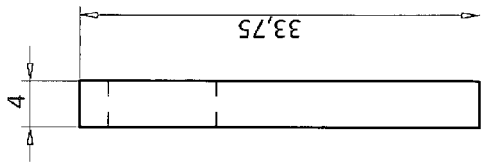
1 X 45°
Tr 10x3
Ø 25
Ø 12
Ø 6,5



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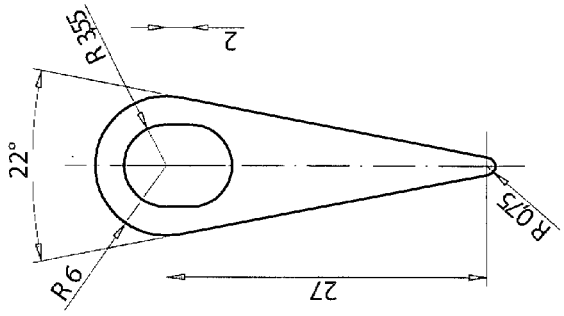
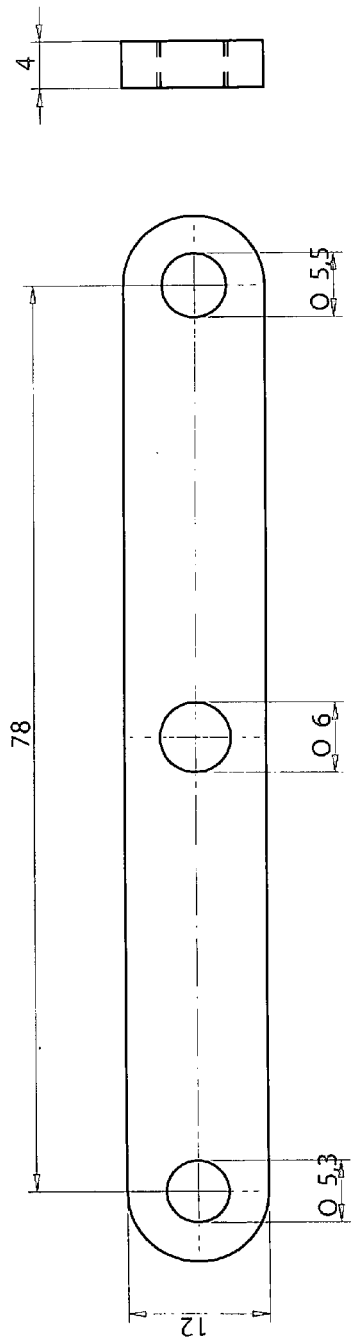
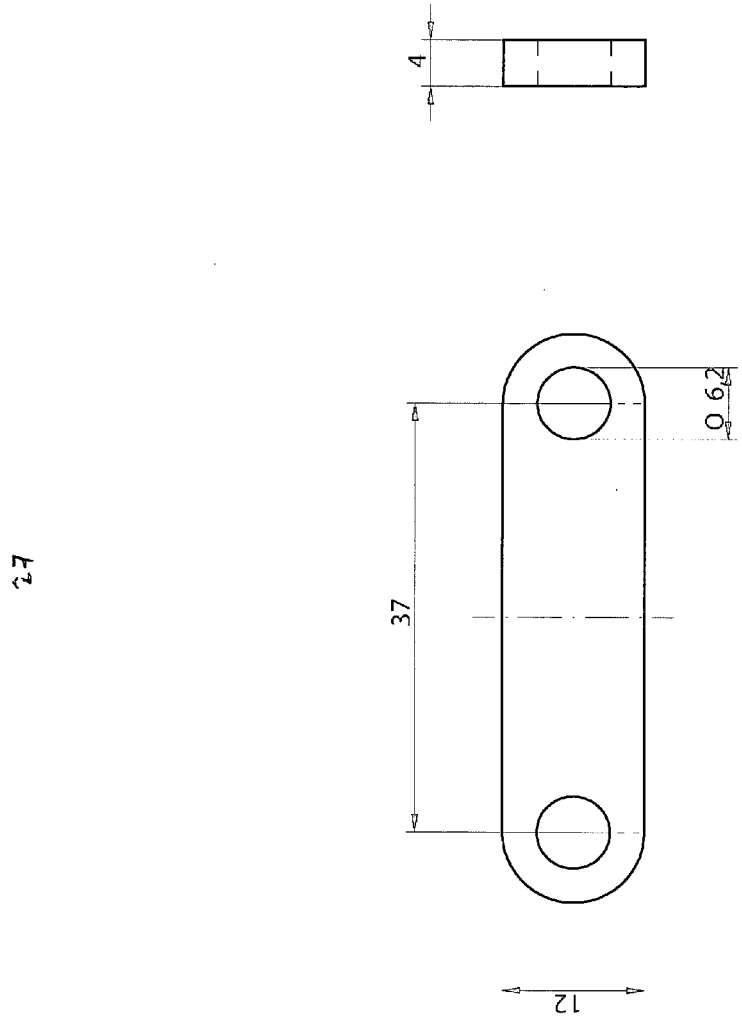


Fig. 1b





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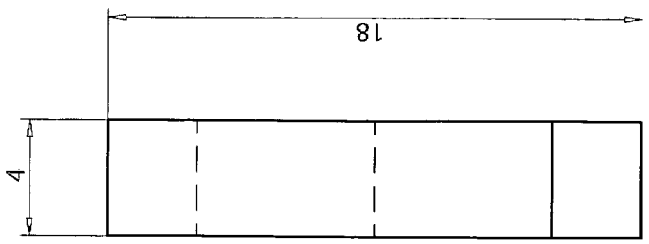
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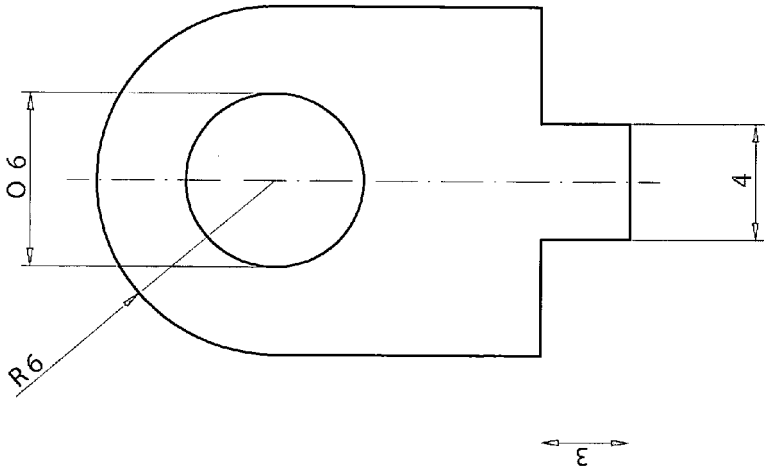
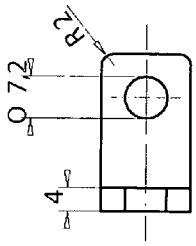
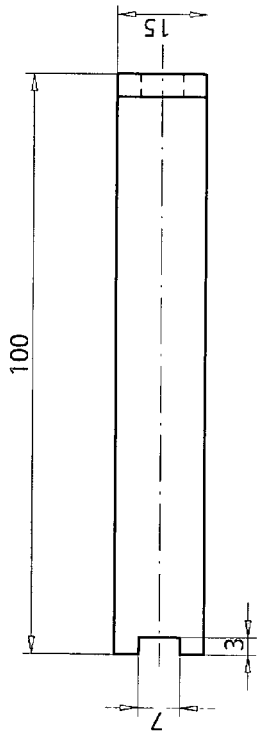

Ø6
4
R6
3





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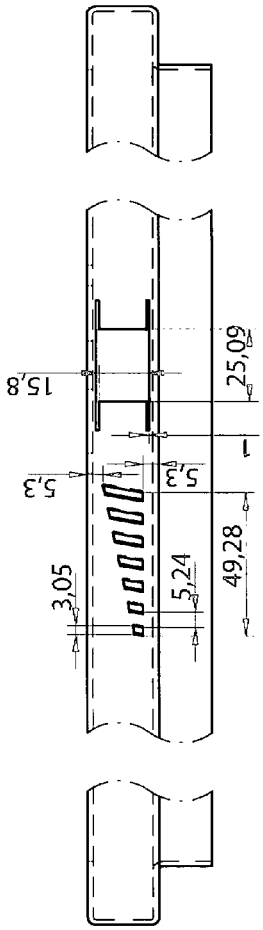

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