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

(11) Publication number: **0 223 528**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **86308716.9**

(51) Int. Cl.⁴: **B05B 3/14**

(22) Date of filing: **07.11.86**

(30) Priority: **07.11.85 US 795970**

(43) Date of publication of application:
27.05.87 Bulletin 87/22

(84) Designated Contracting States:
DE GB IT NL

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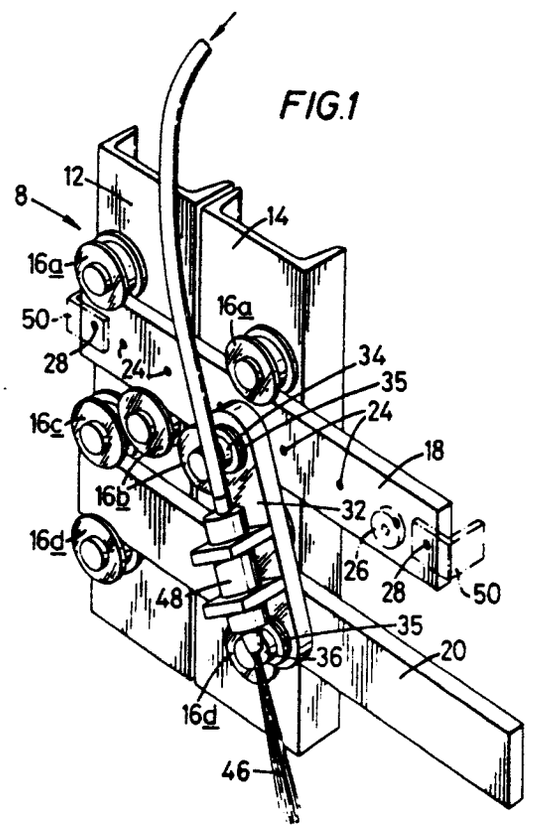
(54) Oscillating spray apparatus.

(57) An oscillating spray apparatus (8) comprises a first bar (18) and a second bar (20) which are connected by a member (32) which carries a nozzle - (48). The reaction force from the spray (46) moves the first bar (18) and the second bar (20) to the left as shown in Figure I until the first bar (18) is restrained. Movement of the second bar (20) continues under the influence of spray (46) until the spray (46) is vertical and thereafter due to the inertia of the second bar (20). This reverses the direction of the spray (46). The first bar (18) and the second bar (20) then return to their initial positions where the cycle is repeated. The travel of the first bar (18) can be limited by stops on the end of the first bar (18) or by an external housing (40).

FIG.1



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Oscillating Spray Apparatus

This invention relates to an oscillating spray apparatus.

According to the present invention there is provided a frame; a first support means slidably mounted on said frame; stop means for limiting the travel of said first support means; a second support means slidably mounted on said frame; and a member for holding fluid discharge means connected to said first support means and said second support means; the arrangement being such that when a nozzle is mounted on said member and fluid is discharged therefrom, said first support means, said second support means and said member carrying said discharge means will move in one sense until said first support means engages said stop means, movement of said second support means relative to said first support means thereafter continuing so that said member moves into a position in which the thrust from said fluid causes said first support means, said second support means, said member and said discharge nozzle to move in the opposite sense.

Preferably, the first support means and the second support means are bars which are substantially parallel to one another.

In one embodiment, the means for limiting the travel of said first support means comprises abutment members mounted on said first support means.

In another embodiment, the means for limiting the travel of said first support means comprises a housing.

If desired, means may be provided for adjusting the frequency of oscillations of said oscillating spray apparatus. Such means may comprise a weight mountable on one of said first support means and said second support means.

Preferably, at least one of said first support means and said second support means is provided with a plurality of holes for the selective attachment of one or more weights.

Advantageously, rollers are mounted on said frame for supporting said first support means and said second support means. At least some of said rollers are preferably provided with flanges for guiding said first support means and said second support means.

For a better understanding of the invention reference will now be made, by way of example, to the accompanying drawings, in which:-

Figure I is a perspective view of an oscillating spray apparatus in accordance with the invention;

Figure 2 is a side view of the oscillating spray apparatus shown in Figure I with parts removed for clarity;

Figure 3 is a side view of a roller;

Figure 4 is a fragmentary plan view of the oscillating spray apparatus shown in Figure I; and

Figures 5 to 8 depict the oscillating spray apparatus in operation.

Referring to Figures I and 2 of the drawings there is shown an oscillating spray apparatus which is generally identified by the reference numeral 8. The apparatus 8 has a frame which comprises two vertical channel members I2, I4 each of which supports four rollers I6a, I6b, I6c, I6d.

A first support means comprising a first bar I8 is disposed between the rollers I6a and I6b whilst a second support means comprising a second bar 20 is disposed between the rollers I6c and I6d. Each roller I6a, I6b, I6 c, I6d is provided with flanges 22 - (Figure 3) which guide their associated bars I8 and 20.

The first bar I8 and second bar 20 are each prvided with a series of holes 24 which can be utilized to receive and hold weights to effect changes in the frequency of the oscillating action. A weight 26 is shown mounted on first bar I8. The holes 24 can also be utilized to receive and hold optional abutment members to limit the travel of the first bar I8 and the second bar 20.

One form of abutment member 30 is shown mounted in end hole 28 on the right hand end of the second bar 20 whilst another form of abutment member 50 is shown mounted in the end holes 28 of the first bar I8.

A member 32 extends between the first bar I8 and the second bar 20. The member 32 is piovtably mounted on the first bar I8 via a pin 34 which passes through a hole in the upper portion of the member 32 and is secured fast in the first bar I8. Washers 35 are provided to either side of the member 32 as shown in Figure 4. The member 32 is also pivotably mounted on the second bar 20 via a pin 36. However, the lower portion of the member 32 is provided with a slot 37.

Referring now to Figures 5 to 8, movement of the first bar I8 and the second bar 20 is limited by a housing 40 having a stepped wall, the upper portion 42 of which limits the travel of the first bar I8 and the lower portion 44 of which limits the travel of the second bar 20.

Starting from the position shown in Figure 5, a spray 46 of fluid is discharged from a nozzle 48 secured to the member 32. The spray 46 makes an angle α with respect to the vertical and conse-

quently there is a reaction force F having a horizontal component Fx which urges the first bar I8 and the second bar I8 to the right as viewed in Figure 5.

When the first bar I8 reaches the rightmost limit of its travel (Figure 6) it abuts the upper portion 42 of the housing 40. However, the second bar 20 continues to move under the influence of the spray 46. As the second bar 20 moves relative to the first bar I8 the angle decreases to 0°. At this point the horizontal component Fx of the reaction force F is zero. However, the inertia of the second bar 20 carries it to the position shown in Figure 7 where the second bar 20 abuts the lower portion 44 of the hpusing 40. The thrust of the spray 46 then drives the first bar I8 and the second bar 20 to the left as viewed in Figure 7 until it reaches the position shown in Figure 8 where the first bar I8 abut the upper portion 42 of the housing 40. As before, the second bar 20 continues moving to the left until it abuts the lower portion 44 of the housing 40. The cycle is then repeated.

It will be appreciated that the housing 40 can be replaced by stops on the first bar such as abutment member 50. Stops such as abutment member 30 on the second bar 20 are optional since the overall movement of the second bar 20 with respect to the first bar I8 is limited by the member 32 and the slot 37.

Claims

I. An oscillating spray apparatus characterized in that it comprises:
a frame (I2, I4);
a first support means (I8) slidably mounted on said frame (I2, I4);
stop means (40; 50) for limiting the travel of said first support means;
a second support means (20) slidably mounted on said frame (I2, I4); and
a member (32) for holding fluid discharge means - (48) connected to said first support mean (I8) and said second support means (20); the arrangement being such that when a nozzle is mounted on said member (32) and fluid (46) is discharged therefrom, said first suppport means (I8), said second support means (20) and said member (32) carrying said discharge means (48) will move in one sense until said first support means (I8) engages said stop means (40; 50), movement of said second support means (20) relative to said first support means (I8) therafter continuing so that said member (32) moves into a position in which the thrust from said fluid (46) causes said first support means (I8), said second support means (20), said member (32) and said discharge nozzle (48) to move in the opposite sense.

2. An oscillating spray apparatus as claimed in Claim I, characterized in that said first support means (I8) and said second support means (20 are bars which are substantially parallel to one another.

3. An oscillating spray apparatus as claimed in Claim I or 2, wherein said means for limiting the travel of said first support means (I8) comprises abutment members (50) mounted on said first support means (I8).

4. An oscillating spray apparatus as claimed in Claim I or 2, wherein said means for limiting the travel of said first support means (I8) comprises a housing (40).

5. An oscillating spray apparatus as claimed in any preceding Claim, including means (26) for adjusting the frequency of oscillations of said oscillating spray apparatus (8)

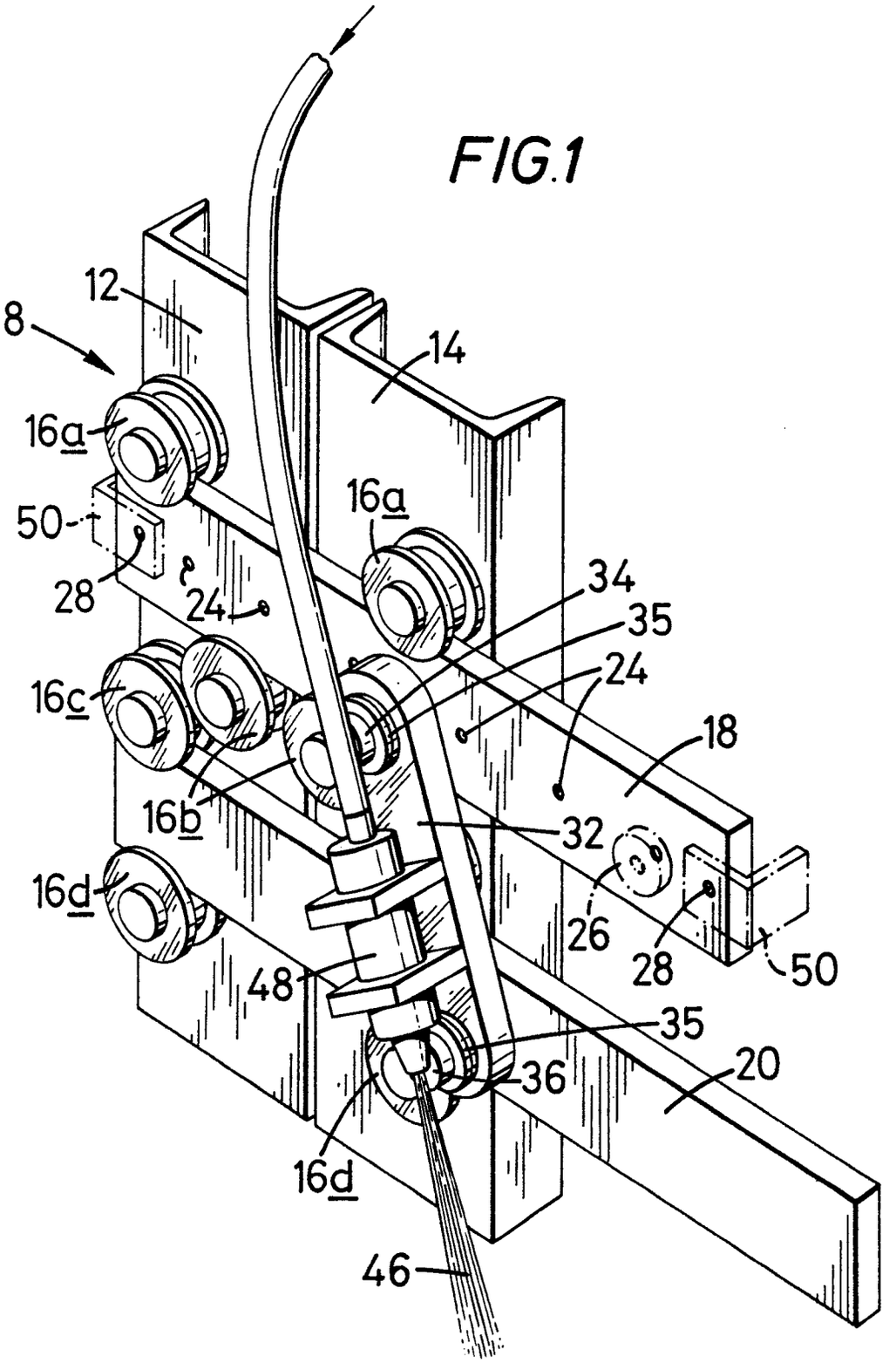
6. An oscillating spray apparatus as claimed in Claim 5, wherein said means (26) comprises a weight (26) mountable on one of said first support means 8I8) and said second support means (20).

7. An oscillating spray apparatus as claimed in any preceding Claim, wherein at least one of said first suppot means (I8) and said second support means (20) is provided with a plurality of holes for the selective attachment of one or more weights.

8. An oscillating spray apparatus as claimed in any preceding Claim, including rollers (I6a, I6b, I6c, I6d) mounted on said frame (I2, I4) for supporting said first support means (I8) and said second support means (20).

9. An oscillating spray apparatus as claimed in Claim 8, wherein at least some of said rollers (I6a, I6b, I6c, I6 d are provided with flanges for guiding said first support means (I8) and said second support means (20).

FIG.1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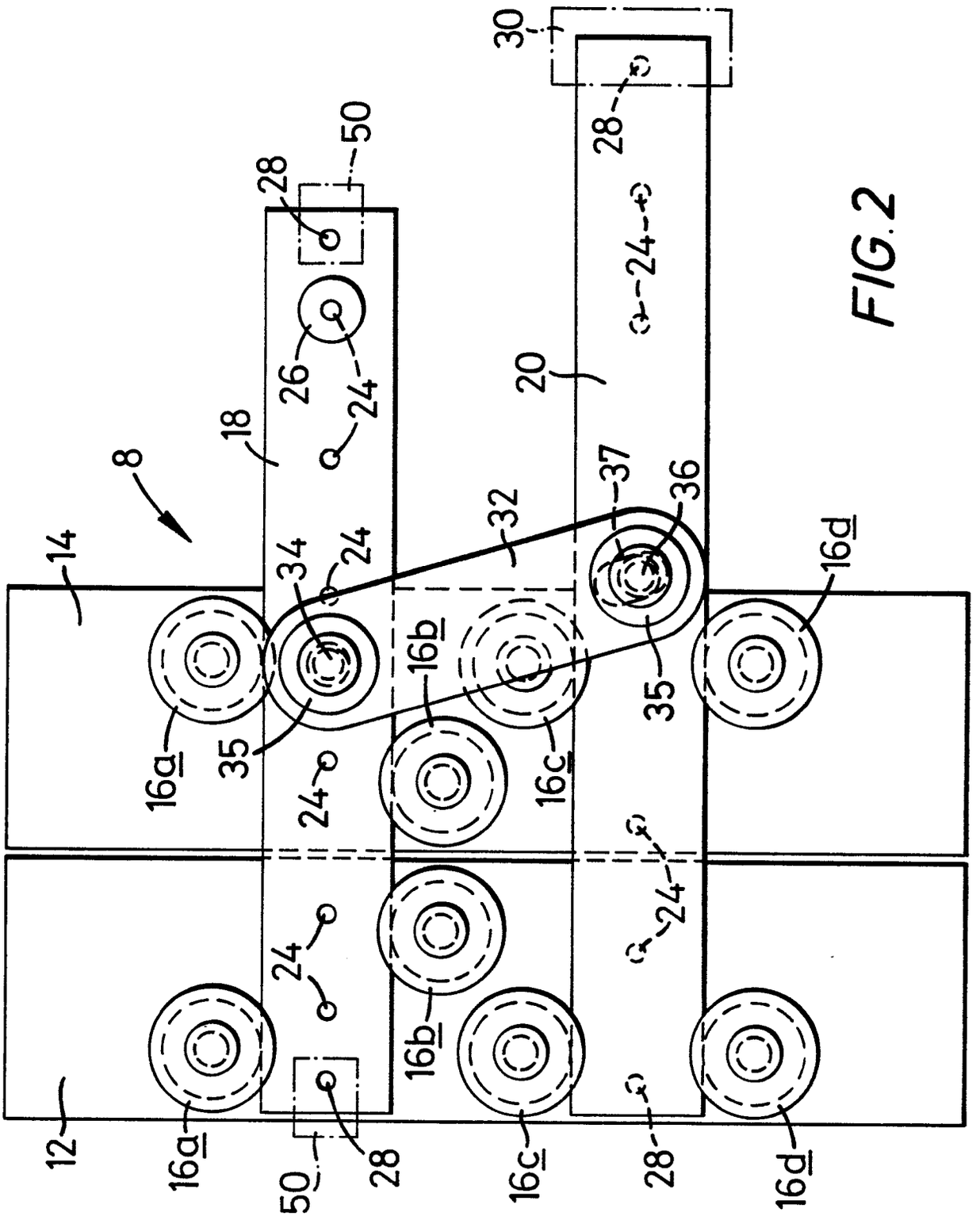

FIG. 2

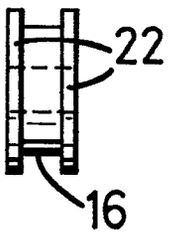

FIG.3

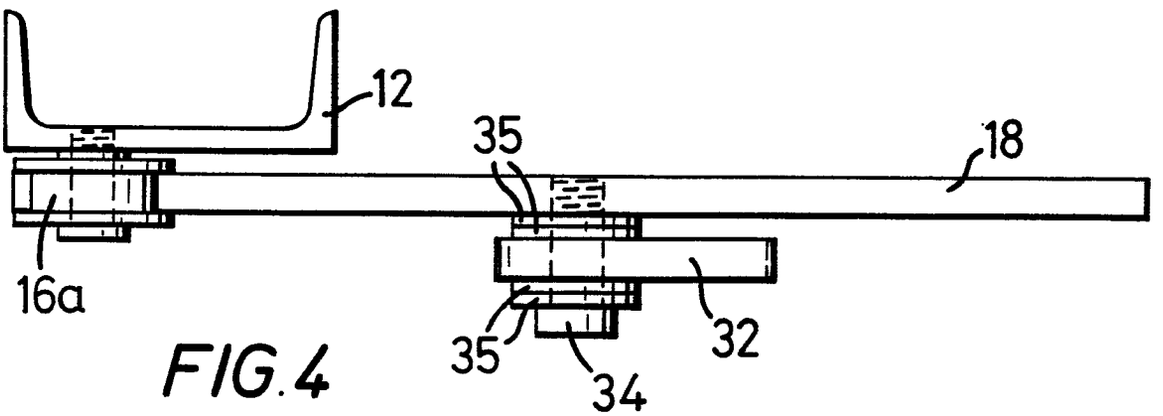

FIG.4

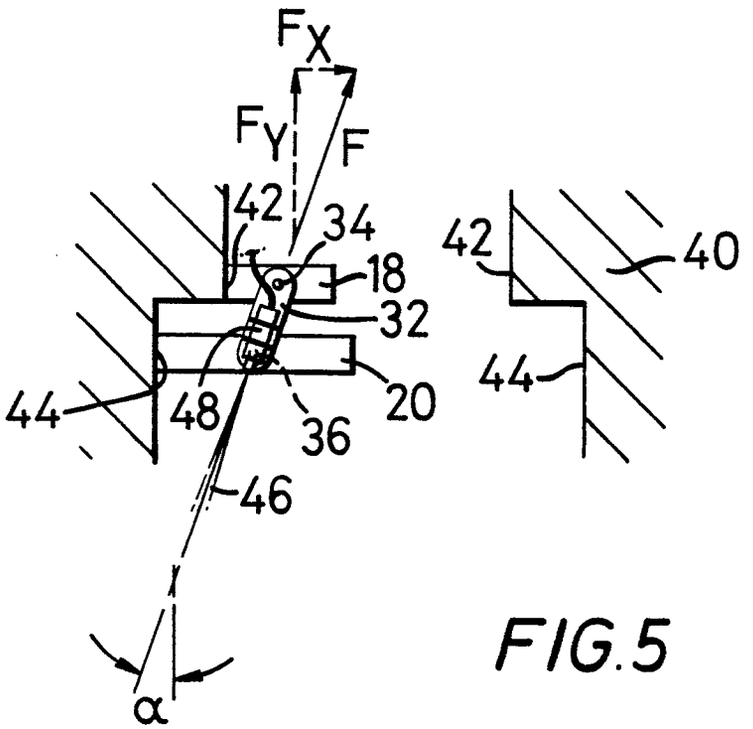

FIG.5

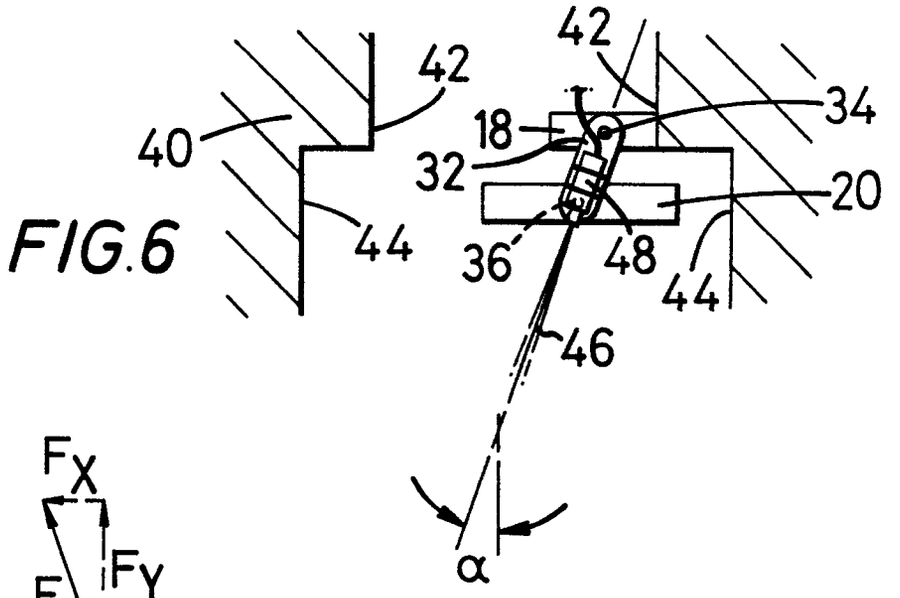

FIG.6

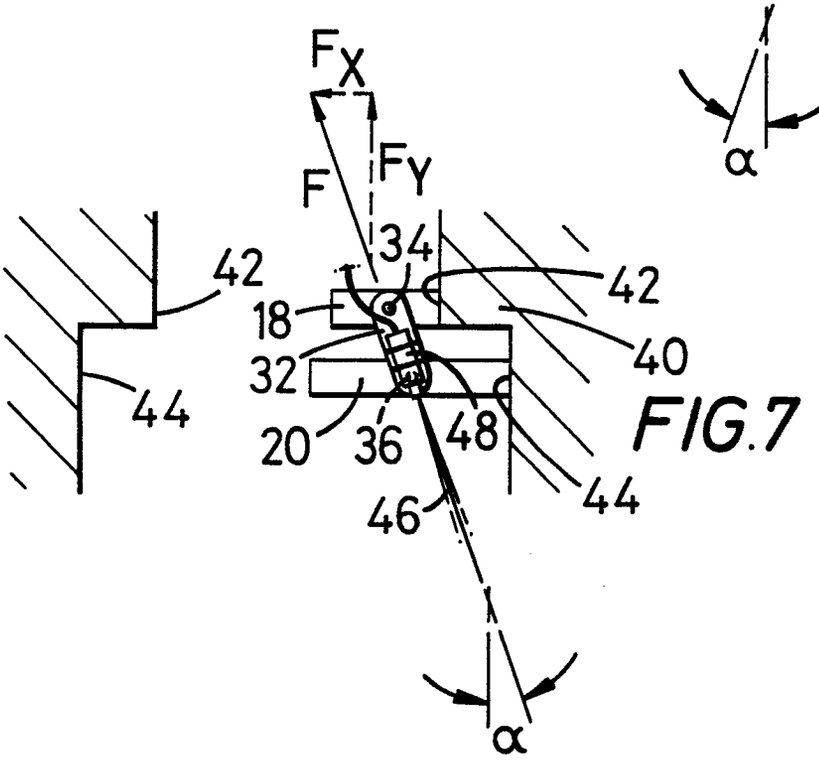

FIG.7

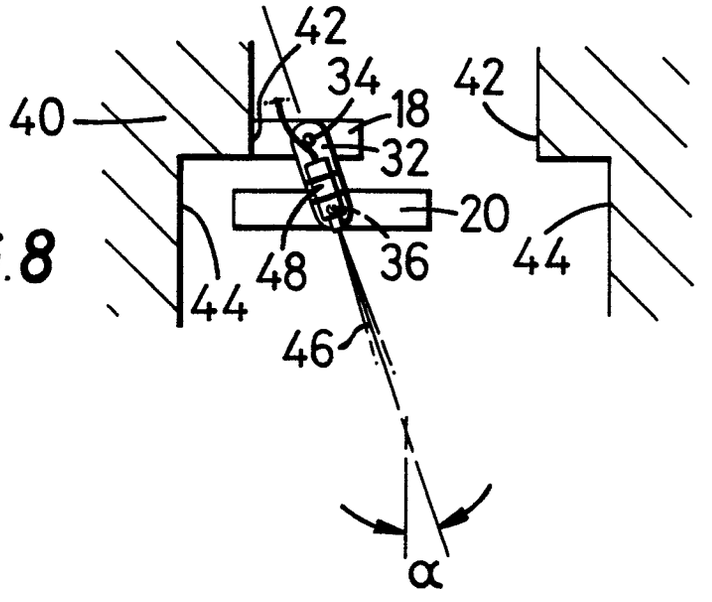

FIG.8