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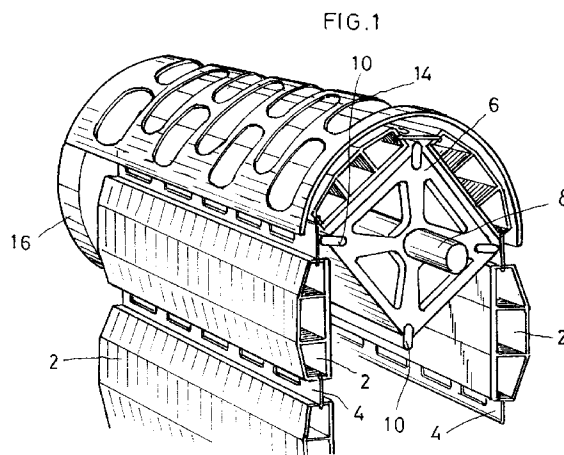
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(54) **Blind roll-up system.**

(57) A blind roll-up system comprising : hingedly connected slats (2) having a groove between adjacent slats ; a roll-up drum (6), with ribs (10) for insertion in the grooves, thereby to move the slats (2) and associated with first drive means, such as a first pulley (12) ; two pairs of guides (46, 48) for unrolling the slats on different sides of the drum (6) ; a semi-cylindrical shell (14) which may be locked in a position allowing said double unrolling ; a clutch member (34) which alternately locks the pulley (12) with the shell (14) or leaves it free.

When the shell (14) is locked in place and the first drive means are declutched, the blind may unroll along the guides (48) and thus show to the inside, making it accessible for cleaning, the side normally facing outwardly.



DESCRIPTION

The invention relates to a blind roll-up system comprising: a series of slats, each of which is hingedly attached to at least one adjacent slat, a groove being defined between pair of adjacent slats; a wind-up drum for said slats; a shaft for rotation of said drum; first drive means for said drum; and a first pair of guides for the slats, adapted to receive the side edges of the slats in the rolled down position thereof.

As is well known, blinds have one side which, in the rolled down position thereof, in on the inside of the hollow receiving the blind, whereby it is perfectly accessible to the user and is easy to clean. On the contrary, the opposite side is either rolled up or is on the outside of the hollow in which the blind is located. Therefore, when this hollow is not accessible from the outside (as is the case of a balcony, terrace or like construction), this opposite side may not be cleaned by the user, unless costly and/or hazardous positions are adopted, by hanging from higher levels.

Several solutions have been proposed for this problem, such as the fixing of brushes whose bristles engage the unaccessible side during the rolling-up and unrolling operations of the blind.

It is an objective of the invention to provide a more efficacious and more universal solution to the problem raised.

According to the invention, this objective is achieved by a system of the type stated at the beginning which is characterized in that it comprises: a plurality of axially extending external ribs situated on said roll-up drum, in such a way that the respective insertions of said ribs in successive grooves cause a driving connection between the drum and the slats; a rotatable semi-cylindrical shell, co-axial to said drum; a clutch member adapted to be moved from a first position in which it forms a driving connection between said semi-cylindrical shell, said roll-up drum and said drive means for said drum, and a second position in which said roll-up means and said semi-cylindrical shell are disconnected; spring means urging said clutch member to said first position; means for locking said semi-cylindrical shell in a position allowing vertical unwinding of the blind on both sides of the roll-up drum; and a second pair of slat guides, substantially symmetrical to said first pair of guides on a vertical plane which is simultaneously diametrical to said drum.

According to a preferred feature of the invention, said first drive means comprises a gear adapted to cause said roll-up drum to rotate in both directions.

According to an alternative feature of the invention, said first drive means comprise a first pulley associated with said drum, coaxial thereto and fixedly attached to said clutch member, there being a first belt, tape or the like adapted to cause said pulley to rotate in both directions.

Also according to the invention, said semi-cylindrical shell is attached to first and second end flanges, said first flange having axial spigots which in said first position of the clutch member are inserted in axial orifices of the first pulley.

Preferably according to the invention, said first and second end flanges are associated with an axially extending bar.

The invention also contemplates that said axially extending orifices of the first pulley are arcuately elongated.

According to one aspect of the invention, there is a cylindrical member fixedly attached to said semi-cylindrical shell and coaxial therewith, which is preferably formed as a pulley, constituting a second pulley adapted to receive second drive means.

The invention also contemplates that said second drive means may comprise a belt adapted to be wound by one end thereof around said second pulley and at the other end is adapted to be wound up in a receiving box.

According to a further aspect of the invention, said locking means consists of at least one aperture in the peripheral area of said cylindrical member and a radial arm, which may move along said shaft and is provided with a shoulder insertable in said aperture and said clutch member and the radial arm of said locking means are associated with one another by a lever allowing for the simultaneous operation of both.

Preferably according to the invention, said roll-up drum is substantially prismatic and said external ribs are located on the edges of the drum and the width of each side of the drum is substantially the same as the width of one of said slats.

Further advantages and features of the invention will be appreciated from the following description in which there is disclosed a preferred embodiment of the invention, without any limiting nature, with reference to the accompanying drawings in which:

Figure 1 is a schematic perspective view of part of the system of the present invention, with the blind being unrolled on both sides of the roll-up drum.

Figure 2 is an elevation view of the system, slit down the centre, from which the pulley drive means have been omitted; this figure shows the first position of the clutch member in which there is a driving connection between the first pulley and the semi-cylindrical shell.

Figure 3 is a part elevation view of the system with the clutch member in the second position wherein the first pulley and the semi-cylindrical shell are disconnected from one another.

Figure 4 is a cross section view on the line IV-IV of Figure 2, from which part of a pulley flange is missing.

Figure 5 is a cross section view on the line V-V of Figure 3.

The system of the present invention comprises

obviously a series of slats 2, each of which is hingedly connected to the two adjacent ones, with the exception of the two end slats which are obviously associated with only one slat.

In the embodiment described and shown, between every two consecutive slats 2 there is a sheet 4 provided with means for engaging the slats. Said sheet ensures the hinged connection referred to above. The lesser thickness of the sheets 4, as well as their arrangement relative to the slats 2, provides a recess or groove (as it will be called hereinafter) between consecutive slats. Nevertheless, the invention also comprises any other embodiment in which a space or groove is formed between consecutive slats.

The said slats 2 are associated with a roll-up drum 6 adapted to rotate around a shaft 8, which is supported in supports 9, duly attached to the blind housing. Unlike the conventional blind wind-up systems, the usual fixing means between the blind and the drum are not provided in the present system, but the drum 6 is provided with axially extending external ribs 10 which are adapted to be inserted in the grooves between slats 2 and thereby form a driving connection between the drum 6 and the blind slats 2.

The drum 6 is preferably substantially prismatic in shape. In these cases, the external ribs 10 are situated on the edges of the prism defined by the drum. To ensure an adequate driving connection, the width of each side of the drum 6 is substantially equal to the width of a slat 2.

The system, as is usual, also comprises first drive means for the roll-up drum 6. According to a not shown embodiment, said first drive means comprise a gear adapted to cause the drum 6 to rotate in both directions. Conventionally, this gear may consist of a pinion arranged coaxially with the shaft 8 and a vertically located endless worm, although the invention also contemplates the possibility of other conventional solutions.

The said first drive means may also comprise a first pulley 12 having conventionally wound around the throat thereof a first belt, tape, cable of the like, or a mechanical means (not shown). This pulley is fixedly attached to the shaft 8 and, therefore, to the drum 6. Further reference will be made to the first pulley 12 hereinafter.

According to the invention, the system is provided with a semi-cylindrical shell 14 which is capable of rotation and is coaxial with the drum 6, extending around substantially half thereof. It is preferably attached to a first end flange 16 located adjacent the first pulley 12 and also to a second end flange 18 opposite the former. To improve the rigidity of the whole, both end flanges 16, 18 are preferably associated together by a bar 20 parallel to the shaft 8.

Furthermore, the first disc 16 is provided with means for associating the rotation thereof with that of the first pulley 12. Said means preferably consists of

axially extending bosses 22 (Figure 3) adapted to be inserted in axially extending orifices 24 in the first pulley 12 (Figure 5). These orifices are preferably arcuately elongated. The invention also contemplates other embodiments of these retaining means, such as a countersunk orifice and a corresponding shoulder adapted to be inserted in the orifice, with mutual engagement by way of mating tongues and grooves.

The second end flange 18 is preferably fixedly attached to a cylindrical member 26 which is coaxial with the flange and which is more preferably shaped like a second pulley. In this case it is also adapted to receive a second belt, tape, cable or the like (not shown) capable of forming second drive means applicable, in this case, to the second pulley.

For reasons to be explained later, the invention requires the possibility of locking the semi-cylindrical shell 14 in the uppermost position thereof, i.e. when it is substantially extending around the upper half of the drum 6 or, otherwise, when it allows the vertical unrolling of the blind on both sides of the drum. To this end, there are locking means preferably comprising an aperture 28 (Figure 4) located on the peripheral area of the cylindrical member 26 and at the height of an edge 29 of the shell 14. The aperture 28 is complemented with a radial arm 30 which is moveable along a portion of the shaft 8 and which is provided with a shoulder 32 insertable in the aperture 28, thereby locking the cylindrical member 26 and, therewith, the semi-cylindrical shell 14. Obviously this locking means may be present without the cylindrical member 26 being strictly necessary, since it may form part of the second flange 18.

A clutch member 34 is fixedly attached to the first drive means and therefore, as the case may be, with the first pulley 12 and may be moved (drawing therewith the first pulley 12 or the first drive means) along a portion of the shaft 8. This movement occurs between a first position (Figure 2) in which there is a driving connection between the first drive means (the first pulley on the embodiment illustrated), the semi-cylindrical shell 14 and the roll-up drum 6, and a second position (Figure 3) in which the first drive means (such as the first pulley 12) and the shell 14 are disassociated. When the system is operated in the first position all the moving parts move simultaneously. In the second position, since it is locked in place, the semi-cylindrical shell 14 does not move, although the other members do move.

The clutch member 34 comprises a rocking arm 36, hingedly connected to a support 38 attached to the blind box and which is provided with a first connection means 40 for a lever (not shown) which is in turn connected to a second connection means 42 on the radial arm 30. In this way, by moving this single not shown lever, simultaneous operation of the locking means 28, 32 and of the clutch member 34, are achieved, such that when the locking means 28, 32 lock the shell

14, the first drive means (for example the first pulley 12) are disassociated from the shell 14. On the contrary, when there is no locking, the member 34 connects the first drive means (or first pulley 12) to the shell 14.

Spring means 44, such as a coil spring wound around the shaft 8 urge the clutch member 34 to the said first position.

Conventionally, the system comprises a first pair of guides 46 for the slats 2, receiving the side edges of the slats when the latter are unwound from the drum 6. But, furthermore, it comprises a second pair of guides 48 for receiving the slats when they are wound in reverse, as described later.

The system operates as explained below. When the clutch member 34 is in the first position, the system works as a conventional blind, i.e. with the ribs 10 of the drum 6 inserted in the grooves between the slats, they entrain the blind, moving it between the position of being rolled-up around the drum 6 (and also, at least in part, around the semi-cylindrical shell 14) and the unrolled position along the first pair of guides 46. The shell 14 itself prevents the blind from unrolling along the second pair of guides 48.

When the clutch member 34 is in the second position and the locking means 28, 32 lock the semi-cylindrical shell 14 in the position in which it embraces the upper half of the drum 6, there is no longer any obstacle for the blind to unroll along the second pair of guides 48. Therefore, in this case, the blind moves from being unrolled along the first pair of guides 46 to being unrolled along the second pair of guides 48.

Should the first drive means not comprise the gear referred to above, the second pulley 26 is preferably for receiving a belt which winds up at one end around the throat of the pulley 26 and at the other end in a collecting box, which has not been shown either. This belt works, therefore, as a conventional belt which requires an effort when the drum 6 is caused to rotate to wind the blind thereon and which is driven by the weight of the blind.

In turn, the tape or belt operating the first pulley 12 is alternatively for moving the whole or for causing the blind to move from the first pair of guides 46 to the second pair of guides 48. Therefore, the tape or belt of the first pulley 12 must allow the drum 6 to rotate in both directions. In view of the above, the existence of a tape or belt for each of the pulleys is preferable on certain occasions.

Obviously, the side of the blind which is on the outside of the hollow in which the blind is located in the normal unrolled position thereof, faces inwardly when the blind has been unrolled along the second pair of guides 48. Therefore, this side is fully accessible for cleaning by the user with great ease, whereby the objective of the invention is achieved.

The reference symbols inserted after the technical features mentioned in the claims are solely for faci-

litating an understanding of the latter and do not limit their scope in any way.

5 Claims

1.- A blind roll-up system comprising: a series of slats (2), each of which is hingedly attached to at least one adjacent slat, a groove being defined between pair of adjacent slats (2); a wind-up drum (6) for said slats (2); a shaft (8) for rotation of said drum (6); first drive means for said drum (6); and a first pair of guides (46) for the slats (2), adapted to receive the side edges of the slats (2) in the unrolled position thereof, characterized in that it comprises: a plurality of axially extending external ribs (10) situated on said roll-up drum (6), in such a way that the respective insertions of said ribs (10) in successive grooves cause a driving connection between the drum (6) and the slats (2); a rotatable semi-cylindrical shell (14), co-axial to said drum (6); a clutch member (34) adapted to be moved from a first position in which it forms a driving connection between said semi-cylindrical shell (14), said roll-up drum (6) and said drive means for said drum (6), and a second position in which said roll-up means and said semi-cylindrical shell (14) are disconnected; spring means (44) urging said clutch member (34) to said first position; means (28, 32) for locking said semi-cylindrical shell (14) in a position allowing vertical unwinding of the blind on both sides of the roll-up drum (6); and a second pair of slat (2) guides (48), substantially symmetrical to said first pair of guides (46) on a vertical plane which is simultaneously diametrical to said drum (6).

2.- The system of claim 1, characterized in that said first drive means are adapted to cause said roll-up drum (6) to rotate in both directions, comprising preferably a gear.

3.- The system of claim 1, characterized in that said first drive means comprise a first pulley (12) associated with said drum (6), coaxial thereto and fixedly attached to said clutch member (34), there being a first belt, tape, cable or the like adapted to cause said pulley (12) to rotate in both directions.

4.- The system of any one of claims 1 to 3, characterized in that said semi-cylindrical shell (14) is attached to first (16) and second (18) end flanges, said first flange (16) having fixing means which in said first position of the clutch member (34) are inserted in complementary configurations of the first pulley (12).

5.- The system of claim 4, characterized in that said fixing means are axial bosses (22) of said first flange (16) and axial orifices (24) in the first pulley (12).

6.- The system of claim 4, characterized in that said first (16) and second (18) end flanges are associated with an axially extending bar (20).

7.- The system of claim 5 or claim 6, charac-

terized in that said axially extending orifices (24) of the first pulley are arcuately elongated.

8.- The system of any one of claims 1 to 7, characterized in that there is a cylindrical member (26) fixedly attached to said semi-cylindrical shell (14) and coaxial therewith.

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9.- The system of claim 8, characterized in that said cylindrical member (26) is preferably formed as a pulley, constituting a second pulley adapted to receive second drive means.

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10.- The system of claim 9, characterized in that said second drive means comprises a second belt adapted to be wound by one end thereof around said second pulley (26) and at the other end is adapted to be wound up in a receiving box.

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11.- The system of claim 9, characterized in that said locking means (28, 32) consists of at least one aperture (28) in the peripheral area of said cylindrical member (26) and a radial arm (30), which may move along said shaft (8) and is provided with a shoulder (32) insertable in said aperture (28).

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12.- The system of any one of claims 1 to 11, characterized in that said clutch member (34) and the radial arm (30) of said locking means (28, 32) are associated with one another by a lever allowing for the simultaneous operation of both.

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13.- The system of any one of claims 1 to 12, characterized in that said roll-up drum (6) is substantially prismatic and said external ribs (10) are located on the edges of the drum (6).

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14.- The system of claim 13, characterized in that the width of each side of the drum (6) is substantially the same as the width of one of said slats (2).

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FIG.1

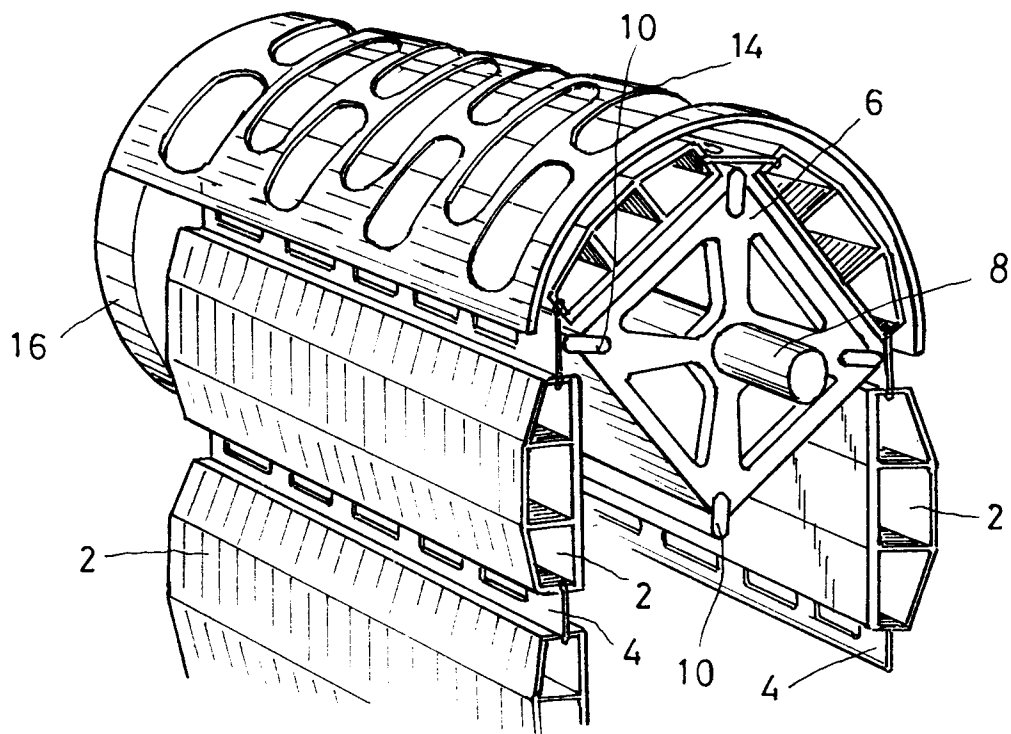


FIG. 2

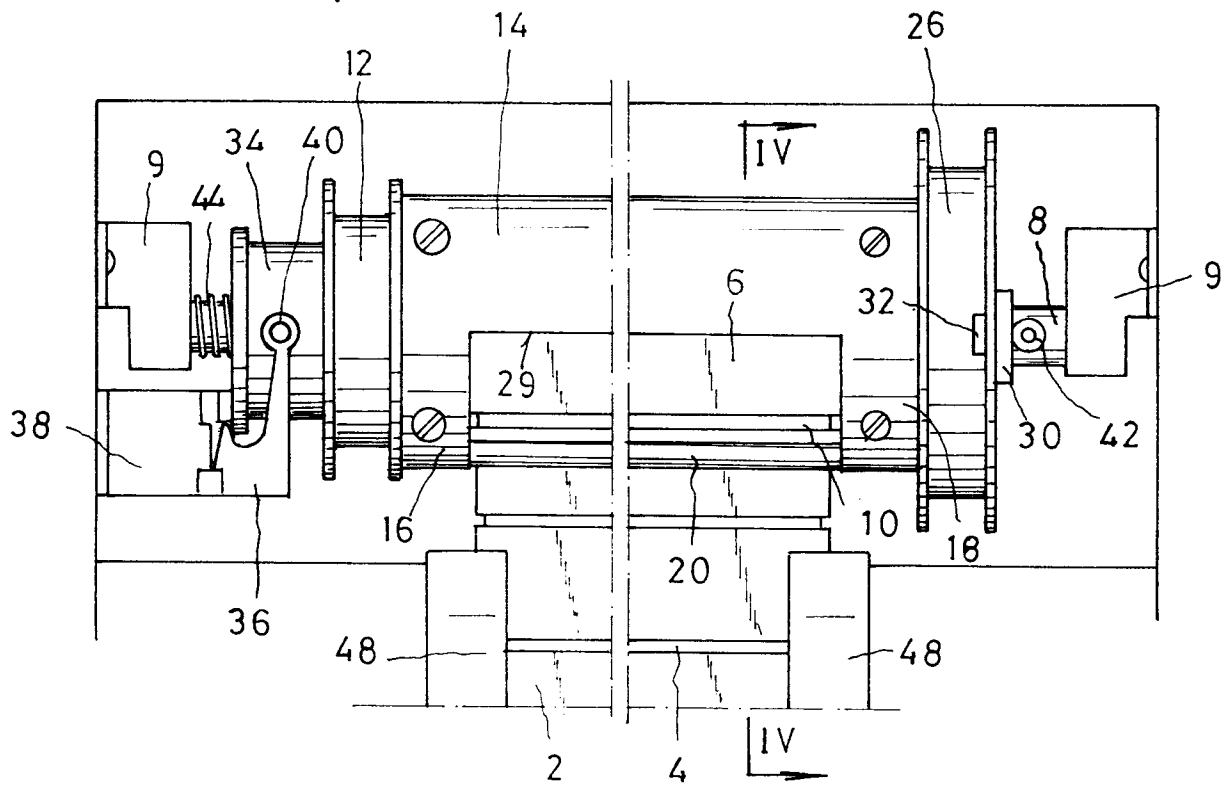


FIG. 3

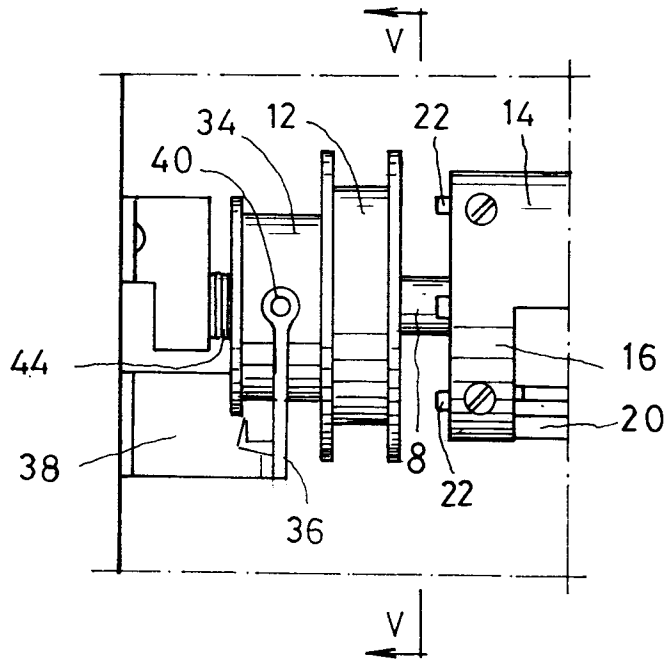


FIG. 4

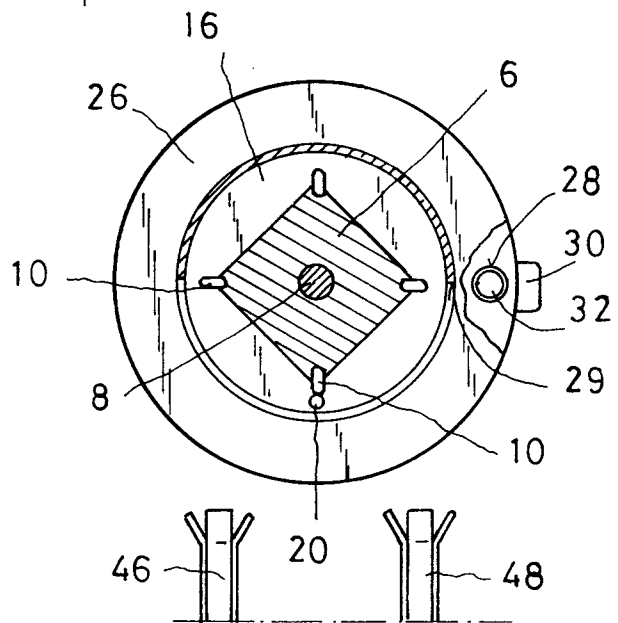


FIG. 5

