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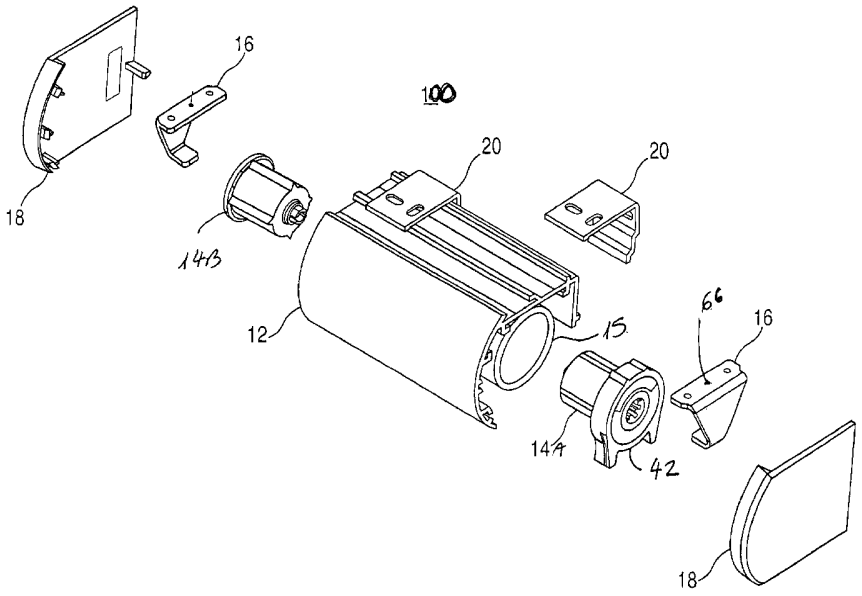
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(54) Title: UNIVERSAL BRACKETING AND CAP SYSTEM FOR MULTIPLE CASSETTE ROLLER SHADE



(57) Abstract: A cassette system for window treatment includes a head rail with a base, end brackets attached to the base in a facing relationship and at least one roller blind with a mandrel and a decorative panel that is wound on the mandrel. It can be selectively drawn off the mandrel by rotation thereof. The end brackets are identical and mate with end plugs on the mandrel to rotationally support the roller blind. In an alternate embodiment, two or more roller blinds are supported by intermediate brackets or by an intermediate bracket and an end bracket. The end plugs on the madrel(s) have identical shapes to made with respective legs on the end brackets.

WO 03/080979 A2

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UNIVERSAL BRACKETING AND CAP SYSTEM FOR MULTIPLE CASSETTE ROLLER SHADE

BACKGROUND OF THE INVENTION

1. Field of Invention

This invention pertains to a cassette system for window shades and more particularly to a system that incorporates a roller blind supported by two identical brackets. The cassette system can accommodate one panel that can be deployed by a user in the conventional manner, or can include axially spaced end panels, each panel each panel being deployed independently.

2. Description of the Prior Art

There are several types of window dressings that can be used to cover windows. One of the most popular types of window dressings are roller blinds. Typically, roller blinds consist of a cylindrical mandrel holding a decorative panel of fabric, plastic or other pliable material. The cylindrical mandrel is formed with a clutch on one side, a pin on the other, and supported by two brackets on each side. The end of the mandrel supported at the pin is freely rotatable. The clutch allows the mandrel to rotate in a controlled manner to allow selectively the raising or lowering of the panel. A control mechanism may be interfaced with the clutch to allow a customer to operate the roller blind, using a chain or a rope.

The simplest roller blinds consist only of the mandrel and the panel, and two end brackets. More advanced blind rollers are contained in cassette

housings. The cassettes provide a decorative housing that hides the roller blind (except for the panel), the associated hardware, and can be mounted in a window frame using a variety of mounting fixtures depending on the orientation.

Two different cassette systems with roller blinds are known. In one system, the cassettes are provided with roller blinds having a clutch at one end and a pin at the other, as discussed above, with a specific end-cap provided for each type of bracket. Systems of this type are available, for example, from Multifilm of Cuneo, Italy, Arquati of Carrolton, Texas and Sala Baganza (Parma) Italy. This arrangement has several disadvantages. One disadvantage is that customers demand the ability to install the cassettes with the control mechanism, including the clutch on either the right or the left side of the window. As a result, the cassette systems had to be made with four different types of brackets: two types for a left clutch and a right pin; and two additional types, one for a right clutch and one for a left pin. Yet another disadvantage is that there are several types of clutches are available, and a different type of bracket must be provided for each type of clutch mechanism.

Another disadvantage on the manufacturing side is that end caps of these types require complex and expensive tooling, frequently running up to $50,000.

Another type of cassette system presently available requires separate end brackets that must be mounted in the window frame and attached to a rail by a screw and finished with a protective cover attached to the bracket. This type of system is available, for example, from Benthin Systems of Germany. Its

main disadvantage is that the bracket and its cover add to the cost of the system and are esthetically undesirable.

In addition, both systems described above tend to be difficult to assemble.

U.S. Patent Nos. 4,372,432 and 4,433,765 disclose clutch assemblies that are used for roller blinds and other similar devices.

SUMMARY OF THE INVENTION

According to this invention, a window treatment cassette system includes a head rail with a base, two preferably identical end brackets mounted in the base and a roller blind supported between the brackets. The blind roller includes two end plugs: one for the pin end and one for the clutch. The end plugs are formed on the external surface of the roller with identical slots adapted to receive the respective leg of each supporting bracket. In this manner, the blind roller can be mounted with the clutch plug end on the left or the right, thereby allowing the blind roller to be operated from either side.

In an alternate embodiment, the cassette system is provided with a plurality of roller blinds of various lengths, each roller blind supported either between two intermediate brackets or an intermediate bracket and an end bracket.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows an exploded view of a cassette system constructed in accordance with the subject invention for a single roller blind;

Fig. 1a shows a front elevational view of the roller blind used in the cassette system of Fig. 1;

Fig. 1b shows a front elevational exploded view of the cassette system of Fig. 1A;

Fig. 1c shows a side elevational view of a clutch plug of the cassette system of Figs. 1a, 1b;

Fig. 1d shows a side elevational view of a plain plug of the cassette system of Figs. 1a, 1b;

Fig. 2a shows a partial orthogonal view of the head rail for the cassette system of Fig. 1 as seen from the back without the blind roller and the end caps;

Fig. 2b shows the head rail of Fig. 2a with the end bracket removed;

Fig. 3 shows a side elevational view of the bracket of Fig. 2b;

Fig. 4a shows an orthogonal view of a cassette system for two blind rollers; and

Fig. 4b shows an orthogonal view of the cassette of Fig. 4a with the end plugs removed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to Figs. 1 and 1a-1d, a cassette system 100 constructed in accordance with this invention includes a head rail 12, two end plugs 14A,

14B, a roller blind 15, two end brackets 16 and two end caps 18. The end brackets are mounted on the head rail. The end plugs 14A, 14B are inserted telescopically into the roller blind 15 and are supported by the end brackets. The cassette system 100 can be secured to the frame of a window or other similar fixture (not shown) by two or more clips 20 that engage the head rail 12.

The roller blind 15 includes a hollow mandrel 30 with a panel 32 wound on the mandrel 30. Rotating the mandrel 30 in one direction causes the panel 32 to wind up onto the mandrel 30 while rotating the mandrel 30 in the opposite direction causes the panel 32 to wind down, as indicated by arrow A.

The ends of the mandrel 30 are hollow to receive end plugs 14A (shown as an idler) and 14B (shown as a clutch), respectively. (In fact, the whole mandrel is typically hollow.) End plug 14A consists of a drum 34 and a bushing 36 rotatably inserted into the drum 36. End plug 14B is formed with a drum 38 and a capstan 40. Drums 34, 38 are inserted into the opposite ends of mandrel 30 and are maintained therein by interference fit or by other well known means.

The drum 38 includes a clutch (not shown). Capstan 40 includes an opening 42 through which a rope (not shown) such as, for example, a cord or bead chain, can pass through. Within the capstan, the rope passes over a wheel 44 and then exits through opening 42. Pulling one end of the rope causes the wheel to rotate in one direction. This motion is transmitted to the clutch which then rotates the drum 38 and mandrel 30. Pulling the other end of the rope causes the mandrel 30 to rotate in the opposite direction. This whole

mechanism is well known in the art, as described for example, in U.S. Patent No. 4,372,432 incorporated herein by reference.

As best seen in Fig. 1c, the capstan 40 has a central scalloped hole 46 on its side surface. The hole 46 defines at least one slot 48 having a maximum diameter width D. The hole 46 could be shaped to define two different slots disposed, for example, orthogonal to each other, each having a maximum width D. As seen in Fig. 1d, the bushing 36 has an identical hole 46 with slots 48. The end plugs 14A, 14B are installed and oriented with holes 46 positioned coaxially with the axis of the mandrel 30 and the slots 42 on the respective end plugs disposed in parallel to each other.

Figs. 2a and 2b show details of the head rail 12 and two end brackets 16 mounted on the head rail 12 so that they face each other. The head rail 12 is made from aluminum, an aluminum alloy and other similar rigid and relatively light weight material. The head rail is formed with a base 50, a rear wall 52 and a front wall 54. The base 50 is formed with two L-shaped internal channels 56. The two channels extend in parallel to define a track for the brackets 16. The base 50 and the rear wall 52 each have an external rib 58, 60. These external ribs are used to secure the clips 20. The clips 20 are external mounting brackets. The front wall 54 is essentially decorative and its purpose is to hide the other elements of the cassette from view.

The brackets 16 are generally C-shaped with a vertical member 60 and two legs 62, 64 oriented perpendicularly to the vertical member 60. The leg 64 has a width that corresponds to the distance between the channels 56 allowing the brackets to be inserted into the track formed by these channels, as shown in

Fig. 2b. The leg 62 is formed with a small dimple 66 that protrudes slightly to form an interference fit with the base 50. As a result of this fit, the brackets 16 are held within the track. The leg 64 has a width that is slightly smaller than the distance D defined by the slots 48 on the end plugs 14A, 14B.

Referring back to Fig. 1, the cassette system 100 is assembled so that the brackets are inserted into the track between the rails 56 and the roller blind is supported on the legs 64 of the brackets 16. Since these legs 64 are inserted into slots 48, the bushing 36 and capstan 40 are immobilized thereby allowing the panel 32 to be raised and lowered as described above. Importantly, since the central holes 46 on the end plugs 14A, 14B are identical, the two brackets, in this example, are identical as well, thereby reducing the number of parts required, and manufacturing costs. The end caps 18 are made to press fit, as in a manually applied frictional engagement onto the head rail 12.

Figs. 4a and 4b show an alternate embodiment of the invention. In this embodiment, a cassette system is shown that can be used for two roller blinds disposed side by side. As can be seen in these Figures, the cassette system 100 includes a head rail 112, two end brackets 116 and two roller blinds (not shown, but identical to the roller blind of Figs. 1-3). Each roller blind has its own set of end plugs 14A, 14B. One end plug of each roller blind is mounted on a leg 164 of one of the end brackets 118. Importantly, the cassette system 100 further includes an intermediate bracket 117 arranged and constructed to slide within the rail formed by ribs 156. The intermediate bracket 117 has two legs 164A and 164B oriented in the opposite directions, as shown. These legs are used to support the other two end plugs of the roller blinds. In Fig. 4a the end

plugs 14B are shown mounted on the legs 162 while the end plugs 14A are mounted on legs 164A, 164B. The positions of the end plug can be reversed, or an alternate arrangement can be used. For example, starting in Fig. 4a, the leftmost end bracket can be used for an end plug 14B, the intermediate bracket 117 could be used for one end plug 14B (facing toward the left) and one end plug 14B facing toward the right. The rightmost leg 164 could then be used for an end plug 14A.

The scheme can be extended for any number of roller blinds. For this latter cassette system, two end brackets are required and a number of intermediate brackets, identical to bracket 117, are used to provide the proper support. This cassette system has several advantages as well. First, the same type of parts are used for all systems, the only difference between systems being the length of the head rail 112. A further advantage is that each roller blind can be raised and lowered independently. Finally, if individual cassette systems are used (whether identical to the system shown in Figs. 1-3, or not) each system requires its own bracket and end cap at the interface between two adjacent systems. As a result, when the panels of each roller blinds are lowered, the horizontal spacing between these panels is substantial. Such a spacing may be esthetically undesirable. In the present invention, no end caps are required between roller blinds, and subsequently the horizontal spacing therebetween is substantially equal to the width of the intermediate bracket plus the width of the capstan 40. (The distance by which the drum 34 on end plug 14A extends axially beyond the roller 30 is negligible).

While the invention has been described with reference to several particular embodiments, it is to be understood that these embodiments are merely illustrative of the principles of the invention. Accordingly, the embodiments described in particular should be considered as exemplary, not limiting, with respect to the following claims.

We claim:

1. A cassette system comprising:

a head rail having a base;

two identical brackets mounted on said base and facing each other; and

a roller blind having a first and a second end plug, said first end plug including a control mechanism to control a rotation of said roller blind, said end plugs being mated with said brackets to rotationally support said brackets.

2. The cassette system of claim 1 wherein each said end plug has a slot and each said bracket has a leg, said leg being disposed in one of said slots to support said roller blind.

3. The cassette system of claim 2 wherein said end plugs are oriented with said slots oriented in parallel.

4. The cassette system of claim 1 wherein said roller blind includes a mandrel with two ends receiving said end plugs and a panel wound on said mandrel.

5. The cassette system of claim 1 wherein said head rail further includes a front wall and a rear wall, said front wall being arranged to cover said mandrel.

6. The cassette system of claim 1 further comprising two end caps covering said brackets.

7. A cassette system for window treatment comprising:

a head rail having a base;

a first end bracket disposed on said base;

a second end bracket disposed on said base facing said first end bracket;

an intermediate bracket;

a first blind roller; and

a second blind roller;

said first and second end brackets being identical and cooperating with said intermediate bracket to support said first and second blind rollers in a manner that allows each blind roller to be operated independently.

8. The cassette system of claim 7 wherein said first and second end brackets have identical shapes.

9. The cassette system of claim 7 wherein said base is formed with a track, said brackets being disposed in said track.

10. The cassette system of claim 7 wherein each roller blind has a clutch end plug and a plain end plug, end plugs mating with said brackets to support said roller blinds.

11. The cassette system of claim 10 wherein each end plug is formed with substantially identical slots and each bracket is formed with substantially identical legs, said legs mating with the respective slots.

12. The cassette system of claim 11 wherein each said end brackets has a single leg adapted to be received in the respective slot of one of said end plugs.

13. The cassette system of claim 11 wherein said intermediate bracket includes two legs facing in opposite directions, each leg being arranged to be received in the respective slot of one of said end plugs.

14. The cassette system of claim 7 wherein said head rail includes a back wall and a front wall forming a tubular housing for said roller blind.

15. The cassette system of claim 14 wherein further comprising two end caps covering said brackets.

16. A cassette system comprising:

a head rail with a base;

two end brackets and at least one intermediate bracket with two legs, said brackets being oriented colinearly on said base; and

a plurality of blind rollers having end plugs, said blind rollers being supported in a colinear arrangement between said brackets, with said brackets and end plugs cooperating to allow independent operation of said blind rollers.

17. The cassette system of claim 16 wherein said end plugs are formed with slots and said brackets are formed with legs arranged to be received in said slots.

18. The cassette system of claim 17 wherein said end brackets have one leg, and said intermediate bracket has two legs.

19. The cassette system of claim 16 further comprising end caps covering said end brackets.

20. The cassette system of claim 16 wherein said end brackets are identical.

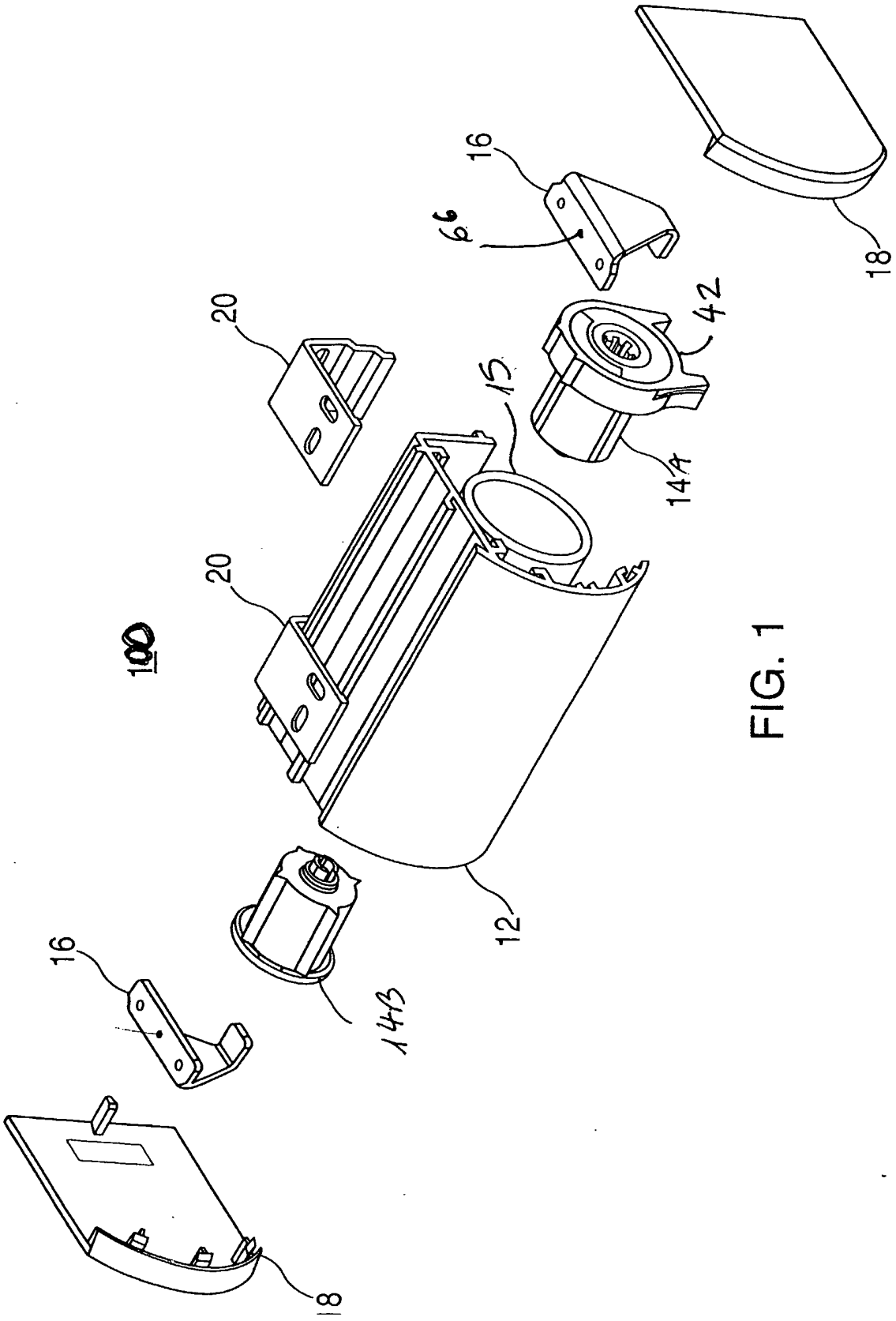


FIG. 1

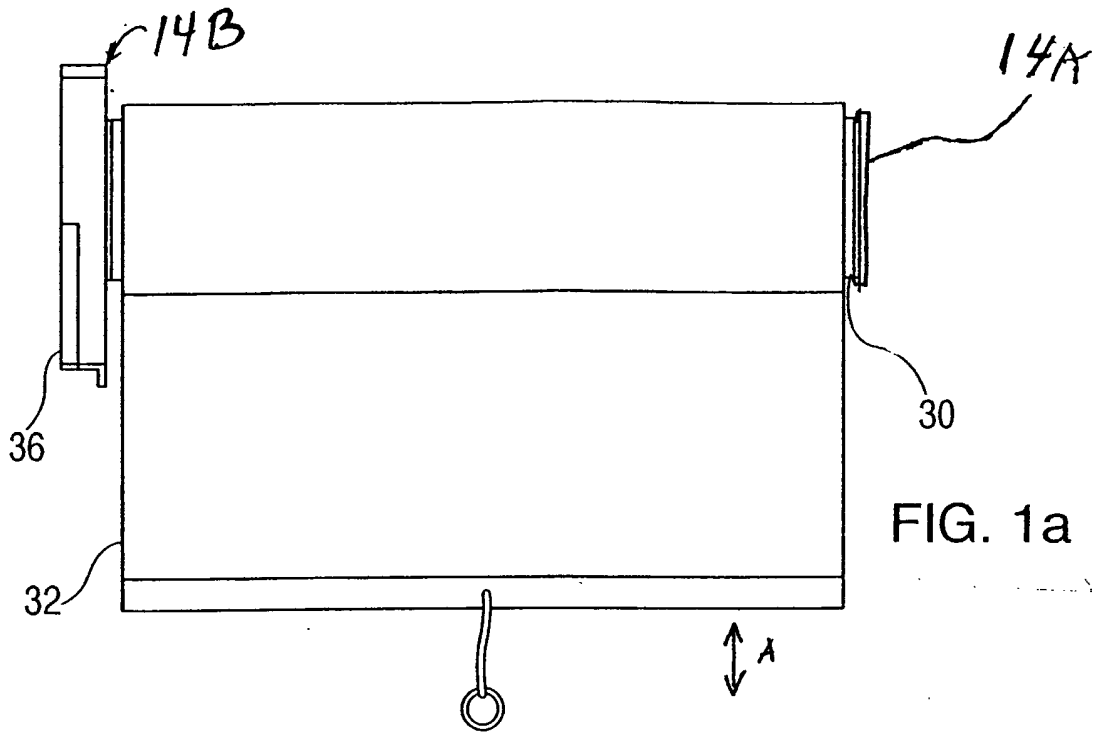


FIG. 1a

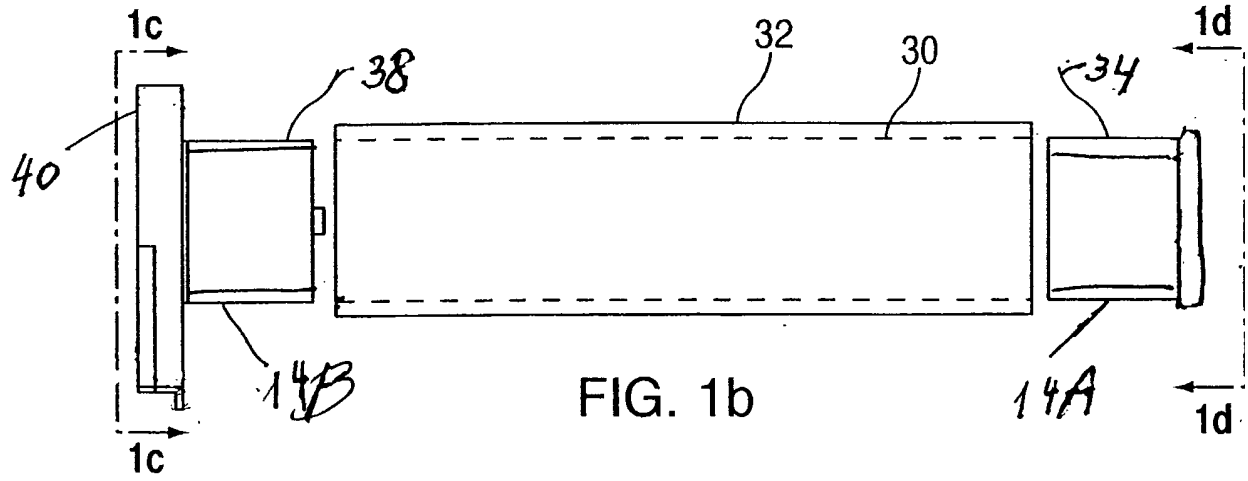


FIG. 1b

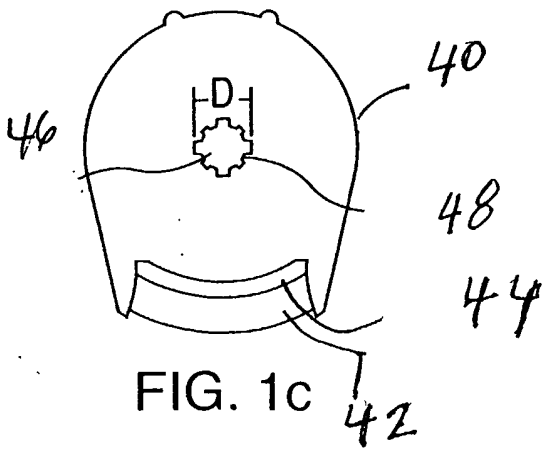


FIG. 1c

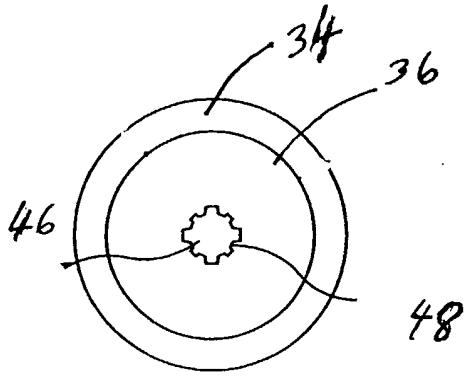


FIG. 1d

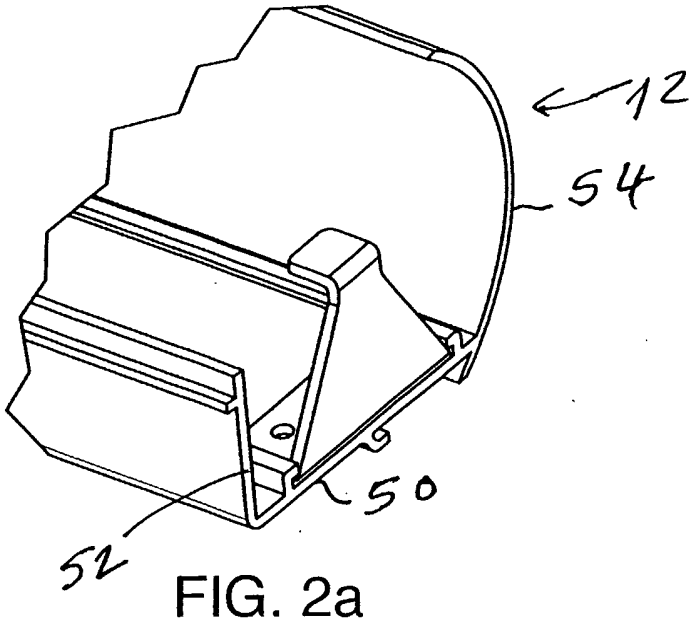


FIG. 2a

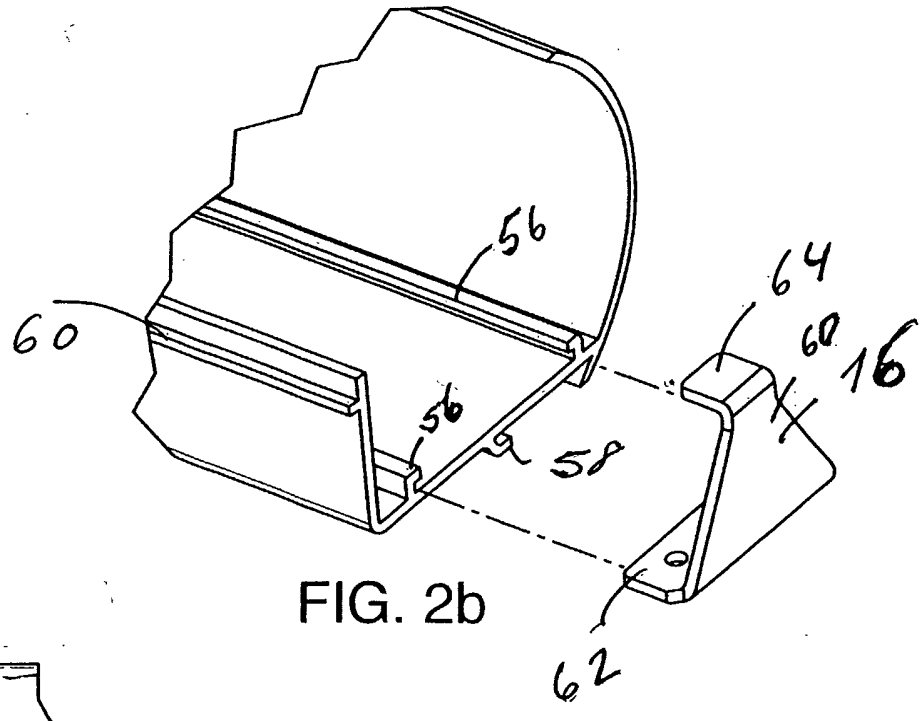


FIG. 2b

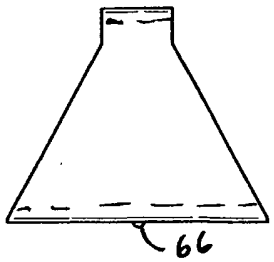


FIG. 3

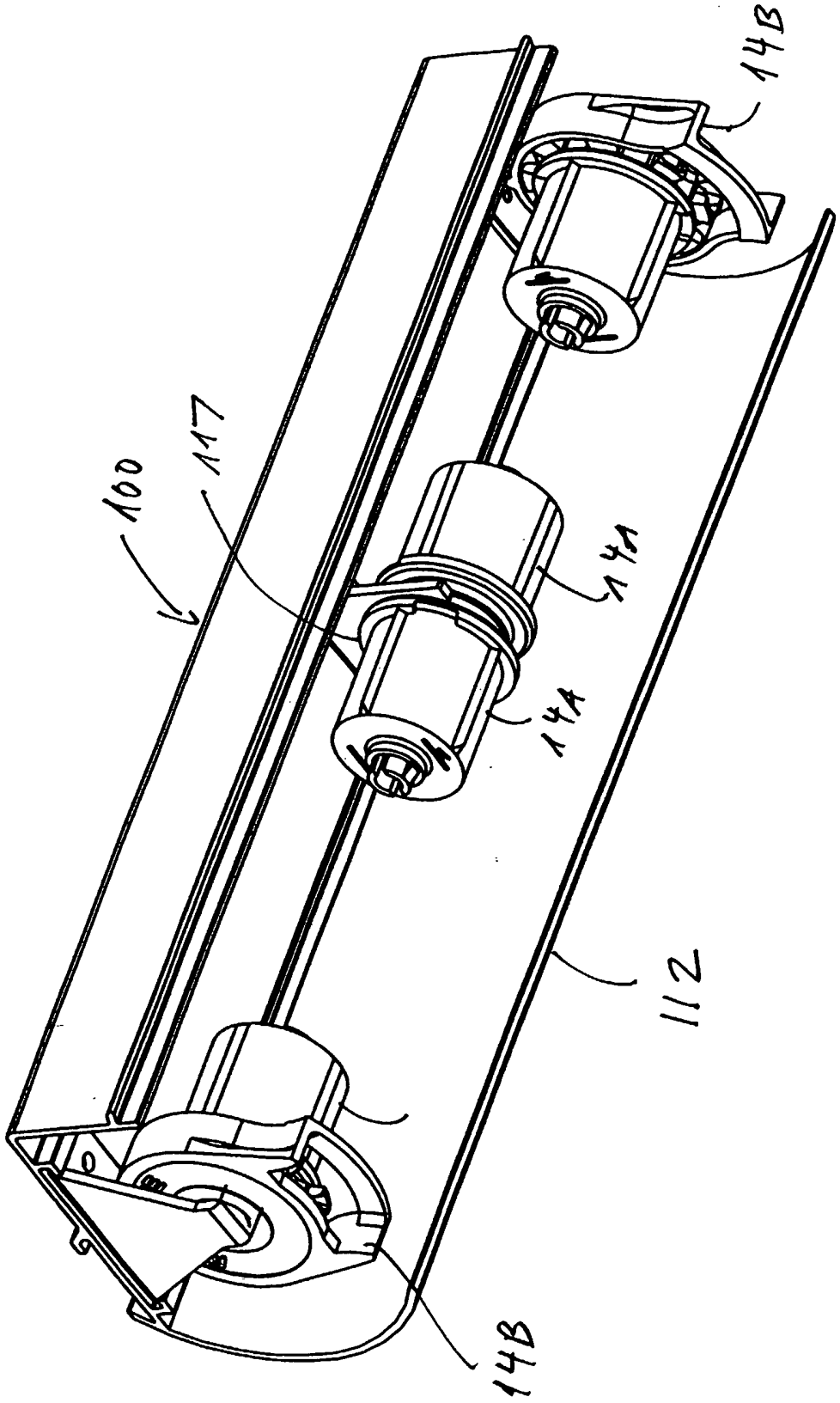


Fig # 4g

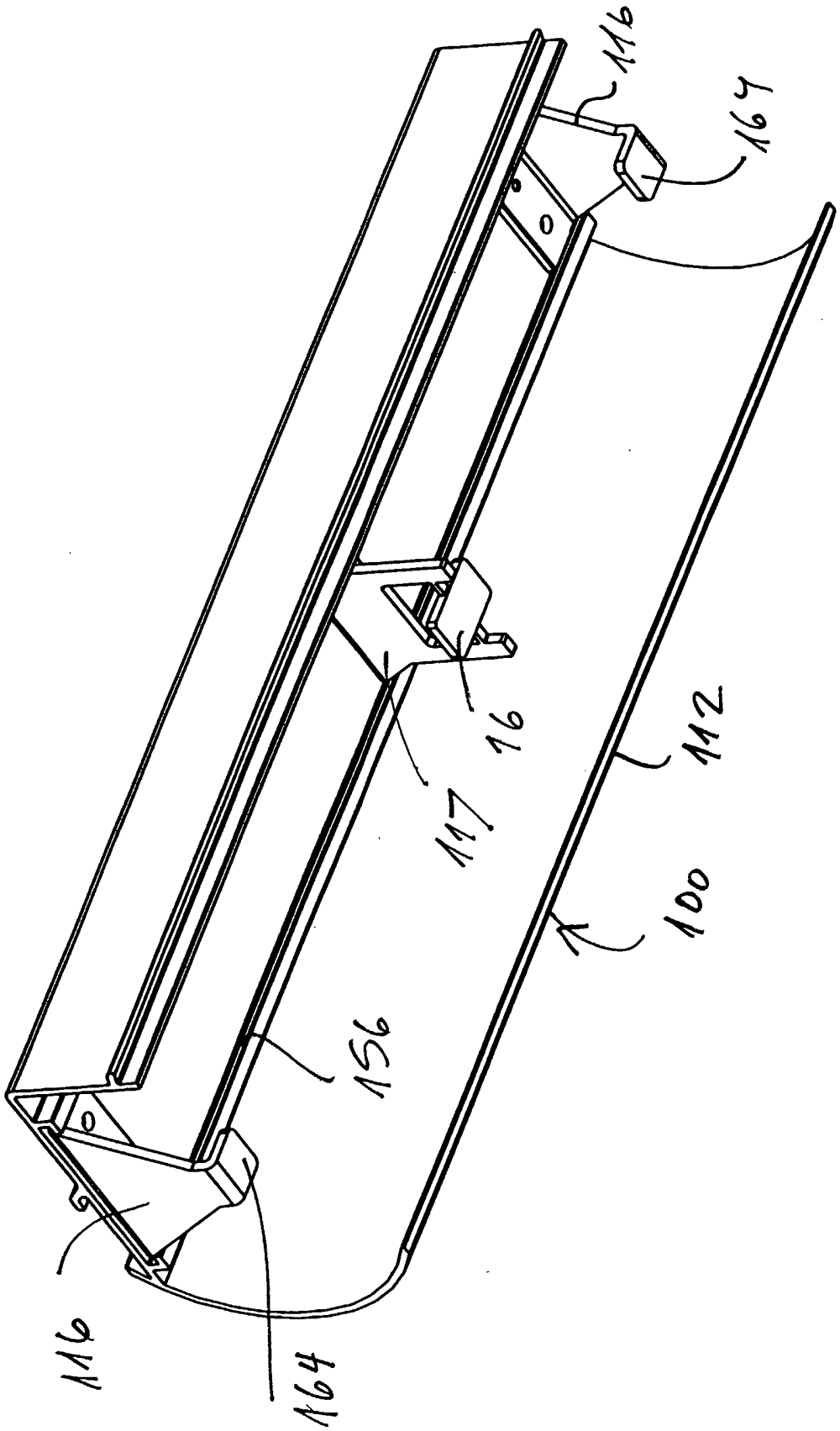


Fig #4b