



(22) Date de dépôt/Filing Date: 2006/03/08

(41) Mise à la disp. pub./Open to Public Insp.: 2006/09/08

(30) Priorité/Priority: 2005/03/08 (US60/659,182)

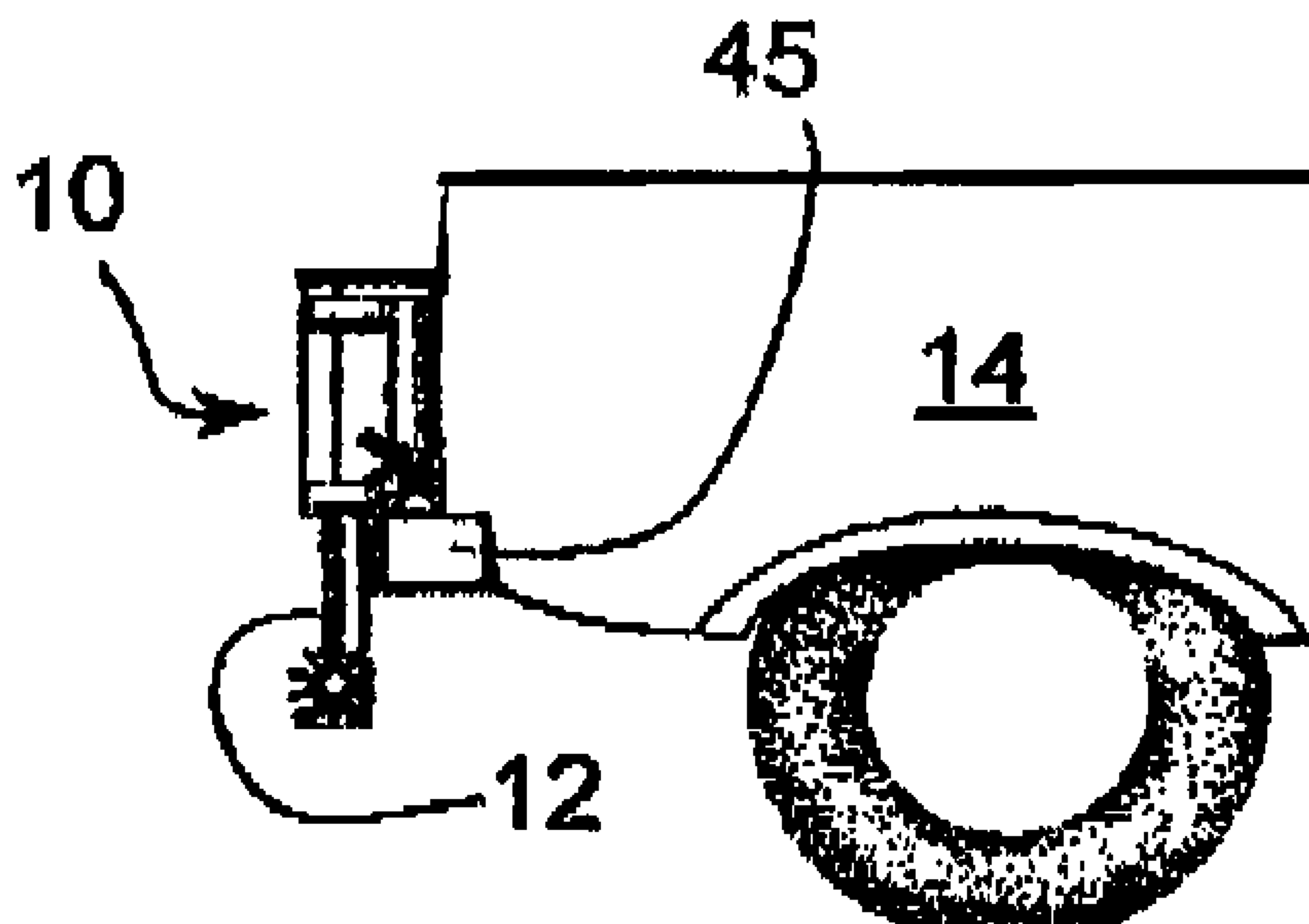
(51) Cl.Int./Int.Cl. *B65G 65/02* (2006.01),
B65D 83/02 (2006.01), *B65G 65/18* (2006.01),
B65G 65/48 (2006.01), *F21L 17/00* (2006.01)

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(54) Titre : DISTRIBUTEUR DE FUSEES ECLAIRANTES

(54) Title: FLARE DISTRIBUTOR



(57) **Abrégé/Abstract:**

A flare distributor for distributing a flare. The flare distributor includes a base defining a base aperture. A is rotatably mounted to the base. The defines a aperture, the including a flap rotatably mounted in proximity to the aperture. The flap is rotatable between a closed configuration wherein the flap blocks at least in part a aperture and an open configuration wherein the flap substantially frees the aperture. The is rotatable between a holding configuration wherein the aperture is substantially blocked by the base and a releasing configuration wherein the aperture is substantially in register with the base aperture. Flare receptacles extend substantially upwardly from the substantially in register with the aperture.



ABSTRACT

A flare distributor for distributing a flare. The flare distributor includes a base defining a base aperture. A is rotatably mounted to the base. The defines a aperture, the including a flap rotatably mounted in proximity to the aperture.

- 5 The flap is rotatable between a closed configuration wherein the flap blocks at least in part a aperture and an open configuration wherein the flap substantially frees the aperture. The is rotatable between a holding configuration wherein the aperture is substantially blocked by the base and a releasing configuration wherein the aperture is substantially in register with the
- 10 base aperture. Flare receptacles extend substantially upwardly from the substantially in register with the aperture.

TITLE OF THE INVENTION

Flare distributor

5 FIELD OF THE INVENTION

[001] The present invention relates to the field of road safety, and is more specifically concerned with a flare distributor.

BACKGROUND OF THE INVENTION

- [002] When an accident, or any other hazard, is present on a road,
10 it is often the case that flares are placed to warn incoming traffic that the road ahead is blocked. Such flares are typically placed on the road by a human being. Either the human being leaves a vehicle and walks to locations wherein flares are to be located or, alternatively, the human opens a door of a vehicle and slowly moves the vehicle to suitable locations where flares are dropped.
- 15 [003] In both cases, there is a relatively large risk involved as the user who distributes the flares is exposed to oncoming traffic. In addition, in cases of extreme weather, the act of distributing the flares is relatively uncomfortable and may also become relatively dangerous, for example by increasing a risk of frostbites.
- 20 [004] Accordingly, there is a need in the industry to provide a novel flare distributor.

OBJECTS OF THE INVENTION

[005] An object of the present invention is therefore to provide a flare distributor.

SUMMARY OF THE INVENTION

5 [006] In a broad aspect, the invention provides a flare distributor for distributing a flare. The flare distributor includes a grouping of flare receptacles and a base defining a base aperture. A series of flaps, one each situated under each flare receptacle are rotatable between a closed configuration wherein the flap blocks at least in part the aperture and an open configuration
10 wherein the flap substantially frees the aperture. When a given flare receptacle passes over the base aperture, its flap opens and the flare exits the flare receptacle. An actuator is provided for rotating the grouping of flare receptacles.

15 [007] In a specific embodiment of the invention, the flap is supported by the base when not in register with the base aperture. Accordingly, when the flare receptacle aperture becomes substantially in register with the base aperture through rotation, the flap becomes unsupported by the base and therefore adopts the releasing configuration. This allows a flare contained within the flare receiving portion to pass through the aperture
20 and through the base aperture.

[008] Advantageously, the flare distributor allows through the use as a suitable controller by an intended user to distribute flares while the user remains protected by the vehicle. Also, the flare distributor is relatively easy to manufacture and relatively robust.

[0009] The flare distributor is also relatively safe to use and, in some embodiments of the invention, a plurality of flare distributors are provided at a plurality of lateral locations onto a vehicle so as to distribute flares that are at different distances from the side of the road.

[0010] Other objects, advantages and features of the present invention will become more apparent upon reading of the following non-restrictive description of preferred embodiments thereof, given by way of example only with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] In the appended drawings:

[0012] Figure 1 is a side elevation view illustrating a flare distributor according to the invention attached to a vehicle;

15 [0013] Figures 2a-b are side elevation views of the flare distributor in two operating configurations;

[0014] Figure 3 is a perspective partially exploded view of the flare distributor of Figure 1;

20 [0015] Figure 4 is another perspective partially exploded view of the flare distributor of Figure 1;

[0016] Figure 5 is a bottom view of the flare receptacles and the flaps;

[0017] Figure 6 is a perspective view of the base of the flare
5 receptacles of Figure 5 from which all but one flap has been removed;

[0018] Figure 7 is a side view illustrating the flare distributor of Figure 1 with a flap in an opened configuration;

[0019] Figure 8 is a side view of the flare distributor of Figure 1 with a flare being released.

10 DETAILED DESCRIPTION

[0020] Figure 1 illustrates a flare distributor 10 for distributing a flare 12 attached to a vehicle in the form of a pick-up truck 14. The reader skilled in the art will readily appreciate that while the drawings illustrate a flare distributor 10 attachable to a pick-up truck 14, it is within the scope of the invention to
15 have flare distributors that are attachable to any other suitable vehicles.

[0021] As shown in Figure 4, the flare distributor 10 includes a base 16. A top plate 18 and a bottom plate 18' hold the flare receptacles 28 in a grouping and an axle 20 passes through both plates 18, 18'. The flare receptacles 28 are thus rotatably mounted to the base 16. The base 16 defines
20 a base aperture 22.

[0022] As shown in Figures 5 and 6, each flare receptacles 28

consists of a tube that is opened at both ends. The upper end being opened to deposit the flares 12 in each flare receptacle 28 and the lower end being opened into an aperture 24 to allow the egress of the flares 12. In the drawings, the apertures 24 are substantially circular, but it is within the scope of the invention to have apertures 24 of any other suitable shape.

[0023] A respective flap 26 is provided proximal each aperture 24. Each flap 26 blocks at least in part a respective aperture 24 when in a closed configuration as shown in Figures 5 and 6. The flaps 26 are rotatably mounted to the bottom plate 18' so as to rotate substantially perpendicularly to the axle 20. Therefore, each flap 26 is rotatable to an open configuration wherein the flap 26 substantially frees the aperture 24.

[0024] The grouping of flare receptacles 28 is rotatable between a holding configuration wherein one of the apertures 24 is substantially blocked by the base 16 and a releasing configuration wherein this aperture 24 is substantially in register with the base aperture 22. When a flare 12 reaches the releasing configuration, it exits the flare receptacle by way of gravity and drops into a flipping receptacle 51.

[0025] The flipping receptacle 51 is rotationally attached to a flipping means 47 and flips the flare 12 end to end so that when released, the flare 12 hits the road on its non-ignited end and therefore helps in insuring that the flare 12 remains ignited when released. Although a spring system could advantageously replace the flipping means 47, it has been found that springs tend to be less efficient in cold weather so a counterweight system is preferable but of course, it would be within the scope of this invention to provide for any number of flipping means beyond the two examples cited here.

[0026] In addition, while the present description refers to direction as being upward or downward, or through the use any other similar terminology, it is within the scope of the invention to have flare distributors that are not oriented as shown in the drawings. Accordingly, this terminology should not be
5 used to restrict the scope of the invention.

[0027] Referring to Figures 5 and 6, the flaps 26 are each mounted through a flap axle 30 that is connected to mounting flanges 32 extending substantially downwardly from the bottom plate 18'. The flaps 26 are substantially trapezoidal and each includes a flap body 34 and a wheel 36
10 mounted to the flap body 34. The wheels 36 rotate on top of the base 16. Therefore, the axle 20 is not necessarily supporting the flare receptacles 28.

[0028] As shown in Figure 3, in some embodiments of the invention, a case 40 is attached to the base 16. However, the case 40 is not necessarily present in alternative embodiments of the invention.

15 [0029] A flipping means 47, in the form of a counterweight, is situated inside a flipping means container 49 extending substantially downwardly from the base 16. The flipping means 47 brings the flipping receptacle 51 to its initial position, as in Figure 1, ready to receive another flare 12. Initially, the weight of the flare 12 is what flips the flipping receptacle 51 as
20 in Figure 2.

[0030] As illustrated in Figure 4, the base 14 receives a motor 43 connected through an axle to a pulley 44. As seen in Figure 3, a strap 46 interconnects the pulley 44 to bosses 42 situated on each flare receptacle 28, thereby allowing rotation of about the axle 20.

[0031] As better shown in Figure 1, an igniter 50 provides an electrical current which heats up a heating element 56 situated at the base of the flipping receptacle 51 that ignites the flare 12.

[0032] In some embodiments of the invention, a controller 60
5 controls the rotation of the flare receptacles 28 and provides a suitable electrical current to the igniter heating element 56 at an appropriate time.

[0033] The use of the flare distributor 10 is described hereinbelow with reference to Figures 7, 8 and 9.

[0034] Figure 7 illustrates the flare distributor 10 with the 18 in a
10 holding configuration. The reader skilled in the art will readily appreciate that references to a holding configuration for the flare receptacles 28 refers to a holding configuration for a specific flare 12. As it will apparent from the discussion found hereinbelow, when the flare receptacles 28 is in the holding
15 configuration for one flare 12, it may be in raising configuration for another of the flares 12.

[0035] In the holding configuration, the flare 12 is maintained within the flare receptacles 28 by the flap 26. To that effect, the wheel 36 abuts the base 14 and is thereby maintained in the closed configuration. When the flare receptacles 28 is suitably rotated, the flap 26 becomes substantially in register
20 with the base aperture 22 and therefore adopts the open configuration through the action of gravity. Therefore, the flap 26 is freed to rotate around the flap axle 30 as the wheel 36 is no longer supported by the base 14.

[0036] Applying a suitable current to the igniter heating element 56 warms the heating element to its flashpoint, for example 850°C, or any other

temperature capable of causing ignition, and thereby provides heat to the flare 12 to provoke its ignition. This current is either applied automatically by the controller 60 or applied manually through a suitable control by an intended user. After a suitable amount of time has passed, the flare 12 is ignited. For
5 example, the flare 12 is ignited after five seconds.

[0037] Subsequently, the flare receptacles 28 is rotated so that the aperture 24 becomes substantially in register with the base aperture 22 which allows the flare 12 to be distributed by the flare distributor 10 and to fall onto
10 the roadway.

[0038] In some embodiments of the invention, the controller rotates the flare receptacles 28 so that flare receptacles 28 rotates in a substantially uniform speed throughout the releasing process, the speed being adjusted so that the flare 12 is ignited when the flare 12 reaches the base aperture 22.

15 [0039] The exact controller 60 used is not critical to the present invention and the reader skilled in the art will readily appreciate many manners in which such controllers may be provided. Accordingly, this controller 60 is not described in details herein.

[0040] In some embodiments of the invention, a plurality of flare
20 distributors 10 is provided on a single truck 14 as a plurality of locations onto the bumper 45. Then, flares 12 are distributable by the flare distributors 10 at different lateral locations on the road, depending on the flare distributor 10 that is used to distribute the flare 12. This allows for a relatively secure, fast, and efficient manner of distributing flares 12 at different locations onto the road, for

example to show to oncoming drivers that they must move their vehicle laterally so as to avoid hitting a hazard.

[0041] Although a specific flare distributor 10 has been shown, many alternative embodiments of the invention are within the scope of the invention.
5 For example, it is within the scope of the invention to have the motor 43 directly affixed to axle 20 so that the pulley 44 and the strap 46 are not necessary.

[0042] Also, it is within the scope of the invention to have flare distributors 10 that are not substantially vertically oriented but that instead are
10 angled with respect to the vertical.

[0043] In some embodiments of the invention, the grouping of flare receptacles 28 is not supported by the wheels 36 but is instead supported by the axle 20 and therefore, in this embodiment of the invention, the wheels 36 are only provided to facilitate a movement of the flare receptacles 28.

15 [0044] Although the present invention has been described hereinabove by way of preferred embodiments thereof, it can be modified, without departing from the spirit and nature of the subject invention as defined in the appended claims.

WHAT IS CLAIMED IS:

1. A flare distributor for distributing a flare, said flare distributor comprising:
a base defining a base aperture;
5 a grouping of flare receptacles comprised of a plurality of flare receptacles rotatably mounted to said base, a flap rotatably mounted underneath each one of said plurality of flare receptacles, said flap being rotatable between a closed configuration wherein said flap blocks at least in part said aperture and an open configuration wherein said flap substantially frees said aperture, said grouping
10 of flares being rotatable between a holding configuration wherein said aperture is substantially blocked by said base and a releasing configuration wherein said aperture is substantially in register with said base aperture; and
an actuator for rotating said plurality of flare receptacles.
15
2. A flare distributor for distributing a flare as in claim 1 wherein:
said flap being supported by said base when not in register with said base
aperture; said aperture becomes substantially in register with said base
aperture through a rotation of said , said flap becomes unsupported by said
20 base to adopt said releasing configuration in order so as to allow said flare contained within said flare receptacles to pass through said aperture and through said base aperture.
3. A flare distributor for distributing a flare as in claim 1 wherein:
an igniter is provided to ignite said flare prior to its release by said flare
25 distributor.

4. A flare distributor for distributing a flare as in claim 1 wherein:

said being substantially disc-shaped so as to define a substantially peripheral groove.

5. A flare distributor for distributing a flare as in claim 1 wherein:

5 said base receives a motor connected through an axle to a pulley; a strap interconnects said pulley and said thereby allowing rotation of said about said axle through the use of said motor.

6. A flare distributor for distributing a flare as in claim 1 wherein:

10 said base aperture includes a base aperture ignition portion and a base aperture releasing portion.

7. A flare distributor for distributing a flare as in claim 1 wherein:

an igniter is provided in register with said base aperture ignition portion; said igniter having an igniter receptacle defining an open end for releasing said flare said igniter further includes an igniter heating element for igniting said flare.

15 8. A flare distributor for distributing a flare as in claim 1 wherein:

said base aperture releasing portion being in register with a portion of said base that allows said flare to fall through the action of gravity from said flare distributor.

9. A flare distributor for distributing a flare as in claim 1 wherein:

a controller controls the rotation of said and provides an electrical current to said igniter heating element.

10. A flare distributor for distributing a flare as in claim 1 wherein:

5 a flipping receptacle is rotationally attached to a flipping means and flips said flare end to end so that when released, said flare hits the road on its non-ignited end.

11. A flare distributor for distributing a flare as in claim 1 wherein:

10 said controller rotates said so that said rotates in a substantially uniform speed throughout the releasing process, speed being adjusted so that said flare is ignited when said flare reaches said base aperture releasing portion.

12. A flare distributor for distributing a flare as in claim 1 wherein:

said controller rotates said so that said flare is first received within said igniter and, after a predetermined amount of time, said is further rotated so that said flare attains said base aperture releasing portion.

15 13. A flare distributor for distributing a flare as in claim 1 wherein:

a plurality of flare distributors is provided on a single truck at a plurality of locations onto said bumper.

14. A flare distributor for distributing a flare as in claim 1 wherein:

said s are affixed to axles that are directly operated by said motor.

15. A flare distributor for distributing a flare as in claim 1 wherein:

said flare distributors being oriented at an angled with respect to the vertical.

16. A flare distributor for distributing a flare as in claim 1 wherein:

said being supported by said axle.

5 17. A flare distributor for distributing a flare as in claim 1 having the following method of use:

10 in holding configuration, said flare is maintained within said flare receptacle by said flap; said wheel abuts said base and is thereby maintained in said closed configuration; when said flare receptacles is rotated, said flap becomes in register with said base aperture and adopts said open configuration through the action of gravity; said flap is freed to rotate around said flap axle as said wheel is no longer supported by said base; at first, said flare is received by said base aperture ignition portion; said flare then falls into said igniter receptacle and contacts said igniter heating element; a current applied to said igniter heating
15 element warms said heating element to a temperature to provoke ignition of said flare; said is rotated so that said aperture becomes in register with said base aperture releasing portion, this allows said flare to be distributed by said flare distributor and to fall onto the roadway.

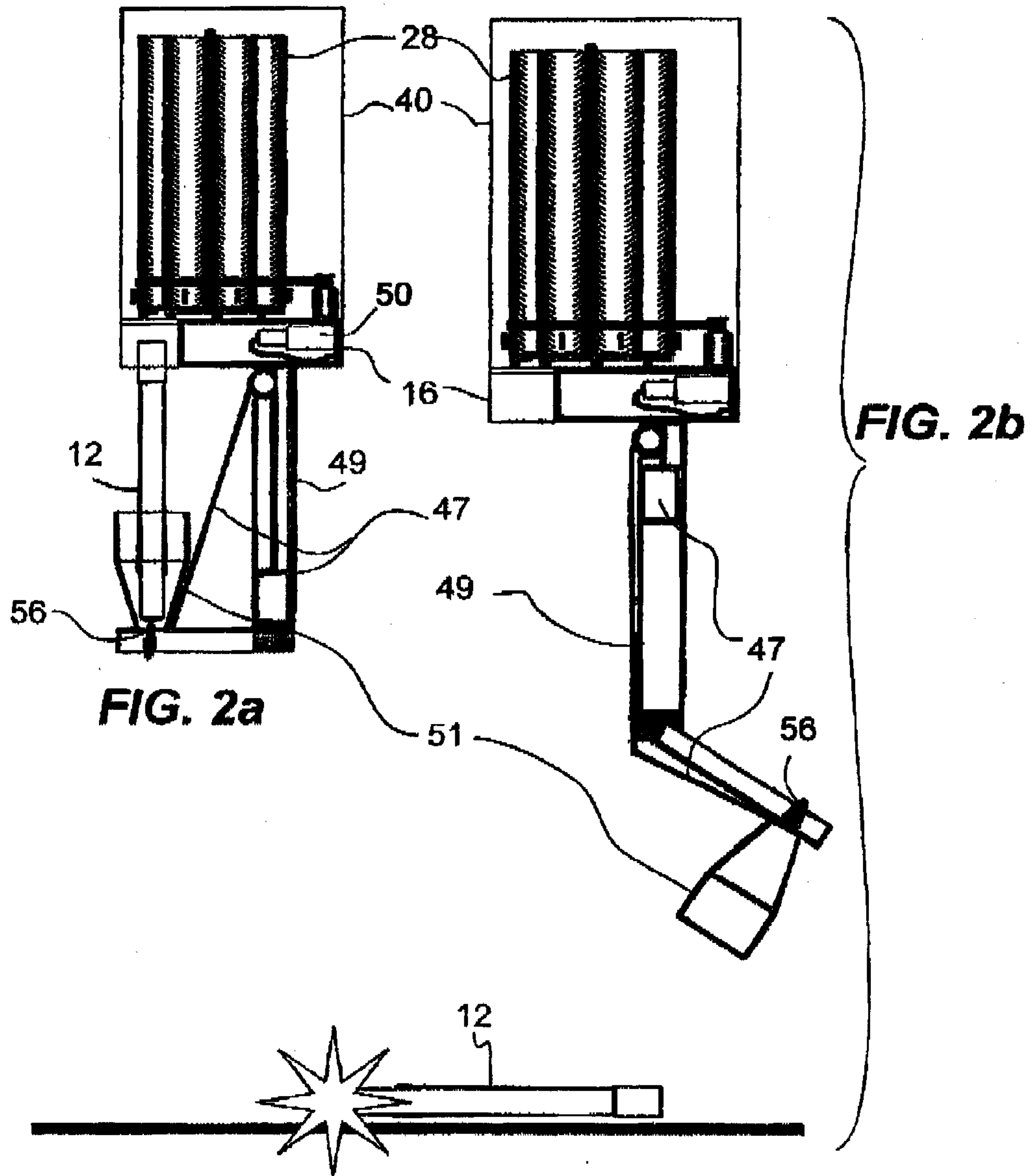
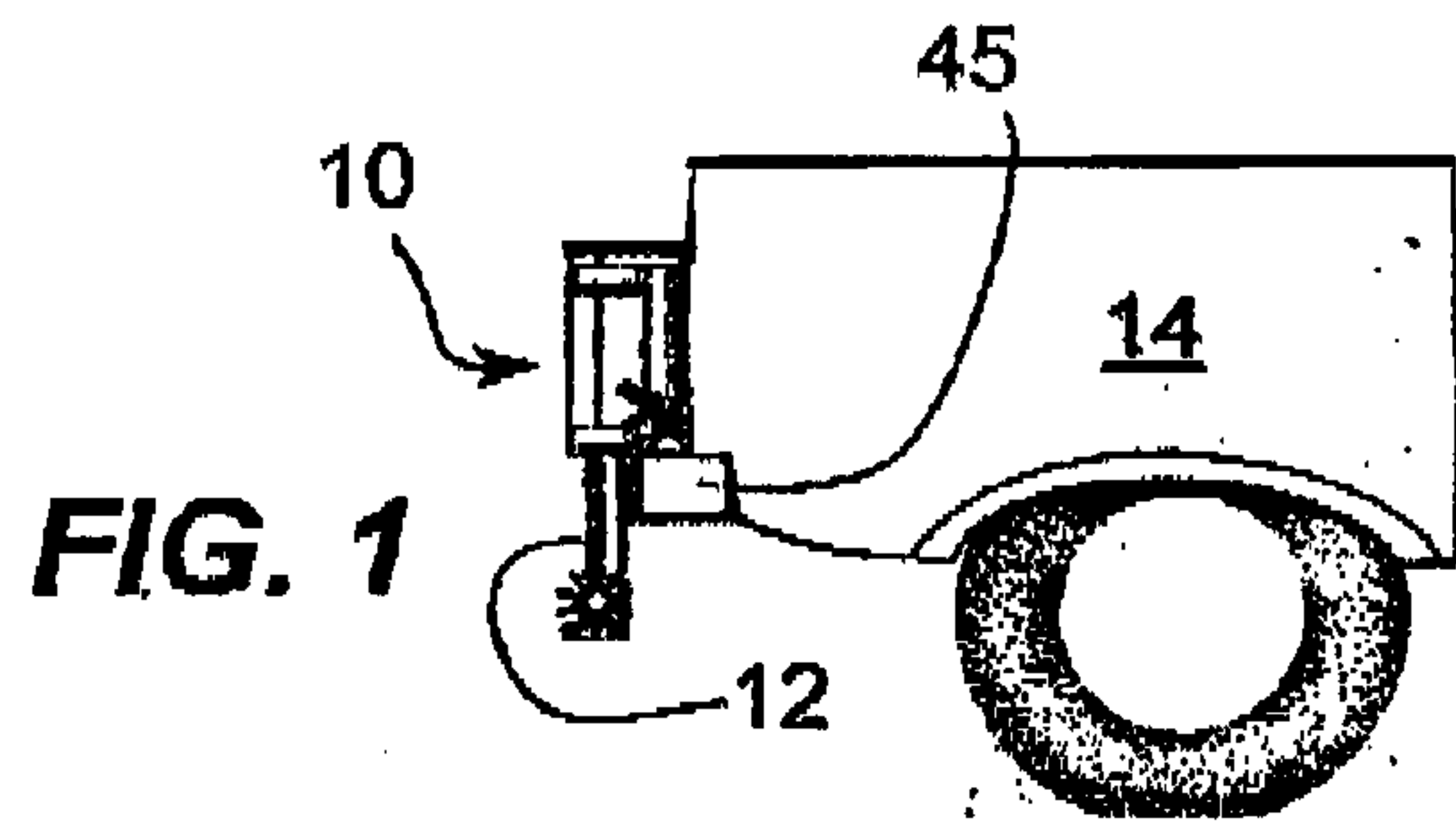


FIG. 3

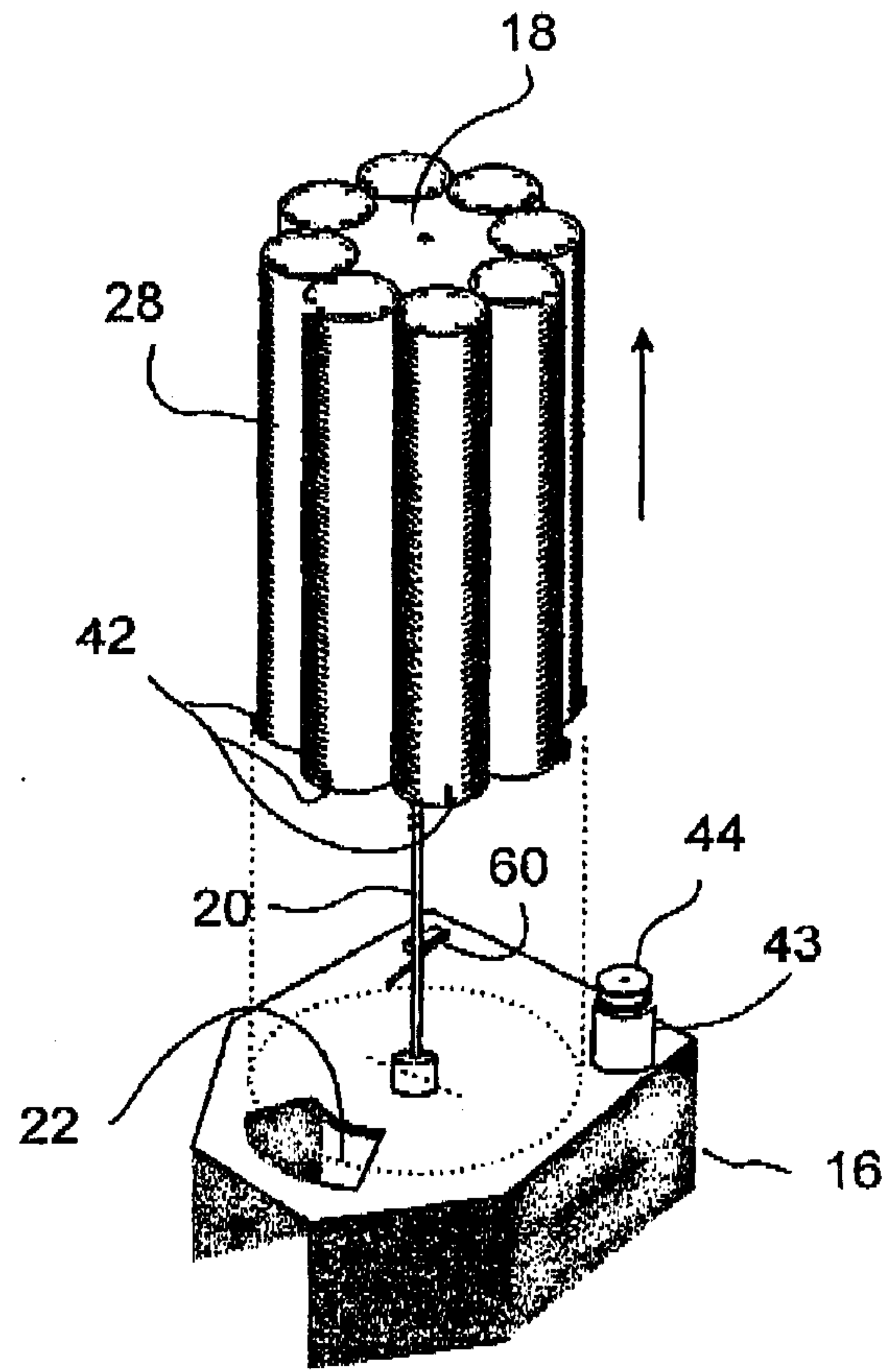
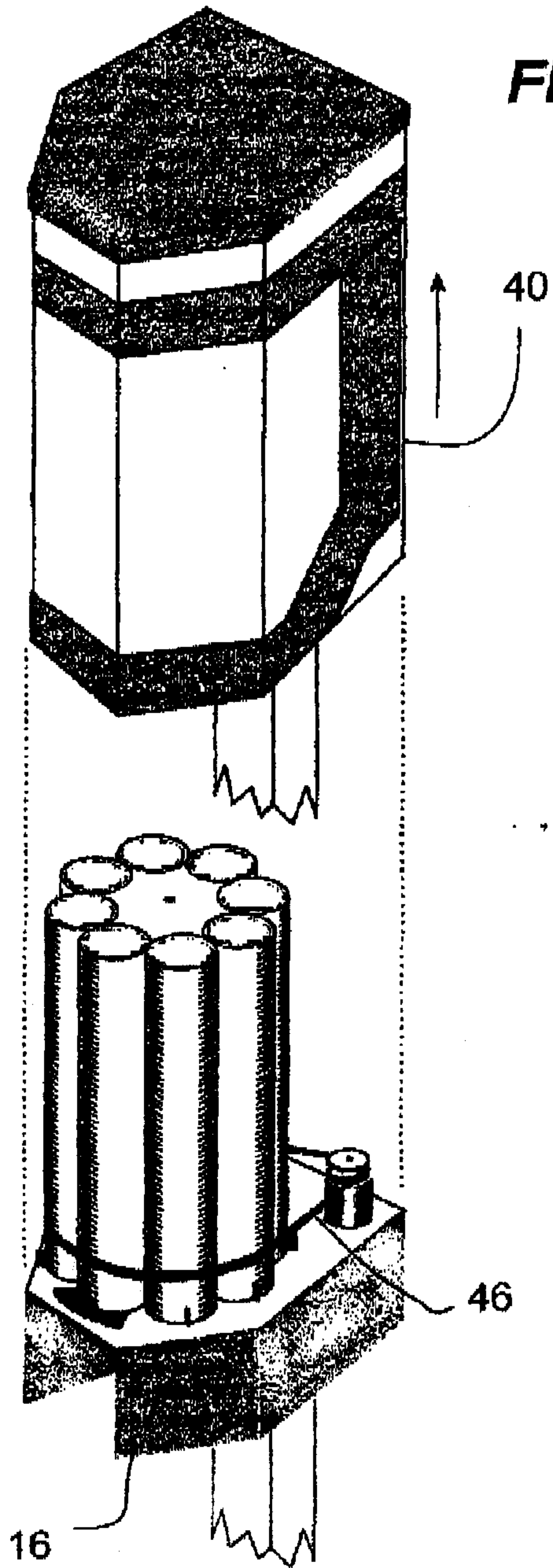


FIG. 4

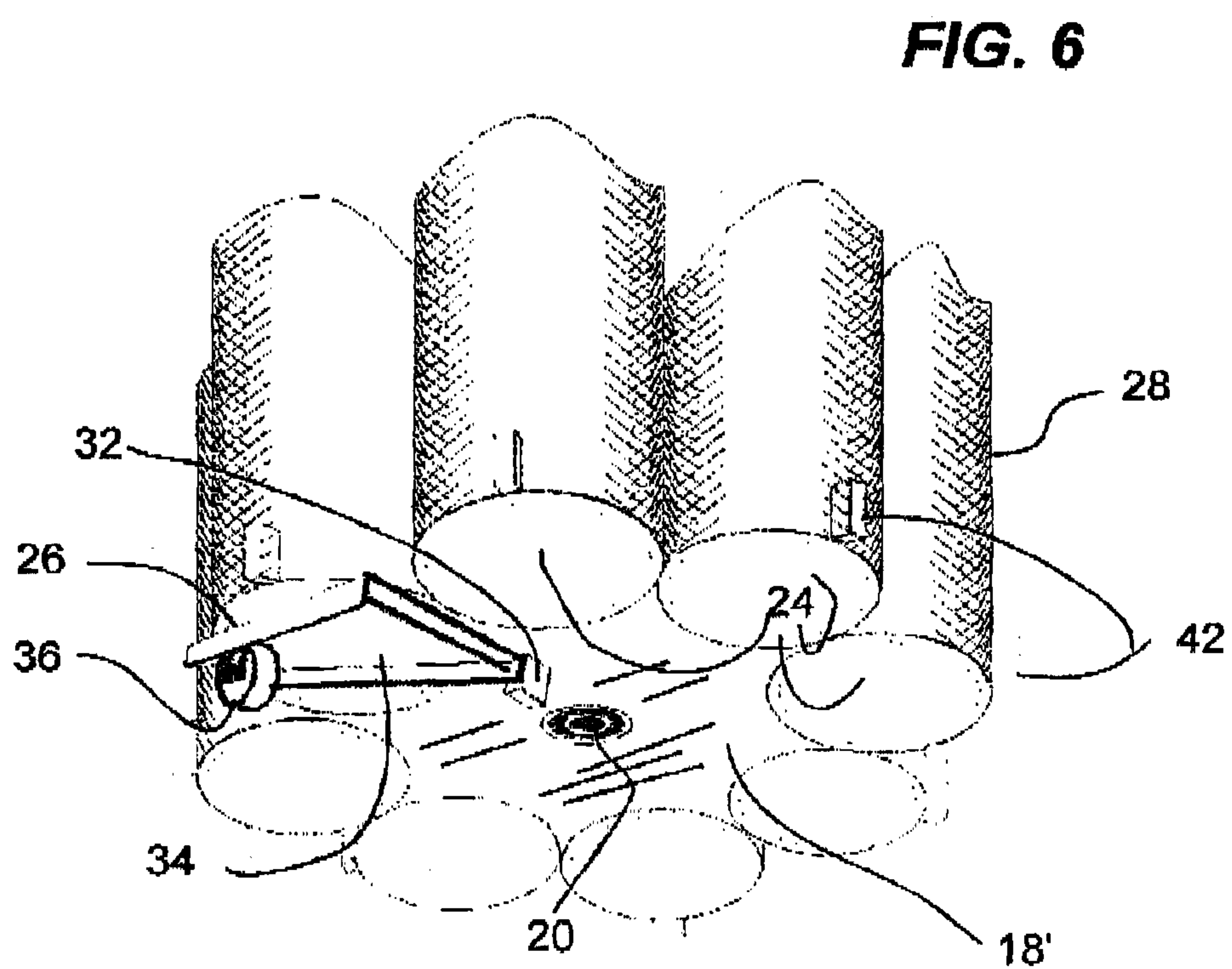
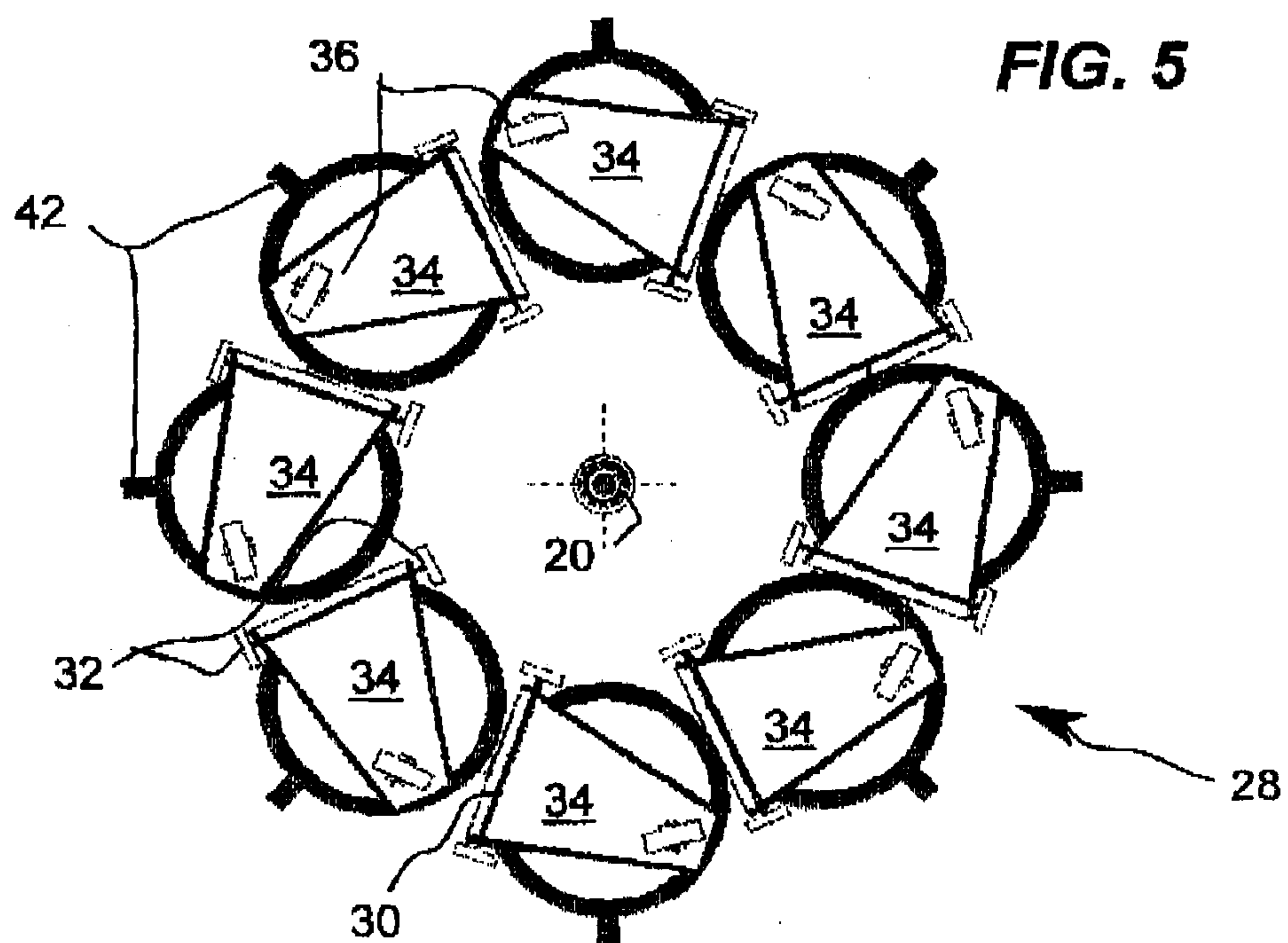


FIG. 7

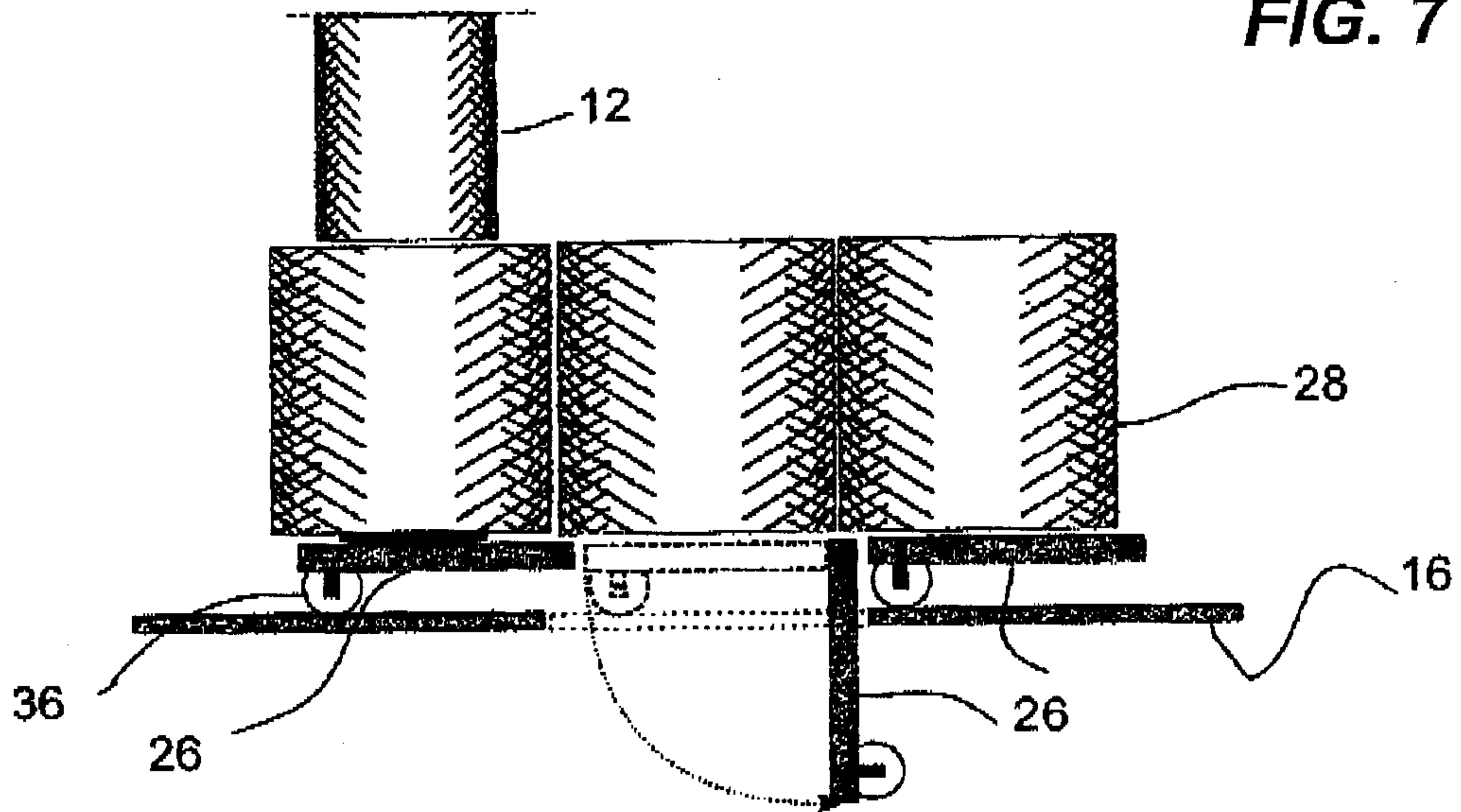


FIG. 8

