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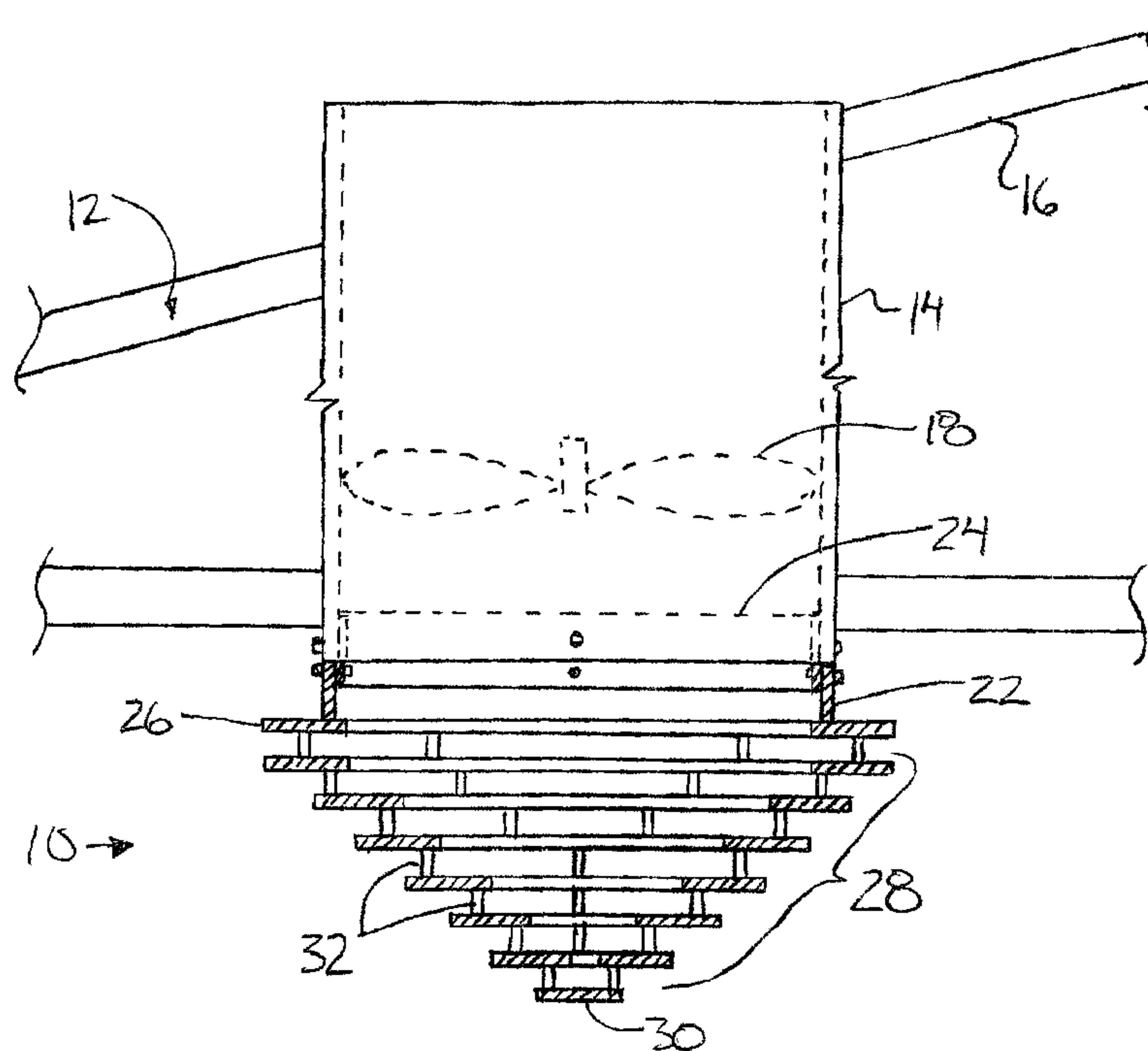
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(54) Titre : DIFFUSEUR DE LUMIERE

(54) Title: LIGHT DIFFUSING APPARATUS



(57) Abrégé/Abstract:

A light diffusing apparatus is provided for attachment to an upright vent pipe, for example the type found in poultry barns and the like. The apparatus includes a mounting collar for securement about one end of the vent pipe and a plurality of generally annular baffles supported on the mounting collar substantially co-axially with the mounting collar. The baffles are spaced apart in an axial direction and have varying diameter from one another so that the baffles overlap one another in a radial direction. The configuration of the baffles ensures that light cannot pass through the vent pipe when the light diffusing apparatus is supported thereon. In particular, overlapping of the baffles in the radial direction thereof while the baffles remain vertically spaced apart permits ventilating air to pass therethrough while blocking light travelling through the vent pipe in an axial direction of the pipe.



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ABSTRACT

A light diffusing apparatus is provided for attachment to an upright vent pipe, for example the type found in poultry barns and the like. The apparatus includes a mounting collar for securement about one end of the vent pipe and a
5 plurality of generally annular baffles supported on the mounting collar substantially co-axially with the mounting collar. The baffles are spaced apart in an axial direction and have varying diameter from one another so that the baffles overlap one another in a radial direction. The configuration of the baffles ensures that light cannot pass through the vent pipe when the light diffusing apparatus is supported thereon. In
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LIGHT DIFFUSING APPARATUS

FIELD OF THE INVENTION

The present invention relates to a light diffusing apparatus for attachment to an upright vent pipe of the type typically located in the roof of a building for diffusing light passing through the vent pipe.

BACKGROUND

In ventilated buildings, ventilation is occasionally provided by upright vent pipes extending through the roof of the building. These upright vent pipes are known to allow undesirable amounts of light to pass therethrough. In a poultry barn for example, light shining on the floor can attract the chickens housed therein as chickens are known to peck at and swallow small pebbles which are lit up on the floor of an otherwise darkened housing area. Swallowing these pebbles can be fatal to the chickens in some instances.

SUMMARY

According to one aspect of the present invention there is provided a light diffusing apparatus for attachment to an upright vent pipe, the apparatus comprising:

a mounting collar for securement about one end of the vent pipe;

a plurality of generally annular baffles supported on the mounting collar substantially co-axially with the mounting collar, each baffle spanning a respective width in a radial direction of the baffle about a full circumference of the baffle;

the baffles being spaced apart in an axial direction of the mounting collar at different spacings from the mounting collar and having varying diameter from one another;

the width of each baffle overlapping in a radial direction a portion of the width of an adjacent baffle about a full circumference of the baffles;

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and a cap member supported on one of the baffles substantially co-axially with the mounting collar.

The configuration of the baffles ensures that light cannot pass through the vent pipe when the light diffusing apparatus is supported thereon. In particular,
5 overlapping of the baffles in the radial direction thereof while the baffles remain vertically spaced apart permits ventilating air to pass therethrough while blocking light travelling through the vent pipe in an axial direction of the pipe.

The width of each baffle preferably overlaps approximately half the width of the adjacent baffle in the radial direction of the baffles. More preferably, the
10 width of each baffle overlaps at least two adjacent baffles in the radial direction of the baffles.

The baffles may each be formed of a flat plate material supported in a generally horizontal orientation. The baffles may be formed of plastic material, for example a high density polyethylene.

15 In one embodiment, the generally annular baffles have a rectangular shaped perimeter. In this instance, each baffle is formed by a pair of L-shaped plates of plastic material butt welded together to define the rectangular shaped perimeter thereof.

In a further embodiment, the generally annular baffles may have a
20 circular shaped perimeter.

Each baffle may further comprise a flared circular collar having an annular flange formed at one end thereof which defines the width of the baffle in the radial direction thereof. The flared circular collar forming each baffle in this instance is preferably oriented substantially co-axially with the mounting collar.

25 In a further arrangement, each baffle may comprise a stepped circular collar having an annular flange formed about the stepped circular collar between

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respective ends of the stepped circular collar which defines the width of the baffle in the radial direction of the baffle. The stepped circular collar forming each baffle is also preferably oriented to lie substantially co-axially with the mounting collar.

5 The apparatus may be provided in combination with an upright vent pipe in a roof of a poultry barn having a ventilating fan operatively supported therein. The mounting collar in this instance preferably has a mating cross section which is secured about one end of the vent pipe.

10 Diameter of the baffles may decrease as distance from the mounting collar increases such that the cap member can be supported on a furthestmost one of the baffles from the mounting collar. Accordingly, the cap member spans in the radial direction across a portion of the width of the furthestmost one of the baffles about a full circumference thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

15 In the accompanying drawings, which illustrate exemplary embodiments of the present invention:

Figure 1 is a partly sectional side elevational view of a first embodiment of the light diffusing apparatus.

Figure 2 is a top plan view of the light diffusing apparatus of Figure 1.

20 Figure 3 is an isometric view of a second embodiment of the light diffusing apparatus.

Figure 4 is a sectional side elevational view of a third embodiment of the light diffusing apparatus.

Figure 5 is a sectional side elevational view of a further embodiment of the light diffusing apparatus.

25 DETAILED DESCRIPTION

Referring to the accompanying drawings, there is illustrated a light

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diffusing apparatus generally indicated by reference numeral 10. The apparatus 10 is intended for use with a poultry barn 12 in which plural vent pipes 14 extend substantially vertically through a roof 16 of the barn for ventilation. A ventilating fan 18 is housed within the vent pipe 14 for forcing ventilation air through the vent pipe 5 when the ventilating fan 18 is operated. The apparatus 10 mounts on a bottom end of the vent pipe 14 inside the poultry barn 12 for blocking direct light passing through the vent pipe.

Referring initially to Figure 1 and 2, a first embodiment of the apparatus 10 is illustrated. In preferred embodiments, the apparatus 10 is formed of 10 high density polyethylene which has been cut and assembled into the desired configuration, however other suitable materials may be used. The apparatus includes a mounting collar 22 which is arranged to be secured to the bottom end of the vent pipe 14 by a mounting ring 24 which is concentrically received within both the mounting collar 22 and the vent pipe 14. Screws are provided for securing the 15 collar 22 to the mounting ring 24 and subsequently to the vent pipe 14.

The mounting collar 22 has a mating cross section with that of the vent pipe for ensuring a proper fit therein. When the vent pipe has a square cross section for example, the mounting collar 22 also has a mating square cross section for fitting on the vent pipe.

20 The apparatus 10 further includes an uppermost baffle 26 secured on the mounting collar 22, a plurality of intermediate baffles 28 at various spacings from the mounting collar 22 and a cap member 30 supported on a furthestmost one of the intermediate baffles 28 from the mounting collar 22.

Each of the baffles 26 and 28 have a square perimeter while being 25 generally annular-shaped and formed of a flat plate material. A square opening centrally located within the baffle defines the annular shape thereof. The width of

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the baffle is defined in a radial direction between the opening in the baffle and the perimeter thereof when the baffles are mounted co-axially aligned with one another as illustrated in Figure 1. The width of each baffle is substantially constant about a full circumference thereof.

5 The baffles 26 and 28 and the cap member 30 are all mounted spaced apart from one another by a plurality of mounting posts 32 at spaced positions about a circumference of the apparatus. A diameter of the baffles is reduced with increased distance from the mounting collar 22 with the mounting posts 32 being arranged to be mounted between respective overlapping sections of adjacent
10 baffles. The mounting posts 32 are arranged so that the spacing between the baffles is substantially constant with the distance being equal to approximately only half of the width of each baffle.

 The baffles are arranged in an overlapping configuration in a radial direction of the baffles such that each baffle overlaps approximately 50% of the
15 previous adjacent baffle nearest to the collar while it is overlapped by approximately 50% of its width by the following adjacent baffle which is next furthest from the mounting collar 22. Overlapping the baffles by approximately 50% of their width ensures that each baffle, in addition to overlapping the two adjacent baffles, also meets or overlaps the next most adjacent baffle on opposing sides of the adjacent
20 baffles thereto. When mounted on a vertically oriented vent pipe 14 the baffles and the cap member are all positioned to lie generally horizontally, spaced apart vertically but overlapping in the horizontal directions to block direct light passing vertically through the vent pipe.

 The cap member 30 is mounted in a similar manner as the
25 intermediate baffles 28, being spaced below the lowermost baffle and being arranged to span horizontally across the opening in the lowermost baffle so as to

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overlap the width of the lowermost baffle by approximately 50% of its width just as the baffles are mounted. The cap member 30 is a continuous flat plate.

Turning now to Figure 3 a further embodiment of the apparatus 10 is illustrated in which circular baffles 40 are provided. The baffles 40 are identical to the configuration of the baffles as shown in Figure 1 with the exception that the baffles have a circular cross section aligned co-axially with the mounting collar 22. The circular baffles 40 similarly overlap one another in the radial direction of the baffles by approximately half of the width of the baffles at equidistant spacing from one another as noted above with regard to the first embodiment.

Yet a further embodiment of the apparatus 10 is illustrated in Figure 4. In this embodiment each baffle comprises a flared circular collar 44 which is concentrically mounted with the vent pipe 14 and the remaining baffles. The collar each have a constant diameter which is reduced in diameter in relation to the other collars with increasing distance from the vent pipe upon which the collars are supported as in the previous example. An annular flange 46 is formed about the bottom of each collar 44 to span radially outwardly therefrom to define the width of the baffle in the radial direction thereof. As in the previous embodiments the baffles are mounted concentrically with one another with increasing distance from the vent pipe upon which they are supported so that the annular flanges 46 of each baffle overlaps the adjacent baffle in the radial direction while being spaced apart therefrom.

Turning now to Figure 5 a further embodiment of the light diffusing apparatus 10 is shown. In this embodiment each baffle comprises a stepped circular collar 50 which is mounted concentrically with the vent pipe 14 upon which it is supported and the remaining baffles. The stepped portion 52 of each collar 50 is located partway between respective ends of the collar so that each collar has a

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narrower diameter at a top end as compared to the bottom end thereof. The stepped portion 52 thus forms a shoulder which spans a radial extent about a full circumference of the apparatus, thus defining the width of each baffle. As in previous embodiments the widths of the baffles are arranged to overlap one another

5 in the radial direction of the baffles while remaining spaced apart in an axial direction to permit flow of air therethrough. The ends of each collar 50 are oriented to lie substantially co-axially with the vent pipe and mounting collar supporting the apparatus thereon. Cap members are also provided in the further embodiments for spanning the opening in the lowermost baffle spaced farthest from the mounting

10 collar supporting the apparatus on the vent pipe.

While various embodiments of the present invention have been described in the foregoing, it is to be understood that other embodiments are possible within the scope of the invention. The invention is to be considered limited solely by the scope of the appended claims.

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CLAIMS:

1. A light diffusing apparatus for attachment to an upright vent pipe, the apparatus comprising:

a mounting collar for securement about one end of the vent pipe;

5 a plurality of generally annular baffles supported on the mounting collar substantially co-axially with the mounting collar, each baffle spanning a respective width in a radial direction of the baffle about a full circumference of the baffle;

the baffles being spaced apart in an axial direction of the mounting collar at different spacings from the mounting collar and having varying diameter
10 from one another;

the width of each baffle overlapping in a radial direction a portion of the width of an adjacent baffle about a full circumference of the baffles;

and a cap member supported on one of the baffles substantially co-axially with the mounting collar.

15 2. The apparatus according to Claim 1 wherein the width of each baffle overlaps approximately half the width of the adjacent baffle in the radial direction of the baffles.

3. The apparatus according to Claim 1 wherein the baffles are each formed of a flat plate material.

20 4. The apparatus according to Claim 1 wherein the baffles are each supported in a generally horizontal orientation.

5. The apparatus according to Claim 1 wherein the baffles are formed of plastic material.

25 6. The apparatus according to Claim 1 wherein the baffles are formed of high density polyethylene.

7. The apparatus according to Claim 1 wherein the width of each

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baffle overlaps at least two adjacent baffles in the radial direction of the baffles.

8. The apparatus according to Claim 1 wherein the generally annular baffles have a rectangular shaped perimeter.

5 9. The apparatus according to Claim 8 wherein each baffle is formed by a pair of L-shaped plates of plastic material welded together to define the rectangular shaped perimeter thereof.

10. The apparatus according to Claim 1 wherein the generally annular baffles have a circular shaped perimeter.

10 11. The apparatus according to Claim 1 wherein each baffle comprises a flared circular collar having an annular flange formed at one end thereof which defines the width of the baffle in the radial direction thereof.

12. The apparatus according to Claim 11 wherein the flared circular collar forming each baffle is oriented substantially co-axially with the mounting collar.

15 13. The apparatus according to Claim 1 wherein each baffle comprises a stepped circular collar having an annular flange formed about the stepped circular collar between respective ends of the stepped circular collar which defines the width of the baffle in the radial direction of the baffle.

20 14. The apparatus according to Claim 13 wherein the stepped circular collar forming each baffle is oriented to lie substantially co-axially with the mounting collar.

15. The apparatus according to Claim 1 in combination with an upright vent pipe in a roof of a poultry barn.

16. The apparatus according to Claim 1 in combination with an upright vent pipe having a ventilating fan operatively supported therein.

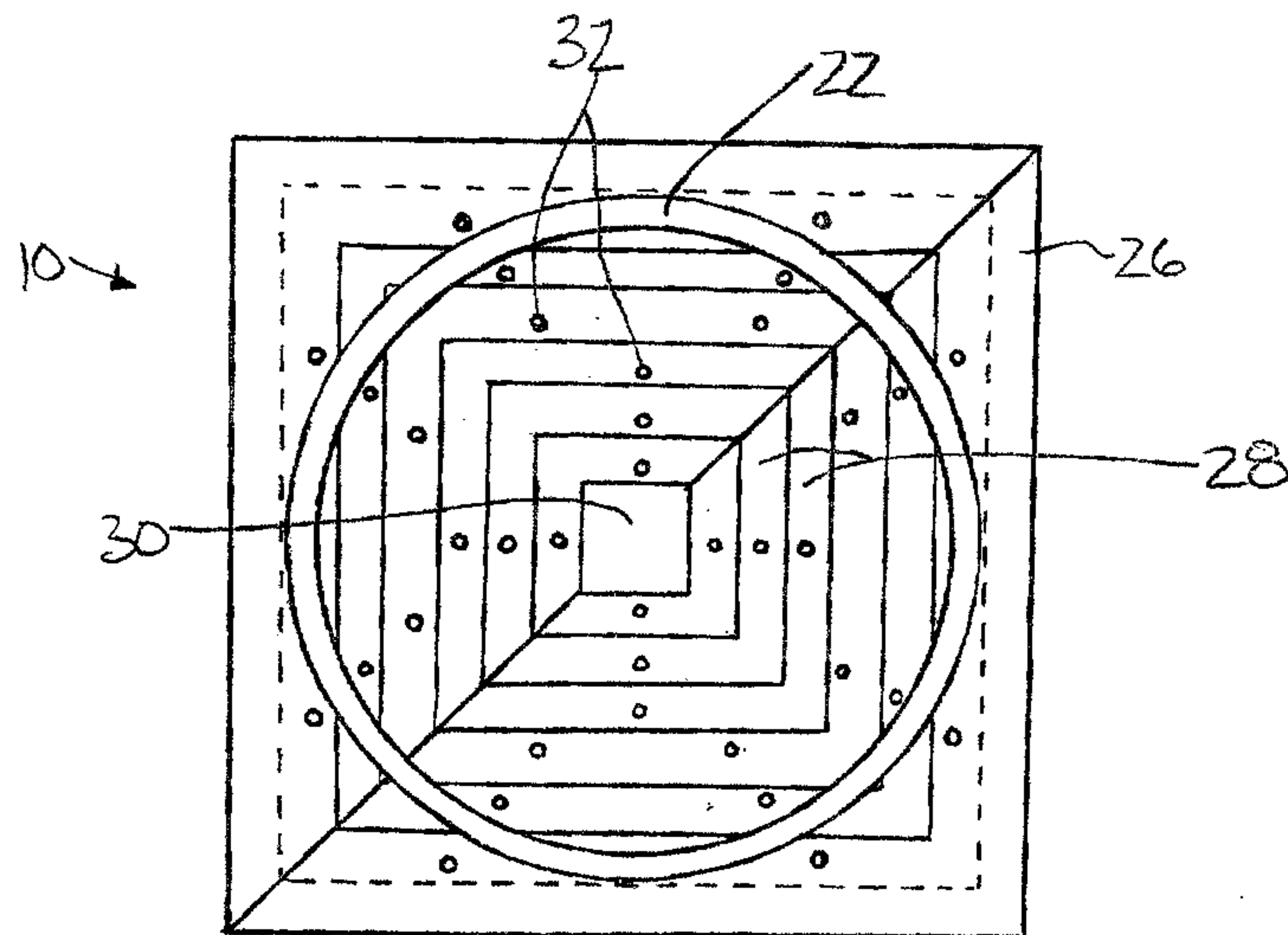
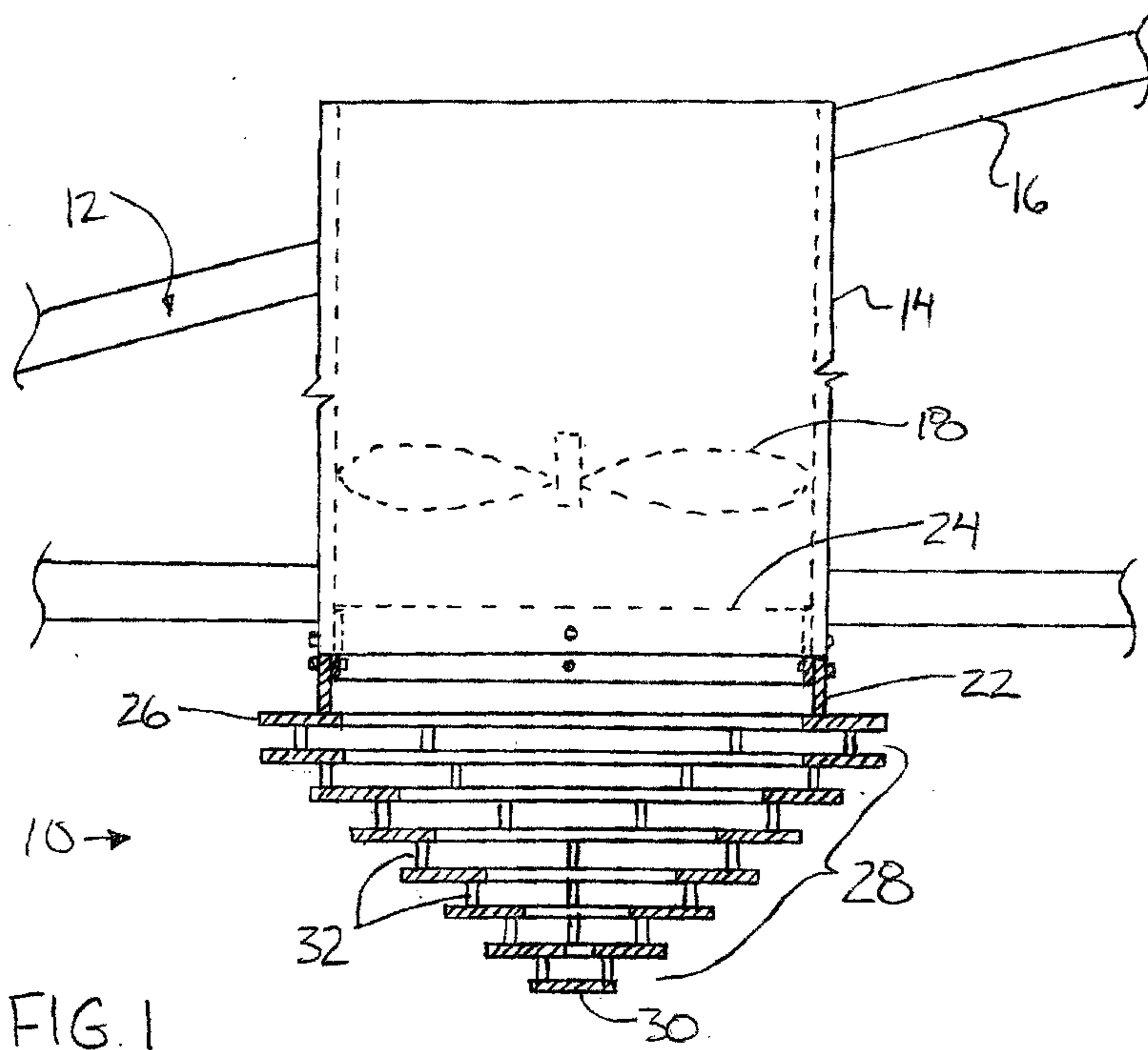
25 17. The apparatus according to Claim 1 in combination with an upright vent pipe wherein the mounting collar has a mating cross section which is

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secured about one end of the vent pipe.

18. The apparatus according to Claim 1 wherein diameter of the baffles decrease as distance from the mounting collar increases.

19. The apparatus according to Claim 1 wherein the cap member is
5 supported on a furthestmost one of the baffles from the mounting collar, the cap member spanning in the radial direction across a portion of the width of the furthestmost one of the baffles about a full circumference thereof.



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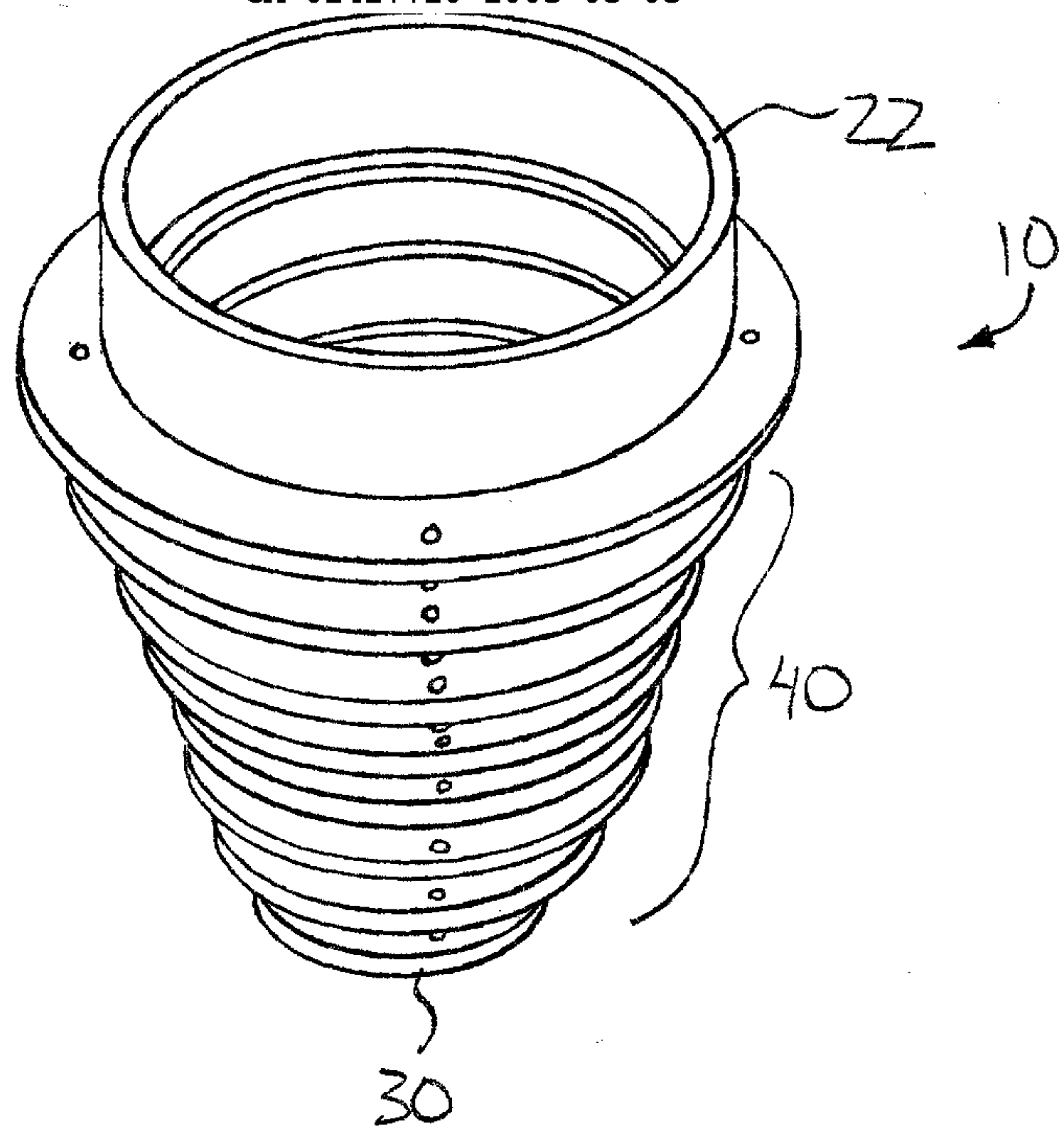


FIG. 3

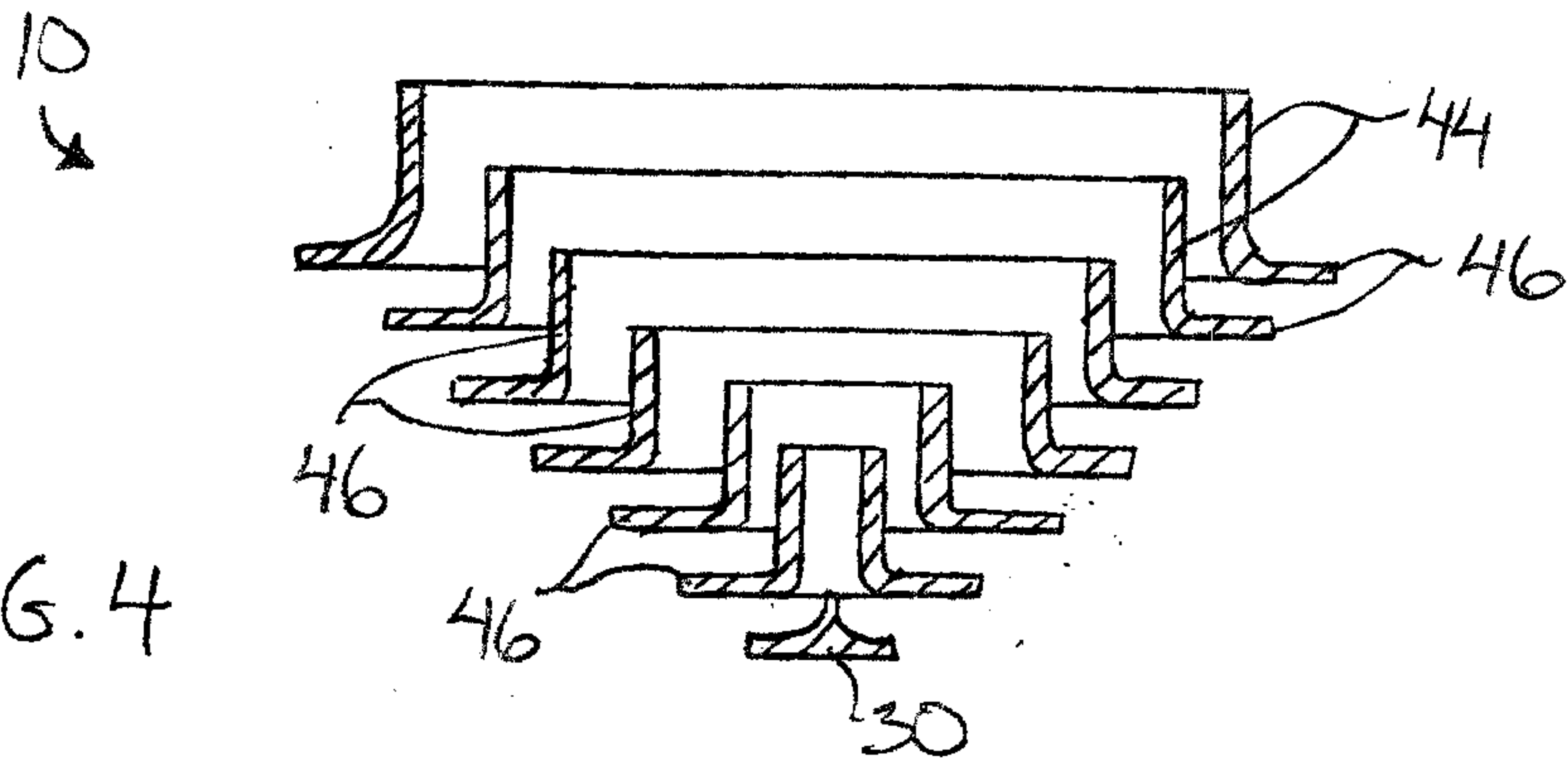


FIG. 4

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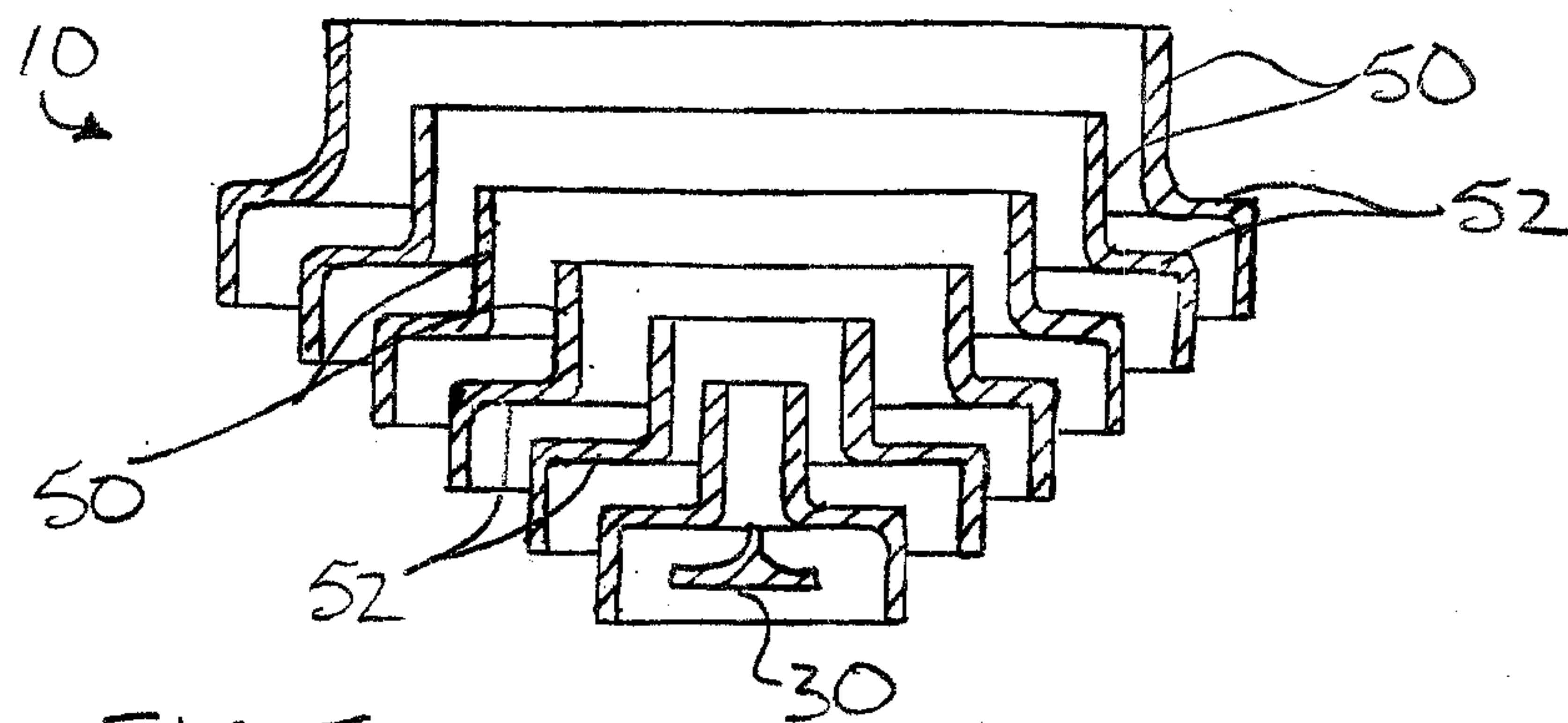


FIG. 5

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