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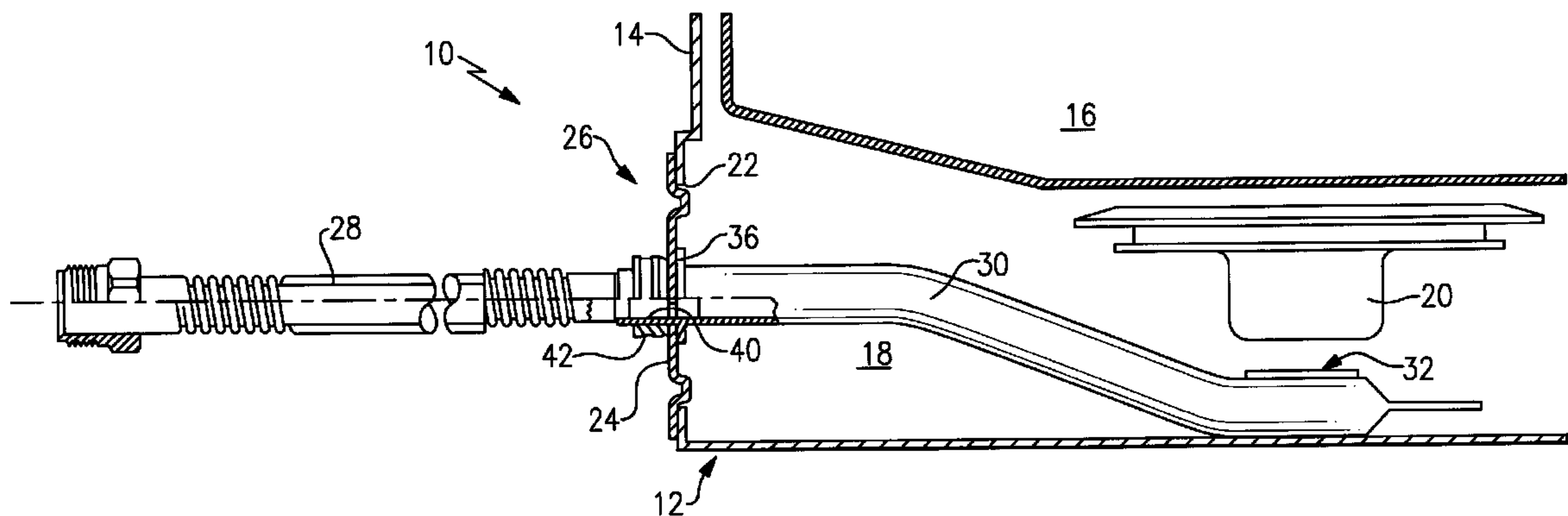
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(54) Titre : INTERFACE D'ALIMENTATION EN GAZ POUR CHAUFFE-EAU

(54) Title: GAS SUPPLY INTERFACE FOR A WATER HEATER



(57) Abrégé/Abstract:

The present invention relates to a gas supply interface for delivering combustions gases to a combustion chamber of a heating device including a door having a serrated opening and a gas supply tube having a flange and which is inserted through the serrated opening of the door.



ABSTRACT

The present invention relates to a gas supply interface for delivering combustions gases to a combustion chamber of a heating device including a door having a serrated opening and a gas supply tube having a flange and which is inserted through the serrated opening of the door.

GAS SUPPLY INTERFACE FOR A WATER HEATER

BACKGROUND

5 The present disclosure relates to a gas supply interface for delivering natural gas to a combustion chamber of a water heater.

Devices that utilize a combustible fuel such as propane or natural gas require connections between a multiple of components. Various connections have been provided. Although effective, current connection components are rather expensive and may require a welded or brazed connection which may complicate installation for
10 combustible fuel devices.

SUMMARY

A gas supply interface according to an exemplary aspect of the present disclosure includes a door adapted to fit within an opening to a combustion chamber
15 and a gas supply tube which defines a flange, the gas supply tube received within a serrated opening such that the flange abuts the door.

A method of assembling a gas supply interface for delivering combustion gases to a device according to an exemplary aspect of the present disclosure includes telescoping a gas supply line to a gas supply tube; inserting the gas supply tube
20 through a serrated opening of a door adapted to fit within an opening to a combustion chamber; and compressing the gas supply tube against the serrated opening.

BRIEF DESCRIPTION OF THE DRAWINGS

The various features and advantages of this invention will become apparent to
25 those skilled in the art from the following detailed description of the currently preferred embodiment. The drawings that accompany the detailed description can be briefly described as follows:

Figure 1 is a general side view of a gas supply interface for a water heater embodiment of the present invention;

30 Figure 2 is a perspective sectional view of the gas supply interface for the water heater;

Figure 3 is an exploded view of a gas supply interface;

Figure 4A is a front view of a door with a serrated opening; and
 Figure 4B is a sectional view taken along line 4B-4B of Figure 4A.

DETAILED DESCRIPTION

5 Figure 1 illustrates a general perspective view of a gas supply assembly 10 for
 use with a water heater assembly 12. Although a water heater assembly 12 is
 disclosed in the illustrated embodiment, it should be understood that any other type of
 device such as a gas range, oven, fireplace, water heater, furnace, cloths dryer, BBQ
 grill or any other gas or liquid propane type appliance, valve, regulator or other gas
 10 control device will benefit herefrom.

The water heater assembly 12 includes a water heater housing 14 that may be
 compartmentalized to include a water tank 16 and a combustion chamber 18.
 Disposed within the combustion chamber 18 is a burner 20 in close proximity to the
 water tank 16. The gas supply assembly 10 of the present invention is designed to
 15 deliver fuel to the burner 20 for combustion proximate the water tank 16 thereby
 heating the water within the tank 16 to a predetermined temperature. The gas supply
 assembly 10 will be connected to a fuel supply which in one preferred embodiment is
 natural gas although it is contemplated that the gas supply assembly 10 may be used
 with other fuel types including propane. The combustion chamber 18 includes an
 20 opening 22 to the exterior of the water heater 12 to facilitate access to the gas supply
 and combustion elements.

The gas supply assembly 10 is disposed within and extends through the
 opening 22 of the combustion chamber 18. The gas supply assembly 10 includes a
 door 24 configured to seat within the opening 22 thereby closing this pathway into the
 25 combustion chamber 18 (Figure 2). The door 24 may in one disclosed, non-limiting
 embodiment of a water heater assembly be at least partially arcuate and approximately
 10X3.5 inches in size which typically provides maintenance access, etc. The door 24
 defines an interface 26 which provides interconnection between a gas supply line 28
 and a gas supply tube 30. The gas supply line 28, in one non-limiting embodiment,
 30 may be a flexible line which is connected to the fuel supply. The gas supply tube 30
 is, in one non-limiting embodiment, a rigid tube with an outlet port 32 at the burner 20
 for delivering the fuel to the burner 20.

Referring to Figure 3, the door 24 receives the gas supply line 28 within a serrated opening 34 formed directly therein (also illustrated in Figures 4A). The serrated opening 34 is defined by a multiple of teeth or other serrations. That is, the serrated opening 34 is a non-circular opening within the door 24. It should be understood that various serrations may alternatively be provided.

The gas supply tube 30 includes a flange 36 which abuts the door 24 from an inner side thereof when the gas supply tube 30 is inserted within the serrated opening 34. Once the gas supply tube 30 is inserted within the serrated opening 34, the gas supply tube 30 receives the gas supply line 28 directly therein in an overlapped or telescoped relationship at an interface section 40. It should be understood that other male/female receipt arrangements may also be utilized.

A crimp ring 42 provides a metal-to-metal seal between the supply tube 30 and the gas supply line 28 at the interface section 40. One such crimp ring 42 may be a crimp ring manufactured by Lokring of Bartow, Florida. The crimp ring 42 typically includes a ramped inner diameter to provide contact stresses which are sufficiently high to plastically yield a portion of the interface section 40 between the gas supply tube 30 and the gas supply line 28 forming a circumferential, permanent, metal-to-metal seal. The crimp ring 42 facilitates a permanent joint and avoids the usage of elastomeric or rubber seals, O-rings or gaskets which may degrade and leak over time. The crimp ring 42 essentially meets all criteria of a welded connection, except that no heat is required to make the connection.

Once crimped, the crimp ring 42 also essentially compresses the gas supply tube 30 against the serrated opening 34 to prevent the gas supply tube 30 from rotating therein upon assembly. That is, the serrated opening 34 at least partially interfaces with the material build-up which forms the flange 36 to assure a non-rotatable and secure attachment.

It should be understood that although a particular component arrangement is disclosed in the illustrated embodiment, other arrangements will benefit from the instant invention.

Although particular step sequences are shown, described, and claimed, it should be understood that steps may be performed in any order, separated or combined unless otherwise indicated and will still benefit from the present invention.

The foregoing description is exemplary rather than defined by the limitations within. Many modifications and variations of the present invention are possible in light of the above teachings. The scope of the claims should not be limited by the preferred embodiments set forth in the examples, but should be given the broadest interpretation
5 consistent with the description as a whole.

CLAIMS

1. A gas supply interface for delivering combustion gases to a combustion chamber of a heating device, said supply interface comprising:
 - 5 a door adapted to fit within an opening to a combustion chamber, said door including a serrated opening;
a gas supply tube which includes a flange, said gas supply tube received within said serrated opening such that said flange abuts said door ; and
a crimp ring which, when crimped, provides a metal-to-metal seal between said
10 gas supply tube and said gas supply line, and compresses said gas supply tube against said serrated opening.
- 15 2. The gas supply interface as recited in claim 1, further comprising a gas supply line which telescopes with said gas supply tube.
3. The gas supply interface as recited in claim 1, wherein said gas supply tube is flexible.
- 20 4. The gas supply interface as recited in claim 1, wherein said crimp ring includes a ramped inner surface.
5. The gas supply interface of claim 1, wherein, when said crimp ring is crimped, said serrated opening at least partially interfaces with said gas supply tube such that said gas supply tube is substantially prevented from rotating relative to said door.
- 25 6. The gas supply interface as recited in claim 1, wherein a surface of said flange engages a surface of said door such that a plane of said surface of said flange is substantially parallel to a plane of said surface of said door.

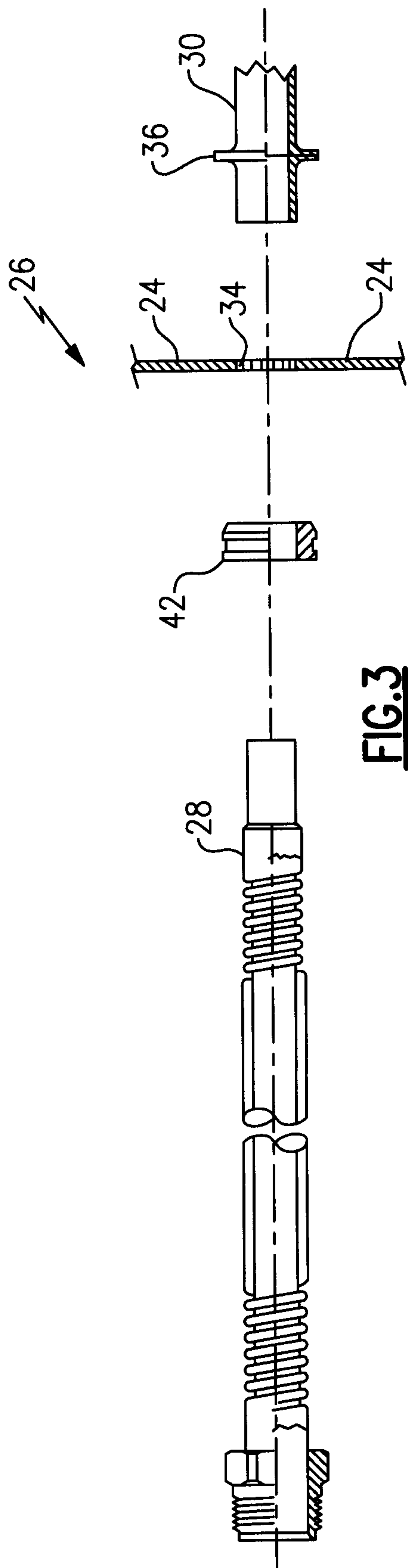
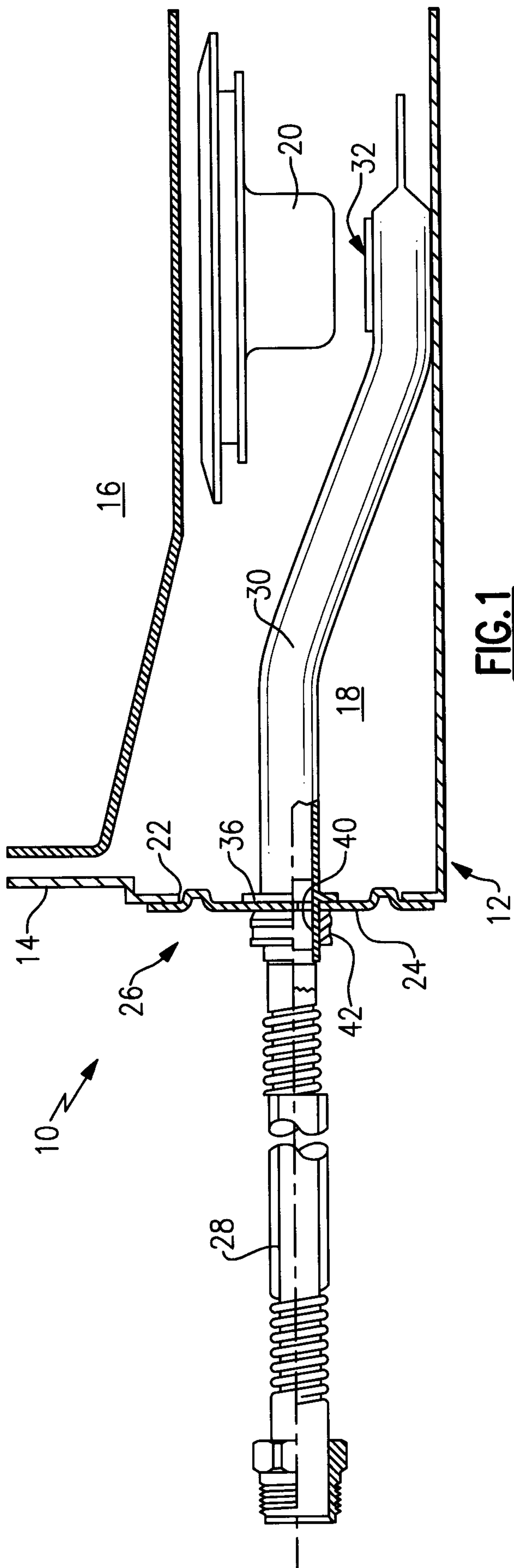
7. The gas supply interface as recited in claim 1, wherein said door is seated within an opening providing access to said combustion chamber, thereby substantially closing said opening to said combustion chamber.

5 8. The gas supply interface as recited in claim 7, wherein said door is attached to a housing of a water heater assembly.

9. The gas supply interface as recited in claim 8, wherein said door is at least partially arcuate along a length direction thereof.

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10. The gas supply interface as recited in claim 9, wherein said door has a length of approximately 10 inches, and a height of approximately 3.5 inches.



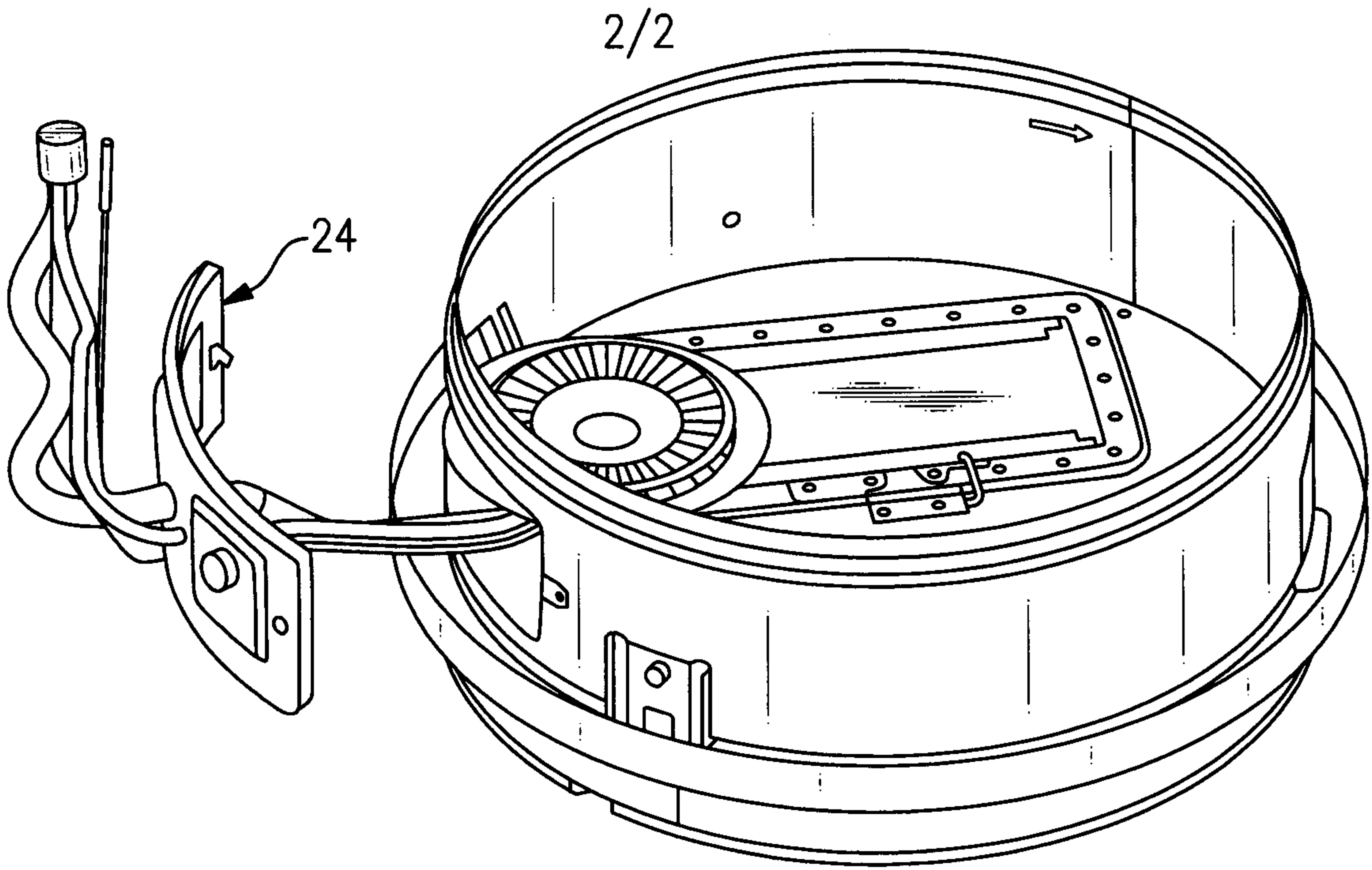


FIG. 2

FIG. 4A

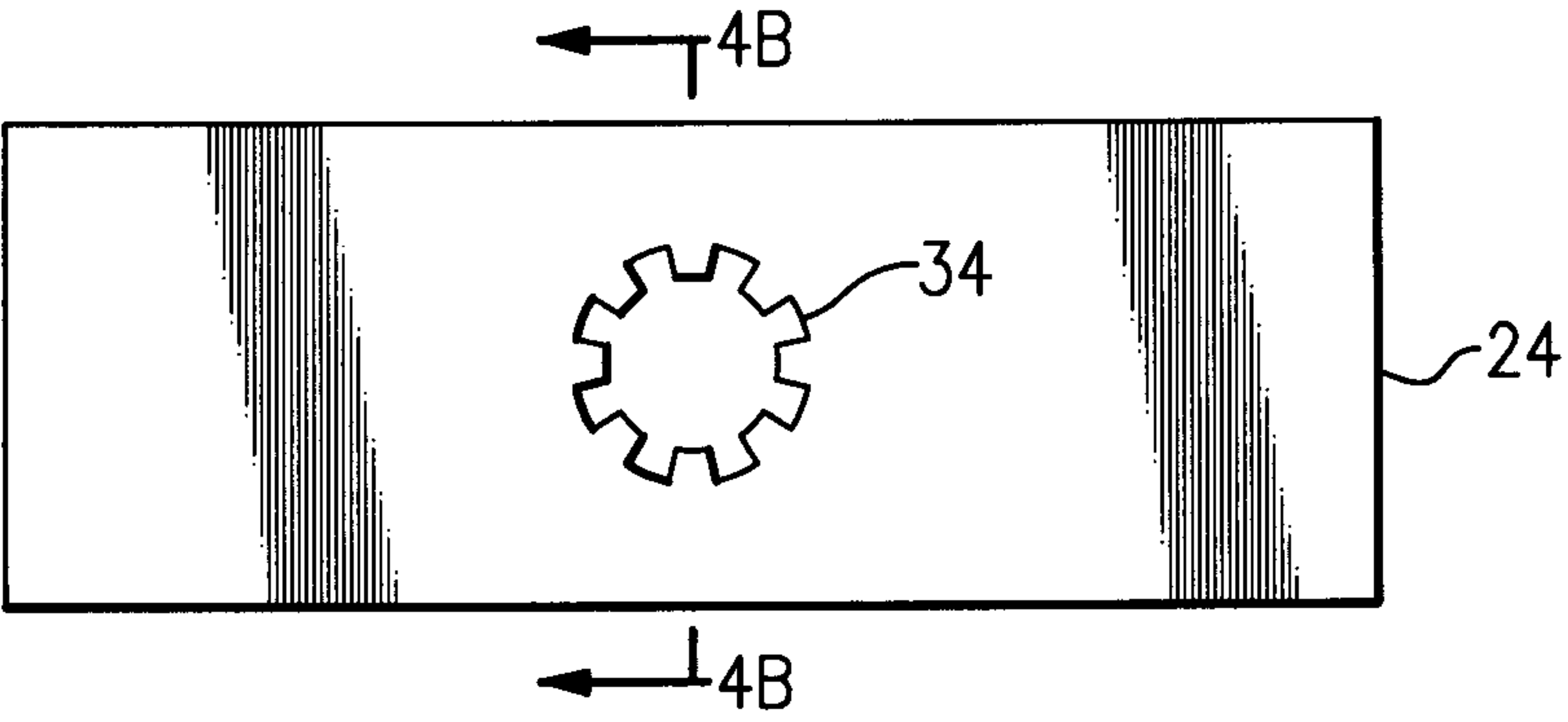


FIG. 4B

