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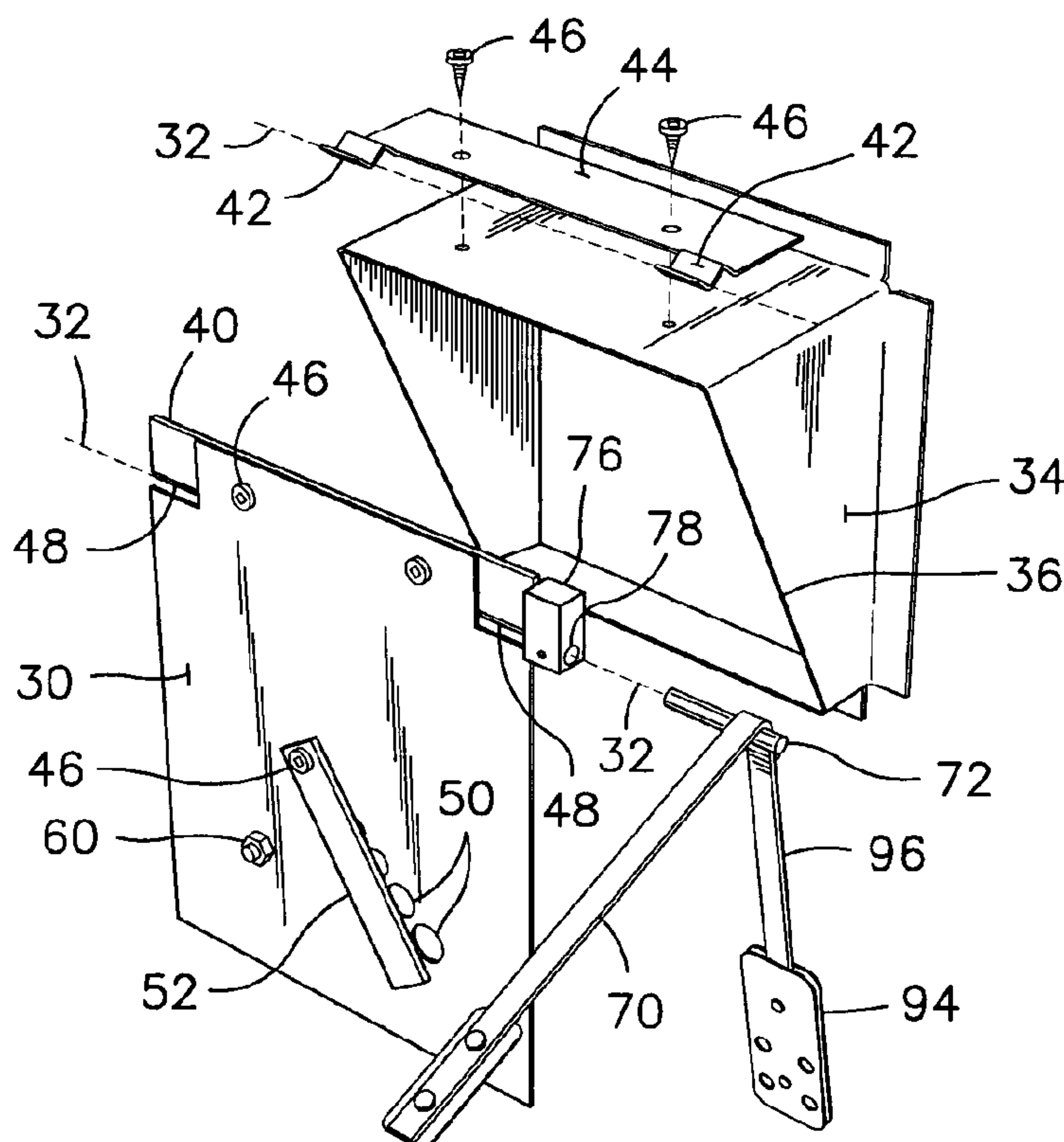
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(54) Titre : REGULATEUR DE TIRAGE DE CHEMINEE

(54) Title: CHIMNEY DRAFT CONTROL VALVE



(57) Abrégé/Abstract:

The chimney draft control valve has a baffle plate suspended inside a housing, between an inlet opening and a valve seat inside that housing. The baffle plate is suspended to a pivot axis for pendulum movement toward and away from the valve seat and for checking a draft in a chimney when a vacuum pressure in that chimney is high. A spring is affixed to the housing and to the baffle plate for controlling an amplitude of the pendulum movement of the baffle plate in moderate to strong wind conditions. A dampening device is affixed to the housing, to the baffle plate and to the spring for controlling a period and amplitude of the pendulum movement of the baffle plate and a free vibration in the spring.

ABSTRACT OF THE DISCLOSURE

The chimney draft control valve has a baffle plate suspended inside a housing, between an inlet opening and a valve seat inside that housing. The baffle plate is suspended to a pivot axis for pendulum movement toward and away from the valve seat and for checking a draft in a chimney when a vacuum pressure in that chimney is high. A spring is affixed to the housing and to the baffle plate for controlling an amplitude of the pendulum movement of the baffle plate in moderate to strong wind conditions. A dampening device is affixed to the housing, to the baffle plate and to the spring for controlling a period and amplitude of the pendulum movement of the baffle plate and a free vibration in the spring.

TITLE: CHIMNEY DRAFT CONTROL VALVE**FIELD OF THE INVENTION**

5 This invention pertains to chimney draft control devices and more particularly it pertains to a damper-type flue gas control valve having in combination a mass, a spring and a damper, to control the draft in a chimney to which an oil stove is connected.

BACKGROUND OF THE INVENTION

10 The efficiency of a pot-type oil stove depends to a great extent on the draft in the chimney to which the stove is connected. A high wind above the chimney, for example, is known to put out the flame in the pots of these stoves, whereby the oil can fill and overflow the pot, leading to dangerous spills. It is believed that these oil stoves would be more widely used if
15 better draft control devices would be available for installation thereon.

Most draft control devices available commercially are similar to each other wherein each has a baffle plate pivoted on a horizontal axis. Generally, one or more counterweights are affixed to the plate, to move the centre of gravity of the plate toward or away from the pivot axis, and to increase or
20 decrease the plate's resistance to tilting from a flow of flue gases through the chimney. Although the centre of gravity of the baffle plate is normally relatively close to the pivot axis, the inertia of the plate is not negligible. Therefore, when the wind above a chimney is unsteady, the baffle plate oscillates like a pendulum, letting irregular amounts of air pass through the
25 chimney, and causing a fluttering draft through the stove. This fluttering draft is also capable of extinguishing the flame in the pot of an oil stove.

In the context of control systems, the natural oscillation of the baffle plate in a pendulum-like manner is referred to as a free vibration. The flow of flue gases forcing the baffle plate to oscillate is called a forced vibration. It is believed that the combination of these two vibrations on the baffle plate is the primary cause of air fluttering in a flue gas passage.

The field of chimney draft control devices is a limited one wherein few changes were made to a basic concept since a far past. The following documents represent a good inventory of the chimney draft control devices available in the art.

- 10 **US Pat. No. 1,142,894** issued to F.D. Leighton et al. on June 15, 1915;
- US Pat. No. 1,196,117** issued to A.S. Kiefer on Aug. 29, 1916;
- US Pat. No. 2,154,644** issued to C.B. Sweatt on April 18, 1939;
- US Pat. No. 2,259,973** issued to W.E. Firehammer on Oct. 21, 1941;
- US Pat. No. 2,489,915** issued to E. Loewenheim on Nov. 29, 1949;
- 15 **US Pat. No. 2,620,984** issued to W. Larsen on Dec. 9, 1952;
- US Pat. No. 2,735,385** issued to G. De Ascentiis on Feb. 21, 1956;
- US Pat. No. 2,801,056** issued to E.A. Field on July 30, 1957;
- US Pat. No. 3,197,139** issued to A. Diermayer et al. on July 27, 1965;
- US Pat. No. 4,046,318** issued to M. Ripley on Sept. 6, 1977;
- 20 **US Pat. No. 4,369,718** issued to O. Eppinger et al. on Jan. 25, 1983;
- US Pat. No. 4,384,672** issued to L. Kutzner et al. on May 24, 1983;
- CA Pat. No. 988,799** issued to N.Y. Nicolas et al. on May 11, 1976;
- JA Pat. No. 0024,346** issued to T.K.K. Kubota on Feb. 23, 1977;
- DE Pat. No. 582,344** issued to H. Umbach on July 27, 1933;
- 25 **DE Pat. No. 4,039,676** issued to L. Kutzner et al. on Jan. 30, 1992.

The draft control device described in the first-mentioned **US Pat. No. 1,142,894** has enjoyed a long-lasting success for having being used in residential wood furnaces and coal furnaces from its conception to at least the late 1960's. This type of draft control device has a baffle plate
5 suspended to a horizontal pivot axis. The baffle plate is set at a fixed angle from the rim of a flue gas passage by a chain that may extend away from the furnace, to a main floor of a building for example. The chain is adjustable in length to change the position of the baffle plate and to increase or decrease the draft through the chimney.

10 Perhaps the most popular draft control devices ever made belong to a same type as those described in **US Pat. No. 2,620,984** and in **US Pat. No. 2,801,056**. A draft control device of this type has a baffle plate mounted on a horizontal pivot axis passing near the diameter of the blade, and one or more counterweights that are adjustable toward and away from the pivot
15 axis, to control the vacuum pressure inside a chimney with more or less sensitivity. These draft control devices are still used on modern wood furnaces and oil furnaces.

The other documents listed herein-before describe various improvements made to the latter popular models of draft control devices, with some
20 differences including the addition of a spring, a damper, a counterweight, one or more electric switches or a solenoid. More specifically, the German patent **DE 4,039,676** discloses a draft control device wherein sudden movements of the baffle plate are controlled by a fluid brake, and **US Pat. No. 4,046,318** and German patent **DE 582,344** disclose the use of a spring
25 to control the movements of a baffle plate.

The purpose of a spring is to control the forced vibration caused by large flow of flue gases through the chimney. Ideally, the displacements of the

baffle plate should be directly proportional to the vacuum forces applied to the baffle plate. Because of its natural frequency, however, the spring changes the characteristics of the free vibration but does not eliminate it. On the other hand, a damper attenuates the free vibration, but does not
5 provide a linear response to a forced vibration.

It is for these reasons, basically, that the prior flue gas dampers are difficult to predict or to calibrate. As such, it is believed that there is a need in the field of oil stove accessories, for a draft control device which is more precise than the prior art systems, in controlling the draft in the chimney to
10 which an oil stove is connected.

SUMMARY OF THE INVENTION

The chimney draft control valve according to the present invention has a baffle plate mechanism comprising a mass, a spring and a dampening device. The spring is selected and mounted to influence the movement of the baffle plate in moderate to high wind conditions only. The spring is
15 mounted in a position to influence the movement of the baffle plate along one half of the baffle plate's pendulum movement. The damper is selected and mounted in such a way as to remove all free vibration in the baffle plate. The chimney draft control valve according to the present invention
20 is capable of maintaining an uniform and constant negative pressure inside a chimney, and inside the flue pipe leading to the chimney, in any kind of weather conditions including very high winds.

Broadly, in accordance with one aspect of the present invention, there is provided a method for controlling the draft in a chimney. This method
25 comprises the following steps;

- a) checking a draft in a chimney with a baffle plate suspended to a pivot axis for pendulum movement toward and away from a valve seat mounted in a flue gas passage on that chimney, wherein the valve seat has a planar opening extending at an angle from a vertical plane, and that angle has a vertex on the pivot axis;
- b) adjusting a position and inertia of the baffle plate so that the baffle plate remains in a calibrated position in no-wind and normal-wind conditions;
- c) causing the baffle plate to abut against a spring in moderate-wind conditions;
- d) causing said spring to apply a force on the baffle plate in moderate-wind and strong-wind conditions;
- e) dampening a free vibration on the baffle plate from a pendulum effect on the baffle plate in the no-wind, normal-wind and moderate-wind conditions, and,
- f) dampening a free vibration on the baffle plate from a natural frequency of the spring in moderate-wind and strong-wind conditions.

The method described above ensures that the movement of the baffle plate is substantially directly proportional to average wind condition above the chimney.

In accordance with another aspect of the present invention, there is provided a chimney draft control valve that has a housing comprising an inlet opening, an outlet opening and a valve seat mounted therein between the inlet and outlet openings. The housing is also configured for installation in-line in a flue pipe leading to a chimney. The chimney draft control valve also has a baffle plate suspended inside the housing between the inlet opening and the valve seat, for pendulum movement toward and

away from the valve seat and for checking a draft in a chimney when a vacuum pressure in that chimney is high. A spring is affixed to the housing and to the baffle plate for controlling an amplitude of the pendulum movement of the baffle plate in its movement toward the valve seat. A
5 dampening device is affixed to the housing, to the baffle plate and to the spring for controlling a free vibration in the baffle plate. The dampening device is selected to provide a lesser influence than the spring on the forced vibration of the baffle plate.

The chimney draft control valve according to the present invention is
10 advantageous in that a displacement of its baffle plate toward the valve seat is depending almost entirely upon, and is substantially proportional to, the torque applied to the baffle plate by a vacuum pressure inside the chimney. The other factors of influence such as the free vibration of the baffle plate due to its pendulum movement and the free vibration of the spring due to
15 its natural frequency are substantially eliminated by the dampening device.

In accordance with another feature of the present invention, the position of the spring in the chimney draft control valve is adjustable on the housing, relative to the position of the baffle plate. The movement of the baffle plate is thereby adjustable to different chimney conditions.

20 In accordance with yet another aspect of the present invention, the movement of the baffle plate, the operation of the spring and of the dampening device are compatible to a mounting of the control valve in a horizontal flue pipe, in a vertical flue pipe, or as a right angle elbow changing the direction of a flue pipe from vertical to horizontal. In the
25 first-mentioned installation the baffle plate is suspended straight down in front of a valve seat facing upstream relative to the flow of flue gases. In the second-mentioned installation, the valve seat faces downward, and the

baffle plate is bent toward the valve seat. In the case of the elbow configuration, the inlet duct extends downward on the upstream side of a baffle plate that is suspended straight down in a same manner as in the horizontal installation. In all three cases, the pivot axes of the baffle plates
5 are substantially the same, and the structure and operation of the springs and dampening devices are similar and equivalent.

This brief summary has been provided so that the nature of the invention may be understood quickly. A more complete understanding of the invention can be obtained by reference to the following detailed description
10 of the preferred embodiment thereof in connection with the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Three embodiments of this invention are illustrated in the accompanying drawings, in which like numerals denote like parts throughout the several
15 views, and in which:

FIG. 1 is perspective top, side and inlet end view of the chimney draft control valve according to the first preferred embodiment of the present invention;

FIG. 2 is a perspective top, side and front view of the baffle plate assembly
20 and the valve seat in the first preferred chimney draft control valve;

FIG. 3 is side view of the first preferred chimney draft control valve;

FIG. 4 is a longitudinal cross-section view of the chimney draft control valve as seen along **line 4 - 4** in **FIG. 1**;

FIG. 5 is an enlarged view of the pivot axis for the baffle plate in the first preferred chimney draft control valve as seen in **FIG. 4**;

FIG. 6 is a front view of the baffle plate and damper actuator in the first preferred chimney draft control valve;

5 **FIG. 7** is a side view of the baffle plate and damper actuator in the first preferred chimney draft control valve;

FIG. 8 is an enlarged view of the coupling block between the baffle plate and the damper actuator;

10 **FIG. 9** is a perspective view of the base for the spring on the first preferred chimney draft control valve;

FIG. 10 is a front view of the paddle member on the damper actuator illustrated in **FIGS. 6** and **7**;

FIG. 11 is a schematic illustration of the control system in the first and second preferred chimney draft control valves;

15 **FIG. 12** is a cutaway side view of the draft control valve according to the second preferred embodiment showing the baffle plate and valve seat therein;

FIG. 13 is a side view of the second preferred draft control valve;

20 **FIG. 14** is an enlarged view of the pivot axis for the baffle plate in the second preferred draft control valve, as seen in **FIG. 12**;

FIG. 15 is a cutaway side view of the draft control valve according to the third preferred embodiment, showing the preferred location of the inlet duct.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 Referring firstly to **FIGS. 1 - 5**, the chimney draft control valve **20** according to the first preferred embodiment is comprised of a rectangular housing **22** having an inlet duct **24** and an outlet duct **26**. In use, the chimney draft control valve **20** is mounted in a horizontal section of the flue pipe of an oil stove for example. The first preferred chimney draft
10 control valve **20** is installed in-line with the flue pipe of the stove and eliminates the need for a conventional flue damper on that flue pipe.

The housing **22** has a cover **28** mounted thereon. The cover **28** is mounted with screws such as it is easily removable for the purpose of inspecting the components inside to control valve **20**.

15 The control valve **20** has a baffle plate **30** mounted therein across the flow of flue gases inside the housing **22**. The baffle plate **30** is mounted as a pendulum, on a pivot axis **32**. A valve seat **34** is mounted inside the housing **22** between the baffle plate **30** and the outlet duct **26**. The valve
20 seat **34** has an inlet portion along a slanted planar opening **36**. This slanted planar opening **36** makes an angle "A" of between 20° and 30° with the baffle plate **30** when the baffle plate is in a true vertical alignment as illustrated in **FIG. 4**.

The pivot axis **32** coincides with the upper edge of the slanted planar opening **36** such that the baffle plate **30** can swing about the pivot axis **32** to close the slanted planar opening **36** completely.

5 Referring now to **FIG. 2**, the pivot axis **32** extends along a fulcrum that is defined by a sharp blade **40** affixed to the upper end of the baffle plate **30**, and a pair of saddle members **42** extending from a support plate **44** which is affixed to the top surface of the valve seat **34** with screws **46**.

10 The sharp blade **40** has sharp edges **48** along its lower portion on both ends thereof. In use, the sharp edges **48** of the blade **40** rest into the saddle members **42**. The baffle plate **30** is affixed to the sharp blade **40** with screws **46** and swings back and forth about the tip of the sharp edges **48**.

15 The baffle plate **30** has a series of orifices **50** therein to control a minimum draft of the valve. These orifices are positioned along a slanted line and are covered with a flat bar **52** that is pivoted at its upper end on a screw **46**. Should the flat bar **52** become loose on the baffle plate **30**, it would swing vertically down, thereby opening most of the orifices **50** and causing no safety hazard.

20 A counterweight **60** is also mounted to the baffle plate **30** as illustrated in **FIGS. 4** and **7**. This counterweight **60** prevents the baffle plate **30** from closing prematurely under the negative pressure of a small wind for example. The counterweight **60** ensures that the baffle plate **30** remains at an angle slightly larger than “**A**” in a no-wind condition, and at an angle “**A**” in a normal-wind condition. A normal-wind condition is determined according to the location of the chimney and the wind speed normally
25 encountered at that location.

It will be appreciated that a minimum clearance between the baffle plate **30** and the side walls of the housing **22** defines an area that is substantially the same or slightly larger than a cross section of a flue gas passage defined by a gap between the baffle plate **30** and the slanted planar opening **36** when
5 the baffle plate is in a vertical alignment, such that any movement of the baffle plate **30** toward the slanted planar opening **36** reduces the size of the flue gas passage through the draft control device.

Furthermore, it should be understood that the purpose of controlling the movement of the baffle plate **30** toward and away from the slanted planar
10 opening **36** is to vary the size of a flue gas passage in the valve seat in a manner that is inversely proportional to a velocity of a flow of flue gases through the valve seat. Such control of the size of flue gas passage is effected to ensure a substantially constant supply of air to an oil stove on
15 which the draft control valve is mounted, to safely maintain the flame in that stove. The present disclosure should be interpreted in that context.

The movements of the baffle plate **30** are further controlled by a damper mechanism **64** mounted outside the housing **22**. The damper mechanism **64** comprises spring means and damper means to eliminate excessive
20 movement of the baffle plate in strong or turbulent wind conditions. The damper mechanism **64** is preferably covered with a guard (not shown) that is affixed to the housing **22**.

Referring now to **FIGS. 1 to 9**, a means to apply a spring force to the baffle plate **30** will be explained. A first arm **70** extends from a shaft **72**. The shaft **72** extends through the wall **74** of the housing **22** and connects into
25 a coupling block **76** that is affixed to the blade **40** of the baffle plate **30**.

The coupling block **76** has a hole **78** therein to receive the shaft **72**. That hole **78** aligns with the tip of the sharp edges **48** on the blade **40** such that the shaft **78** is centred with the pivot axis **32** of the baffle plate **30**, as shown in **FIGS. 2, 7 and 8**. The shaft **72** is secured into the hole **78** by a set screw **80** threaded through the block **76**.

A spring seat **82** and a spring **84** are mounted below the first arm **70** and urge the first arm upward when the baffle plate **30** tends to close the opening along the slanted planar opening **36**. The spring **84** is a compression spring and abuts against the first arm **70** when the baffle plate **30** is at a specific angle from the slanted planar opening **36**; at an angle “**A**” for example. The spring **84** increases the force required to move the baffle plate **30** and to close the slanted planar opening **36** completely.

The spring seat **82** is affixed to the housing **22** by means of screws, and is adjustable in height relative to the shaft **72** by means of two mounting slots **86** therein. The spring **84** is mounted in a socket **88** which is also adjustable along a slot **90** in the spring seat **82**, that extends toward and away from the shaft **72**. Therefore the force and interference of the spring **84**, can be adjusted to satisfy the conditions of the oil stove on which the draft control valve **20** is installed.

Referring now to **FIGS. 1, 2, 3, 6, 7, and 10**, the dampening device in the damper mechanism **62** will be explained. The dampening device comprises an oil bath **92** which is affixed to the housing **22**. A paddle **94** is affixed to a second arm **96** extending at right angle from the shaft **72** and at an angle of about 80° to 90° from the first arm **70**. The paddle **94** extends into the oil bath **92**, and has a width to fitly slide between the walls of the oil bath **92**. The oil in the oil bath is preferably a vegetable oil, or any other fluid

having a similar viscosity.

Referring now to **FIGS. 2, 6, 7 and 10**, the paddle **94** is made of a pair of plates **100, 102** mounted on opposite sides of the second arm **96**. Both plates **100, 102** have holes therein and the holes **104** in the front plate **100** are misaligned with the holes **104'** in the rear plate in order to produce a specific fluid resistance on the paddle **94** in the oil bath. As previously mentioned, the fluid resistance of the dampening device is selected or adjusted to cause a lesser influence than the spring **84** on the vacuum forces applied to the baffle plate.

The exact specifications for the housing, the baffle plate, the valve seat, the spring and the dampening device are not mentioned herein for being obtainable without undue experimentation by those skilled in the art, in view of the prior art draft control devices, and in view of the present disclosure and the following criteria.

Accordingly, the dimensions of the housing **22** and of the baffle plate **30**, the dimensions and angle “**A**” of the slanted planar opening **36**, and the counterweight **60** should be selected to ensure a proper flow of flue gases **62** through the valve **20** under no-wind to moderate-wind conditions. The spring **84** should be selected to ensure a proper flue gases flow through the valve **20** in moderate-wind to high-wind conditions. The dampening device should be selected to eliminate the free vibration caused by the natural frequency of the spring **104** or by the flapping of the baffle plate **30** in all wind conditions.

A schematic illustration of the chimney draft control valve according to the present invention is provided in **FIG. 11**. When the control valve **20** is

installed alone in a flue pipe, without other conventional damper, the control valve **20** with its spring **84**, damper **92, 94** and mass **M** of the baffle plate **30, 60** constitute a mechanical system having only one movement influence, when operated along the angle "**A**".

5 The movements of the baffle plate **30** due to inertia and free oscillation or turbulence in the flue gases, or due to the oscillation in the spring, are substantially eliminated. The angular position of the baffle plate **30** about the pivot axis **32** is only dependent on the torque **T** applied to the baffle plate by the negative pressure inside the chimney. This system is thereby
10 easy to calibrate and its operation remains consistent.

Although the draft control valve according to the first preferred embodiment was illustrated and described herein above as a device mountable in a horizontal flue pipe, it will be appreciated that this is not a limitation to the present invention. An embodiment of the present
15 invention for installation in a vertical flue pipe is illustrated in **FIGS. 12-14**.

The operation of the draft control valve according to this second preferred embodiment is substantially the same as the operation of the first preferred embodiment. The elements in the second preferred draft control valve have
20 been modified to accommodate a vertical flow of flue gases **62** through the valve.

Accordingly, the inlet duct **24** and the outlet duct **26** on the control valve according to the second preferred embodiment are on bottom and top portions of the housing **122** thereof respectively. The baffle plate **130** is
25 suspended to a fulcrum having a pivot axis **132** extending alongside a valve

seat **134**. The valve seat **134** is mounted immediately below the outlet duct **26**, and the slanted planar opening thereof **136** makes an angle '**B**' of about 11° - 15° with a horizontal plane.

5 The baffle plate **130** is also suspended to a sharp blade **140**. The sharp blade **140** rests into a pair of saddle members **142** extending from a support plate **144**. The support plate **144** is affixed to the side surface of the valve seat **134**. The support plate **144** has a right angle bent **148** in it to retain the saddle members **142** in an upward-facing orientation as illustrated in **FIG. 14**.

10 The baffle plate **130** is bent away from the sharp blade **140** such that it makes an angle '**C**' of 2° - 3° more than the angle '**B**', from a horizontal plane in no-wind and normal-wind conditions. A counterweight **160** is affixed to the sharp blade **140** away from the baffle plate, to maintain the baffle plate **130** along the angle '**C**' in no-wind and normal-wind
15 conditions. The counterweight **160** may be adjustable toward or away from the pivot axis **132** in a similar manner as in the first preferred embodiment.

Referring now to **FIG. 13**, a damper mechanism **164** affixed to the outside surface of the housing **122**. A first arm **170** extends from a shaft **172** passing through the wall **174** of the housing **122**. The function of the shaft
20 **172** is the same as the shaft **72** in the first preferred embodiment, as it engages into an identical coupling block (not shown) on the baffle plate **130**.

25 The first arm **170** extends below a spring seat **182** affixed to the outside surface of the housing **122**. A spring **184** is fastened to the spring seat between the first arm **170** and the spring seat **182**. The arm **170** abuts

against the spring **184** in moderate and strong-wind conditions, and the position of the spring is adjustable along the spring seat **182** to calibrate the engagement of the first arm **170** with the spring. The structure and operation of the spring and the first arm **170** are substantially the same as their equivalent elements in the draft control valve according to the first preferred embodiment.

The dampening mechanism **164** also has an oil bath **192** affixed to the housing. A second arm **196** extends from the shaft **172** at an angle from the first arm **170**. The second arm **196** has a paddle on its end (not shown) and extends into the oil bath **192**. The structure and operation of the oil bath **192**, the second arm **196** and the paddle (not shown) on the second arm are substantially the same as their equivalent elements in the draft control valve according to the first preferred embodiment.

Referring now to **FIG. 15**, the draft control valve can also be configured as an elbow to change the direction of a flue pipe. In this third preferred embodiment, the housing **222** has an inlet duct **24** extending through the bottom wall thereof on the upstream side of the baffle plate **30**. The baffle plate **30**, the pivot axis **32**, and the valve seat **34** and their functions are the same as in the control valve according to the first preferred embodiment.

Although the chimney draft control valve has been described as an apparatus for use with an oil stove, it will be appreciated that this chimney draft control valve according to the present invention can also be installed in the flue pipe of a wood stove, a propane stove or a natural gas stove.

CLAIMS

What is claimed is;

1. A method for controlling a draft in a chimney, comprising the steps of;
checking said draft with a baffle plate having orifices therein, said baffle plate being suspended to a pivot axis for pendulum movement toward and away from a valve seat mounted in a flue gas passage in said chimney, wherein said valve seat has a planar opening extending at an angle from a vertical plane, and said angle has a vertex on said pivot axis;
covering portions of said orifices;
adjusting a position and an inertia of said baffle plate such that said baffle plate remains in a calibrated position in no-wind and normal-wind conditions;
causing said baffle plate to abut against a spring in moderate-wind conditions;
causing said spring to apply a force on said baffle plate in strong-wind conditions;
dampening a free vibration on said baffle plate from a pendulum effect on said baffle plate in said no-wind, said normal-wind and said moderate-wind conditions, and
dampening a free vibration on said baffle plate from a natural frequency of said spring in said moderate-wind and said strong-wind conditions.

2. The method as claimed in **claim 1**, further including the step of adjusting a position of said spring relative to said baffle plate according to said normal-wind conditions in a region of use of said chimney.
3. The method as claimed in **claim 1**, wherein said step of checking said draft includes swinging said baffle plate about said pivot axis at said angle wherein said angle is about 20° - 30° from a vertical plane.
4. The method as claimed in **claim 1**, further including the step of maintaining a minimum draft through said baffle plate in said strong-wind conditions.
5. A chimney draft control valve comprising:
a housing comprising an inlet opening and an outlet opening and a valve seat mounted therein between said inlet opening and said outlet opening, and means for installation thereof in-line in a flue pipe leading to a chimney;
means including a baffle plate suspended inside said housing between said inlet opening and said valve seat for pendulum movement toward and away from said valve seat and for checking a draft in said chimney when a vacuum pressure in said chimney is high;
said baffle plate having orifices therein and said orifices being selectively covered by a movable flat bar;
means including a spring affixed to said housing and to said baffle plate for controlling an amplitude of said pendulum movement, and
dampening means affixed to said housing, to said baffle plate and

to said spring for controlling a period and said amplitude of said pendulum movement and a free vibration in said spring.

6. The chimney draft control valve as claimed in **claim 5**, further including means affixed to said baffle plate for adjusting an inertia of said baffle plate.
7. The chimney draft control valve as claimed in **claim 6**, further including means for adjusting a position of said spring relative to said housing and relative to said baffle plate.
8. The chimney draft control valve as claimed in **claim 5**, wherein said baffle plate is mounted inside said housing, and said spring and said means for adjusting are mounted outside said housing, and said spring is connected to said baffle plate by a shaft extending through a side of said housing.
9. The chimney draft control valve as claimed in **claim 8**, wherein said damper means comprises an oil bath and a paddle in said oil bath, and said oil bath is mounted outside said housing and said paddle is connected to said shaft.
10. The chimney draft control valve as claimed in **claim 5**, wherein said inlet opening and said outlet opening are oriented vertically.
11. A chimney draft control valve comprising;
a housing having an inlet opening and an outlet opening, a baffle plate mounted therein and a damper mechanism affixed thereto;

said baffle plate being suspended to a pivot axis between said inlet
 opening and said outlet opening;
 said baffle plate having orifices therein and said orifices being
 selectively covered by a movable flat bar;
 said damper mechanism comprising a spring and a dampening
 device;
 said baffle plate having a mass and being affixed to said pivot axis
 for pendulum movement about said pivot axis, and
 said spring and said dampening device being connected to said
 pivot axis and having displacements proportional to said
 pendulum movement of said baffle plate;
 said baffle plate also comprising means to adjust an inertia of said
 mass;
 said damper mechanism having means to adjust a force of said
 spring, and
 said dampening device having means to dampen said pendulum
 movement and an oscillation in said spring.

12. The chimney draft control valve as claimed in **claim 11**, wherein said baffle plate has a moderate-wind position, and said spring comprises engagement means for engagement thereof with said baffle plate when said baffle plate is in said moderate-wind position.
13. The chimney draft control valve as claimed in claim **12**, wherein said spring further comprises adjustment means for adjustment of said engagement means toward or away from said engagement thereof with said baffle plate when said baffle plate is in said moderate-wind position.

14. The chimney draft control valve as claimed in **claim 11**, wherein said means to adjust an inertia of said mass comprises a counterweight.
15. The chimney draft control valve as claimed in **claim 11**, wherein said orifices are positioned along a slanted line.
16. The chimney draft control device as claimed in **claim 12**, further including a valve seat between said baffle plate and said outlet opening and said valve seat has a opening along a slanted plane making an angle of about 20° - 30° with said baffle plate in normal-wind conditions.
17. The chimney draft control valve as claimed in **claim 16**, wherein said pivot axis extends along a fulcrum means comprising a sharp blade affixed to said baffle plate and a pair of saddle brackets affixed to said valve seat, and said pivot axis aligns with said slanted plane.
18. The chimney draft control device as claimed in **claim 11**, wherein said spring and said dampening device are connected to each other by an arm mounted on a shaft extending along said pivot axis.
19. The chimney draft control device as claimed in **claim 18**, wherein said dampening device comprises an oil bath and a paddle submersed in said oil bath, and has a lesser influence than said spring on a forced vibration of said baffle plate.

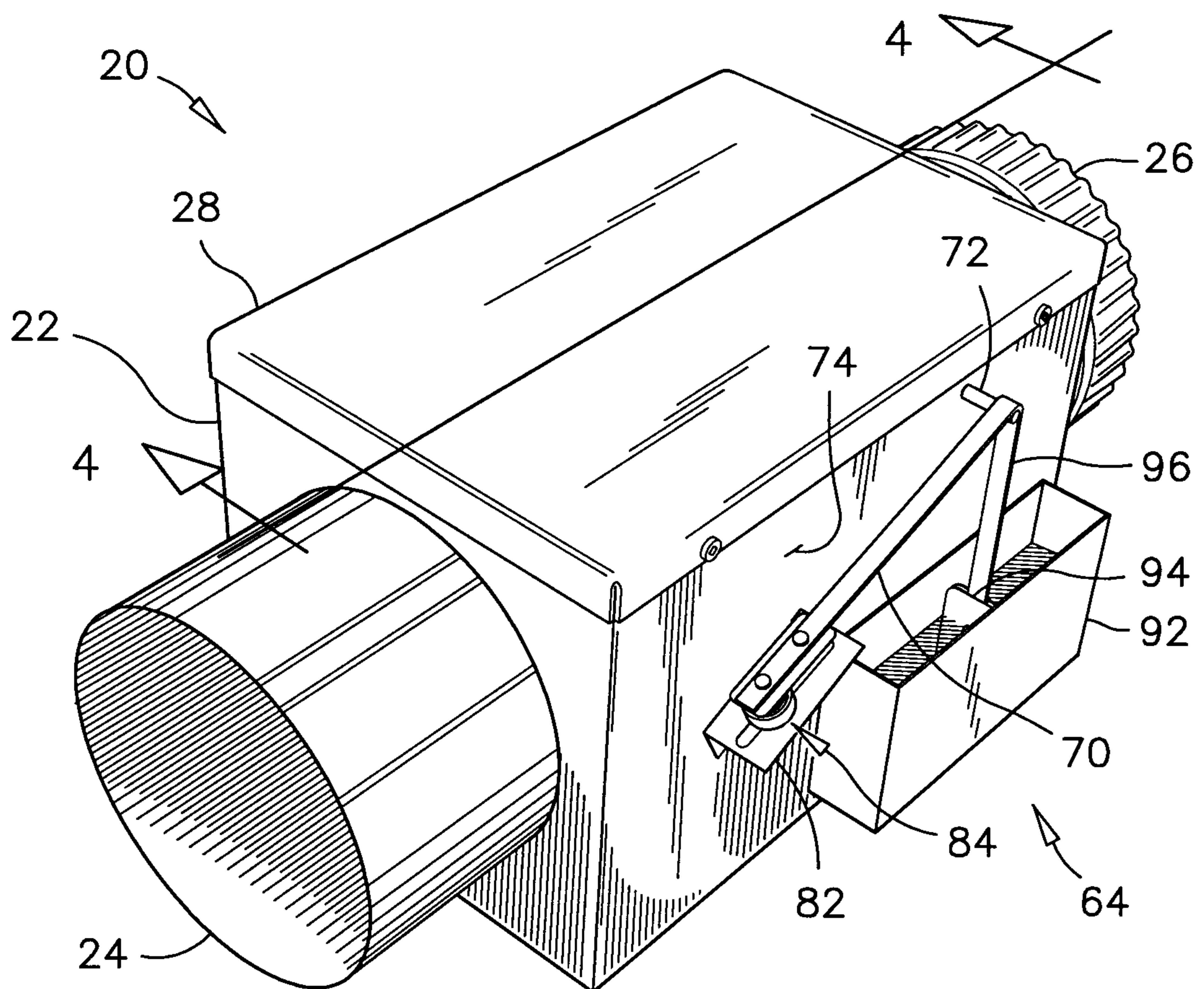


FIG. 1

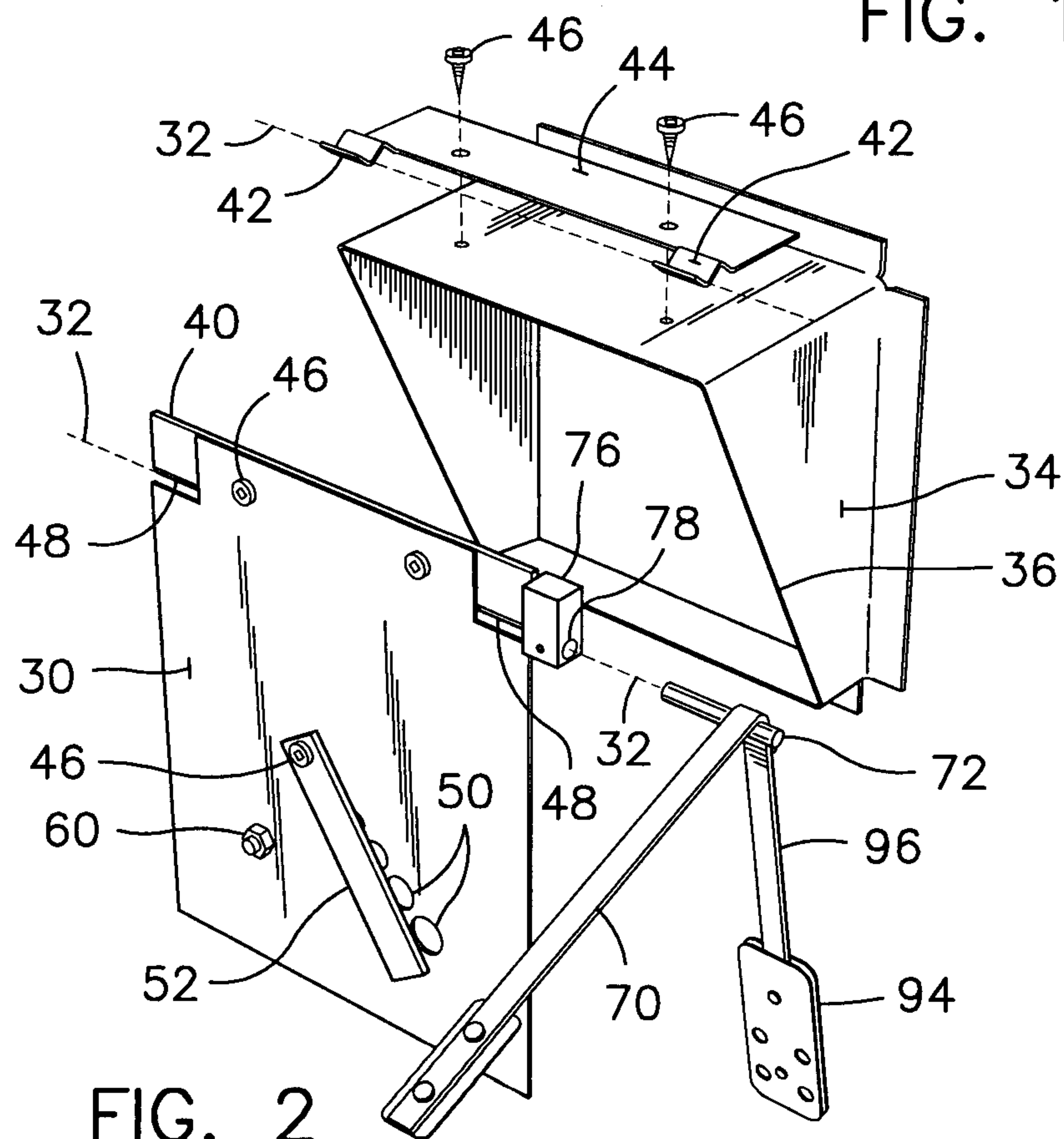


FIG. 2

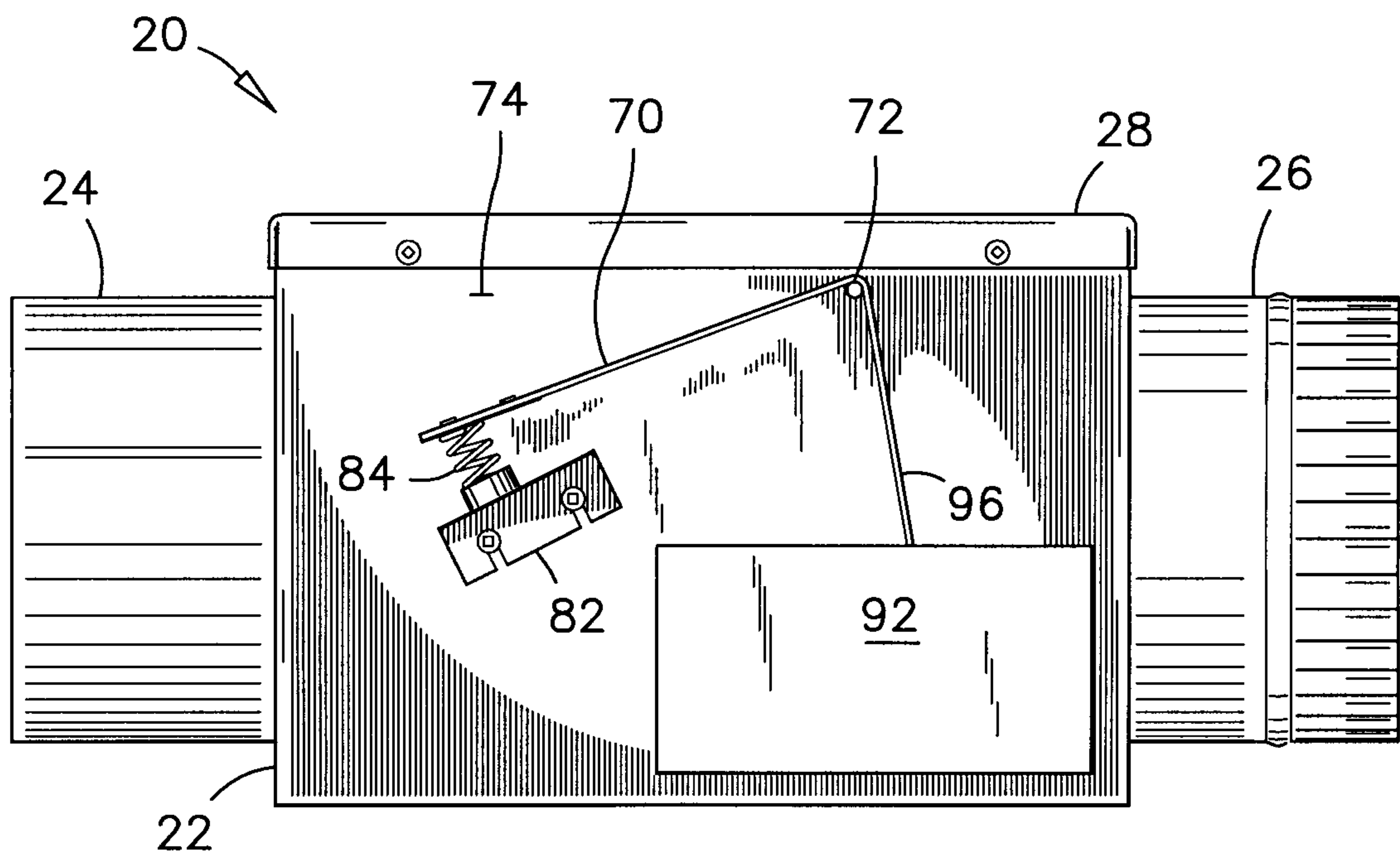


FIG. 3

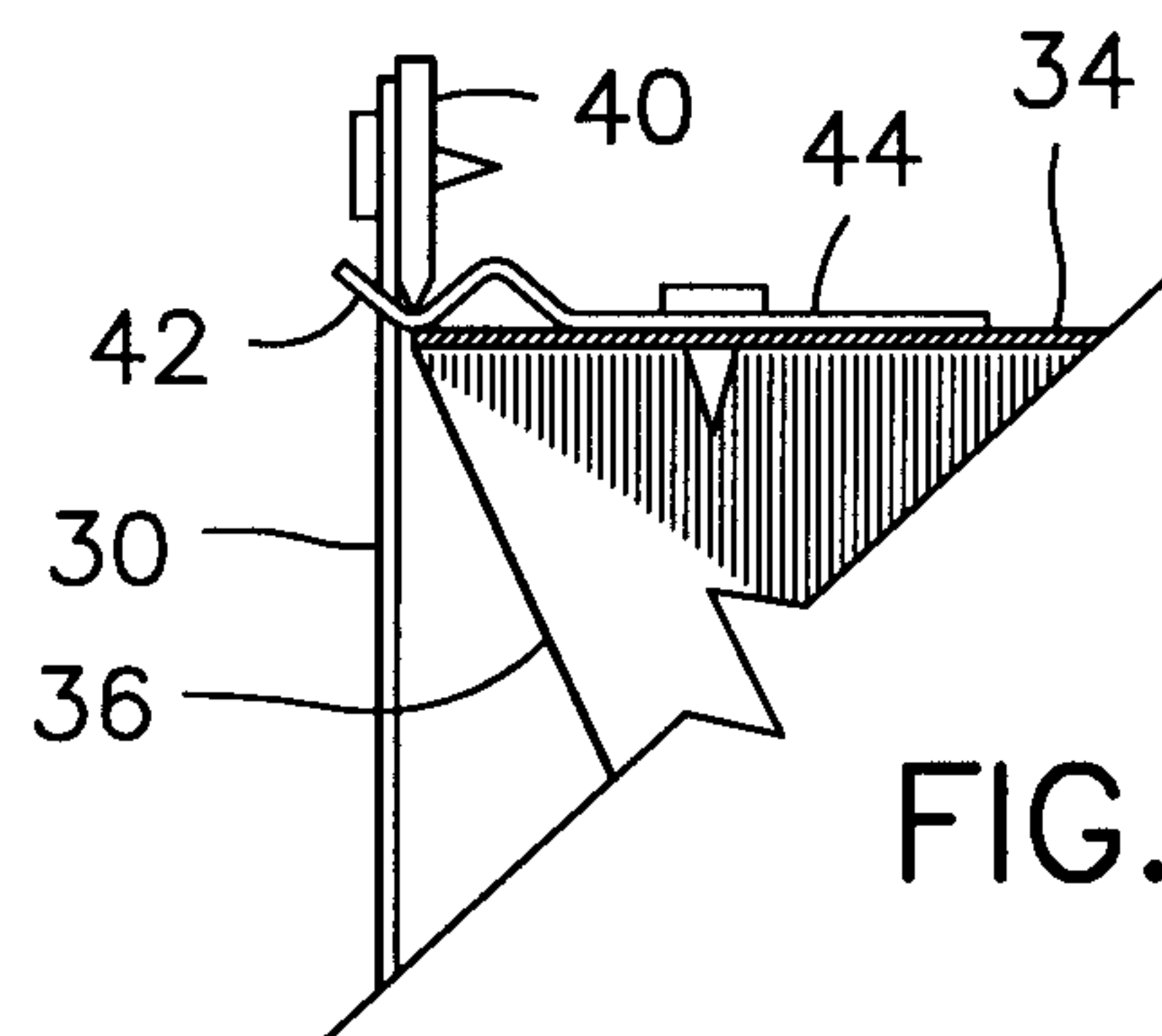


FIG. 5

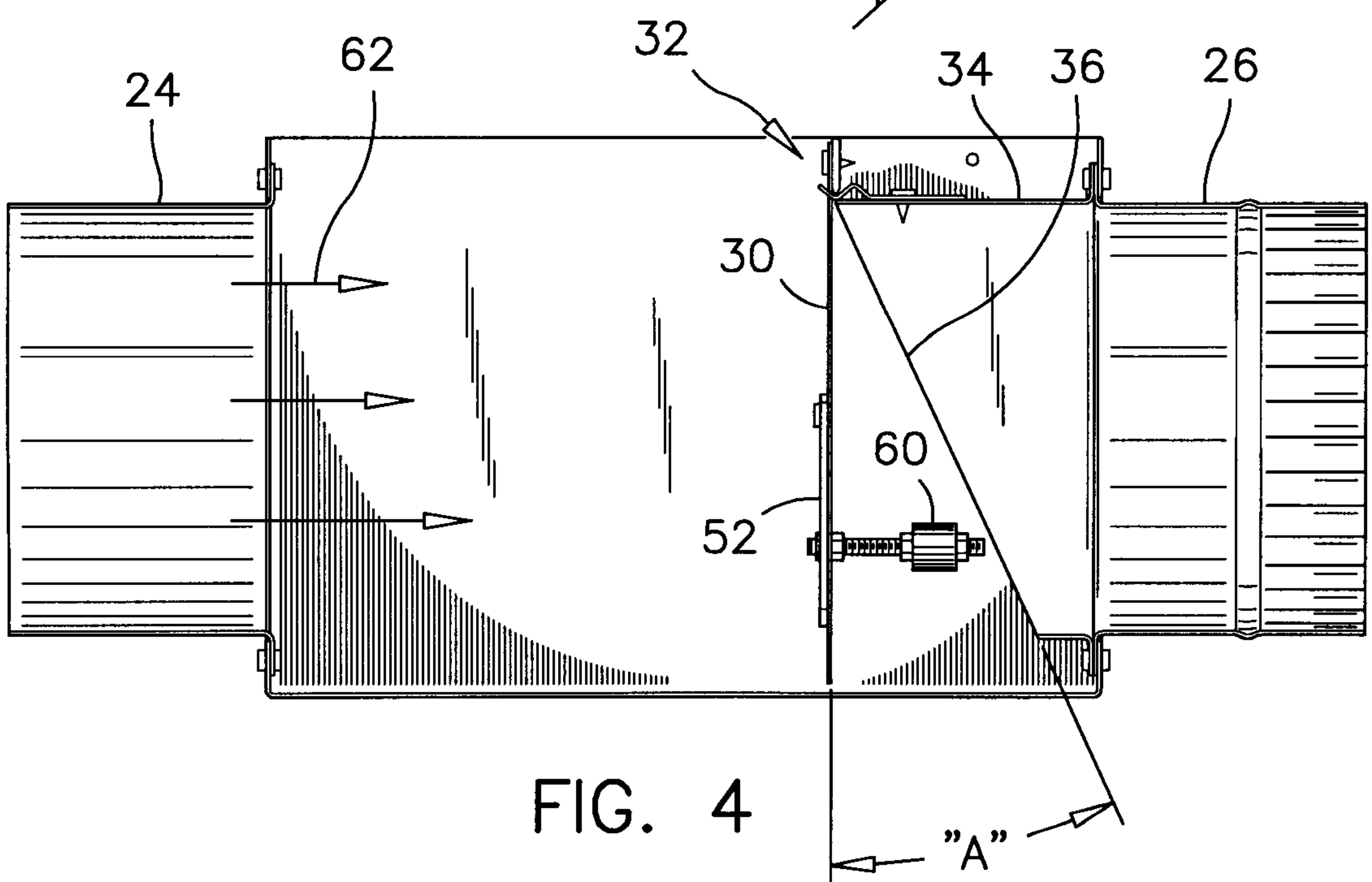


FIG. 4

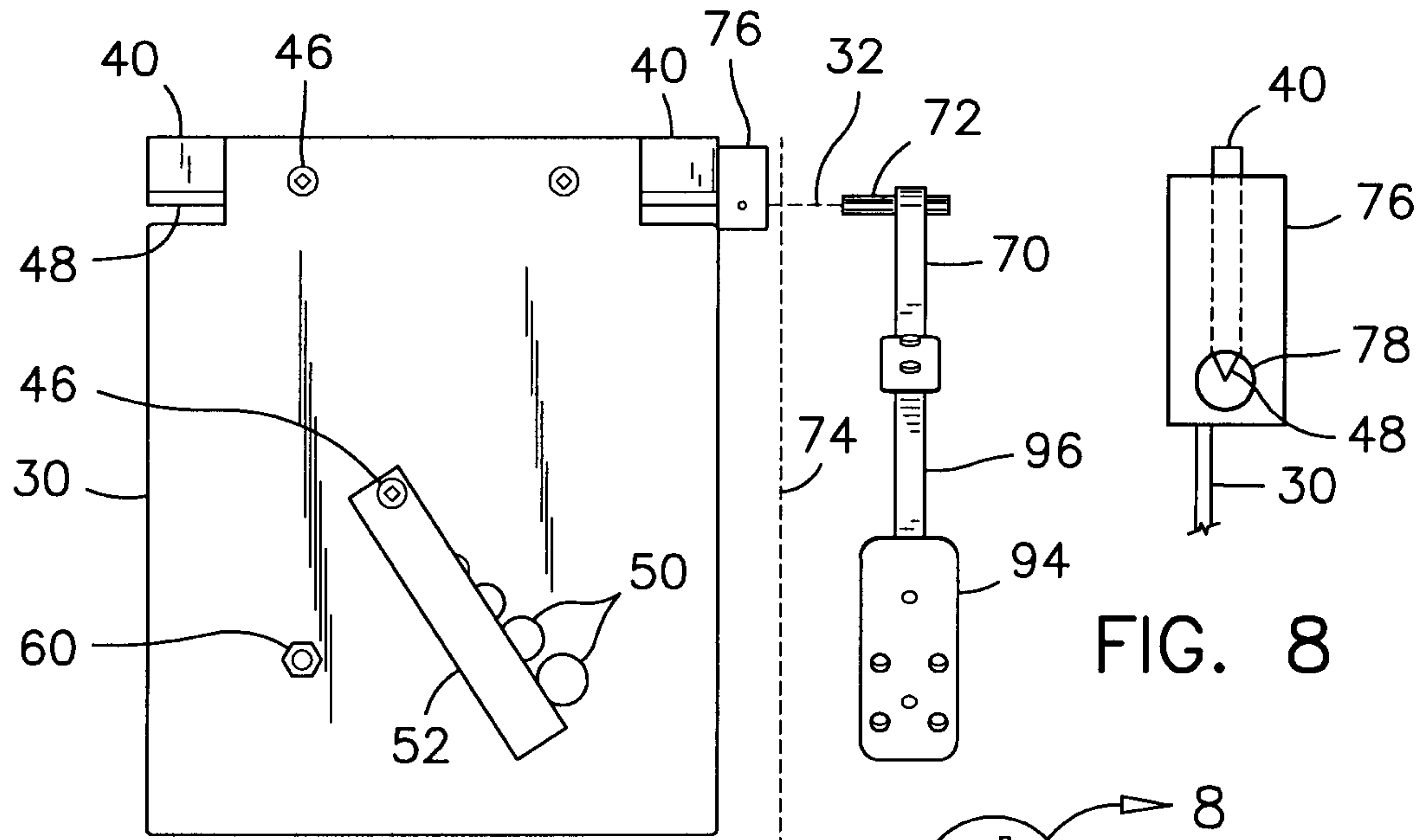


FIG. 6

FIG. 8

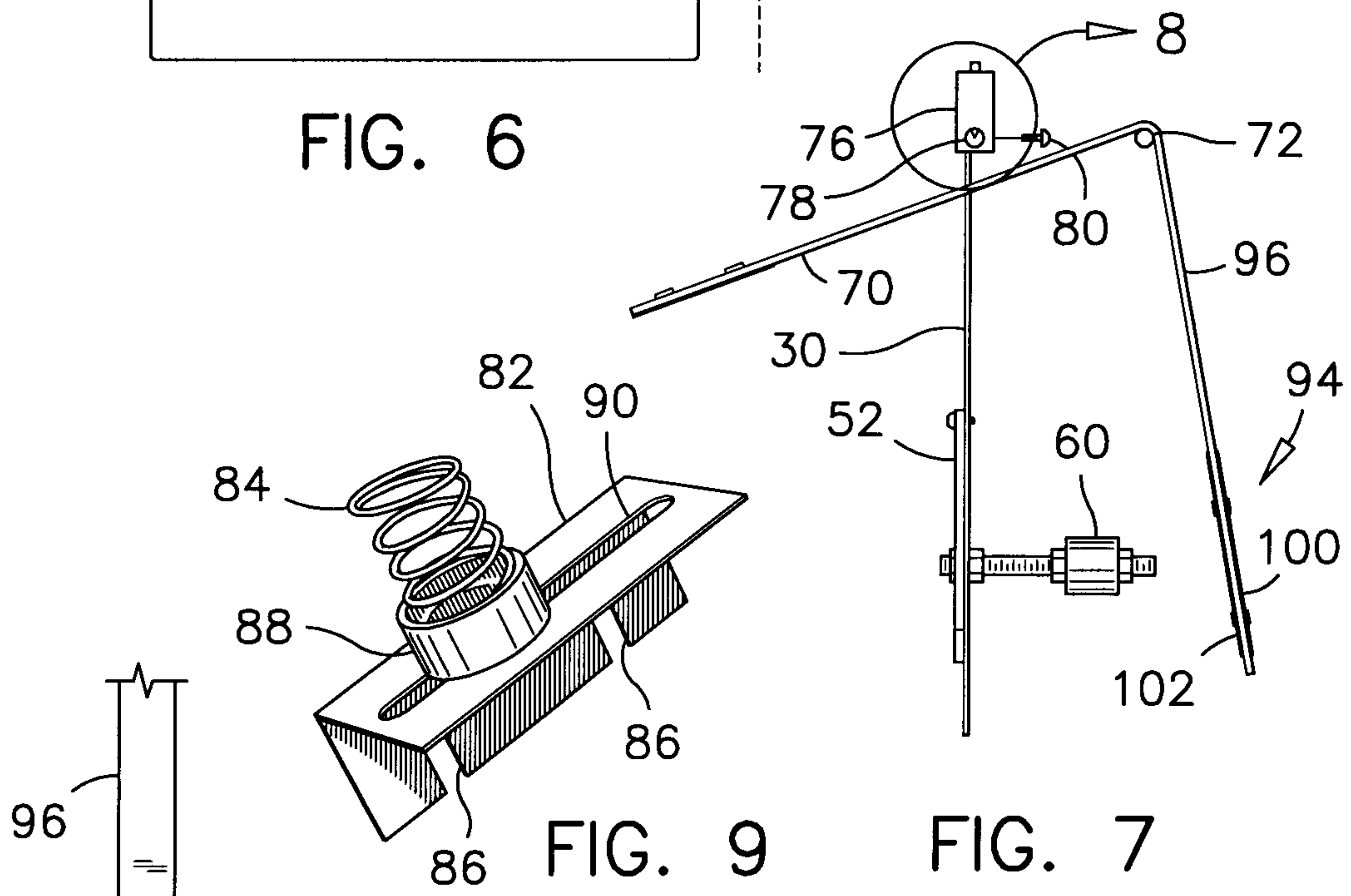


FIG. 9

FIG. 7

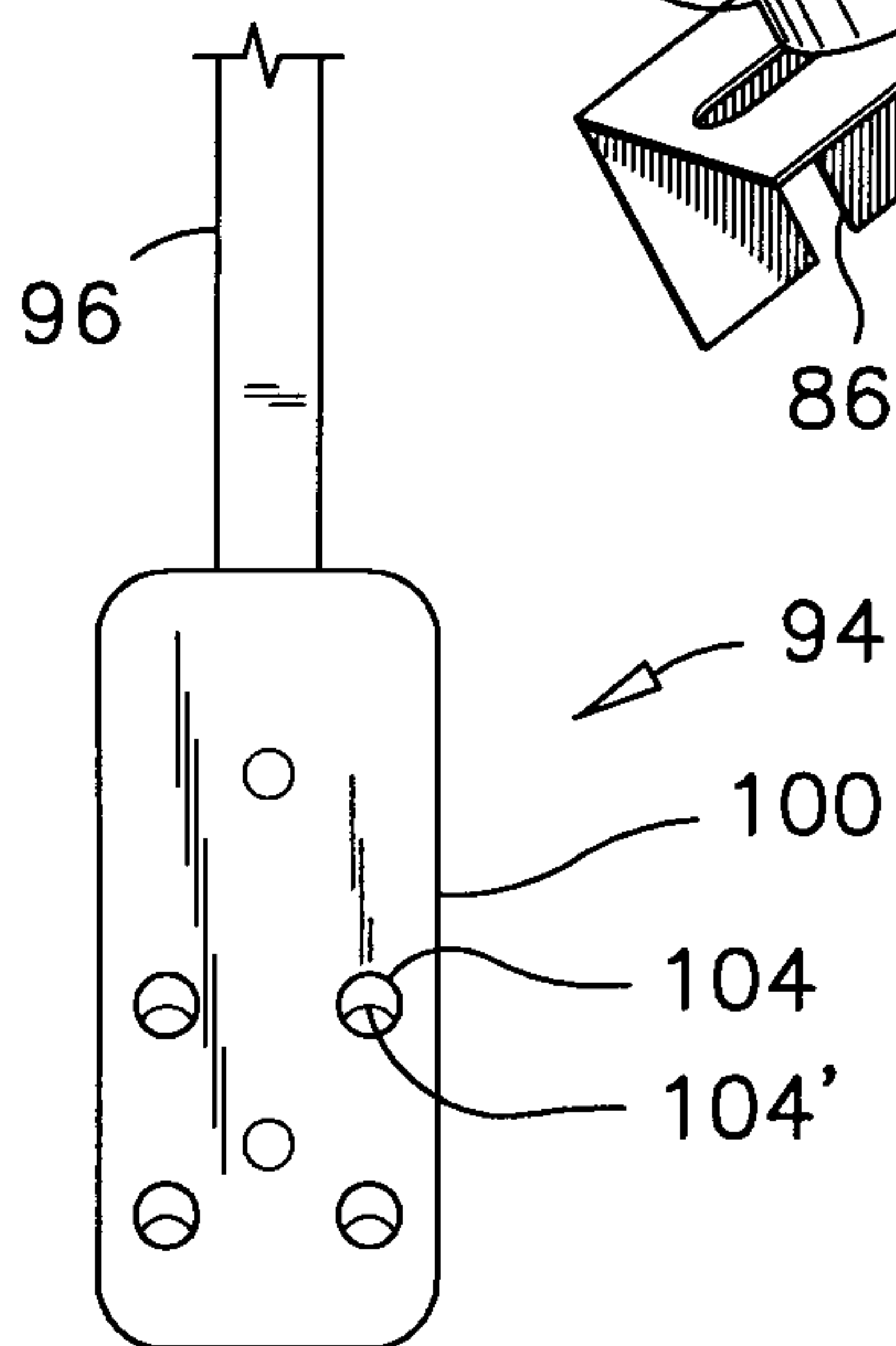


FIG. 10

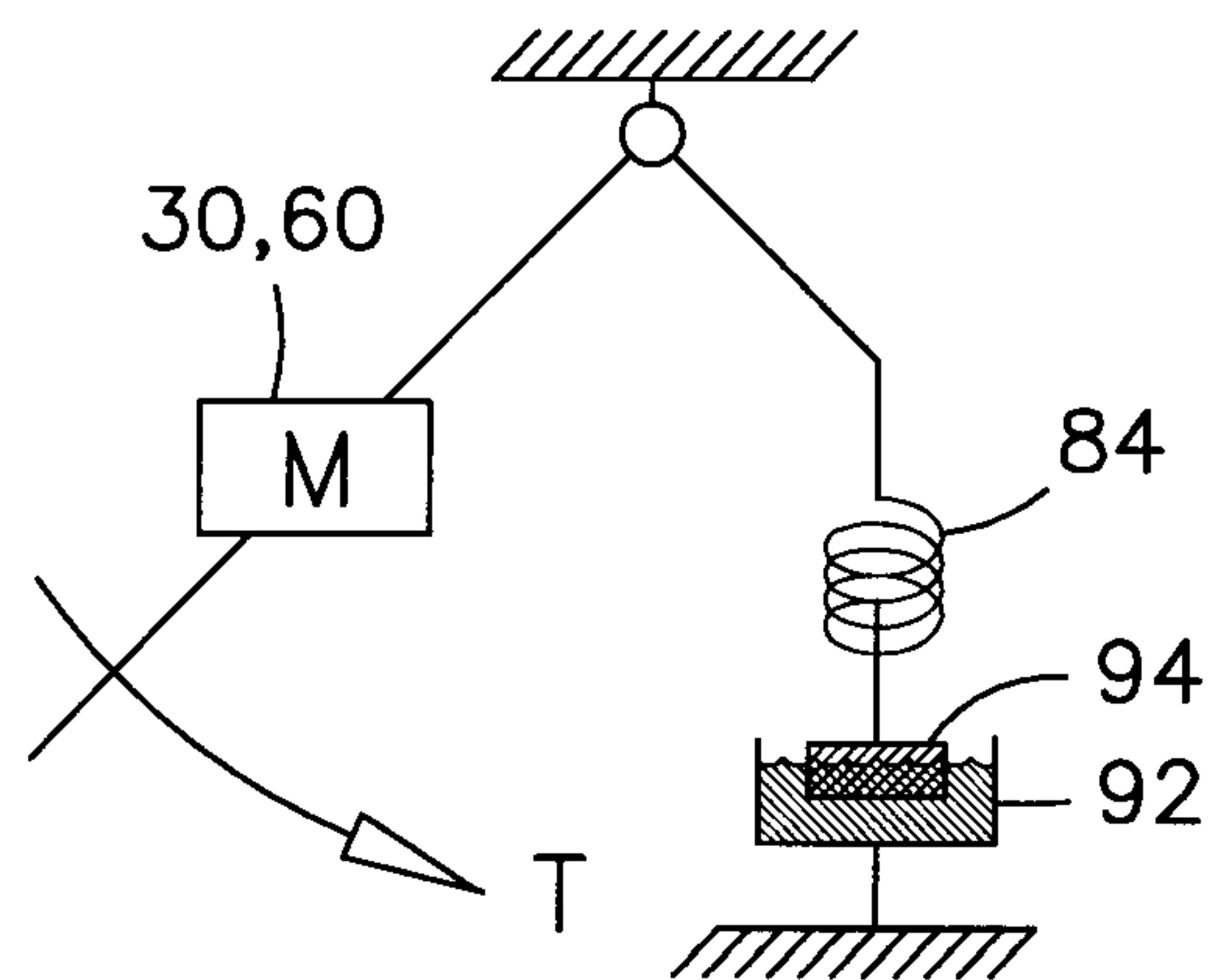


FIG. 11

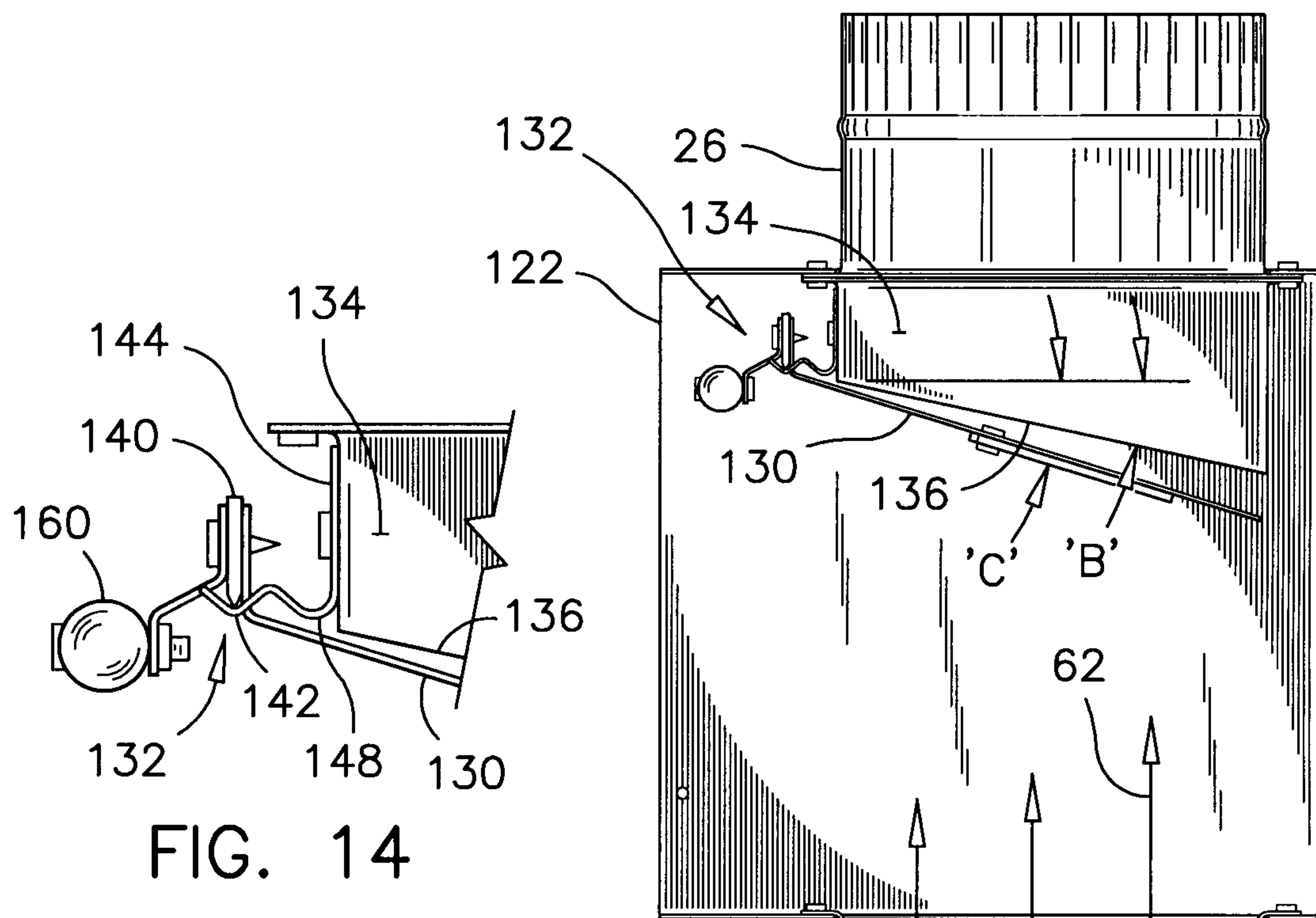


FIG. 14

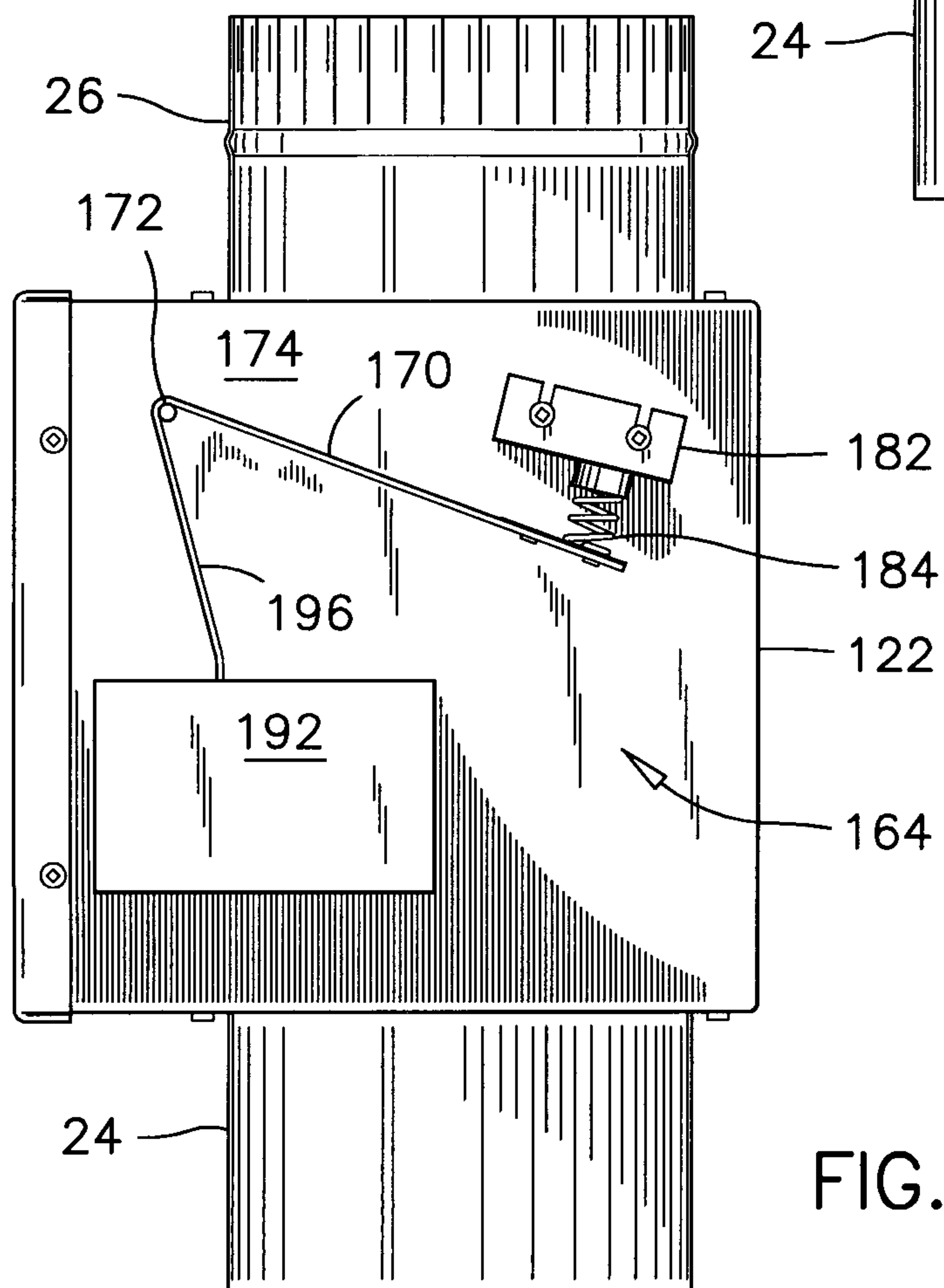


FIG. 13

FIG. 12

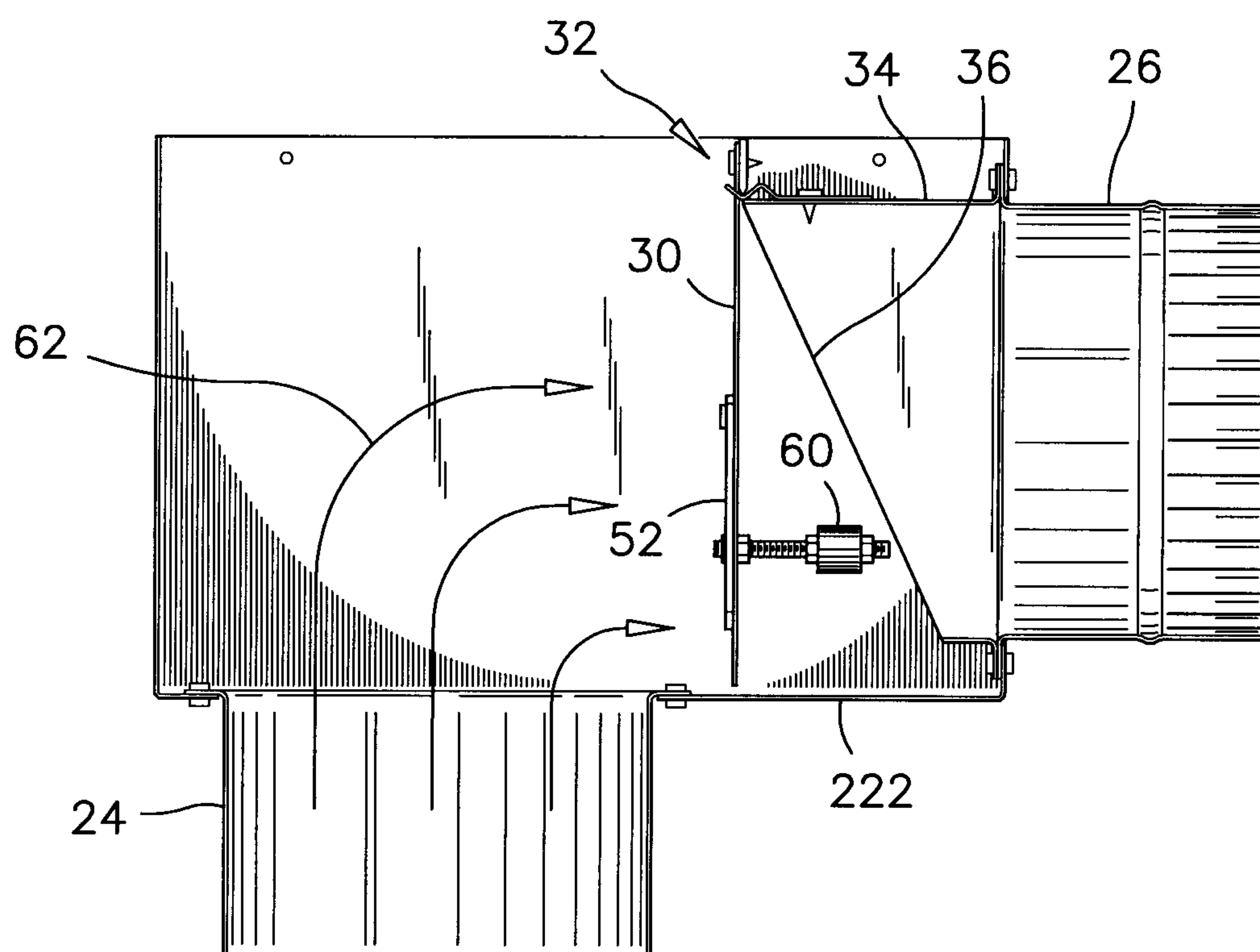


FIG. 15

