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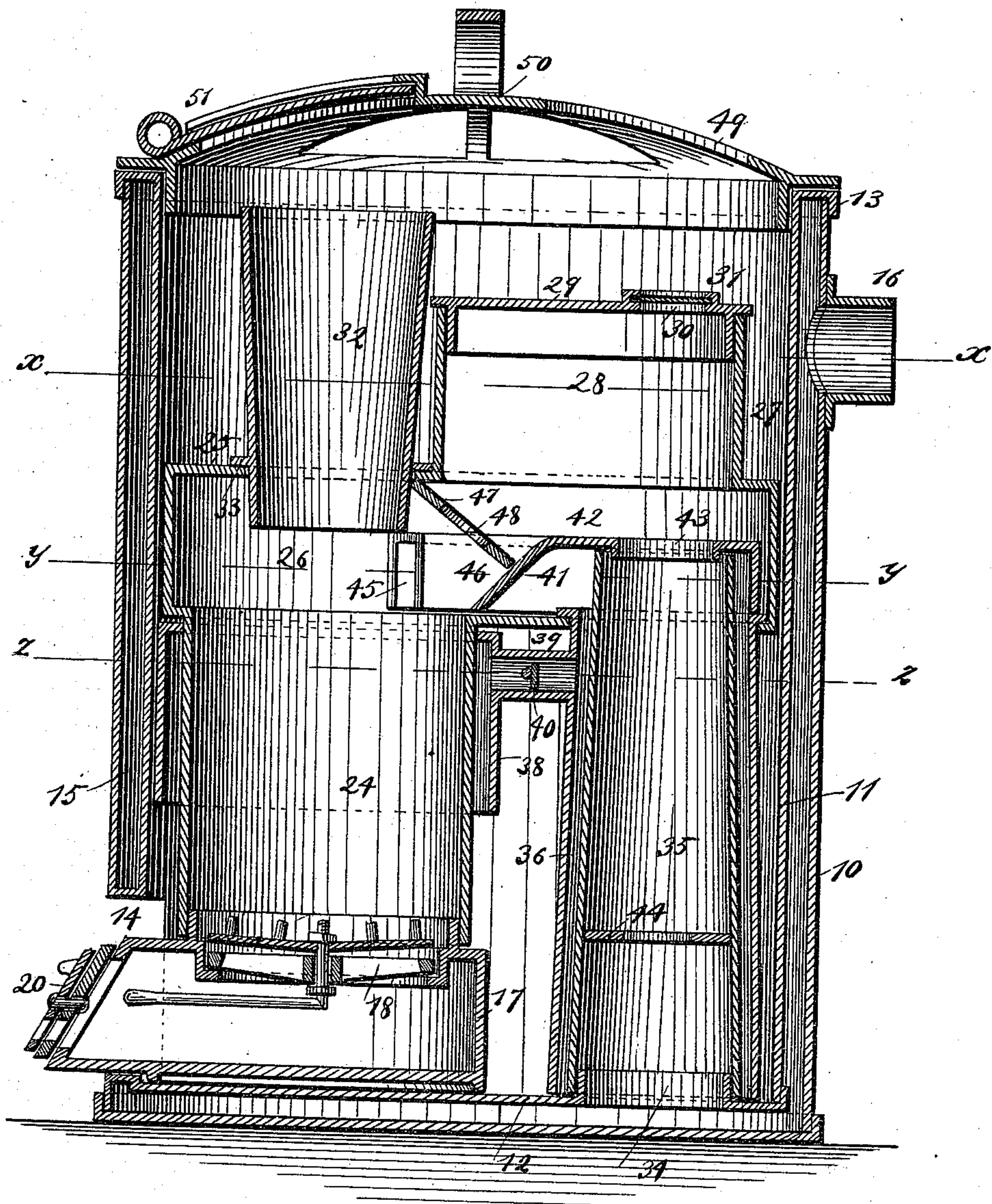
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D. HUBBARD.
STOVE.

No. 412,505.

Patented Oct. 8, 1889.

Fig. 1.



WITNESSES:

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W. Seitzgwick

INVENTOR:

D. Hubbard
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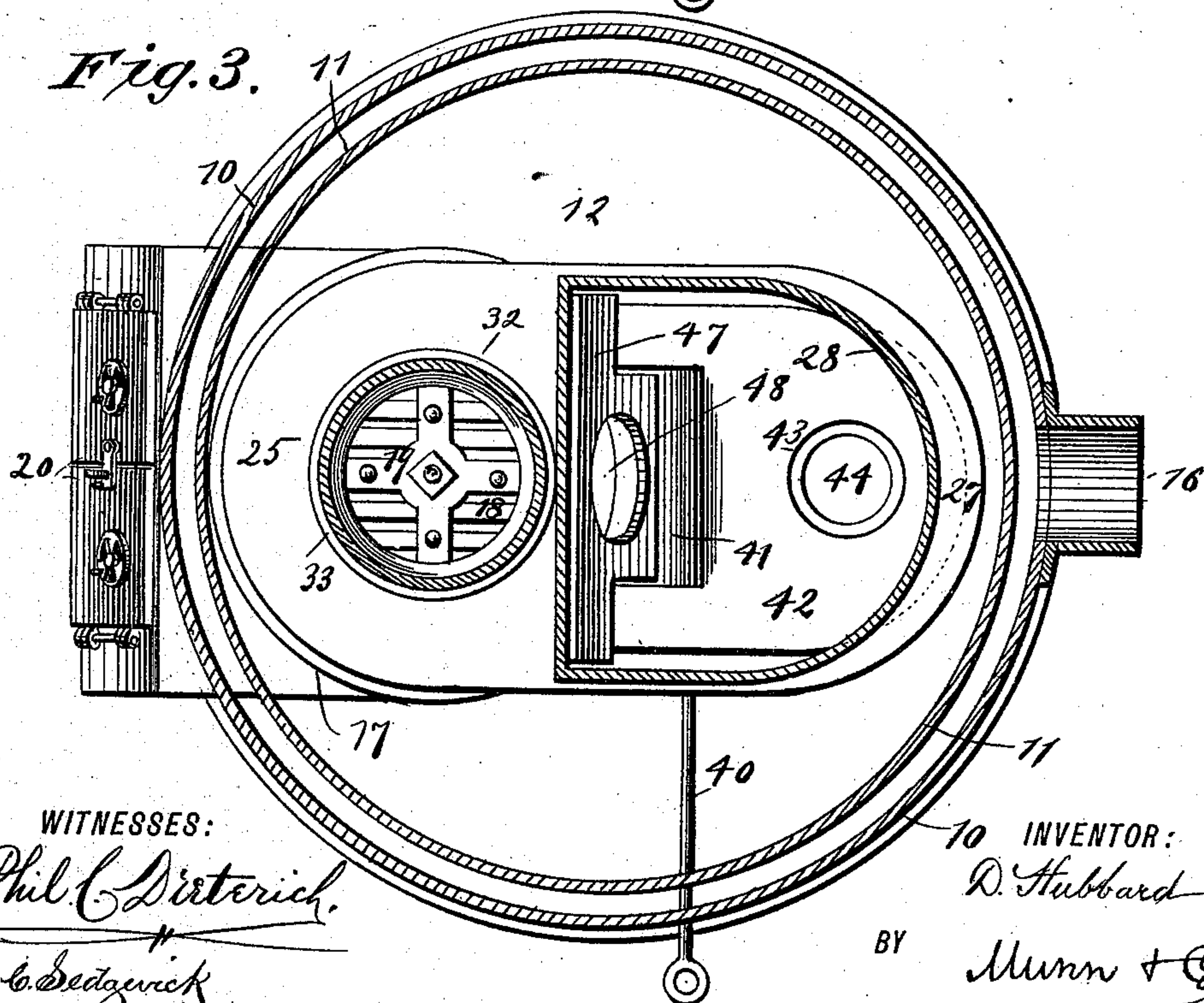
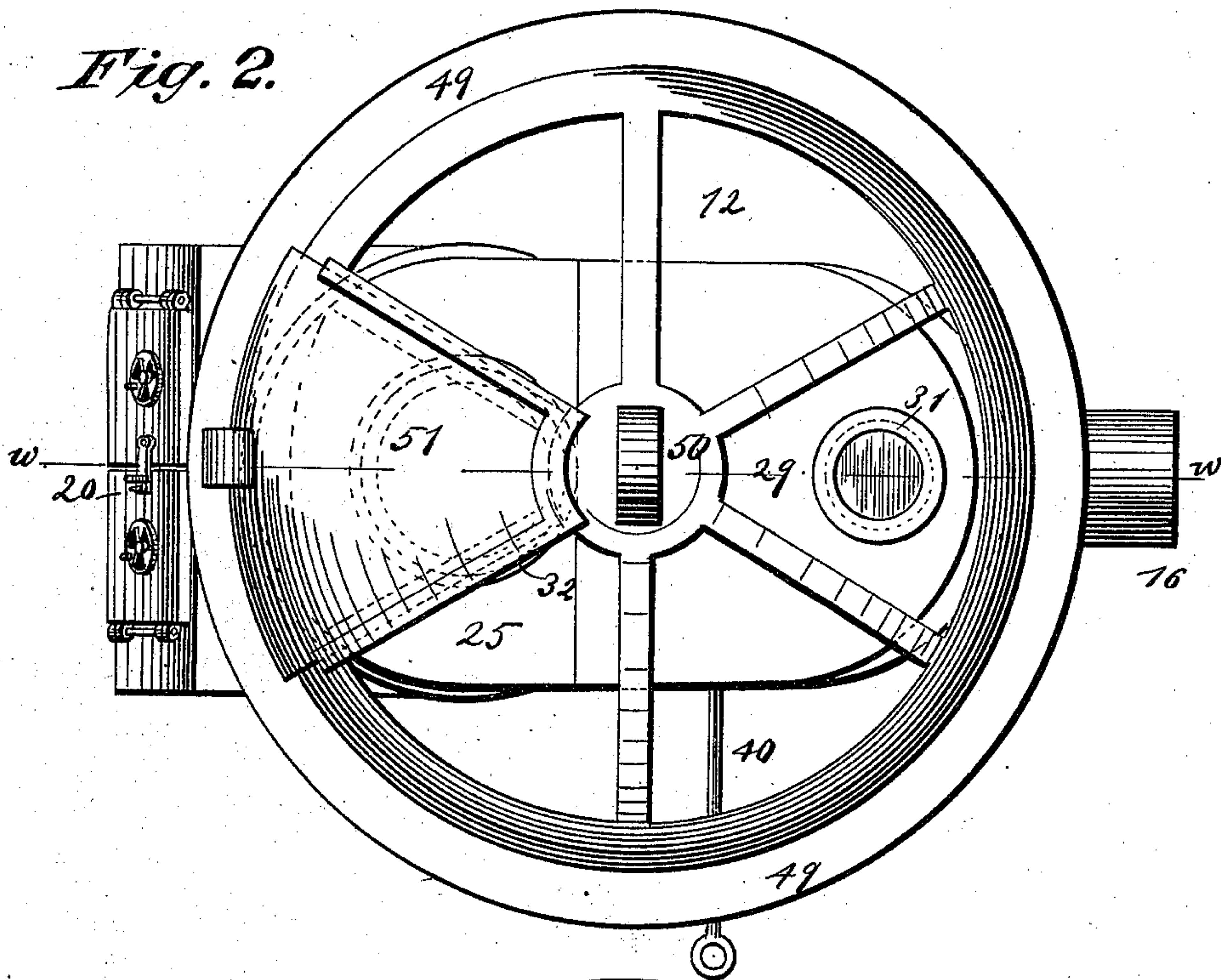
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Phil. C. Dirterich.
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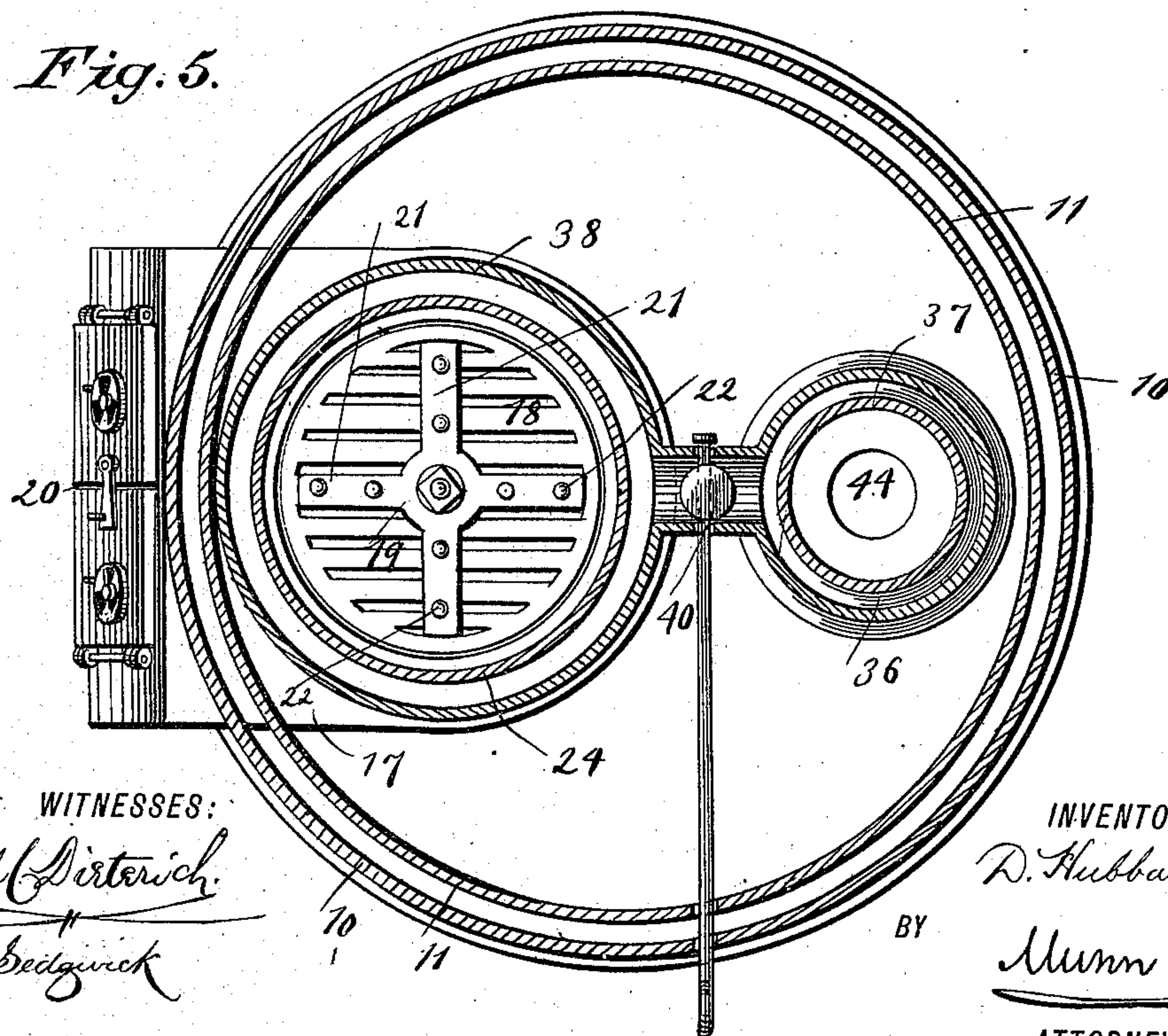
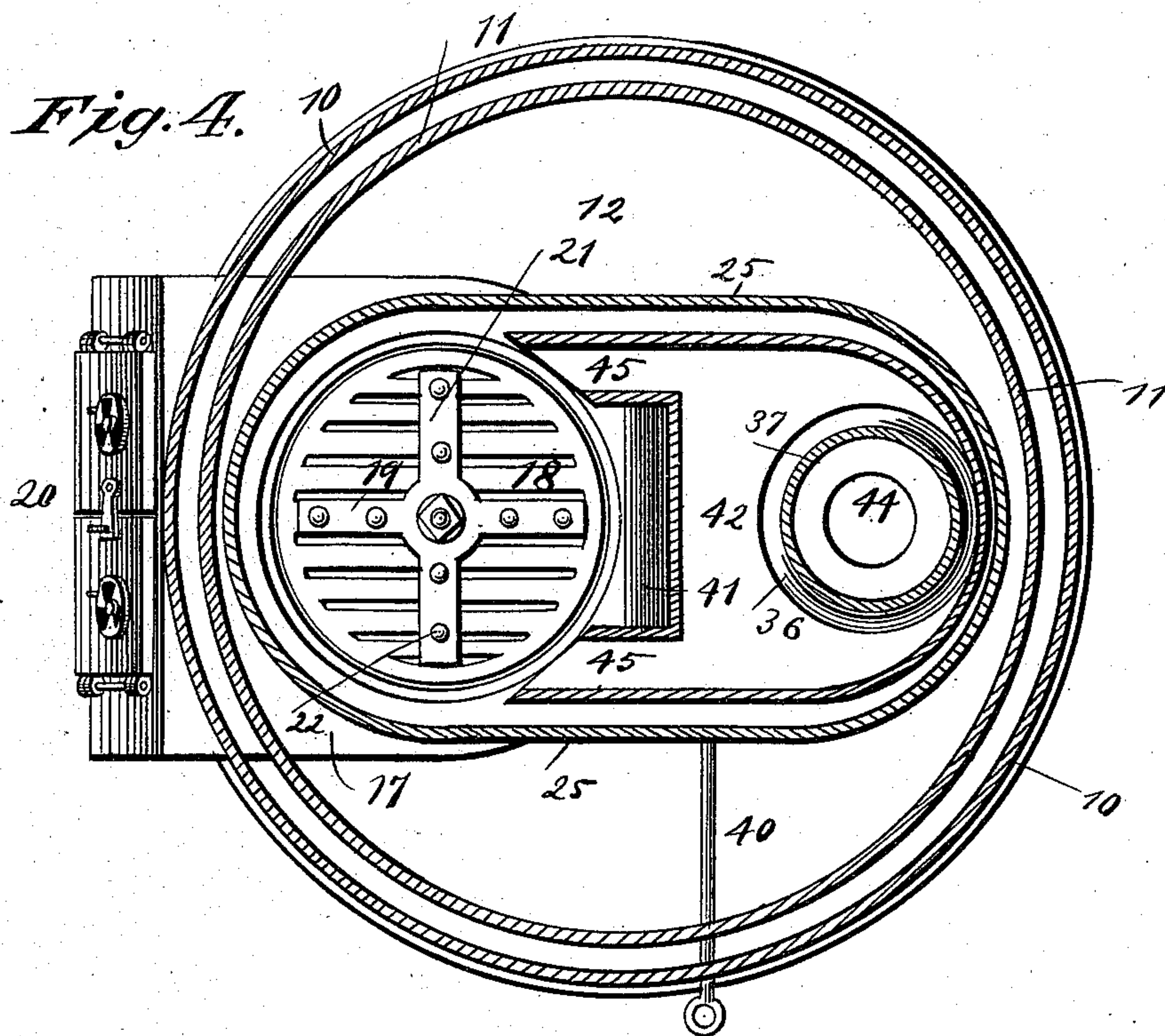
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UNITED STATES PATENT OFFICE.

DANIEL HUBBARD, OF OSWEGO, NEW YORK.

STOVE.

SPECIFICATION forming part of Letters Patent No. 412,505, dated October 8, 1889.

Application filed July 2, 1888. Serial No. 278,746. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HUBBARD, of Oswego, in the county of Oswego and State of New York, have invented certain new and
5 useful Improvements in Stoves, of which the following is a full, clear, and exact description.

My invention relates to an improvement in stoves, and has for its object to provide a
10 stove of simple construction which will be economical in the consumption of fuel and wherein the gases ordinarily permitted to escape through the offtake-flue will be consumed.

15 The further object of the invention is to provide a stove which may be readily cleaned, containing few parts, and not liable to disarrangement, and wherein the products of combustion are utilized to a maximum extent and a maximum degree of radiation obtained.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed
25 out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

30 Figure 1 is a central vertical section through the complete stove, taken on line *ww* of Fig. 2. Fig. 2 is a plan view of the same. Fig. 3 is a horizontal section taken on line *xx* of Fig. 1. Fig. 4 is a horizontal section on line
35 *yy* of Fig. 1, and Fig. 5 is a similar section on line *zz* of Fig. 1.

In carrying out the invention the stove is provided with an outer casing or jacket 10 and an inner spaced casing 11, the latter casing being provided with a closed bottom, an
40 open top, and an outwardly-projecting flange 13, integral with said top, which flange is adapted to rest upon the upper edge of the outer casing or jacket, as best shown in Fig. 1, sustaining the said inner casing in position. At or near the bottom of the stove upon
45 one side a horizontal opening 14 is formed, the cut-away portion of the inner and outer cylinder surrounding this opening being closed in any suitable manner, thus providing
50 a closed chamber 15, having but one out-

let, which is located at or near the top and surrounded by a stove-pipe collar 16.

The base 17 of the stove proper is made to rest upon the bottom of the inner cylinder 55 11. The grate is shown at 18. That portion of the base forming the ash-pit is adapted to project outward through the opening 14 in the casing, being provided with suitable draft-openings 20. 60

The fire-pot 24 consists of a cylinder, which may or may not be lined, supported upon the base 17 in any approved or suitable manner.

A preferably oblong casing 25 is attached at one end to the upper end of the fire-pot, 65 the bottom of the said casing being provided with an aperture of equal diameter to that of the diameter of the said fire-pot, whereby communication between the fire-pot and the chamber 26, formed by the said casing 25, is 70 freely obtained. The oblong casing 25 extends the entire width of the inner cylinder 11, and is provided upon the upper face at the end opposite to the fire-pot with upwardly-projecting walls 27, whereby another chamber 28 is 75 obtained, which chamber is closed through the medium of a cover 29, having an aperture 30 produced therein, preferably covered with a sheet of mica 31, or other transparent or translucent material, to observe the flame as it 80 goes down the center pipe.

Immediately over the fire-pot 24 a magazine 32, by which the said fire-pot is supplied with fuel, is introduced. The magazine 32 may be 85 stayed or braced at the top in any suitable or approved manner, and is retained in position within the casing 25 through the medium of an annular flange 33, which flange rests upon the upper surface of the aforesaid casing 25.

An inlet-aperture 34 is provided in the bottom of the inner cylinder 11 and the rear of the base 17, which aperture is surrounded by a preferably conical tube 35, the said tube being adapted to extend upward through an aperture produced in the lower face of the 95 casing 25, as best shown in Fig. 1. The said tube 35, which I for convenience denominate a "fire-tube," is surrounded by a second spaced tube 36. The latter tube is secured at the upper end to the bottom of the said 100 casing 25, extending through the same opening through which the fire-tube 35 is passed.

The lower end of the said tube 36, which I denominate a "hot-air tube," extends down to the bottom of the inner casing 11 in similar manner to the fire-tube 35, as is also best illustrated in Fig. 1.

The fire-pot 24 is surrounded by a spaced jacket 38, which jacket preferably extends from the top of the said fire-pot to about the center of the same, and is connected with the hot-air tube 36 through the medium of a transverse pipe 39. This pipe 39 may, if found desirable, be provided with a damper 40, having an attached rod preferably passed through the outer casing. A hot-air tube 41 is formed in the chamber 26 through the medium of a flanged cap-plate 42, the flange of which plate, being attached to the end side, is adapted to rest upon the inner face of the bottom of the said chamber 26 above the several tubes 35 and 36. The fire-tube 35 is preferably secured to the end surface of the cap-plate 42, and immediately over the said tube 35 an aperture 43 is produced in the cap-plate of less diameter than the diameter of the tube, and at or near the bottom of the tube 35 a ring 44 is introduced, as will be hereinafter set forth.

The cap-plate 42 is provided with channels 45, one being located at each end adjacent to the fire-pot, each of which channels extends a slight distance inward over the said fire-pot, being adapted to supply heated air to the products of combustion, as will be hereinafter set forth.

The chamber 41, formed by the cap-plate 42, I will for convenience designate as a "burner." Intermediate of the two channels 45 of the cap-plate the said plate is carried downward at an inclination (as best shown in Figs. 1 and 3) at 46, to an engagement with the inner bottom face of the casing 25. A partition 47, having a central (preferably circular) aperture 48, is made to bear against the walls of the casing 25 and rest upon the inclined surface 46 of the burner, as is also best illustrated in Figs. 1 and 3, thus reducing the opening between that portion of the chamber 26 over the burner and the fire-pot.

The stove is provided with an open or essentially open cover or top 49, having a handle 50, by which the same may be readily manipulated. Ordinarily the cover 49 is provided with a slide 51, located over the magazine 32.

In operation, a fire having been built in the fire-pot, the products of combustion pass from said fire-pot through the aperture 48 of the partition 47 down through the aperture 43 into the fire-pipe 35, the ring 44 and the walls of the aperture 43 preventing the products of combustion from coming in direct contact with the sides of the said flue. From the flue 35 the products of combustion pass into the chamber 15 and circulate freely around the same, passing out through the aperture in the rear, surrounded by the off-take-pipe collar 16. The cold air entering at the top or at the bottom through the space

provided by the opening 14, or both, passes up between the jacket 38 and the fire-pot 24, where the said air is partially heated. From thence the air passes through the short pipe 39 up through the hot-air pipe 36 into the burner or chamber 41 and is delivered from said chamber through the medium of the channels 45 over the fire-pot, inside of the partitions 47. Hot air thus being supplied to the products of combustion causes the escaping carbonic-oxide gases to take fire. The said ignited gases thereupon pass out through the aperture 48 in the partition, as heretofore stated.

It will be seen that fresh heated air is constantly supplied to the fire above the flame, insuring the effective combustion of any unconsumed gases.

I do not confine myself to the construction of the burner whereby the heated air is conveyed to the fire-pot through spaced channels, as the channels may be dispensed with and perforations be substituted, or the channels and perforations may be used jointly.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the fire-pot and a horizontal casing, forming a combustion-chamber, extending rearwardly from the fire-pot and provided with an outlet, of a burner in the rearward-projecting part of the said chamber and provided with spaced air-channels opening over the fire-pot, and a jacket surrounding the fire-pot provided with an air-inlet and connected with said channels, substantially as set forth.

2. The combination, with the fire-pot and a horizontal casing, forming a combustion-chamber, extending rearwardly from the fire-pot and having an outlet, of the horizontal burner having spaced air-channels opening over the fire-pot, an apertured partition dividing the combustion-chamber above the burner and in rear of the fire-pot, and through which aperture the products of combustion pass to the outlet, and the jacket surrounding the fire-pot, open at its lower end to receive the air and connected with the burner to supply its channels with heated air, substantially as set forth.

3. In a stove, the combination, with an inner and an outer cylinder, a fire-pot within the inner cylinder, an oblong casing supported above said fire-pot, extending horizontally beyond the same and forming the combustion-chamber, and a burner horizontally supported within the said combustion-chamber at one side of the fire-pot, provided with conducting-channels extending into the fire-pot and an aperture in the upper face, of an apertured partition dividing the combustion-chamber into two compartments, a jacket surrounding the fire-pot, an air-tube connected with said jacket and burner, a fire-tube provided with a ring surrounding the opening in the burner and passing downward within the air-tube to a connection with the space intervening the

inner and outer casing, and means, substantially as shown and described, for introducing air between the jacket and the burner, as and for the purpose specified, whereby hot air
5 is supplied to the products of combustion within the fire-pot and the escaping carbonic-oxide gas is consumed, as set forth.

4. In a stove constructed substantially as herein shown and described, the combination,
10 with a fire-pot, and a casing supported above said fire-pot, extending beyond one side of the same and forming the combustion-chamber, of a burner supported in the said combustion-

chamber, having tubular channels projected from the ends adjacent to the fire-pot and
15 leading into the fire-pot, and a centrally-aper-tured partition resting upon said burner and the walls of the casing, dividing the chamber into two sections, and means for supplying air to said burner and conducting the pro-
20 ducts of combustion from the fire-pot, substantially as and for the purpose specified.

DANIEL HUBBARD.

Witnesses:

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JOSEPH B. LATHROP.