

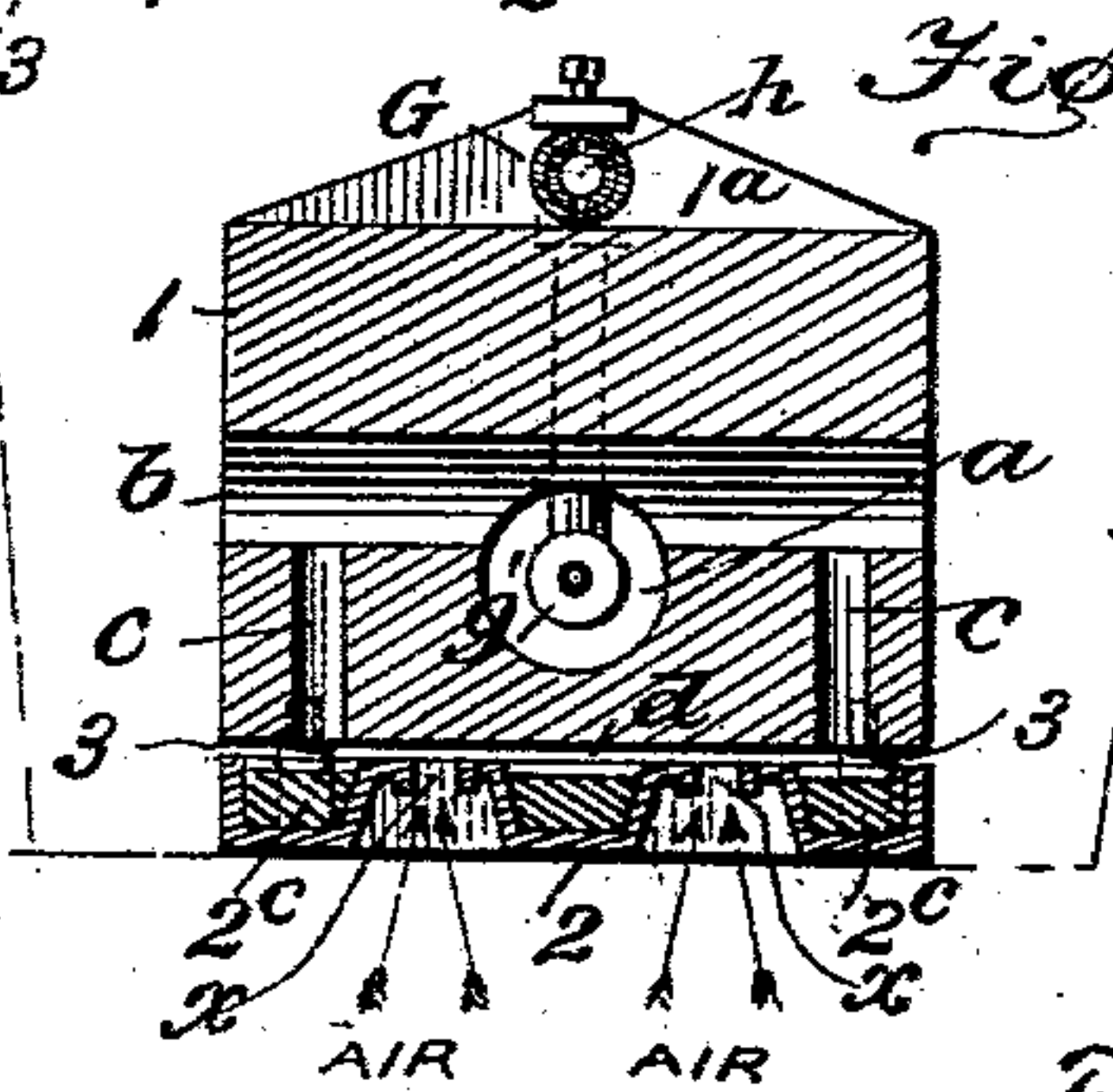
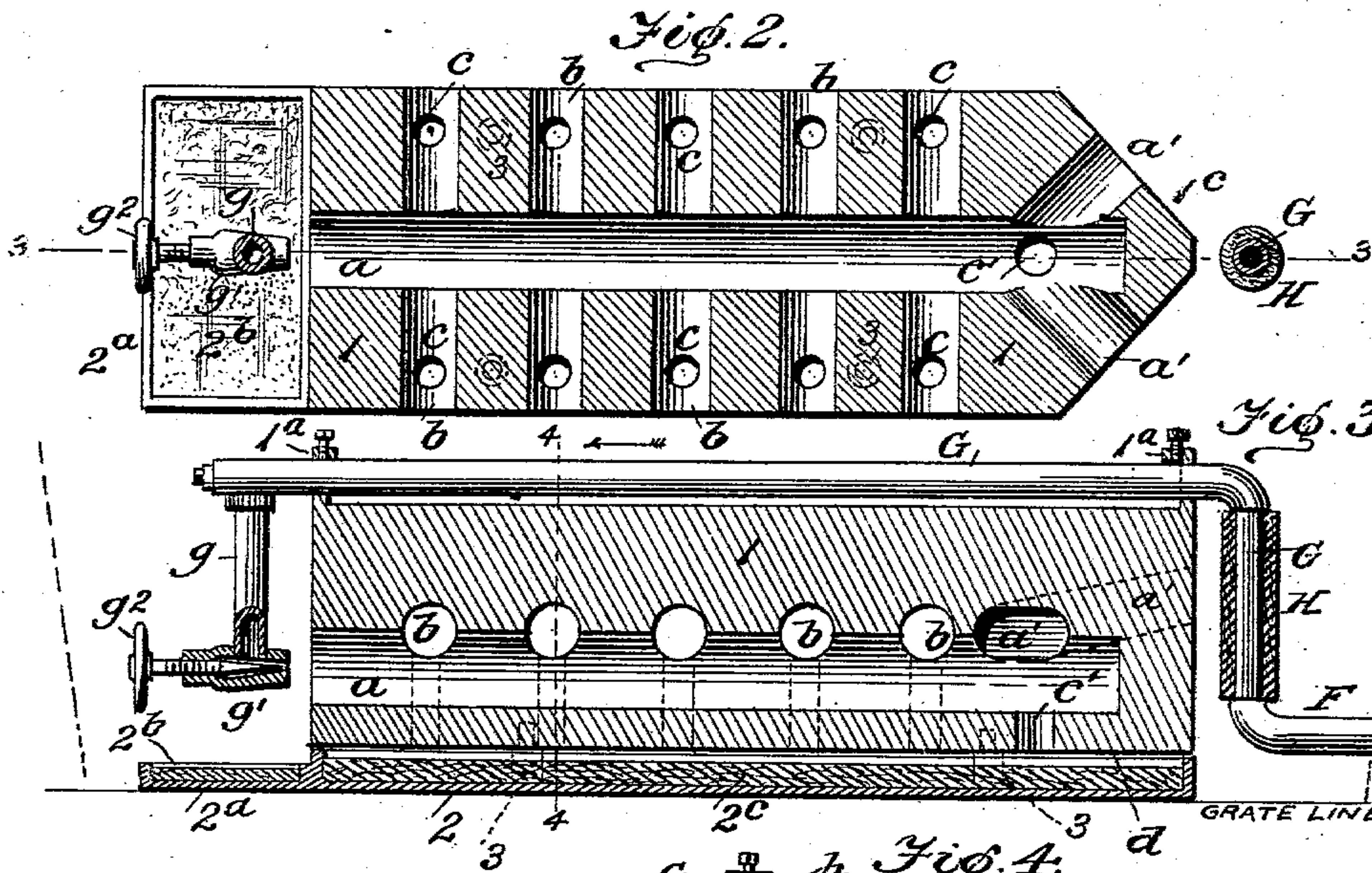
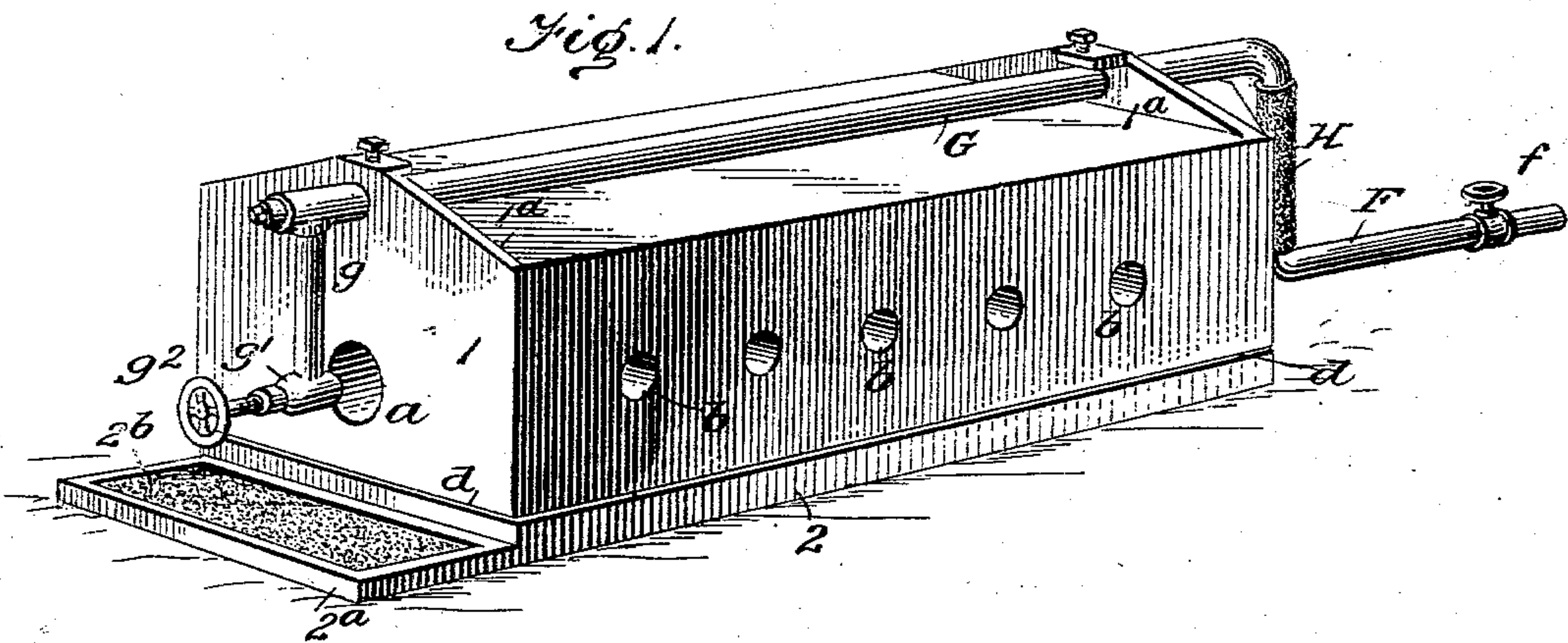
No. 715,467.

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O. FALKENWALDE.
GASEOUS FUEL BURNER.

(Application filed Sept. 10, 1902.)

(No Model.)



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GASEOUS-FUEL BURNER.

SPECIFICATION forming part of Letters Patent No. 715,467, dated December 9, 1902.

Application filed September 10, 1902. Serial No. 122,891. (No model.)

To all whom it may concern:

Be it known that I, OSCAR FALKENWALDE, residing in the city of Baltimore and State of Maryland, have invented a new and Improved
5 Gaseous-Fuel Burner, of which the following is a specification.

My invention is in the nature of an improved gaseous-fuel burner, especially designed for use in the fire box or chamber of
10 the ordinary domestic cooking stoves or ranges and hot air or water furnaces, and primarily my invention seeks to provide a burner of this kind of a simple and economical construction, which can be readily fitted in the stove or furnace fire-box without necessitating any material changes in the construction thereof, in
15 which the initial heating of the burner to a vaporizing condition can be expeditiously, conveniently, and safely accomplished, and in
20 which a positive and effective action of the heater will be maintained so long as the fuel-feed is turned on.

My invention in its generic construction embodies a body or log of cast metal provided
25 with a series of transversely-disposed burner-apertures, a longitudinally-extending gaseous feed-flue which bisects the several transverse flues or burner-apertures, a series of air-feed apertures that communicate with the longitudinal and transverse fire or burner flues and
30 having means for holding a generator or vaporizing pipe connected with a fuel-supply (in practice located outside of the building or other point of safety) and provided with a
35 burner having a needle-valve adjustment arranged to eject the fuel in a fluid or gaseous condition into the rear end of the longitudinal flue in the body or log.

In its more complete nature my invention
40 includes a body portion having a tapering front or head, a generator or vaporizing pipe section extended over the apex end of said head in the vertical plane thereof, and fire-outlets fed from the central or longitudinal
45 flue in the said body that project in divergently opposite directions, whereby to eject the flame around the said generating-pipe section, but not in direct contact therewith. A novel construction of base member which detachably supports the body portion is also provided, in which is mounted comminuted as-

bestos or other analogous absorbent or capillary fluid-conducting fireproof material and which is also specially designed to provide
55 for a free and effective air circulation for properly aiding combustion in the longitudinal and transverse flues or burner-passages in the body or log.

In its more subordinate features my invention consists in certain details of construction
60 and peculiar combination of parts, all of which will hereinafter be fully explained, and specifically pointed out in the appended claims, reference being had to the accompanying
65 drawings, in which—

Figure 1 is a perspective view of my form of gaseous-fuel burner. Fig. 2 is a horizontal section thereof. Fig. 3 is a vertical longitudinal section thereof on the line 3 3 of Fig. 2, and Fig. 4 is a transverse section of the
70 same on the line 4 4 of Fig. 3.

In its practical construction my invention comprises a body or log 1, a base-supporting member 2, and combined generating and feed
75 pipes G F, which parts have such correlative arrangement whereby they can be economically made, combined, and set up for practical use without the requirement of skilled labor or special tools therefor.

The body or log 1 consists of a solid cast-
80 metal block of rectangular shape the major portion of its length, with its front end tapering to a point, as indicated by 1^c, (see Fig. 2,) the purpose of which will presently appear. The body 1 has a longitudinal bore or flue
85 that extends from its rear end to a point in line with the base of the tapering-head portion 1^c, at which point said bore is forked and extends divergently outward in two oppositely-projected discharges *a' a'*, which
90 while providing for the ejection of the flame at the front end of the log or body 1 also serves to prevent a discharge thereof directly forward, the purpose of which will presently
95 be explained.

b b designate a series of transversely-arranged burner flues or apertures which extend entirely across the body 1 and bisect the main flue or bore *a* at the upper or crown portion thereof, (see Fig. 3,) such location of
100 the flues or burners being provided to not unnecessarily retard the draft or suction of

the flame in the bore *a* and to provide for a maximum flow of flame and heat into the said flues *b*.

At a point where the branches *a' a'* connect with the main part of the bore *a* the body 1 has a vertical aperture *c'*, that extends through the bottom of said body (see Fig. 3) and connects with the bore *a*, and at each end of the flues *b* similar apertures *c c* are provided, the said apertures *c c* acting as the air feeds to the combustion-flues *a* and *b*, the aperture *c'* also acting under certain conditions as a fluid-fuel outlet for leading the oil to the asbestos body 2^c in the bottom or supporting member 2. The bottom or supporting base 2 is also of cast metal and has side and end flanges, whereby to form a depressed portion to receive the asbestos lining 2^c, (see Fig. 3,) and at one end the bottom or supporting-base 2 has an extension 2^a, in which is held an asbestos absorbent 2^b, disposed directly under the needle-valve feed *g*² to collect the drippings therefrom, as clearly shown.

The base 2 has a number of shouldered dowels or studs 3, that project upwardly and engage with corresponding sockets in the bottom of the body 1, and the said dowel connections are such that the body 1 is supported in a plane slightly above the base 2 to provide a continuous air-space *d* between the two parts, and to provide an effective and sufficient air-supply for a proper combustion of the fuel as it passes through the burner said base has a plurality (two being shown) of longitudinally-extended inverted channels that have air-slits *x*, (see Fig. 4,) extending their length and which serve to open up a thorough communication between the draft from the ash-box below the grate-line and the air-feed passages *c c'* in the log or body 1.

F designates a feed-pipe, which in practice connects with the source of supply and extends outside of the building or to other point of safety, and said pipe at a point outside the stove or furnace has a controlling-valve *f*. When fitted to an ordinary range, the side or door to the fire-pot thereof is apertured and the pipe *F* is passed therethrough and connected with a vertically-extended vaporizing portion which extends up over the front edge of the tapered end or head of the body 1, (see Figs. 1 and 2,) and said portion is protected from being burned out by excessive heat by an asbestos jacket *H*. The generator-pipe *G* also includes a horizontal portion, which extends over the top of the body 1 and is supported in the end extensions 1^a 1^a, integrally or otherwise made a part of the body 1 and provided with set-screws whereby to clamp the body 1 and the pipe *G* together.

To the rear end of the pipe *G* is secured a pendent member *g*, the lower end of which is in the plane of the flue *a* and terminates in a valve-chamber *g'* to receive the needle-valve *g*² of any approved construction which is so

arranged as to eject the fluid or vaporous fuel into the burner.

From the foregoing description, taken in connection with the accompanying drawings, it is believed the advantages and operation of my invention will be readily understood.

The fire-apertures in the body 1 can be drilled, cored, or otherwise formed therein, and by reason of its simple form the bottom member 2 can be readily cast or pressed up.

It will be apparent that in operation the flames will practically surround the body 1; but by reason of the peculiar manner in which the pipe *G* is connected with the said body it is at all times held out of a direct flame contact, though at all times within the hottest zone.

In operation of the burner the oil is admitted through the valve *g*² into the flue *a*, and in starting the oil is taken up by the asbestos 2^c and 2^d on the bottom plate, which also takes up any overflow such as will occur only when the burner is first lighted. The oil is fed continuously from feed-pipe *F* into the vaporizer or generator pipe *G*, the quantity being determined by the controlling-valve *f* to produce the desired flame intensity. The oil after the log or body is initially heated becomes vaporized and as it passes into the horizontal portion in the top of body 1, by reason of the radiant heat and the heat from the side flames, becomes superheated or vaporized and thence passes as a gas into the single valve-outlet *g*². In case the oil flows to the generator-pipe *G* more rapidly than it is consumed the surplus will be caught up by the asbestos absorbents 2^c and 2^d and be again ignited, and thereby create an additional heat, which will bring up the heat on the generator-pipe to a degree sufficient to vaporize all the oil entering therein.

By reason of the peculiar construction of my improved burner there can be no waste of oil, and hence the odor commonly found in the use of oil-burners is avoided. Furthermore, the flame-flues are so arranged that there is no clogging, and hence little or no deposits to incrustate or rapidly burn out the body 1, and by reason of the ample air-supply and the manner in which it is distributed over the bottom of the body 1 a uniform feed of air is provided under all conditions to procure a perfect combustion or blue flame.

To prevent the oil from entering the hot zone, the generator-pipe *G* has a lining of perforated sheet-asbestos, as indicated by *h* in Fig. 4.

When utilized for a furnace, a number of the burners can be nested together and each fed from an independent feed-pipe and the nest of burners so arranged that one of them can be kept going at all times to heat up the others, and thereby provide by a simple turning of the valve *f* in one or more of the burners for controlling the size of the fire for the furnace.

It will be understood that the exact details of construction shown and described may be varied or modified without departing from my invention as defined in the appended
 5 claims. While I prefer to construct the body 1 of cast-iron, the same may be formed of steel, aluminium, fire-brick, or other non-combustible material.

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

1. A gaseous-fuel burner; comprising a body having one or more transverse apertures, a longitudinal bore bisecting said apertures,
 15 air-inlets extending from the bottom of said body into said bore and transverse apertures, an oil take-up filling below the body, a feed-pipe, a generator-pipe connected therewith and supported on the body 1 and a valved
 20 ejector connected with the generator-pipe held to discharge into the entrant end of the longitudinal bore in the body 1 for the purposes described.

2. A gaseous-fuel burner; comprising a
 25 body having a tapered front end and a plurality of transverse apertures, a longitudinal bore which bisects said apertures, the outer end of which is forked and terminates in divergingly-extended discharges, $a' a'$, air-inlets
 30 extending from the bottom of the body 1 into the central bore and the transverse apertures, a base member detachably joined with the bottom, having air-passages and an oil take-up, a valved feed-pipe, a generator-pipe connected thereto, including a portion
 35 extended up over the front edge of the tapered head of the body between its discharges $a' a'$, a portion supported on the top of said body and a pendent discharge member having a valved ejector for discharging into the
 40 entrant end of the longitudinal bore of the body 1, substantially as shown and described.

3. A fluid-fuel burner; comprising in combination a body portion 1, having a central
 45 bore, transverse apertures communicating with said bore and air-inlets extending from the bottom into the said transverse apertures and the central bore, an oil take-up absorbent supported under the body 1, a generator-pipe held in contact with the solid top of the
 50 body 1, a feed-pipe connected with one end of the generator, a pendent outlet-pipe connected with the other end of said generator, and a valved ejector joined to said outlet-pipe and
 55 held to discharge into the longitudinal bore of the body 1, all being arranged substantially as shown and described.

4. A gaseous-fuel burner; comprising in

combination; a metal body having a longitudinally-extending bore a , one end of which
 60 terminates in divergingly-extended outlets $a' a'$, and a series of transversely-extending apertures $b b$, having pendent air-passages that extend through the bottom of the said body, a generator-pipe mounted on the body, a feed-
 65 pipe joined in one end of the generator, a pendent outlet joined with the other end of the generator, a valved ejector on the lower end of the pendent outlet, held to discharge into the entrant end of the bore a , a base
 70 member 2 connected with the bottom of the body, and held separated therefrom, said base member having air-passages, and an extension 2^a projected under the aforesaid ejector and an oil absorbent or take-up material sup-
 75 ported on the base for the purposes described.

5. The hereinbefore - described gaseous burner; consisting of a base member 2 having an extension 2^a and longitudinal slots, absorbent packing $2^c 2^b$ on said base, said base
 80 also having upwardly-projected dowels or studs 3; in combination with the body 1, having a tapered end, a centrally longitudinally extending bore a , the front end of which terminates in diverging portions $a' a'$, that discharge at each side of the tapered end, said
 85 body also having a series of transverse apertures $b b$, that communicate with the bore a at the upper or crown portion thereof, air-inlets $c c'$, that open through the bottom of
 90 the body and discharge into the apertures b and the bore a respectively, a generator-pipe comprising a section that passes up over the front end of the body between the discharges $a' a'$, a portion that rests upon the top of the
 95 body, a valved feed-pipe connected to one end of the generator, an outlet connected to the other end of said generator, and a needle-valve-equipped ejector held to discharge into the bore a , as set forth.
 100

6. A gaseous-fuel burner, comprising a body having one or more transverse apertures, a longitudinal bore bisecting said apertures, and having air-inlets extending through said
 105 body into the said bore and the transverse apertures, a generator-pipe arranged for attachment to an oil-supply pipe, and supported on the body, and a valved ejector connected with the generator-pipe held to discharge into the entrant end of the longitudinal bore in the body for the purposes described.
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Witnesses:

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