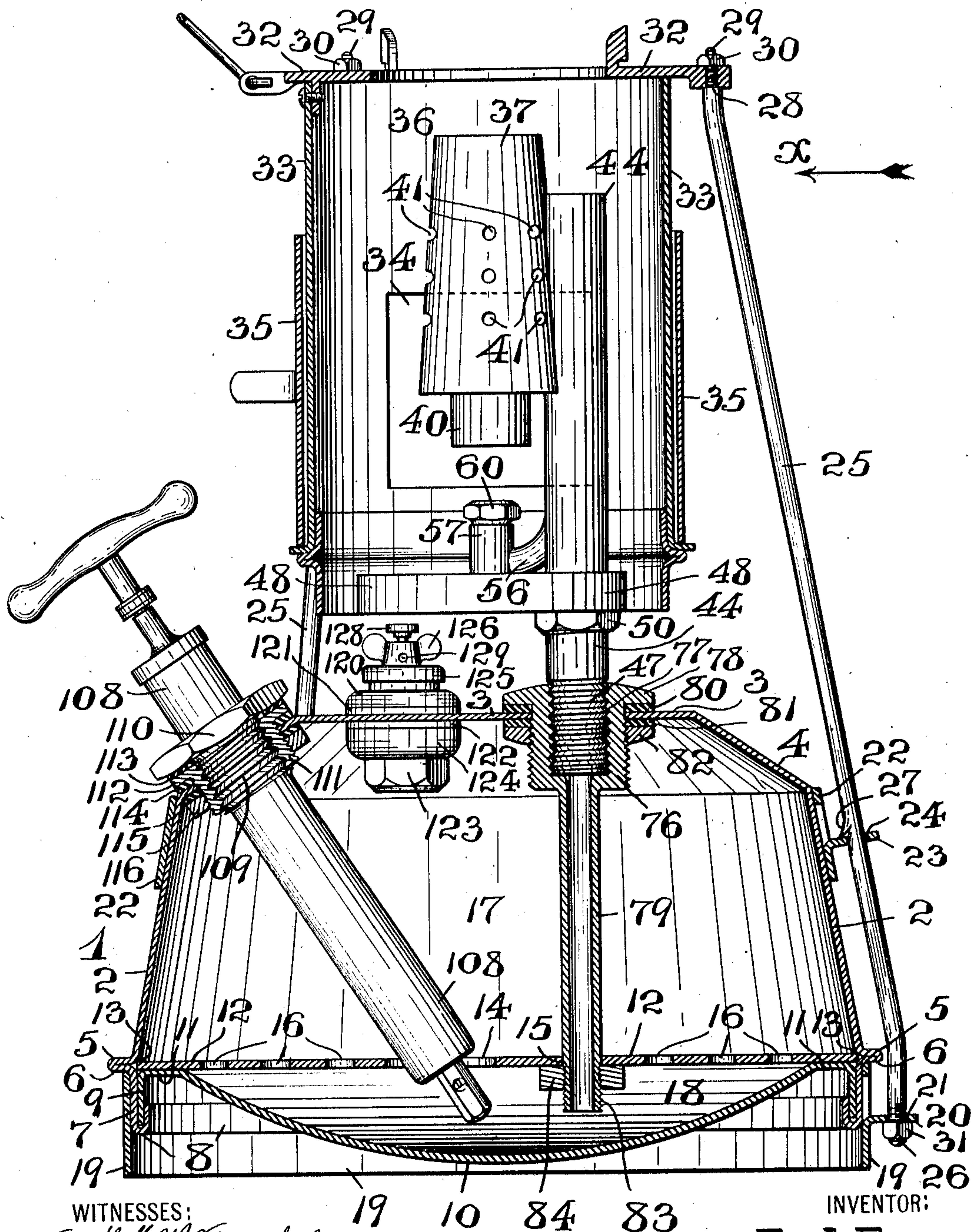


E. BEYER.
BURNER FOR FIRE POTS, BLOW TORCHES, AND THE LIKE.
APPLICATION FILED JUNE 14, 1909.

970,416.

Patented Sept. 13, 1910.

4 SHEETS—SHEET 1.



WITNESSES:
Fredk H. W. Fraentzel
Anna H. Alter

Fig. 1

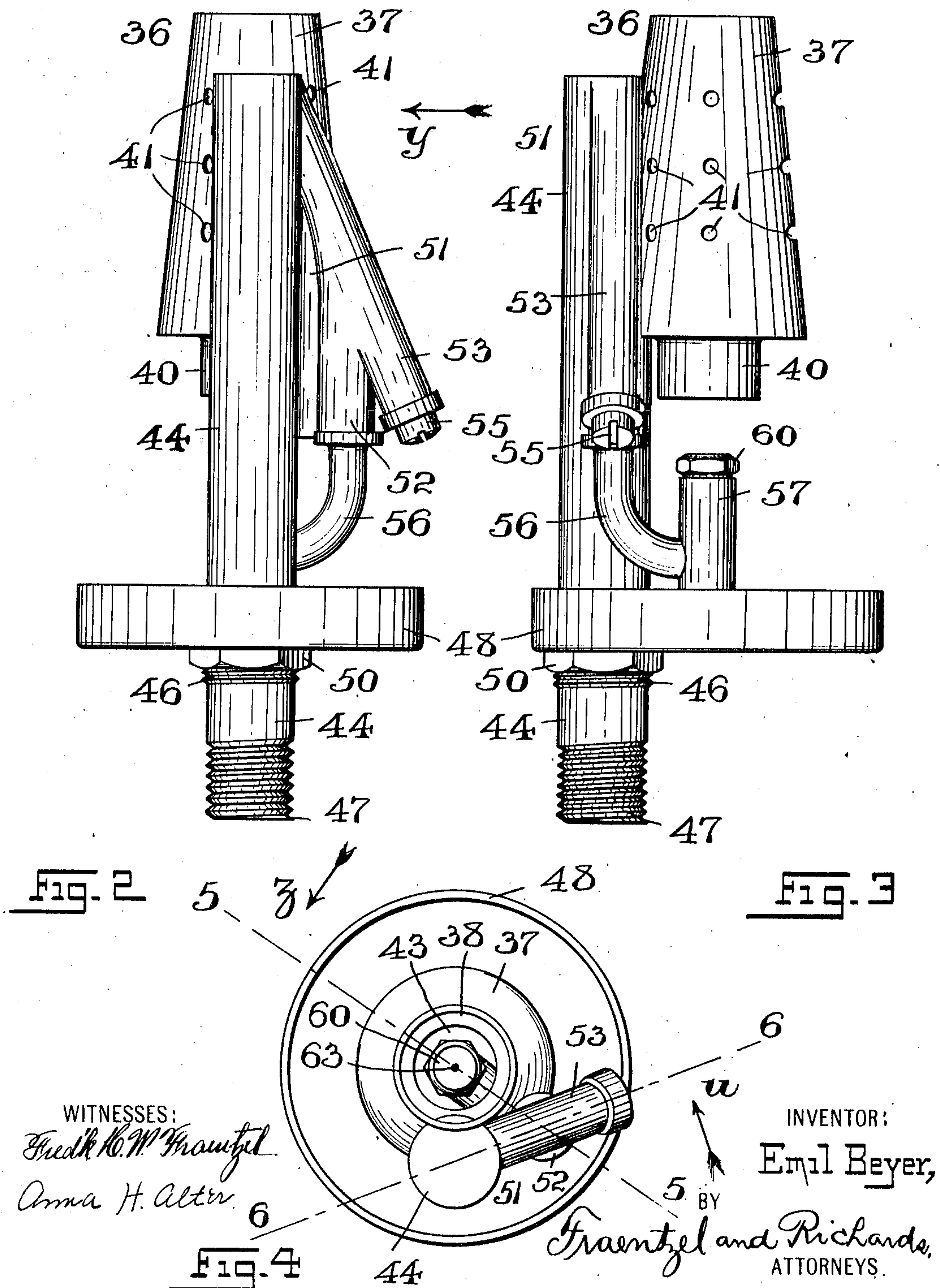
INVENTOR:
Emil Beyer,
BY
Fraentzel and Richards,
ATTORNEYS

E. BEYER.
BURNER FOR FIRE POTS, BLOW TORCHES, AND THE LIKE.
APPLICATION FILED JUNE 14, 1909.

970,416.

Patented Sept. 13, 1910.

4 SHEETS—SHEET 2.



WITNESSES:
Fredk H. W. Fraentzel
Anna H. Alter

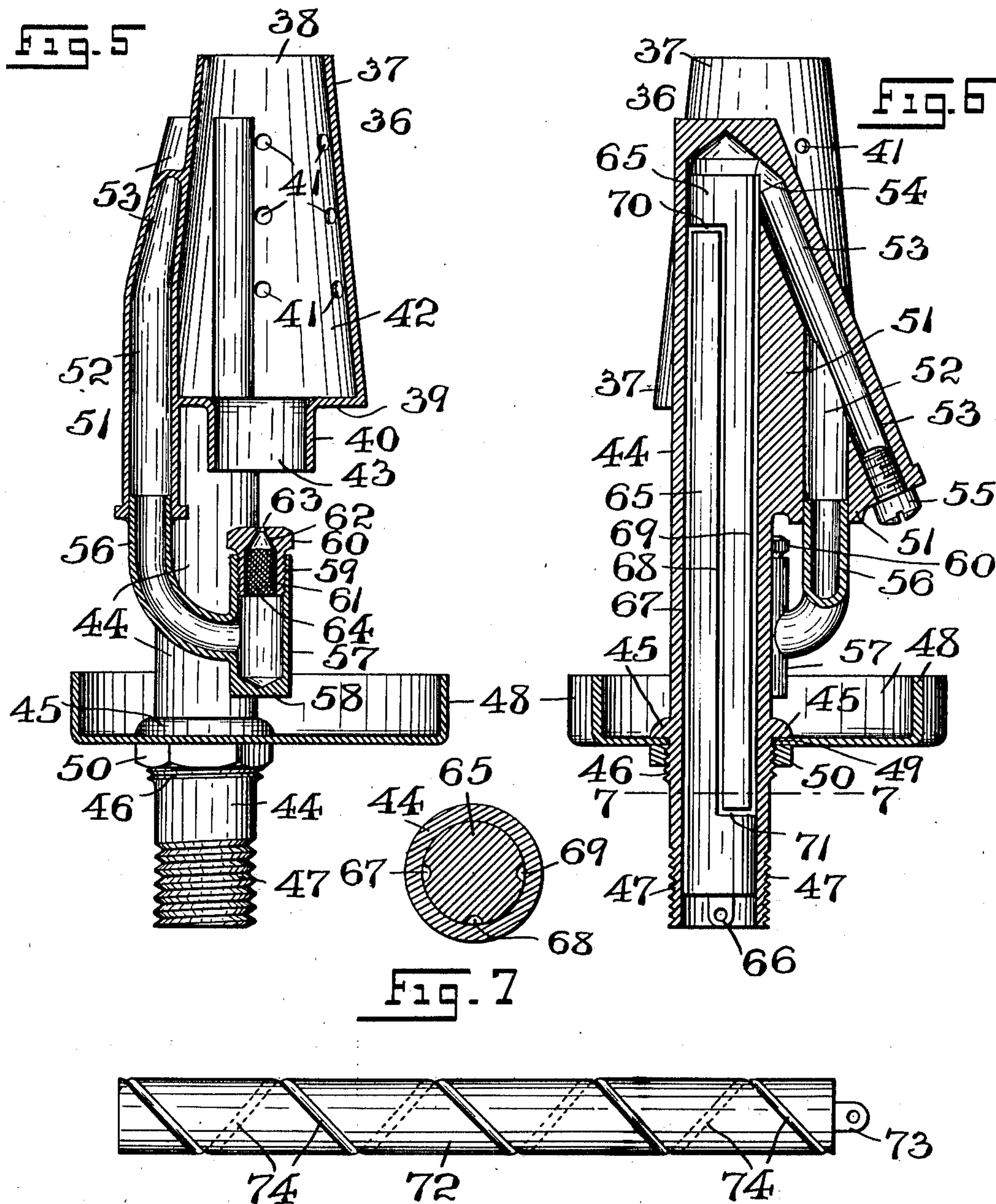
INVENTOR:
Emil Beyer,
BY *Fraentzel and Richards,*
ATTORNEYS.

E. BEYER.
BURNER FOR FIRE POTS, BLOW TORCHES, AND THE LIKE.
APPLICATION FILED JUNE 14, 1909.

970,416.

Patented Sept. 13, 1910.

4 SHEETS—SHEET 3.



WITNESSES:
Frederick W. Fraentzel
Arman H. Alter
Fig. 8

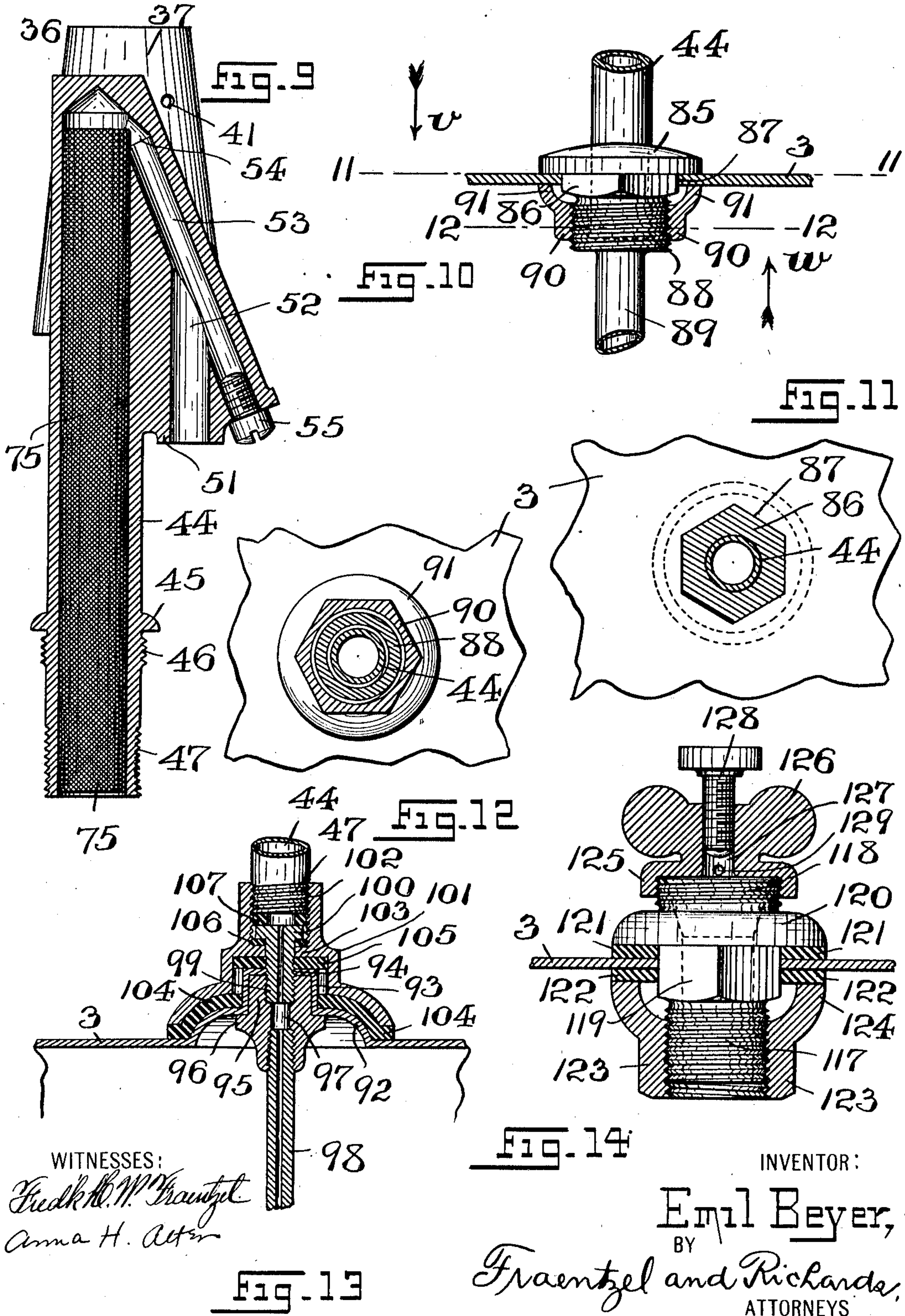
INVENTOR:
Emil Beyer,
BY
Fraentzel and Richards,
ATTORNEYS.

E. BEYER.
BURNER FOR FIRE POTS, BLOW TORCHES, AND THE LIKE,
APPLICATION FILED JUNE 14, 1909.

970,416.

Patented Sept. 13, 1910.

4 SHEETS—SHEET 4.



WITNESSES:
Fredk M. W. Fraentzel
Anna H. Alt

INVENTOR:

Emil Beyer,
BY
Fraentzel and Richards,
ATTORNEYS

UNITED STATES PATENT OFFICE.

EMIL BEYER, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO FREDERICK J. SCHAEFER, OF NEWARK, NEW JERSEY.

BURNER FOR FIRE-POTS, BLOW-TORCHES, AND THE LIKE.

970,416.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed June 14, 1909. Serial No. 501,908.

To all whom it may concern:

Be it known that I, EMIL BEYER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Burners for Fire-Pots, Blow-Torches, and the Like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The invention has reference, generally, to improvements in that class of devices known in the art as fire-pots or furnaces which are provided with a receptacle or reservoir containing a liquid fuel, under pressure, and provided with a burner to which the fuel is conducted and mixed with air for the ignition of the same at such burner; and, my present invention relates, more particularly, to a novel construction of burner for use with fire-pots or furnaces of the general character hereinafter more particularly set forth, and for use also with that class of devices known as blow-torches.

The invention relates also to certain details of construction embodying various novel features, such as will be more fully specified in the following description of my present invention.

The present invention has for its principal objects to provide a novel fire-pot or furnace of the general character hereinafter set forth, and a novel and simply constructed burner for use with a fire-pot or furnace, as well as with a blow-torch, which burner is to be used with a receptacle or reservoir in which is contained a gas-producing medium, such as kerosene, or the like, the burner being cast in one integral part, so that there are no hard-soldered connections which are subject to separation due to the intense heat which is generated, and in which the gas-producing medium is forced into and through the various parts of the burner in a circuitous manner, and under pressure, is delivered in a fine spray intimately mixed with air into the ignition chamber of the burner, so as to produce a perfect mixture and combustible gas which is expelled in a burning condition and a hot

flame from the end-portion of said ignition chamber.

The invention has for its further object to provide a novel means, in the form of a connection, for securing the burner, the filling device, and a small force-pump in their operative positions to the said fuel-containing receptacle or reservoir without any use of solder, and in such a manner so that the connected parts are not subject to separation, due to the excessive heat which is generated; and, the invention has for its further object the provision of certain novel details of construction of the fire-pot or furnace whereby the parts of the apparatus or device are easily and quickly assembled, and a device is the result which will readily withstand the hard usages to which these devices are generally put.

Other objects of this invention not at this time more particularly enumerated will be clearly understood from the following detailed description of my present invention.

With the various objects of the invention in view, the said invention consists, primarily, in the novel fire-pot or furnace, and in the novel burner for use with the same and with blow-torches, hereinafter set forth; and, the invention consists, furthermore, in the novel arrangement and construction of a connection for securing the burner, the filling-device, and the force-pump operatively to the fuel-containing reservoir or receptacle without the use of solder, and producing a connection which is not subject to separation due to the excessive heat which is generated in devices of this character.

The invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claims which are appended to and which form an essential part of the said specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a transverse vertical section of a fire-pot or furnace embodying the principles of the present invention, some of the parts being represented in elevation. Fig. 2 is a side elevation of the burner detached from the fuel-containing receptacle or tank of the fire-pot, looking at the burner in the

direction of the arrow x in said Fig. 1; Fig. 3 is an elevation of the burner, looking in the direction of the arrow y in said Fig. 2; and Fig. 4 is a top or plan view of the parts shown in said Fig. 2. Fig. 5 is a transverse vertical section, taken on line 5—5 in said Fig. 4, looking in the direction of the arrow z ; Fig. 6 is a similar section, taken on line 6—6, looking in the direction of the arrow v , in said Fig. 4, the circuitous fuel-conveying means within a portion of said burner being represented in elevation; and Fig. 7 is a horizontal section of the lower portion of the burner, said section being taken on line 7—7 in said Fig. 6. Fig. 8 is a side elevation of a modified form of circuitous fuel-conveying means detached from the burner; and Fig. 9 is a transverse vertical section of another modified form of burner, but still embodying the leading features of my present invention. Fig. 10 is a detail view, partly in section and partly in elevation, of a modified connection for securing the burner and especially its fuel-conveying tubes to the fuel-containing receptacle; Fig. 11 is a horizontal section, said section being taken on line 11—11 in said Fig. 10, looking in the direction of the arrow v ; and Fig. 12 is a similar section taken on line 12—12 in said Fig. 10, but looking in the direction of the arrow w . Fig. 13 is detail transverse sectional representation of another modified connection for securing the burner and especially its fuel-conveying tubes to the fuel-containing receptacle; and Fig. 14 is a view, partly in elevation and partly in section, of a filling device secured to the fuel-containing receptacle by means of a connection made according to the principles of my present invention.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now to the several figures of the drawings, the reference-character 1 indicates a suitable receptacle, such as is used in fire-pots or in blow-torches, in which a gas-producing medium, such as kerosene or the like, is placed and maintained under pressure, to be conveyed to the burner of the apparatus, in the manner to be hereinafter more fully specified. In Fig. 1 of the drawings, I have illustrated one form of fuel-receiving receptacle or reservoir, the same in this case comprising a main shell or body 2, the sides of which taper upwardly, and which is made with a top 3, and an angular or tapering annular portion 4 between said top and the upper portion of said main shell or body, substantially as shown. Near its lower part the said main shell or body is made with an outwardly extending annular projection 5, forming preferably an integral part of said main shell or body, said projection 5 being made with

a doubled-under part 6, from which extends a downwardly projecting annular rim or member 7. This rim or member is made with an inwardly bent and upwardly projecting retaining bead, as 8, to which is suitably secured, by clamping or in any other suitable manner, within said annular rim or member 7 an annular or ring-shaped rim or member 9 of a concaved plate or element 10 which is also formed with an annular flat portion 11, substantially as illustrated in said Fig. 1 of the drawings, said plate or element 10 and the parts connected therewith forming the bottom of the fuel-containing or receiving receptacle. Resting upon the said flat portion 11 of said plate or element 10 is a rigid or stiff plate 12 of a circular marginal configuration, the said plate 12 being suitably secured in place, against upward displacement, by having its marginal edge bearing upon the portion 13 of the main shell or body 2, substantially in the manner represented in said Fig. 1. The said plate 12 is provided with suitable openings 14 and 15, and with any desired number of suitably disposed perforations 16. The said plate 12 the purpose of which will be hereinafter more fully set forth, thus provides a partition which divides the fuel-containing or receiving receptacle into an upper chamber or compartment 17 and a lower chamber or compartment 18. Surrounding the said annular rim or member 7, and suitably secured thereto is a ring 19 which, as will be clearly evident, forms a suitable base or support for the entire apparatus, the said ring 19 having pressed or forced out of its body a suitable number of laterally extending ears or lugs 20, and each lug or ear 20 being provided with a perforation or opening 21. Fitted upon the upper and outer tapered portion of the said main shell or body 2 is another and correspondingly formed ring 22, said ring 22 having pressed or forced out of its body a suitable number of laterally extending ears or lugs 23, said ears or lugs corresponding in number and positions to the number and positions of the ears or lugs 20 of the ring 19, and each ear or lug 23 being provided with a perforation or opening 24. In practice, each ring 19 and 22 is usually formed with three ears or lugs, but it will be evident, that each ring may be provided with a smaller or larger number of such ears or lugs.

The reference-character 25 indicates a number of suitably formed tie-rods, each rod being made with a lower screw-threaded end-portion 26, and at the proper place with a suitably formed tooth-like projection, as 27, or other suitably formed holding means. At its upper end-portion each rod 25 is made with an annular shoulder 28, and a reduced screw-threaded shank 29, adapted to receive a nut 30. These rods 25 are primarily used

for securing the rings 19 and 22 in their fixed positions upon the main shell or body 2, by the insertion of said rods in the perforated ears or lugs 20 and 23, so that the retaining member of projection 27 rests upon the ear or lug 23, and is brought into holding engagement therewith, when a nut 31 upon the screw-threaded end-portion 26 of each rod 25 is tightened against the under side of the ear or lug 20, and whereby the two rings 19 and 22 are drawn toward each other so as to be finally firmly secured in their fixed positions upon the said main shell or body 2, as clearly shown in said Fig. 1 of the drawings.

Resting upon the shoulders 28 of the several rods 25, is a supporting ring or casting 32, the shanks 29 extending through suitable perforations in said ring, and the parts being secured in their assembled positions by means of the said nuts 30 which are screwed down upon said shanks 29 and upon the upper surface of the said ring or casting 32. This ring or casting 32 is of the usual construction and is for the placing thereon of the usual melting pot, or other device to be heated. Suitably secured to and depending from the said ring or casting 32 is the usual chimney or protector-shell 33, formed with the opening 34 in one side, and with the usual closing slide or gate 35, also formed with the usual opening corresponding to the opening 34, so that the chimney 33 may be opened for igniting the gas at the burner, and for closing the opening 34 when the device is in operation.

The burner which embodies some of the principal features of my present invention is indicated by the reference-character 36, and the same comprises a suitably tapered or cone-shaped body-portion 37, which has an open end 38, and is provided upon its end-wall 39 with a tubular extension 40, substantially as shown, and said body-portion being provided with suitably disposed outlets 41, for the expulsion of the hot air from within said body 37. By this device a flame or ignition chamber 42 having a gas-receiving inlet 43 is provided, as will be more clearly seen from an inspection of Fig. 5 of the drawings. Suitably connected with the said tapered or cone-shaped body-portion 37, by being cast integral therewith, is a tubular conveying duct or element 44, the said tube or element 44 being preferably formed with an annular flange 45, below which the said tube is made with a screw-threaded portion 46. The said tube is also provided upon its lower end-portion with a screw-threaded part 47. Connected with the said tube or element 44 is a suitably formed drip-cup, as 48, the latter being made with a suitably disposed opening 49, so that the said cup can be slipped over the end-portion of the said tube or element 44 and arranged upon the screw-

threaded portion 46, against the said flange 45, the parts being positively secured together by means of a nut 50 upon said screw-threaded portion 46, and that without the use of any solder, so that the parts cannot become accidentally separated due to excessive heat. The said tubular duct or element 44 is made with a projecting portion 51, formed with suitable ducts or bores 52 and 53, arranged at acute angles to each other, and the duct or bore 53 being in direct communication with the interior of the member or element 44, at 54. The opposite end-portion of the duct or bore 53 is internally screw-threaded and is closed by means of a tap-bolt 55, or other suitably formed closing means. In the construction of these parts of the burner, just described, the element 44 and the projecting portion 51 are cast in one piece, so that there are no soldered joints, the ducts 52 and 53 being formed in said portion 51, preferably, by boring or drilling, as this is the simplest way of establishing a communication with the interior of the member or element 44, as will be clearly evident.

Suitably connected with the lower end-portion of the duct or bore 52, preferably by being hard-soldered thereto, is a suitably curved tubular element or pipe-like member 56 which connects with a vertically disposed tubular or chambered member 57. This member 57 is closed, as at 58, and its upper open portion is internally screw-threaded, as at 59. Suitably screwed into said screw-threaded end of the member 57 is a screw-threaded tip or plug 60, formed with the tubular or chambered part 61, having a contracted portion 62 and a small outlet or delivery-orifice 63, as clearly shown in Fig. 5 of the drawings. If desired, the said chambered part 61 may have arranged therein a suitably formed roll of wire-gauze 64 which serves as a means of retaining the supply of the gas-producing medium within the chambered part 61, and retards its passage through the wire-gauze and from the orifice 63, so that the medium is delivered from said orifice in the form of a forced and fine spray in the nature of a gas which becomes intimately mixed with the air at this point, and thereby provides the proper and most efficiently acting flame within the ignition chamber formed by the tapered or cone-shaped body or shell 37. Suitably arranged within the said tubular conveying duct or element 44 is a cylindrically shaped rod or stem 65 which is preferably slightly shorter than the interior portion of the element 44 into which said stem or rod is fitted, being preferably provided at its lower end with a perforated or other suitably formed projection, as 66, which serves as a fingerpiece or a grip-piece by means of which the said rod can be withdrawn from or returned into said member 44 when it is necessary to clean

the same, or for other reasons. This rod or stem 65 is provided in its cylindrical surface with an arrangement of three longitudinally extending channels or ducts 67, 68 and 69, and a pair of laterally extending channels or ducts 70 and 71 which connect with the respective channels or ducts 67, 68 and 69, substantially in the manner illustrated in said Fig. 6 of the drawings. The channel or duct 67 extends from the lower edge of the said rod or stem 65, and the channel or duct 69 extends directly to the upper end of said rod or stem, so that a circuitous passageway will be produced through which the gas-producing medium will flow and become heated on its way into and through the pipe-like member 56 and the tubular or chambered member 57, and will be finally ejected at the orifice 63 in a condition for a proper and most efficient mixture with the air at the igniting tip or plug 60, as will be clearly evident. In lieu of this form of stem or rod 65, provided with the longitudinal grooves or channels 67, 68 and 69, and the connecting grooves or channels 70 and 71, the element 44 may be provided with the form of cylindrical rod or stem 72 represented in Fig. 8 of the drawings, said rod or stem being preferably formed with a grip or fingerpiece 73, and having in its cylindrical surface a spirally formed fuel-conveying channel or groove 74 which extends from the one end of said rod or stem 72 to the other end thereof, substantially in the manner shown in said figure. Instead of either of said forms of rods or stems 65 and 72, the element 44 may be provided with a roll of wire-gauze, as 75, through which the gas-producing medium is forced, said gauze serving the same purpose as the various grooves or channels with which either of said rods or stems 65 and 72 are provided, as will be clearly evident.

Referring now once more to Fig. 1 of the drawings, it will be seen, that in one of the openings in the top 3 of the fuel-receiving receptacle or tank 2 is arranged the externally screw-threaded body 76 of a connection, said body having a screw-threaded socket 77 into which the screw-threaded part 47 of the tubular conveying duct or element 44 is screwed, so as to secure said element 44 and the other parts of the burner in their operative positions. Surrounding the upper and outer portion of said connection is a hexagonal or other suitably formed member 78, and extending from said body 76 and in communication with the said receiving socket 77 is a tube or pipe 79 forming an integral portion of the said connection. Between the upper and outer surface of the said top 3 and said member 78 is a washer 80 of asbestos, or other material which is a non-conductor of heat, and arranged against the lower and inner surface of said top 3 and

surrounding the screw-threaded body 76 of said connection is another washer 81 of asbestos, or other material which is a non-conductor of heat, the parts being securely fixed in place, to provide a non-leaking joint or connection, without the use of solder, by means of a nut 82 which is firmly screwed in place upon said screw-threaded body 76, and thereby providing a perfect connection which is not subject to separation due to excessive heat. To guard against any possibility of loosening the connection, due to careless or rough handling of the apparatus or device, the tube or pipe may be made of sufficient length so that the lower end-portion thereof which is screw-threaded, as at 83, will extend through the opening 15 in the disk or plate 12, and is fixed in place by means of a nut 84 which is screwed upon said screw-thread 83 and against the lower face of the said disk or plate 12, the said disk or plate 12 thus serving as a means for rigidly securing the lower end-portion of the said tube or pipe in place, as shown in said Fig. 1 of the drawings. In lieu of the form of connection shown in said Fig. 1, and described herein-above, I may employ a modified form of connection represented in Figs. 10, 11 and 12 of the drawings. In this construction I provide a socketed body-member 85 of any suitable marginal configuration which rests upon the upper and outer face of the said top 3, and is provided with a hexagonal or other suitably shaped portion 86 fitted into a correspondingly formed hole or opening 87 in said top. Connected with and depending from the said portion 86 is an externally screw-threaded member or part 88, from which extends in a downward direction the pipe or tube 89, similar to and for the same purpose as the pipe or tube 79 herein-above described. The lower screw-threaded end-portion 47 of the element 44 is secured in the socketed receiving portion of this form of connection in the manner herein-above described. To secure the connection and parts shown in said Figs. 10, 11 and 12 of the drawings in their operative positions upon the top 3, a nut 90 formed with a dish or cup-shaped part 91 is screwed upon said screw-threaded member 88 until the edge of said part 91 is firmly and securely brought against the under and inner surface of the top 3, as shown in said Fig. 10, to provide a leakage and a fire-proof joint or connection. If desired, the two washers 80 and 81 illustrated in said Fig. 1 of the drawings may be omitted, as clearly indicated and as will be evident from an inspection of said Fig. 10.

In Fig. 13 of the drawings is shown still another modified form of connection for securing the burner to the said fuel-containing or receiving receptacle. In this construction, the top 3 has pressed up therein a cup-shaped part 92, formed with a receiving

socket 93 which is formed in its upper closed portion with an opening 94. Suitably arranged within the said receiving socket 93 is a connecting member or union 95 formed with an annular shoulder 96 and with a duct 97, the lower and upper portions of which are provided with screw-threads, substantially as shown. Suitably screwed into the lower screw-threaded portion of the said connecting member or union 95 is a pipe 98, which serves the same purposes as the pipe 79 in Fig. 1, or the pipe 89 in Fig. 10 of the drawings. Suitably screwed into the upper screw-threaded portion of the said connecting member or union 95 is a tubular nipple 99, which is provided with an annular flanged portion 100, the said annular flanged-portion 100 being fitted in an internally screw-threaded receiving socket 102 of a cap-like device 101, and the shank of the said nipple being passed into and through a hole in a wall 103 with which the said cap-like device 101 is provided, substantially as shown. Suitable washers or gaskets 104, 105, 106 and 107 are arranged between the various parts, substantially in the manner shown in Fig. 13, so as to provide leakage-proof joints, the said gaskets being made of asbestos, or similar material which is not affected by the excessive heat usually produced in devices of this kind, and thereby protect the connected parts from the excessive heat, as will be clearly evident. The lower screw-threaded portion 47 of the element 44 of the burner is suitably screwed into the internally screw-threaded receiving socket 102, as clearly shown.

Referring now to Fig. 1 of the drawings, there is shown therein a novel means of securing a suitably constructed force-pump 108, by means of my novel form and construction of connection to the said fuel-containing and receiving receptacle or reservoir of the device. The pump in itself is of any usual construction, but its cylinder is provided with a screw-threaded part 109 and a nut-shaped portion 110. This screw-threaded portion 109 is screwed into an internally screw-threaded union or connecting member 111, said union being provided with an annular flange 112 as shown, and a suitable washer 113 of asbestos or similar fireproof material, being arranged between the said annular flange 112 and the said nut-shaped member 110, substantially as shown. The said union or connecting member 111 is arranged in a suitably formed opening in the tapered or angularly arranged portion 4 of the fuel-receiving tank, suitable washers 114 and 115 of asbestos or other similar fireproof material being arranged upon the opposite sides of the said angular surface-portion 4 of the fuel-receiving receptacle, and a nut 116 being screwed upon the externally screw-threaded portion of the union or con-

necting member 111 for permanently and securely fixing these various parts in their assembled relations without any use of hard solder or brazing, and still providing a fire-proof joint. As shown in the said Fig. 1 of the drawings, the cylinder of the said pump 108 has its lower end-portion suitably arranged in the previously mentioned opening 14 of the fixed disk or plate 12. In said Fig. 1, as well as Fig. 14 of the drawings, I have shown the application of a connection made according to the principles of the present invention applied to a filling device which is to be used in connection with the top 3 of the fuel-receiving and containing receptacle or tank, this filling device being secured to the top of said tank without the use of any solder or brazing, and providing a fire-proof connection in which the parts are not subject to separation due to excessive heat generated in devices of this character.

Referring now more particularly to Fig. 14 of the drawings, this filling device consists, essentially, of a lower screw-threaded portion 117, an upper screw-threaded portion 118, and an intermediately placed hexagonal body-portion 119, and an annular flange 120, the entire device being made in a tubular form as indicated in the dotted outline in said Fig. 14. The said hexagonal body-portion 119 is arranged in a correspondingly formed hole or opening in the upper part 3 of the fuel-receiving receptacle, a washer 121, of asbestos, or similar fireproof material, being placed between the upper surface of the top 3 and the said annular flange 120. Arranged against the lower or inner surface of the said top 3 is another washer 122 of asbestos, or other suitable fireproof material, the parts being secured in their operative positions upon the said top 3 by means of a nut 123, formed with a dish or cup-shaped part 124, said nut 123 being screwed upon the screw-threaded member 117 until the edge of the said part 124 is firmly and securely brought against the under surface of the washer 122, as shown in said Fig. 14, and whereby all the parts are tightly drawn together so as to provide a leakage proof and a fireproof joint or connection, the parts of which are not subject to separation due to excessive heat as will be clearly evident. Screwed upon the upper screw-threaded portion 118 of the device is a suitably formed closing cap 125 which is provided with fingerpieces 126 for the manipulation thereof, said closing cap being provided with an internally screw-threaded tubular part 127 in which is adjustably arranged a screw-threaded closing plug 128, and the said device being provided with a safety vent 129, substantially as and for the purposes set forth.

From the foregoing description of my present invention it will be clearly seen, that

I have produced a simply constructed and efficiently operating burner for firepots or furnaces, or for blow torches, in which the gas-producing medium or fuel used is usually kerosene; and, furthermore, I have produced by means of my present invention a simply constructed connecting and fastening means for respectively securing the burner, the force pump, as well as the filling device, to the fuel-receiving and containing receptacle, said connecting means being secured in place without the use of solder or brazing, and a fireproof joint or connection being the result, the parts of which are not subject to separation due to the excessive heat generated in devices or apparatuses hereinabove described.

I am fully aware that some changes may be made in the various arrangements and combinations of the devices and parts, as well as in the details of the construction of the same, without departing from the scope of my present invention, as described in the foregoing specification, and as defined in the claims which are appended thereto. Hence, I do not limit this invention to the exact arrangements and combinations of the devices and parts as set forth in the foregoing specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

I claim:—

1. A burner of the character herein set forth comprising a main body forming an ignition chamber, said body being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body, means within said duct for producing a circuitous flow of the gas-producing medium through said duct, a hollow projection extending from said body and interiorly communicating with the said conveying duct, said body, said conveying duct, and said hollow projection, all being cast in one integral piece, a pipe-like member connected with said projection, a chambered member connected with said pipe-like member, said chambered member being closed at one end and being open at the other end, a tubular tip arranged in said open end, said tip having a contracted portion provided with a delivery orifice, and a wire-gauze roll within said reduced portion of said tip, substantially as and for the purposes set forth.

2. A burner of the character herein set forth comprising a main body forming an ignition chamber, said body being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body, a cylindrical stem within said duct, said stem being formed with longitudinally extending channels and laterally extending con-

necting channels for producing a circuitous flow of the gas-producing medium through said duct, means connected with a portion of said stem for the withdrawal of the same from said conveying duct, a hollow projection extending from said body and interiorly communicating with said conveying duct, said body, said conveying duct, and said hollow projection, all being cast in one integral piece, a pipe-like member connected with said projection, a chambered member connected with said pipe-like member, said chambered member being closed at one end and being open at its other end, and a tubular tip arranged in said open end, said tip having a contracted portion provided with a delivery orifice, substantially as and for the purposes set forth.

3. A burner of the character herein set forth comprising a main body forming an ignition chamber, said body being provided with an inlet for the admission of a gaseous mixture into said chamber, a tubular conveying duct connected with said body, said duct being provided with means for the attachment thereof to a fuel-containing receptacle, and said duct being formed with a screw-threaded portion and an annular flange, a drip-cup arranged upon said screw-threaded portion and against said flange, and a nut upon said screw-threaded portion for securing said parts in their assembled relation, combined with a hollow projection extending from said body and interiorly communicating with the said conveying duct, a pipe-like member connected with said projection, a chambered member connected with said pipe-like member, said chambered member being closed at one end and being open at the other end, and a tubular tip arranged in said open end, said tip having a contracted portion provided with a delivery opening, substantially as and for the purposes set forth.

4. The combination with a fuel-receiving receptacle formed in its top with an opening, of a burner provided with a tubular and externally screw-threaded conveying duct, a heat-proof connecting means arranged within said opening in the top of said receptacle, said connecting means comprising a flanged and externally screw-threaded body, said body being also formed with an internally screw-threaded receiving socket for removably securing therein the externally screw-threaded end of the conveying duct of the burner, a pipe connected with the said flanged body, said pipe extending down into the fuel-receiving receptacle and establishing a communication with the conveying duct which is removably arranged in said receiving socket, and a nut upon the externally screw-threaded part of said socketed body, all arranged so that the tubular conveying duct and the burner can be detached

from said socketed body without disturbing the fixed position of said socketed and screw-threaded body of the heat-proof connecting means, and the said pipe which is connected with said socketed body with relation to the fuel-receiving receptacle, substantially as and for the purposes set forth.

5. In a fire-pot of the character specified, a fuel-receiving receptacle comprising a body and top, and a dish-shaped bottom secured to said body, a perforated disk or plate secured within said receptacle, combined with a burner formed with a conveying duct, a conveying pipe within said receptacle connected with said duct, said pipe having a lower screw-threaded portion extending through said disk or plate, and a nut screwed upon said screw-threaded portion of said pipe and against said disk or plate, substantially as and for the purposes set forth.

6. In a fire-pot of the character specified, a fuel-receiving receptacle comprising a body

and top, and a bottom secured to said body, a ring encircling the lower portion of said body and forming a base for the same, an upper ring encircling another portion of said body, said rings being provided with outwardly projecting lugs, said lugs being formed with tie-rod receiving openings, and tie-rods arranged in the openings of said lugs, each tie-rod having a lower screw-threaded portion and a nut screwed thereon in engagement with a lug of said lower ring, and each tie-rod having a tooth-like projection in engagement with a lug of said upper ring, substantially as and for the purposes set forth.

In testimony, that I claim the invention set forth above I have hereunto set my hand this ninth day of June, 1909.

EMIL BEYER.

Witnesses:

FRED'K H. W. FRAENTZEL,
FRED'K C. FRAENTZEL.