

No. 626,509.

Patented June 6, 1899.

G. M. SWARTHOUT.
HYDROCARBON BURNER.

(Application filed Nov. 6, 1897. Renewed Apr. 29, 1899.)

(No Model.)

Fig. 1

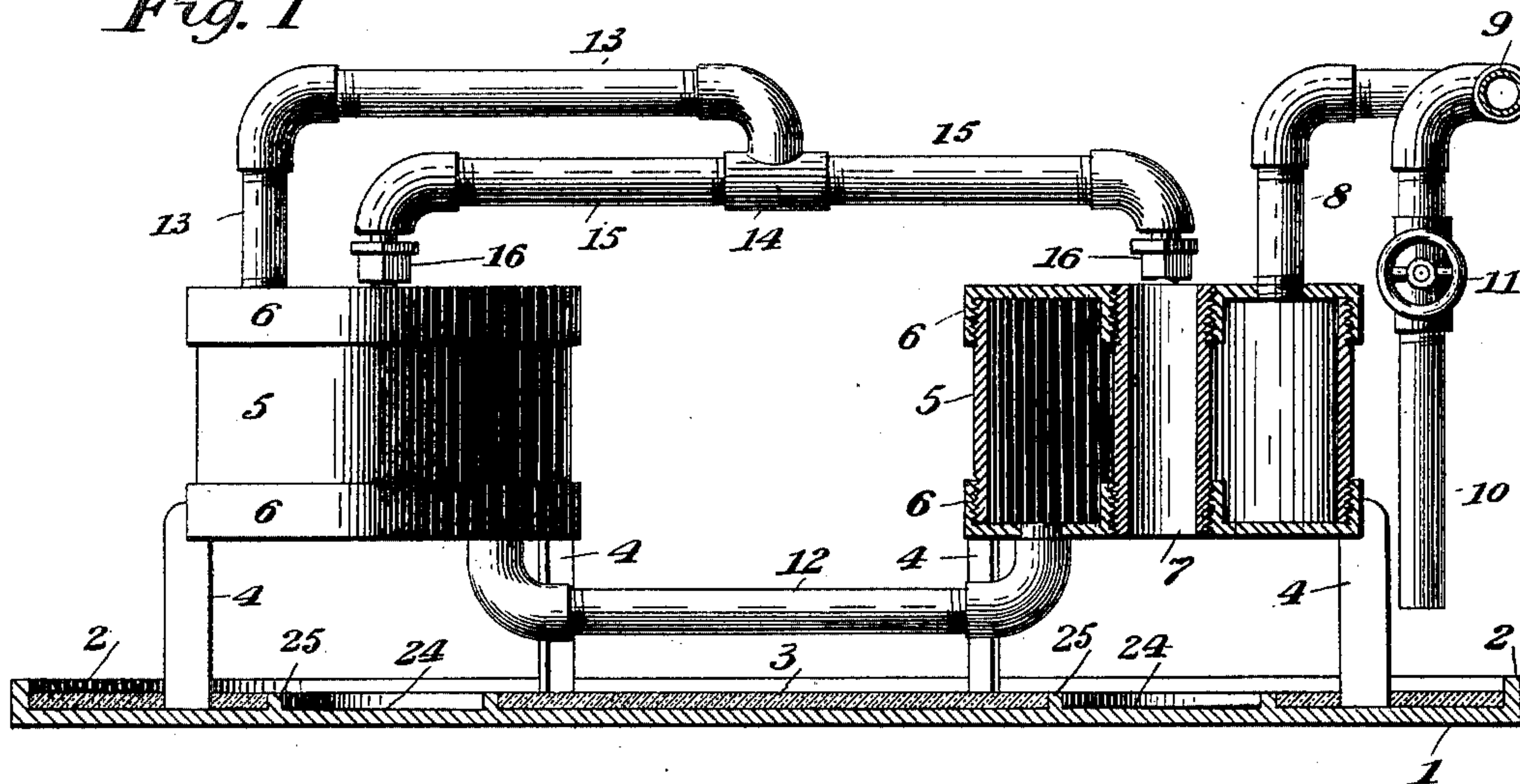


Fig. 2

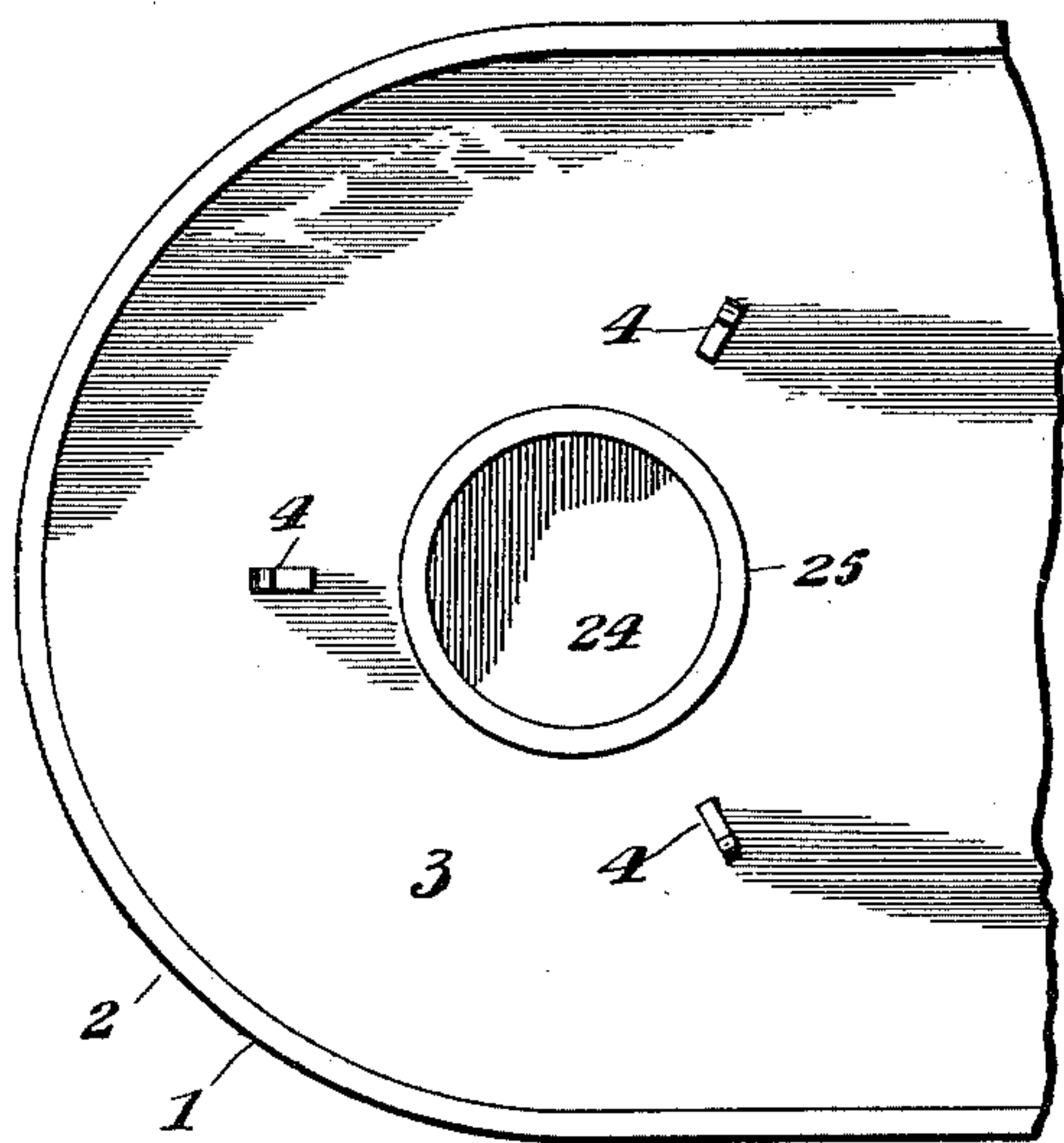


Fig. 3

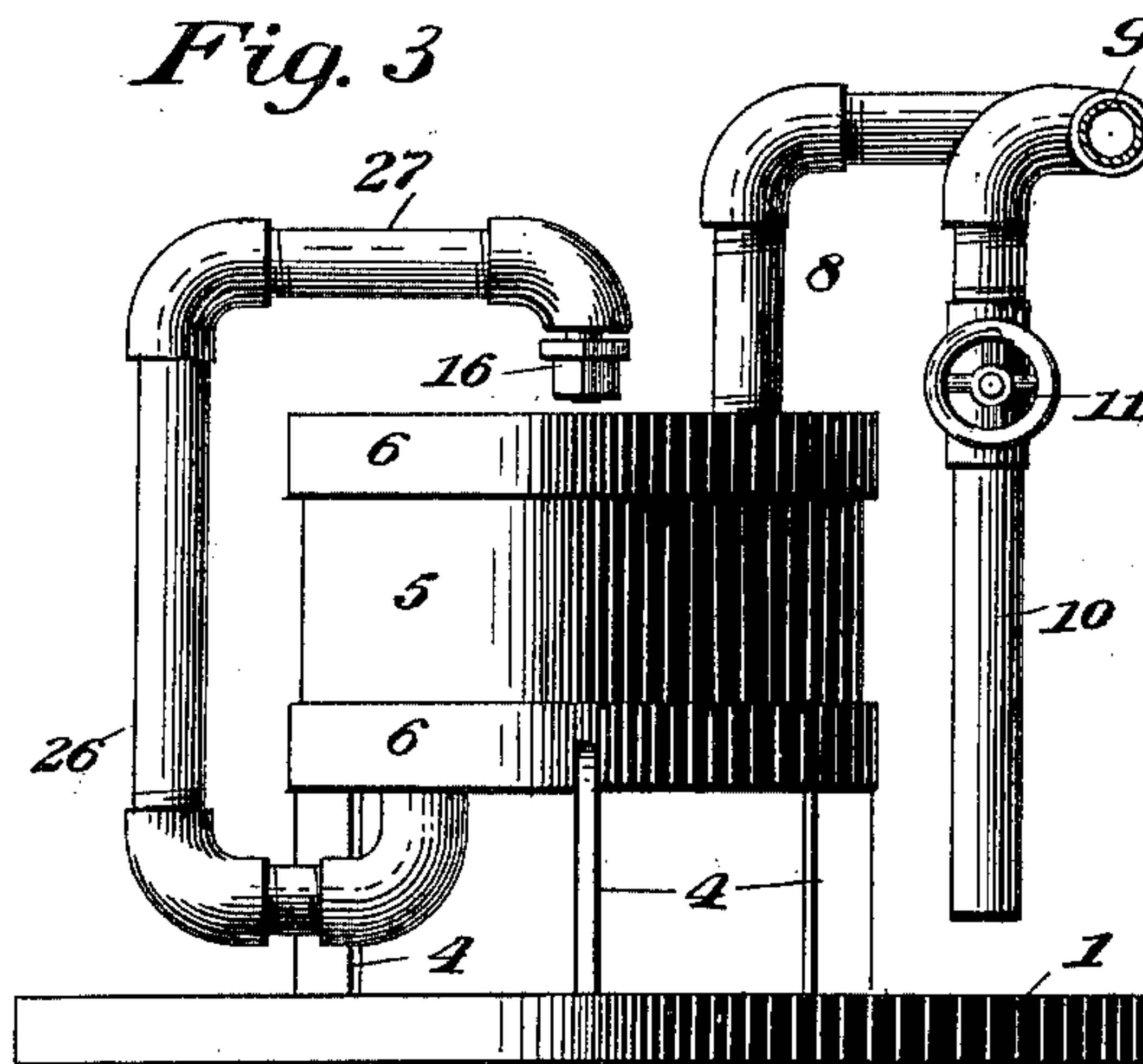
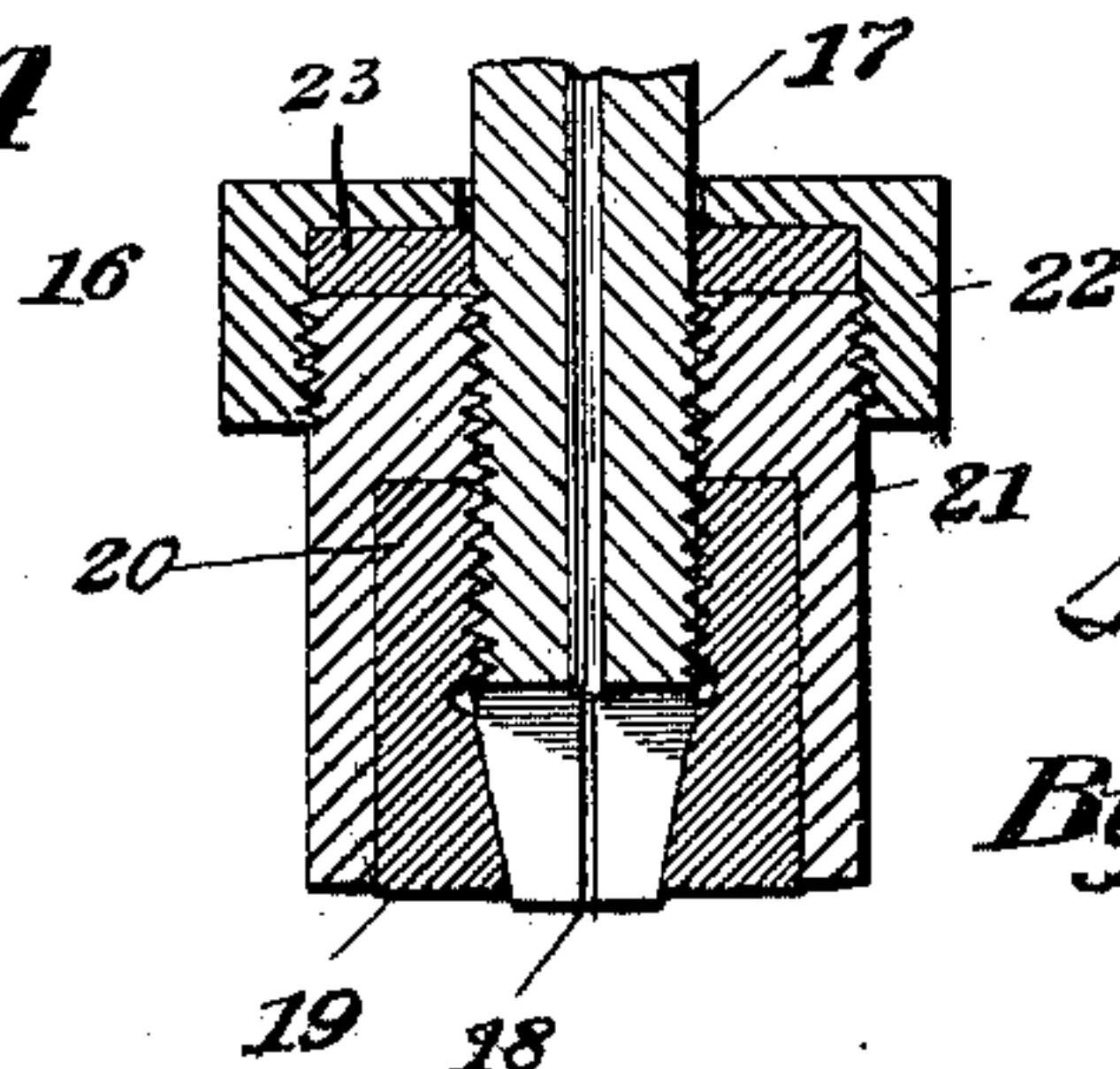


Fig. 4



Witnesses:
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21
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UNITED STATES PATENT OFFICE.

GEORGE M. SWARTHOUT, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-THIRD
TO CORNELIUS WILLIAM CASH, OF SAME PLACE.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 626,509, dated June 6, 1899.

Application filed November 6, 1897. Renewed April 29, 1899. Serial No. 715,034. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. SWARTHOUT, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do 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 the figures of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in hydrocarbon-burners, and more particularly in that class of such burners which are especially adapted for burning kerosene-oil, and the object of the invention is to provide a burner of this character of a simple and inexpensive nature, which shall be compact and durable in construction and adapted for economical use of the liquid fuel, so as to produce the best results possible.

The invention consists in certain novel features of the construction, combination, and arrangement of the various parts of the improved burner, whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In order that my improvements may be the better understood, I have shown in the accompanying drawings a burner constructed according to my invention, in which—

Figure 1 is a side elevation showing the improved burner, the drip-pan and one of the vaporizers being shown in section. Fig. 2 is a partial plan view showing one end of the drip-pan, the vaporizing and burning devices being omitted. Fig. 3 is a side elevation showing a modified form of the burner having but a single vaporizer or retort. Fig. 4 is an enlarged sectional detail view showing the preferred form of nipple or tip employed in the improved burner.

In the views, 1 indicates the base, which is formed, by preference, of cast metal, being in the nature of a drip-pan having raised side walls 2 about its edges, and provided in its bottom with a packing 3, formed of a sheet of asbestos or other absorbent refractory material adapted to hold the charge of oil for the initial heating of the retort or vaporizer.

The drip-pan or base 1 is provided at each end with a series of integral lugs or standards 4, projecting up from it, each series comprising three of said lugs, and the lugs of each series are notched on their upper adjacent-sides, so as to receive and hold a retort or vaporizer of cylindrical form, as clearly shown in the drawings.

Each retort, as shown, is formed of an outer shell 5, preferably formed of copper and provided with right and left screw-threads at its opposite ends to receive copper caps 6, which are centrally perforated and have inwardly-projecting annular bosses also provided, respectively, with right and left screw-threads to engage similar threads on the ends of the central tubular portion or flue 7 of the retort, which passes through the axis thereof. The construction of the parts with right and left screw-threads permits of readily fitting the parts of the retort together in assembling the burner.

With the upper part of one of the retorts or vaporizers connects a pipe 8, connecting with a supply-pipe 9, leading from a fuel-supply tank or reservoir (not shown) and provided with a controlling-valve, (not shown,) and with said pipe 9 also connects a pipe 10, provided with a valve 11 and leading downward, being adapted when said valve 11 is opened to discharge oil into the drip-pan to effect the initial heating of the vaporizers or retorts. With the lower part of the same retort or vaporizer connects a pipe 12, leading to the lower part of the other retort or vaporizer and adapted to carry the vaporized fuel across to the lower part of the other retort or vaporizer, from the top of which extends a vapor-pipe 13, connecting with a coupling 14, from which extend burner-pipes 15, having nipples 16, arranged over and adapted to dis-

charge the vapor downward through the central flues 7 of the retorts or vaporizers.

The preferred construction of the nipples 16 is shown in Fig. 4. In this view 17 indicates a pipe connected with the burner-pipe 15 and having a bore formed through its axis for the passage of the vapors, which bore communicates with angular kerfs or slits 18, formed in the end of said pipe 17, the extremity of said pipe being tapered or made cone-shaped to fit an internal cone-surface formed in the lower part 19 of a nut 20, arranged to screw on the lower end of the pipe 17, which is threaded, and on which is also arranged to screw a nut 21, chambered or hollowed out on its under side to receive said nut 20.

On the upper part of the nut 21 screws a centrally-perforated cap 22, between which and the upper part of said nut 21 is held a packing 23, of asbestos or other refractory material, serving to prevent the passage of the fuel-vapors upward from the slits 18 between the pipe 17 and the nuts thereon. When the nut 20 is turned, its coned lower part will by engagement with the coned lower part of the pipe 17 serve to cause the slits 18 to be either contracted or expanded, so as to suitably regulate the discharge of the vapor therefrom and also to permit of cleaning the nipple or tip from the solid carbon which will be deposited thereon to a greater or less extent in the operation of the burner.

Below the lower end of the central flue 7 of each retort or vaporizer the asbestos covering 3 of the base-plate or drip-pan 1 is omitted, as shown at 24, the exposed portions of the drip-pan being of circular form and being adapted to receive the impact of the flame passing through the flues 7, and each of said circular exposed portions 24 of the drip-pan is formed with a raised edge wall 25 to prevent the liquid fuel discharged in the drip-pan for the initial heating from collecting therein and also to hold the asbestos covering 3 in place.

In operation the oil for the initial heating being discharged into the drip-pan and lighted the liquid fuel contained in the retorts will be heated and vaporized, the vapor from the retort at the right passing into and being superheated in the retort at the left and being discharged through the pipe 13 into burner-pipes 15 and through the nipples 16 into the central flues 7 of the retorts or vaporizers, so as to maintain the heat thereof for the vaporization of a further quantity of fuel.

Thus it will be seen that the burner is not only extremely simple and compact in construction, but permits of economical use of

the fuel, the vapor from one retort being superheated and expanded in the other before being discharged and burned at the nipples 16, so as to reduce as much as possible the deposition of solid carbon in the operation of the device. Furthermore, the construction of the nipple 16 permits of readily adjusting the device to different requirements and of conveniently cleaning out the vapor-passages.

In Fig. 3 I have shown a modified arrangement wherein but one retort or vaporizer is employed, the lower part thereof being connected with an upright pipe 26, having an angular upper part 27 extending over the retort and carrying a nipple 16, located over and arranged to discharge the vapor directly down through the central flue of the retort. The operation of this device will be obvious.

From the above description it will be seen that the improved burner constructed in accordance with my invention is of an extremely simple and inexpensive nature and is especially well adapted for the purposes for which it is designed, and it will also be obvious that the device is capable of considerable modification without material departure from the principles and spirit of my invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the various parts herein set forth.

Having thus described my invention, I claim—

1. In a hydrocarbon-burner, the combination of two retorts having flues, a burner-pipe having a nipple to discharge vapor through each of said flues, a pipe connecting the retorts, a fuel-supply pipe connected to one retort, and a vapor-pipe connecting the other retort with the burner-pipe, substantially as set forth.

2. In a hydrocarbon-burner, a tip comprising a pipe having a conical, slitted discharge end and two nuts screwing on the pipe, one nut being chambered to receive the other and the last-mentioned nut being provided with a cone-surface to engage the conical end of the pipe to contract the slit therein, a cap held on the pipe above said first-mentioned nut, and a packing held beneath said cap to prevent the upward passage of vapor from said slitted discharge end, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE M. SWARTHOUT.

Witnesses:

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JOHN ELIAS JONES.