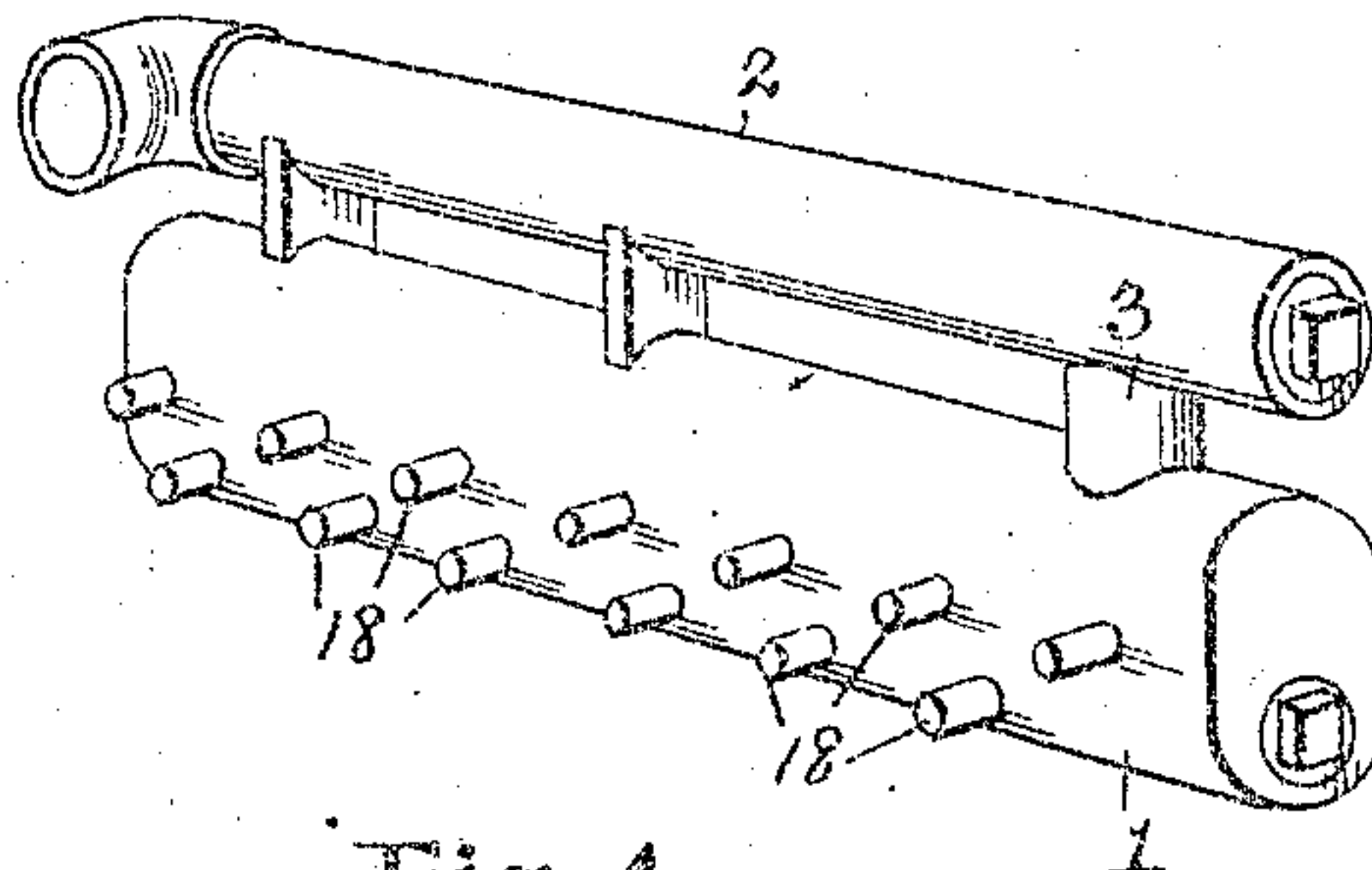
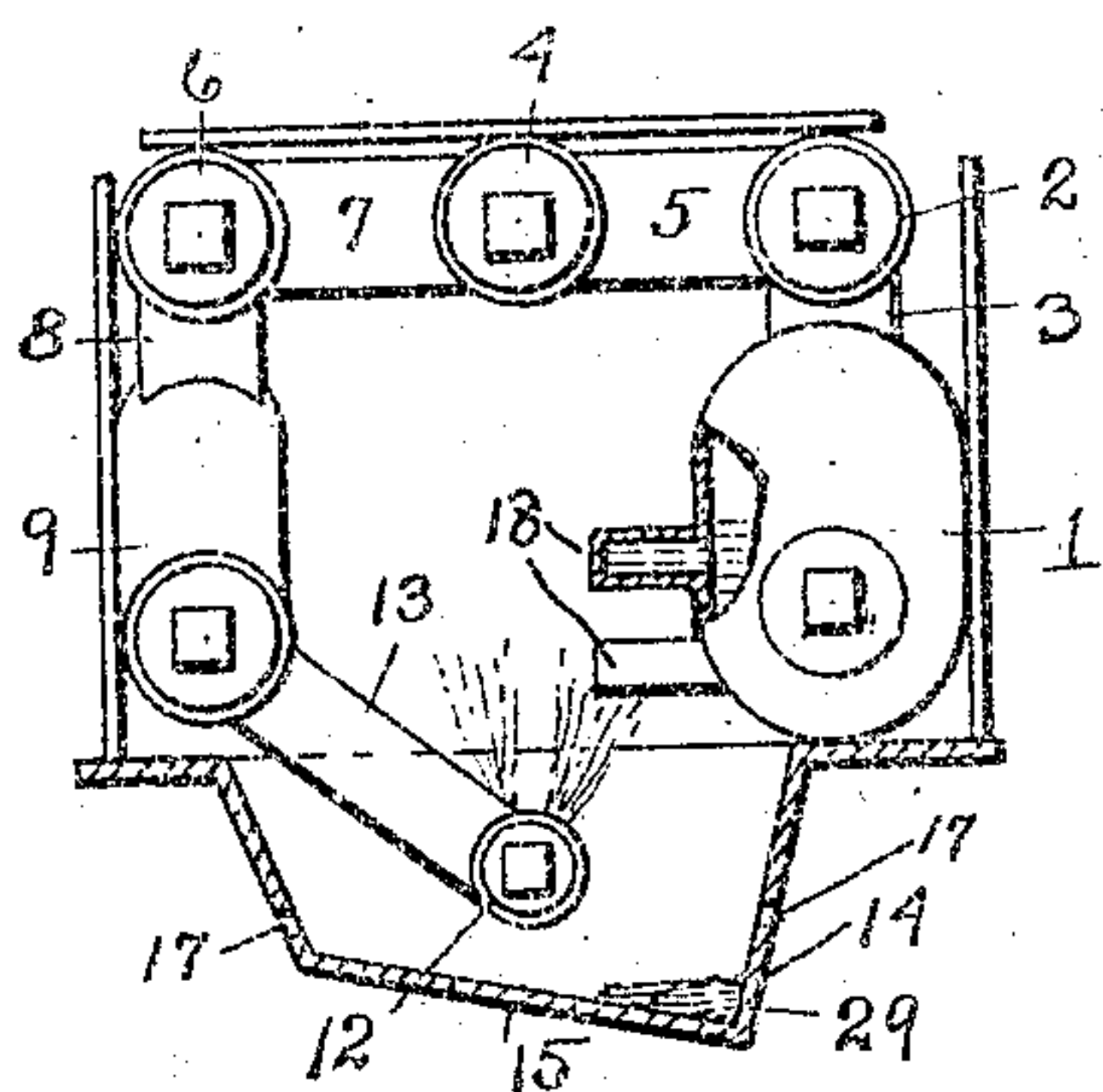
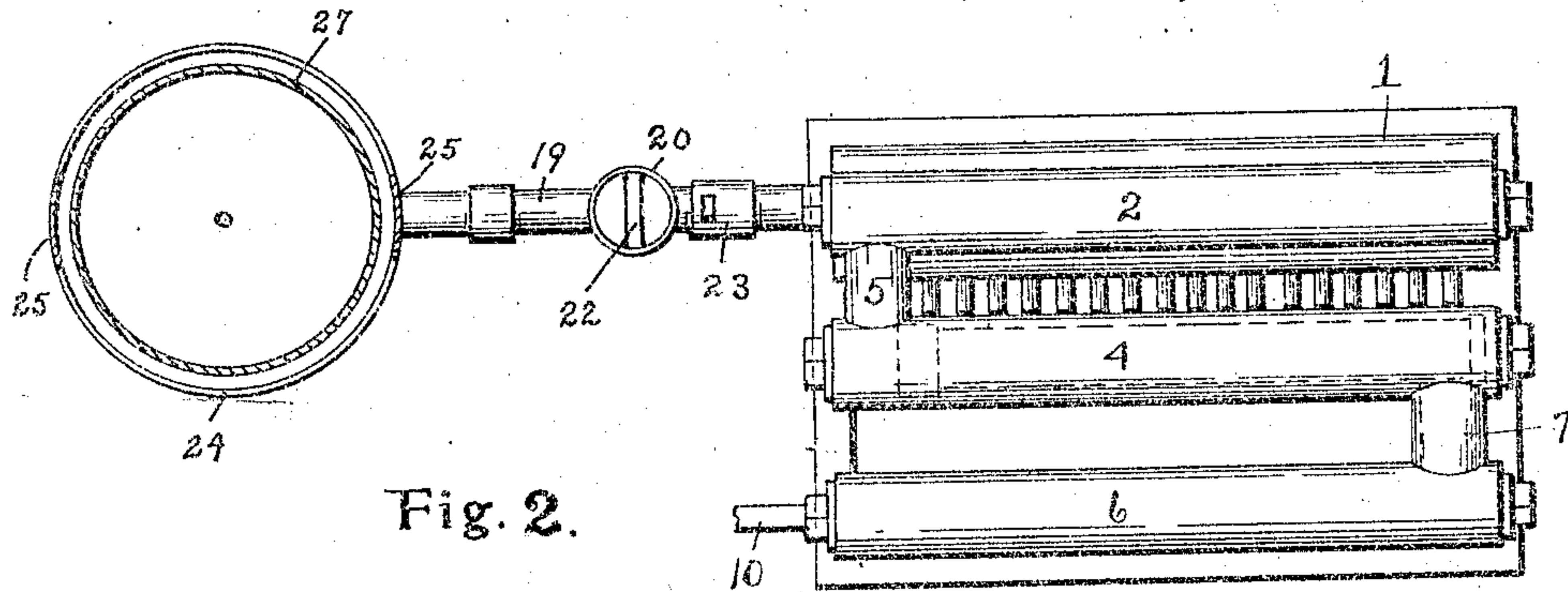
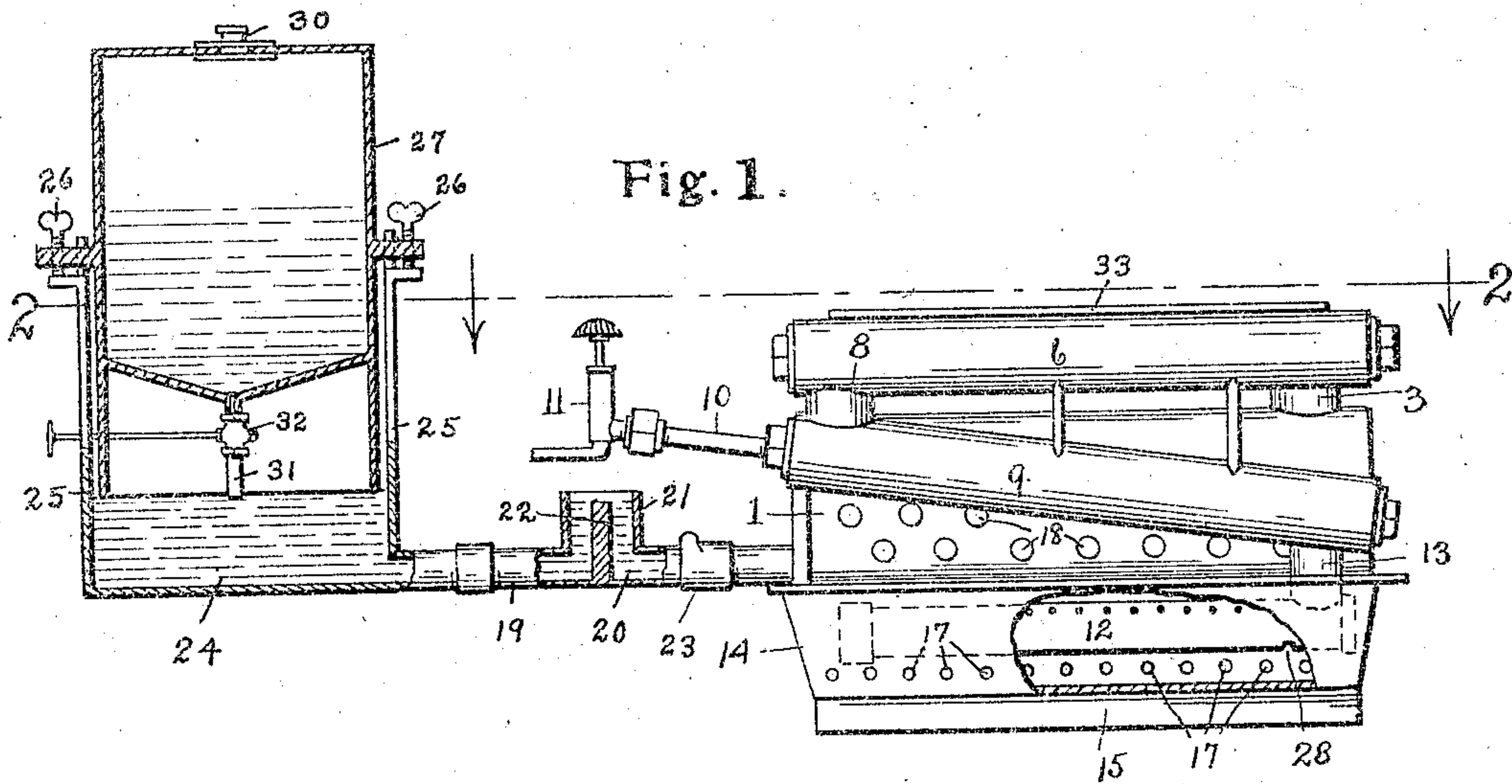


E. G. MUMMERY.
HYDROCARBON BURNER.
APPLICATION FILED OCT. 1, 1910.

992,798.

Patented May 23, 1911.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN G. MUMMERY, OF DETROIT, MICHIGAN.

HYDROCARBON-BURNER

992,798.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed October 1, 1910. Serial No. 584,811.

To all whom it may concern:

Be it known that I, EDWIN G. MUMMERY, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Hydrocarbon-Burner, of which the following is a specification.

My invention relates to means for properly mixing steam and the vapors of hydrocarbon liquids so as to form a vapor capable of giving off great heat when burning, and its object is to so improve over the constructions of the prior art that the hydrocarbon burner thus produced will be more efficient with practically no increased cost of construction.

My invention consists in so forming the burner-pan or tray of this construction that the burning hydrocarbon liquid at the starting of the operation of the burner will be located where it will be most efficient; and in so constructing the steam-generating chamber that the flames of the burning hydrocarbon, and afterward, of the mixed hydrocarbon vapor and steam will act on the same with most desirable heating effect.

In the accompanying drawing, Figure 1 is a side elevation of this improved construction, the burner-pan being partially broken away to show the main burner-pipe. Fig. 2 is a plan of the same from the line 2-2 of Fig. 1. Fig. 3 is an end view of the burner, from the right in Fig. 1, the end of the burner-pan being broken away. Fig. 4 is a perspective of the steam-generator and one of the superheaters for the steam.

Similar reference characters refer to like parts throughout the several views.

The various parts of the construction shown, with the exception of the steam-generator and the burner-pan, may be similar in general design to those already known. The steam-generating chamber 1 connects to the first superheater 2 by means of the pipe 3. The superheater 2 connects to the second superheater 4 by the pipe 5, while the second superheater connects to the third superheater 6 by means of the pipe 7. It will be noticed that in this construction, the steam must travel the entire length of the superheaters in succession. A pipe 8 connects the third superheater with the upper or intake-end of the mixing-chamber 9 into which also connects the hydrocarbon feed-pipe 10. Any desirable valve 11 controls the

flow of fuel to this mixing-chamber from any proper supply-tank.

The lower end of the mixing-chamber 9 connects to the burner-pipe 12 by means of the pipe 13. A pan 14 extends up around the burner pipe and its bottom 15 inclines downwardly toward the steam-generating chamber 1. As the steam passes through the mixing chamber 9, it evaporates and mixes with the hydrocarbon, forming a gas, which burns freely with a flame of intense heat. Before the steam is generated, the liquid hydrocarbon flows down the mixing chamber, through the pipe 13 and out of the small aperture 28 in the bottom of the burner pipe 12, and runs down to the lowest portion of the bottom 15 of the pan 14, where it may be lighted. Wicking 29 of asbestos may be laid in the trough formed by the bottom and side to assist in the initial operation of the burner.

To effect quicker heating of the water in the steam-generator, and thereby the quicker production of the perfect gas, the generator is provided with a series of hollow projections 18 in the form of water tubes, having closed outer ends, which extend inwardly over the flame of the liquid hydrocarbon burning in the trough from the asbestos 29, and are preferably at right angles to the side of the generator in parallel staggered rows.

In order to secure the most desirable heating effect from the burning of the liquid, the combustion should occur next adjacent the side of the steam-generator, and the bottom of the burner-pan is accordingly inclined as shown. The burner-pan is formed with a series of holes 17, preferably in both sides, to admit air to the burning liquid or gas. If the generating chamber were placed immediately above the flames, the bottom would be highly heated and the water might be held out of contact with the bottom by the steam which forms on the interior surface, resulting in the operation of the burner becoming unsteady. To avoid this, the generator is so located with respect to the flames that the bottom is not primarily affected, the flames passing upward along the inner side of the generator.

Connecting the steam-generator and water-tank is a water feed pipe 19 in which is a water indicator 20 formed with an upwardly-opening chamber 21, within which is a partition 22 projecting upward to the

required height of the water-line in the steam-generating chamber 1. The check-valve 23 may be located in the water-supply pipe to prevent back-pressure of steam, the check-valve however, being so constructed as to permit the water to pass freely to the generator.

Connected with the pipe 19 is a shallow water-basin 24 which may be located at any desirable place, and is of sufficient height to contain water standing just above the partition 22. Supports 25 extend upward to receive the adjusting screws 26 which support the tank 27. A cap 30 gives admittance to the tank, while a pipe 31 leads to the basin 24, the flow of water being controlled by the valve 32.

The burner is adapted for furnaces, ranges and stoves and its proportions and details may be varied so it will be adapted for the particular location where it is to be employed.

Having now explained my construction, what I claim as my invention and desire to secure by Letters Patent is:—

1. In a hydrocarbon burner, the combination of a burner-pan having an inclined bottom, a burner-pipe extending horizontally within the pan near the middle thereof, a steam-generating chamber extending along

the edge of one side of the pan next to the low side of the bottom and having hollow tubes extending inwardly, toward the space over the burner-pipe.

2. In a hydrocarbon burner, the combination of a burner-pan having a laterally inclined bottom, a burner pipe extending horizontally within the pan; a mixing-chamber connected thereto, said burner-pipe having an opening in its lower side to permit liquid hydrocarbon to flow into said pan, a refractory absorbent material in the pan along its lowest part, and a steam-generating chamber extending above the side of the pan next to the low side of the bottom adjacent said absorbent material.

3. The combination of a pan, a burner within the pan, a steam-generating chamber mounted above one side of the pan and provided with hollow tubes extending inwardly toward the space over the burner, and means for conducting the steam from the generator to the burner.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDWIN G. MUMMERY.

Witnesses:

EDWARD N. PAGELSEN,
HENRIETTA MITZEL.