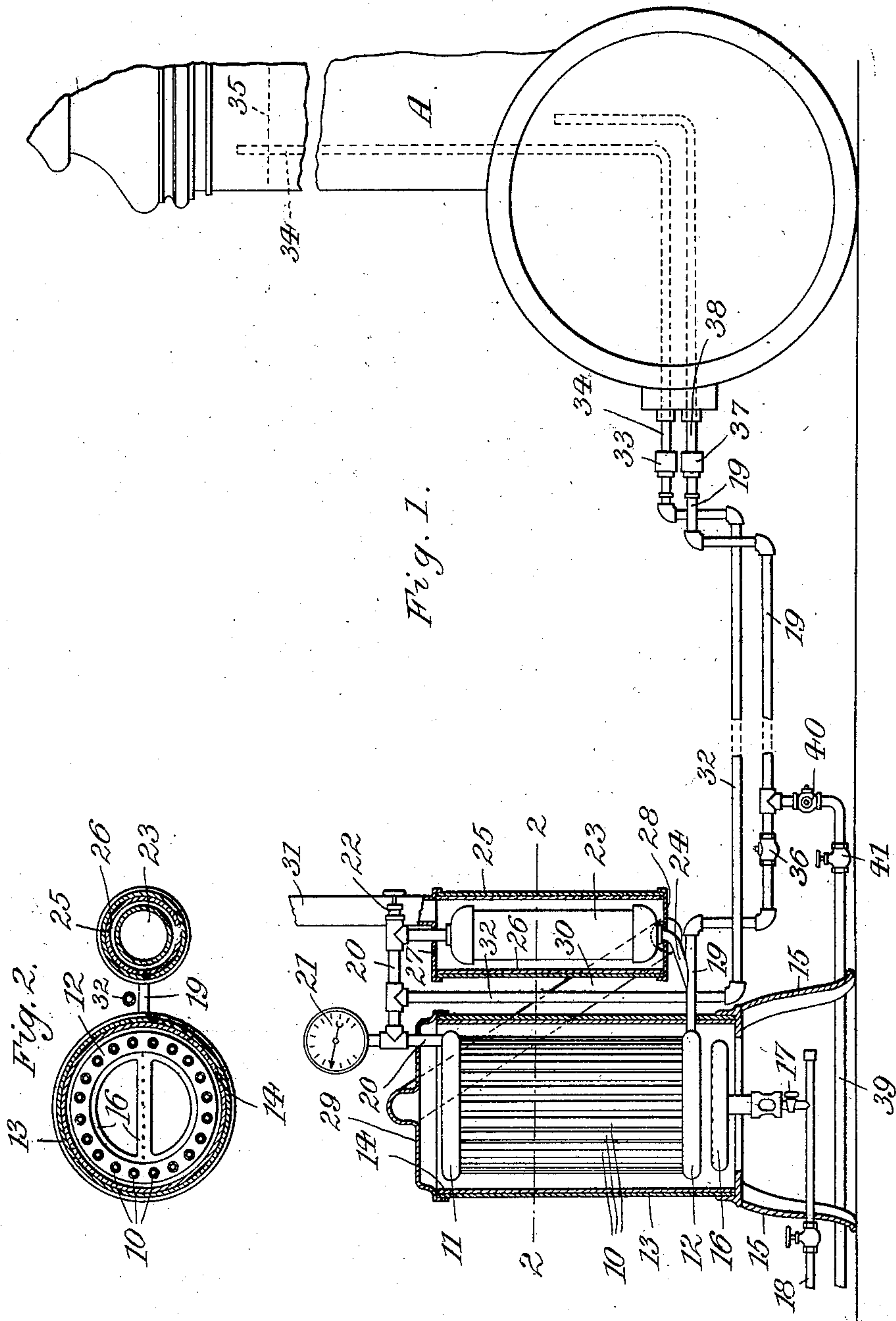


No. 889,476.

PATENTED JUNE 2, 1908.

W. F. MESSITER.
HEATER FOR FIRE ENGINES.
APPLICATION FILED FEB. 20, 1908.



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UNITED STATES PATENT OFFICE

WILLIAM F. MESSITER, OF NEW YORK, N. Y.

HEATER FOR FIRE-ENGINES.

No. 889,476.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed February 20, 1908. Serial No. 416,826.

To all whom it may concern:

Be it known that I, WILLIAM F. MESSITER, a citizen of the United States, residing at New York city, Brooklyn, county of Kings, State of New York, have invented new and useful Improvements in Heaters for Fire-Engines, of which the following is a specification.

This invention relates to an improved heater more particularly adapted for steam fire engines. While the engine stands in its house the temperature of the water contained in its boiler should be kept at such a height as to insure a quick generation of steam when the engine is called to a fire. It is furthermore desirable to maintain a certain pressure in the boiler when the engine is thus standing, so that the whistle may be sounded. To accomplish the above results, a powerful heater of novel construction is provided, which has a limited water capacity and is preferably heated by a gas burner. The heater is constructed to insure a rapid water circulation within the same, which is utilized to produce a lively water circulation between heater and engine boiler. In this way the water in the latter is heated and the desired pressure maintained in an efficient and economical manner.

In the accompanying drawing: Figure 1 is a vertical section through my improved heater, showing it coupled to a steam fire engine, and Fig. 2 a horizontal cross section on line 2—2, Fig. 1.

A series of vertical water tubes 10, arranged preferably in a circle, open at the top and bottom into annular heads 11 and 12, respectively. Parts 10, 11 and 12 are inclosed within a tubular shell 13, lined with asbestos or other non-conducting material 14, and supported upon legs 15. At a suitable distance below head 12, and inclosed within shell 13, is mounted a gas burner 16 having a cock 17 and receiving its charge from a gas pipe 18. To head 12 is connected a circulating tube 19, hereinafter more fully described, while upper head 11 communicates with a discharge pipe 20 provided with a gage 21. Pipe 20 is connected by a T-coupling having try cock 22 with a water chamber or equalizer 23, the capacity of which is about equal to that of tubes 10 and heads 11, 12, collectively. From the bottom of equalizer 23 extends towards the heater a pipe 24 that enters pipe 19 at an acute angle. Equal-

izer 23 is inclosed within a tubular casing 25 having asbestos lining 26, a cover 27 and a bottom 28. Casing 25 is heated by the waste heat of the heater. For this purpose shell 13 is provided with a hood or cover 29, into which enters a flue 30 extending to the bottom of casing 25. The hot gases rising in shell 13 will thus be conveyed to the bottom of casing 25, where they will ascend to heat equalizer 23, being finally discharged through flue 31. Intermediate head 11 and equalizer 23, there branches off from pipe 20, a circulating tube 32 having a slip joint 33 which is adapted to be coupled to a pipe 34 entering the boiler of a steam fire engine A, and terminating near the water level 35 of such boiler. Tube 19, hereinabove referred to, is provided with a back pressure valve 36 and has a slip joint 37 adapted to be coupled to a pipe 38 entering the engine boiler and terminating near the bottom thereof. To tube 19 is connected a feed water pipe 39 provided with a back pressure valve 40 and a feed valve 41.

The operation is as follows: When the fire engine is normally stationed in the engine house, pipes 34 and 38 of the engine are, by slip joints 33, 37, coupled to tubes 32 and 19 of the heater. Burner 16 being lighted, will rapidly heat the water contained in tubes 10. This heated water will thus rise from head 12 through tubes 10, into head 11, and thence flow through pipe 20 partly into equalizer 23, from which it will flow through pipes 24, 19, back into head 12, thus insuring a rapid circulation. Part of the water discharged from head 11 will, through pipe 20, enter tube 32 to be conveyed through pipe 34, to the boiler of engine A. As the water from equalizer 23 rushes from pipe 24 into pipe 19, it will act as a siphon to carry with it, into the heater, the cold water flowing from the engine boiler, through pipes 38, 19. By manipulating cock 17, the heater may be adjusted to regulate the circulation of the water through the boiler and maintain it at the temperature desired. By opening cock 22, it may be ascertained whether the heater is full of water, the cock also serving to permit the escape of air while the heater is being filled.

It will be seen that by my invention a rapid interchange of water between the engine boiler and the heater is obtained, so that the engine is effectively preheated and the desired pressure maintained.

I claim:

1. A heater for fire engines, comprising a shell, inclosed water tubes, an equalizer and a first circulating tube simultaneously communicating with the top of the water tubes, a second circulating tube connecting with the bottom of said water tubes, and means for permanently connecting the bottom of the equalizer with said second circulating tube, substantially as specified.
2. A heater for fire engines, comprising a shell, inclosed water tubes, an equalizer and a first circulating tube communicating with the top of the water tubes, a second circulating tube connecting with the bottom of said water tubes, means for connecting the bottom of the equalizer with said second circulating tube, a casing inclosing the equalizer, and a heating flue connecting the shell with said casing, substantially as specified.

3. A heater for fire engines, comprising a shell, inclosed water tubes, an upper and a lower head communicating therewith, an equalizer, a pipe connecting the upper head with said equalizer, a first circulating tube entering said connecting pipe, a second circulating tube entering the lower head, a pipe connecting the lower end of the equalizer with said second circulating tube, a casing inclosing the equalizer, and a flue connecting the top of the shell with the bottom of said casing, substantially as specified.

Signed by me at New York city, (Manhattan,) N. Y., this 19th day of February, 1908.

WILLIAM F. MESSITER.

Witnesses:

W. V. SCHULZ,
FRANK V. BRIESEN.