

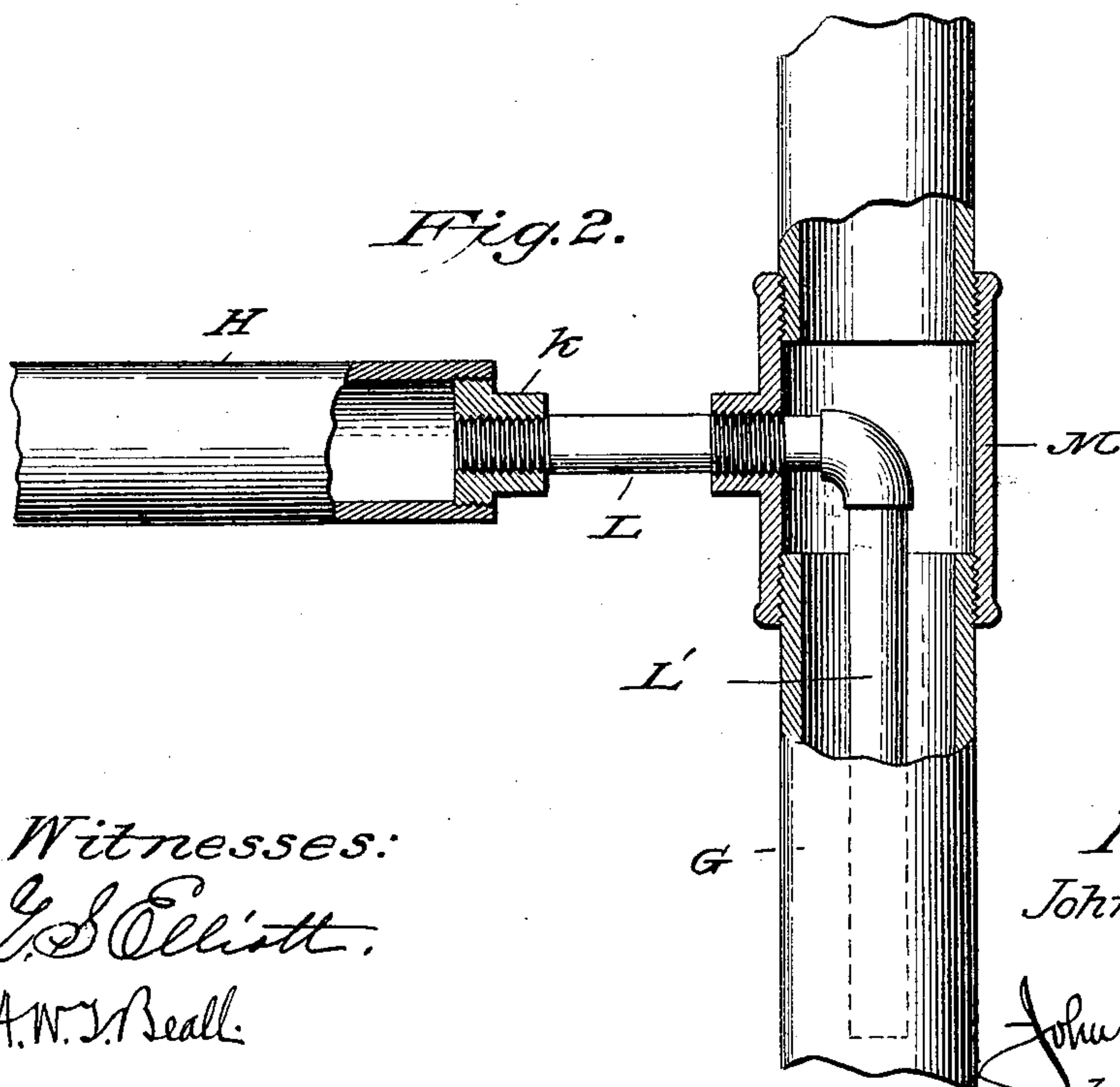
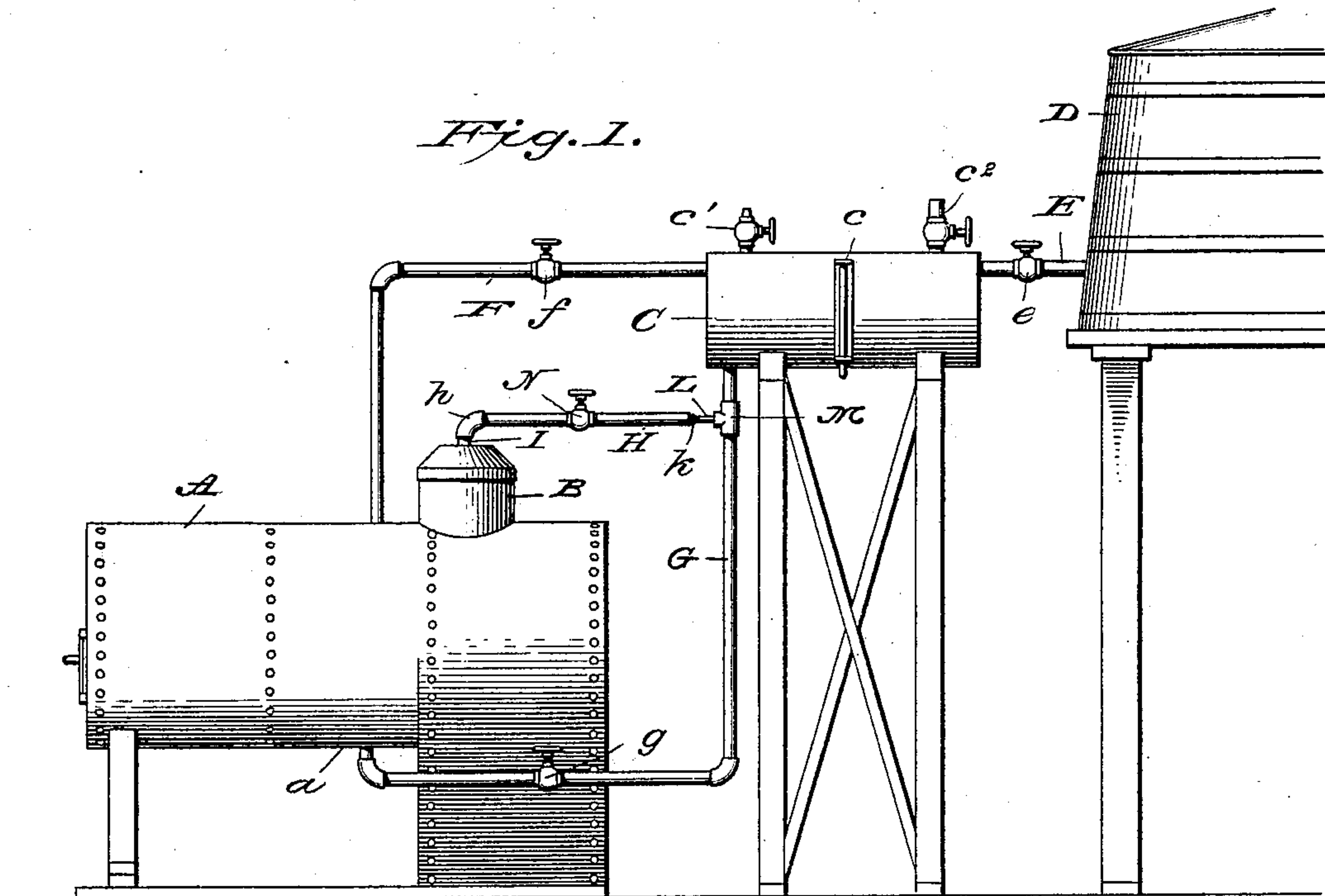
No. 611,871.

Patented Oct. 4, 1898.

J. A. SUMNER.
STEAM BOILER FEEDER.

(Application filed Mar. 22, 1898.)

(No Model.)



Witnesses:
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by
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UNITED STATES PATENT OFFICE.

JOHN A. SUMNER, OF TILLAR, ARKANSAS, ASSIGNOR OF ONE-HALF TO
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STEAM-BOILER FEEDER.

SPECIFICATION forming part of Letters Patent No. 611,871, dated October 4, 1898.

Application filed March 22, 1898. Serial No. 674,724. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. SUMNER, a citizen of the United States of America, residing at Tillar, in the county of Drew and State of Arkansas, have invented certain new and useful Improvements in Steam-Boiler Feeders; 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.

This invention is an improvement in steam-boiler feeders; and the object of the same is to provide an apparatus for feeding hot water into the bottom of the boiler from an auxiliary tank or feeder located intermediate a supply-tank and the boiler, a supply-pipe leading from tank to feeder, a feed-pipe leading from the feeder into the bottom of the boiler, and a steam-pipe leading from the top of the boiler into the feeder, while a second steam-pipe extends from the dome of the boiler into an intermediate portion of the feed-pipe and terminates in a jet-point to accelerate the flow of the feed-water into the boiler.

The invention contemplates a construction and arrangement of parts by which the flow of water into the boiler may be regulated and introduced at a sufficiently high temperature as not to change the temperature of the water in the boiler, and thus maintain the steam-pressure therein.

To the accomplishment of the above objects the invention consists in the construction and combination of the parts constituting the apparatus, as hereinafter fully described, and specifically set forth in the appended claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is an elevation of my improved steam-boiler feeder. Fig. 2 is an enlarged detail sectional view of the means for accelerating the flow of the feed-water to the boiler.

My improved apparatus for supplying feed-water to a steam-boiler may be applied to any type of boiler now in common use, the boiler shown in the accompanying drawings and designated by the letter A illustrating the application of my invention and is provided

with the usual dome B. Adjoining the boiler A and supported in any suitable manner is an auxiliary tank or feeder C, which is connected to the main tank or reservoir D by a pipe E, having a globe-valve *e*, the said reservoir being located above the feeder, while the latter is positioned near the boiler. The feeder is provided with a water-gage *c*, blow-off cock *c'*, and valved nipple *c''*, the latter providing a means for supplying the feeder independent of the reservoir.

Entering the upper part of the feeder is a pipe F, which I shall term the "steam-pipe," the said pipe leading from the top of the boiler at one side of the dome for the purpose of introducing steam into the feeder and is provided with an ordinary globe-valve *f*. A feed-pipe G extends from the bottom of the feeder and enters the bottom *a* of the boiler for introducing the water into this part of the boiler, the said pipe having a globe-valve *g* for regulating the feed.

It will be understood that after the auxiliary tank or feeder has been filled with water from the reservoir the valve *e* is closed, and by opening the valve *f* of the steam-pipe the steam will enter the feeder and heat the water therein to the boiling-point, the valve in the feed-pipe being then opened to introduce or feed the water into the bottom of the boiler.

After many experiments to produce a perfect steam-boiler feeder I have found that the best results are attained by introducing the water into the bottom part of the boiler and at the same temperature as the water in the boiler, and it is desirable, if not essential to the perfect operation of the apparatus, that the water be introduced into the boiler as rapidly as possible. To accomplish this feature of the apparatus, a jet of steam is introduced into the feed-pipe to accelerate the flow, the steam being taken from the dome of the boiler for the purpose. To this end a horizontal pipe H is connected by an elbow-joint *h* to a vertical pipe I, extending into the dome B, and at its other end is connected by a reducing-joint *k* to a smaller pipe L, which extends into the feed-pipe G and has a depending section L' with an open end discharging in the direction of the flow. The feed-pipe is provided with a T-coupling M, through

which the horizontal pipe L of the injector passes, said pipe having external threads which engage the female threads of the coupling and serve to position the section or pipe L' in the center of the feed-pipe. A globe-valve N is located in the pipe H to control the admission of steam into the injector.

By employing the injector hereinbefore described the feeding of the water into the boiler from the feeder after being brought to a high temperature in the latter is greatly facilitated by introducing a jet of steam into the feed-pipe, the steam not only serving to accelerate the flow, but also maintains the temperature of the water while on its way to the boiler.

It will be readily noted from the foregoing description, in connection with the accompanying drawings, that the feeding action of the apparatus is positive and that by the proper manipulation of the valves the feed-water is first heated to the boiling-point and can then be quickly fed to the boiler, after which the feeder is again supplied from the tank or reservoir and the operation repeated.

The relative proportions of the parts constituting the apparatus are about as illustrated in the accompanying drawings, the feeder being of a size relative to the capacity of the boiler and the known rate of consumption of water by said boiler.

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

1. An apparatus for feeding hot water to a steam-boiler, comprising a supply tank or reservoir, a feeder located intermediate the sup-

ply-tank and boiler adjoining the latter, a valved supply-pipe connecting supply-tank and feeder, a valved feed-pipe connecting the feeder with the boiler entering the bottom of the latter, and a steam-pipe connecting the upper part of the boiler to the feeder; together with a second steam-pipe extending from the dome of the boiler into the feed-pipe and discharging in the direction of the flow to the boiler, as herein shown and described.

2. An apparatus for feeding hot water to a steam-boiler, comprising a supply tank or reservoir, a feeder located intermediate the supply-tank and boiler adjoining the latter, a valved supply-pipe connecting supply-tank and feeder, a valved feed-pipe extending from the feeder into the bottom of the boiler, said feed-pipe having a T-coupling at an intermediate point, and a steam-pipe leading from the upper part of the boiler into the feeder; together with a pipe extending from the dome of the boiler, a smaller pipe coupled to the end of the aforesaid pipe and screwed into the T-coupling of the feed-pipe, and a pipe of small diameter connected to the end of the other small pipe and depending in the feed-pipe at the center thereof to direct a jet of steam in the direction of the flow to the boiler, as herein shown and described.

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

JOHN A. SUMNER.

Witnesses:

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