No. 854,913. PATENTED MAY 28, 1907.

T. F. SCOLLARD.

STEAM GENERATOR.

APPLICATION FILED SEPT. 18, 1906.

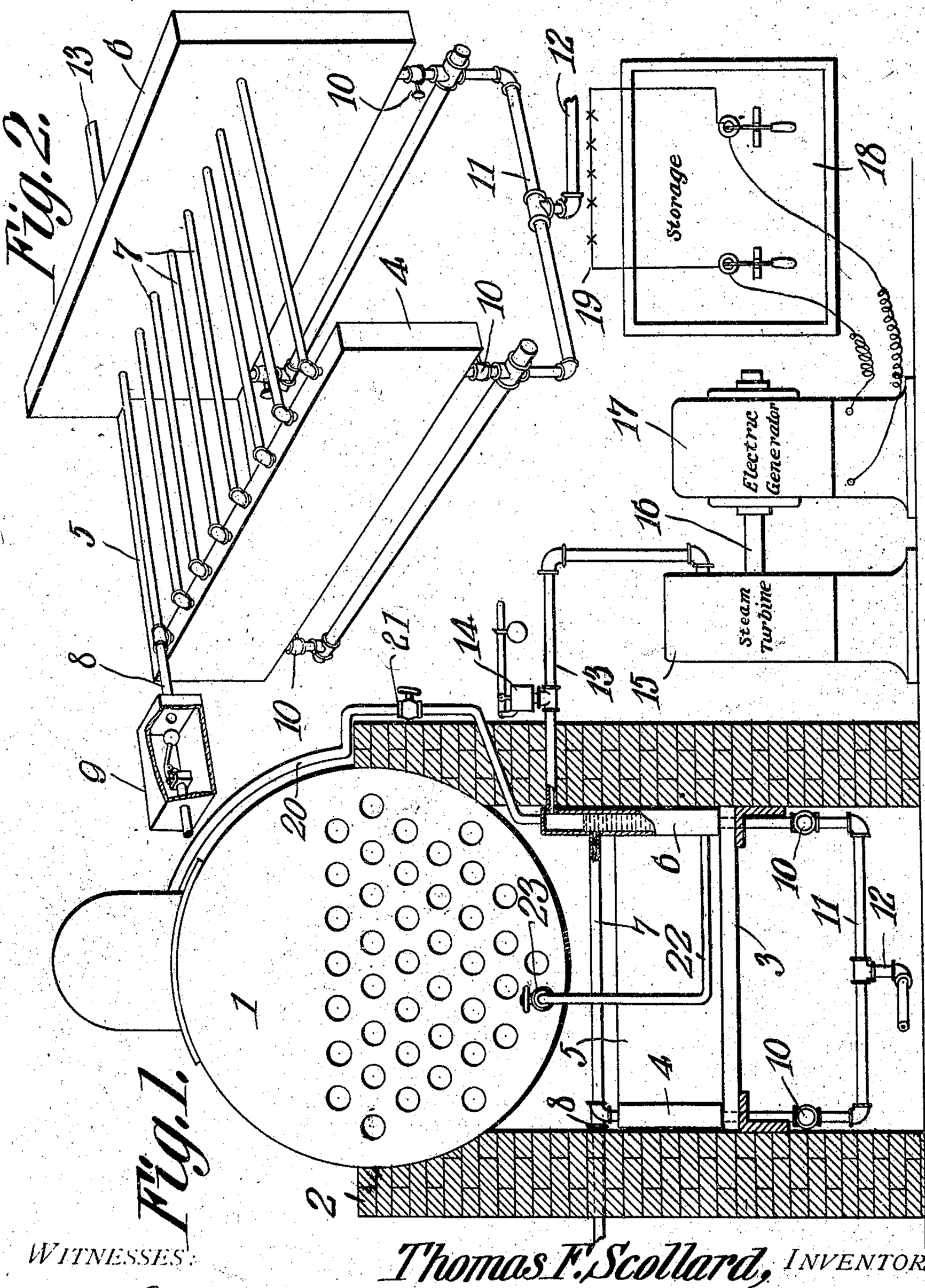

Fig. 1.

Fig. 2.

WITNESSES:

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THOMAS F. SCOLLARD, OF WARSAW, INDIANA.

STEAM-GENERATOR.

No. 854,913. Specification of Letters Patent. Patented May 28, 1907.

Application filed September 18, 1906. Serial No. 335,091.

To all whom it may concern:

Be it known that I, THOMAS F. SCOLLARD, a citizen of the United States, residing at Warsaw, in the county of Kosciusko and State of Indiana, have invented a new and useful Steam-Generator, of which the following is a specification.

This invention has relation to steam generators, and it consists in the novel construction and arrangement of parts as hereinafter shown and described.

The object of the inventon is to provide a steam generator which is located in the fire box of a steam boiler furnace, and is of such construction as not to interfere with the heating of the primary steam generator. The present invention is therefore in the nature of a secondary steam generator which, together with the primary generator, is heated by a single fire. The primary generator is of usual construction, while the secondary generator is of special construction. The said secondary generator consists, primarily, of a series of backs or sides which are located adjacent the side and end walls of the fire box. One of the said backs extends higher than the other back and constitutes a steam dome from which steam is taken off and led into a steam turbine. The shaft of the turbine is connected with the shaft of an electric generator, and said generator in turn is electrically connected with storage batteries, and said batteries in turn are connected with the light fixtures. A means is provided for automatically maintaining the water in the secondary generator at a uniform level, and means is also provided for flushing the said secondary generator for the purpose of removing sediment and such solid matter as may accumulate therein. The backs of the secondary generator, which are located at opposite sides of the fire box, are connected together by means of transversely extending pipes, the surfaces of which, in addition to the inner exposed surfaces of the said backs, present sufficient area to the fire for the purpose of absorbing heat units therefrom.

In the accompanying drawing, Figure 1 is a diagrammatic view with parts in section, illustrating a system in which the secondary steam generator is employed. Fig. 2 is a perspective view of the steam generator detached.

The primary steam generator 1 is supported by the furnace walls 2. The grate 3 is located below the generator 1, and the space between the said grate and the generator 1 constitutes the fire box. The water backs 4, 5 and 6 are arranged within the fire box, the back 4 being located against one of the furnace walls 2; the back 6 against the opposite furnace wall, and the back 5 against the back wall of the fire box. The back 5 connects the backs 4 and 6 together. The back 6 is of greater dimensions vertically than the backs 4 and 5, and the space within the upper portion of the back 6 constitutes a steam dome. The pipes 7 extend transversely across the fire box and are attached at their ends to the side of the back 6 and the top of the back 4. The water supply pipe 8 is connected with the back 4, said pipe 8 being provided with a trap 9 which contains a float operated valve for the purpose of maintaining the water within the secondary generator at a uniform level. Such level is at a higher altitude than the tops of the backs 4 and 5 and the pipe 7, but is at a lower level than the top of the back 6. The bottoms of the backs 4 and 6 are provided with the valved pipe 10, the lower ends of which are connected with the transversely extending pipe 11 which is preferably located in the ash pit. The said pipe 11 is connected with the drain pipe 12. The steam pipe 13 connects with the dome of the back 6 and is provided with a safety valve 14. The steam turbine 15 is suitably located and the steam pipe 13 connects with the steam inlet port of the said turbine 15. The shaft 16 of the turbine 15 is connected with the shaft of the electric generator 17. The said generator 17 in turn is electrically connected with the storage batteries 18 and the said batteries are electrically connected with the current wires of the light line 19.

From the foregoing description, it is obvious that as the steam is generated in the secondary generator, it is carried off through the steam pipe 13 to the turbine 15 and operates the same, and that the said turbine in turn operates the generator 17 which supplies electric current to the storage batteries 18. The said batteries 18 may be used for feeding the current to the light line 19. If, at any time the steam pressure in the secondary generator or steam pipe 13 should become abnormal, the excess of pressure is reduced by the safety valve 14 which is operated in the usual manner by such excess pressure to permit some of the steam to escape. It will also be observed that the

water level within the secondary generator is maintained at a uniform level, and that the parts of the said secondary generator are so arranged as to not interfere with the heating of the primary generator. Also the surface of the secondary generator is sufficient to absorb the necessary amount of heat units from the fire for the purpose of generating the steam.

When it is desired to relieve the secondary generator of sediment and foreign matter, the valves in the pipes 10, 10 are opened and the water is permitted to flow in through the pipe 8, and thus the sediment is swept down through the pipes 10, 10, pipe 11, and out through the drain pipe 12. It is, of course, understood that the flushing occurs at such time when the steam is not being generated in the said secondary generator.

The steam pipe 20 connects the steam dome of the generator 1 with the steam of the secondary generator. Said pipe is provided with the valve 21. The pipe 22 connects with the generator 1 below the water level thereof and also connects with the secondary generator at a point below its water level. The said pipe 22 is provided with a valve 23.

The pipes 20 and 22 are for the purpose of leading water and steam from the primary to the secondary generator, the latter of which is connected with the turbine 15.

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

1. In combination with a primary steam generator mounted upon a furnace, a secondary steam generator located in the fire box of the furnace and comprising water backs arranged around the sides of the furnace one of said water backs having a steam dome and a steam pipe connected therewith, a water supply pipe connecting with the secondary steam generator, and means for maintaining the water in the secondary steam generator at a uniform level.

2. In combination with a primary steam generator mounted upon a furnace, a secondary steam generator comprising water backs arranged against the walls of the fire box of the furnace, one of said water backs having a steam dome with a steam pipe connected thereto, a water supply pipe connecting with the water backs, a means for maintaining the water within the secondary steam generator at a uniform level, and valve controlled water outlet pipes connected with said water backs.

3. In combination with the primary steam generator mounted upon a furnace, a secondary steam generator located within the fire box of the furnace and comprising water backs one of which is provided with a steam dome having a steam pipe connected therewith, transversely extending pipes connecting opposite water backs together, a water supply pipe connected with said water backs, and means for maintaining the water within the secondary steam generator at a uniform level.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

THOMAS F. SCOLLARD.

Witnesses:
JOHN C. GRAVES,
W. E. STROUD.