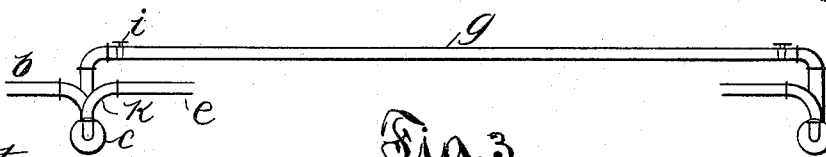
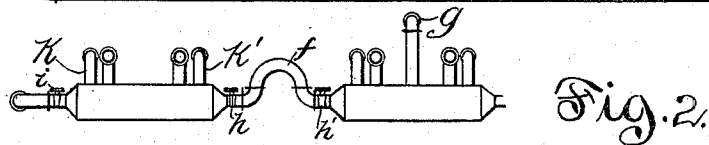
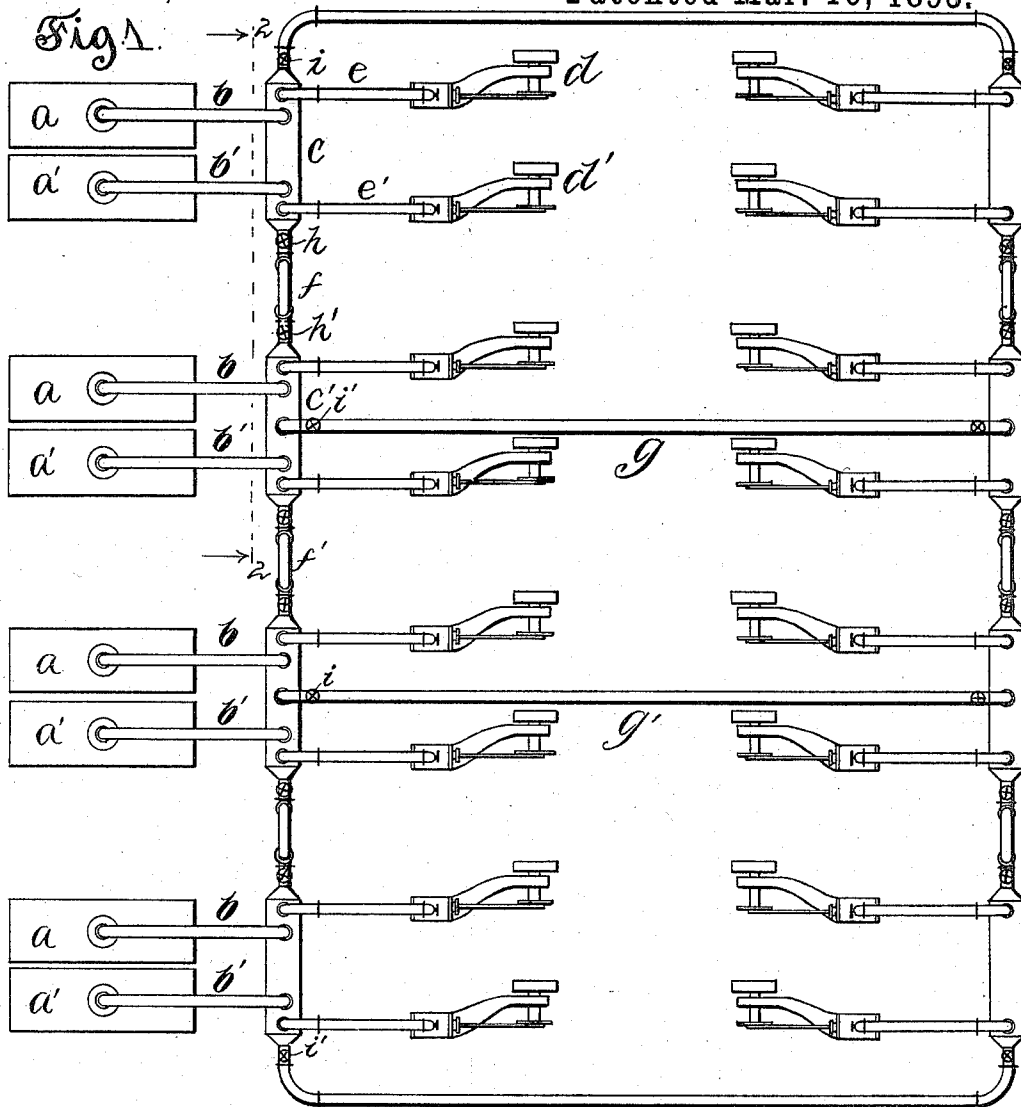


(No Model.)

F. SARGENT.
SYSTEM OF STEAM DISTRIBUTION.

No. 535,861.

Patented Mar. 19, 1895.



Witnesses:

George L. Crugg.
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UNITED STATES PATENT OFFICE.

FREDERICK SARGENT, OF CHICAGO, ILLINOIS.

SYSTEM OF STEAM DISTRIBUTION.

SPECIFICATION forming part of Letters Patent No. 535,861, dated March 19, 1895.

Application filed June 12, 1894. Serial No. 514,277. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK SARGENT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Systems of Steam Distribution, (Case No. 1,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a system of steam distribution, and more particularly to a system in which intermediate headers are provided into which the steam from the steam generators is fed, and from which steam is withdrawn for the various engines, or other steam consumers; and its object is to provide means for efficiently uniting all of the steam generators and steam consumers of a steam plant so that they may mutually coact to produce a uniformity of operation.

A further object of my invention is to overcome the deleterious effects of expansion heretofore experienced in the use of intermediate headers, and to facilitate the making of repairs.

Heretofore it has been proposed to provide an intermediate header into which the steam generated by the several boilers is passed, and from which steam is withdrawn for the various engines. Such headers have usually extended throughout the length of the station, the boilers being arranged upon one side and the engines upon the other and connected thereto at points along the length thereof by pipe connections. There are several objections to the use of such headers. In the first place as the header is usually anchored at its center the ends partake of a longitudinal to-and-fro movement as the temperature changes, thus subjecting the ends of the pipes leading to the boilers and engines to a transverse movement that tends to destroy the joint between the header and said pipes, the movement to which the end of any such pipe is subjected being greater the greater the distance of the point of connection from the anchored center of the header. Again, when a single header, as above described, is used, no facility is afforded for repairs, as if it is desired to repair the joint between the header and any connecting pipe it

is necessary to cut off the steam supply from all of the boilers leading to the header.

My invention comprises a number of headers of short length united by flexible connections, the boilers and engines being connected to the headers by flexible connections, thus reducing the extent of movement of the connecting pipes due to expansion, while freely permitting the movement of the ends of the several headers toward and away from one another due to expansion.

My invention consists, further, in a system of steam distribution wherein the steam from the boilers is fed into a number of intermediate communicating chambers, from which intermediate chambers steam is withdrawn for the several engines, a uniform distribution of the steam from the boilers to the engines being thereby secured.

My invention consists, further, in such other features as will hereinafter appear.

I will describe my invention in connection with the accompanying drawings, in which—

Figure 1 is a plan view of a system of steam distribution embodying my invention. Fig. 2 is an elevational view of the headers as seen from line 2—2, Fig. 1. Fig. 3 is an elevational end view of one of the headers illustrating the manner of connecting the header with the boilers and engines.

Like letters refer to like parts in the several figures.

The boilers *aa'*, represented in conventional form, are connected by means of pipes *bb'* with a series of headers *cc'*. I have illustrated each header as fed by two boilers. The engines *dd'* are fed with steam from the headers by pipe connections *ee'*, two engines being illustrated as fed by each header. I have shown the headers in two rows, one row on each side of the space occupied by the engines. In stations as usually constructed the boilers are placed in a room separate from that containing the engines, and when so arranged one row of headers may be placed upon each wall of the engine room.

The headers are preferably anchored at the middle the ends being free to expand and contract with changes of temperature. The ends of the headers in each row are united by flexible pipe connections *ff'* which I preferably form from copper pipe bent into the

form of a semi-circle, the ends being joined in any proper manner to the ends of the headers. Pipes *g g'* extend between the opposite headers of the two rows, and these pipes I preferably connect with the headers at the middles thereof, as then the connection between the pipes and the header may be a non-flexible one, since the middle portions, being anchored, remain stationary under changes of temperature.

The connection between the header and the pipes leading to the boilers and engines is best made by the employment of copper pipes *k k'* bent into the form of a quarter circle and joined, one end to the header and the other to the pipe leading to the boiler or engine.

Valves *h h'* are provided in the end of each header so that any header may be disconnected from the remaining headers for the purpose of repairs. Likewise valves *i i'* are provided in the pipes *g g'* extending between the opposite headers for a similar purpose.

The various headers being thus connected, it will appear that if all of the boilers be in operation, and likewise all of the engines, and the boilers connected with each header are generating steam just sufficient for the engines connected therewith, no transfer of steam will take place between the several headers. Should, however, the boilers leading to any header generate more steam than the engines connected therewith can consume, a portion of the steam will pass to the adjacent headers. Likewise, if the engines connected to any header consume more steam than the boilers connected therewith can supply, a flow of steam takes place from the adjacent headers, and if the engines connected with such adjacent headers thus receive less than a sufficient supply, a flow takes place from other headers into said adjacent headers, the various headers thus coacting to maintain uniformity throughout the system. If, again, it should be desired to cut off certain of the engines without cutting off the boilers

normally directly feeding the same, the steam will flow from the header fed by such boilers to the adjacent headers to assist the remaining boilers.

It is evident that my invention is susceptible of many embodiments, and I do not desire, therefore, to limit myself to particularities, but

What I claim, and desire to secure by Letters Patent, is—

1. In a system of steam distribution, the combination with two or more steam receptacles or headers mounted independently of one another to permit expansion and contraction of one without interfering with the rest, pipes or connections joining said headers and adapted to permit the independent expansion and contraction of said headers, one or more boilers communicating with each of said headers, and steam consumers communicating with said headers, substantially as described.

2. In a system of steam distribution, the combination with two rows of headers arranged end to end, of flexible pipe connections between the adjacent headers of each row, rigid pipe connections between the centers of opposite headers, boilers connected with the headers of one row, and engines receiving steam from the headers of both rows, substantially as described.

3. In a system of steam distribution, the combination with the headers arranged end to end in two rows, of the pipes *f f'* connecting the ends of headers in the same row, the pipes *g g'* connecting opposite headers, a battery of boilers communicating with each of the headers of one row, and the engines communicating with the headers, substantially as described.

In witness whereof I hereunto subscribe my name this 2d day of June, A. D. 1894.

FREDERICK SARGENT.

Witnesses:

W. CLYDE JONES,
GEORGE L. CRAGG.