No. 681,722. Patented Sept. 3, 1901.

S. D. MOTT.

COIL FOR STEAM BOILERS.

(Application filed Dec. 4, 1900.)

(No Model.)

Fig. 1.

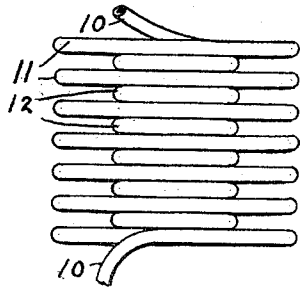


Fig. 3.

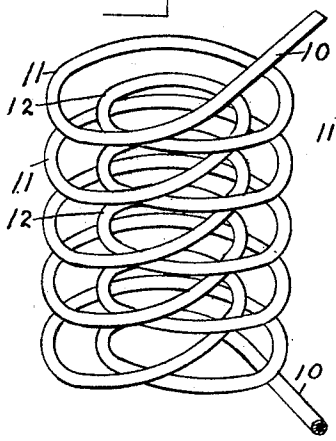


Fig. 2.

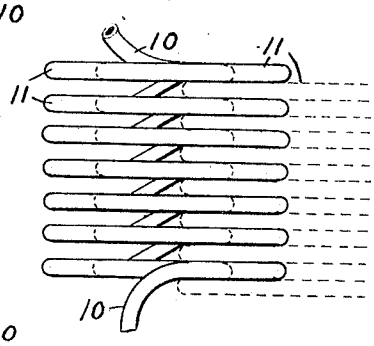


Fig. 4.

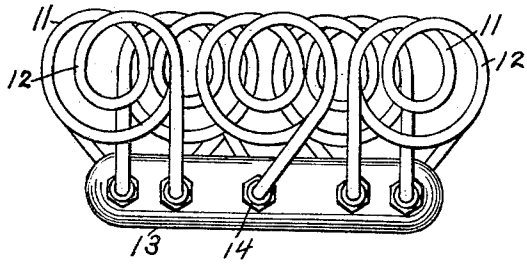


Fig. 5.

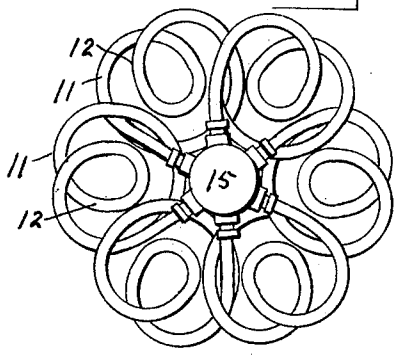


Fig. 6.

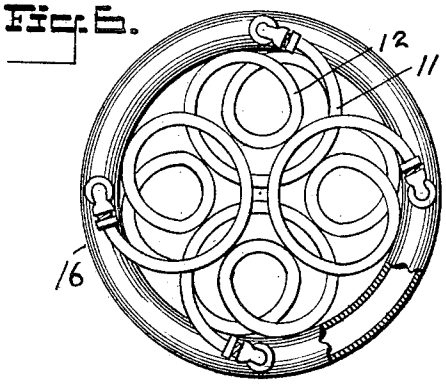
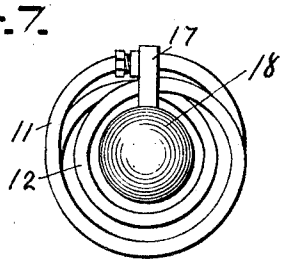


Fig. 7.



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COIL FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 681,722, dated September 3, 1901.

Application filed December 4, 1900. Serial No. 38,700. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL D. MOTT, of Passaic, Passaic county, New Jersey, have invented certain new and useful Improvements in Coils for Steam-Boilers, of which the following is a full, clear, and exact description.

My invention relates to improvements in coils, and particularly such as are adapted for use in connection with steam-boilers, and more especially where the coil forms the essential part of the steam-generator.

I do not limit the use of my coil to the production of steam; but it is particularly applicable to such use, and that is its chief purpose.

The object of my invention is to produce a coil having a series of loops of different sizes, to the end that the coil may be disposed in a heating-space, so that the heat may be utilized to the greatest extent and a practically instantaneous generation of steam result.

In carrying out my invention I do not limit myself to any particular material; but copper is the best material I know for the purpose, as it has the necessary strength and the necessary ductility.

With these ends in view my invention consists of a coil the construction of which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar figures of reference refer to similar parts throughout the several views.

Figure 1 is a side elevation of my improved coil, the loops being shown in close relation. Fig. 2 is a side elevation of the coil with the smaller loops arranged concentric with the larger ones and illustrating also how adjacent coils may intermesh. Fig. 3 is a detail perspective view of my improved coil when opened up or spread to better show its construction. Fig. 4 is a plan view of a series of these coils united to a header to form a boiler. Fig. 5 is a plan view of another form of boiler made up of a central header with my improved coils grouped around it. Fig. 6 shows another modification of the invention in which a header circular in cross-section is made to inclose a series of coils, and Fig. 7 illustrates in plan a simple form of boiler made of a central header with the coil arranged around it.

In another application filed simultaneously with this, showing an apparatus for forming the coil, it will be seen how my improved coil is made; but without regard to the manner of making it consists of a tube 10, which is formed into a series of connected larger and smaller loops 11 and 12, and for convenience in use it is advisable that the loops 11 be of similar size and that the loops 12 be of corresponding size. As each series is made of a uniform size, the coil may be more conveniently combined with other coils or arranged in a heating-space. I do not wish to limit my invention, however, to a coil made up of two sizes of loops merely, as a greater number may be formed, although I find that these two sizes are apparently all that is desirable. For many purposes the loops may be arranged one upon the other in close juxtaposition, as shown in Fig. 1, so that an adjacent coil may be brought into close relation by permitting the loops 11 of the two to intermesh, as illustrated in Fig. 2.

It is obvious that coils of this kind may be arranged with almost an infinite number of headers to produce a boiler, and in consonance with this idea I have shown several modifications illustrating different methods of arranging the coils and headers to produce a practical boiler.

As shown in Fig. 4, a header 13 is used which may be of any sufficient height, and the coils have their upper ends connected with the top or upper portion of the header, while their lower ends connect with the under part of the header, so that when water passes to the lower part of the coils, which part is subjected to heat, the water will be quickly turned to steam, and this will return to the upper part of the header.

In Fig. 5 I show a central vertical header 15, with the coils 11 and 12 arranged around it, the coils having their upper ends connected to the upper part of the header and their lower ends to the under part thereof.

In Fig. 6 I show what is perhaps the preferred form of a boiler of this character, in which the header 16 is circular in cross-sec-

tion, thus affording a strong type of boiler and affording also a casing and protection for the coils which are arranged within it and which are, as before, connected to the header at top and bottom. Obviously this type of boiler need not have the header circular in cross-section if only it is extended so as to inclose the coils; but the section referred to is easier to build.

In Fig. 7 I have illustrated still another means of forming a simple form of boiler, and here the header 18 is inclosed by a single coil, the connection being through suitable couplings 17.

From the foregoing description it will be seen that the steam-boiler embodying this compact type of coil can be made in many ways without affecting the principle of my invention.

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

1. As an improved article of manufacture, a coil of tubing formed from a single pipe into a plural series of alternating loops of different sizes.

2. As an improved article of manufacture, a coil of tubing formed into a plural series of loops of greater and less size, the loops being alternating and connected so as to deliver from one into the other, substantially as set forth.

3. The herein-described boiler comprising an inclosing hollow double-walled casing forming a header, and coils arranged within the header or casing and connected to the interior thereof at its upper and lower parts.

4. The herein-described boiler comprising a steam and water containing header shaped to form an inclosing casing, and a series of coils arranged within the said inclosing casing and connected at top and bottom to the upper and lower parts of the header.

5. The herein-described boiler comprising a steam and water containing header shaped to form an inclosing casing, and a series of coils arranged within the said casing, each coil being formed into a plural series of loops of different sizes and each coil being also connected at its upper and lower ends to the upper and lower parts of the header.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL D. MOTT.

Witnesses:
JOHN D. GRIFFEN,
W. B. HUTCHINSON.