A. NICLAUSSE.

TUBE FOR MULTITUBULAR STEAM GENERATORS.

APPLICATION FILED MAR. 17, 1913.

1,103,531.

Patented July 14, 1914.

2 SHEETS—SHEET 1.

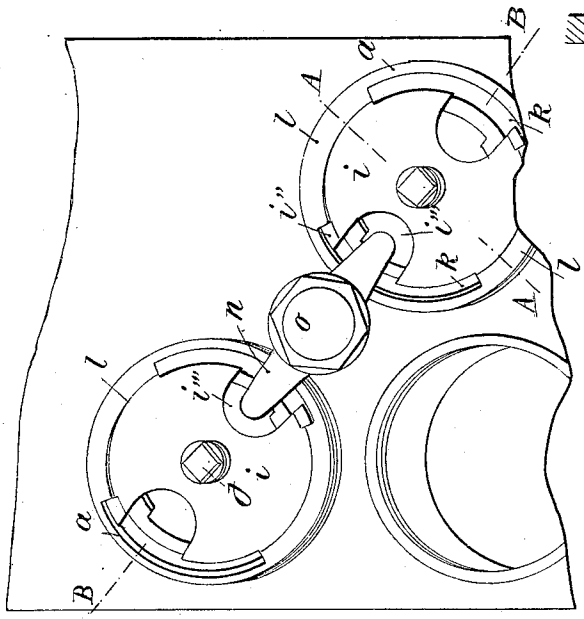


FIG. 1.

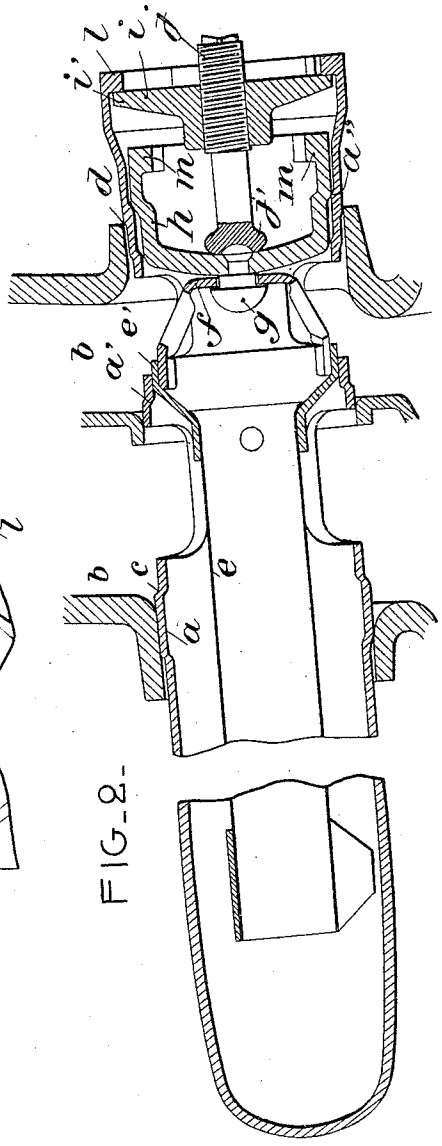


FIG. 2.

Witnesses:
E. O. Hildebrand
Ina M. Kerstein

Inventor:
Albert Niclausse,
by Wm. Thorn
his Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

FIG. 4.

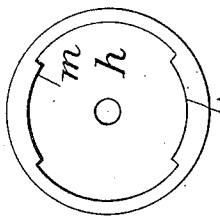
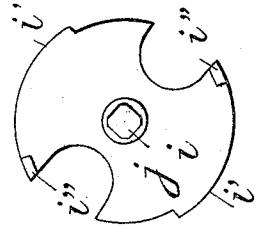


FIG. 5.



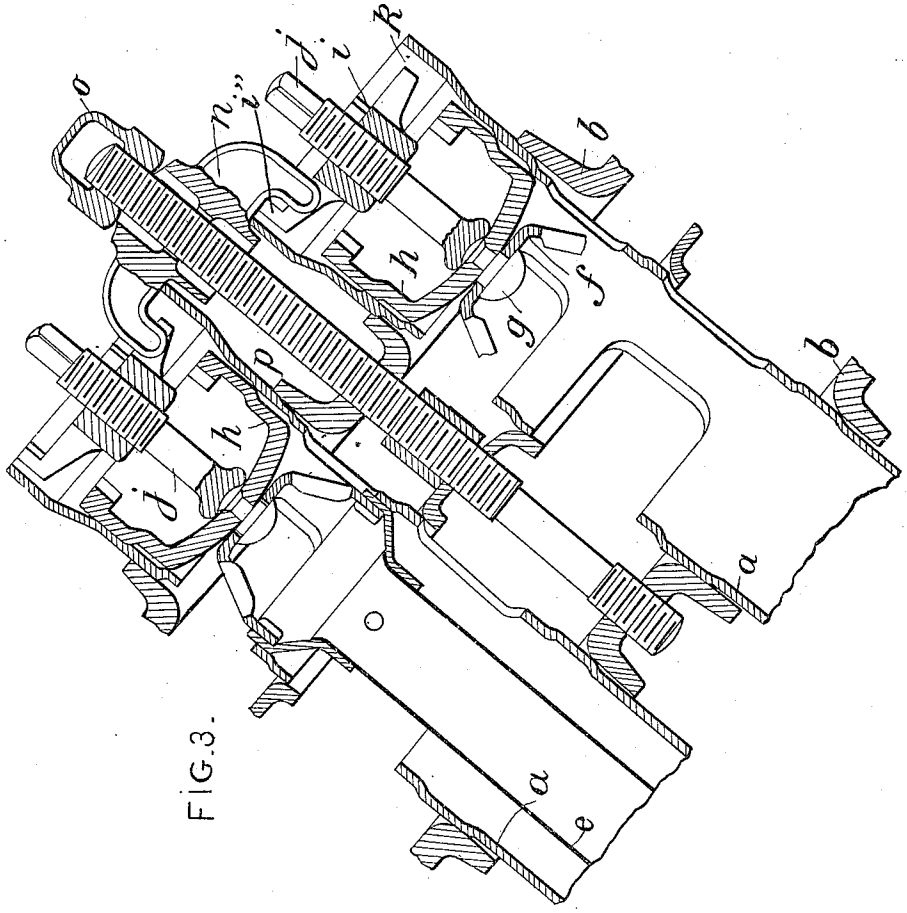


FIG. 3.

Witnesses:

E. O. Hildebrand

Sue M. Kerstein

Inventor:

Albert Niclausse,

by Max Fryer

his Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALBERT NICLAUSSE, OF PARIS, FRANCE.

TUBE FOR MULTITUBULAR STEAM-GENERATORS.

1,103,531. Specification of Letters Patent. **Patented July 14, 1914.**

Application filed March 17, 1913. Serial No. 754,728.

To all whom it may concern:

Be it known that I, ALBERT NICLAUSSE, of 24 Rue des Ardennes, Paris, France, engineer, have invented a new and useful Improvement in Tubes of Multitubular Steam-Generators, which improvement is fully set forth in the following specification.

This invention relates especially to a method of constructing and assembling the boiler tube and the inner circulating tube of multitubular steam generators.

According to this invention no portion directly subjected to steam pressure is screw threaded and the tubes are assembled and the boiler tube closed exclusively by conical metallic joints, the tubes remaining easily removable, balanced and independent.

The boiler tube and the inner tube are so assembled that the head of the inner tube forms a plug to the boiler tube and such plug may be maintained in position by means of a member so mounted as to prevent the head or plug from being blown out by steam pressure. A safety bar may be provided to maintain two neighboring boiler tubes in the collector of the generator.

The accompanying drawing illustrates one method of carrying out the invention.

In this drawing Figure 1 is a front elevation of two boiler tubes mounted upon a collector; Fig. 2 is a longitudinal section on the line A—A of Fig. 1; Fig. 3 is a section on the line B—B of Fig. 1; Fig. 4 is a front elevation of the plug closing the boiler tube; and Fig. 5 is a front elevation of the cover which aids in preventing the plug of the boiler tube from being blown out.

Each boiler tube *a* is fitted to the collector *b* in the known manner, the metal joint between the two parts being kept tight by two swells *c* and *d* formed at the head of each boiler tube. Such tubes differ however internally from the usual construction.

e is an inner circulating tube for heating the feed water and is provided with an enlargement *e'* which fits into the narrowed portion *a'* of the boiler tube.

f is a stirrup which connects the inner tube *e* through a rivet *g* to a head or plug *h* which closes the boiler tube *a*. The tube *a* is internally coned at *a''* and the plug *h* is externally coned, the conical portions bearing one against the other. When the plug *h* is placed in the boiler tube as shown in Figs. 2 and 3, a cover *i* mounted upon its screw threaded rod *j* is placed in the boiler tube by passing the projecting parts *i' i'* on the cover through the corresponding holes *k k* formed in the boiler tube. The cover is then given about a quarter of a turn in the proper direction in the head of the tube *a* so as to bring the projections *i' i'* beneath the flanges *l l* of the tube; rotation is discontinued when the stops *i'' i''* on the cover bear against the ends of the flanges *l l*. The screw *j* is turned by means of a suitable spanner, its end *j'* bearing against the plug, until the plug is tight within the tube.

The plug *h* is provided internally with flanges *m m* by the aid of which the plug can be withdrawn from the boiler tube with the greatest facility by the aid of any suitable tool bearing for example both internally against the flanges *m m* and against the end of the tube. The flanges *l l* serve in the same manner to withdraw the tube *a* from the collector *b* by the aid of any suitable tool which takes a bearing for example upon the flanges *l l* and upon the external face of the collector.

n is a safety bar which bears against two neighboring boiler tubes *a* and maintains them in the collector *b* by the aid of a nut *o* which screws upon a rod *p* mounted upon the collector. The bar *n* is guided by the rod *p* and its fingers *n'* engage in slots *i'''* in the cover *i* and thereby prevent undesired movement or rotation of the said cover on the threaded rod or screw *j*, said fingers *n'* thus constitute means for holding the rod-supported member consisting of the plug *h* and the stirrup *f* united therewith.

Claims:

1. In a multitubular boiler, a boiler tube, and an inner circulating tube having its outer end fitting against and directly in contact with the inner wall of the boiler tube to form a coned joint.

2. In a multitubular boiler, a boiler tube having an internal coning and an inner circulating tube having its outer end fitting against and directly in contact with said coning to form a coned joint.

3. In a multitubular boiler, a boiler tube, and an inner circulating tube having its outer end fitting against and directly in contact with the inner wall of the boiler tube to form a coned joint, and a rod supported retaining member fitting against the inner wall of the inner tube opposite the coned joint.

4. In a multitubular boiler, a boiler shell,

a boiler tube, and an inner circulating tube having its outer end fitting against and directly in contact with the inner wall of the boiler tube to form a coned joint, a rod supported retaining member fitting against the inner wall of the inner tube opposite the coned joint, a yoke supported on the boiler shell and means for holding said rod supported member thereby.

5. In a multitubular boiler, a boiler shell, a boiler tube extending therethrough and supported thereagainst by a coned joint, an inner circulating tube having its outer end fitting against and directly in contact with the inner wall of the boiler tube to form a coned joint, a rod-supported retaining member fitting against the inner wall of the inner tube opposite the coned joint, and a plug member closing the outer end of the boiler tube by a coned joint and serving to support said retaining member.

6. In a multitubular boiler, a boiler shell, a pair of adjacent boiler tubes, a yoke member supported by the shell and serving to secure the boiler tubes, each boiler tube extending through the shell and supported thereagainst by a coned joint, each boiler tube being combined with an inner circulating tube having its outer end fitting against and directly in contact with the inner wall of the boiler tube to form a coned joint, a rod-supported retaining member fitting against the inner wall of the inner tube opposite the coned joint, a plug member closing the outer end of the boiler tube by a coned joint and serving to support said retaining member and means for holding said plug member from said yoke.

7. In a multitubular boiler, a boiler tube fitted to the shell elements by coned joints and extending through the front or collector wall, an inner tube having a coned head fitting directly against the inner wall of said boiler tube to form a coned joint, a rod-supported retaining member fitting against the inner wall of the inner tube at the head by a coned joint, a plug member closing the outer end of the boiler tube by a coned joint and supporting the retaining member and means for holding the boiler tube head and plug member.

8. In a multitubular boiler, a boiler tube having inwardly extending lugs at its outer end and a closure therefor comprising a coned plug member, a threaded rod member extending outwardly therefrom, and a threaded member mounted on said rod and adapted in one position of rotation to pass said lugs and in another to engage therewith.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALBERT NICLAUSSE.

Witnesses:
GASTON DE MESTRAL,
LUCIEN MEMMINGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."