

Jan. 2, 1923.

1,441,105

R. T. MARSHALL ET AL.  
CIRCULATOR EMPLOYED IN STEAM GENERATORS AND THE LIKE.  
FILED APR. 2, 1921.

2 SHEETS-SHEET 1

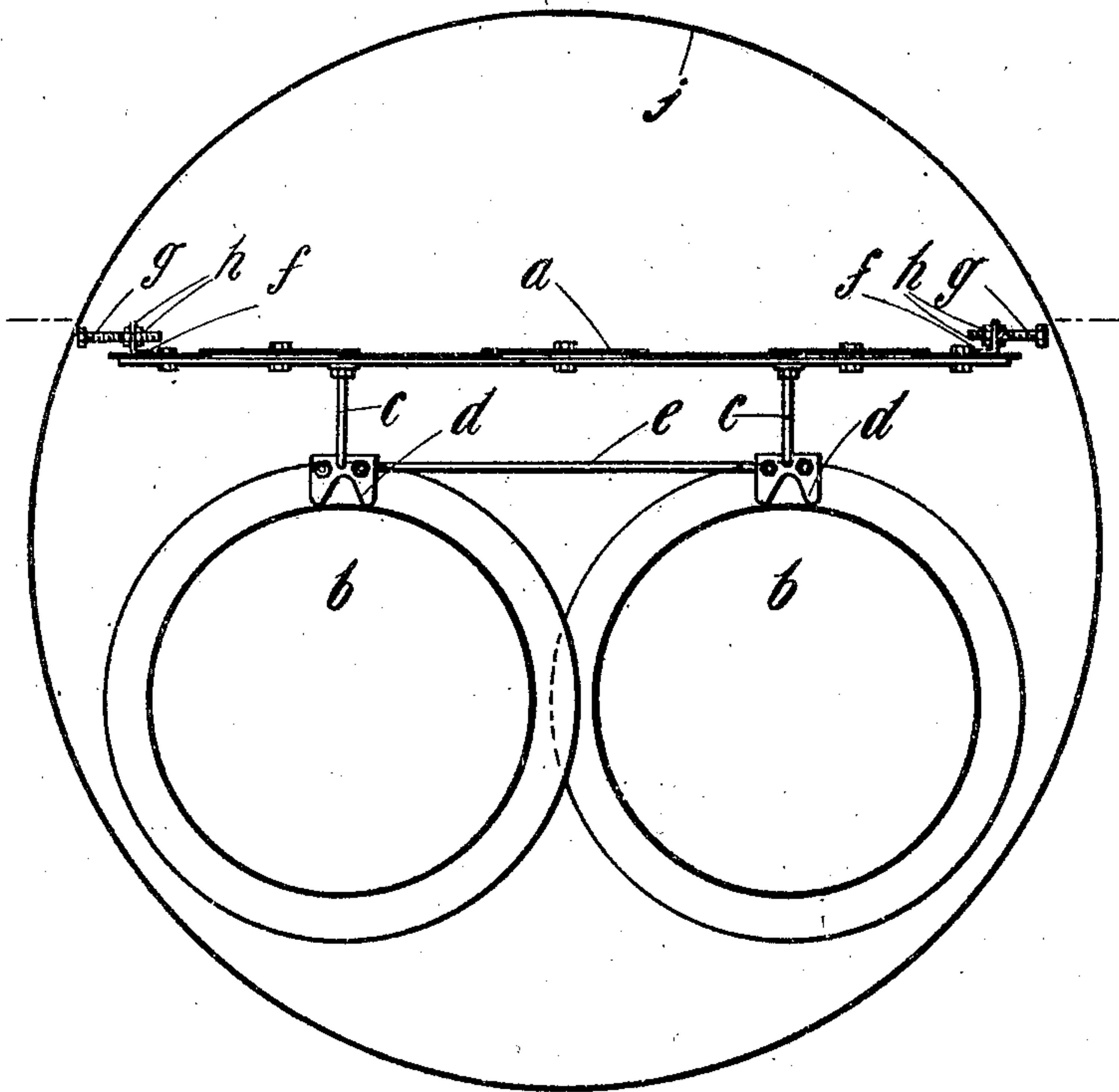


Fig. 1.

INVENTORS  
Reginald T. Marshall  
Lionel Le Sueur

By *James L. Perry*  
Attorney

Jan. 2, 1923.

1,441,105

R. T. MARSHALL ET AL.  
CIRCULATOR EMPLOYED IN STEAM GENERATORS AND THE LIKE.  
FILED APR. 2, 1921.

2 SHEETS-SHEET 2

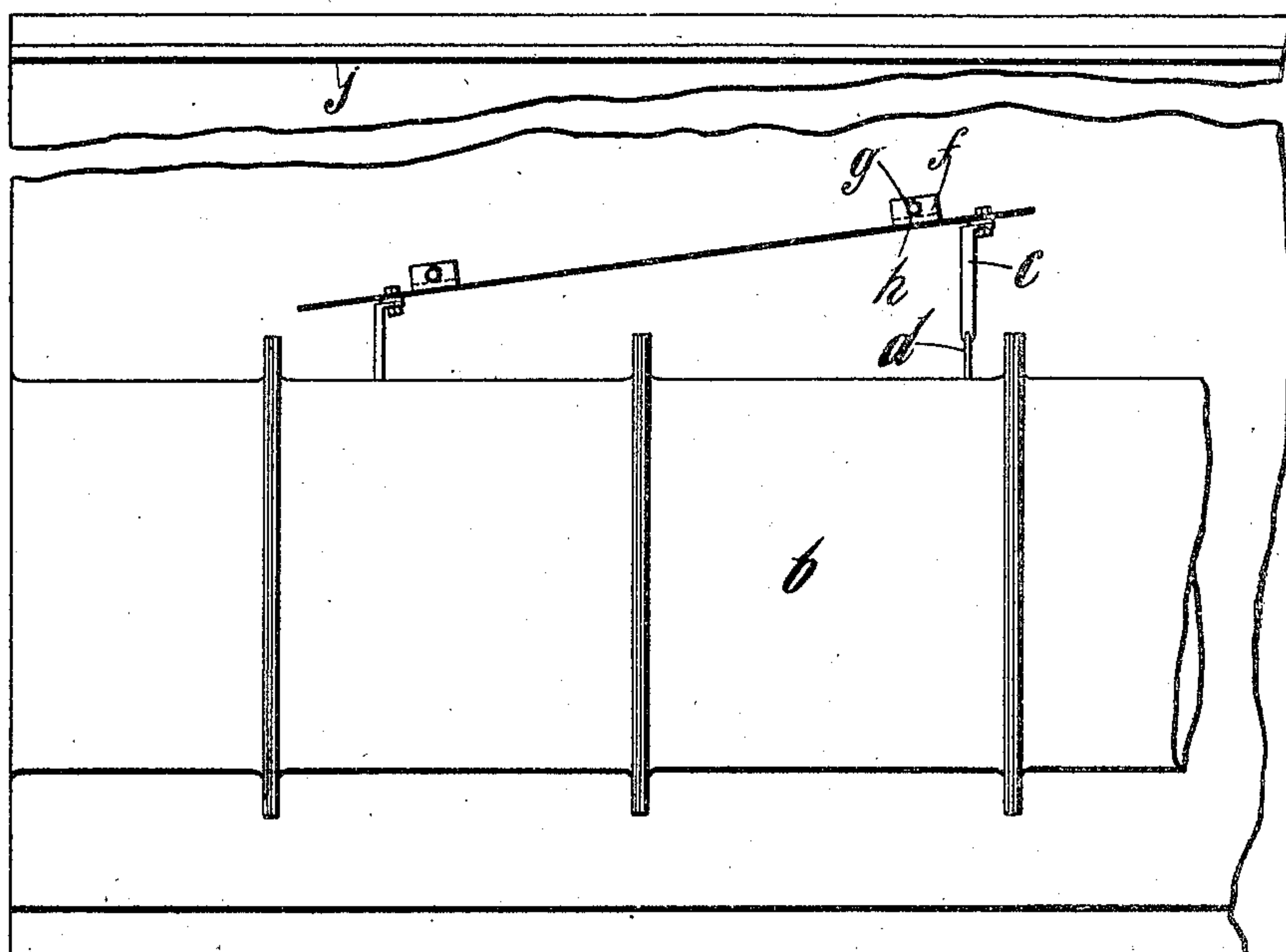


Fig. 3.

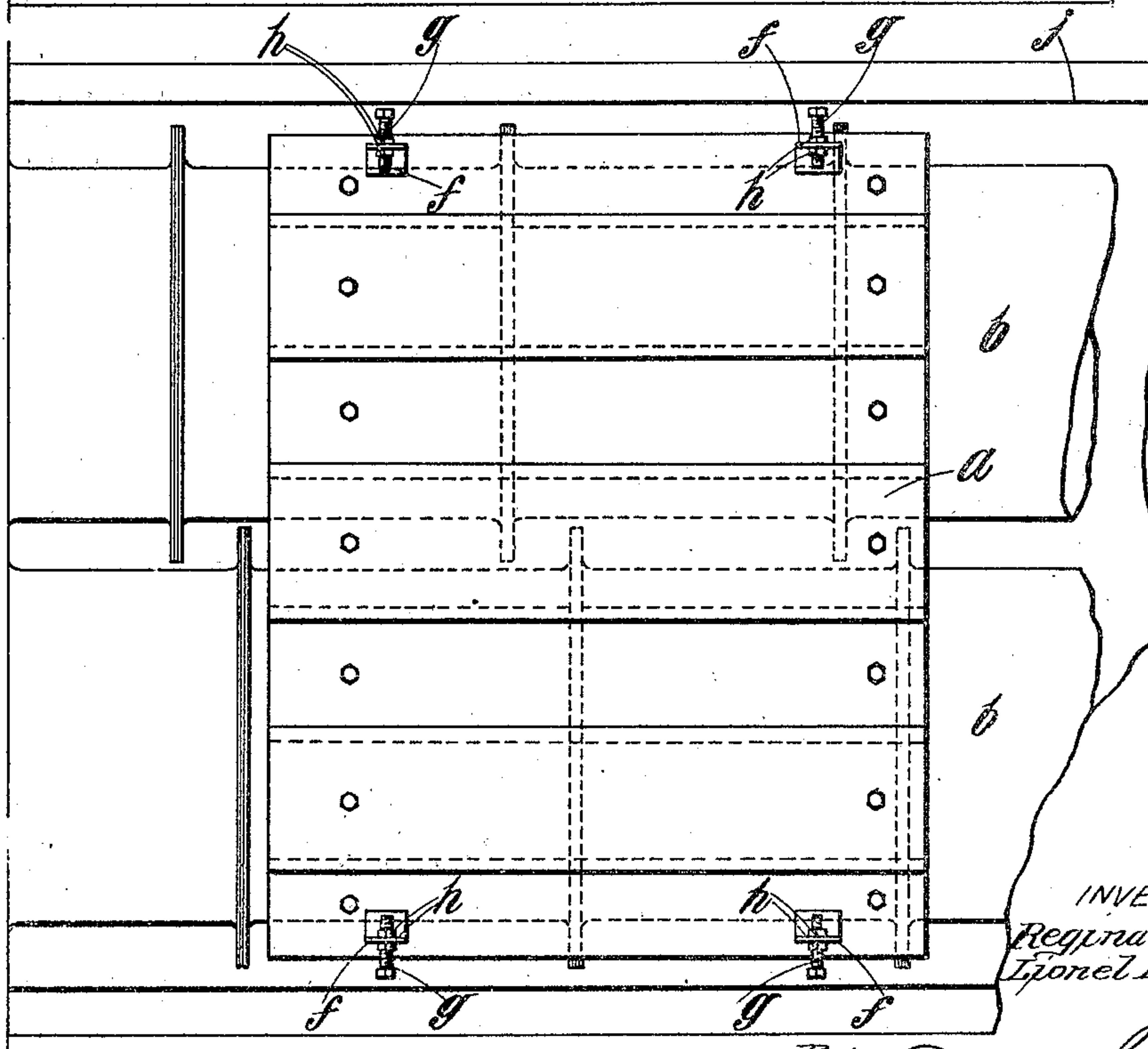


Fig. 2.

INVENTORS  
Reginald T. Marshall  
Lionel LeSueur

By *Paul L. Norris*  
Attorney.



# UNITED STATES PATENT OFFICE.

REGINALD TOM MARSHALL AND LIONEL LE SUEUR, OF LONDON, ENGLAND.

CIRCULATOR EMPLOYED IN STEAM GENERATORS AND THE LIKE.

Application filed April 2, 1921. Serial No. 457,986.

*To all whom it may concern:*

Be it known that REGINALD TOM MARSHALL and LIONEL LE SUEUR, subjects of the King of Great Britain, residing at 15 and 16 Cullum Street, London E. C3, England, have invented certain new and useful Improvements in Circulators Employed in Steam Generators and the like, of which the following is a specification.

This invention relates to circulators adapted to be fitted inside steam generators and the like to promote longitudinal circulation of the fluid therein.

Various types of circulators have been proposed for example, it has been proposed to fit a separate circulator to each fire tube and also to fit a single circulator across two or more fire tubes. As far as we are aware it has been the custom in every case to retain the circulator in position on the fire tube or tubes by means of chains passing around each tube or around both tubes as the case may be and fastening the chains underneath the tube or tubes by means of a screw coupling.

It has been found in actual practice, however, that these chains collect deposits and also, the couplings being at the bottom are not easy to manipulate by the fitter when it is desired to fit in position or remove the circulator.

The objects of this invention are to provide an improved fitting which can be fitted to any type of circulator, which dispenses with the usual chains and couplings and which is very accessible.

According to this invention means are provided on the circulator which are adapted to bear against the shell of the generator and thus retain the said circulator in position.

The said means may consist of one or more set bolts disposed on and at each side of the circulator and adapted to bear against the shell of the generator and so hold the circulator in position.

The invention will now be described with reference to the accompanying drawings in which Figure 1 is a front elevation of one form of fitting constructed in accordance

with this invention, Figure 2 is a plan view; and Figure 3 is a side elevation thereof.

This circulator consists of an inclined plate *a* composed of a number of sections bolted together, which is positioned above the fire tubes *b*, *b* of a double flue land boiler at the fire box end thereof.

The circulator is positioned above the tubes by means of supporting members *c*, *c* provided with feet *d*, *d* which are attached to the underside of the plate and at each end thereof and the feet rest on the tops of the fire tubes.

The two pairs of supporting members are coupled together by tie rods *e*, *e* or other rigid members.

Instead of the usual chains encircling the fire tubes angle plates *f*, *f* are affixed at each side of the inclined plate *a*.

Each angle plate is formed with a threaded hole to receive a set bolt *g* provided with lock nuts *h*, *h* in such a manner that the said bolt may be screwed until it grips the curved shell *j* of the generator.

Any suitable number of set bolts may be provided.

As the shell of the boiler is curved and the supporting members of the circulator rest on the fire tubes it is impossible for the circulator to shift its position.

Also since the set bolts *g* are on top of the circulator they can be manipulated easily by the fitter when it is desired to fit the circulator into position or to remove same.

What we claim is:—

1. The combination with a generator having a curved shell with fire tubes therein, of a circulator disposed thereover and consisting of an inclined plate structure with depending supporting members provided with feet and disposed on the top portions of the fire tubes, angle plates secured to each side of the inclined plate structure, and adjustable bolts mounted in the angle plates and impinging against the curved shell of the generator above the fire tubes.

2. The combination with a generator having a curved shell and fire tubes therein, of a circulator consisting of an inclined plate structure provided with depending support-

ing members having feet disposed on the  
top portions of the fire tubes, angle plates  
fixed at opposite sides of the inclined plate  
structure, screw bolts adjustably mounted in  
5 said angle plates and having their outer  
headed ends arranged to tightly impinge  
against the curved shell of the generator,  
and locking means engaging the screw bolts  
to hold the latter in their adjusted positions.

In testimony whereof we have hereunto 10  
set our hand in presence of two subscribing  
witnesses.

REGINALD TOM MARSHALL.  
LIONEL LE SUEUR.

Witnesses:

W. F. WHEELER,  
J. P. CRAWLEY.