

No. 812,448.

PATENTED FEB. 13, 1906.

W. PLATZ.
SUPERHEATER.

APPLICATION FILED SEPT. 29, 1904.

2 SHEETS—SHEET 1.

FIG. 1.

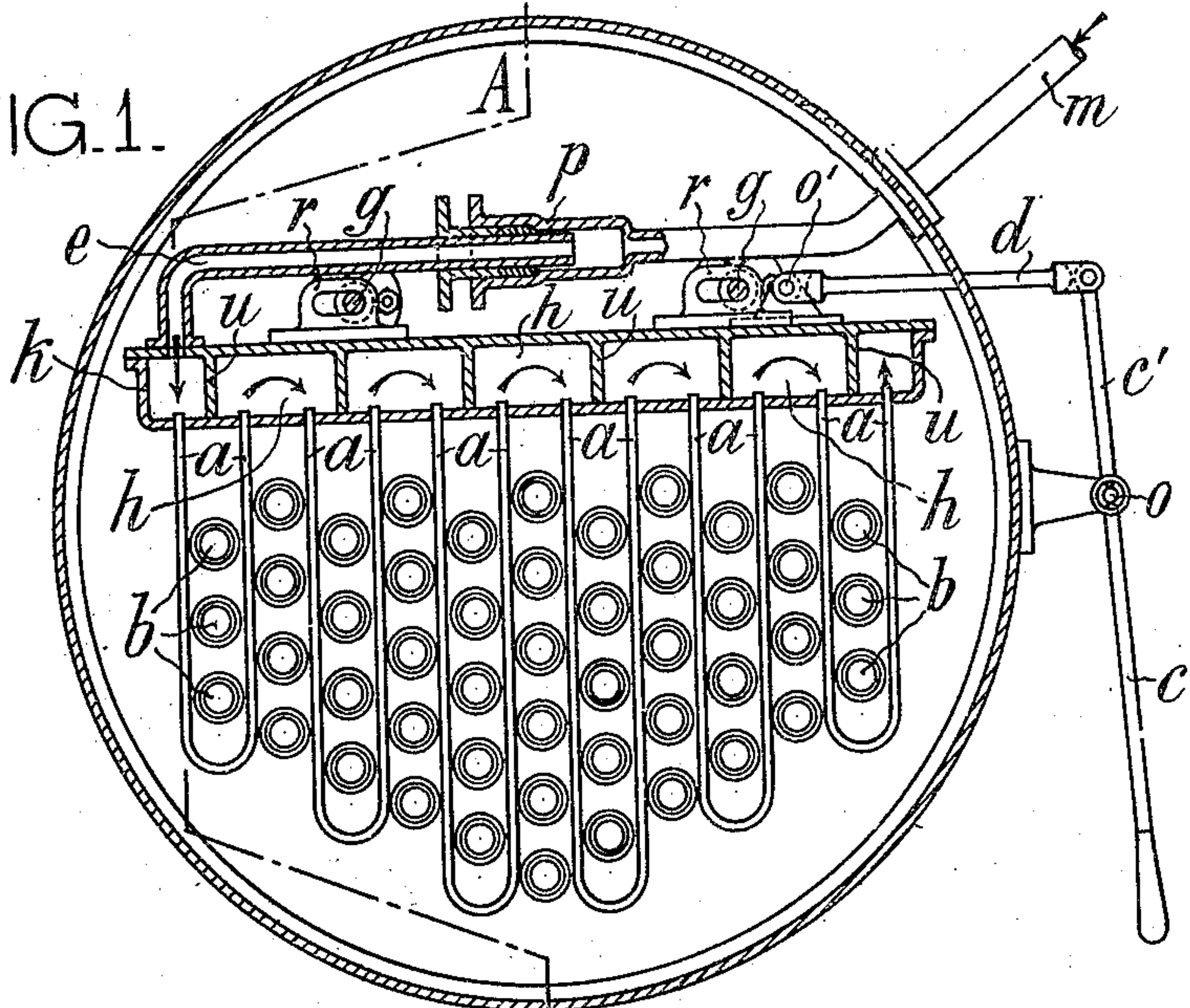
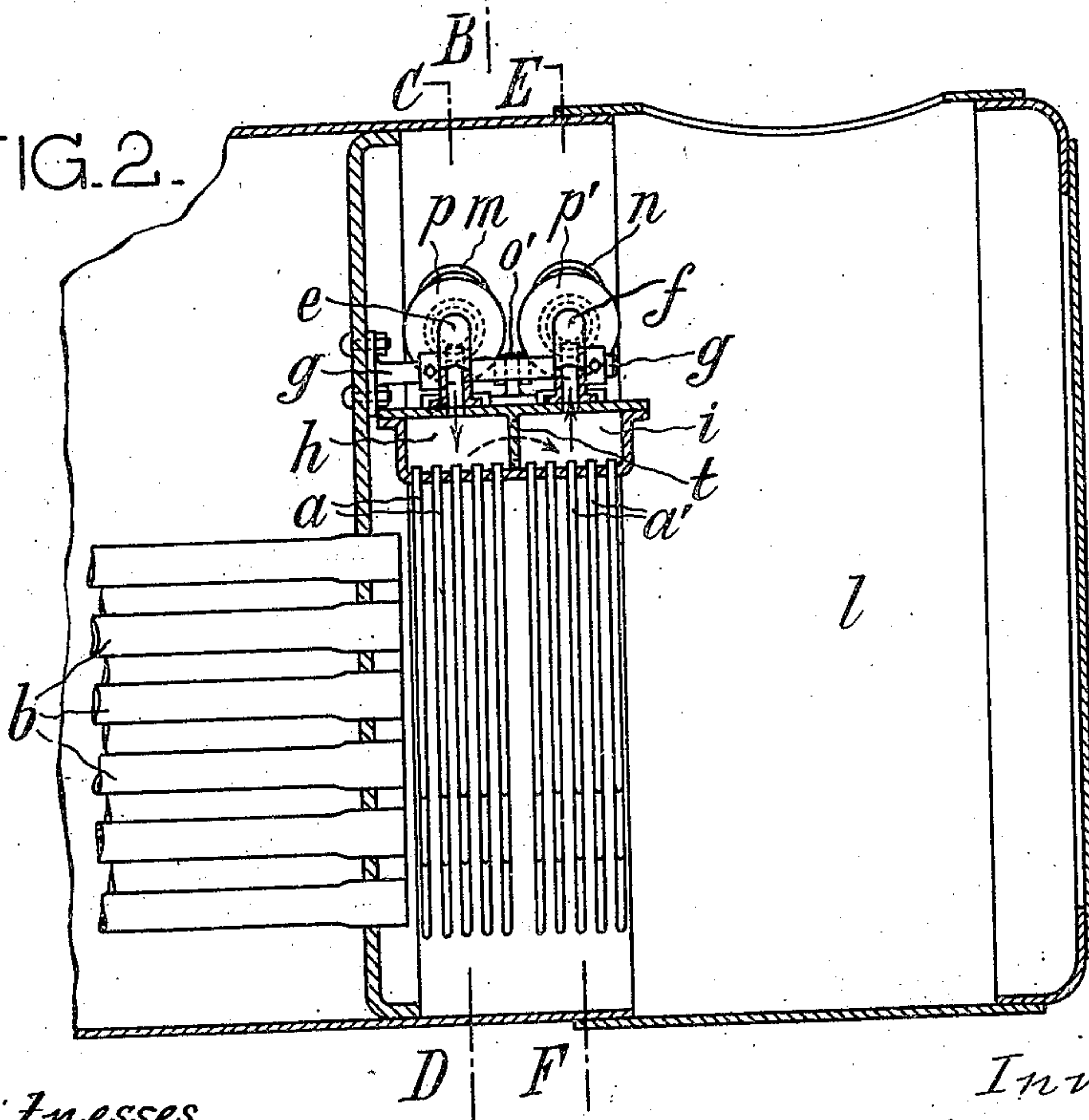


FIG. 2.



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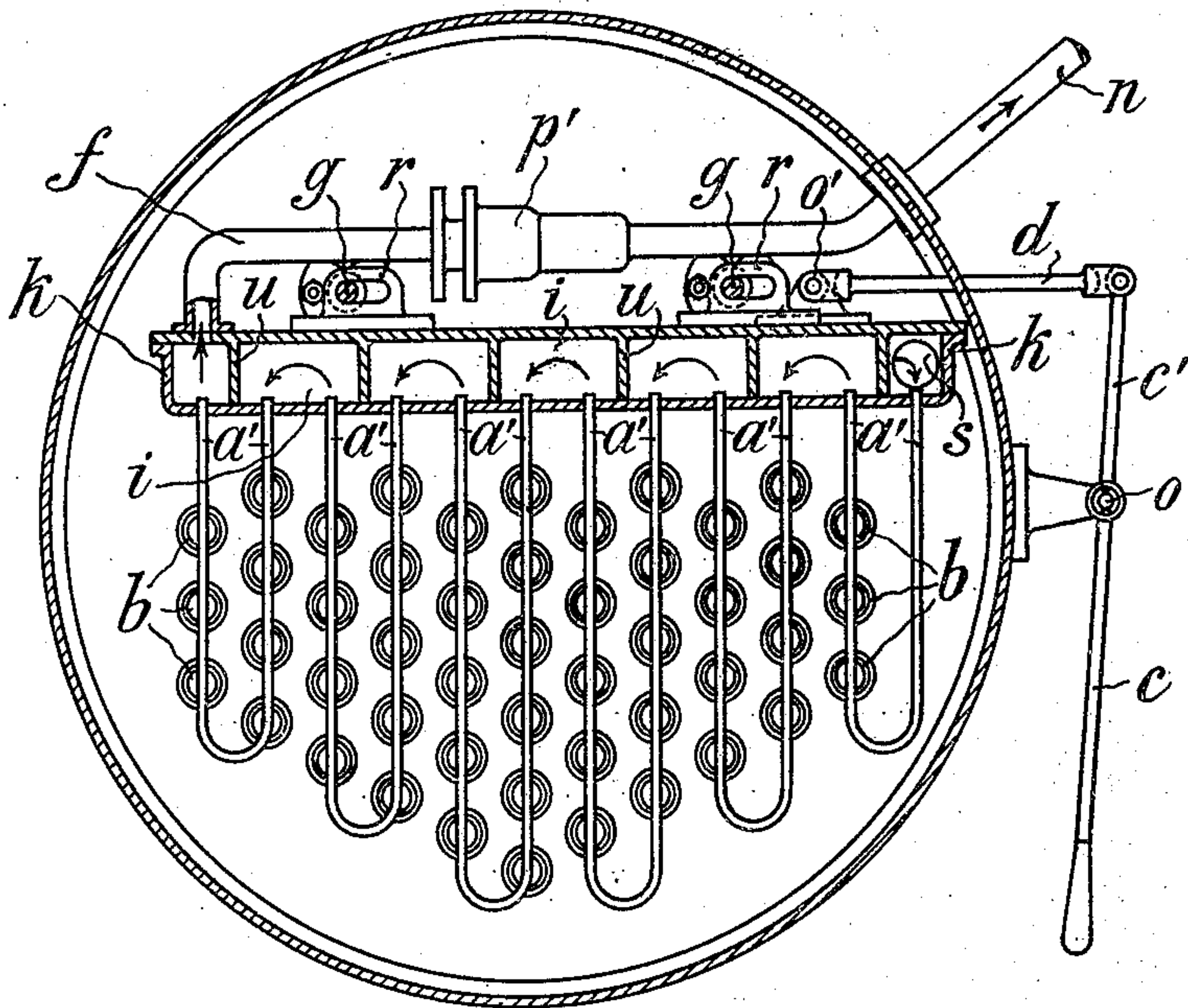
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2 SHEETS—SHEET 2.

FIG. 3.



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UNITED STATES PATENT OFFICE.

WILHELM PLATZ, OF WEINHEIM, GERMANY.

SUPERHEATER.

No. 812,448.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed September 29, 1904. Serial No. 226,560.

To all whom it may concern:

Be it known that I, WILHELM PLATZ, a subject of the Grand Duke of Baden, residing at Bahnhofstrasse 27, Weinheim, in the Grand Duchy of Baden and Empire of Germany, have invented new and useful Improvements in and Relating to Superheaters, of which the following is a specification.

My invention relates to superheaters which are arranged in the smoke-box of fire-tube boilers or generators.

The invention consists, substantially, in conducting the steam to be superheated through superheater-tubes of such a small diameter that when these tubes are placed behind the fire-tubes the section of the latter will remain quite or almost free. By reason of their accessibility the fire-tubes may therefore be conveniently cleaned. For the same steam-pressure the small tubes may, moreover, have thinner walls than the large tubes, which have heretofore been used exclusively. Thus the action of the heating-gases upon the steam is increased. The increased action is especially due to the fact that the volume of steam in the said tubes is very small and is therefore penetrated more rapidly by the heat conducted to the same.

In the accompanying drawings I have represented a preferred constructional form of this invention.

Figure 1 is a vertical transverse section on the line C D of Fig. 2, showing the superheater in the inoperative position. Fig. 2 is a vertical longitudinal section on the line A B of Fig. 1. Fig. 3 is a vertical transverse section on the line E F of Fig. 2, showing the superheater in the operative position wherein its tubes are behind the orifices of the fire-tubes.

In this constructional form the superheater comprises a casing *k*, arranged horizontally in the smoke-box *l* of the boiler or generator and above the fire-tubes *b*, the said casing being suspended, by means of slotted lugs *r*, from rods or brackets *q*, secured to the end of the smoke-box *l*. The casing *k* is divided by a longitudinal partition *t* into two compartments *h* and *i*, Fig. 2, each of which is again divided by transverse partitions *u* into a plurality of chambers, the last chamber of the first compartment *h* communicating with the adjacent chamber of the second compartment *i* through an orifice *s* in the partition *t*, Fig. 3. Several series of superheater-tubes *a* and *a'*, which are shown of U-shaped form

and are of a very small diameter, connect each two adjacent chambers of either compartments *h* and *i*, so that the steam to be superheated traverses each chamber of the two compartments as it passes through the series of tubes *a* and *a'* from the inlet-pipe *e* to the outlet-pipe *f*, Figs. 1 and 3.

When it is in operation, the superheater occupies the position indicated in Fig. 3, its tubes *a* and *a'* being placed centrally behind the orifices of the fire-tubes *b*. For cleaning the fire-tubes the superheater is displaced to the position indicated in Fig. 1, in which the orifices of the fire-tubes are quite clear of the superheater-tubes *a* and *a'*. This is effected through the agency of a two-armed lever *c c'*, adapted to turn upon a fixed pivot *o* on the outside of the smoke-box and connected by a push-rod *d*, which passes through the wall of the said box, with a lug *e'*, attached to the superheater-casing *k*. In order to render the displacement of the superheater possible, the pipes *e* and *f* are movably connected with the pipes *m* and *n*. This may be accomplished either by flexible metallic connections or by the telescopic arrangement shown, wherein the pipes *e* and *f* have horizontal branches extending into the pipes *m* and *n*, furnished at their ends with stuffing-boxes *p p'*.

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

1. In a superheater located in the smoke-box of a fire-tube boiler behind the fire-tubes, superheater-tubes arranged at right angles to the fire-tubes at the rear of the same, the diameter of said superheater-tubes being much less than the diameter of the fire-tubes and the superheater-tubes being arranged at distances so as not entirely to cover the openings in the ends of the fire-tubes and means for moving said superheater-tubes transversely of the boiler, substantially as described.

2. In a superheater of the class described, a casing, superheater-tubes connected thereto, said tubes being arranged at right angles to the fire-tubes near the ends thereof, and means for moving said superheater-tubes transversely of the boiler so as to cover and uncover the openings of the fire-tubes.

3. In a superheater of the character described, the combination of a casing, divided by longitudinal partitions into compartments separated by transverse partitions into chambers, series of U-shaped superheater-tubes connecting each two adjacent

chambers of either compartment, telescopic steam inlet and outlet pipes, and means for displacing the superheater, substantially as herein set forth.

- 5 4. In a superheater of the character described, the combination of a casing, divided by longitudinal partitions into compartments separated by transverse partitions into chambers, series of U-shaped super-
10 heater-tubes connecting each two adjacent chambers of either compartment, telescopic steam inlet and outlet pipes, slotted lugs pro-

vided on the said casing, brackets extending through these slotted lugs, and an operating-lever connected with the aforesaid casing for
15 displacing the superheater, substantially as herein set forth.

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

WILHELM PLATZ.

Witnesses:

H. W. HARRIS,
Jos. H. SEUTE.