

(No Model.)

2 Sheets—Sheet 1.

W. B. MACK.  
LOCOMOTIVE BOILER.

No. 500,716.

Patented July 4, 1893.

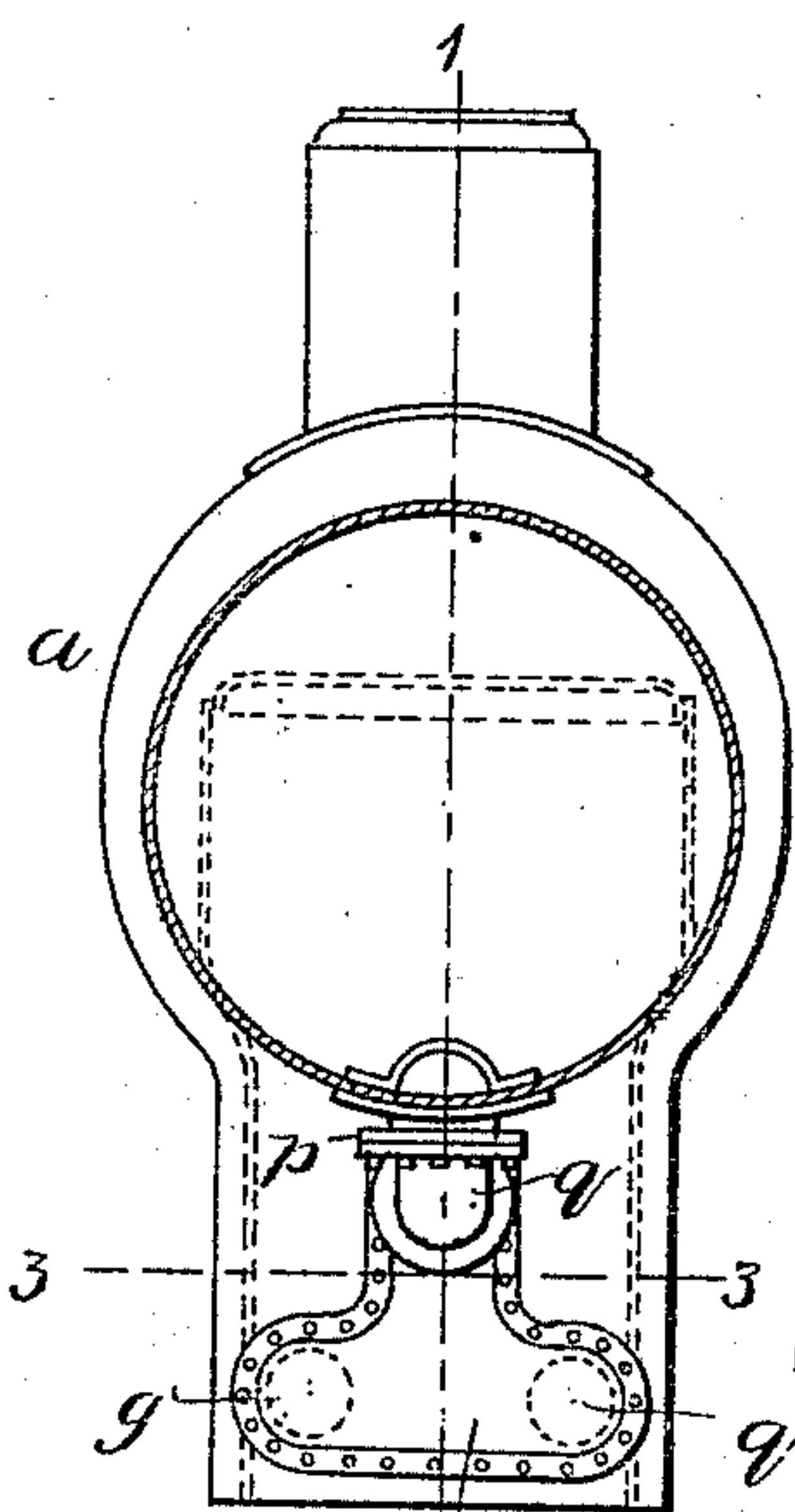
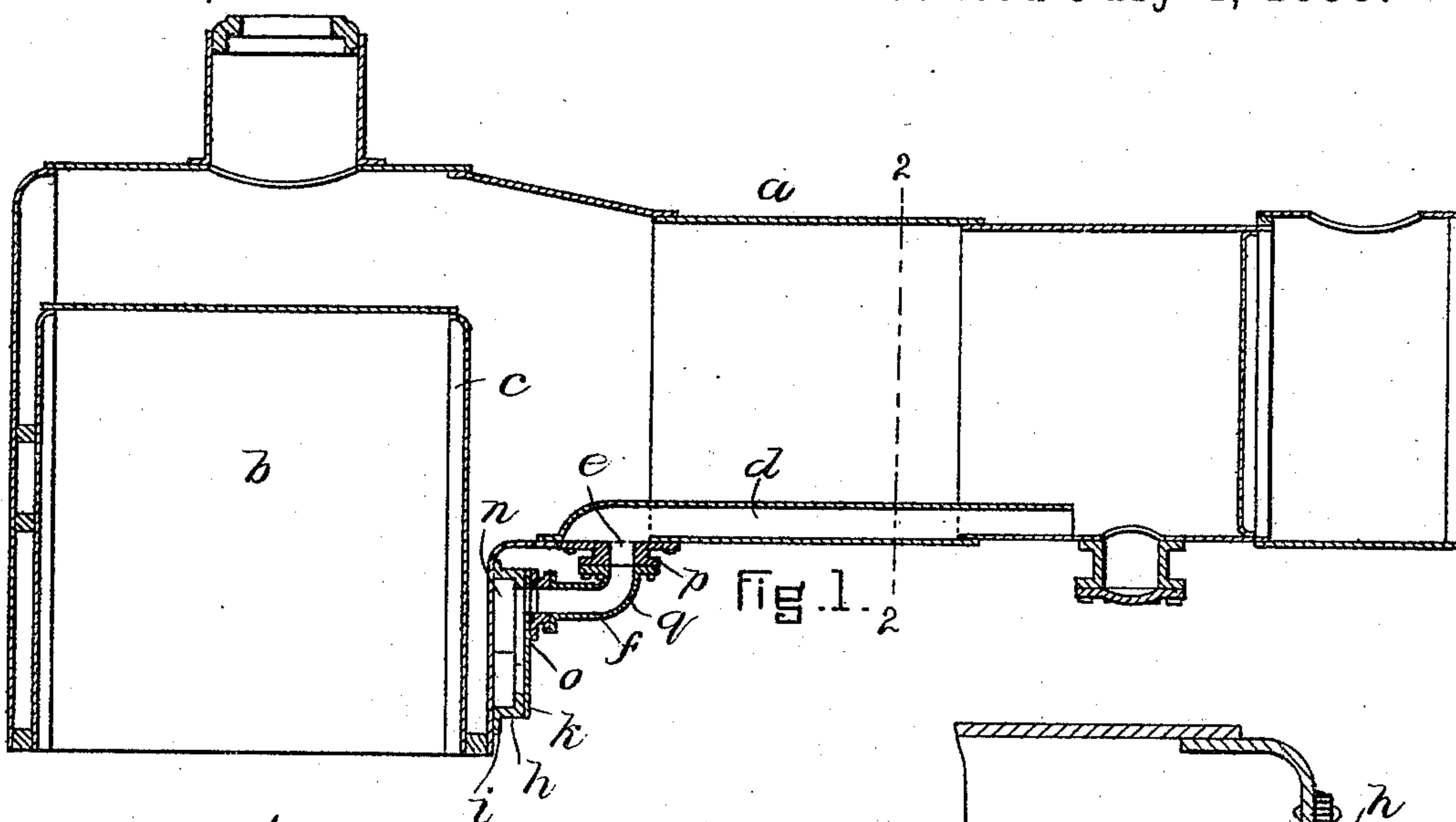


Fig. 2.

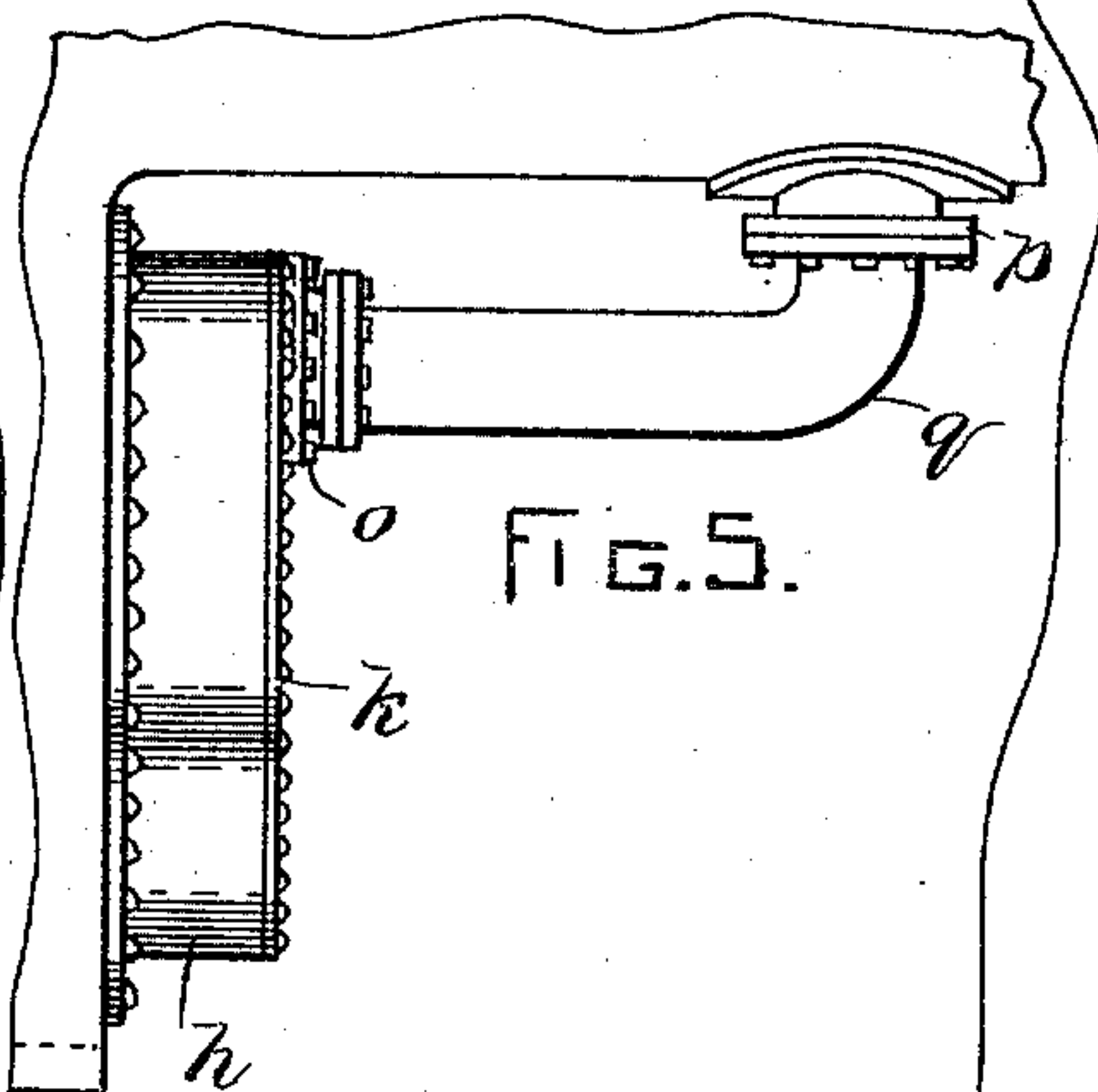


Fig. 5.

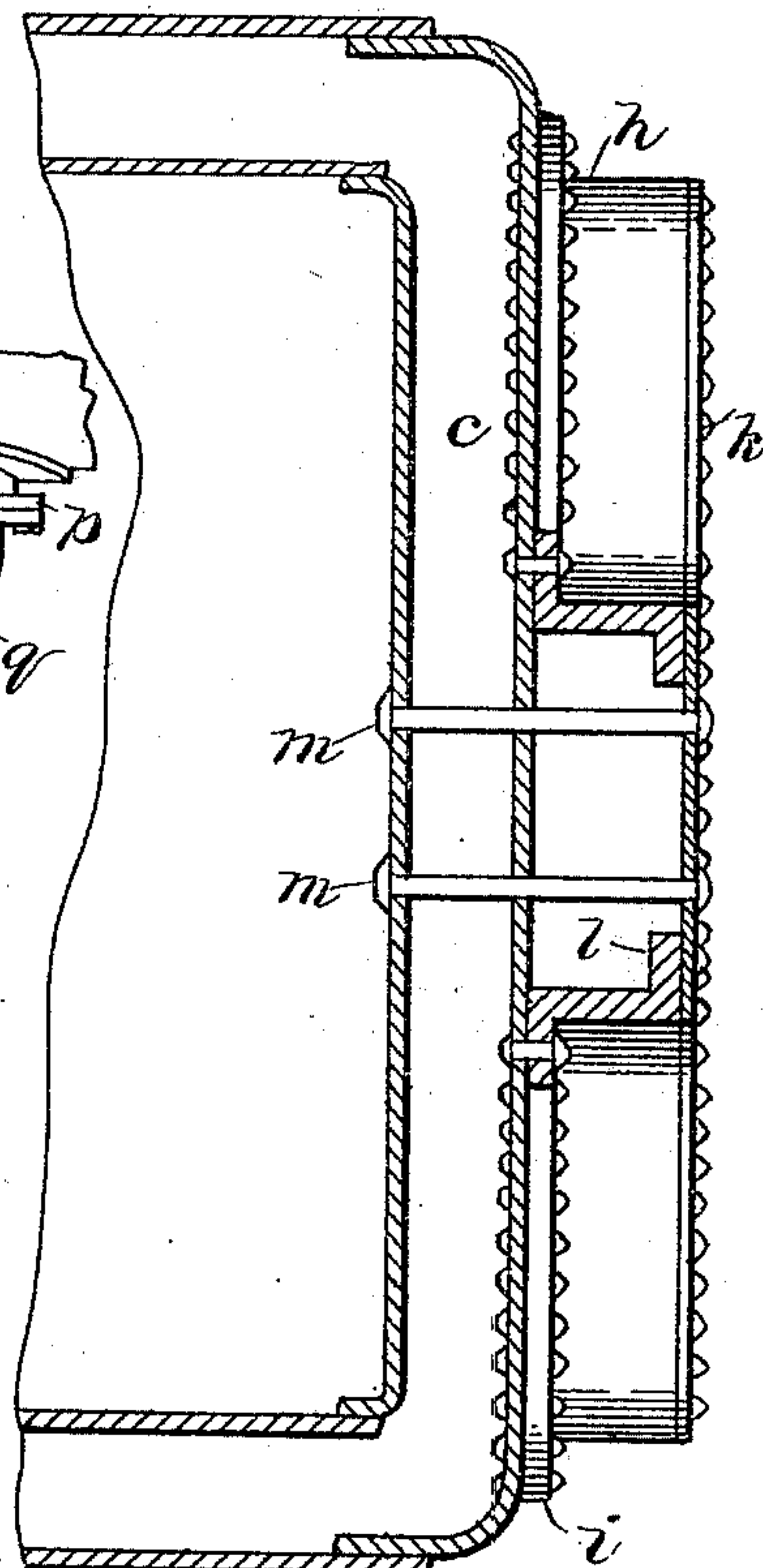


Fig. 3.

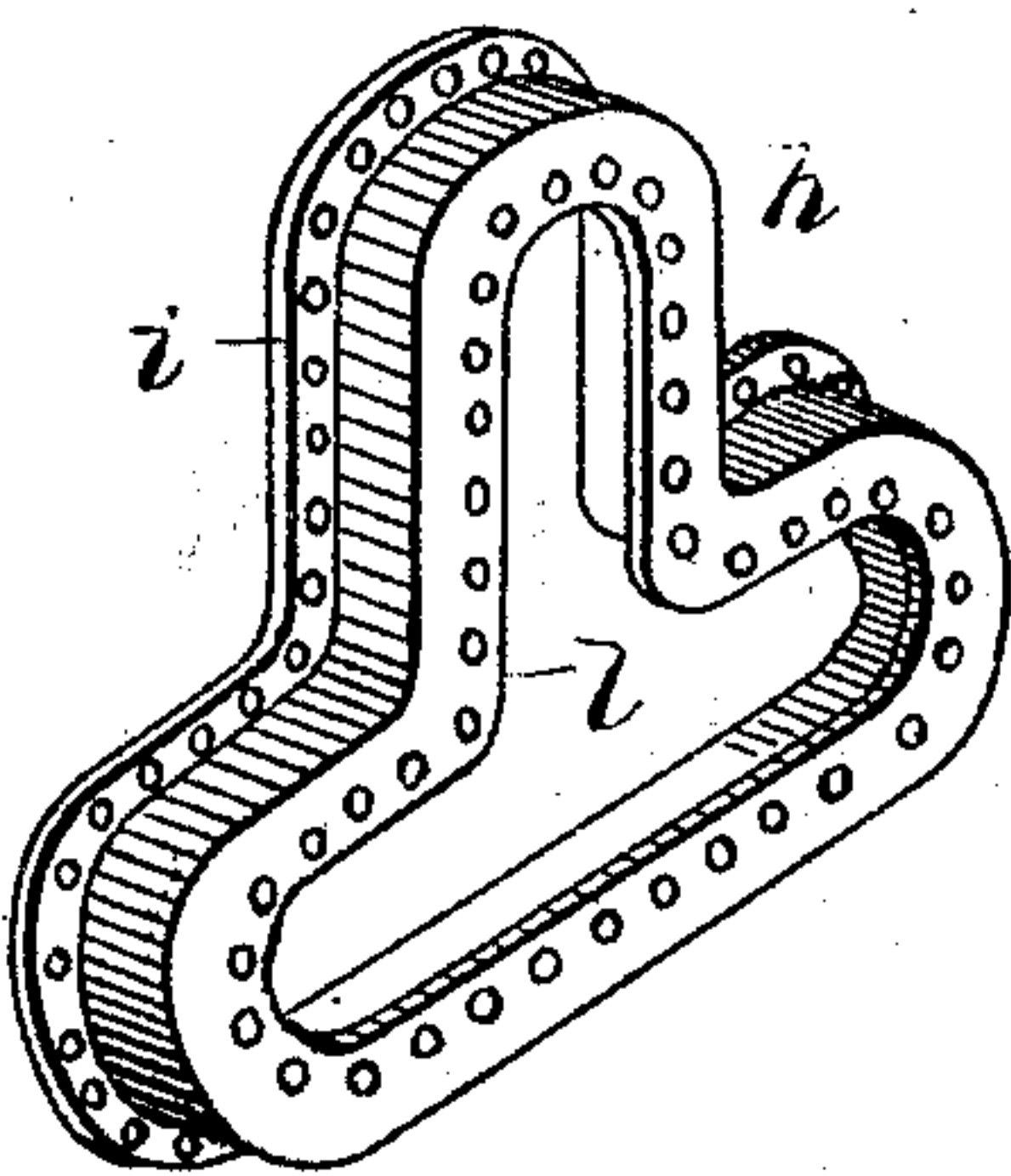


Fig. 4.

WITNESSES:  
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W. L. McLeod.

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Atty.

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LOCOMOTIVE BOILER.

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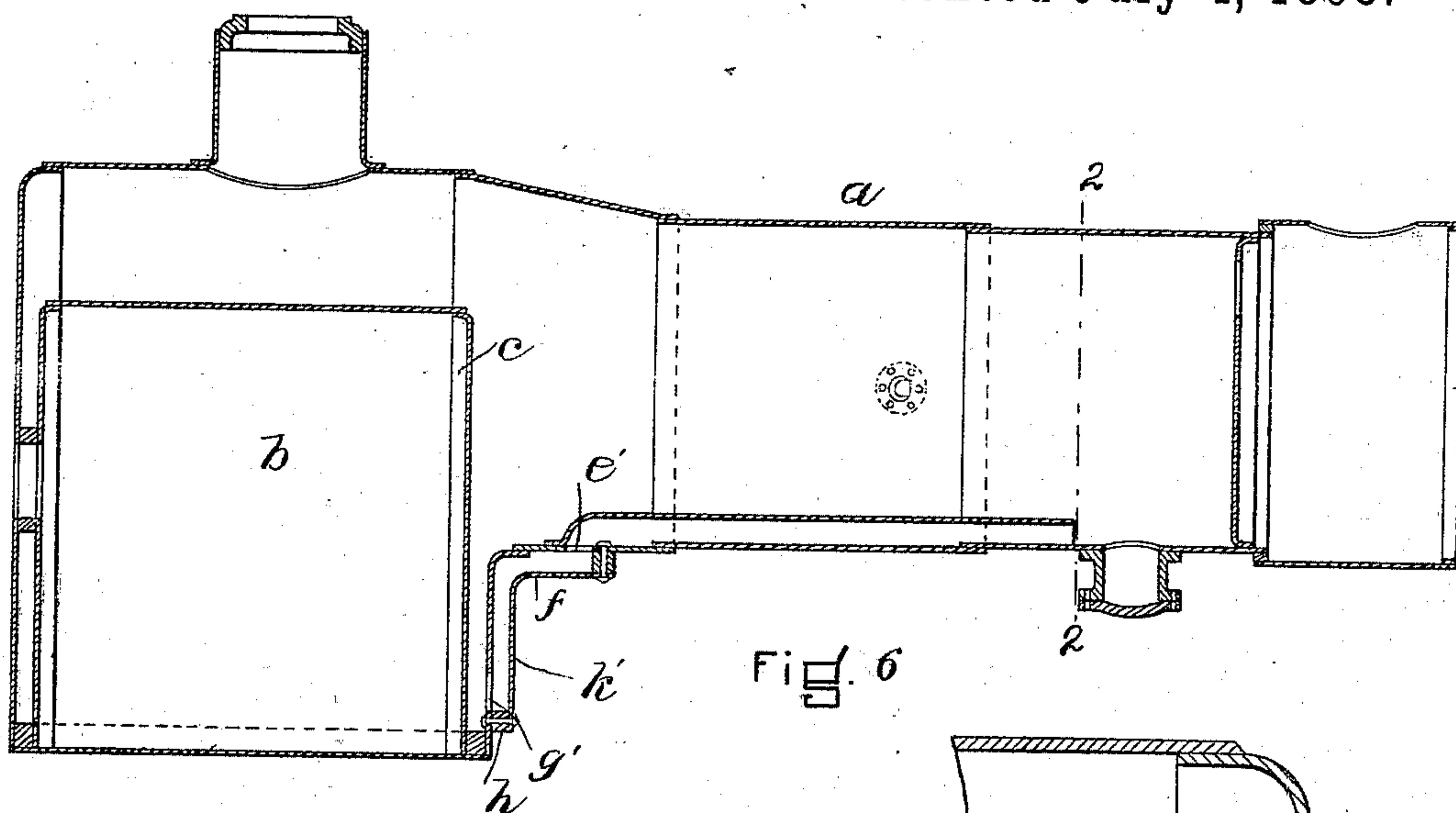


Fig. 6

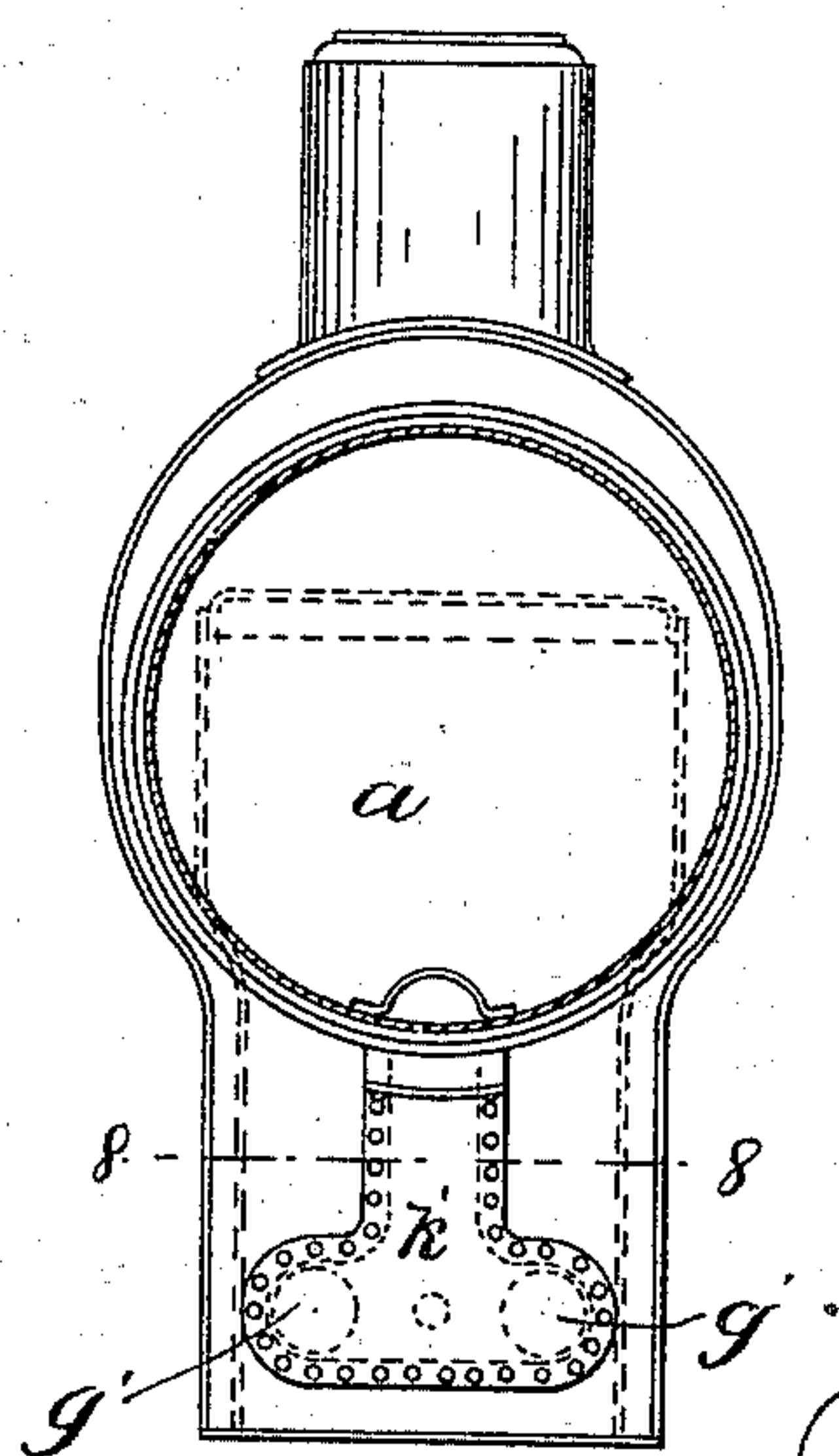


Fig. 7

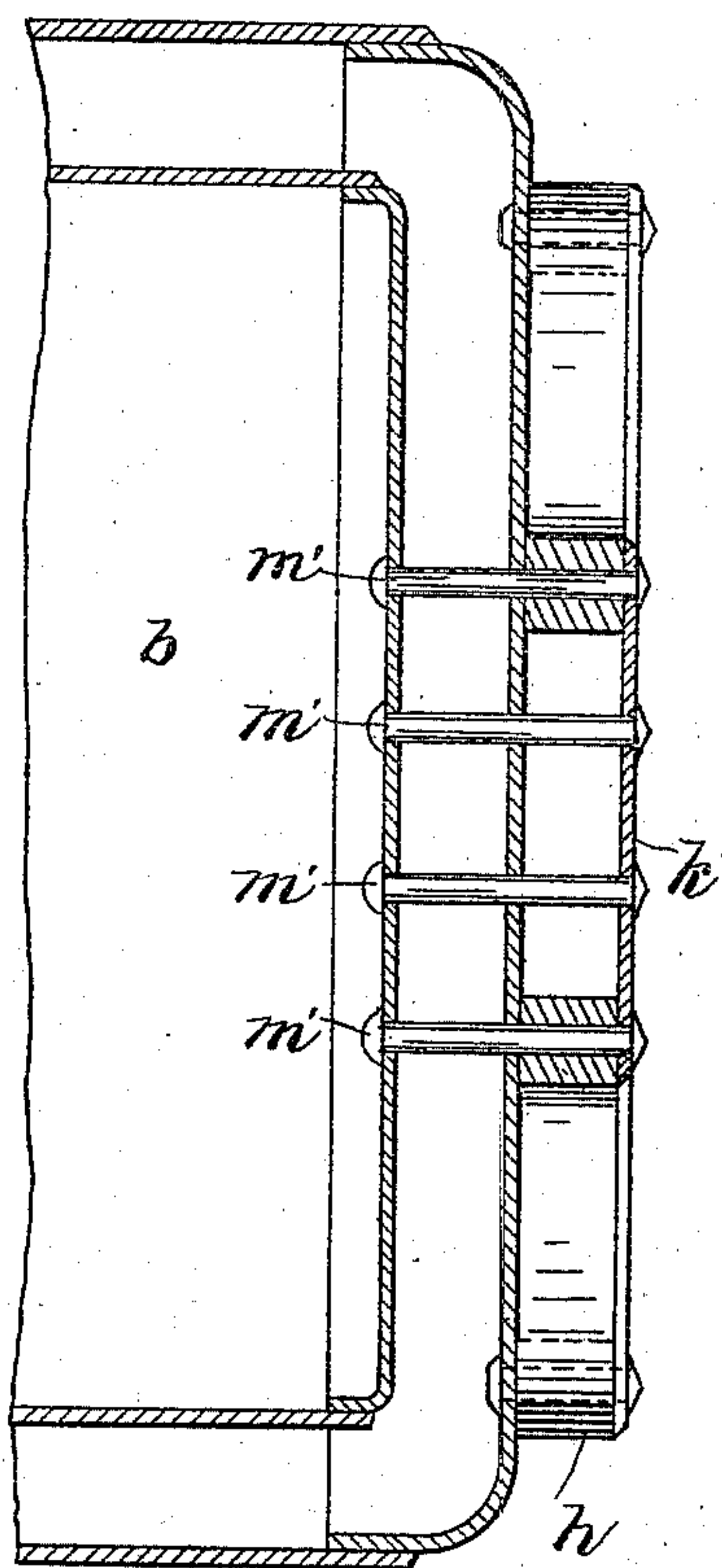


Fig. 8

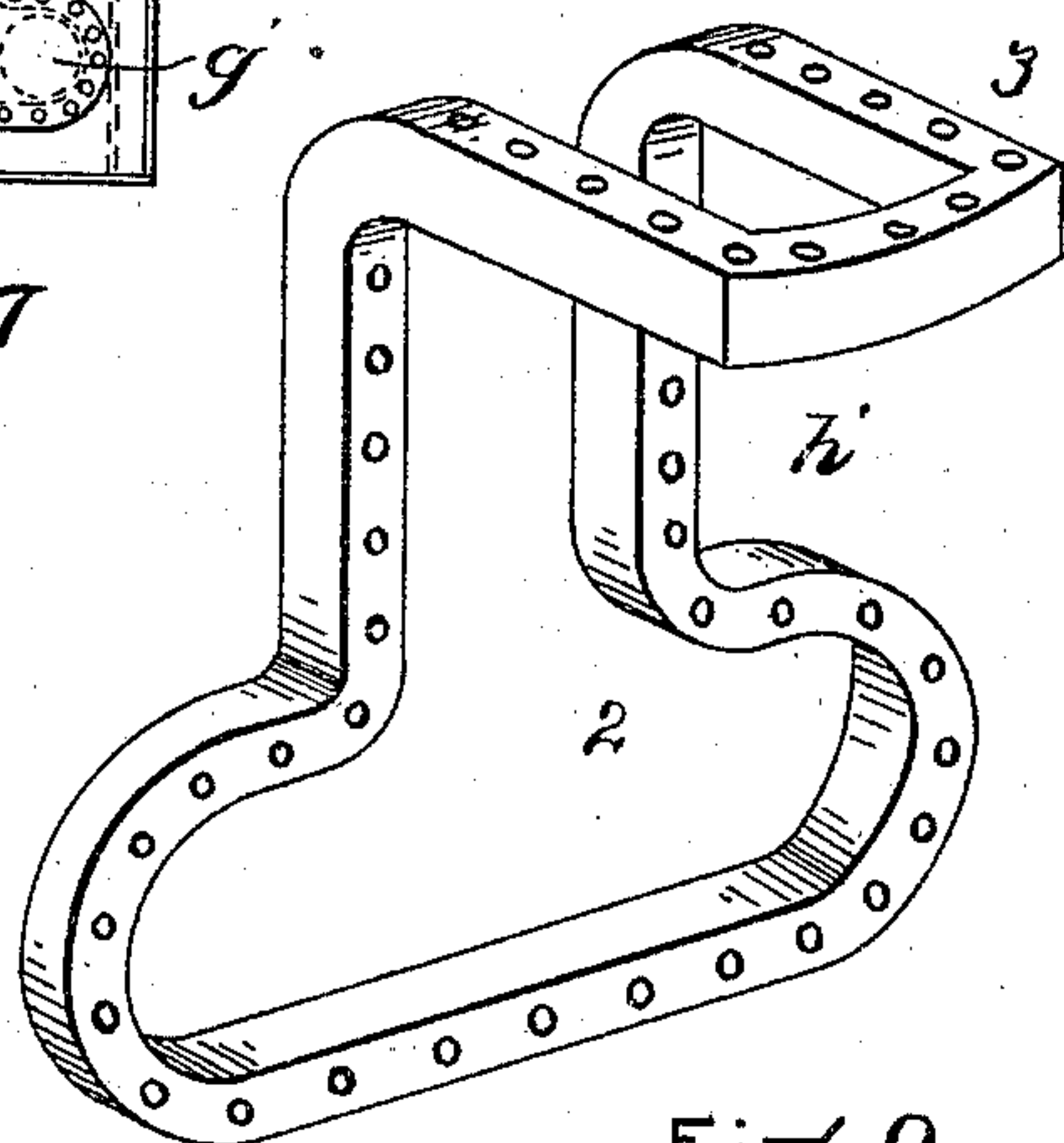


Fig. 9.

WITNESSES

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# UNITED STATES PATENT OFFICE.

WILLIAM B. MACK, OF BOSTON, MASSACHUSETTS.

## LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 500,716, dated July 4, 1893.

Application filed November 5, 1892. Serial No. 451,024. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM B. MACK, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Locomotive-Boilers, of which the following is a specification.

My invention relates to improvements in locomotive boilers in which a conduit leading from the part of the boiler communicates with the lower front portion of the water-leg surrounding the fire-box, thus insuring a constant circulation of water.

This invention relates particularly to improvements in the form of connection between the conduit within the boiler and the water-leg, as described in Letters Patent No. 487,535, granted to me December 6, 1892. The connection there described, consisting of a dished plate of peculiar form riveted to both the boiler and water-leg, was found in practice to be difficult to manufacture and also to keep the joint water tight, and to overcome the objections I employ the the construction illustrated in the accompanying drawings, in which—

Figure 1, is a longitudinal, central, vertical section of a locomotive boiler provided with my improvements. Fig. 2, is an end elevation; Fig. 3, a partial transverse section on the line 3—3 Fig. 2; Fig. 4, a perspective view of the connecting frame; Fig. 5, a side elevation showing the whole external connection. Figs. 6, 7, 8 and 9, are views corresponding to Figs. 1, 2, 3, and 4, and show a modification of my construction.

In the drawings in which like letters and figures of reference indicate like parts: *a* is a locomotive boiler provided with the fire box *b*, surrounded by a water-leg *c*, all of the usual construction. Within the boiler is a conduit *d*, leading from the forward portion, to an orifice *e* in the bottom of the boiler near the water-leg, and from this orifice an external connection *f* conducts the water from the boiler to the water-leg through two orifices *g g*. The connection *f* I construct as follows: To the front of the water-leg is secured a double flanged frame *h* preferably of an inverted T-shape, by riveting through the outwardly turned flange *i*, while to the inwardly turned flange *l* is secured a covering plate *k* forming with the frame a box. This plate is further secured by two rods *m, m*, which pass through the plate and the front of the water-leg to the front of the fire-box and are

riveted in place. Near the upper central portion of plate *k* is an orifice *n* which is surrounded by a flanged collar *o*. Orifice *e* also has a flanged collar *p* and these are connected by the similarly flanged pipe *q* completing the connection. Pipe *q* which is secured in place by bolts may be readily removed for the purpose of clearing the connection of accumulated sediment.

In the modification illustrated in Figs. 6, 7, 8 and 9 I substitute for the flanged frame, covering plate and pipe, a frame *h'*, the lower portion 2 being of the general inverted T-shape surrounding the orifice *g' g'* in the water-leg, while the upper portion 3 is bent forward at right angles to that below, and surrounds the orifice *e'* in the bottom of the boiler. A covering plate, bent to conform to the frame, is placed over it, and both frame and plate are riveted together to the water-leg and boiler. Four rods *m'* secure the covering plate to the front of the fire-box.

All the parts in this construction are readily manufactured and secured to make a water-tight front.

I claim—

1. In a locomotive boiler having an interior conduit, opening through the bottom of the boiler, and a water-leg having orifices in its rear, the combination of a frame secured about orifices in the water-leg, a covering-plate for said frame forming a box, and a connection between the box and the conduit opening in the boiler.

2. In a locomotive the combination of a frame secured about orifices in the water-leg, and bearing on the rear wall of the latter a covering-plate for said frame having an orifice, and a pipe connecting the orifice in the plate with one in the boiler.

3. In a locomotive boiler the combination of a frame secured about orifices in the water-leg, and bearing on the rear wall of the latter a covering-plate for said frame having an orifice, and a pipe, removably secured, for connecting the orifice in the covering-plate with one in the boiler.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 31st day of August, A. D. 1892.

WILLIAM B. MACK.

Witnesses:

C. F. BROWN,  
M. W. JACKSON.