

(No Model.)

H. LANCASTER.

STEAM TRAP.

No. 299,809.

FIG. 1. Patented June 3, 1884.

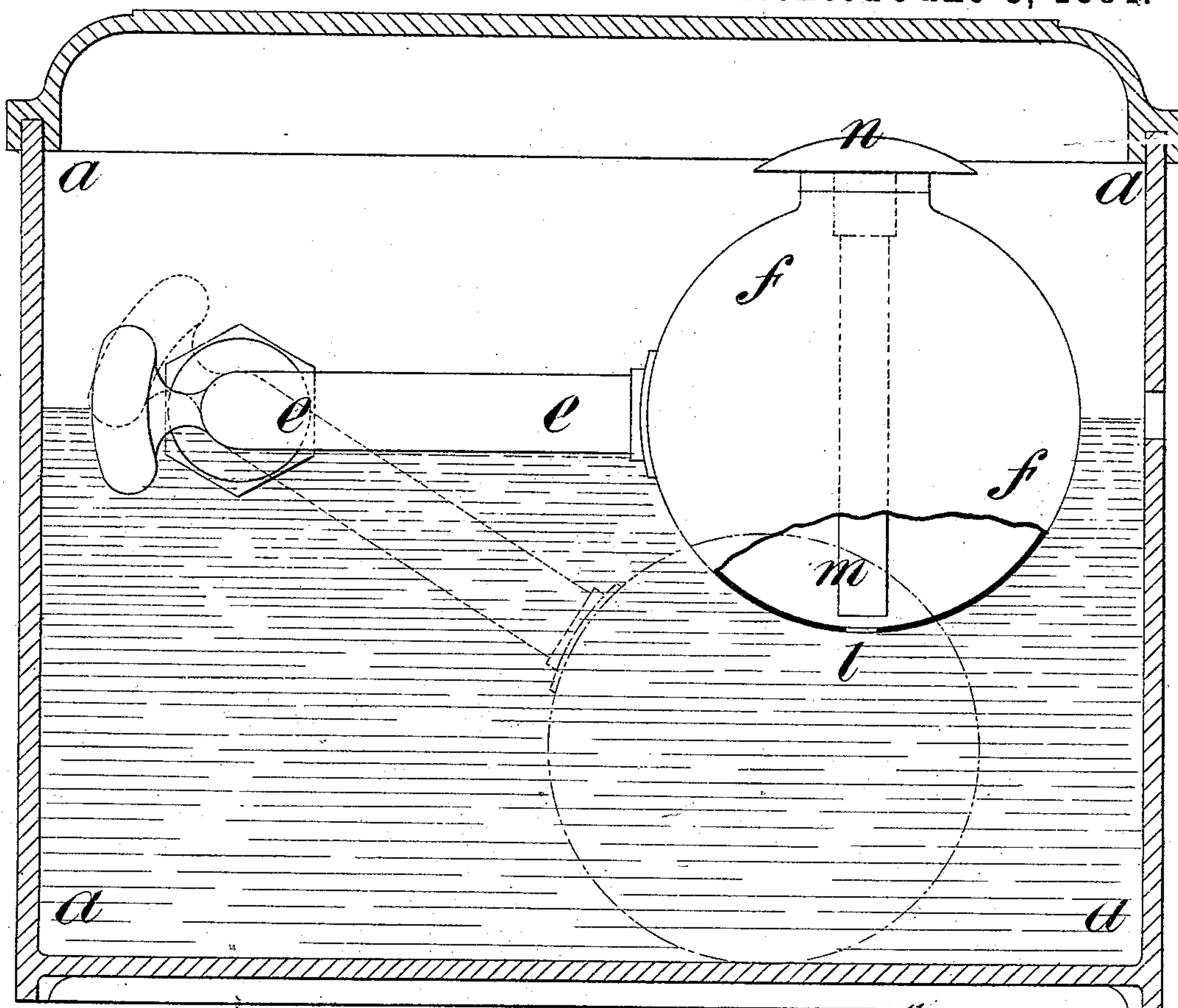
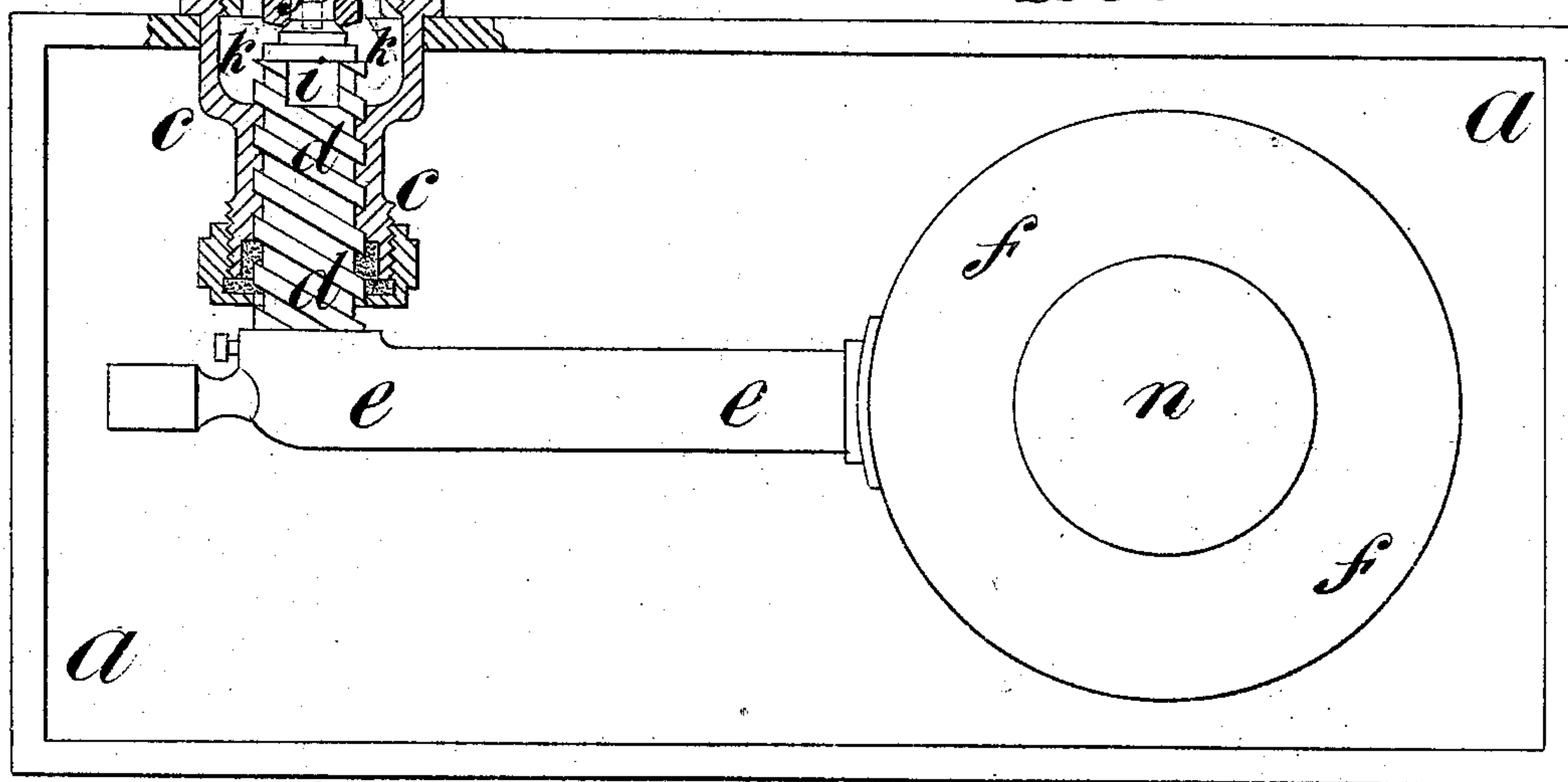
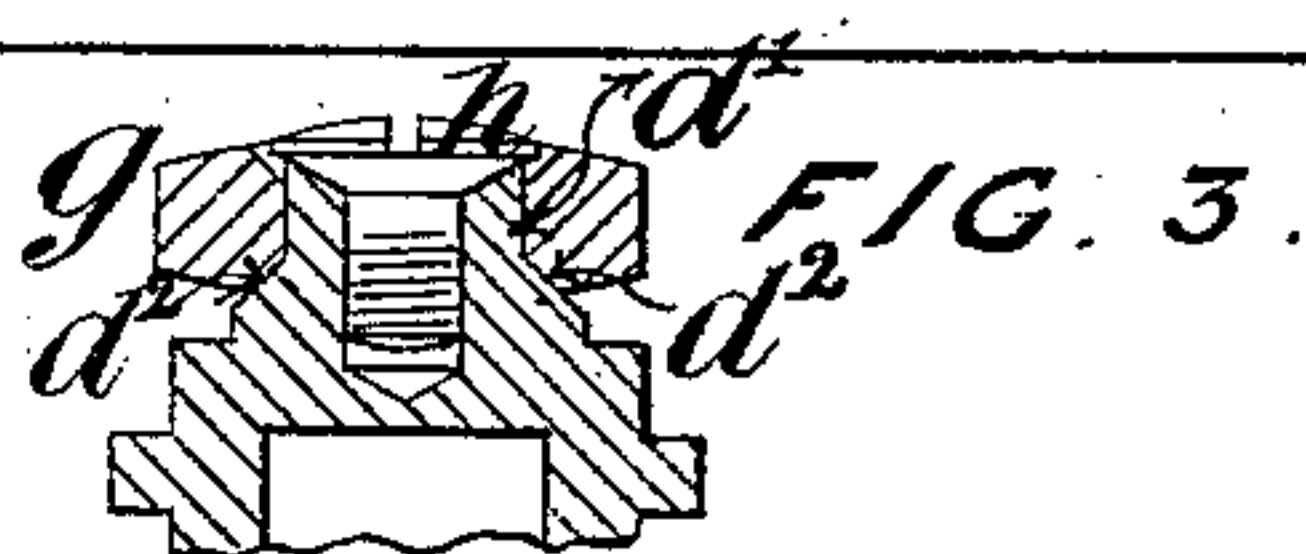


FIG. 2.



James F. Johnson  
John & Carter

Witnesses

Inventor, H. Lancaster  
by his attys. *Howson & Sons*



# UNITED STATES PATENT OFFICE.

HENRY LANCASTER, OF MANCHESTER, COUNTY OF LANCASTER, ENGLAND.

## STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 299,809, dated June 3, 1884.

Application filed December 11, 1883. (No model.) Patented in England August 2, 1882, No. 3,663; in France December 26, 1882, No. 152,846, and in Belgium December 27, 1882, No. 59,972.

*To all whom it may concern:*

Be it known that I, HENRY LANCASTER, a subject of the Queen of Great Britain and Ireland, and residing at Manchester, county of Lancaster, England, engineer, have invented an Improvement in Steam-Traps, (for which I have obtained a patent in Great Britain, No. 3,663, August 2, 1882,) of which the following is a specification.

My invention relates to the steam-traps which are used to effect the discharge of the water of condensation from steam-pipes and apparatus in which steam is used. In my steam-trap a valve is loosely mounted upon a hollow screw-spindle, which is connected by means of a hollow arm with a float.

In the accompanying drawings, Figure 1, drawn partly in section, is an elevation of the steam-trap. Fig. 2, partly in section, is a plan of the same. Fig. 3 is an enlarged view of the end of the spindle, with the valve represented in section.

In Figs. 1 and 2, *a* is the metal cistern, to one side of which is secured the water-inlet branch *b*. A trap, *c*, which projects into the cistern, is formed as a screw-nut to suit a hollow screw-spindle, *d*, which is connected by means of a hollow arm, *e*, with a hollow float, *f*. The end of the spindle *d* is separately represented on a larger scale by Fig. 3, wherein *g* is a valve, which is loosely mounted upon the reduced end, *d'*, of the spindle *d*, and is kept in place by means of a screw, *h*. A conical shoulder, *d''*, is formed on the end of the spindle, and the hole in the valve is countersunk or coned to correspond, so that a sufficiently steam-tight joint is formed, and the spindle is also free to turn with a minimum of friction. The face of the valve is slightly coned, and the valve-face in *b* is coned in a contrary direction in order to lessen the tendency of the valve to stick fast; but this construction may be varied. When the valve becomes worn on its face, it can be taken off and reversed, so as to present the other face to the seating. Slots *i* in the spindle open out of the chamber *k* into the hollow spindle. A hole, *l*, is formed

in the lower part of the float, and water is free to enter through this hole into the float, thereby sinking it into the position indicated by the dotted lines. When in this position, the way through *b* is open, and water can flow through the valve-opening and the slots *i* into the float, whence it passes downward through the hole *l*, and also upward through a pipe, *m*, into the cistern, as in some other forms of steam-traps. When the steam escapes, it drives the water out of the float, thereby raising it and closing the valve by reason of the turning of the screw-spindle *b* in the nut *c*. It will be seen that when the valve is in contact with the seating the end of the spindle turns in the valve without the latter turning, so that the valve is tightly pressed upon the seating. The wearing of the seating and the tendency of the valve to stick are thus obviated. To divert the water issuing from the pipe *m* into a downward direction, I apply a concave mushroom-shaped thin metal shield, *n*, above the discharge-mouth of the said pipe.

I am aware that the hollow screw and the hollow float have been used previously to my invention; but the apparatus has been liable to derangement in consequence of the valve used sticking fast in its seating.

I claim as my invention—

1. The combination of the valve-seat, screw-spindle, and float of a steam-trap with a valve, *g*, loosely mounted on the screw-spindle and free to turn thereon, substantially as and for the purpose set forth.

2. The combination of the valve-seat, hollow float, and hollow screw-spindle having a reduced end, *d'*, and conical shoulder *d''*, with a valve mounted but free to turn upon the end *d'* and pressed to its seat by the turning of the said spindle, substantially as set forth.

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

HENRY LANCASTER.

Witnesses:

EDWARD K. DUTTON,  
ARTHUR LEDGER.