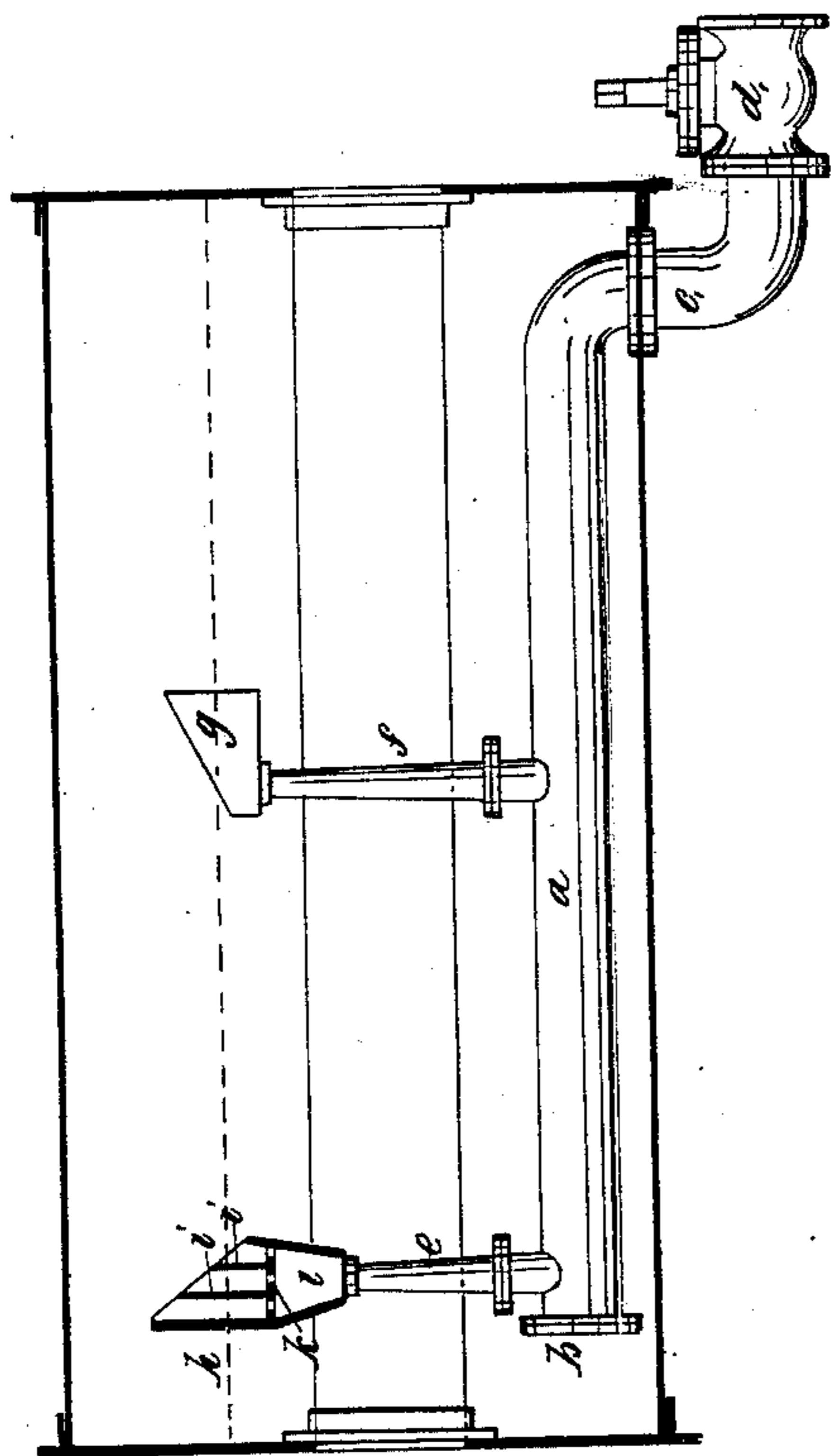


*R. Needham,*  
*Steam-Boiler Cleaner.*  
*No 67,340.                      Patented July 30, 1867.*

*Fig. 2*



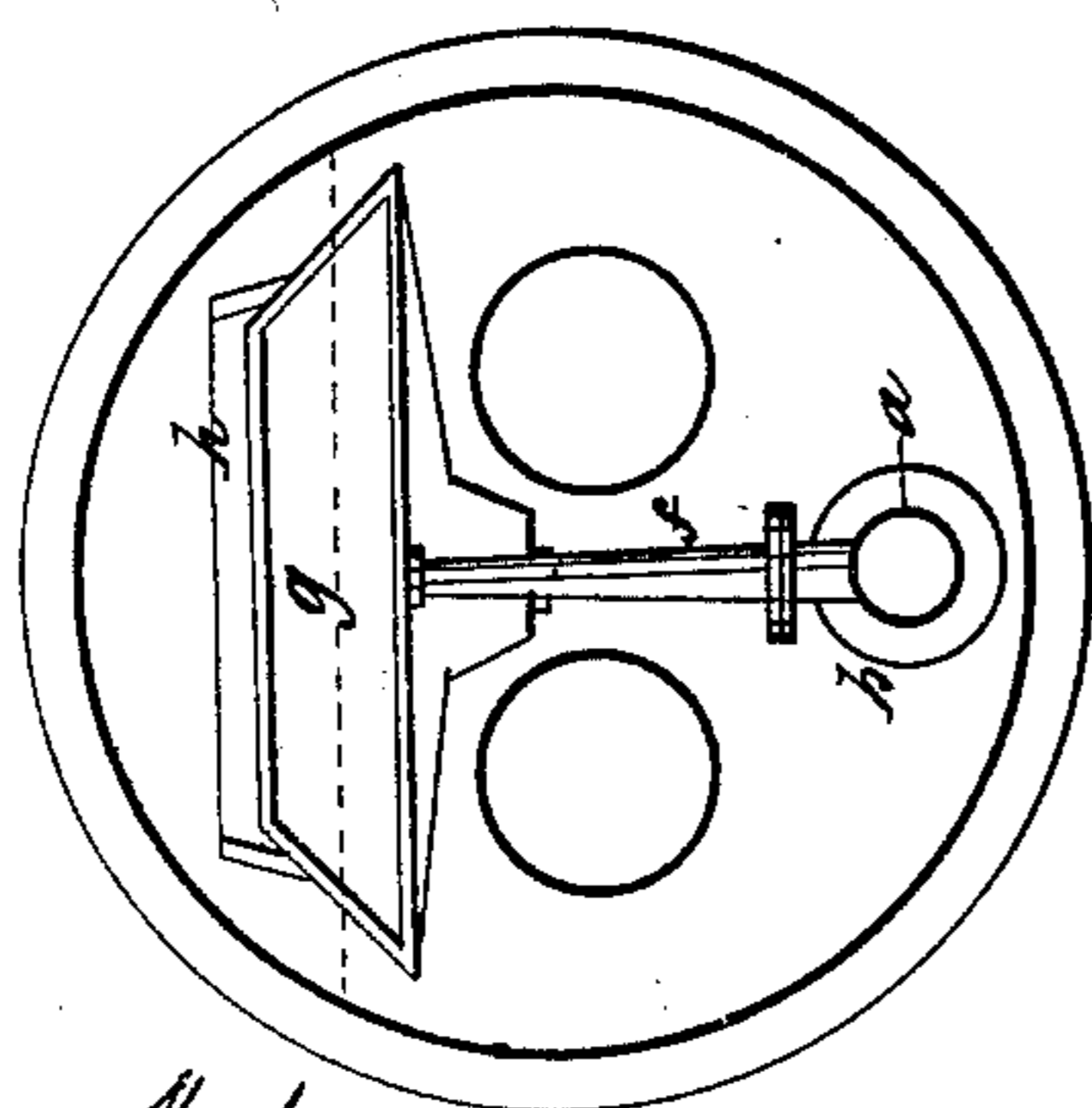
*Fig. 4*



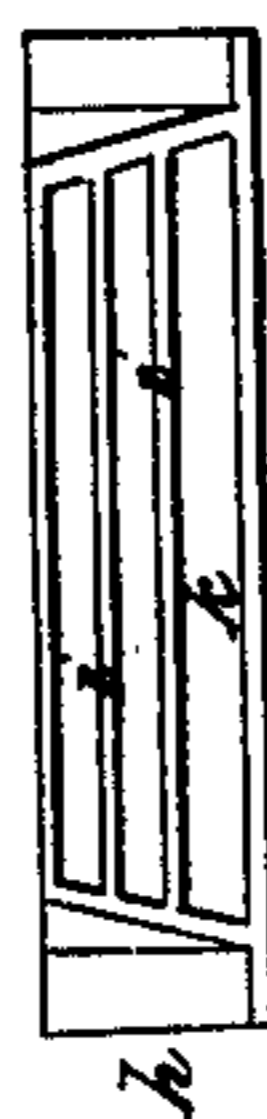
*Fig. 1.*

*Witnesses:*  
*E. J. Hughes*

*C. Septimus Hughes*



*Fig. 3*



*Inventor:*

*R. Needham*

# United States Patent Office.

RICHARD NEEDHAM, OF DUKINFIELD, ENGLAND.

*Letters Patent No. 67,340, dated July 30, 1867; patented in England December 26, 1861.*

## IMPROVEMENT IN STEAM-BOILERS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, RICHARD NEEDHAM, of Dukinfield, in the county of Chester, and Kingdom of England, engineer, have invented new and useful "Improvements in Apparatus for Cleansing Steam-Boilers;" and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

This invention consists in an improved mode of removing the scum from steam-boilers. In the interior of the boiler I place a pipe extending longitudinally from end to end, and connected at one end to a vertical pipe, communicating with a cock or valve on the outside. The said longitudinal pipe is placed at the bottom of the interior of the boiler, or at some distance above it, as may be convenient, and has connected to its top a number of vertical pipes, each opening in the shape of a funnel at the level of the water. The said funnels face the front or firing end of the boiler, so that the scum shall of necessity enter them in consequence of the heat at the front end of the boiler causing the flow or roll of water towards the back. The scum after entering the funnels passes through the vertical and longitudinal pipes to the cock or valve on the outside, which is opened, when required, to let off the scum. This arrangement may be modified by placing in the funnels a series of compartments, so that the upper edges of the sides of the compartments ascend in steps one above the other, these compartments communicating with one common box or receiver which has its bottom inclined from the ends towards the middle, such incline being varied to suit the different descriptions of boilers. The lowest compartment is placed at about the level of the lowest water line, and the highest compartment about on a level with the high-water level of the boiler. Any convenient number of compartments, stepped one above the other, may be used. The lowest edges of the partitions forming the compartments descend a little below the upper edge of the lowest compartment, and at this level a perforated plate may be fixed which will tend to prevent agitation, and thus the disturbance of the scum or sediment which may have been deposited will be prevented from returning to the water in the boiler.

My invention will be clearly understood by referring to the figures and letters on the accompanying sheet of drawings, in which—

Figures 1 and 2 are longitudinal transverse sections of an ordinary two-flued boiler provided with my improved apparatus for removing the scum from the water, and

Figures 3 and 4 are plans of the two different funnels.

In figs. 1 and 2 the longitudinal pipe extending from end to end in the interior of the boiler is shown at *b*. It is closed at one end, as at *b*, and at the other end connected to the elbow pipe *c*, which is outside the boiler, and to which is bolted the cock or valve *d*. At the top of the longitudinal pipe there are vertical pipes *e f*, which open either into flattened funnels *g*, figs. 1, 2, and 4, or into funnels *h*, figs. 1, 2, and 3, having a series of compartments. The funnel *g* is simply a cavity, and the funnel *h* another cavity, having a number of sides or partitions, *i*, a perforated bottom, *k*, and a chamber, *l*, and both the funnels are placed so as to face the front or firing end of the boiler. The ordinary level of the water is represented by the dotted line, and the heat from the firing end causes a continual agitation or flow of water towards the back, by which means the scum enters the funnels and pipes, from whence it is blown out or removed by opening the cock or valve *d*.

I do not claim dividing the funnel-shaped skimmer into compartments, as I am aware that that feature is claimed in the patent of James Seward and Henry Smith, of February 5, 1867.

I claim as my invention the combination with a steam-boiler of one or more funnels or open-mouthed skimmers, so constructed and arranged and provided with an exit pipe as to collect the scum from the surface of the water, substantially as hereinabove set forth.

Done at Manchester, England, this seventeenth day of May, 1865.

RICHARD NEEDHAM.

Witnesses:

EDWARD JOSEPH HUGHES, *Patent Agent, 20 Cross Street, Manchester,*  
G. SEPTIMUS HUGHES, *Patent Agent, 20 Cross Street, Manchester.*