

No. 714,804.

Patented Dec. 2, 1902.

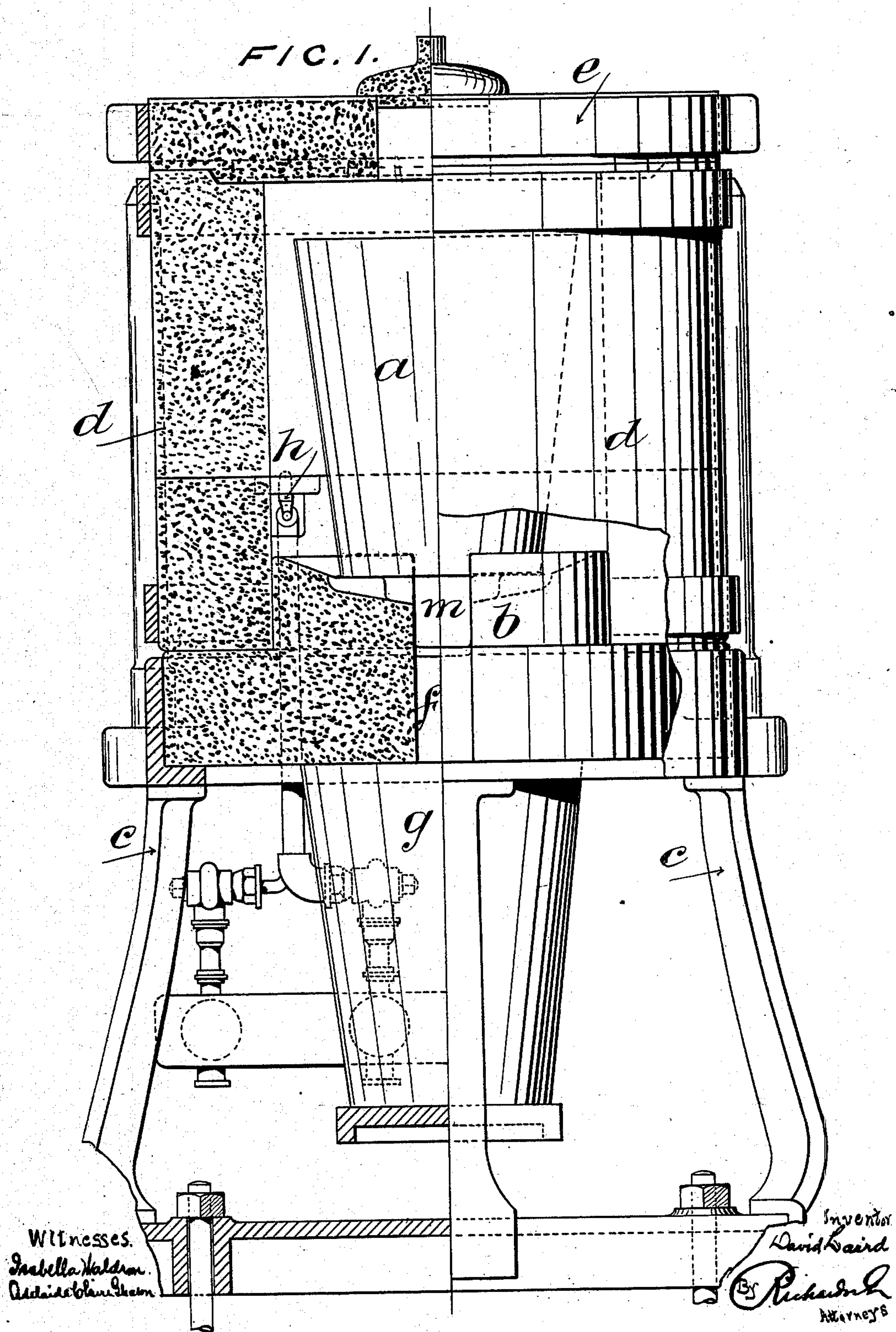
D. LAIRD.

MEANS FOR LIFTING CRUCIBLES FROM FURNACES.

(Application filed Sept. 24, 1901.)

(No Model.)

3 Sheets—Sheet 1.



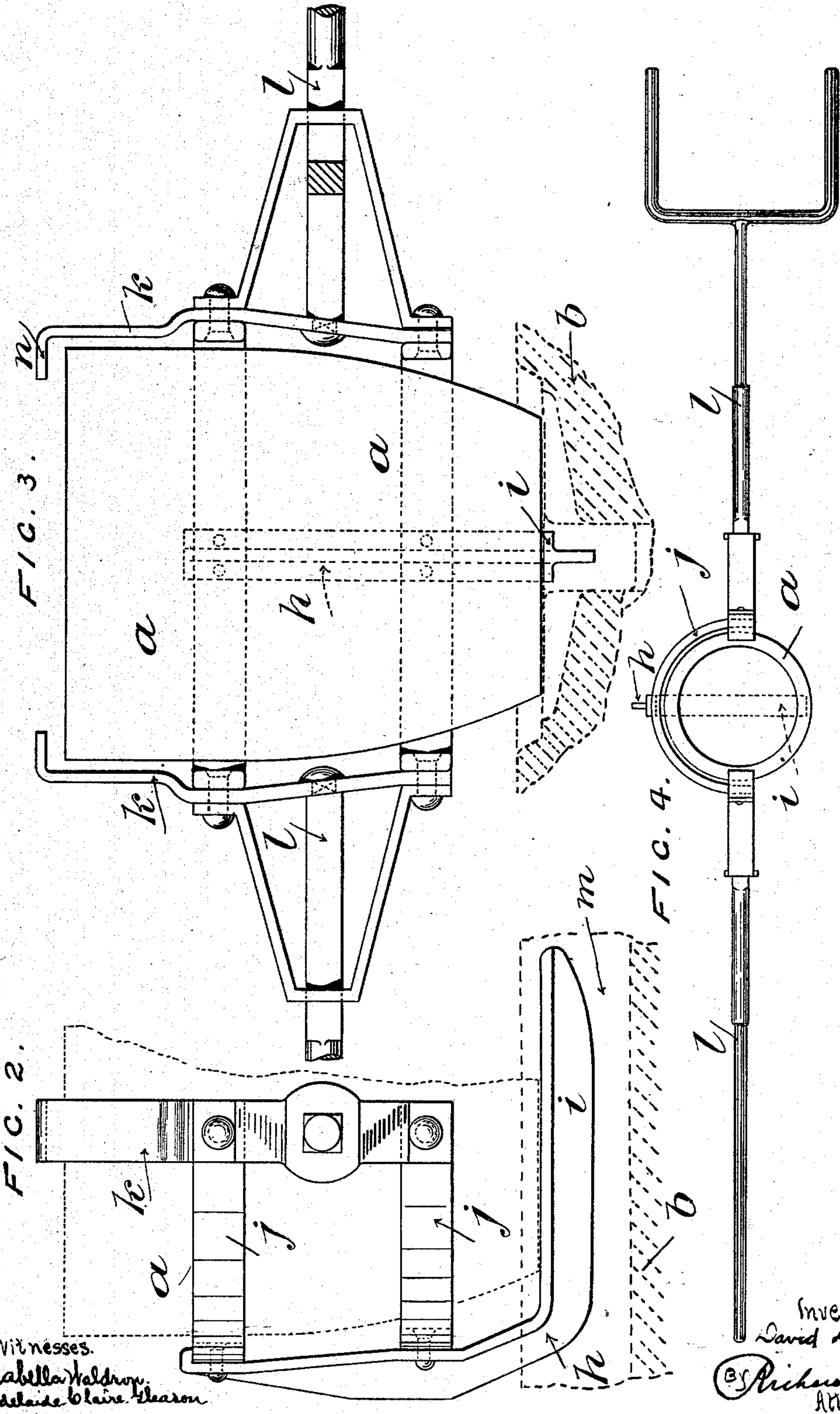
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3 Sheets—Sheet 2.



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3 Sheets—Sheet 3.

FIG. 5.

FIG. 6.

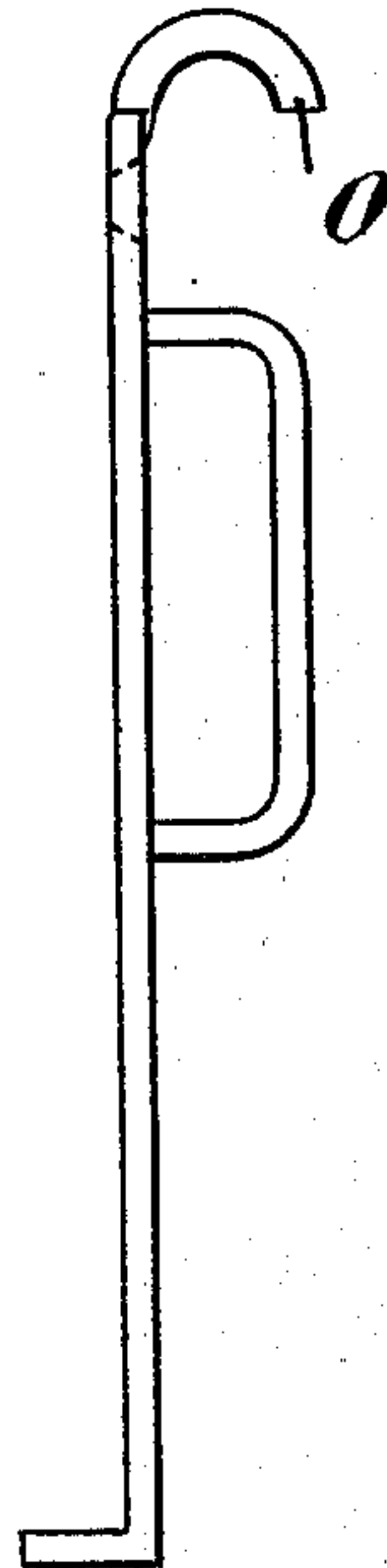
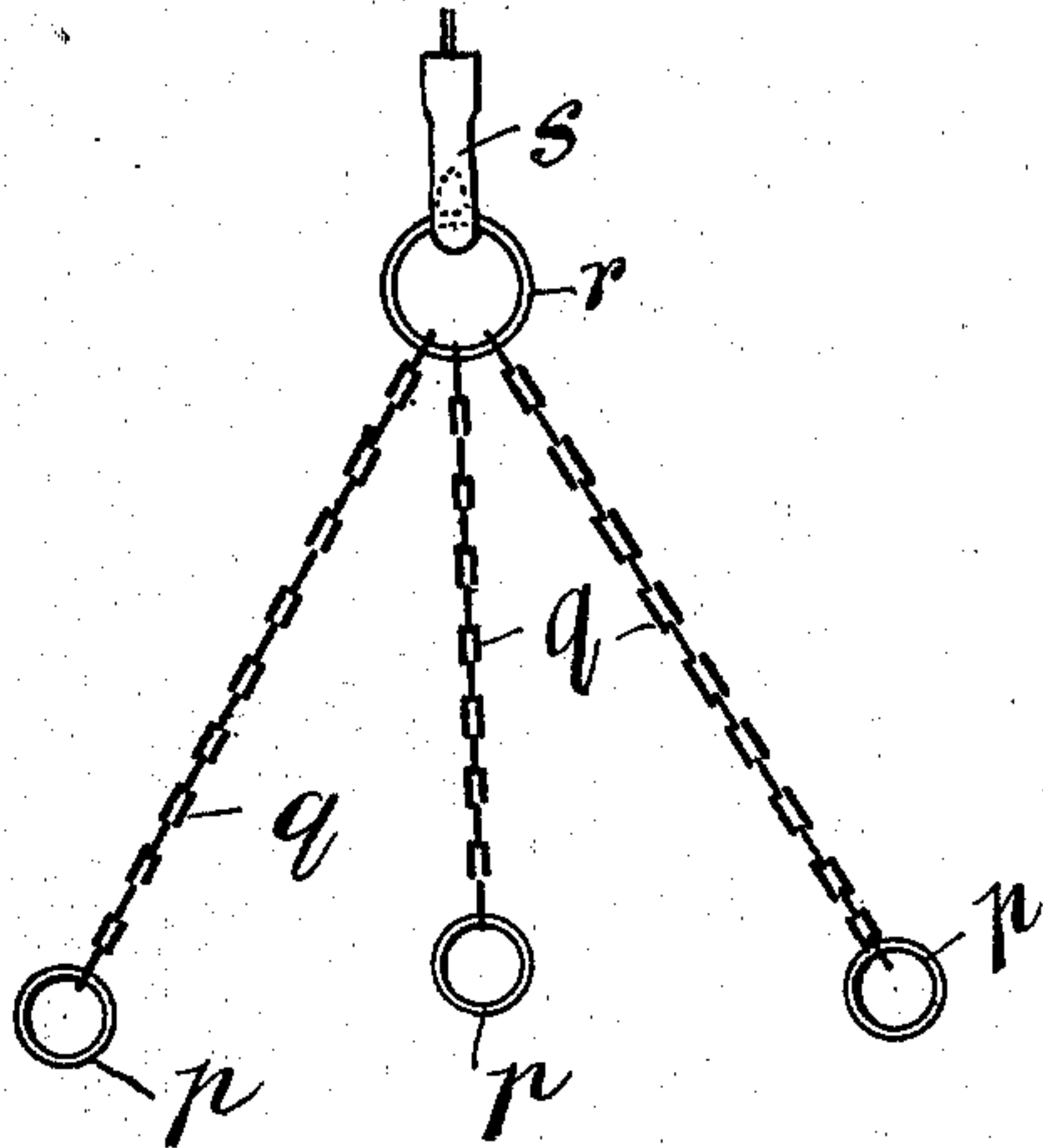
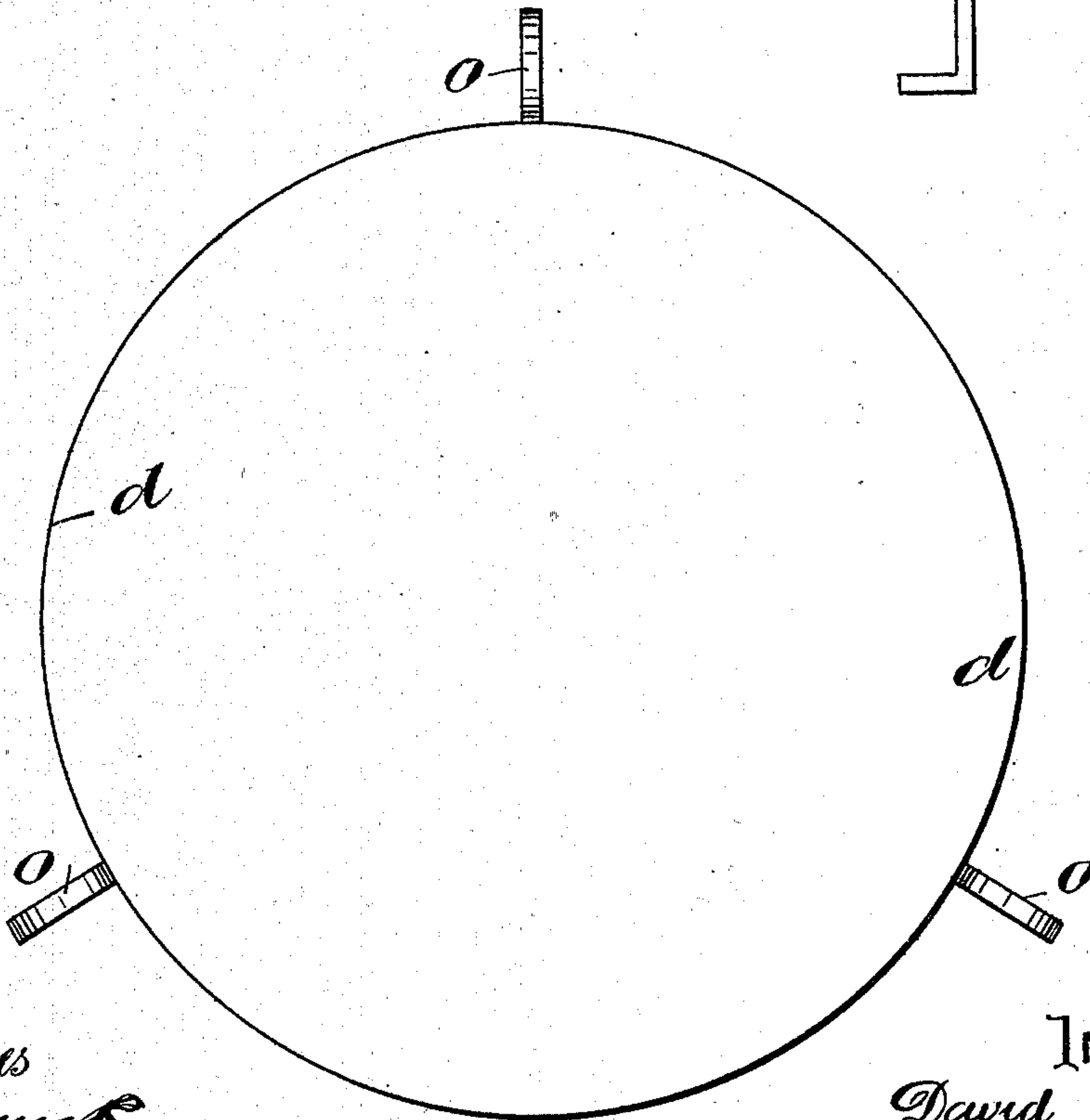


FIG. 7.



Witnesses
Otto Munk
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UNITED STATES PATENT OFFICE.

DAVID LAIRD, OF FORFAR, SCOTLAND.

MEANS FOR LIFTING CRUCIBLES FROM FURNACES.

SPECIFICATION forming part of Letters Patent No. 714,804, dated December 2, 1902.

Application filed September 24, 1901. Serial No. 76,326. (No model.)

To all whom it may concern:

Be it known that I, DAVID LAIRD, engineer and metallurgist, a subject of the King of Great Britain and Ireland, residing at Forfar, in the county of Forfar, Scotland, have invented a certain new and useful Improvement in Means for Lifting Crucibles from Furnaces, of which the following is a specification.

This invention relates to furnaces for smelting ore, and has reference particularly to improved means for removing the crucible from the hearth or pedestal and replacing the same thereon and for tilting the crucible to pour out the contents into ingot-molds or the like.

In the accompanying two sheets of drawings, Figure 1 represents a smelting-furnace in elevation, partly in section. Fig. 2 is a side view of the appliance for removing and emptying the crucible and replacing the same on the pedestal or hearth of the furnace. Fig. 3 is a front view of the same, the handles being broken off for want of space. Fig. 4 is a plan view thereof on a smaller scale, showing the handles. Figs. 5, 6, and 7 are detail views.

In the type of smelting-furnace shown in Fig. 1 of the drawings the crucible *a*, containing the ore and flux, stands upon a circular hearth or pedestal *b*, which is supported by standards *c*. The body of the furnace *d* rests upon the hearth and carries a removable cover *e*. The hearth is formed with radial recesses *o* and is bored with a central vertical hole *f*, so that in case of accidental breakage of the crucible *a* the slag and molten metal will run into a receiver *g*, disposed below the pedestal *b*.

The furnace illustrated in Fig. 1 is heated by means of a burner *h*, generating a flame of oil and air under pressure, or it might be gas and air.

As stated, my invention relates to a ready means for removing, handling, and replacing the crucible *a*. When the metal in the crucible *a* is ready for pouring out, the body *d* and cover *e* of the furnace are removed, leaving the crucible exposed upon the pedestal *b*. For removing the crucible I have devised the

appliance shown in Figs. 2 to 4 of the drawings. This is a cradle consisting of a backbone *h*, having a foot *i*. To the backbone are riveted two curved or semicircular ribs *j*, having uprights *k k* at their ends. The cradle is also provided with lifting-handles *l l*, one of which is straight and the other shaped, as shown in the plan view Fig. 4, to assist in tilting the cradle. I form the top of the pedestal *b* with a horizontal recess or groove *m*, so that when the body and cover of the furnace have been removed the foot *i* may be slid along the recess *m*, so as to bring it below the crucible *a*, as shown in Fig. 3. By means of the handles the crucible can then be raised, resting on the foot *i*, and be removed from the pedestal, the cradle being tilted back to allow the crucible to rest against the curved ribs *j*. When tilting the crucible to pour out the contents, the turned-in portions *n* of the uprights *k* act as stops to prevent the crucible from sliding out of the cradle.

The method of removing the body *d* of the furnace is shown in the diagrams Figs. 5, 6, and 7. The body *d* (shown in plan view in Fig. 7) is provided at intervals with hooks *o*, one of which is shown on side view in Fig. 6. At the required time the rings *p*, carried by chains *q*, (see Fig. 5,) are placed around the hooks. The chains *q* are carried by a ring *r*, and by means of the hook *s* of any suitable hoisting-tackle the body *d* may be lifted up to enable the crucible *a* to be removed.

I declare that what I claim is—

A cradle for lifting crucibles consisting of a foot *i* to pass under the crucible, a curved band connected with the foot for embracing the side of the crucible and uprights *k k* having hooked ends to engage the top edge of the crucible in pouring, said cradle having handles, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

DAVID LAIRD.

Witnesses:

JOSHUA ENTWISLE,
RICHARD IBBERSON.