

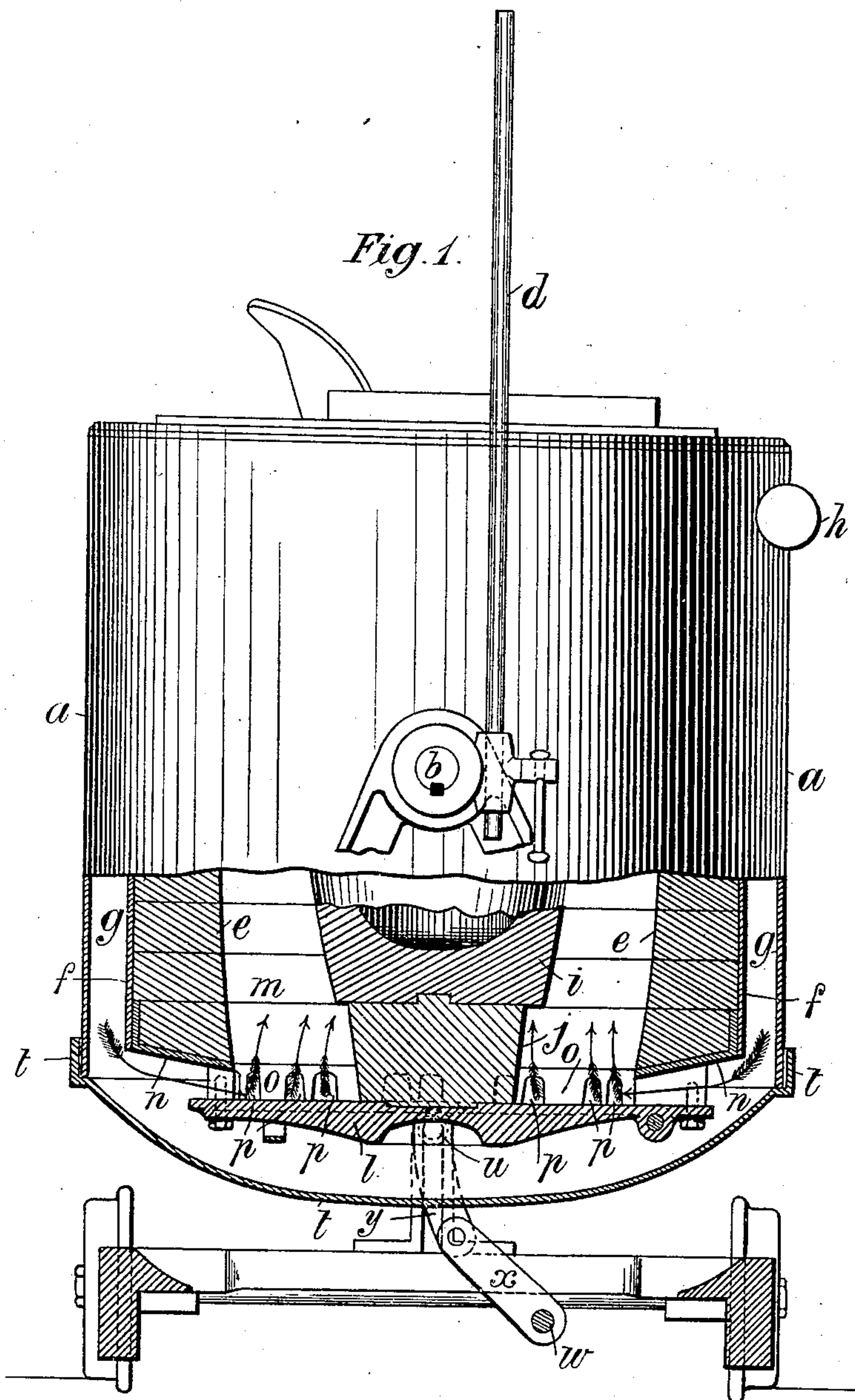
No. 868,181.

PATENTED OCT. 15, 1907.

M. HARVEY.
PORTABLE CRUCIBLE FURNACE.

APPLICATION FILED MAY 18, 1907.

3 SHEETS—SHEET 1.



Witnesses:

W. P. Burke

W. C. Bell

Inventor:

Matthew Harvey

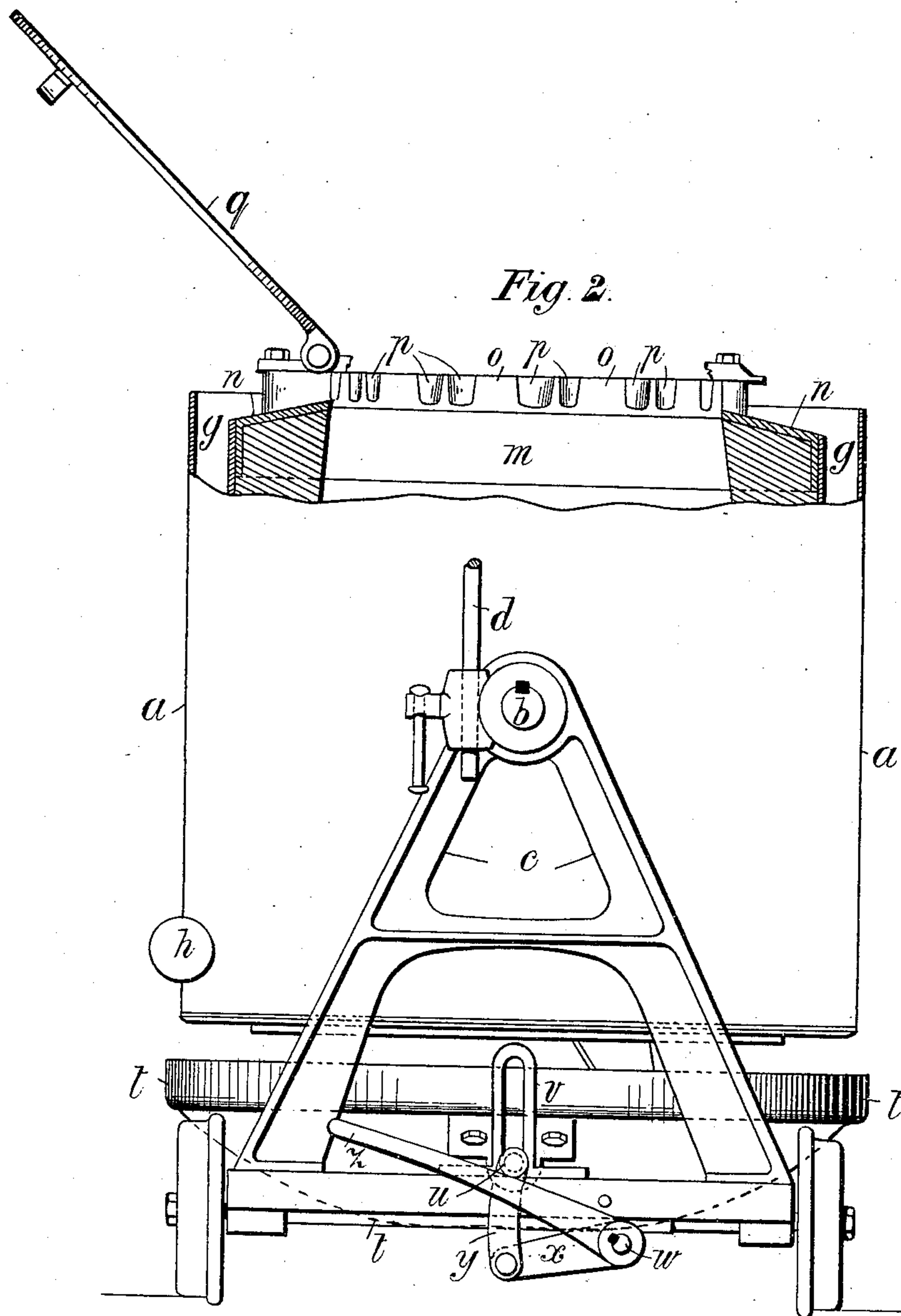
By *AM Munn Mith*
ATTY.

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3 SHEETS—SHEET 2.



Witnesses.

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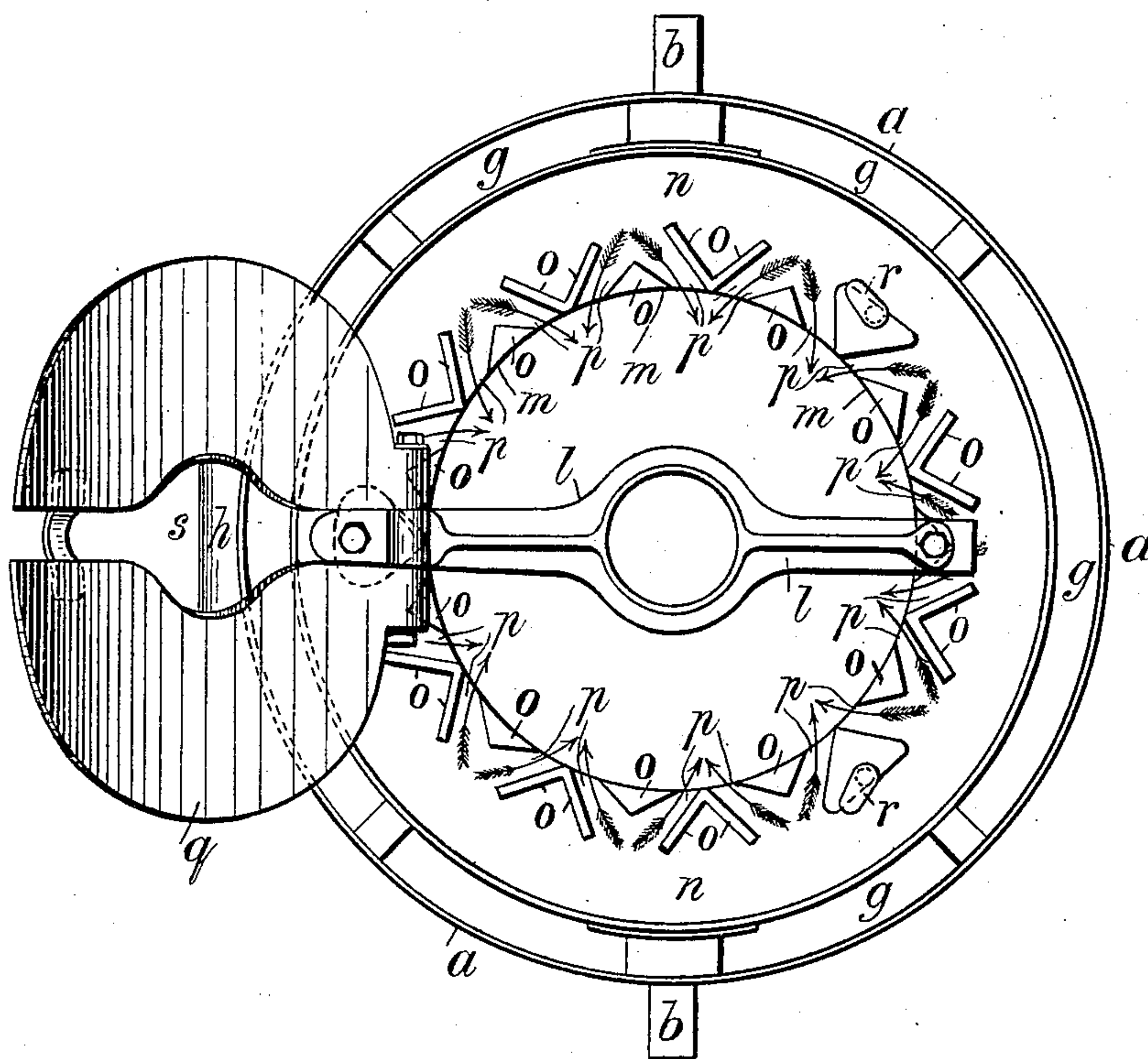
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3 SHEETS—SHEET 3.

Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

MATTHEW HARVEY, OF WALSALL, ENGLAND.

PORTABLE CRUCIBLE-FURNACE.

No. 868,181.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed May 18, 1907. Serial No. 374,461.

To all whom it may concern:

Be it known that I, MATTHEW HARVEY, a subject of His Majesty the King of Great Britain and Ireland, and residing at Walsall, in the county of Stafford, England, 5 managing director of Matthew Harvey & Co. Limited, have invented new and useful Improvements in Portable Crucible-Furnaces, of which the following is a specification.

This invention has reference to portable crucible furnaces of the kind in which the furnace proper containing the crucible and the fuel for heating the same is arranged inside a cylindrical blast chamber which is carried by side trunnions on a suitable traveling or other frame so that the furnace proper with the blast chamber 10 can be tilted for pouring and can also be turned upside down for examination of the bottom part of the furnace which is made with blast inlets through which the blast passes from the blast chamber to the fuel in the interior of the furnace proper round the crucible.

My present invention is designed to facilitate the opening of the lower part of the furnace and blast passages and cause the blast to be properly diffused in the fuel space round the crucible and prevent it from impinging directly on to certain parts of the crucible and 25 its support.

I will describe my invention by referring to the accompanying drawings on which

Figure 1 is a sectional side elevation of a portable crucible furnace embodying my invention; Fig. 2 is a side 30 elevation of the same with the bottom of the outer casing of the portable furnace lowered and the furnace turned up side down for examination of the blast passages at the bottom of the furnace proper; Fig. 3 is a plan of the furnace in the position shown by Fig. 2.

35 *a* is the cylindrical blast chamber carried by side trunnions *v* which are mounted in bearings at the top of the side frames *c* of the traveling carriage; these trunnions are as heretofore fitted with a side handle *d* for tilting the furnace when pouring therefrom; *e* is the refractory lining of the furnace proper contained in the cylindrical casing *f* which is fixed inside the blast chamber *a* leaving an annular blast space *g* which receives the blast through a side pipe *h* as heretofore.

45 *i* is the crucible mounted on a bottom block *j* which is carried by a cross bar *l* which is fixed to and stretches across the circular opening *m* in the annular bottom plate *n* which is fixed to the casing *f* of the furnace proper.

In carrying out my invention I provide on the bottom of the annular plate *n*, which as aforesaid is fixed to 50 the bottom of the metal casing of the furnace proper, a series of projections *o* shaped so as to form V-shaped or other blast grooves or blast passages *p* so shaped and arranged that as the blast passes through them from the

blast chamber *g* in the direction indicated by the arrows in Figs. 1 and 3 the blast is divided up into various currents which impinge against one another as they meet in the annular blast space round the crucible *i* and they are thereby mixed up and diffused and prevented from impinging directly on to the lower part of the crucible and the block on which it is mounted which as aforesaid has previously had the effect of soon burning said block and crucible away. Fitting against the underside of these projections *o* there is a bottom plate *q* which is hinged at one side to the annular plate *n* and 65 forms the bottom of the furnace proper on which the coke rests and also the bottom of the blast grooves or channels *p* and this bottom plate *q* is secured to the annular plate *n* by side catches *r* or by other suitable means, so that when the furnace has been turned up 70 side down on its trunnions as in Figs. 2 and 3 this bottom plate *q* can be turned up as shown in these figures thereby opening the blast grooves *p* from which the clinkers or other obstructions can readily be removed. The bottom plate has a central longitudinal slot *s* of the proper shape to clear the cross bar *l* which carries the block *j* and crucible *i*. 75

In order to enable the bottom plate *m* and the blast channels *p* to be readily examined as aforesaid, the bottom *t* of the outer casing of the furnace is made like a 80 metal dish with an upwardly projecting top rim in which the bottom of the outer casing *a* of the furnace fits and this dished bottom *t* is guided for vertical movement by side pins *u* arranged at the extremities of the diameter of the dish and fitting in vertical slots in 85 brackets *v* fixed on the base of the carriage which carries the side frames *c* which support the trunnions *b* of the furnace. Below this dished bottom *t* is a rocking shaft *w* mounted in bearings on the underside of the carriage and provided with two levers *x* the ends of which 90 are by links *y* connected to the side pins *u* of the dished bottom plate *t* and this rocking shaft is provided with a side handle *z* by which the shaft can be turned and the dished bottom raised to receive the bottom of the body *a* of the furnace as in Fig. 1, so as to close the same and 95 also hold the furnace *a* in position and prevent it from tilting about its trunnions *b*. The handle *z* is locked in this position by any convenient means as by a peg taking against the handle and engaging in a hole in the side frame *c*. When it is desired to pour the molten metal 100 from the furnace, or to turn the furnace up side down, the dished bottom *t* can by the handle *z* be moved down to its lowest position as in Fig. 2 where it will be clear of the furnace, and then the furnace being free to be revolved on its trunnions *b* can be tilted for pouring, or as 105 in Figs. 2 and 3 can be up-ended on its trunnions and the blast passages *p* examined as required. Moreover if the crucible in the furnace should break the contents

thereof will run through the blast passages *p* into the dished bottom *t* from which, when the latter has been lowered as in Fig. 2, the metal can readily be removed.

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

1. A portable or self-contained crucible furnace containing a combined crucible chamber and air pre-heating chamber formed by an outer shell mounted on side trunnions and provided with an annular bottom plate carrying the lining of the furnace proper said bottom plate having projections forming V-shaped blast passages which are closed by a hinged bottom plate which when the furnace is up ended on its trunnions can be turned up to enable the blast passages to be cleaned out, substantially as set forth.

2. The combination with a portable or self-contained crucible furnace of the kind described of a dished bottom for the furnace said bottom being guided for vertical movement and provided with levers and connections for moving it up or down so that when this dished bottom is moved up it engages with the shell of the furnace and prevents the same from turning but when the dished bottom is moved down the furnace is free to be turned about its trunnions for pouring or to up-end it for examination of the blast passages.

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

MATTHEW HARVEY.

Witnesses:

CHARLES BOSWORTH KETLEY,
THOMAS JOHN ROWE.