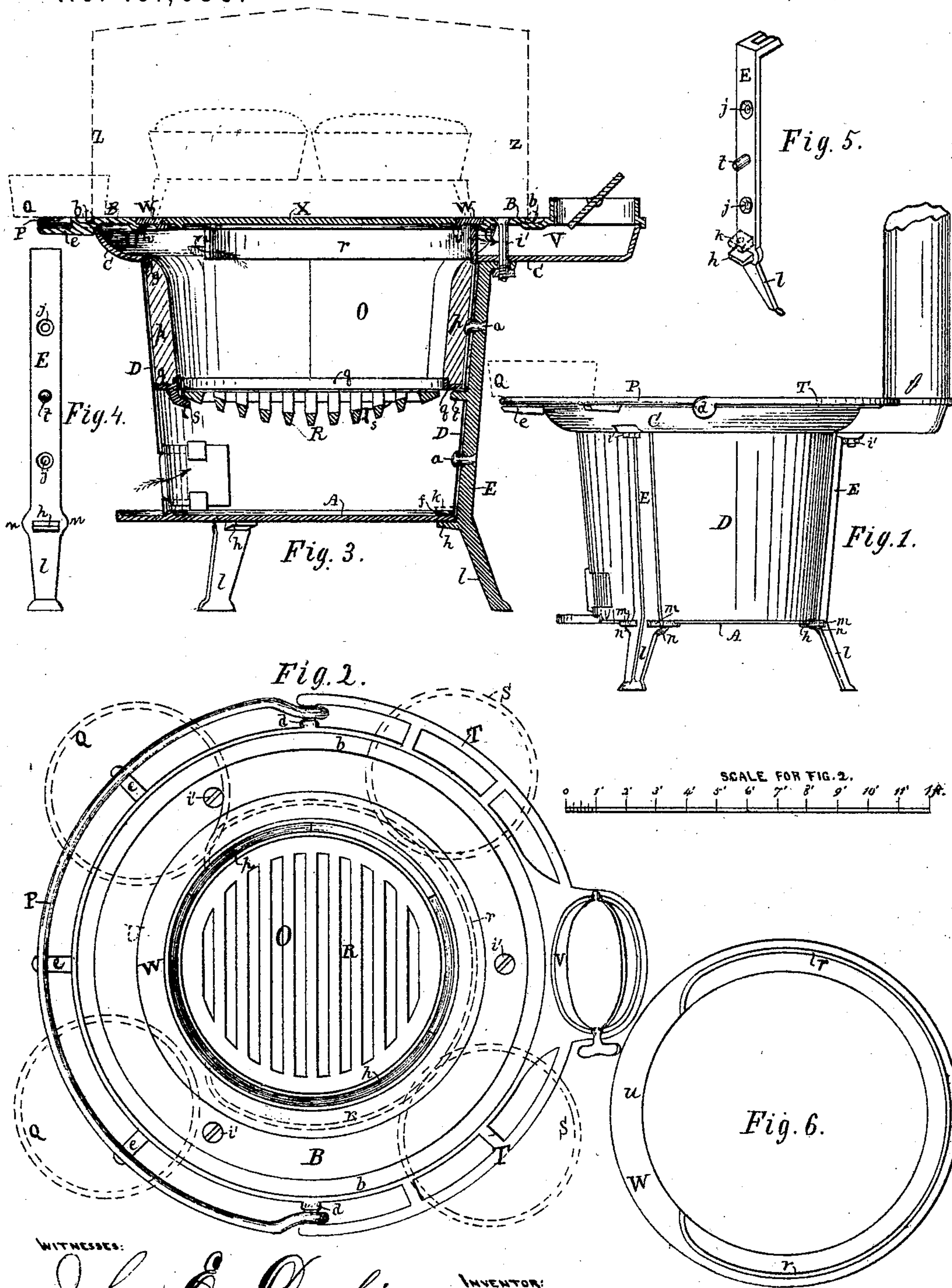


M. SAULSON.
Portable Furnace.

No. 131,030.

Patented Sep. 3, 1872.



WITNESSES:

John E. Devlin
Austin F. Park.

INVENTOR:

Moritz Saulson

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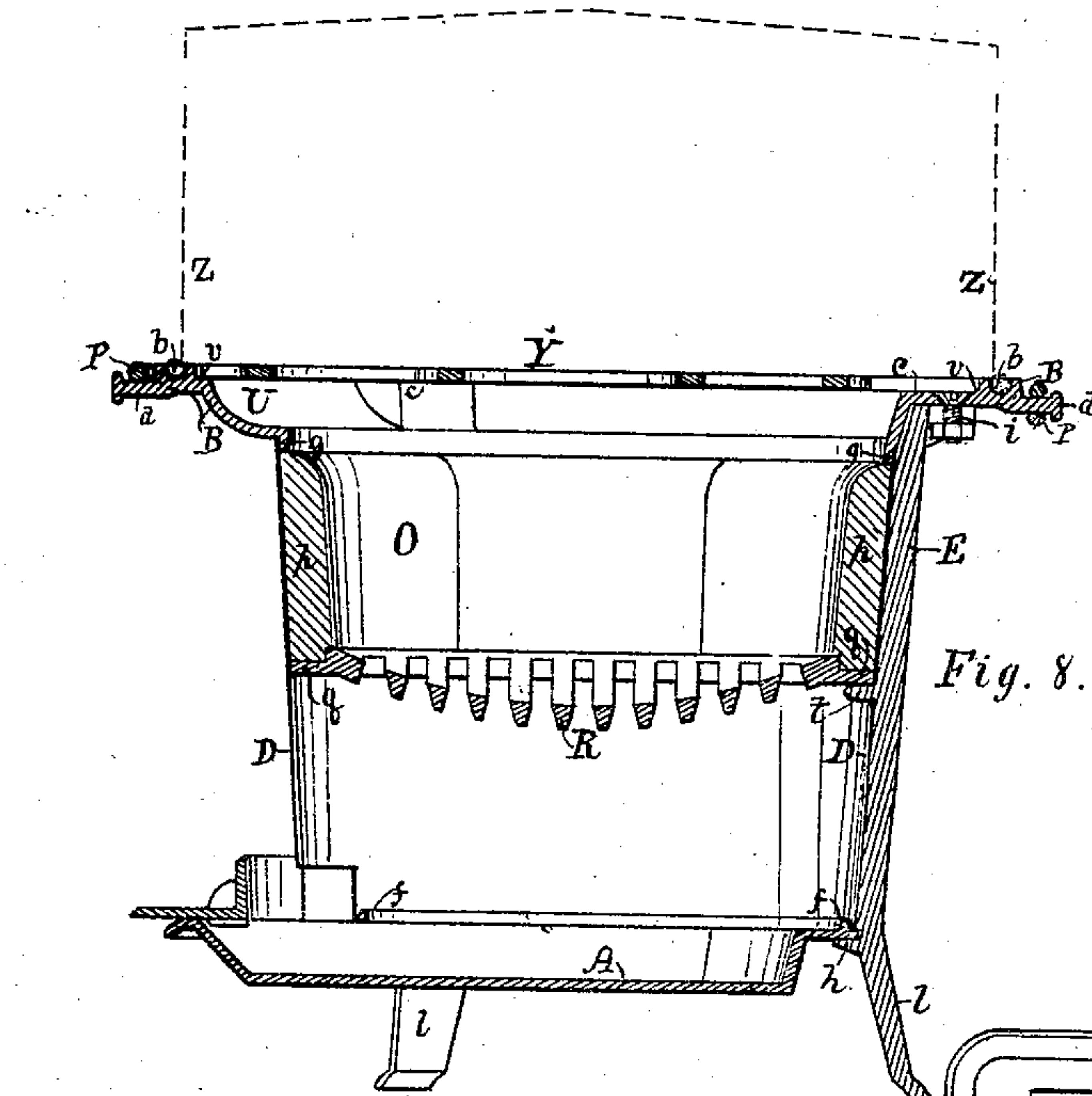


Fig. 8.

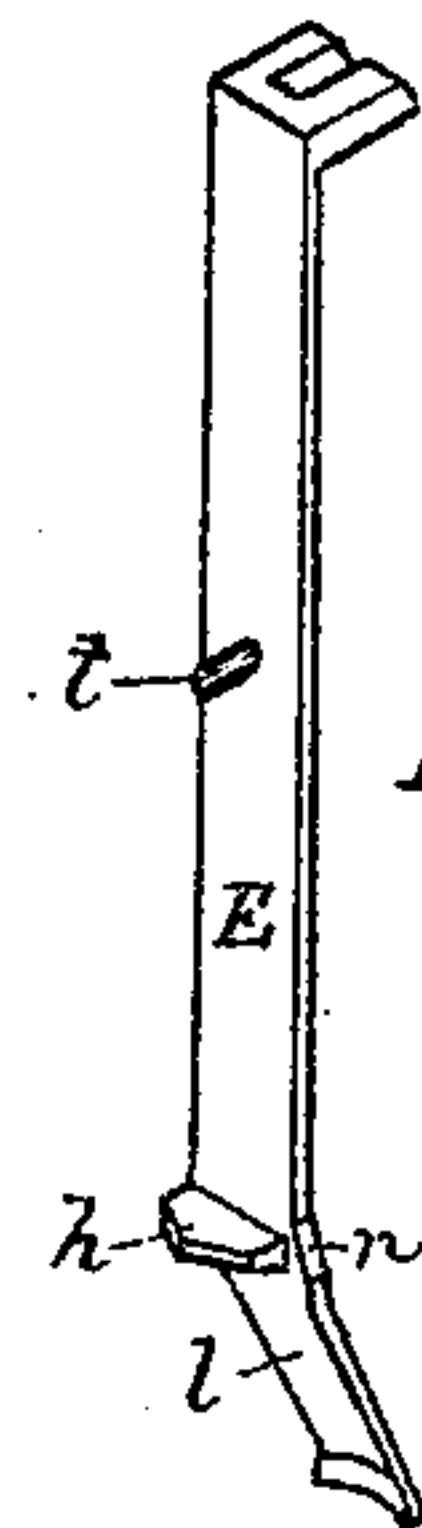


Fig. 11.

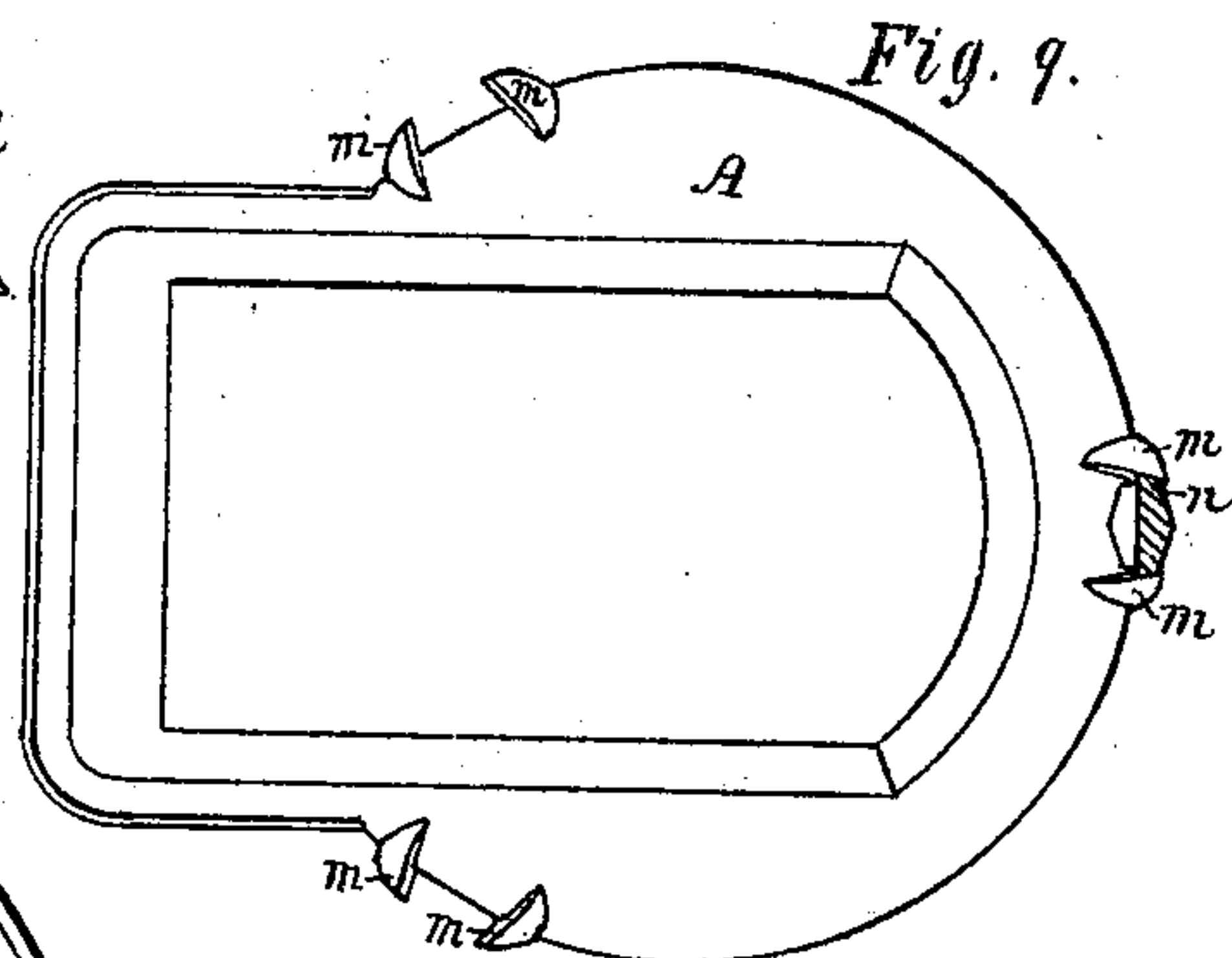


Fig. 9.

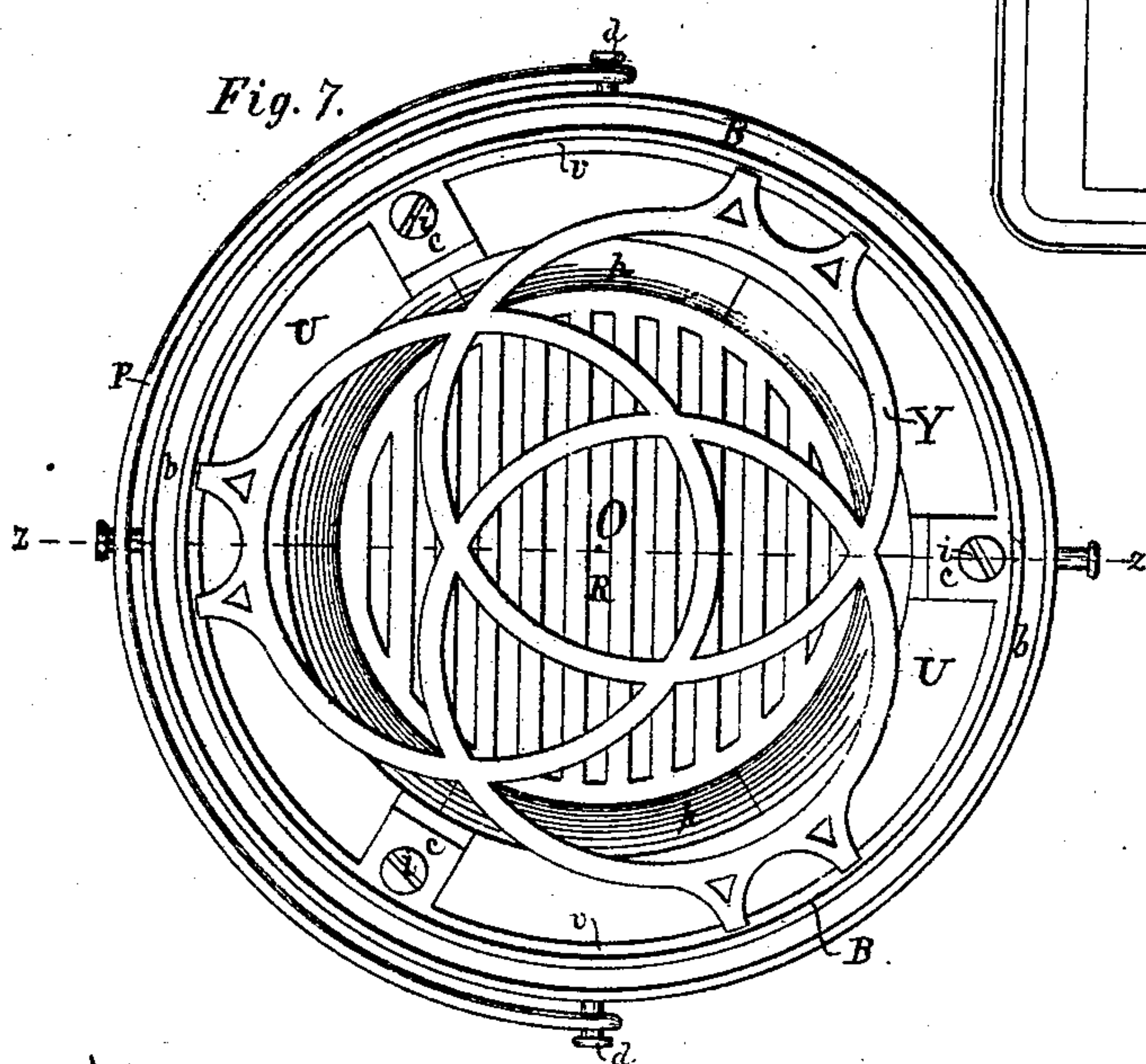


Fig. 7.

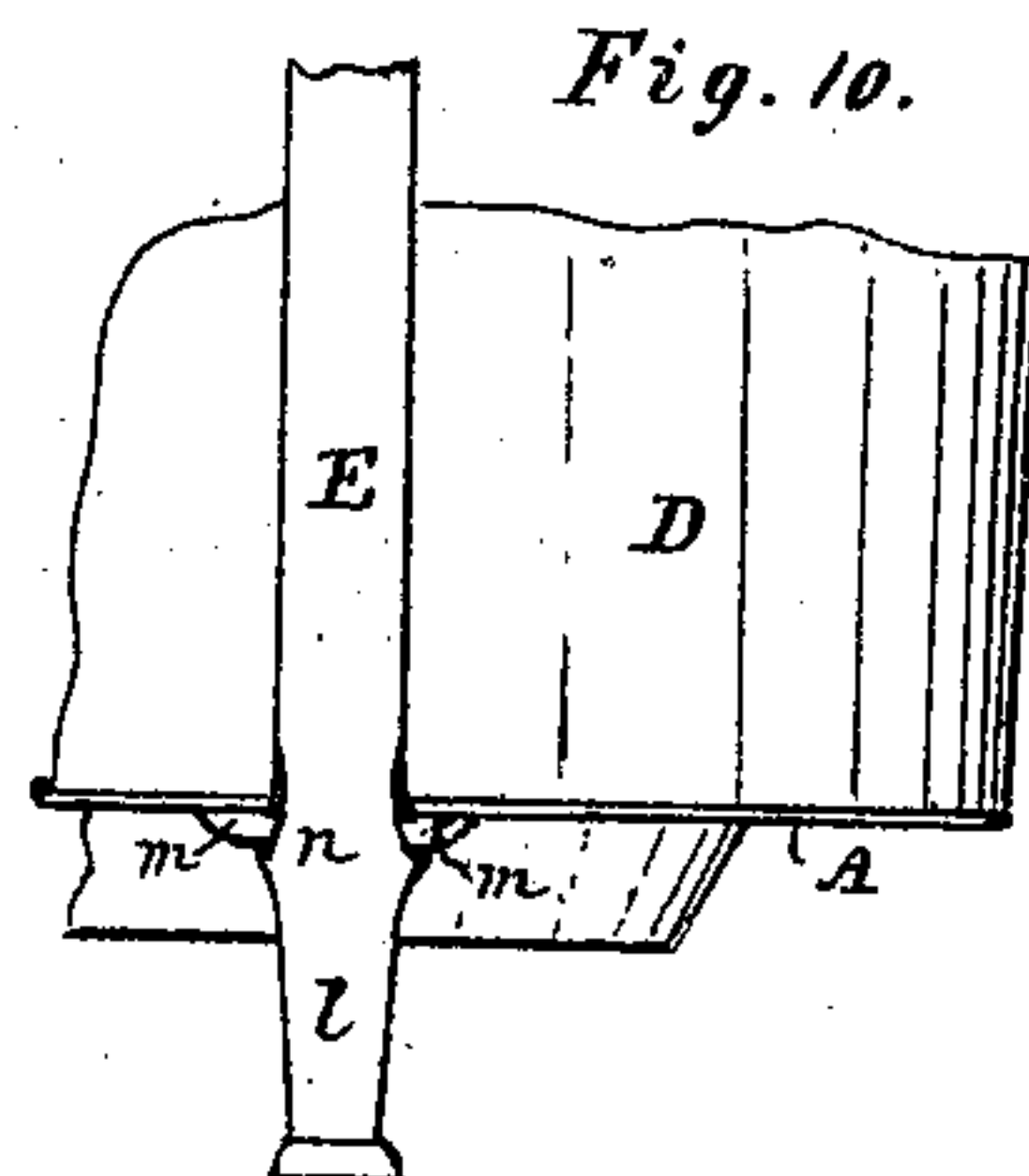


Fig. 10.

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UNITED STATES PATENT OFFICE.

MORITZ SAULSON, OF TROY, NEW YORK, ASSIGNOR OF ONE-HALF HIS
RIGHT TO JOHN C. HOELLINGER, OF SAME PLACE.

IMPROVEMENT IN PORTABLE FURNACES.

Specification forming part of Letters Patent No. 131,030, dated September 3, 1872.

To all whom it may concern:

Be it known that I, MORITZ SAULSON, of the city of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Portable Furnaces, of which the following is a specification, reference being had to the accompanying drawing:

The general object of my invention is to produce, at a cheap rate, very durable and light portable furnaces, which can be easily and cheaply repaired, and which shall be better adapted for various culinary uses than the ordinary portable furnaces heretofore manufactured. One part of my invention in portable furnaces consists of a bottom, top, and intervening lateral casing, formed in separate parts and secured together by means of separate standards constructed and attached thereto, substantially as hereinafter described. Another part consists in the combination, with the standards by which the bottom, top, and intermediate casing are secured together, of legs or feet extended below the bottom, and cast or formed in the same pieces with the said standards. Another part consists in the combination, with the standards by which the bottom, top, and lateral casing are fastened together, of dovetail or converging lugs or loops, cast or formed in one and the same piece with the said bottom and engaged with enlarged parts of the said standards, substantially as hereinafter described. Another part consists in the combination, with the standards by which the bottom, top, and lateral casing are secured together, of inwardly-projecting lugs, which are cast or formed in the same pieces as the standards, and which support the grate, or the ring which holds the grate, or the refractory lining of the fire-pot, or both, substantially as hereinafter described. Another part consists of the means, hereinafter described, for conveniently adjusting and retaining a removable circular baker or raised reflector on and near the edge of the flat-top cooking-plate or rim of the furnace, and in a position concentric, or nearly so, with the circular fire-pot thereof. Another part consists in the combination, with the flat-top cooking-plate or rim having a central circular pot-hole therein, of a skeleton shelf or shelves cast or formed in one and the same

piece as, and flush on the upper side with, the said cooking-plate or rim, and forming an open-work extension or extensions thereof concentric, or nearly so, with the said pot-hole. Another part consists in the combination, with the flat-top cooking plate or rim and a swinging carrying-bail, of outwardly-projecting lugs or fingers, cast or formed on the said rim or top plate, and so arranged that, when the bail shall be turned down upon the lugs or fingers, the upper side of the turned-down bail will then be flush with, and will serve as a skeleton extension of, the said cooking plate or rim. Another part consists of the means, hereinafter described, for producing a variable fluespace or spaces for the gases of combustion along the under side of the permanently-stationary flat-top plate or rim, from and around the circular fire-pot to an exit-passage at one side thereof.

In the aforesaid drawing, Figure 1 is an elevation of a portable furnace which embodies all the parts of my invention, and Fig. 2 is a plan of the same on a larger scale. Fig. 3 is a vertical section of a portable furnace which has some parts of my invention, and Fig. 4 is an elevation of the inner side; and Fig. 5 is a perspective view of one of the combined standards and legs or feet of that furnace. Fig. 6 is a plan of the under side of the flanged ring by which the boiler-hole is contracted, and the passages for the gases of combustion are altered in the furnaces shown by Figs. 2 and 3. Fig. 7 is a plan, and Fig. 8 is a central vertical section at the lines $z z$, in Fig. 7, of another portable furnace which embodies some parts of my invention. Fig. 9 is a plan of the bottom inverted; Fig. 10, an elevation of a part of the lower portion of the body and one standard and leg; and Fig. 11, a perspective view of one of the combined legs and standards of the furnace represented in Figs. 7 and 8.

Like parts are marked by like letters in the different figures.

A is the bottom. B or B C is the top; and D is the lateral casing, all formed in separate parts, and secured together by means of the standards E. To cheaply secure great stiffness, strength, durability, and lightness, I commonly cast the bottom, top, and standards of cast-iron, and make the casing D of sheet-iron; but those parts may consist of any

suitable materials. As shown in Figs. 3 and 8, the lower part of the casing D may fit closely around a flange, *f*, on the bottom, and the upper part around a flange, *g*, on the top of the furnace. The standards E have inwardly-projecting lugs *h*, on which the bottom A rests, and the top B, or B C, rests on the standards, and is fastened thereto by stove-bolts *i*, or *i'*, so that the weight of the top, and whatever shall be placed thereon, will be sustained wholly or mainly by the standards. The casing D is, therefore, protected by the standards E, and, when made of thin sheet-iron, will not be crushed down or injured by the weight of the largest boilers of water that can be used on the furnace. In Fig. 3 the standards E are fastened to the casing D by rivets *a* extending through perforations in the casing and holes *j* in the standards. The standards may have inwardly-projecting lugs, as indicated by dotted lines at *k* in Figs. 3 and 5, which may rest upon the bottom A, and be bolted thereto, and in such cases legs or feet to support the bottom A, and the weight communicated thereto from the top through the standards E may be cast in one and the same piece with the bottom, or may be made separate therefrom, and secured thereto by any suitable means. I greatly prefer to cast the legs or feet *l* in the same pieces with the standards E, as shown in the drawing, in order to avoid casting or fastening legs or feet on or to the bottom A, and so that the pressure caused by the weight of the top B or B C and whatever shall be placed thereon, and sustained by the standards E, will be communicated directly to the feet *l*, and not first to or through the bottom A.

Instead of having the standards E riveted to the casing D, as shown in Fig. 3, I prefer to cast or form the bottom A with dovetail or converging lugs *m m*, Figs. 1, 9, and 10, which project outward and engage with the enlarged lower parts *n* of the standards, so as to thereby secure the standards to the bottom A and against the casing D in such manner that when the bolts *i* or *i'* or their equivalent are removed, the bottom, top, lateral casing, and standards can then be all freely separated from each other. When the lugs *m m* and parts *n* are sufficiently large and strong to hold the bottom A, the lugs *h* may be left off. Each pair of lugs *m m* may be cast as a loop, if desired. O is the circular fire-pot, and *p* is its lining of fire-brick or other suitable material, resting on a ring, *q*. R is the fire-grate. In Fig. 8 the grate R is cast in one and the same piece with the ring *q*, and in Fig. 3 the grate rests loosely on lugs *s*, which project inwardly from that ring. To securely support the ring *q*, and thereby sustain the grate R and lining *p*, I cast or form the standards E with inwardly-projecting lugs *t*, on which the ring *q* rests, so that the weight of the ring *q*, lining *p*, and grate R of the fire-pot, and of any fuel therein, is borne directly by the standards E, and not by the casing D of the furnace.

In Figs. 7 and 8 the top of the furnace consists of one annular plate or rim B; and in Figs. 1, 2, and 3 of the upper plate B and lower one C, fastened together and to the standards E by the bolts *i'*. In each case the top B or B C is extended laterally beyond the fire-pot, so as to form an enlarged space, U, above and around the fire-pot for the gases of combustion. The upper side of the rim or plate B is flat, and has a depressed inside circular flange or seat, *v*, which will receive and hold a solid or open-work cover, or a contracting ring, W, and lid X, or a skeleton frame, Y, Figs. 7 and 8, each flush with the upper side of the rim B, so that the whole will constitute a flat cooking-table or support for culinary vessels over the fire-pot and expanded combustion-chamber.

In order to conveniently adjust and retain a removable circular baker or raised cover or reflector over and upon the plate or rim B, and near to the outer edge thereof, and concentric or nearly so to the circular fire-pot, and without having any lugs or projections extended above the flat upper side of the plate or rim B, I cast or form the latter with an annular depression or groove, *b*, Figs. 2, 3, 7, and 8, into which the lower edge of the circular baker or reflector will fit and be securely retained, as indicated by dotted lines at Z in Figs. 3 and 8.

In boiling, stewing, or frying in pans and other culinary vessels on the flat top of a portable furnace, the pans or vessels will often become too hot to remain over the fire-pot or combustion-chamber, and while a kettle is in the central pot-hole it is often desirable to support and warm other vessels on the furnace outside of the kettle. In order to cheaply provide means for supporting such pans or vessels S on the furnace outside of the combustion-chamber, and where they will cool down, or outside of a kettle in the central pot-hole, I cast the stationary top-plate or rim B with a projecting skeleton shelf or shelves, T, Fig. 2, concentric or approximately so with the circular pot-hole and fire-pot, and flush with the upper side of the plate or rim B.

In Figs. 1, 2, 3, 7, and 8, the bail P, by which the furnace may be carried, is hung to studs or ears *d*, cast or formed on the stationary plate or rim B. In Figs. 1, 2, and 3 the rim or plate B has fingers or lugs, *e*, projecting outward therefrom, and so arranged in respect to the bail P that when the latter is turned down upon the fingers or lugs *e*, it will be supported thereby, and the upper side of the bail will then be flush with the upper side of the plate or rim B, and will then serve as an open-work or cooling-shelf to help support culinary vessels on the top of the furnace outside of the combustion-chamber thereof, as indicated by dotted lines at Q, in Figs. 1, 2, and 3.

In Figs. 7 and 8 the upper ends of the standards E fit against the under sides of raised inwardly-projecting seats *c*, which, when the open-work top Y is removed, will support a

circular boiler or kettle placed thereon, and leave spaces for the escape of the gases of combustion around the boiler or kettle between the seats. In the furnaces represented by Figs. 1, 2, and 3, the outer part of the combustion-chamber U is covered by the stationary top plate or rim B, which has a circular boiler-hole therein concentric or nearly so with the circular fire-pot, and a lateral passage, V, on one side only of the furnace conducts off the gases of combustion.

In Figs. 2 and 3 the circular ring W, Fig. 6, is placed loosely in the boiler-hole in the fixed plate or rim B. The ring W has, on a portion only of its under side, a segmental flange, *r*, concentric or nearly so with the ring, and extended downward to or nearly to or against the top of the fire-pot O. In Figs. 2 and 3 the ring W is shown placed with the middle of its flange *r* immediately opposite to the exit-passage V, so that the gases of combustion must pass from the fire-pot first into the forward part of the chamber U and thence in two flues outside of the flange *r* into the exit-passage. The ring W can be freely turned in the fixed plate B so that the middle of the flange *r*, or of the opening *u* therein, may be set at any part of the circumference of the fire-pot to cause the heated gases to circulate mainly under different parts of the top plate outside of the fire-pot, as may be required in conducting various culinary operations.

I am aware that a loose ring in a pot-hole in a stationary top of a cooking-stove has been heretofore made with a downwardly-projecting flange concentric with and extended only part way around the ring or pot-hole, and combined with flues in the stove, so that by turning the said flanged ring into different positions in the pot-hole the course of the hot gases along the under side of the fixed top plate of the stove would be changed. But I do not know or believe that in any such case the flanged pot-hole ring has been arranged concentrically with a circular fire-pot and laterally-expanded combustion-chamber in any manner substantially as hereinbefore described and shown in the drawing.

I am also aware that a portable furnace has been heretofore made with a circular fire-pot and a combustion-chamber expanded laterally above and around the top of the fire-pot, with an exit-passage at only one side thereof, and with a rotary top plate covering the said combustion-chamber, and having a pot-hole therein concentric with the fire-pot, and a damper-flange cast in one and the same piece with and extended downward from the said rotary top plate itself to and concentric with and only part way around the fire-pot. But in that case the damper-flange could not be set on different sides of the fire-pot to change the course of the gases of combustion without turning the entire top cooking-plate of the furnace around or part way around the fire-pot.

What I claim as my invention is—

1. A portable furnace having its bottom A, top B or B C, and lateral casing D formed in separate parts and secured together by means of separate standards E, constructed, arranged, and fastened thereto, substantially as herein described.

2. In combination with the bottom, top, and lateral casing secured together by means of the standards E, substantially as described, the feet or legs *l* extended below the bottom and cast or formed in the same pieces with the said standards.

3. The bottom, having dovetail or converging lugs *m m* arranged on and cast or formed in one and the same piece with said bottom, and engaged with enlarged parts *n* of the standards, by which the top and lateral casing are secured to the bottom, substantially as set forth.

4. In combination with the standards by which the bottom, top, and lateral casing are secured together, the inwardly-projecting lugs *t*, cast or formed on the standards and arranged to support the grate, or the ring *q* which holds the grate or the lining of the fire-pot, substantially as described.

5. In combination with the circular fire-pot O, combustion-chamber U, and flat top-plate or rim B, the annular baker-holding groove or depression *b*, cast or formed in the upper side and near the outer edge of the top plate or rim, and concentric or nearly so with the fire-pot and combustion-chamber, substantially as described.

6. In combination with the circular fire-pot, combustion-chamber, and flat top having a central boiler-hole therein, the skeleton shelf or shelves T, cast or formed on the stationary plate or rim B, and flush with the upper side thereof, and concentric or nearly so with the boiler-hole and fire-pot, substantially as set forth.

7. In combination with the flat rim or plate B and hinged bail P of a portable furnace, the outwardly-projecting lugs *e*, cast or formed on the ring or plate, and arranged substantially as described, so that the bail, when turned down upon the lugs, will serve as a skeleton extension of the said plate or rim to help support culinary vessels thereon, as set forth.

8. A portable furnace having a circular fire-pot, O, and a combustion-chamber, U, extended above and laterally beyond the top of the fire-pot, with an exit-passage, V, at one side only, and covered by a flat permanently-fixed plate or rim, B, Figs. 2 and 3, having a circular boiler-hole therein concentric or nearly so with the fire-pot, when the said boiler-hole is contracted by a rotary ring, W, having a flange, *r*, extended downward to or nearly to and only part way around the top of the circular fire-pot, as herein set forth.

MORITZ SAULSON.

Witnesses:

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AUSTIN F. PARK.