

(No Model.)

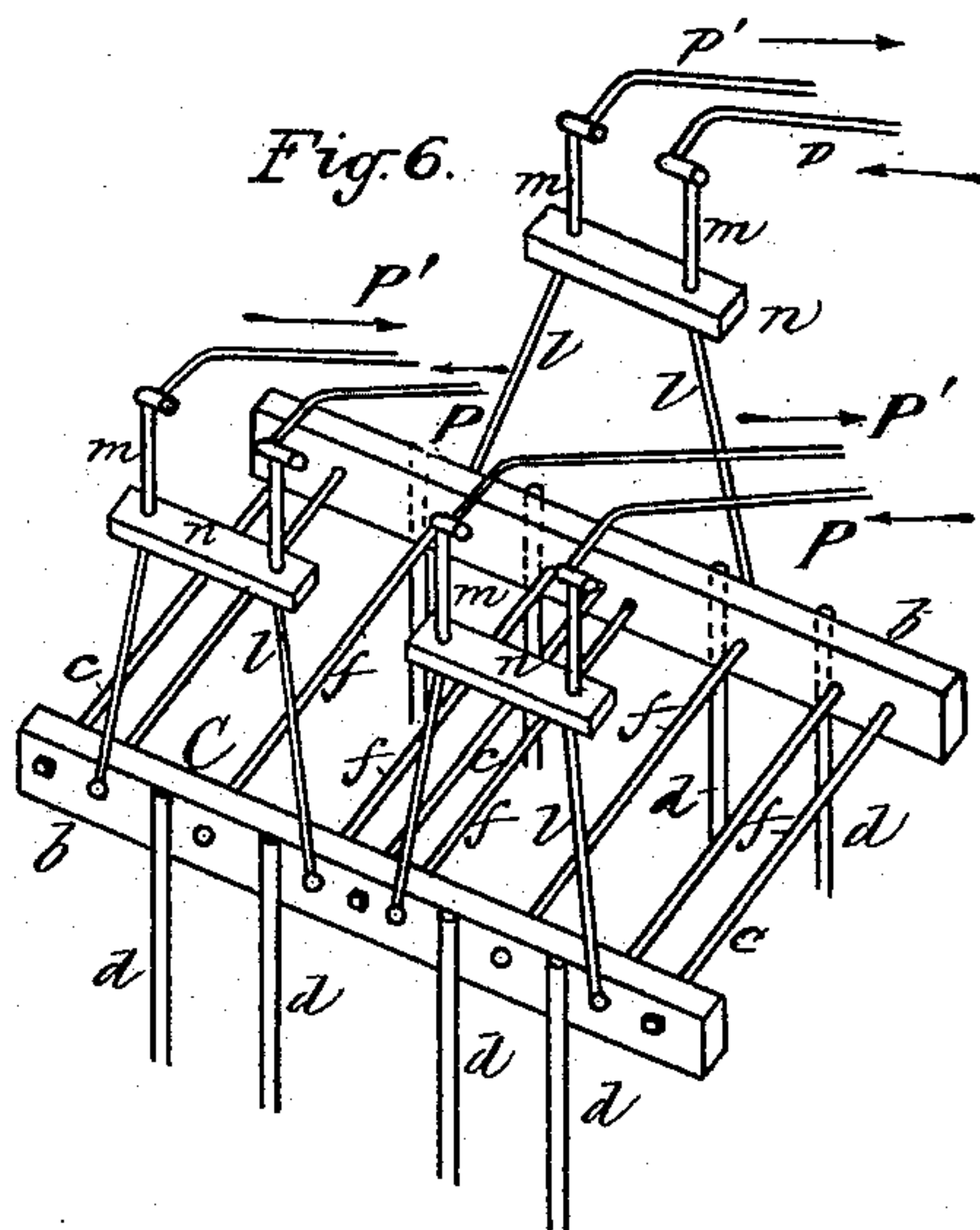
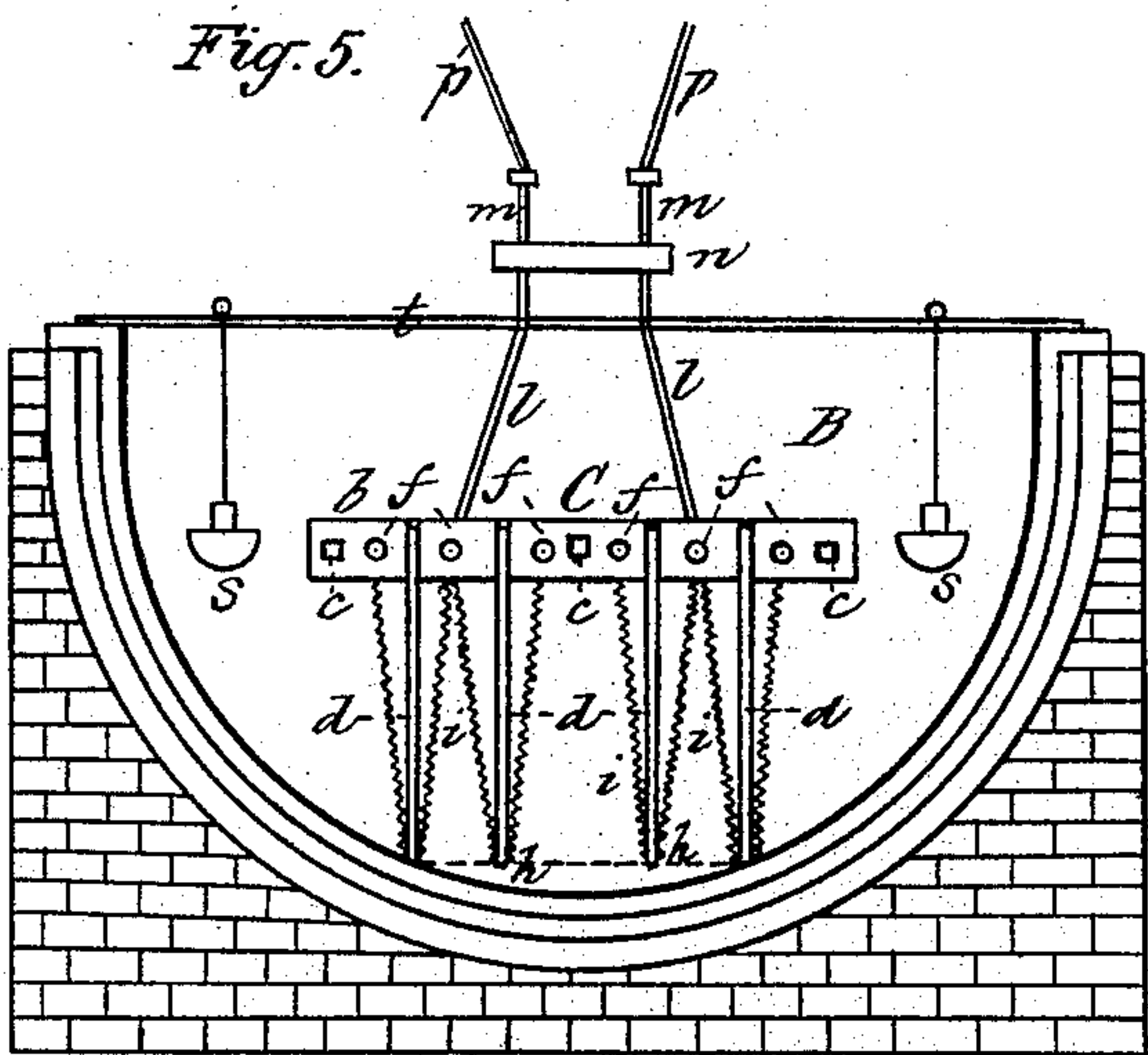
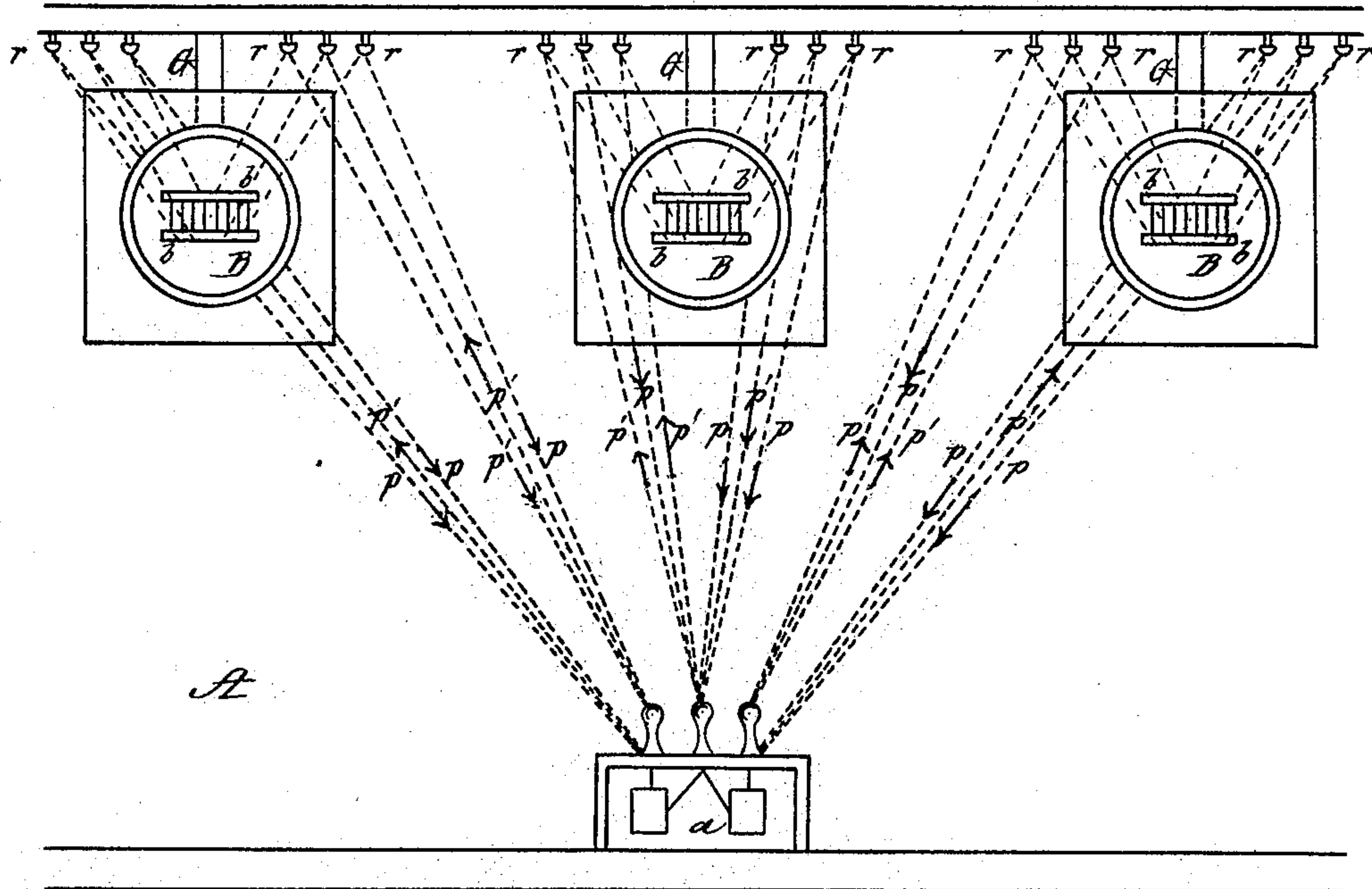
3 Sheets—Sheet 1.

N. F. RYDER.
APPARATUS FOR TREATING OILS.

No. 592,512.

Patented Oct. 26, 1897.

Fig. 1.



Witnesses
Fred L. Milliken
H. F. Stearns

Inventor,
Nathaniel F. Ryder,
per H. W. Stearns,
Att'y.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

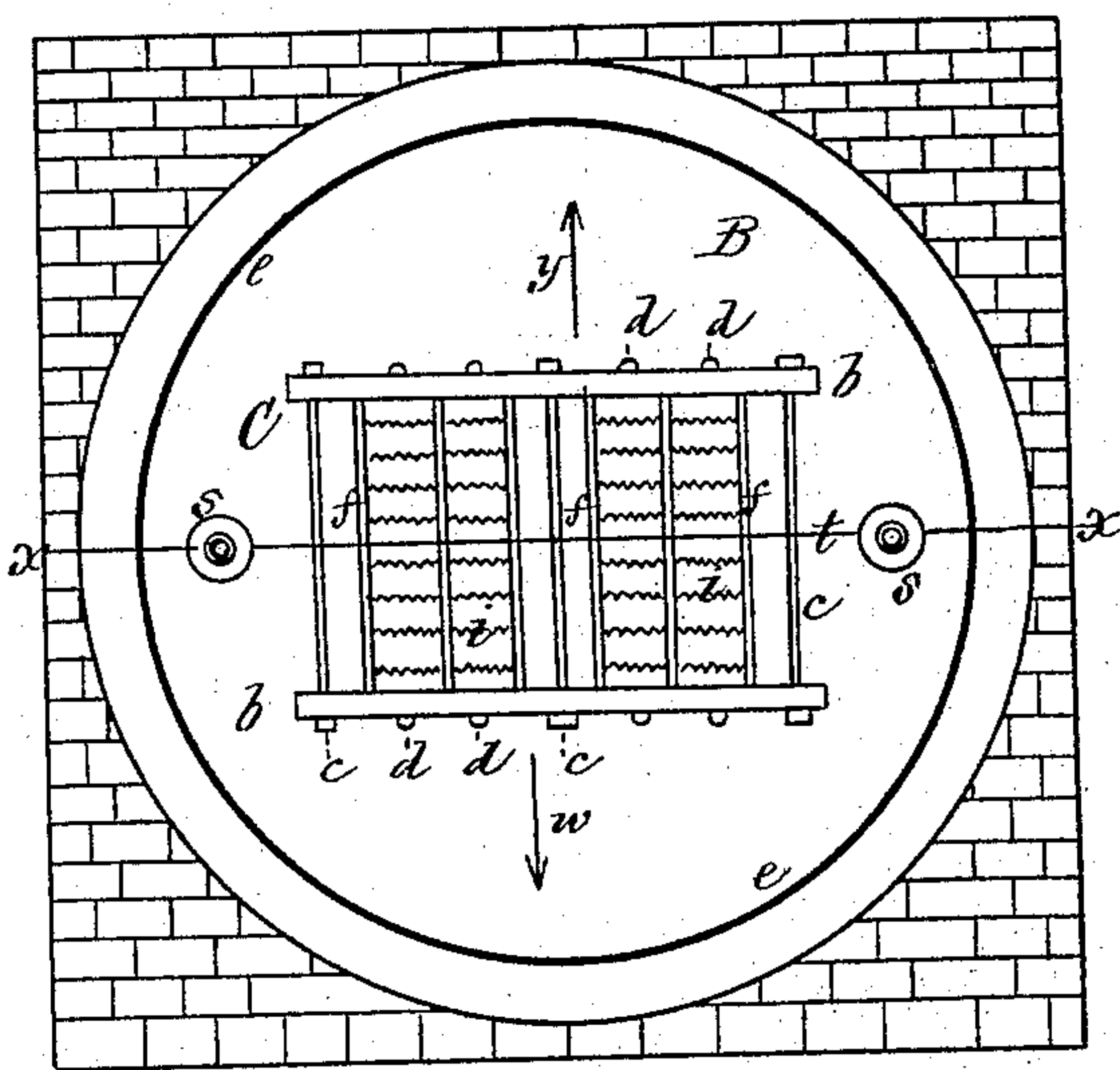


Fig. 4.

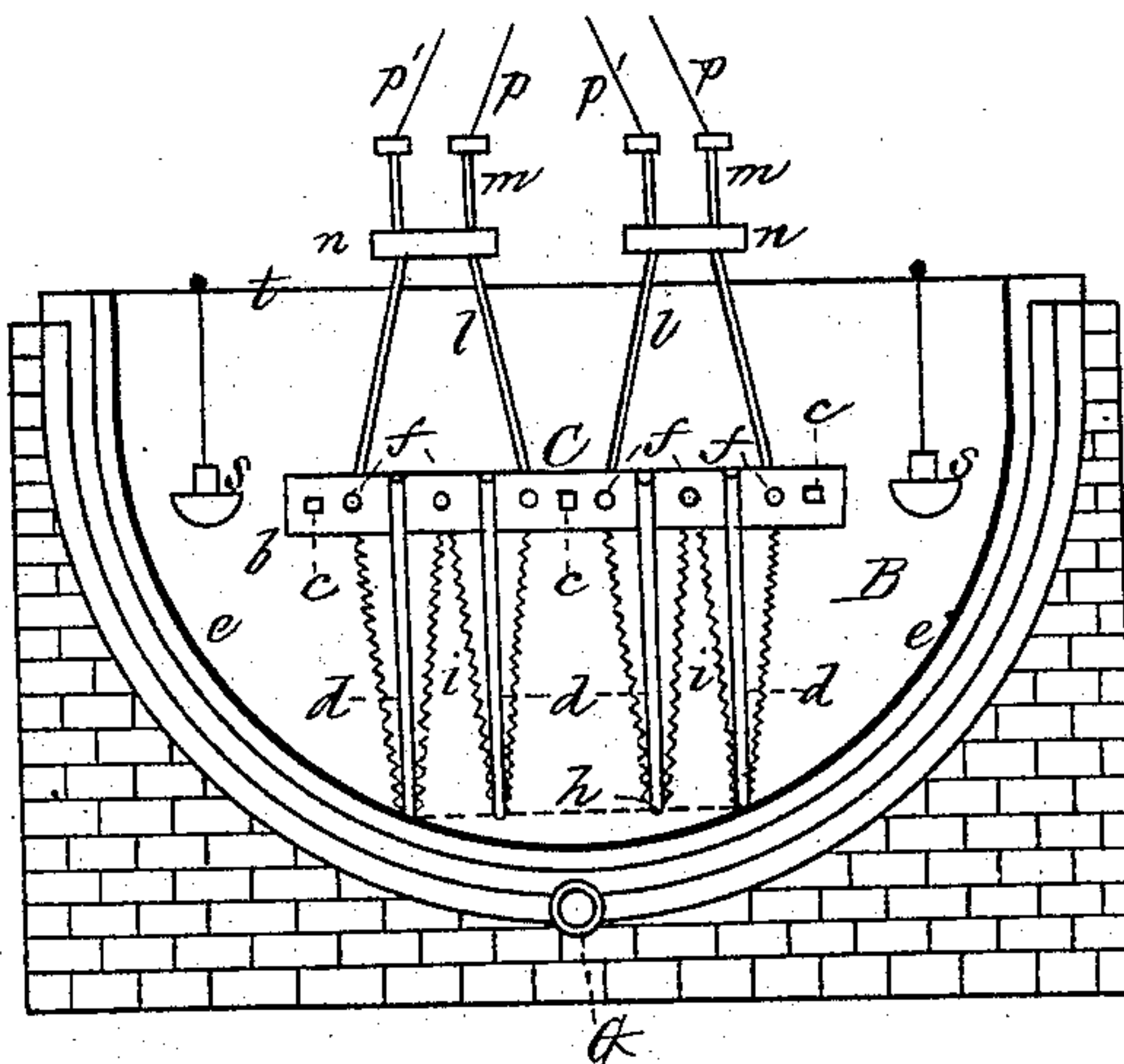
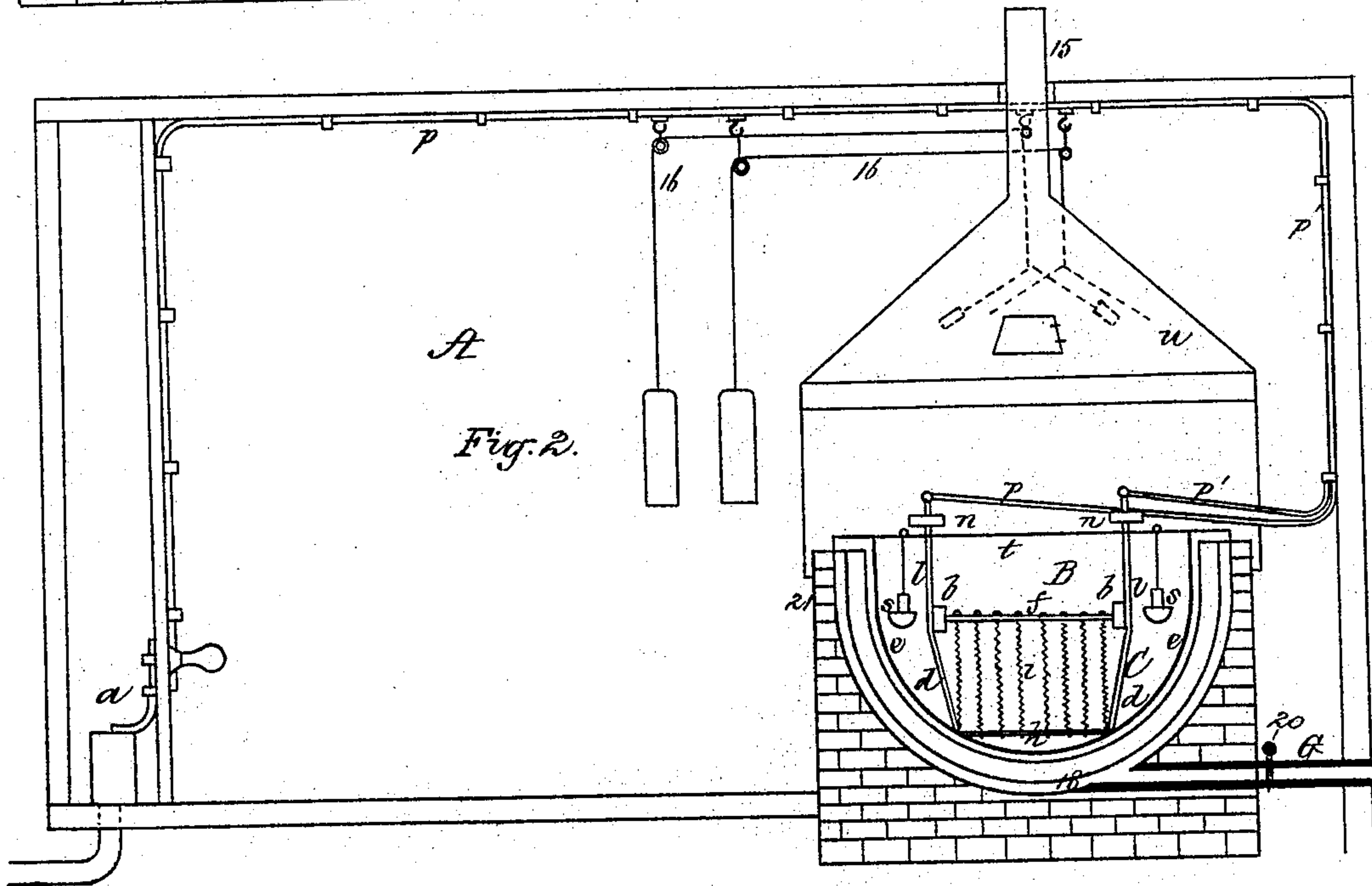


Fig. 2.



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per N. W. Stearns,
Att'y.

(No Model.)

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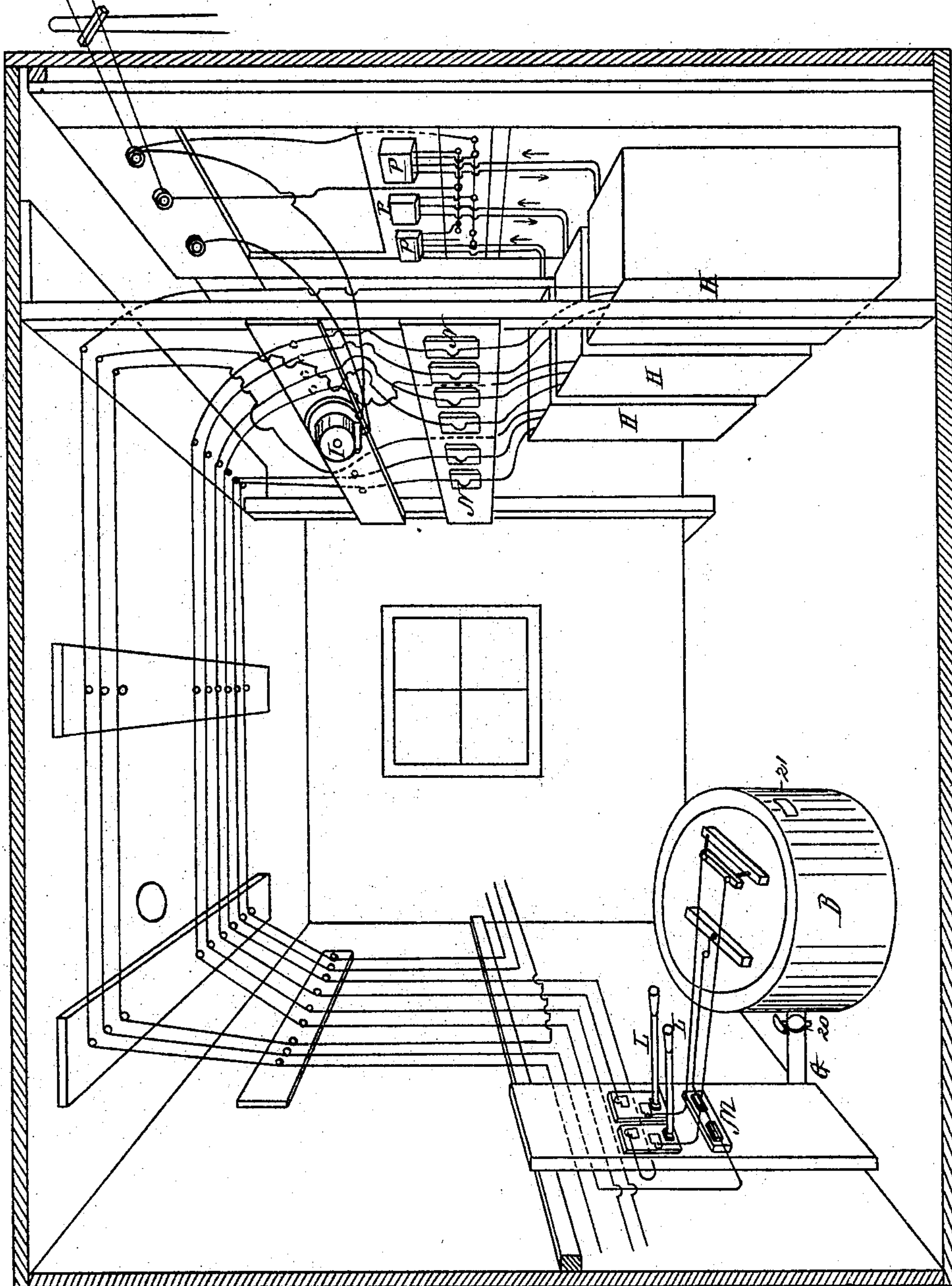


Fig. 7.

Witnesses,
Fred L. Milliken.
J. F. Stearns.

Inventor,
Nathaniel F. Ryder,
per J. W. Stearns,
Att'y.

UNITED STATES PATENT OFFICE.

NATHANIEL F. RYDER, OF MIDDLEBOROUGH, MASSACHUSETTS.

APPARATUS FOR TREATING OILS.

SPECIFICATION forming part of Letters Patent No. 592,512, dated October 26, 1897.

Application filed February 9, 1897. Serial No. 622,630. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL F. RYDER, of Middleborough, Plymouth county, Massachusetts, have made certain discoveries and invented certain Improvements in Apparatus for Treating Oils Employed in the Manufacture of Varnishes, Japans, Linoleum, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents in plan three pots or tanks for the reception of the crude oil to be boiled and otherwise treated with electrodes located therein and with conducting and return wires interposed between them and a source of electrical energy. Fig. 2 is an enlarged vertical section through one of the pots with its electrode and an elevation of the electrical-supply station with the interposed communicating wires, which for convenience and economy of space are led under and secured to the ceiling; Fig. 3, a plan, enlarged, of one of the pots with its electrode and electrical connections for heating the coils immersed within and surrounded on all sides by and in direct contact with the oil to be treated. Fig. 4 is a vertical section on the line xx of Fig. 3, looking in the direction of the arrow w . Fig. 5 is a vertical section on the line xx of Fig. 3, looking in the direction of the arrow y . Fig. 6 is a perspective view, enlarged, of the upper portion of one of the electrodes or resistance-pieces with its connecting-wires. Fig. 7 is a perspective view showing a modified arrangement of wiring, &c.

My invention has particular reference to that class of oils which has a peculiar fitness for use in the production of the various grades and descriptions of varnishes, japans, linoleum, &c., employed in the industrial arts; and this invention consists in certain apparatus for heating said oil by the instrumentality of electricity, the construction and operation of said apparatus being hereinafter described and claimed.

It is well known to those skilled in the art that raw linseed-oil should for many purposes be transformed from its original fluid state to those of different degrees of viscosity and consistency to conform to the specific requirements of the particular use to which it

is to be applied, and it is also well known that the longer the crude oil is boiled the thicker it becomes and that it dries more readily than in its normal condition, and dries quicker after having been submitted to high temperatures; but the treatment of oils by the heat of fire directly applied to the outside of the kettle or steam applied inside or outside thereof has, as is well known heretofore, been ineffectual in obtaining the high grade of prepared oil which the raw oil is capable of producing and which has so long been a desideratum.

I will now proceed to describe an apparatus embodying my invention which I may advantageously employ in carrying out the same.

Referring to Figs. 1 to 6, inclusive, of said drawings, A represents a room of the factory wherein are located the kettles B or receptacles for containing the oil to be boiled and otherwise treated.

a represents the location where a supply of electrical energy enters the building either by underground conduit or overhead wires leading from any convenient generator or power-station.

In each kettle and located in an electric circuit is a resistance-piece or heating apparatus C, consisting of two parallel slabs b , of slate or other non-conducting substance, united by bolts c and supported by standards d , resting on the bottom of the kettle, the surface of which is glazed with enamel e .

ff are a series of parallel rods extending horizontally between the slabs b and are intended as guides, over and around which and the guides h (connecting the bottoms of the standards d) are conducted a series of coils i , of German-silver wire.

Rising from one of the slabs b are two upright frames l , each having two arms m projecting up from the slab through a connecting-cleat n , Fig. 4, and extending up above the plane of the top of the kettle, the two slabs being immersed below the level of the oil therein. The tops of these arms m are provided with screws (or binding-posts) for fastening thereto the electric transmission-wires p , which extend between them and the electric supply at a , there being in this instance two wires attached to the two arms m of each frame, one wire p forwarding

the current from one pole down to and through its German-silver coil *i* and the other wire *p'* returning the current (after passing through its coil) to the other pole. (See Figs. 3, 4, and 5.) Rising from the other slab *b* is a single frame *l*, connected with a coil *i* and of similar construction and for the same purpose as each of the frames *l l* on the other side of the resistance-piece.

The wires *p p'* of each circuit are guided vertically up and secured to the side of the inclosure containing the electric supply, thence along the ceiling and down therefrom to insulated knobs *r*, secured to the wall and located, respectively, near the kettles, to which the wires are finally directed to the tops of their proper arms *m m*, into and through the coils *i* of which the current is transmitted.

s s are baskets or other receptacles for containing the oxid or drier to be boiled and incorporated with the oil at the proper temperature, said receptacles extending down into the oil and being supported by cross-rods *t t*, resting on the tops of the kettles.

Each kettle *B* has a cover *u* of the form seen in Fig. 2, its upper end terminating in a pipe 15, which projects up through the roof to carry away the odors and impurities arising from the boiling contents, said cover being hung to a rope or chain 16, passing over a pulley and so weighted that the cover may be readily raised or lowered and held at any desired height, and either one or two weighted ropes or chains may be employed.

Within each foundation on which each kettle rests is formed a flue 18, with which communicates a cold-air pipe *G*, whose mouth leads to the outside of the building and is controlled by a damper or register 20, located inside.

In order to pass a current of cold air under the heated pot, it is simply necessary to open the register and remove one or more loose bricks located at 21 in the front of the foundation, Fig. 2.

By reference to the construction and modified arrangement of wiring shown in Fig. 7 an alternating current is made to pass through a transformer *H*, one for each kettle, the

strength of the current being indicated by an ampere-meter *I*.

Switches *L L*, two for each kettle, are employed, each one furnishing one-half of the heat, and where an intense heat is required and danger exists of burning the resistance-piece a fuse *M* is located in the circuit immediately before the current enters the kettle and fuses *N N* are placed in the lines of the wires soon after their leaving the transformers.

P P are fuse-boxes located between the supply and transformers.

By my experiments I have discovered that by the location of a resistance-piece within the receptacle containing the oil and the transmission of an electric current through the resistance-piece the oil is endowed with the ability to more rapidly absorb a larger amount of drier without charring or burning and without in any way injuring its original strength and vitality.

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

1. A resistance-piece *C* consisting of the following instrumentalities, viz., a pair of parallel slabs *b* of non-conductive property, frames *l l* rising therefrom, standards *d d* for supporting the same, guide-rods *f f* extending between the slabs *b b*, guide-rods *h h* connecting the bottoms of the standards *d d*, metal transmission-coils *i i* and a series of wires *p p'* for making the circuit between the electric supply and the resistance-piece, as specified.

2. An oil-receptacle *B* having an enameled bottom *e*, a flue 18 thereunder, a cold-air pipe *G* communicating therewith, means of opening and closing the same, a cover *u* with mechanism for raising and lowering it, in combination with a resistance-piece *C*, an electric supply and their communicating wires *p p'*, constructed to operate in the manner and for the purpose set forth.

Witness my hand this 30th day of January, 1897.

NATHANIEL F. RYDER.

In presence of—

GEORGE W. STETSON,
EDMUND S. RUSSELL.