

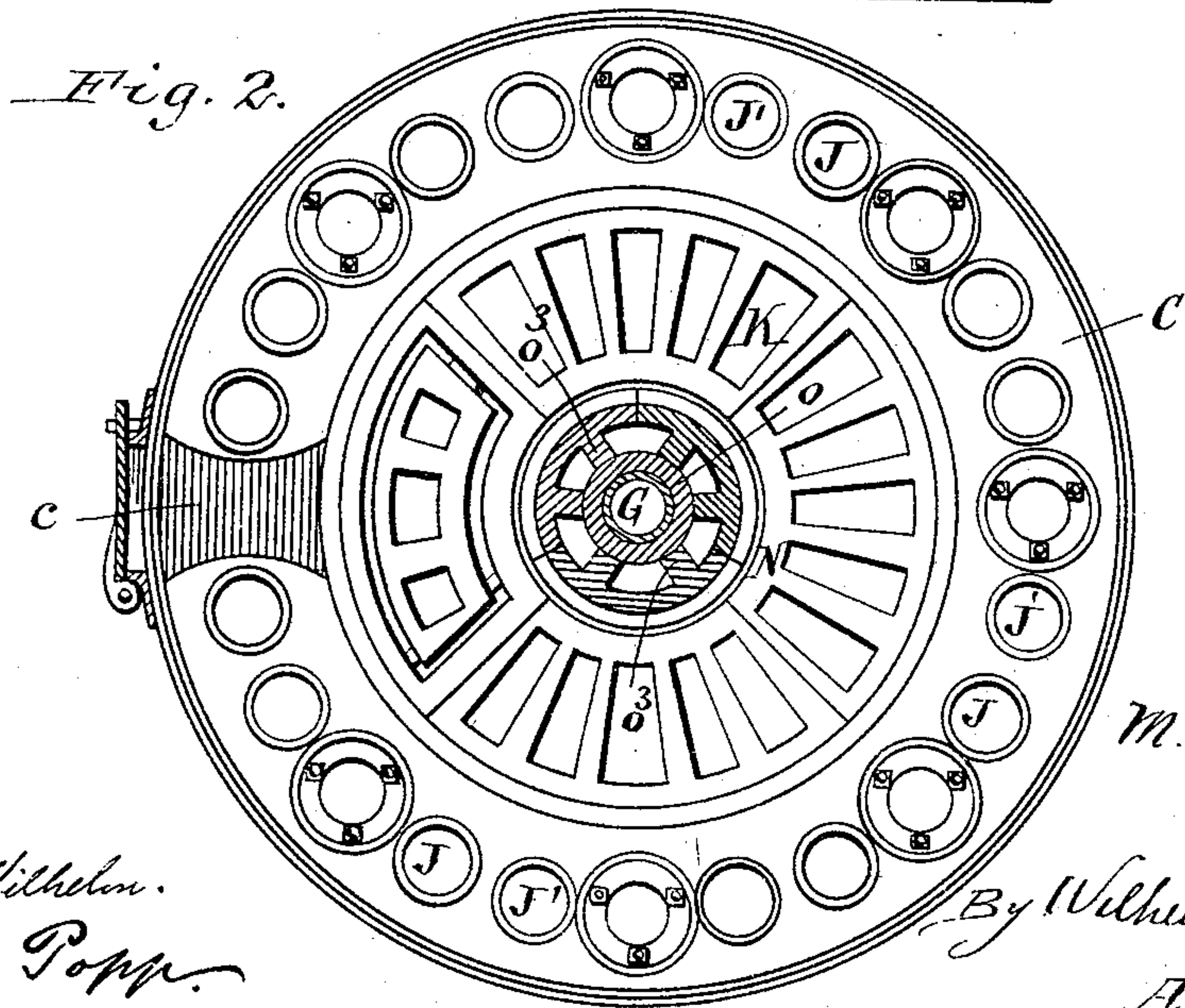
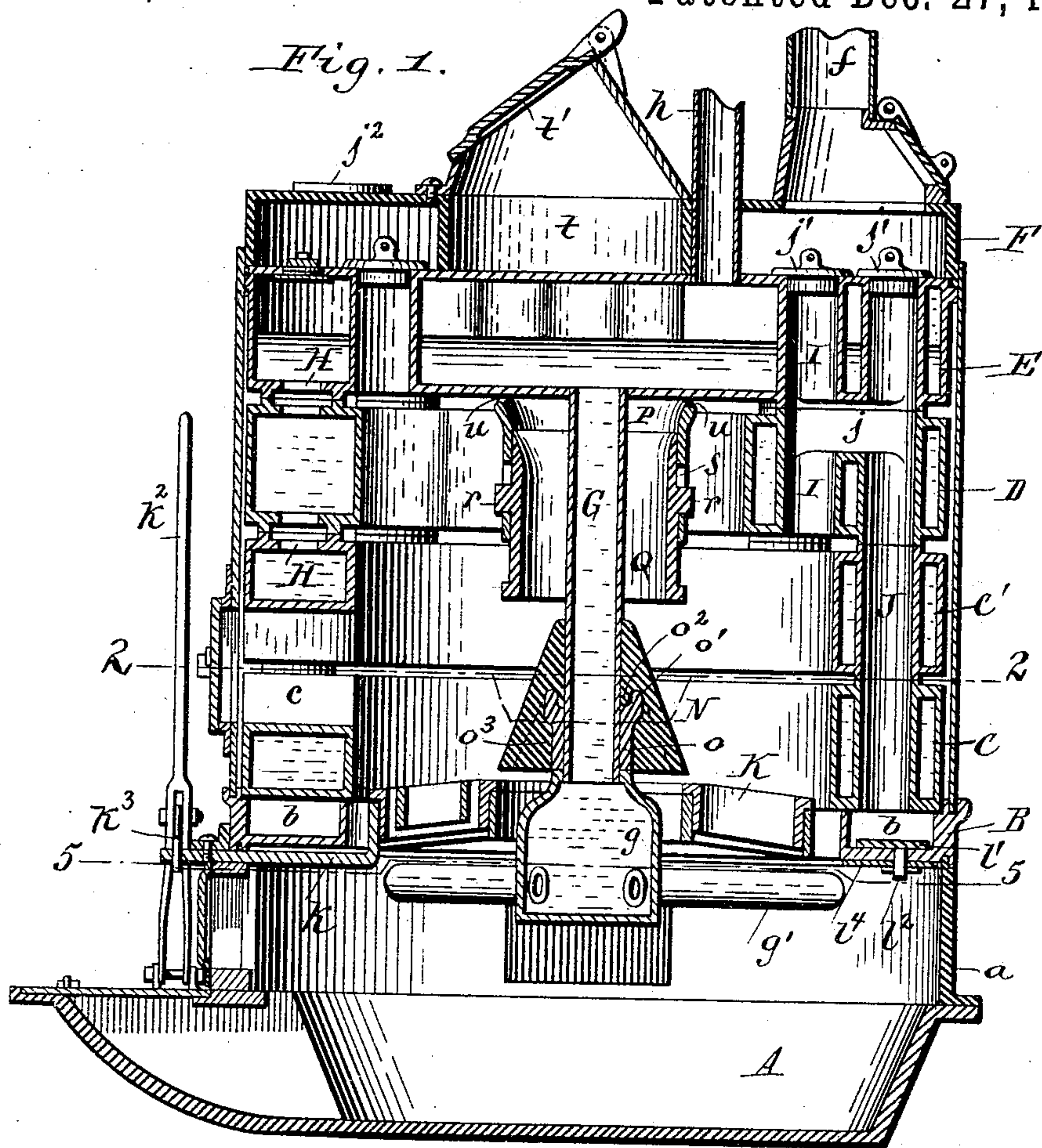
(No Model.)

3 Sheets—Sheet 1.

M. L. CLINTON.
STEAM BOILER.

No. 488,689.

Patented Dec. 27, 1892.



Witnesses:

F. Gustav Wilhelm.

Theo. L. Popp.

M. L. Clinton

Inventor.

By Wilhelm Bonnet.

Attorneys.

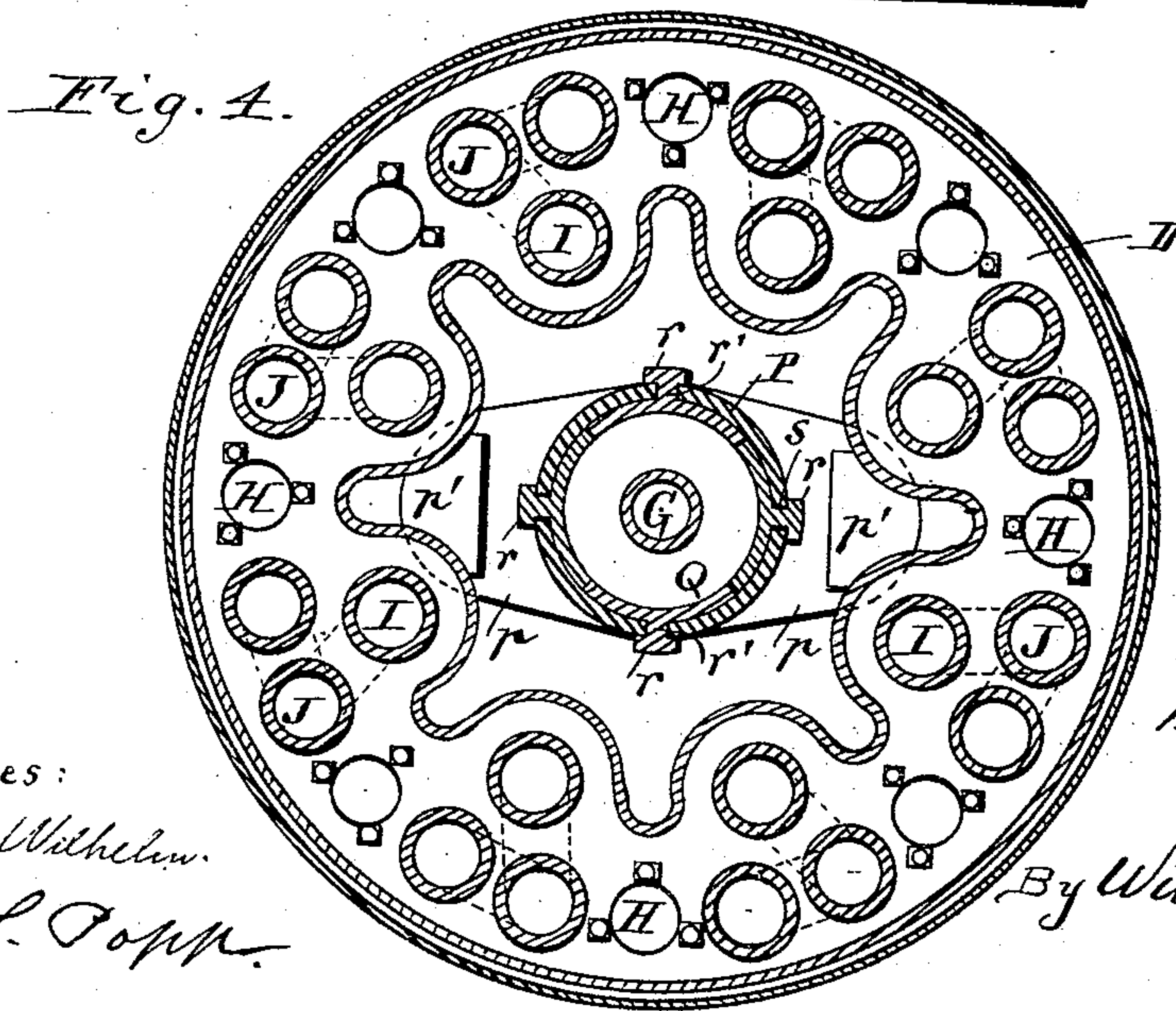
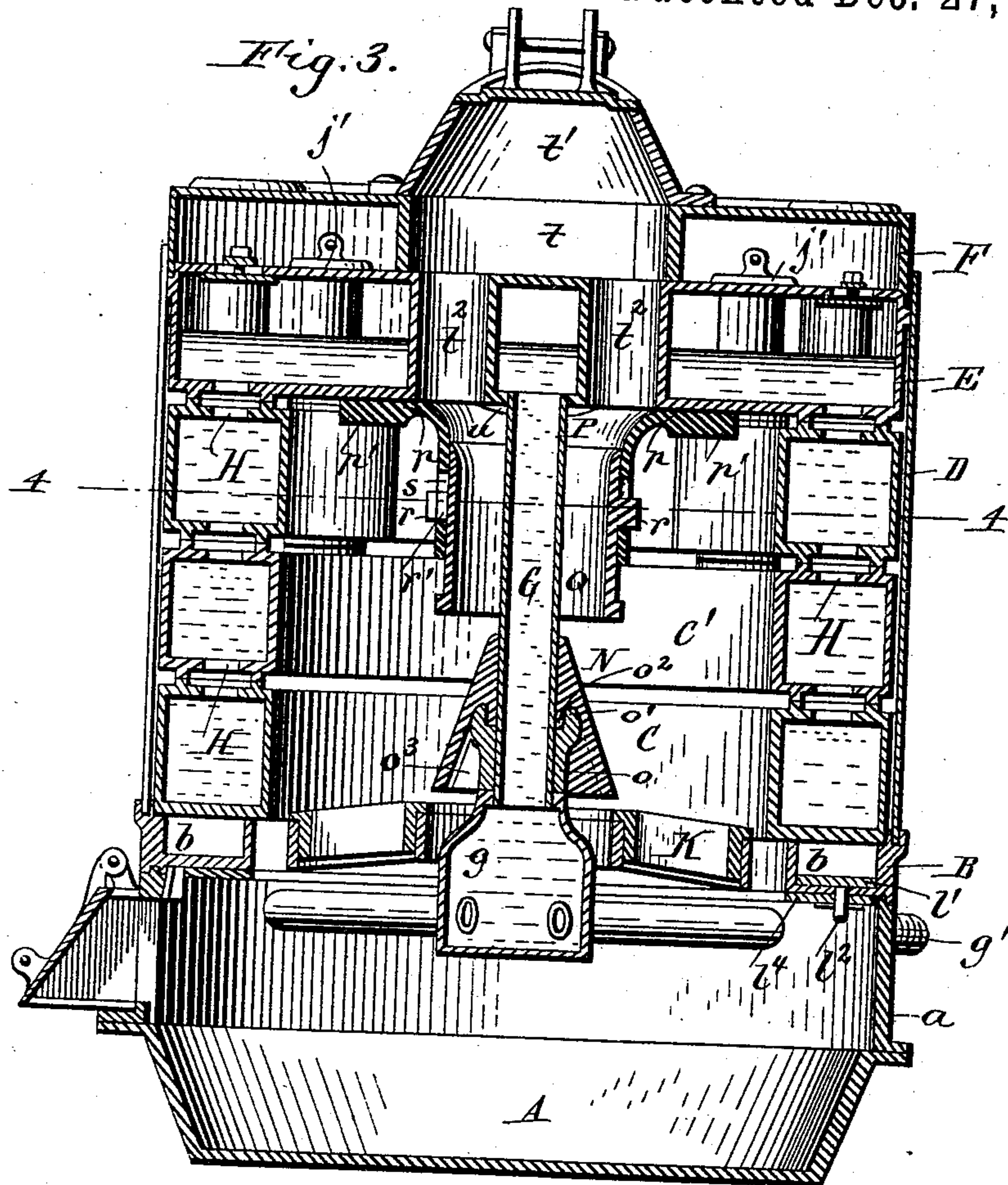
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M. L. CLINTON.
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Inventor.

By Wilhelm Opp.

Attorneys

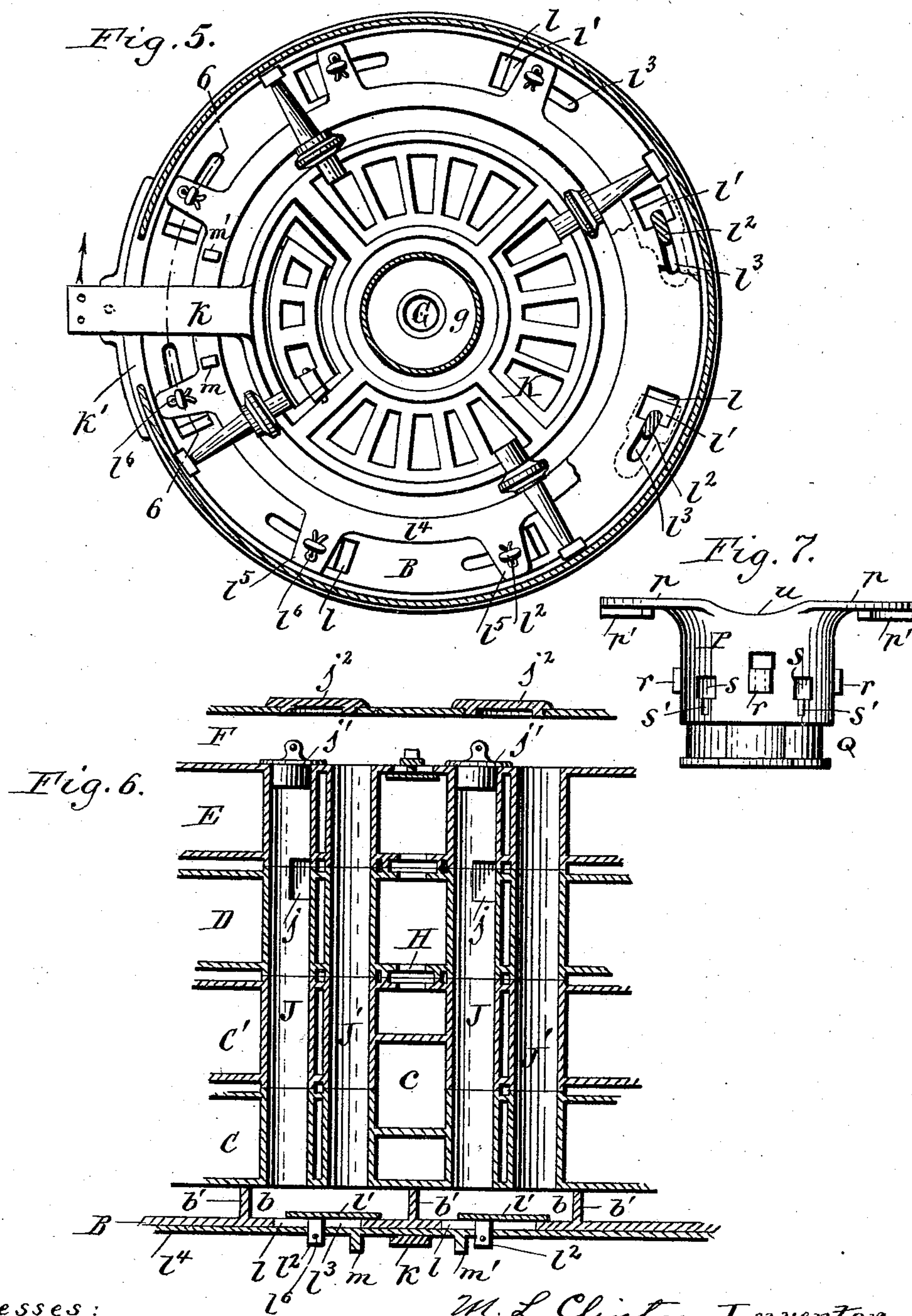
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3 Sheets—Sheet 3.

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F. Gustav Wilhelm.

Thos. L. Popp.

M. L. Clinton Inventor.

By: Wilhelm Bonner

Attorneys.

UNITED STATES PATENT OFFICE.

MILES L. CLINTON, OF ITHACA, NEW YORK.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 488,689, dated December 27, 1892.

Application filed May 26, 1892. Serial No. 434,440. (No model.)

To all whom it may concern:

Be it known that I, MILES L. CLINTON, a citizen of the United States, residing at Ithaca, in the county of Tompkins and State of New York, have invented new and useful Improvements in Steam-Boilers, of which the following is a specification.

This invention relates to steam boilers which are composed of superposed or horizontal sections and which are particularly designed for warming buildings.

The objects of my invention are to improve the construction of the fuel magazine, the means for operating the dust gates, and the other portions of the boiler.

In the accompanying drawings consisting of three sheets:—Figure 1 is a vertical section of a steam boiler embodying my improvements, the section being taken in a plane intersecting the stoke hole and smoke pipe. Fig. 2 is a horizontal section in line 2—2, Fig. 1. Fig. 3 is a vertical section of the boiler at right angles to Fig. 1. Fig. 4 is a horizontal section in line 4—4, Fig. 3, looking upward. Fig. 5 is a horizontal section in line 5—5, Fig. 1, looking upward. Fig. 6 is a fragmentary vertical section in line 6—6, Fig. 5, showing the arrangement of the flues and dust gates. Fig 7 is an elevation of the fuel magazine.

Like letters of reference refer to like parts in the several figures.

A represents the base of the boiler which is preferably embedded in the floor of the building, and α is the base ring which rests upon the base and forms with the base A the ash-pit.

B represents a trough-shaped ring which rests upon the base ring and is divided into a number of compartments b by radial partitions b' , as represented in Fig. 6.

C C' represent two superposed horizontal sections of the boiler which form the fire box. The lower section C rests upon the compartment ring, and the upper section C' rests upon the lower section C.

c represents the stoke-hole which is formed partly in the lower and partly in the upper fire box section.

D represents the intermediate boiler section which rests upon the upper fire box section, E the dome which rests upon the interme-

diate section, and F the smoke box which rests upon the dome.

G represents the water column arranged vertically in the center of the boiler and connected at its upper end with the dome while its lower end is provided with a water receiving chamber g to which is connected a supply pipe g' .

H represents water passages formed respectively in the upper and lower sides of the boiler sections, the passages in one section registering with those of the adjacent sections, so that these passages establish communication between the several sections, as represented in Figs. 1 and 3.

h is a steam pipe through which the steam is taken from the dome.

I represents primary ascending flues formed in the intermediate and dome sections of the boiler above the fire box and connecting at their upper ends with short horizontal passages j formed partly in the dome and partly in the intermediate section. Each passage j communicates with a descending flue J which extends through the several sections and opens with its lower end into one of the compartments b . The upper ends of the primary ascending flues and of the descending flues are closed by plugs j' .

J' represents secondary ascending flues which extend through all the sections, their lower ends opening into the compartments b , while their upper ends open into the smoke box. Each compartment b connects the lower end of a descending flue with the lower end of a secondary ascending flue. The hot gases from the fire box pass upwardly through the primary ascending flues, thence outwardly through the horizontal passages, thence downwardly through the descending flues, thence through the compartments b , thence upwardly through the secondary ascending flues into the smoke box and out through the smoke pipe f .

K represents an annular grate arranged within the compartment ring and provided with an arm k which extends laterally through a slot k' in the base ring, whereby the grate may be shaken from the outside. The construction and arrangement of the parts are substantially the same as shown and described

in Letters Patent of the United States No. 372,519, granted to me November 1, 1887. The grate is oscillated by the usual hand lever k^2 connected with the outer end of the grate arm by a link k^3 , as shown in Fig. 1. Each of the compartments in the ring B is provided in its bottom with a dust opening l , Figs. 5 and 6, through which the light dust in the ash-pit is permitted to escape and which also enables the heat to be checked. The openings l are opened or closed by gates l' resting upon the bottom of the compartments, each provided with a stud l^2 which depends through a slot l^3 formed in the bottom of the compartment on one side of the opening l .

l^4 represents a ring arranged underneath the compartments and provided with perforated ears l^5 to which the studs of the gates are secured by keys l^6 , thereby forming a connection between all of the gates, which permits them to be opened and closed simultaneously.

m m' represent depending lugs formed on the gate ring and arranged on opposite sides of the grate arm. The distance between these lugs is less than the possible stroke of the grate arm but greater than the stroke which is required for shaking the grate, so that the ring can be shifted circumferentially in either direction by a long stroke of the arm, which causes the latter to strike either of these lugs, while the grate can be shaken with a short stroke without striking either lug. When it is desired to shake the grate, its arm is first moved the full distance in the direction of the arrow, Fig. 5, which causes the grate arm to strike the lug m' of the gate ring and open all the gates. The grate arm is then vibrated with a short stroke to shake down the ashes, but not sufficiently to touch either lug m m' . The dust rising from the falling ashes is carried upwardly by the draft through the openings l and the secondary ascending flues, whence it escapes into the smoke box and smoke pipe with the smoke. After the ashes have been shaken down, the arm of the grate is moved in a direction opposite to that of the arrow, Fig. 5, until the arm strikes the lug m and closes the gates. When only a small amount of heat is required for warming the building, the gates are partly opened, which permits the air to pass upwardly into the ascending flues, thereby checking the draft. Access is afforded for cleaning the flues by removing the plugs j' of the primary ascending and of the descending flues, and the caps j^2 which close openings formed in the smoke box above the flues. The soot removed from the flues drops into the compartments b and is removed through the dust openings l .

N, Figs. 1, 2 and 3, represents a conical core surrounding the lower portion of the water column, which core assists in spreading the fire and prevents the fuel from becoming chilled by contact with the water column. This core is made in three sections, so that it

can be removed when worn and replaced by new sections.

o represents a sleeve surrounding the water column and which supports the core. This sleeve rests upon the water receiving chamber g and is provided at its upper end with an annular flange o' which receives hooks o^2 formed on the upper inner sides of the core sections. The inner lower sides of the core sections are provided with radial ribs o^3 which bear against the side of the sleeve. When the lower edges of the core sections are burned off, the ribs o^3 still project over the annular space between the grate and the water chamber g and form a grate which prevents the coal from falling through this space.

P, Figs. 1, 3, 4 and 7, represents a cylindrical fuel magazine surrounding the upper portion of the water column and provided at its upper end with two supporting plates p projecting laterally from opposite sides of the magazine and resting upon the intermediate section of the boiler. The plates p are provided on their under sides with blocks p' which fit between the corrugated inner side of the intermediate section and hold the magazine in place.

Q represents an adjustable cylinder which forms the lower portion of the magazine. This cylinder fits into the magazine and is formed, preferably, of four sections. Each section is provided on its outer side with a head r having a contracted neck r' and the magazine is provided in its side, for the reception of these heads, with openings having enlarged upper portions s , and contracted lower portions s' . The sections of the extension cylinder are attached to the magazine by first passing their heads r through the enlarged portions of the openings s and then moving them downwardly so that the necks of the heads engage in the contracted lower portions s' whereby the sections are firmly held in place. Several tiers of these openings are formed in the magazine, one below the other, which permit the sections, when their lower edges are burned away, to be lowered by engaging their heads in a lower tier of openings.

t , Figs. 1 and 5, represents a fuel chamber formed centrally in the smoke box and closed by a door t' . The fuel chamber is connected with the magazine by vertical passages t^2 formed in the dome on opposite sides of the water column. The upper edge of the magazine is provided on opposite sides with vent openings u which permit the gases formed in the magazine to escape into the fire box where they are consumed.

I claim as my invention:—

1. The combination with the boiler sections having vertical flues and compartments connecting the lower ends of said flues and provided with openings, of gates arranged in the compartments and adapted to open or close the openings, and a movable ring connecting the gates, whereby the gates are shifted simultaneously, substantially as set forth.

2. The combination with the boiler sections provided with vertical flues and compartments connecting the lower ends of the flues and provided with openings and slots, of gates adapted to close said openings and provided with depending studs arranged in said slots, and a movable ring arranged underneath the compartments and provided with ears to which the lugs of the gates are secured, substantially as set forth.

3. The combination with the flue compartments having openings for the escape of dust, the gates arranged over said openings and the movable ring connecting said gates and provided with stops or projections, of an oscillating grate having an arm which engages between said stops or projections, the distance between the latter being greater than the shaking stroke of the grate-arm and less than the stroke which is required for shifting the ring, substantially as set forth.

4. The combination with a steam boiler provided with a fire box and a central water column extending into said box, of a sleeve surrounding said column and provided with an annular top flange and a sectional core surrounding the water column and having each of its sections provided with a hook which en-

gages over said flanges, substantially as set forth.

5. The combination with a steam boiler provided with a fire box and a central water column extending into said fire box, of a sleeve surrounding the water column and provided with an annular top flange, and a conical core surrounding said column and composed of sections, each section provided near its upper end with a hook engaging with said flange and on its lower side with vertical ribs which rest against the sleeve, substantially as set forth.

6. The combination with the fire box and the fuel magazine, of an extension applied to the lower portion of the magazine and consisting of sections arranged side by side circumferentially around the magazine and provided each with a separate vertical fastening whereby each section can be raised or lowered on the stationary portion of the magazine, substantially as set forth.

Witness my hand this 23d day of May, 1892.

MILES L. CLINTON.

Witnesses:

E. M. TREMAN,
C. M. CLINTON.