

(No Model.)

3 Sheets—Sheet 1.

C. W. PINKNEY.
APPARATUS FOR MANUFACTURE OF GAS.

No. 540,559

Patented June 4, 1895.

Fig. 1.

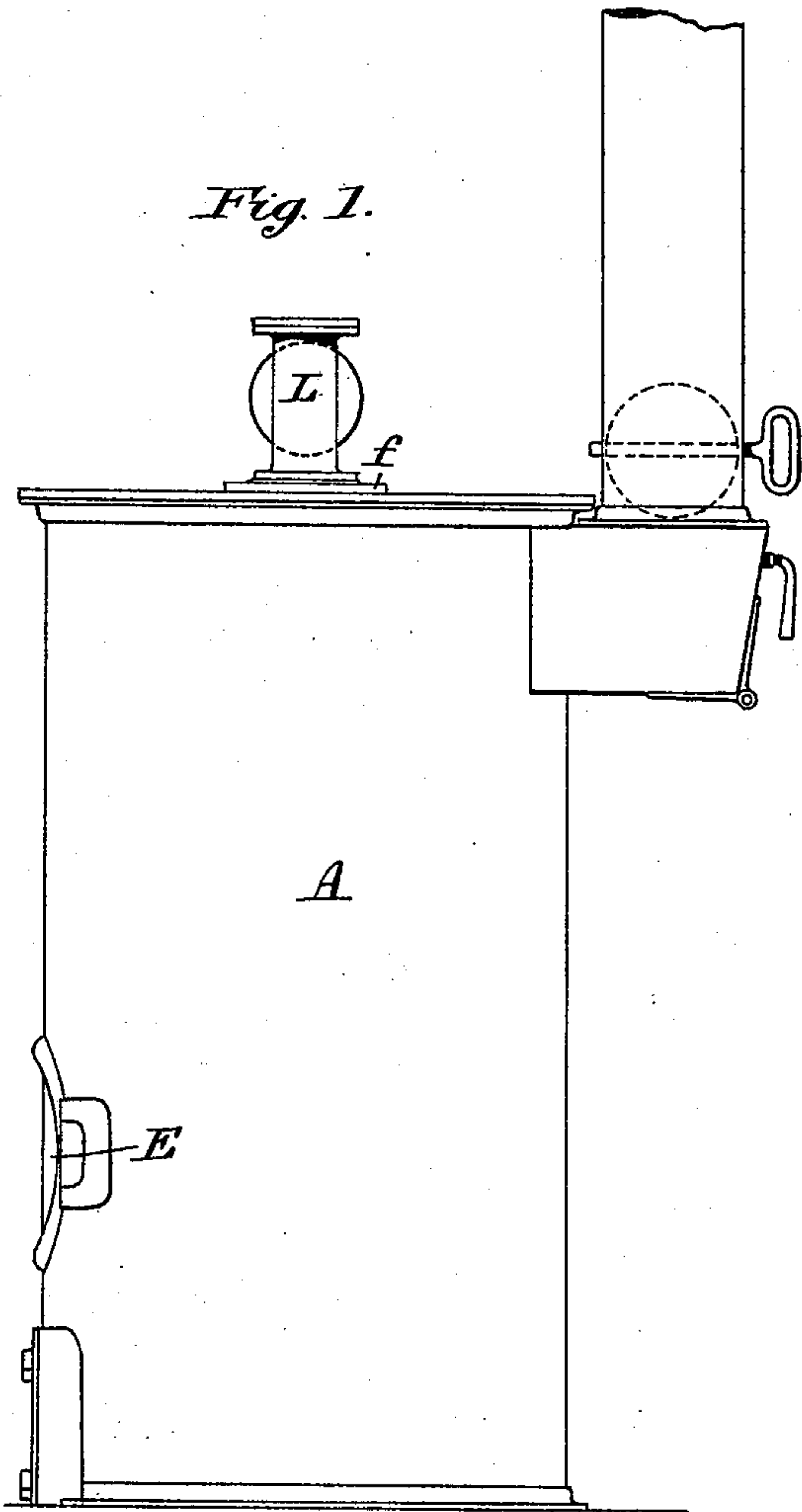


Fig. 3.

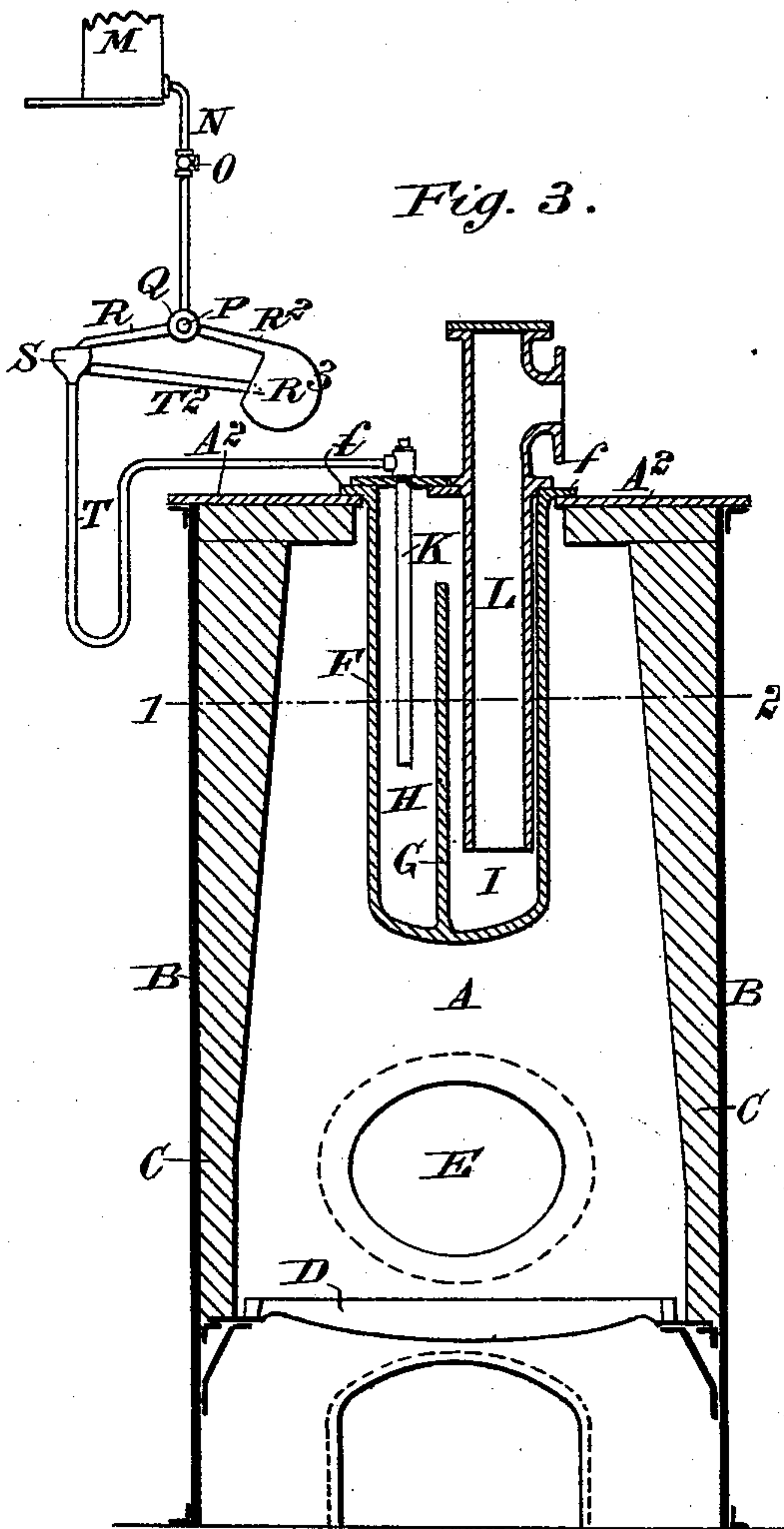


Fig. 2.

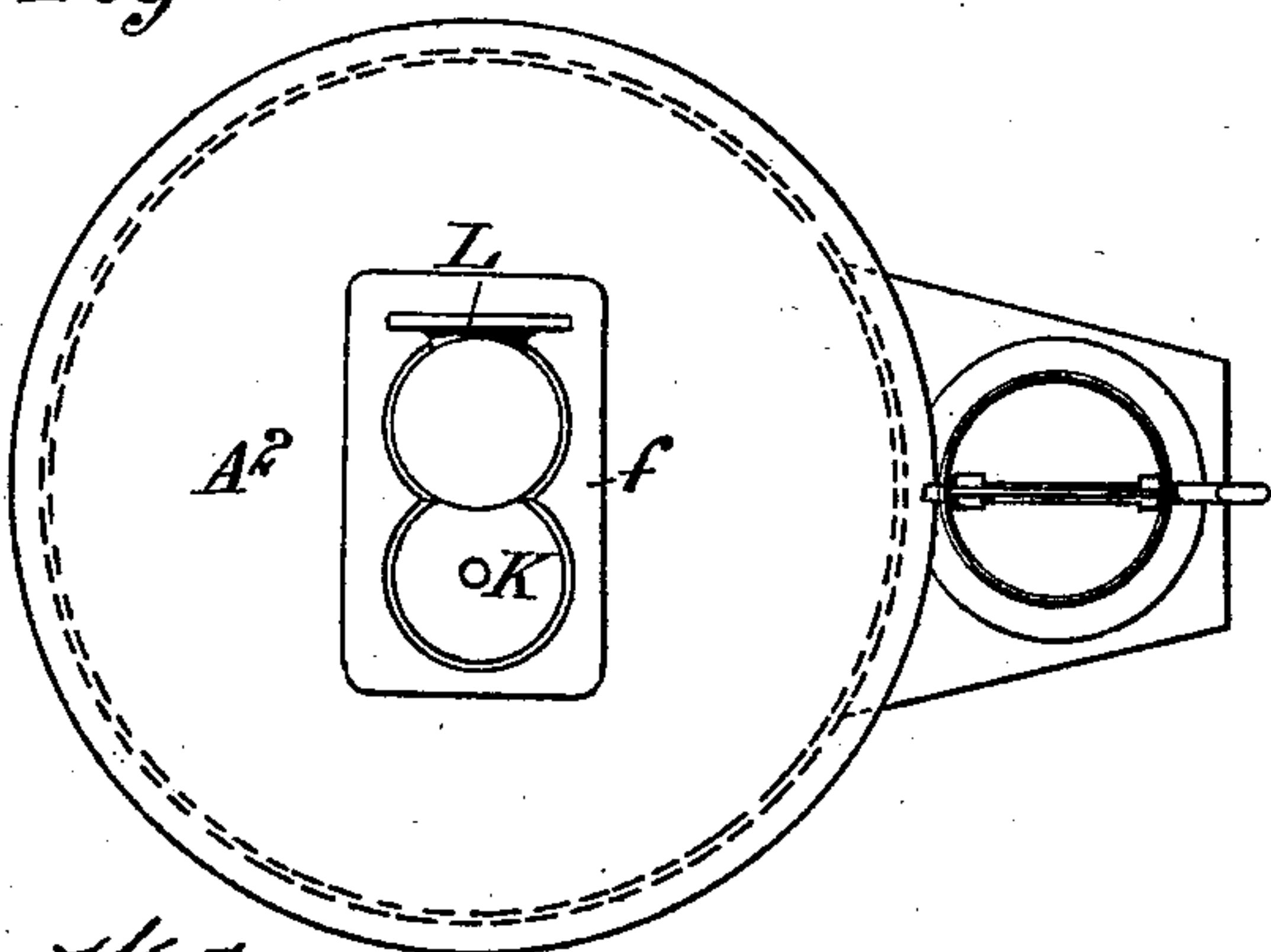
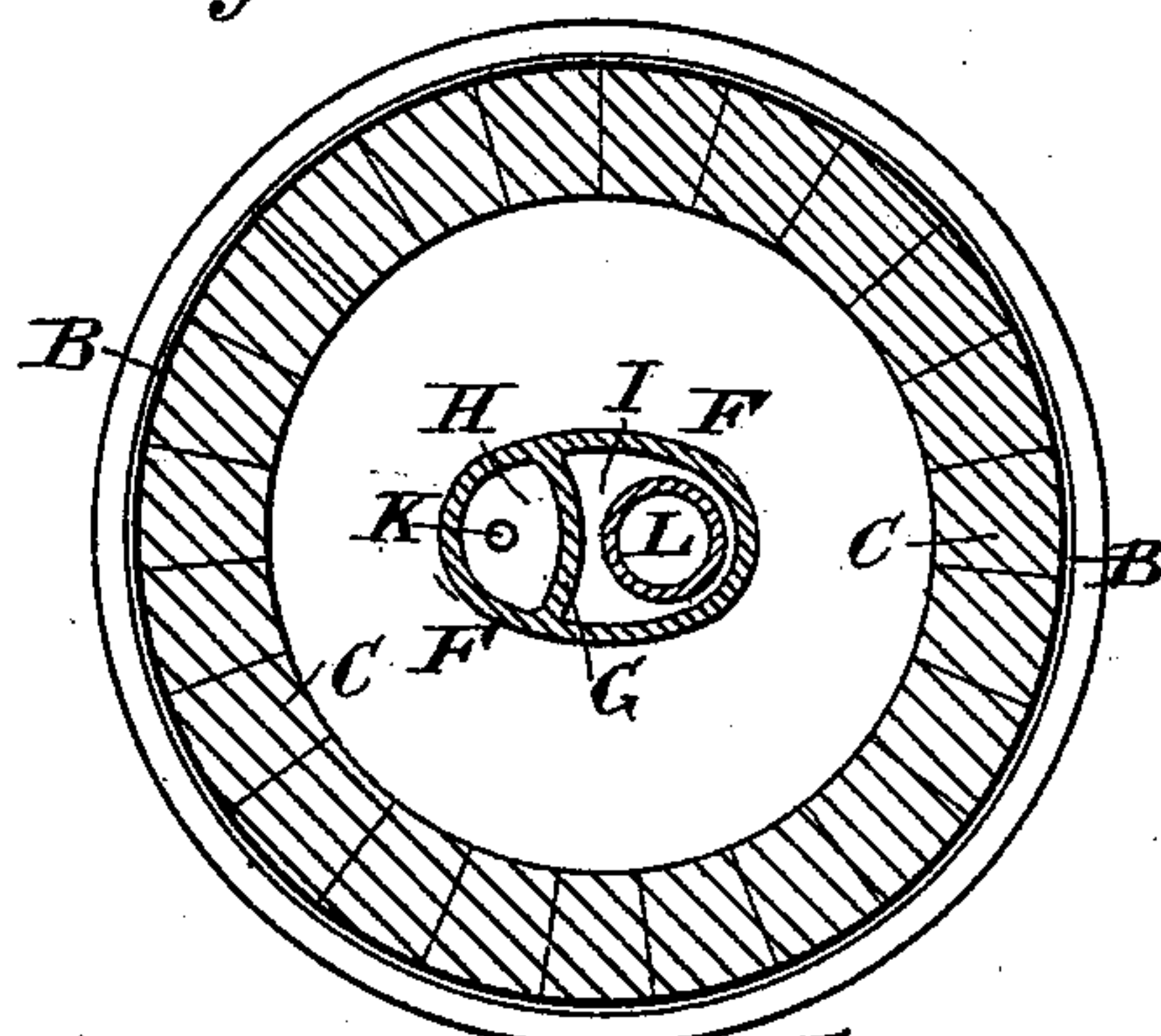


Fig. 4.



Witnesses
Jesse L. ...
W. Ross Edelen.

Inventor
Charles William Pinkney
by Pollock & Manro
his attorney

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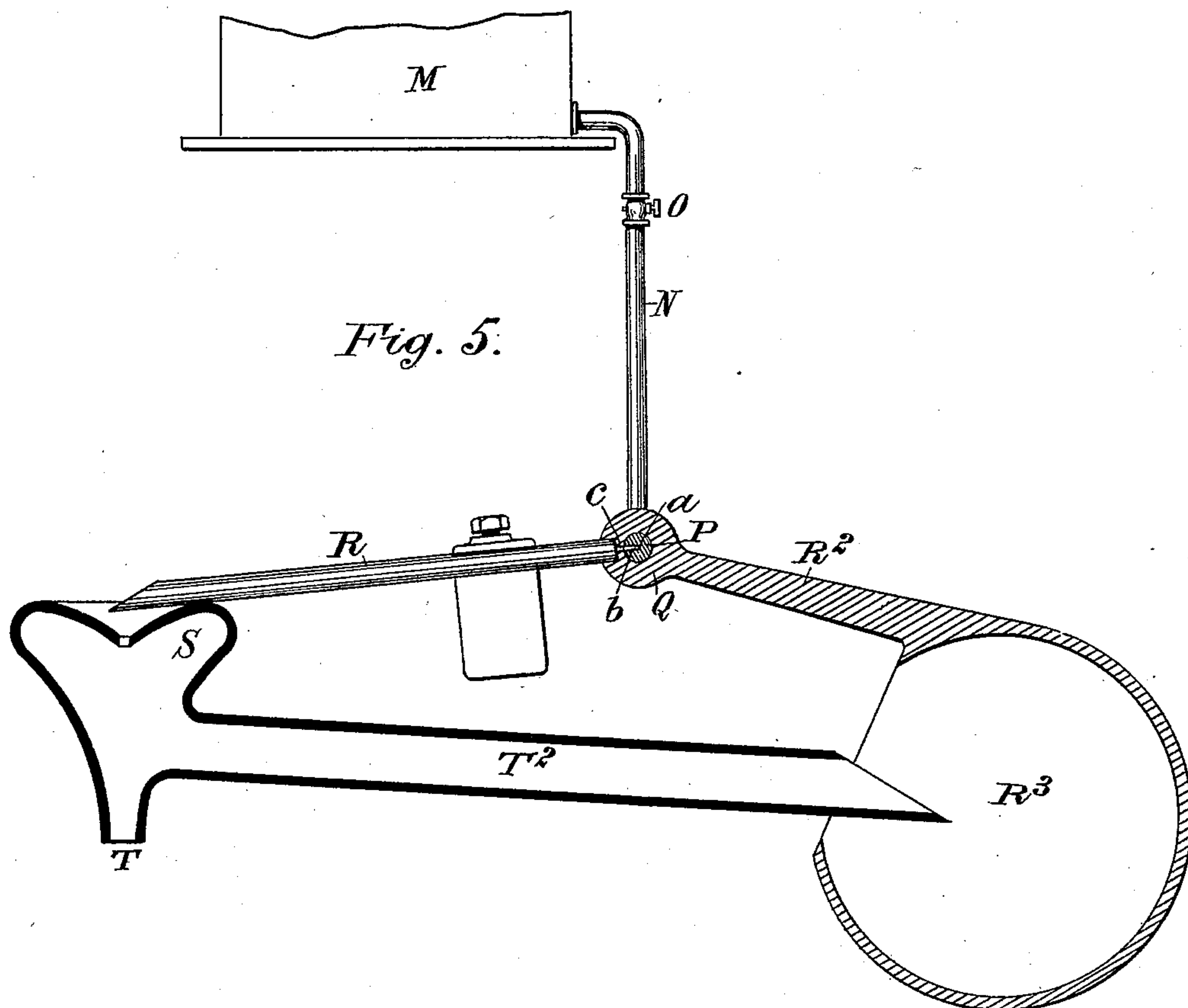
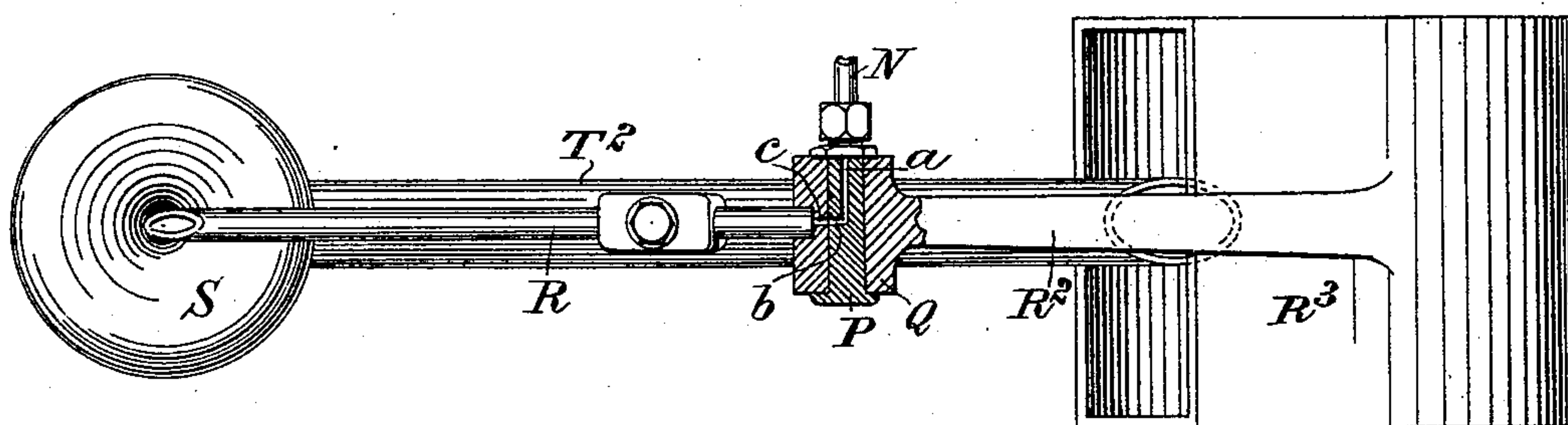


Fig. 6.



Witnesses

Reeve Lewis

W. Rees Edelen

Inventor.

Charles William Pinney
by Folio & Mauro
his attorneys.

(No Model.)

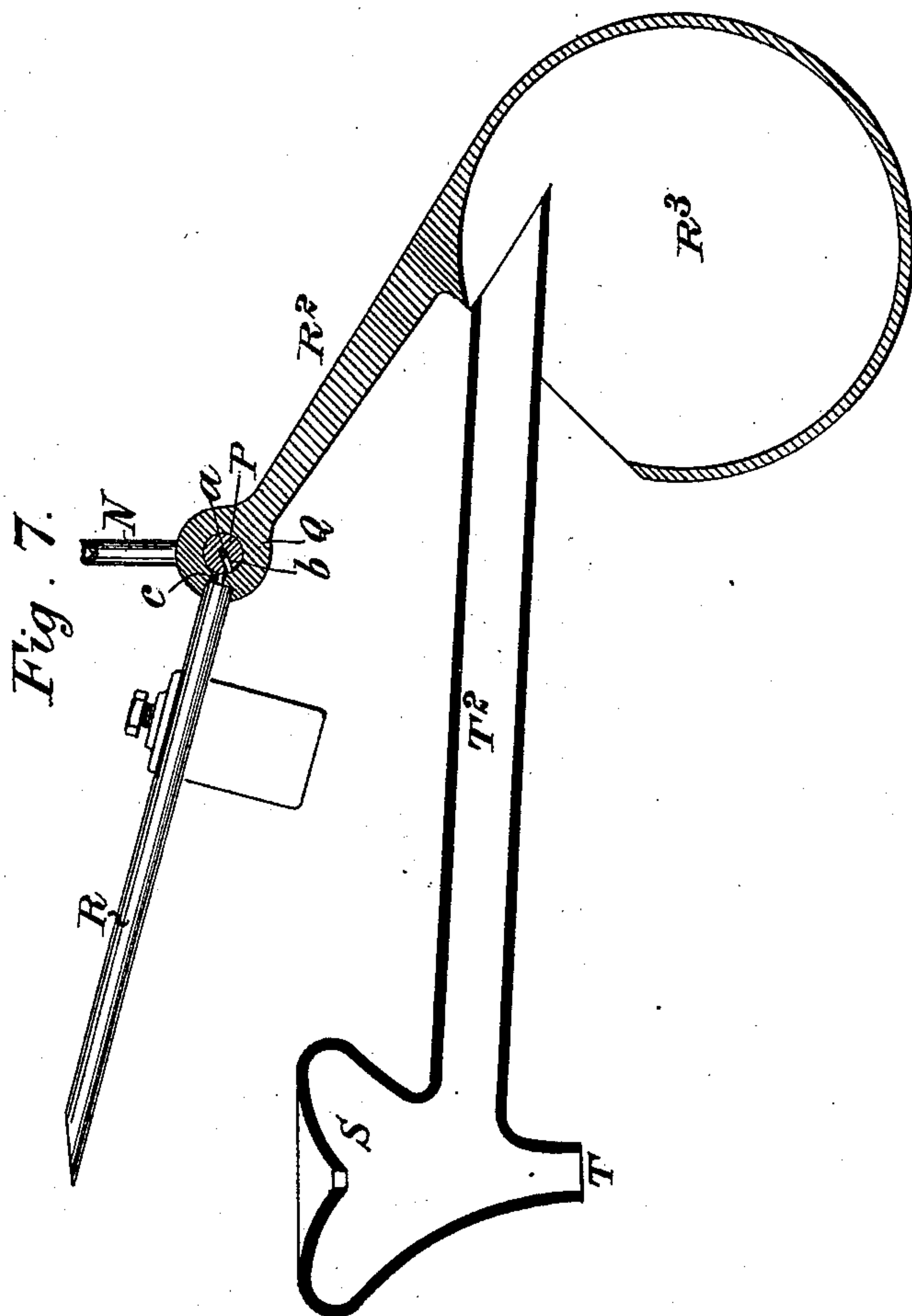
3 Sheets—Sheet 3.

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Witnesses
Devere Lewis.
W. R. Edelen.

Inventor
Charles William Pinkney by
Pollock & Mauro
his attorneys

UNITED STATES PATENT OFFICE.

CHARLES WILLIAM PINKNEY, OF SMETHWICK, ASSIGNOR OF ONE-HALF TO
TANGYES, LIMITED, OF SOHO, ENGLAND.

APPARATUS FOR MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 540,559, dated June 4, 1895.

Application filed December 21, 1894. Serial No. 532,582. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WILLIAM PINKNEY, engineer, a subject of the Queen of Great Britain and Ireland, and residing at 77 Raglan Road, Smethwick, in the county of Stafford, England, have invented certain Improvements in or Connected with Apparatus for the Manufacture of Gas from Liquid Hydrocarbons, of which the following is a specification.

My invention relates to apparatus for the manufacture of gas from liquid hydrocarbons and has for its object to provide means whereby the greatest possible percentage of gas from heavy oils is produced and imperfect gas is prevented from passing from the retorts or gasifiers. It also has for its object to provide means for feeding the oil to the retorts or gasifiers whereby in case of the passages for the gas from the retorts being stopped or clogged the said stoppage will be indicated and the supply of oil cut off.

According to my invention the interior of the retort or chamber in which the oil is gasified is provided with an extended surface over which the gas generated is caused to pass on its way to the outlet from the said retort or chamber whereby the oil is effectually gasified and imperfect or unfixed gas is prevented from passing out of the retort. The outlet pipe for the gas is inserted in the last compartment of the series and extends to within a short distance of the bottom of the retort.

The oil to be gasified is conducted from the oil reservoir through a pipe provided with a cock or valve fitted with a two armed lever one of which arms terminates in or carries a chamber or receptacle for oil, and the other arm is tubular and conducts oil to a pipe in communication with the interior of the retort. This supply pipe is U shaped or bent so as to form a seal and the outer end, where the oil enters is provided with a branch pipe leading to the chamber in connection with the before mentioned arm of the two armed lever. Should the passage from the retort become stopped or clogged the oil fed into the U shaped pipe or seal will flow therefrom through the branch pipe into the chamber connected to the arm of the lever until the weight thereof causes the cock or valve to close and so cut off the supply of oil to the retort.

In order that my invention may be well

understood I will further describe the same with reference to the accompanying drawings, premising however that I do not restrict myself to the particular construction and arrangement of apparatus described and illustrated.

Figures 1 and 2 represent in elevation and plan, respectively, the gas-generating portion of the apparatus, the oil-feeding device being omitted. Fig. 3 is a vertical section of the same with the oil-feeding device in position; and Fig. 4 is a horizontal section on the line 1 2, Fig. 3. Fig. 5 is a sectional elevation of the oil-feeding device drawn to a larger scale, the parts being shown in the position for feeding oil to the retort. Fig. 6 is a plan of the same; and Fig. 7 is view similar to Fig. 5, showing the parts in the position they occupy when the supply of oil is cut off.

A is a furnace consisting of an outer metal case B lined with fire brick C or other suitable non-heat conducting material.

D represents the fire bars or grate which supports the fuel fed into the furnace through the fire door E.

In the top plate or crown A² of the furnace is a hole through which is inserted the retort or chamber F in which the gas is generated the said retort being suspended by the flange f centrally in the furnace so that the heat from the fuel can act on the whole of the exterior surface of the retort. The retort is divided in the interior by a partition G into two compartments H and I the said partition extending upward from the bottom of the retort to within a short distance from the top thereof where the two compartments communicate one with the other. Into the compartment H depends the oil feed pipe K and into the compartment I depends the gas outlet pipe L which extends to within a short distance from the bottom of the retort.

M is the oil reservoir provided near its bottom with a discharge pipe N fitted with a cock O to regulate the flow of oil therethrough. To the lower end of this pipe is connected the plug P (Figs. 5, 6 and 7) of another cock the shell or barrel Q of which cock constitutes the boss of a two armed lever R R² having the plug P as its fulcrum on which it turns. In the plug P is a longitudinal passage a communicating at one end with the passage through the pipe N and at the other end with

a lateral passage *b* in the plug. The arm *R* of the two armed lever is tubular and communicates with a lateral passage *c* in the shell or barrel *Q* of the cock which latter passage coincides with the passage *b* in the plug *P* when the lever is in the position shown in Figs. 1, 5 and 6, the oil then flowing from the reservoir *M* through the pipe *N*, thence by the passages *a* and *b* in the plug of the cock and the passage *c* in the shell or barrel *Q* into the tubular arm *R* of the two armed lever. The outlet end of this lever arm is situated directly over a mouth piece *S* on one end of a U bent or seal pipe *T*, Fig. 3, the other end of which seal pipe is in communication with the feed pipe *K* depending into the compartment *H* of the retort. So long as the double armed lever remains in the position shown in Fig. 5 and the cock *O* remains open a constant stream of oil will enter the compartment *H* of the retort in regulated quantity according to the extent to which the cock *O* is opened. The retort being heated to the required temperature the oil admitted to the compartment *H* of the retort becomes vaporized the vapor passing upward in contact with the sides of this compartment and over the top of the partition *G* into the compartment *I* through which the vapor descends and in which it is converted into perfect gas which passes thence upward through the outlet pipe *L* and may be conducted into coolers or condensers or to the place of storage.

Although the retort shown in the drawings is provided with only one partition a retort having two or more partitions may be employed and so arranged as to cause the vapors and gas to pass in a circuitous course through several compartments before passing through the outlet pipe or passage *L*.

I have found in practice that by causing the hydrocarbons to travel over an extended moderately heated surface the liability to unvaporized oil passing from the retort is prevented, whereas if the hydrocarbon be passed quickly over a highly heated surface in the retort the tendency is to cause the oil to pass from the retort in an unvaporized condition thereby causing waste and inconvenience by blocking the passages between the retort and the place of storage of the gas.

Should any of the passages from the retorts become stopped or clogged means are provided according to my invention whereby the oil in the bent pipe or seal *T* is by the pressure of gas in the retort caused to flow through a branch pipe *T*² near the upper end of the seal *T* into a chamber *R*³ on the arm *R*² of the double armed lever. The weight of this arm of the lever being thus increased causes the lever to turn on the plug *P* and close the passage for oil through the said plug and thereby cut off the supply of oil to the retort; or instead of the lever *R R*² being arranged to close the passage through the plug, the arm *R* of the lever may be made sufficiently long that when the lever is moved into

the position shown in Fig. 7 the outlet end of the arm will be above the level of the oil in the reservoir and so stop the supply of oil.

The lever *R R*² when moved or being moved into the position shown in Fig. 7 may be caused to make an audible signal either electric or mechanical so as to attract the attention of an attendant to the position of the lever. I have not considered it necessary to illustrate this as it is obvious that any convenient arrangement may be adopted. For example the lever may cause contact to be made so as to complete a circuit through the coils of an electric bell or the said lever may operate the striker of a mechanical bell.

When the stoppage or obstruction has been removed from the passages from the retort the lever *R R*² may be returned to the position shown in Fig. 5 to resume the supply of oil to the retort, the oil which had entered the chamber *R*³ being removed therefrom and if desired placed in the oil reservoir *M*.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In apparatus for the manufacture of gas from liquid hydrocarbons, the combination with a reservoir for the latter and a retort, of a passage connecting the same, a cut-off valve in said passage, an overflow pipe from said passage between the valve and retort, and a movable receptacle normally in an elevated position into which said overflow pipe discharges and connections between said receptacle and cut-off valve, whereby the latter is automatically closed by the descent thereof caused by the weight of the hydrocarbon discharged therein, substantially as described.

2. In apparatus for the manufacture of gas from liquid hydrocarbons the combination with a reservoir to contain the hydrocarbon to be gasified, of a discharge pipe or passage from the reservoir provided with a plug having a passage therethrough for the hydrocarbon, a double armed lever fitted to turn on the plug one arm of the said lever being hollow and communicating with the passage in the plug and through which arm the hydrocarbon is conducted to a feed pipe leading to the interior of the retort, and the other arm of the said lever being provided with a chamber or receptacle and a pipe or passage for conducting overflow hydrocarbon from the feed pipe said chamber or receptacle, thereby causing the lever to turn on the plug so as to cut off the supply of hydrocarbon to the retort substantially as hereinbefore described.

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

CHARLES WILLIAM PINKNEY.

Witnesses:

WILLIAM JOHN PARKINS,
WILLIAM HENRY HOWSE.