

No. 779,906.

PATENTED JAN. 10, 1905.

H. A. BURCH.
CARBURETER.

APPLICATION FILED MAY 25, 1904.

3 SHEETS—SHEET 1.

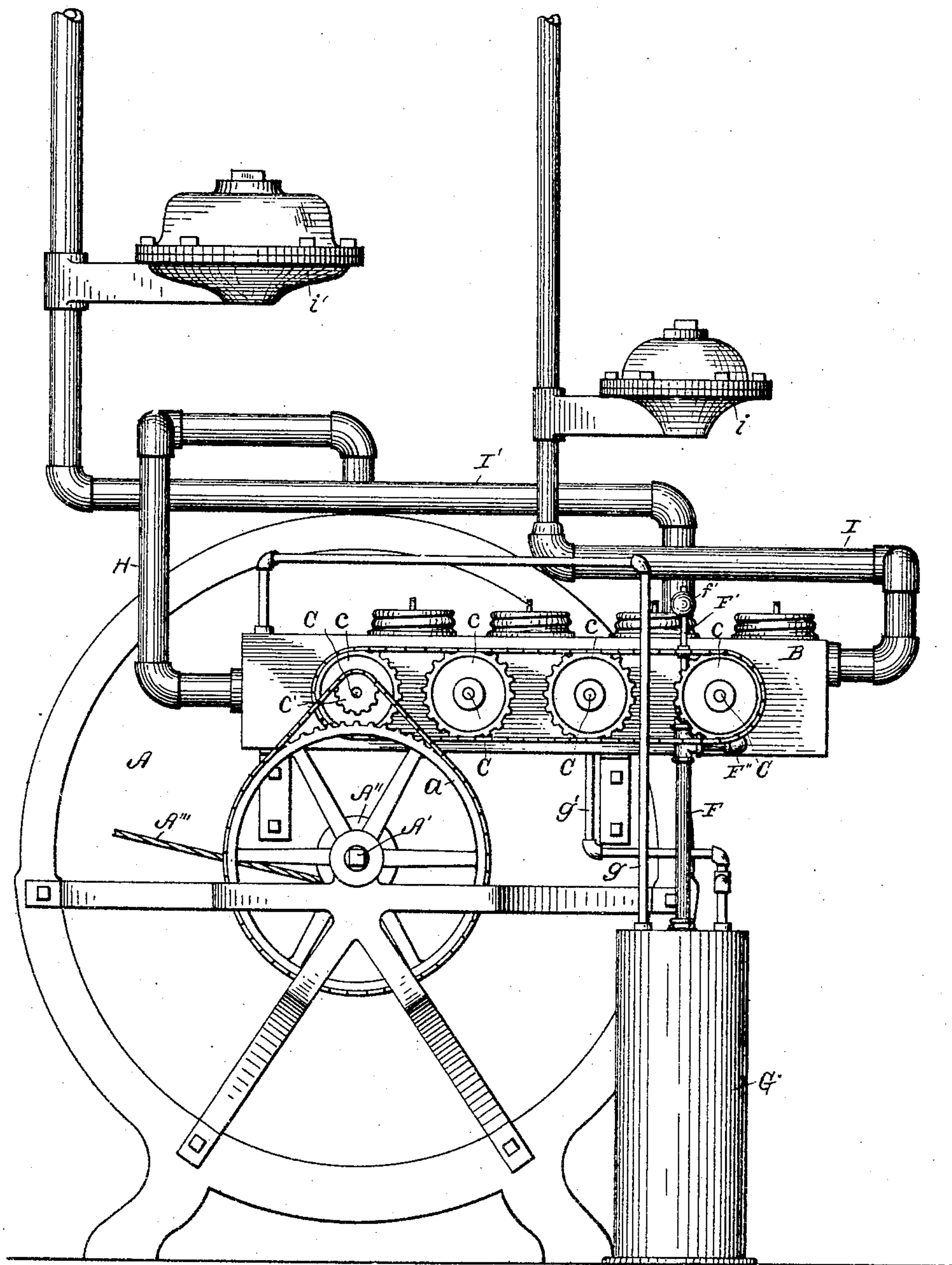


Fig. 1.

Witnesses:

Ethel A. Sellar

Elizabeth Owens

Inventor,

Herbert A. Burch

By *Otis A. Earl*

Att'y.

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3 SHEETS—SHEET 2.

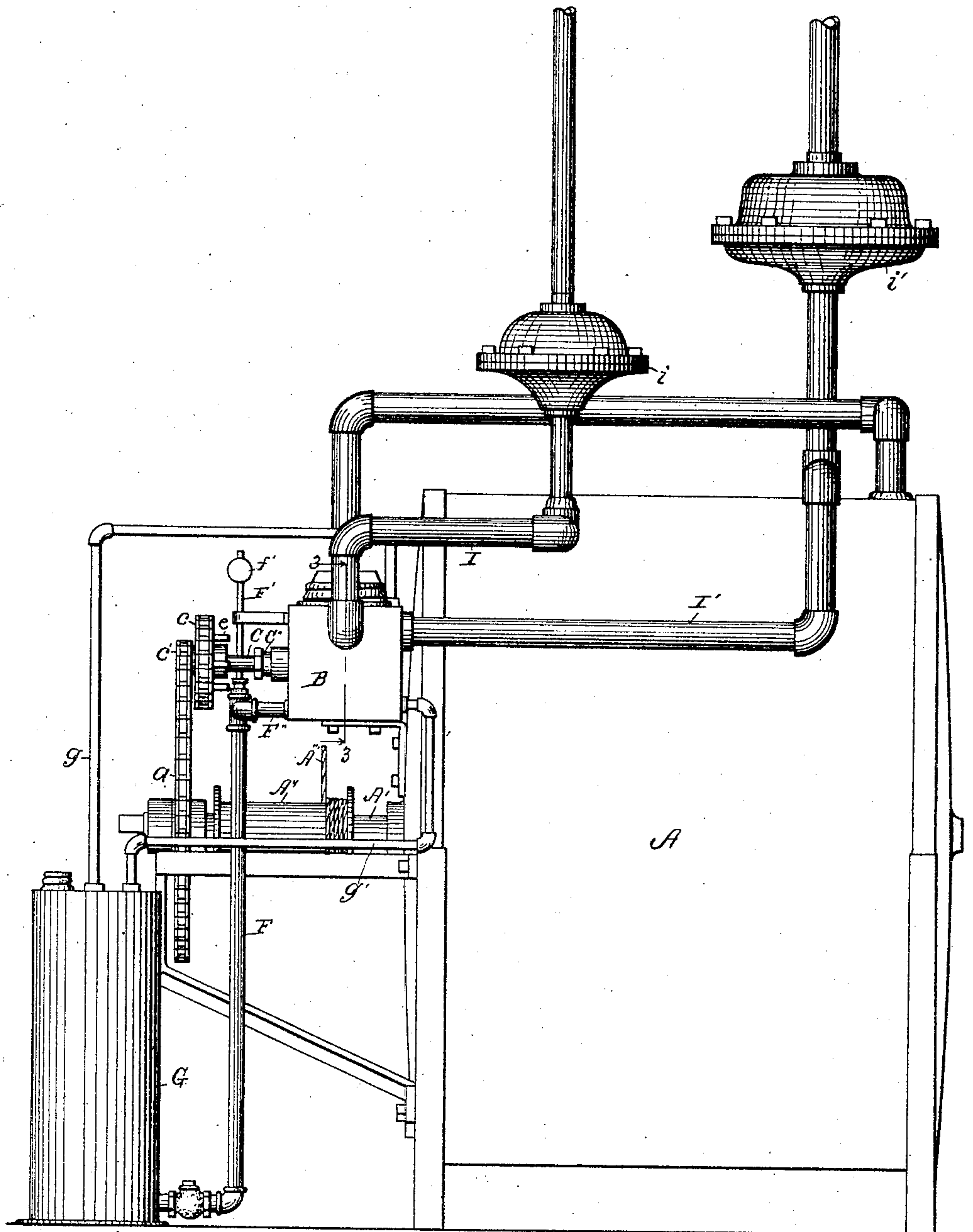


Fig. 2.

Witnesses:

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Elizabeth Owens

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By Otto A. Earl.
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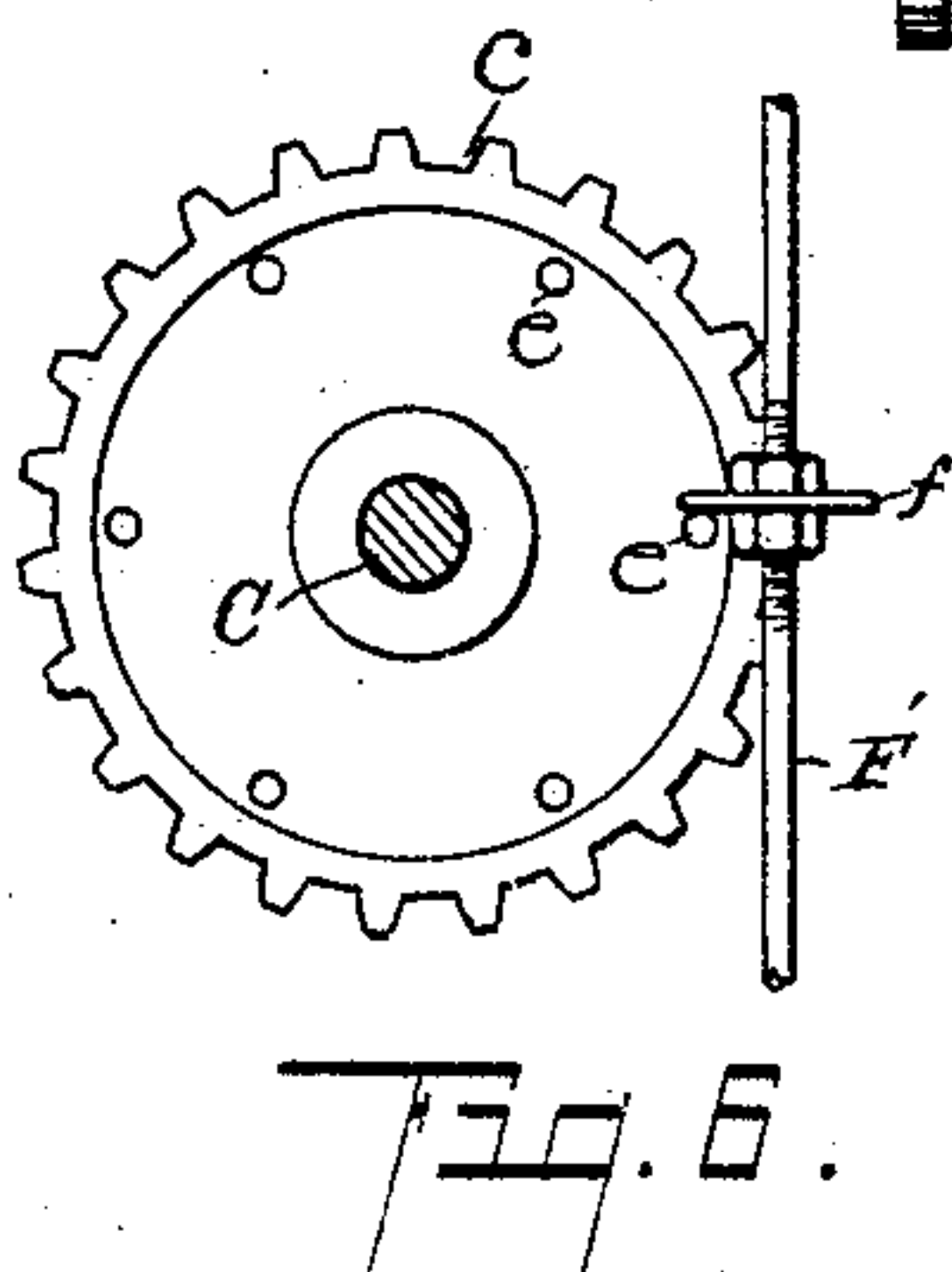
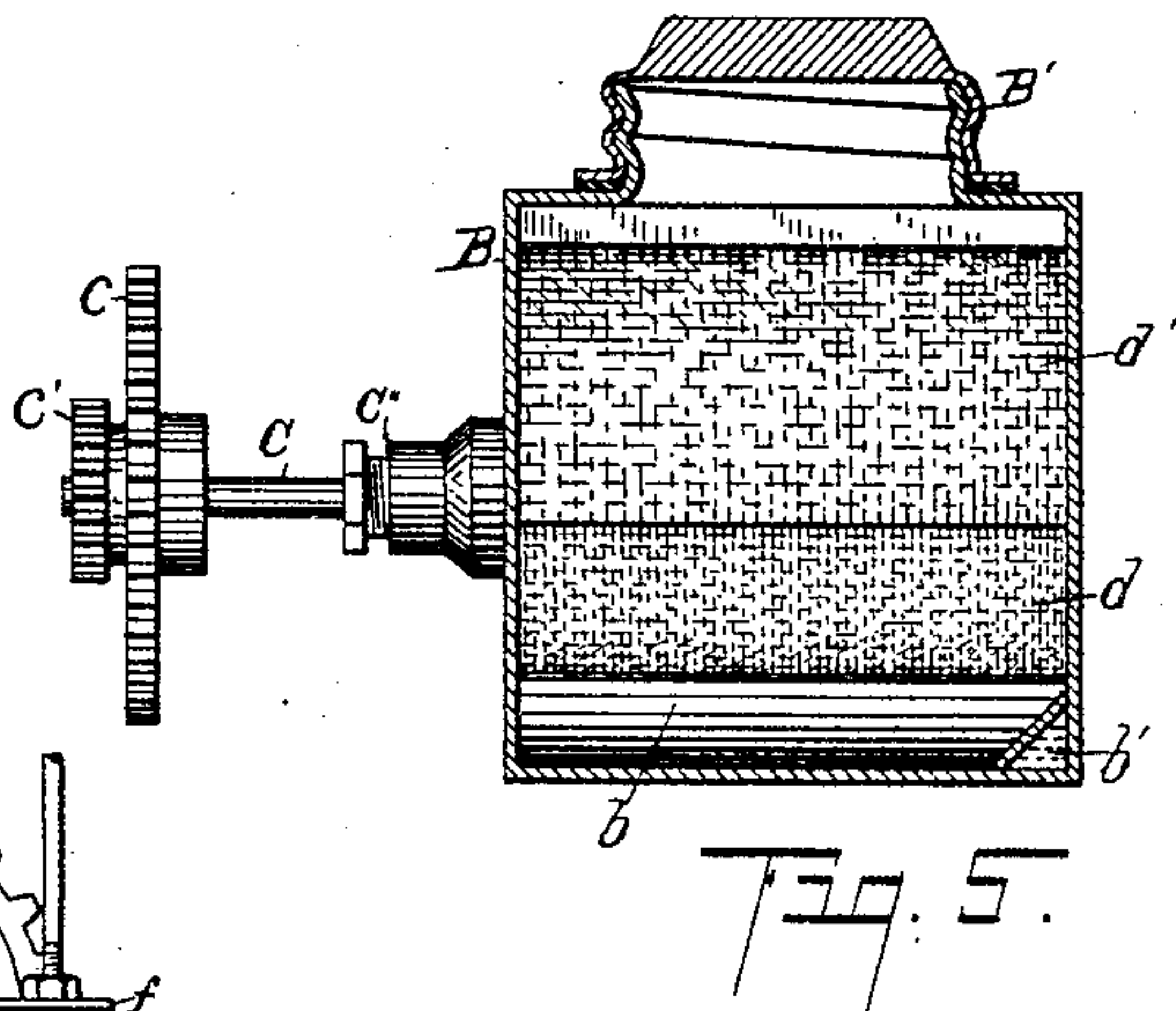
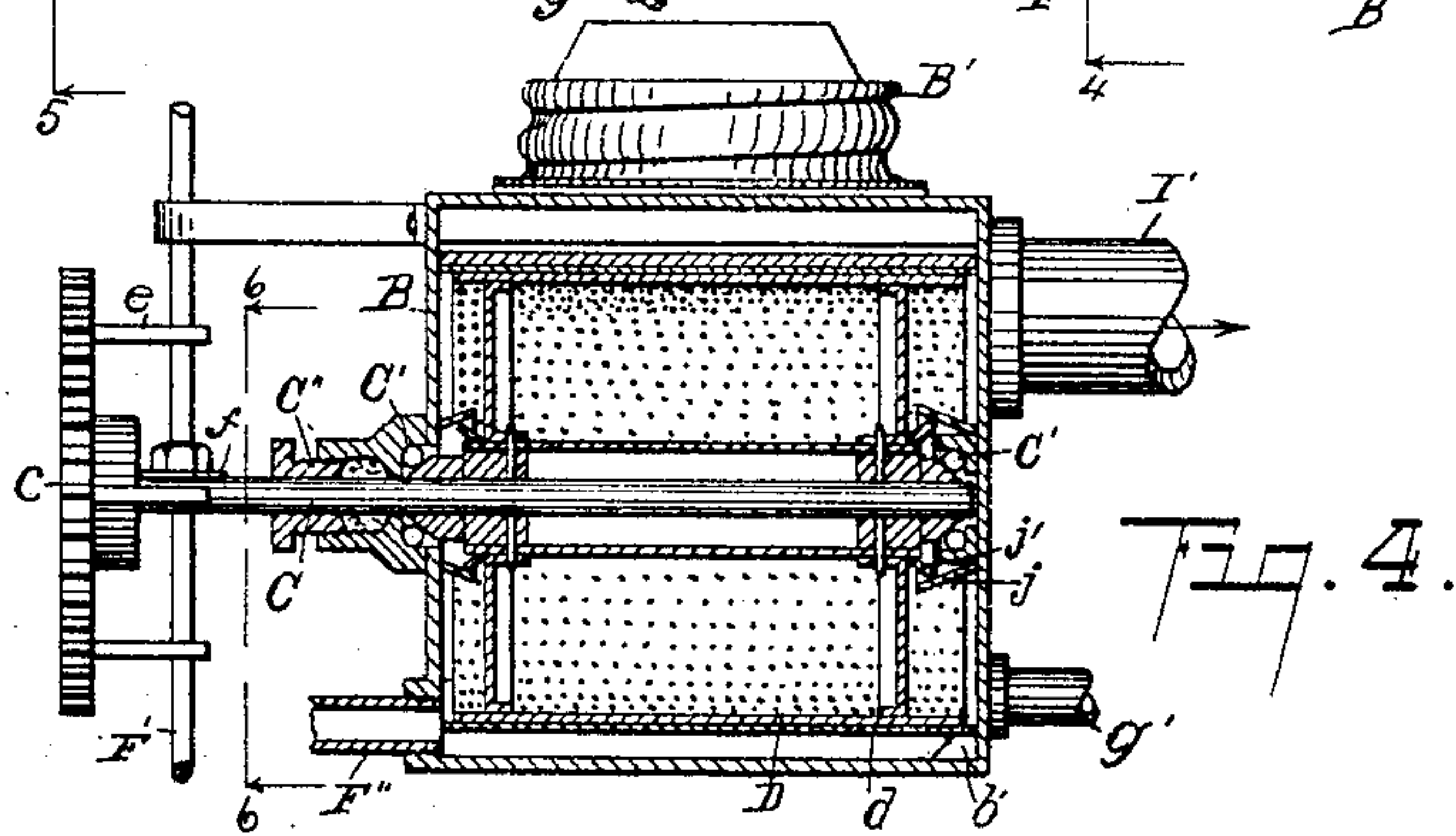
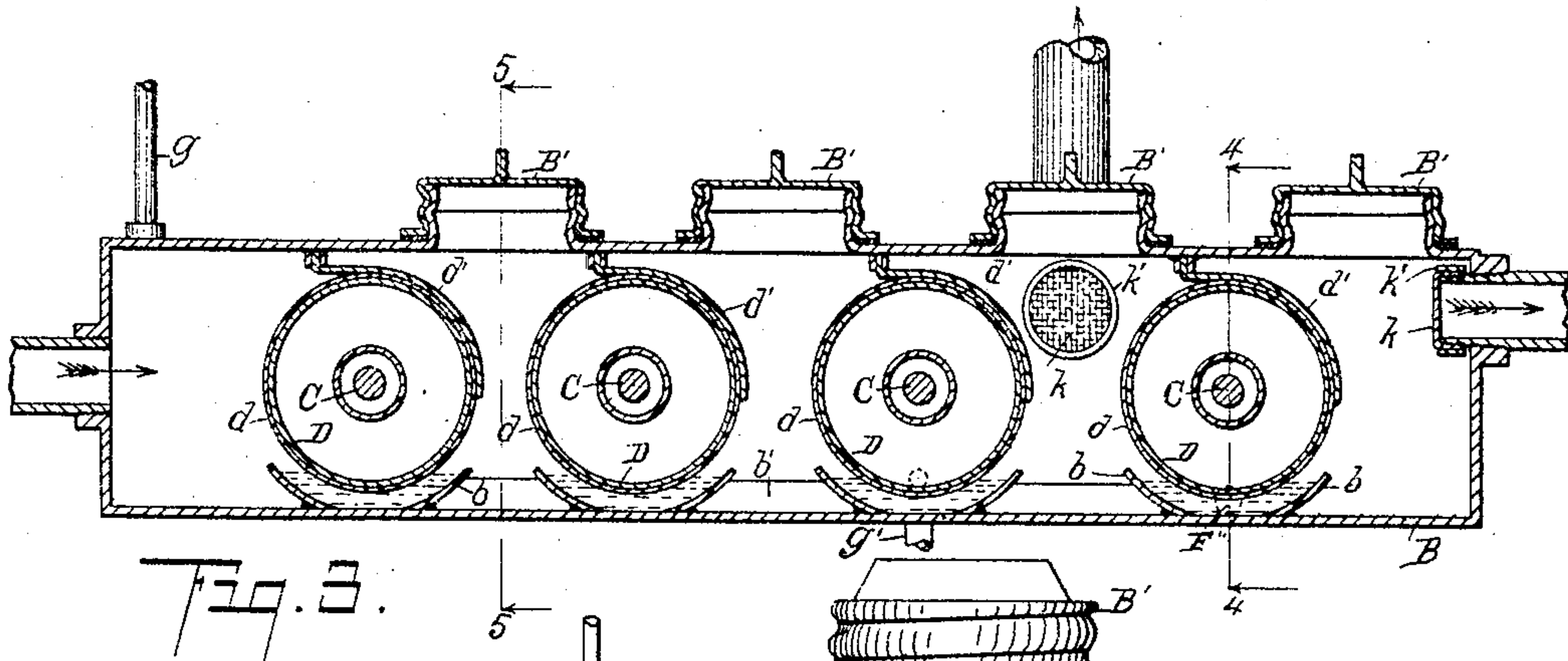
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CARBURETER.

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3 SHEETS—SHEET 3.



Witnesses:

Ethel A. Siller

Elizabeth Ourne

Inventor,

Herbert A. Burch

By *Otis A. Earl*
Att'y.

UNITED STATES PATENT OFFICE.

HERBERT A. BURCH, OF KALAMAZOO, MICHIGAN, ASSIGNOR OF ONE-HALF TO CHARLES H. BARNES, OF KALAMAZOO, MICHIGAN.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 779,906, dated January 10, 1905.

Application filed May 25, 1904. Serial No. 209,781.

To all whom it may concern:

Be it known that I, HERBERT A. BURCH, a citizen of the United States, residing at the city of Kalamazoo, county of Kalamazoo, and State of Michigan, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to improvements in carbureters.

The objects of this invention are, first, to provide an improved carbureter which is automatic in its operation; second, to provide an improved carbureter in which the amount of carbureted air or gas produced is controlled by the amount consumed; third, to provide an improved carbureter by which two or more grades or qualities of carbureted air or gas may be produced and delivered at the same time; fourth, to provide an improved carbureter in which low grades of refined hydrocarbon oils can be used with satisfactory results; fifth, to provide an improved carbureter by which all of the hydrocarbon oil is utilized; sixth, to provide an improved carbureter which, although simple and compact in structure, is of large capacity; seventh, to provide an improved carbureter which is simple in structure and economical to produce and one which is durable and not likely to get out of repair.

Further objects and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail side elevation view of a structure embodying the features of my invention. Fig. 2 is an end elevation view looking from the right of Fig. 1. Fig. 3 is an enlarged longitudinal sectional view through the carbureter tank or chamber, taken on a line corresponding to line 3 3 of Fig. 2. Fig.

4 is an enlarged transverse sectional view 50 through the carbureting tank or chamber, taken on line 4 4 of Fig. 3, showing the structural details of one of the drums D, the shaft C and gear thereof being shown in full lines. Fig. 5 is an enlarged detail transverse sectional view, taken on line 5 5 of Fig. 3, showing the arrangement of the drums in the carbureting-chamber. Fig. 6 is an enlarged sectional view, taken on line 6 6 of Fig. 4, showing the operating means for the oil-pump. 60

In the drawings the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views. 65

Referring to the drawings, A represents a rotary air-pump. This pump may be of any desired construction. On the shaft A' of the pump A is a driver A'' for the cable A''', from which a suitable driving-weight (not here illustrated) is supported. 70

Supported on suitable brackets on the frame or casing of the air-pump A is a carbureter tank or chamber B. This tank, which is preferably rectangular in form, is arranged horizontally. In the bottom of the carbureting-chamber B transverse oil-troughs b are arranged. These troughs are connected by a covered conduit b', arranged along one side of the chamber. Supported above these troughs on the shafts C are foraminated drums D. These drums are provided with coverings d, of fabric, preferably coarse linen. These drums D are supported in such position that their lower portions extend into the oil in the troughs b beneath, so that when they are revolved their fabric coverings are saturated with the oil. The drum-coverings d extend practically across the carbureting-chamber. Supported on the ceiling of the carbureter-chamber above each of the drums D is a curtain or flap d'. These curtains are of such length that they lap over and rest upon the drums. These flaps are also of such width that they extend from side to side of the carbureting-chamber. The carbureter-chamber is by these drums and curtains divided into compartments. In operation the curtains, resting upon the drums, 90 95

also become saturated with the oil, so that the air passing through the carbureter must pass through this saturated fabric.

The shafts C are supported in suitable ball-bearings C'. The bearings C' for the inner ends of the shafts C are supported on the inner wall of the carbureter-chamber. The outer ends of the shafts C project through the walls of the carbureter, and the ball-bearings therefor are supported on the outside of the carbureter-wall. Suitable stuffing-boxes, as C'', are provided for the shafts C. The bearings C' are protected from the oil by the inwardly-flaring hoods j, supported on the walls of the carbureter, which project over the outwardly-flaring flanges j' on the hubs of the drums. The shafts C are provided with sprocket-wheels c. These sprockets are connected by a chain, by means of which they are driven. One of the shafts C is provided with a sprocket-wheel c', which is connected, by means of a suitable chain, to the sprocket a on the shaft A' of the air-pump, so that the drums are actuated whenever the air-pump is actuated.

The air from the pump is delivered to the carbureter-chamber by the pipe H, which is connected to the chamber at its forward end, as clearly appears in Figs. 1 and 3.

A suitable oil-storage tank, as G, is provided. The oil is delivered to the drum-troughs b by the pump F, which is connected by the delivery-pipe F' to the last of the troughs b in the series. (See Figs. 1 and 4.) The oil-pump F is actuated by one of the sprocket-wheels c, which is provided with inwardly-projecting pins e, which are adapted to engage the disk-like projection f on the pump-rod F', (see Fig. 4,) so that the pump is actuated whenever the drums are actuated. A weight, as f', is provided to return the pump to its initial position. An overflow-pipe g' is provided for the drum-troughs b. This is preferably connected with one of the intermediate troughs. Thus connected, the oil is maintained at a constant level in the troughs. A connecting-pipe g is provided for the oil-reservoir and carbureting-chamber, so that the pressure therein is equalized.

Suitable closures B' are provided for the carbureter-chamber, preferably one for each drum, so that the interior of the carbureter is readily accessible.

The carbureted air or gas is delivered by the service-pipes I I'. The service-pipe I delivers the highest grade or richest gas and is intended to deliver gas for lighting purposes. This is connected to the carbureter-tank at its rear end, so that the carbureted air or gas delivered thereby must pass through all of the carbureting-drums. The service-pipe I', which is intended to deliver gas for heating or cooking purposes, is connected to the carbureting-tank at a point in front of the last carbureting-drum, so that the carbureted air or gas delivered thereby will be less rich in

hydrocarbon than that delivered by the pipe I. The grade of the gas is further affected by the fact the fresh oil, which is of course most volatile, is delivered directly to the last trough in the carbureting-chamber. A further advantage of this arrangement is that the less volatile oil passes toward the forward end of the carbureting-chamber, where it is brought into contact with the uncharged air, by which it is more readily taken up. A greater quantity of oil is constantly being supplied than is used, so that some circulation is had in the troughs, the surplus returning to the receiver by the overflow-pipe. I thus secure an even grade of gas and am enabled to utilize all of the oil.

The inner ends of the supply-pipes I I' are provided with a fabric covering k. This covering is preferably made of coarse linen, two or more thicknesses being used. This aids in securing an even quality of so-called "dry" gas. The fabric covering k is held in position by a ring k', which is slipped over the same onto the end of the pipe. The service-pipes I I' are provided with pressure-regulators i i', respectively.

The driving weight or motor for the pump is adapted to operate the pump against a certain pressure, so that whenever the pressure in the carbureter falls below a predetermined point, the pump is actuated, which, through the connections described, actuates the carbureting-drums and the oil-pump. When the pressure again reaches the predetermined point, the air-pump stops. An even quality of gas and comparatively even pressure are thus maintained.

While I have illustrated four of the carbureting-drums in the accompanying drawings, it is evident that the number may be increased or diminished as desired. I find four, however, to produce satisfactory results, and they may be arranged in a comparatively compact structure.

I have illustrated and described my improved carbureter in detail in the form preferred by me on account of its structural simplicity and economy, although I am aware that it is capable of very great structural variation without departing from my invention, and I desire to claim the same broadly as well as specifically, as illustrated.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a carbureting tank or chamber; two or more foraminated drums; shafts therefor projecting from said carbureting-chamber; sprocket-wheels on said shafts; a connecting-chain therefor; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; a connecting-conduit for said troughs; an oil-reservoir; an oil-

pump adapted to deliver to said drum-troughs; an overflow-pipe for said troughs; a service-pipe connected to said carbureting-chamber at the rear end thereof; a service-pipe connected to said carbureting-chamber at a point in front of the last of said drums; and an air-supply connected to said carbureter-chamber at its forward end, all coacting for the purpose specified.

2. The combination of a carbureting tank or chamber; two or more foraminated drums; shafts therefor projecting from said carbureting-chamber; sprocket-wheels on said shafts; a connecting-chain therefor; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; a connecting-conduit for said troughs; an oil-reservoir; an oil-pump adapted to deliver to said drum-troughs; a service-pipe connected to said carbureting-chamber at the rear end thereof; a service-pipe connected to said carbureting-chamber at a point in front of the last of said drums; and an air-supply connected to said carbureting-chamber at its forward end, all coacting for the purpose specified.

3. The combination of a carbureting tank or chamber; two or more foraminated drums; shafts therefor projecting from said carbureting-chamber; sprocket-wheels on said shafts; a connecting-chain therefor; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; a connecting-conduit for said troughs; an oil-reservoir; an oil-pump adapted to deliver to said drum-troughs; an overflow-pipe for said troughs; a service-pipe connected to said carbureting-chamber at the rear end thereof; and an air-supply connected to said carbureting-chamber at its forward end, all coacting for the purpose specified.

4. The combination of a carbureting tank or chamber; two or more foraminated drums; shafts therefor projecting from said carbureting-chamber; sprocket-wheels on said shafts; a connecting-chain therefor; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; an oil-reservoir; an oil-pump adapted to deliver to said drum-troughs; an overflow-pipe for said troughs; a service-pipe connected to said carbureting-chamber at the rear end thereof; a service-pipe connected to said carbureting-chamber at a point in front of the last of said drums; and an air-supply connected to said carbureter-chamber at its forward end, all coacting for the purpose specified.

5. The combination of a carbureting tank or chamber; two or more foraminated drums; shafts therefor projecting from said carbureting-chamber; sprocket-wheels on said shafts;

a connecting-chain therefor; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which drums extend, arranged beneath the same; an oil-reservoir; an oil-pump adapted to deliver to said drum-troughs; a service-pipe connected to said carbureting-chamber at the rear end thereof; a service-pipe connected to said carbureting-chamber at a point in front of the last of said drums; and an air-supply connected to said carbureting-chamber at its forward end, all coacting for the purpose specified.

6. The combination of a carbureting tank or chamber; two or more foraminated drums; shafts therefor projecting from said carbureting-chamber; sprocket-wheels on said shafts; a connecting-chain therefor; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; an oil-reservoir; an oil-pump adapted to deliver to said drum-troughs; an overflow-pipe for said troughs; a service-pipe connected to said carbureting-chamber at the rear end thereof; and an air-supply connected to said carbureting-chamber at its forward end, all coacting for the purpose specified.

7. The combination of a carbureting tank or chamber; two or more revolubly-mounted foraminated drums; fabric coverings for said drums; curtains or flaps secured above the said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; a connecting-conduit for said troughs; an overflow-pipe for said troughs; a service-pipe connected to said carbureting-chamber at the rear end thereof; a service-pipe connected to said carbureting-chamber at a point in front of the last of said drums; and an air-supply connected to said carbureting-chamber at its forward end, all coacting for the purpose specified.

8. The combination of a carbureting tank or chamber; two or more revolubly-mounted foraminated drums; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; a connecting-conduit for said troughs; an overflow-pipe for said troughs; a service-pipe connected to said carbureting-chamber at the rear end thereof; and an air-supply connected to said carbureting-chamber at its forward end, all coacting for the purpose specified.

9. The combination of a carbureting tank or chamber; two or more revolubly-mounted foraminated drums; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; a connecting-conduit for said troughs; a service-pipe connected

to said carbureting-chamber at the rear end thereof; a service-pipe connected to said carbureting-chamber at a point in front of the last of said drums; and an air-supply connected to said carbureting-chamber at its forward end, all coacting for the purpose specified.

10. The combination of a carbureting tank or chamber; two or more revolubly-mounted foraminated drums; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; oil-troughs into which said drums extend, arranged beneath the same; a connecting-conduit for said troughs; a service-pipe for said carbureting-chamber at the rear end thereof; and an air-supply connected to said carbureting-chamber at its forward end, all coacting for the purpose specified.

11. The combination of a carbureting tank or chamber; two or more revolubly-mounted foraminated drums; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest thereon; a service-pipe connected to said carbureting-chamber at the rear end thereof; a service-pipe connected to said carbureting-chamber at a point in front of the last of said drums; and an air-supply connected to said carbureting-chamber at its forward end, for the purpose specified.

12. The combination of a carbureting tank or chamber; two or more revolubly-mounted foraminated drums; fabric coverings for said drums; curtains or flaps secured above said drums, the free ends of which rest upon the same; a service-pipe connected to said carbureting-chamber at the rear end thereof; and an air-supply connected to said carbureting-chamber at its forward end, for the purpose specified.

13. The combination of a carbureting tank or chamber; two or more revolubly-mounted foraminated drums forming partitions across said chamber; fabric coverings for said drums; a service-pipe connected to said carbureting-chamber at the rear end thereof; a service-pipe connected to said carbureting-chamber at a point in front of the last of said drums; and an air-supply connected to said carbureting-chamber, for the purpose specified.

14. The combination of a carbureting tank or chamber; two or more revolubly-mounted foraminated drums forming partitions across said chamber; fabric coverings for said drums; a service-pipe connected to said carbureting-chamber at the rear end thereof; and an air-supply connected to said carbureting-chamber at its forward end, for the purpose specified.

15. The combination of a carbureter-chamber; a carbureting-drum revolubly mounted in said chamber; a curtain or flap supported

above said drum and resting thereon; a service-pipe connected to said carbureter at the rear of said drum; a textile-fabric covering at the inner end of said service-pipe; and an air-supply connected to the forward end of said carbureter-chamber, for the purpose specified.

16. The combination of a carbureter-chamber; a carbureting-drum revolubly mounted in said chamber; and a curtain or flap supported above said drum, the free end of which rests upon the same; for the purpose specified.

17. The combination of a carbureter tank or chamber having an oil-receptacle in the lower portion thereof; a carbureting-drum revolubly mounted in said carbureter-chamber, the lower portion of which projects into said oil-receptacle; a curtain secured in the top of said chamber and adapted to rest upon said carbureting-drum to coact therewith in forming a partition across said chamber; a service-pipe connected to said carbureter in the rear of said drum; a fabric covering for the inner end of said service-pipe; and an air-pipe adapted to deliver to said carbureting-chamber at the forward end thereof, for the purpose specified.

18. The combination of a carbureter-chamber; a carbureting-drum revolubly mounted in said chamber; a curtain or flap supported above said drum and resting thereon; a service-pipe connected to said carbureter at the rear of said drum; a textile-fabric covering at the inner end of said service-pipe; and an air-supply connected to the forward end of said carbureter-chamber, for the purpose specified.

19. The combination of a carbureter-chamber; two or more revolubly-mounted carbureting-drums; a service-pipe connected to said carbureter-chamber at the rear of said drums; a service-pipe connected to said chamber at a point in front of the last of said drums; and an air-supply connected to the forward end of said carbureter-chamber, for the purpose specified.

20. The combination of a carbureter-chamber; two or more carbureting devices arranged in series therein; a service-pipe connected to said carbureter-chamber at the rear end thereof; and a service-pipe connected to said carbureter-chamber at a point in front of the last of said carbureting devices; and an air-supply connected to the forward end of said chamber, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

HERBERT A. BURCH. [L. s.]

Witnesses:

ETHEL A. TELLER,
OTIS A. EARL.