

No. 816,846.

PATENTED APR. 3, 1906.

F. CHARRON & L. GIRARDOT.
CARBURETER FOR PETROLEUM MOTORS.

APPLICATION FILED MAR. 22, 1902.

3 SHEETS—SHEET 1.

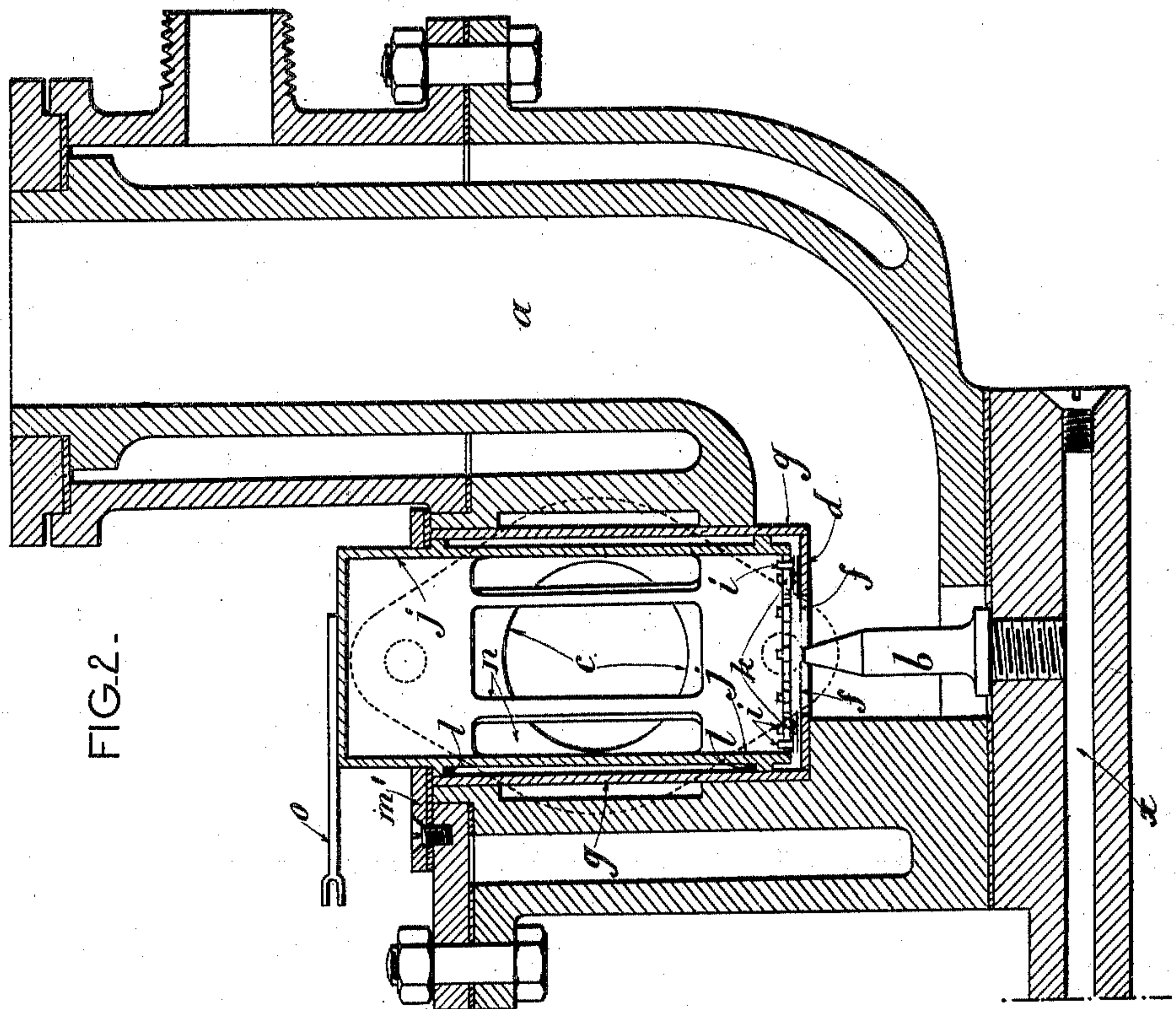
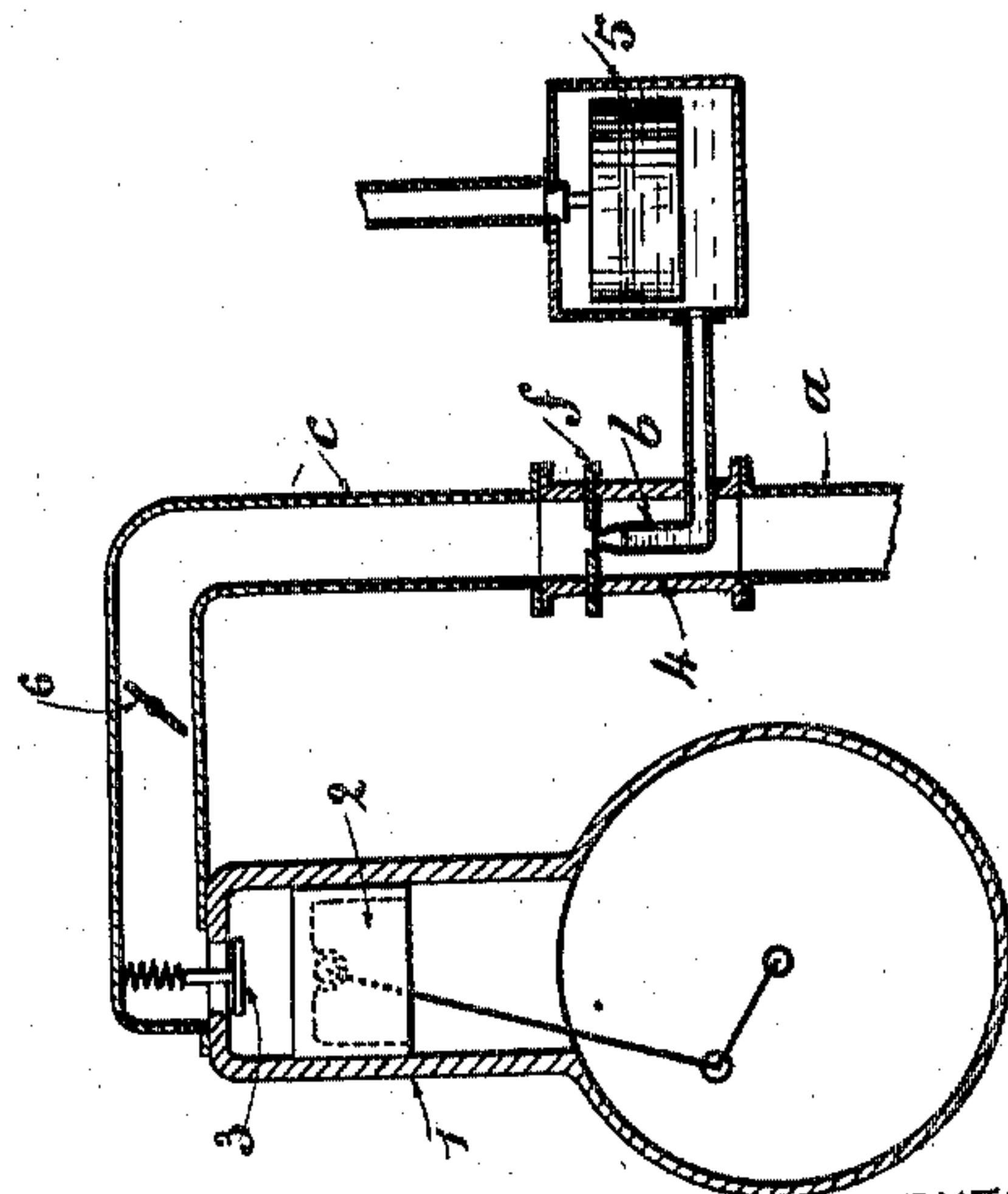


FIG. 1.



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3 SHEETS—SHEET 2.

FIG. 3.

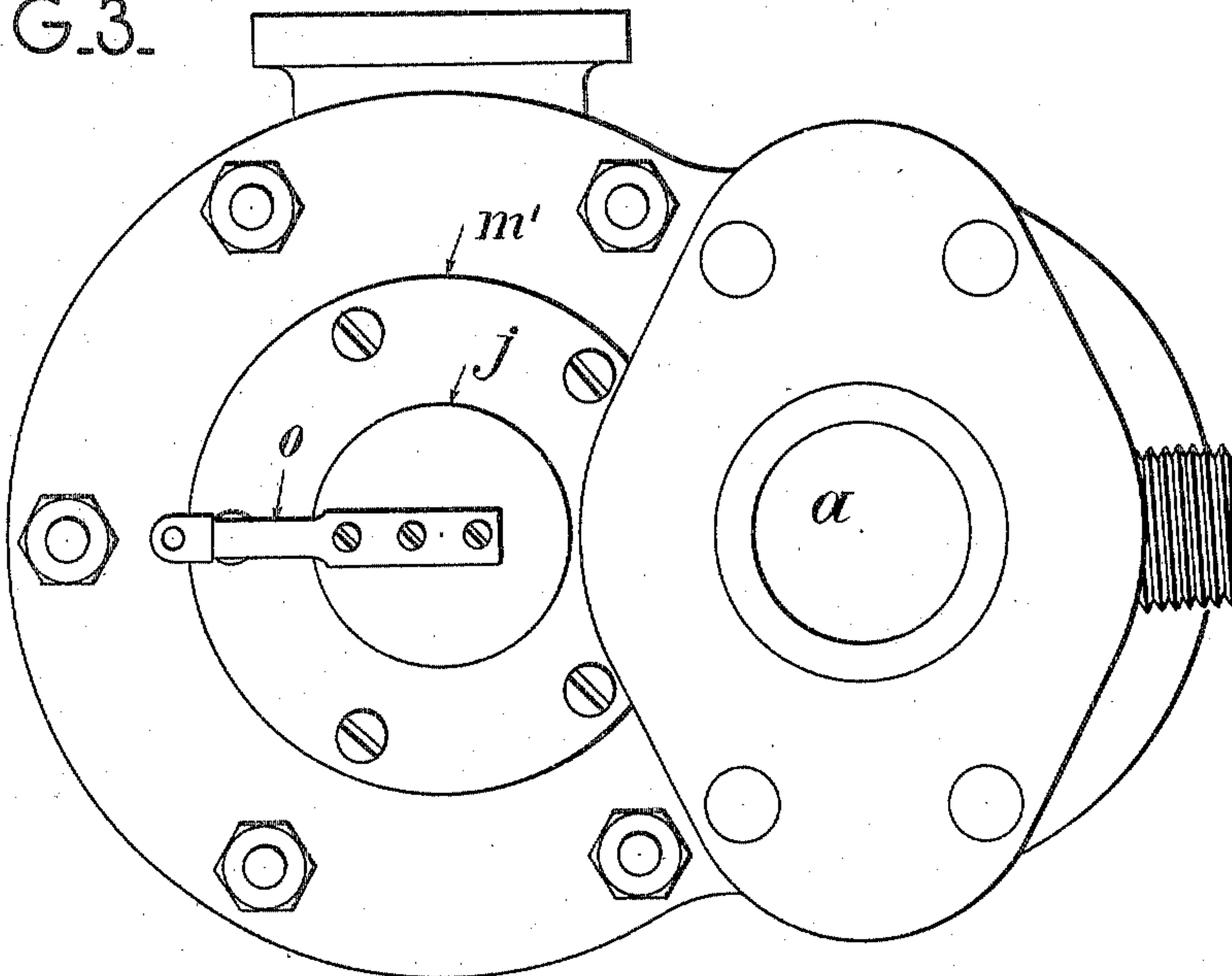
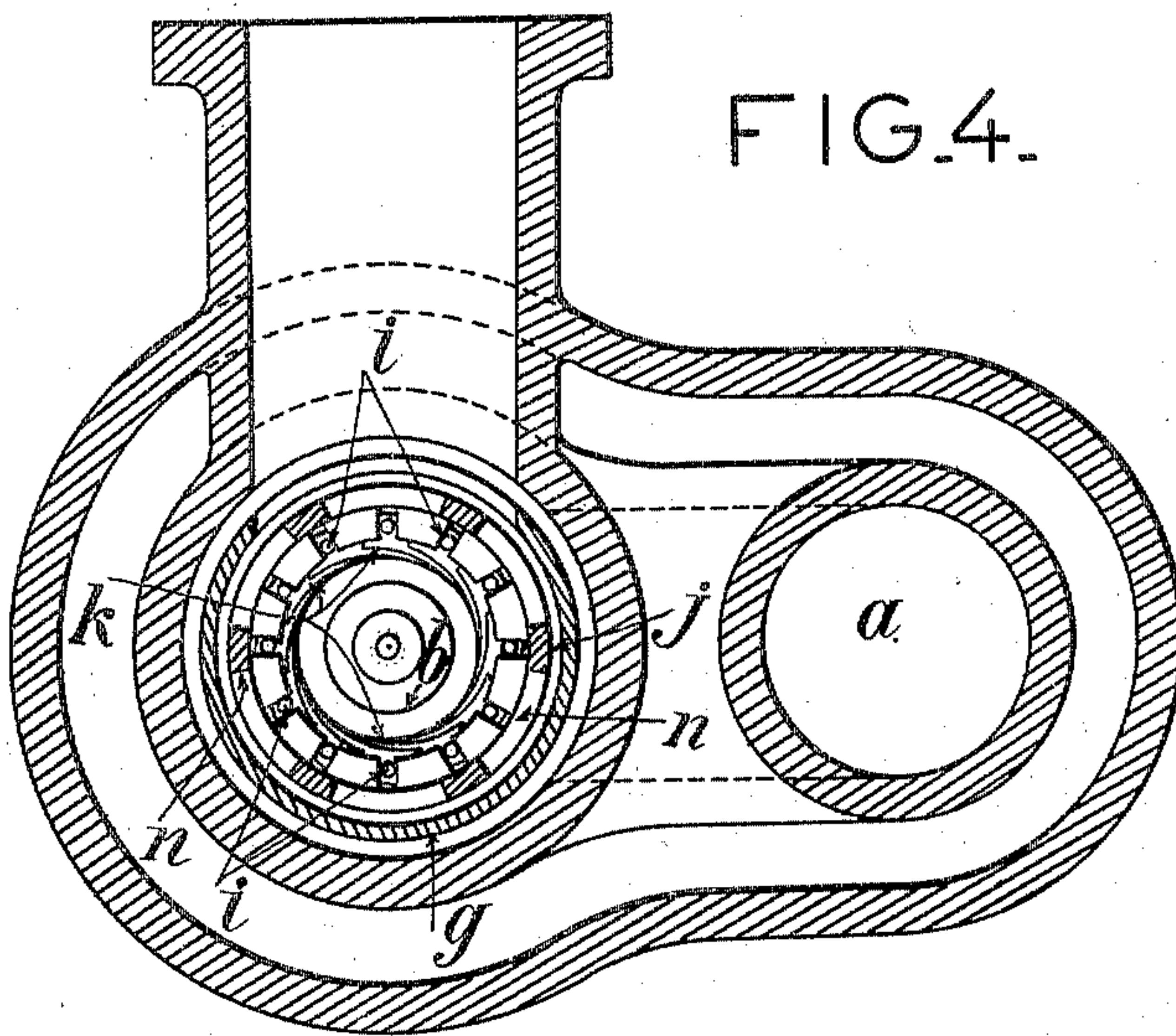


FIG. 4.



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3 SHEETS—SHEET 3.

FIG. 5.

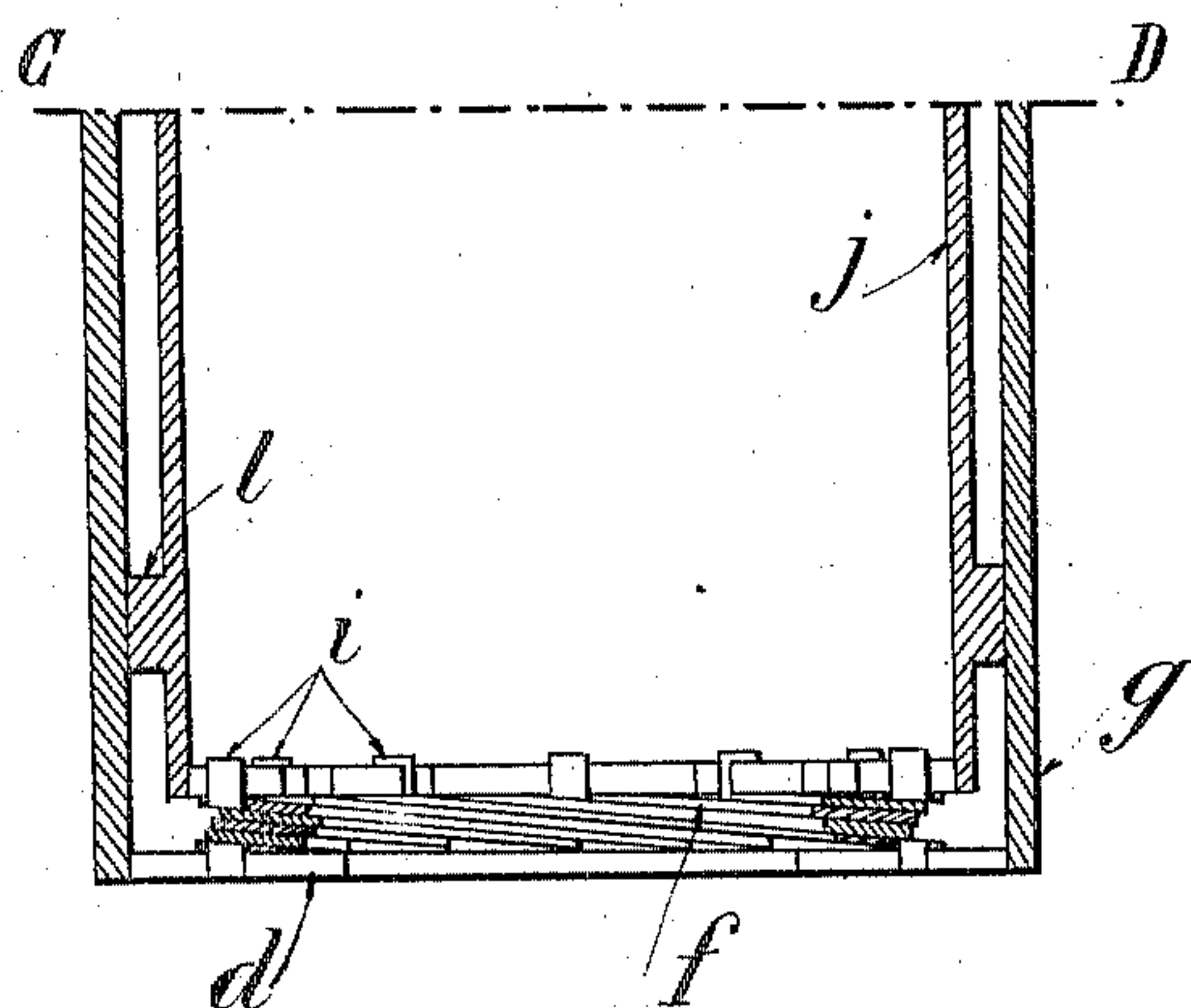


FIG. 7.

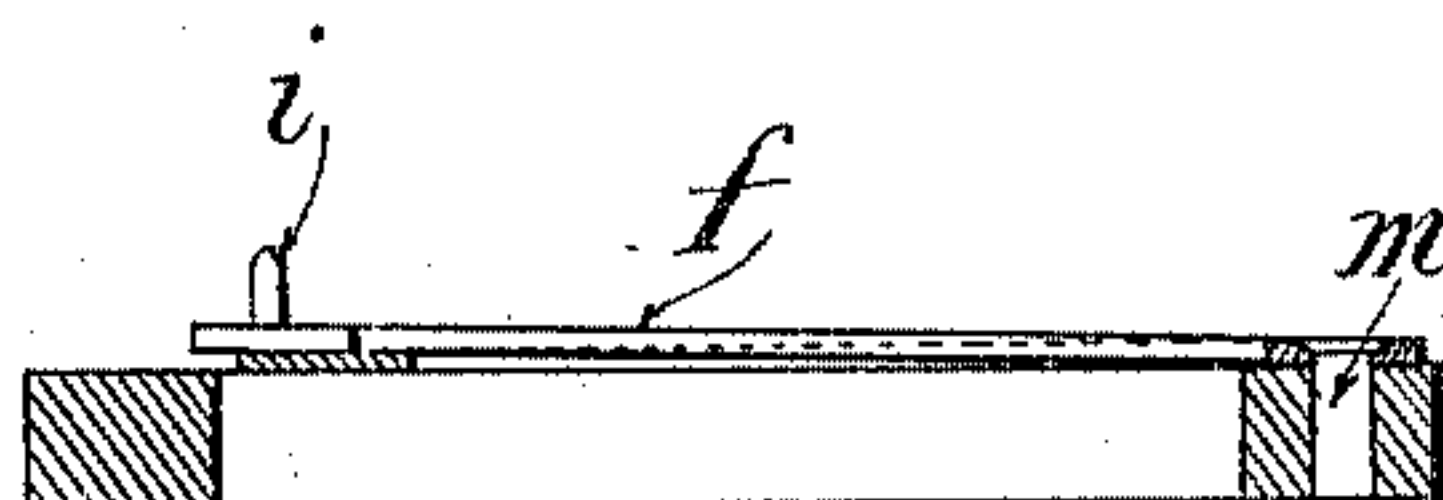


FIG. 6.

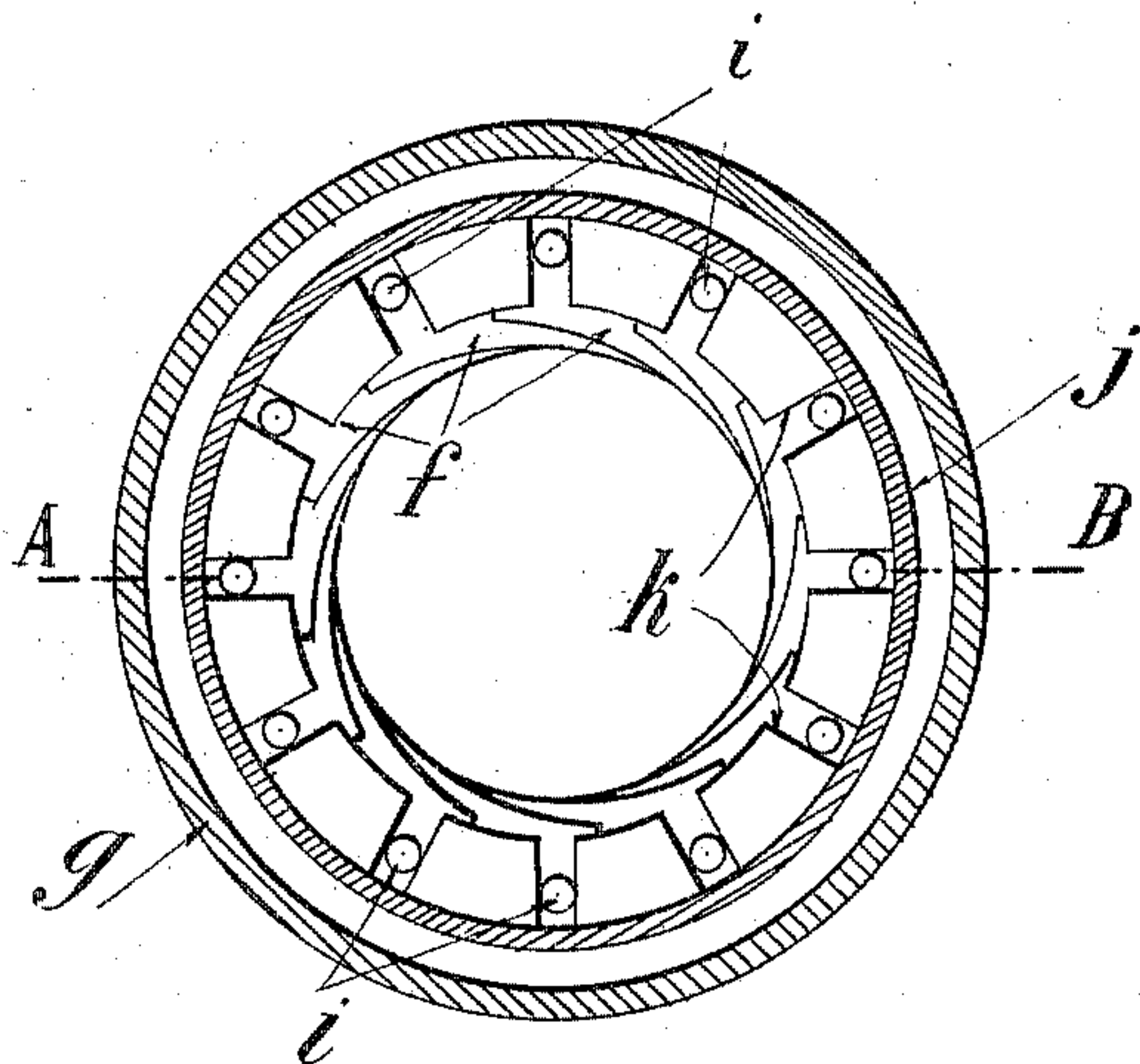
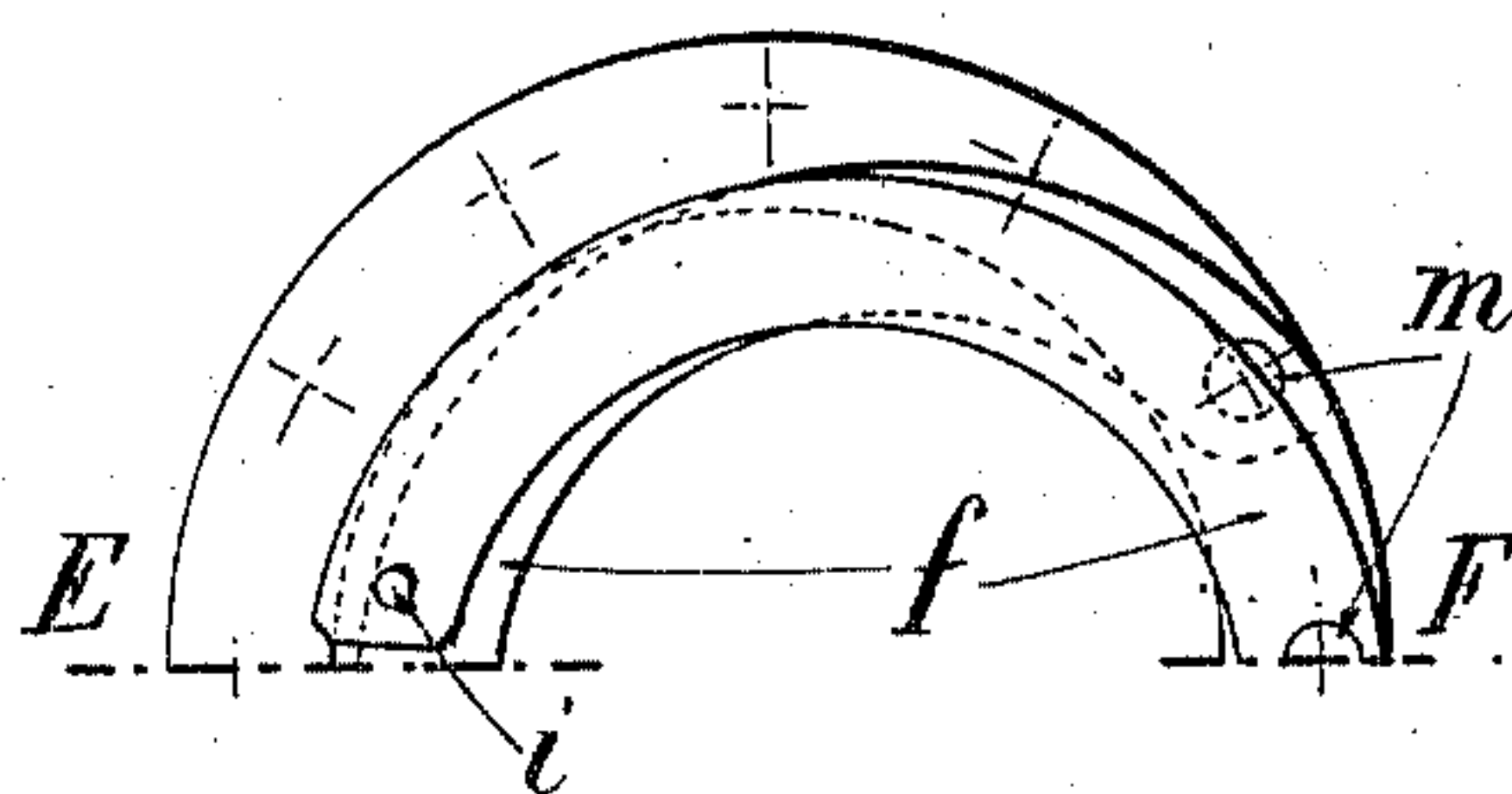


FIG. 8.



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FERDINAND CHARRON AND LÉONCE GIRARDOT, OF PARIS, FRANCE.

CARBURETER FOR PETROLEUM-MOTORS.

No. 816,846.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed March 22, 1902. Serial No. 99,514.

To all whom it may concern:

Be it known that we, FERDINAND CHARRON and LÉONCE GIRARDOT, citizens of the Republic of France, residing at 45 Avenue de la Grance Armée, Paris, France, have invented certain new and useful Improvements in Carbureters for Petroleum-Motors, of which the following is a specification.

This invention relates to carbureters for petroleum-motors, and has for its object to provide means for regulating the section of the air-passage in the carbureting-chamber at the point where the nozzle for petrol or the like leads to, so that this section may be varied in conformity with the piston speed. By this means a constant and efficient carburation can be provided under varying motor speeds.

It is well known that if the air passes too slowly alongside the opening-hole of the petrol-supply nozzle the petrol is not sucked out at all or not in sufficient quantity and sufficient carburation does not take place; but even with a slow piston speed if we conveniently reduce the cross-section of the air-passage at the space where the nozzle lets out petrol the speed at which the air passes through the section increases, the suction of petrol can proceed, and carburation takes place.

This improvement has considerable importance in practice, notably for the motors applied to motor-cars. It permits, for example, of the starting of the engine by insuring a perfect carburation and in consequence motor-explosions when the starting-gear is turned slowly. It is, in fact, sufficient to reduce at this moment the air-passage to a minimum. Also when in motion this improvement permits of the regular working of the motor at a very slow speed with a perfect carburation and regular explosions which is at present impossible. At present, in fact, the shutter placed on the entrance of the air-inlet pipe permits, indeed, of diminishing the speed to some extent; but if closed beyond a certain limit the speed of the inflowing air next to the nozzle is too feeble to cause the petrol to be sucked out, so that the carburation does not take place any longer and the motor stops.

With our improvement, on the contrary, even if a mixture-throttle is used and is nearly closed, as in the slackening of speed for street-crossings in towns, &c., our regulator of air-section being at that moment at

its minimum of opening, the speed of the air flowing past the nozzle is sufficient and carburation is effected, permitting of working regularly and without jerks at low speed as long and as economically as desired.

Our air-section regulator can be formed by any mechanical arrangement permitting of narrowing and enlarging at will the section of the air-passage in the plane of the outlet-nozzle.

In the accompanying drawings, Figure 1 is a diagrammatic view of a motor with a carbureter for regular carburation. Fig. 2 is a form of construction of a carbureter incorporating our invention, in which we employ as air-section regulator an iris diaphragm of the type well known in photography. We have besides supposed in this figure that the iris diaphragm is applied to a carbureter with constant level and with water-jacket of our system, as described in our patent application filed this day under the Serial No. 99,513. Fig. 3 is a plan view of our carbureter. Fig. 4 is a horizontal sectional view made through the mixture-outlet turbine. Fig. 5 is a vertical sectional detail view of the iris-valve regulator on a larger scale, the section being taken through A B of Fig. 6. Fig. 6 is a horizontal section taken through C D of Fig. 5. Fig. 7 is a sectional detail view taken on line E F, Fig. 8. Fig. 8 is a plan of Fig. 7.

Referring to Fig. 1, 1 represents the cylinder of the motor, 2 the piston, 3 the mixture-inlet valve kept closed at rest by a spring and opening by the suction of the piston. 4 represents the carbureter proper; b, the petrol-injector; 5, the constant-level petrol-reservoir; a, the air-inlet pipe, and c the pipe leading the mixture to the motor. In this pipe c is arranged the usual throttle or valve 6 at a small distance in front of the inlet-valve.

The section-regulator f can be of any suitable construction; but the one we prefer is that of the iris type. (Shown in Figs. 2, 5, and 6.) According to this construction a is the air-entrance pipe; b, the nozzle into which the petrol arrives through a bore z, coming from a constant-level reservoir. c is the pipe for conveying the gas mixture to the admission-valve of motor.

The iris-regulator is placed in the horizontal plane passing through the outlet-orifice of the nozzle b. For this purpose the bottom plate d, on which are pivoted the small curved blades f, the combination of which consti-

tutes the iris, is fixed, for instance, at the bottom end of a fixed cylinder *g* in the frame of the carbureter.

Above the blades *f*, which each carry a projecting stud *i*, the inside rim of a movable cylinder *j* lies, the said rim having radial grooves *k*, in which the studs *i* engage. This cylinder *j* is guided in its rotation by its circular ribs *l*, and any vertical displacement is rendered impossible by a plate *m'*, fixed on the cover of carbureter, said plate bearing on the upper rib or collar *l* of cylinder *j*. The cylinder *j* has large oblong orifices *n* on its circumference, and the cylinder *g* has a round orifice opposite the mixture-pipe *c*, so that this pipe communicates always with the interior of the carbureter. On the closed end of cylinder *j* is fixed a lever *o*, which permits of rotating this cylinder, and therefore opening or closing the iris more or less, and thus augmenting or lessening more or less the section of the air-passage in the plane of the orifice of the nozzle. This lever *o* is generally fastened by a connecting-rod or in any other way to the throttle, which itself is placed under the command of the driver or of the governor, because during working the throttle and this regulator of air-section have always to augment or to lessen their opening at the same time. On starting, however, the regulator of air-section is rendered independent of the throttle, because at this moment only the throttle has to be fully open and the regula-

tor of air-section has to show the minimum section. On starting the regulator of air-section is then brought by hand to the desired position.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

A jet or spray carbureter for petroleum-motors, comprising a carburation-chamber to which leads the nozzle or petrol-outlet nozzle *b* and which is connected by one side to the air-inlet pipe *a* and by the other side to the combustible-mixture-outlet pipe *c* leading to the motor, in combination with an iris diaphragm *f* arranged across the air-stream-issuing section in the plane of the orifice of the nozzle *b*, a rotating cylinder *j* which controls the blades of the diaphragm and which is provided with windows *n* for the outlet of the combustible mixture, a plate *m* which keeps said cylinder in position and insures a joint on its circumference and a controlling-lever *c* secured to the cylinder outside of the carbureter, substantially as and for the purpose set forth.

In witness whereof we have hereunto set our hands in presence of two witnesses.

FERDINAND CHARRON.
LEONCE GIRARDOT.

Witnesses:

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EDWARD P. MACLEAN.