

No. 654,977.

Patented July 31, 1900.

W. HAWKS.
HYDROCARBON LAMP.

(Application filed Apr. 1, 1899. Renewed June 25, 1900.)

(No Model.)

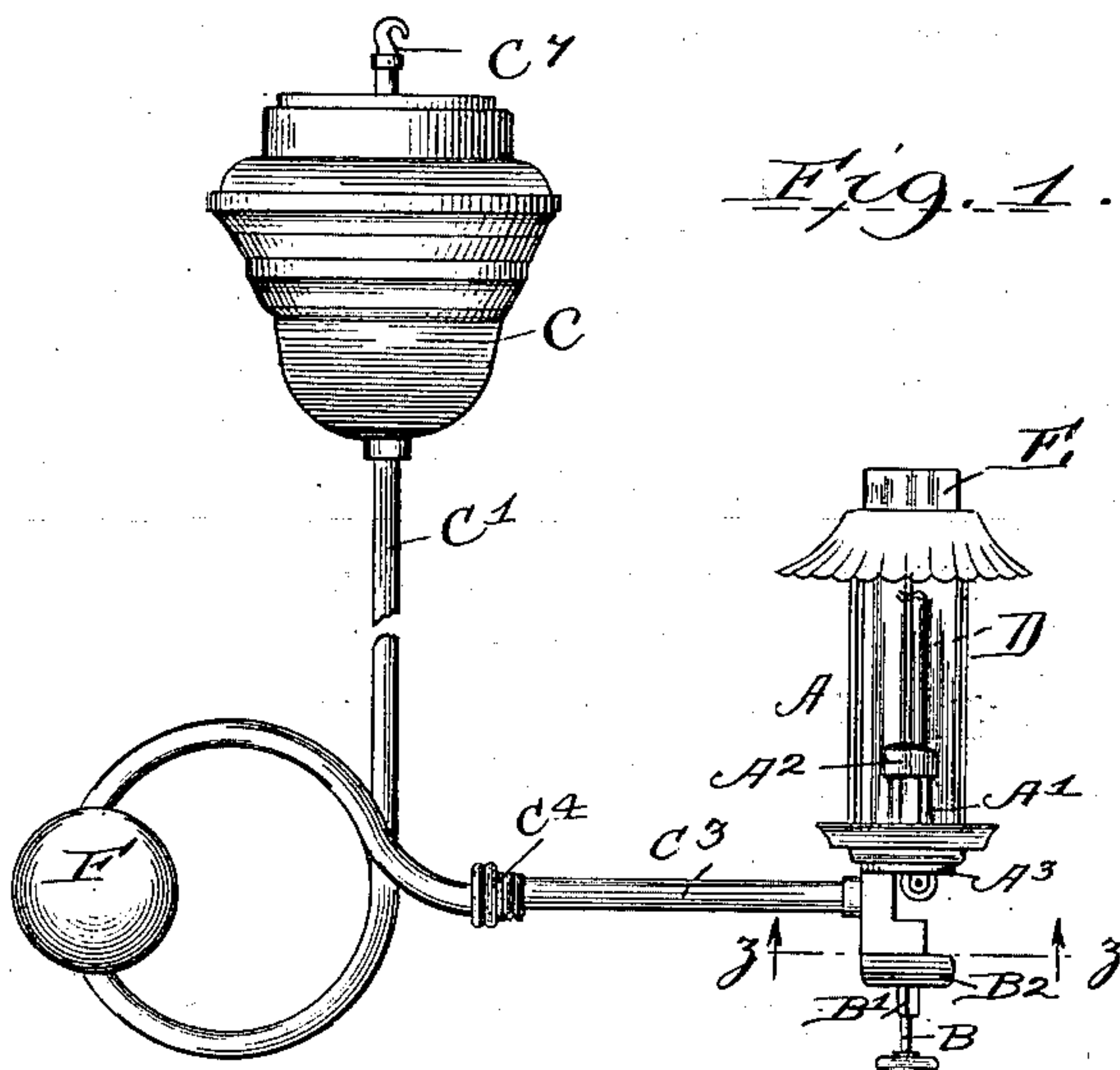


Fig. 1.

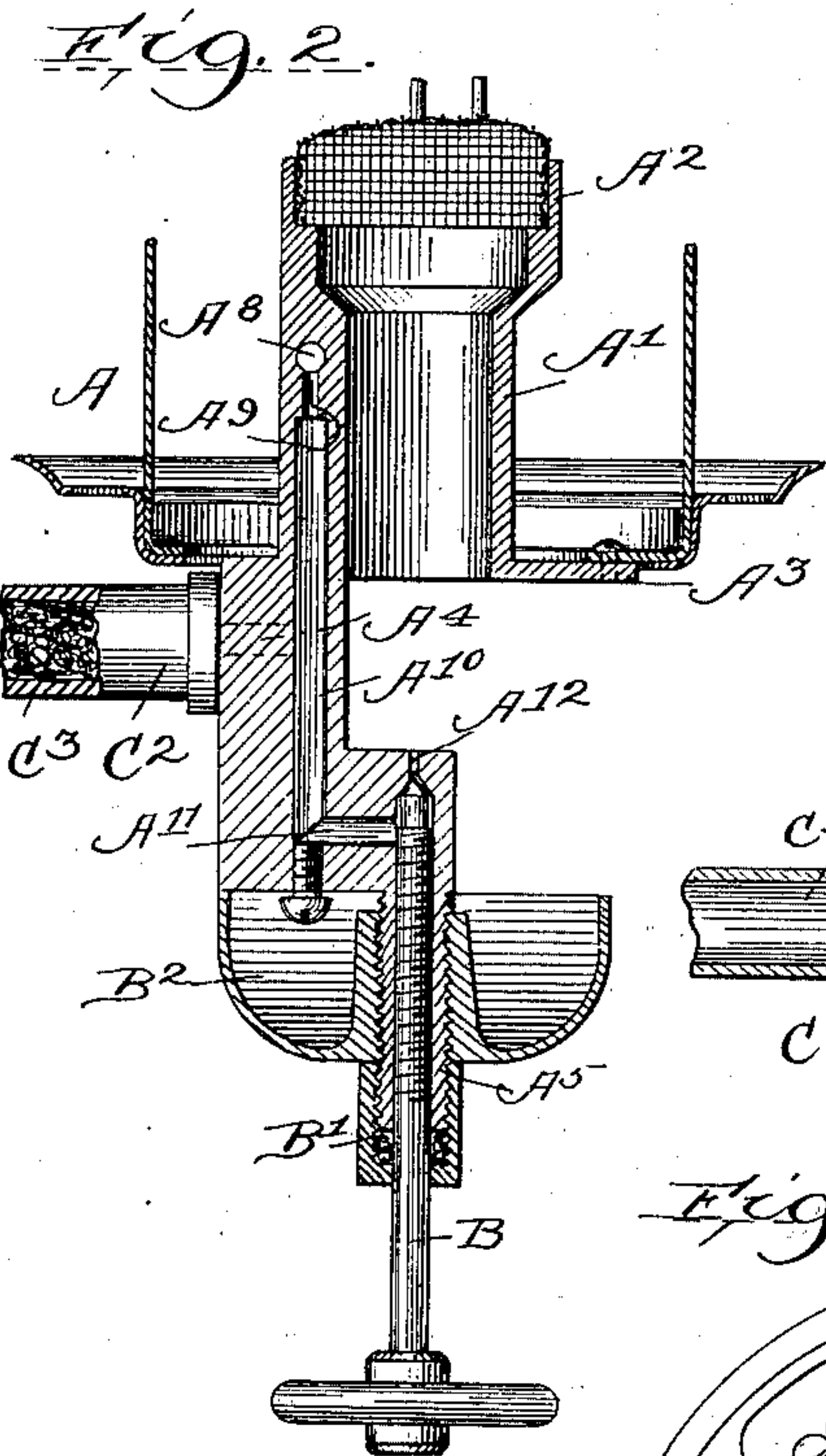


Fig. 2.

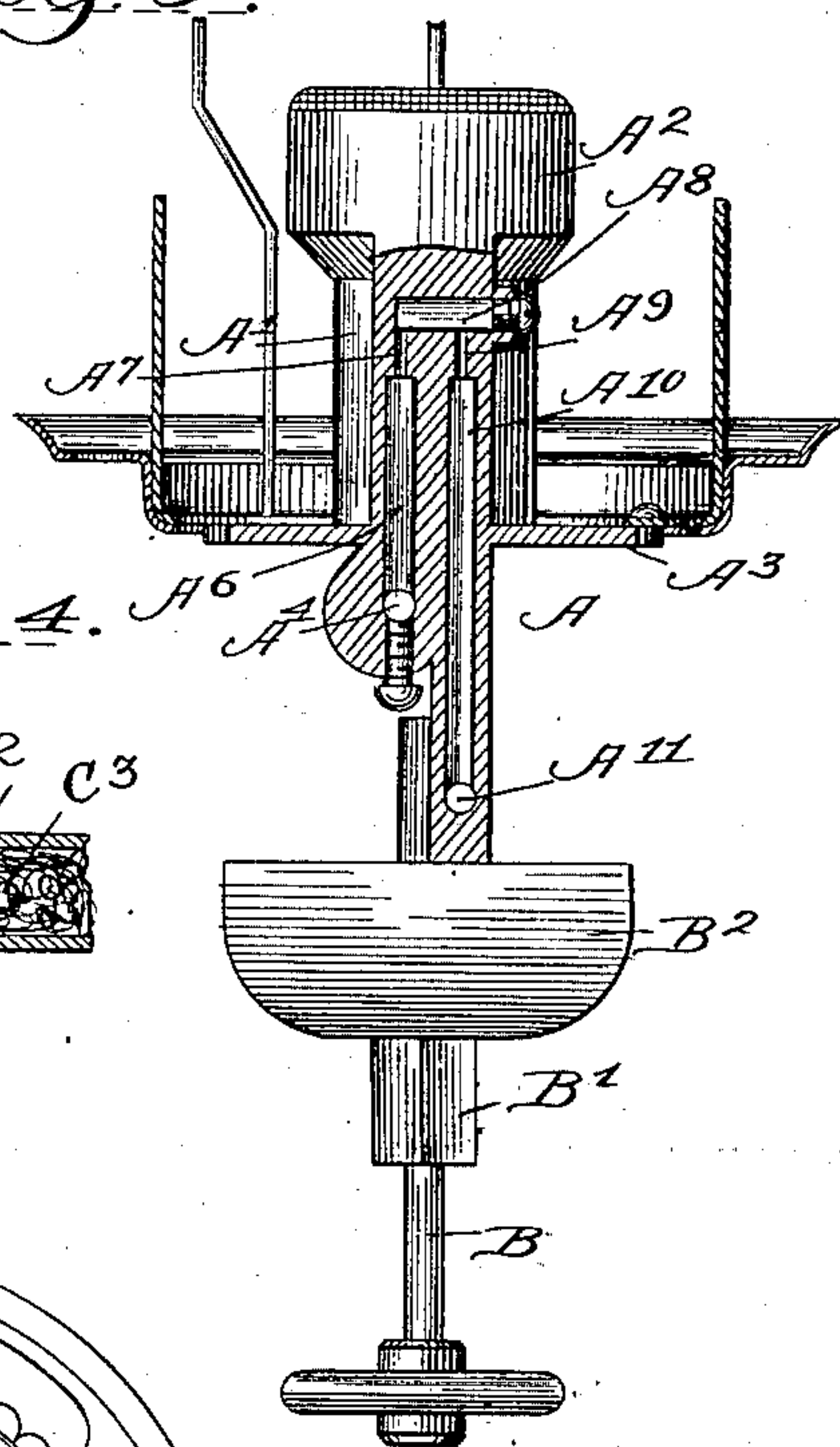


Fig. 3.

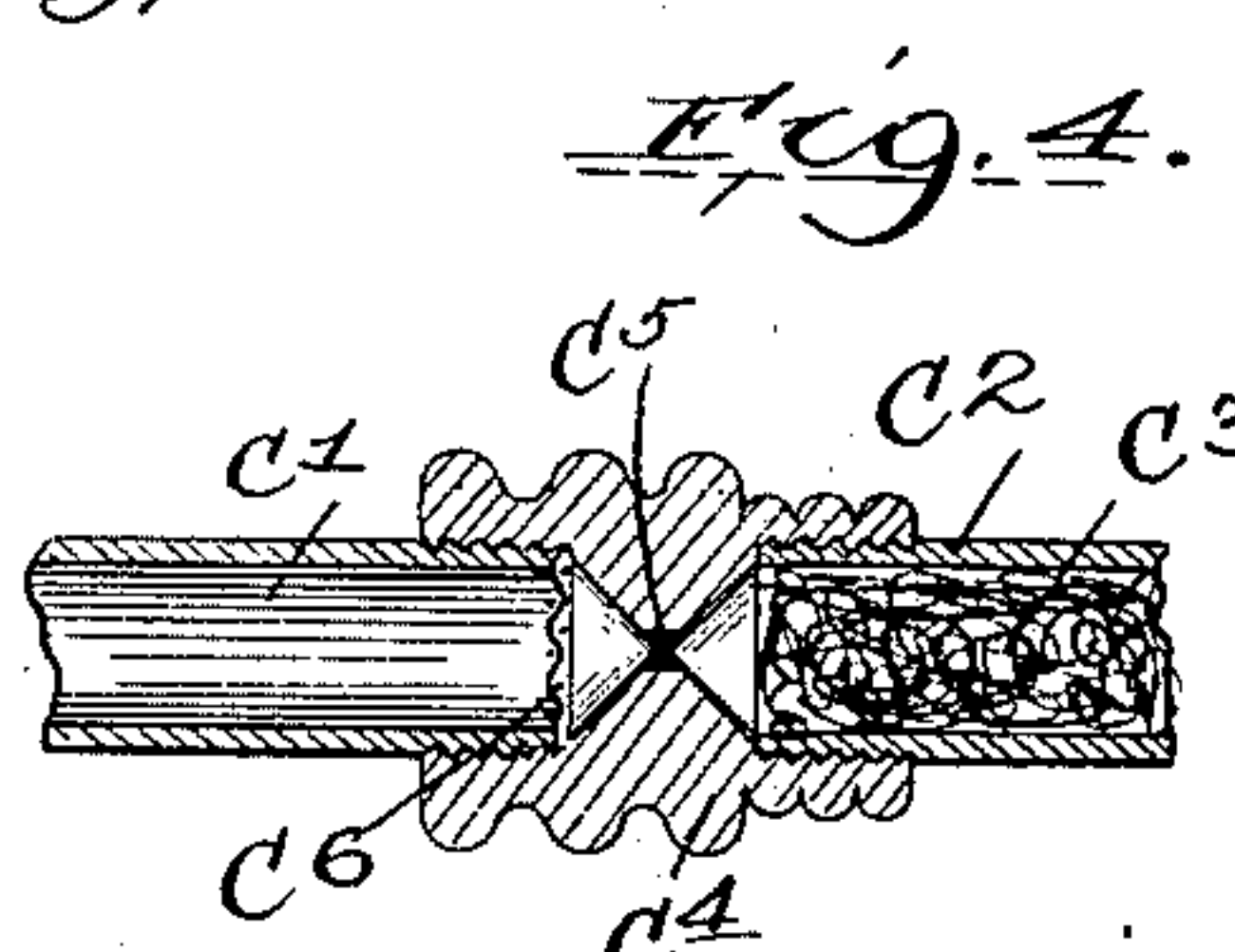


Fig. 4.

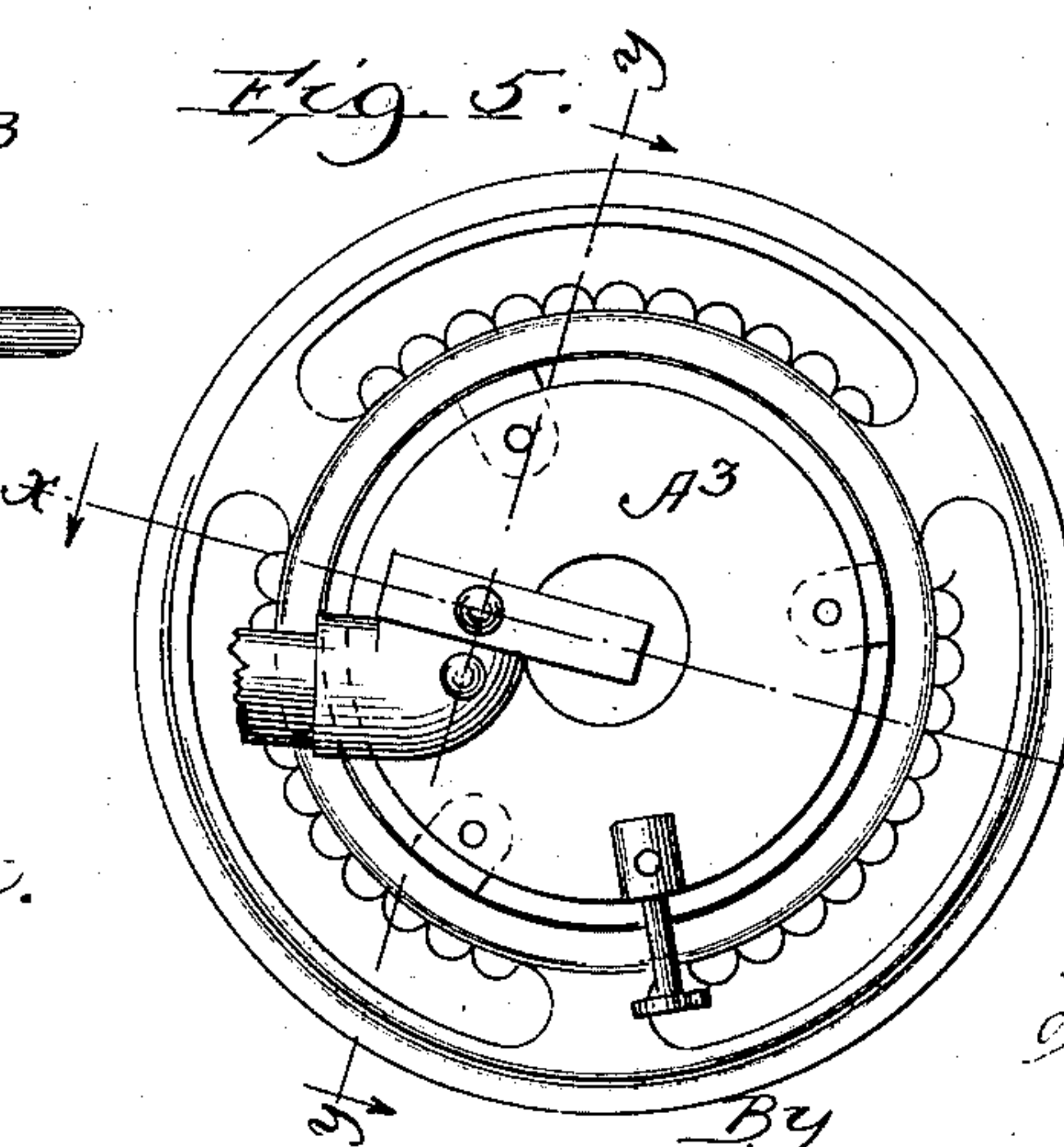


Fig. 5.

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HYDROCARBON-LAMP.

SPECIFICATION forming part of Letters Patent No. 654,977, dated July 31, 1900.

Application filed April 1, 1899. Renewed June 25, 1900. Serial No. 21,574. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAWKS, a citizen of the United States, residing at Midland, in the county of Midland and State of Michigan, have invented certain new and useful Improvements in Hydrocarbon-Lamps, of which the following is a specification.

The object of this invention is the production of a self-generating lamp of improved construction, one that is simple and thus may be cheaply produced, whose parts are easily accessible for cleaning, and wherein the arrangement of those parts is such that the generation of gas is rendered steady and its combustion complete.

In the accompanying drawings, Figure 1 is a side elevation of this lamp, a portion of the fuel-supply pipe being broken away. Fig. 2 is a vertical central section through the lamp-burner on dotted lines xx , Fig. 5. Fig. 3 is a vertical section on dotted line yy , Fig. 5. Fig. 4 is a section through a coupling interposed in the fuel-supply pipe; and Fig. 5 is a horizontal section on dotted line zz , Fig. 1.

Like letters of reference indicate corresponding parts throughout the several views.

In the construction of this lamp I provide a body portion A, the upper part of which is tubular, being composed of the two portions A' and A², respectively, together forming a mixing-chamber, wherein are united the generated hydrocarbon gas and a sufficient quantity of air to make the mixture completely combustible. An annular flange A³ projects outward from the lower edge of the tubular portion A' of the body portion A and supports the lamp-mantle and lamp-chimney. An opening A⁴, formed in the body portion A, is screw-threaded for the reception of a fuel-supply pipe, and a tubular stem A⁵, screw-threaded both inside and outside, is provided for the attachment of a needle-valve, both said supply-pipe and stem to be later described herein.

The hydrocarbon gas used in this lamp is generated from the liquid fuel in ducts, which extend within the body portion A, said liquid fuel entering through the threaded opening A⁴, passing thence upward through the ducts A⁶ and A⁷, transversely through the duct A⁸, downward through the ducts A⁹ and A¹⁰, again transversely through the duct A¹¹ to

the needle-valve. An opening A¹², closed by said needle-valve, is situated so that the generated gas will be discharged under pressure upward into and through the tubular portions A' and A² of the body portion A, drawing air with it and forming with said air a combustible gas. The generating-ducts A⁶, A⁷, A⁸, A⁹, A¹⁰, and A¹¹ and the discharge-opening A¹² are drilled in the body portion A after the same is cast, and the outer open ends of said ducts are closed by screws, the removal of which screws permits ingress to said ducts for clearing them of sediment. The ducts A⁷ and A⁹ are made of smaller diameter than those which they connect, it having been found that the generation of gas is much more perfect and the flame steadier when portions of the generating-ducts are made with reduced diameters.

A needle-valve of ordinary of construction presides over the discharge-opening A¹², the screw-threaded valve-stem B of said needle-valve lying within the tubular stem A⁵ of the body portion A, and is provided with the usual stuffing-box B'. The said stuffing-box B' holds the circular generating-cup B² in position on the external screw-threads of the tubular stem A⁵.

A reservoir C is adapted to contain the liquid fuel and is connected with the opening A⁴ in the body portion A by the supply-pipe C'. A portion C² of this supply-pipe C' adjacent to the lamp-body A is packed with some suitable filtering material C³, as asbestos, and said packing is held in position by the coupling C⁴, which closes the pipe C', except for a minute opening C⁵, permitting the liquid fuel to pass into the filtering material from the reservoir C. A screen C⁶, of wire-gauze or other suitable material, is placed within the coupling C⁴ to prevent the passage of particles into the filtering material C³. C⁷ is a hook at the upper part of said reservoir C, its purpose being to attach the lamp to any suitable support.

The mantle D and the chimney E are similar to the mantles and chimneys in ordinary use upon lamps of this kind.

A weight F is affixed to the liquid-fuel pipe C' at a point suitable to balance the weight of the lamp as the same is suspended by said pipe.

In operation gasoline or other hydrocarbon is placed in the reservoir C and flowing downward through the pipe C' and the filtering material C³ fills the generating-ducts A⁶, A⁷, 5 A⁸, A⁹, A¹⁰, and A¹¹, being arrested by the closed needle-valve. When it is desirable to light the lamp, a small quantity of alcohol is poured into the generating-cup B² and ignited. The burning of the alcohol heats the body 10 portion A of the lamp sufficiently to generate a quantity of gas in the generating-ducts A⁶, A⁷, A⁸, A⁹, A¹⁰, and A¹¹, filling those ducts with the generated gas and forcing the hydrocarbon back toward the reservoir. As soon 15 as the alcohol in the generating-cup B² has been consumed the needle-valve is opened and the hydrocarbon gas escaping upward under pressure through the discharge-opening A¹² mixes with suitable proportions of air 20 in the tubular portions A' and A² of the body portion A and upon ignition burns within the

mantle D, heating said mantle to incandescence.

I claim as my invention—

In a hydrocarbon-lamp, in combination, a 25 reservoir; a fuel-pipe; a filter in said pipe; a coupling C⁴, for said fuel-pipe; a body portion for the lamp, having a tubular mixing-chamber with an annular flange extending from its lower end, also having an opening 30 for the fuel-pipe, the generating-ducts A⁶, A⁷, A⁸, A⁹, A¹⁰, and A¹¹, of which ducts A⁷, and A⁹, are of smaller diameter than those which they connect, a downwardly-extending L-shaped arm and a threaded tubular stem for 35 the needle-valve; a needle-valve for said stem; and a generating-cup.

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Witnesses:

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