

(No Model.)

2 Sheets—Sheet 1.

F. H. CHIDESTER.
VULCANIZER.

No. 315,241.

Patented Apr. 7, 1885.

Fig. 1.

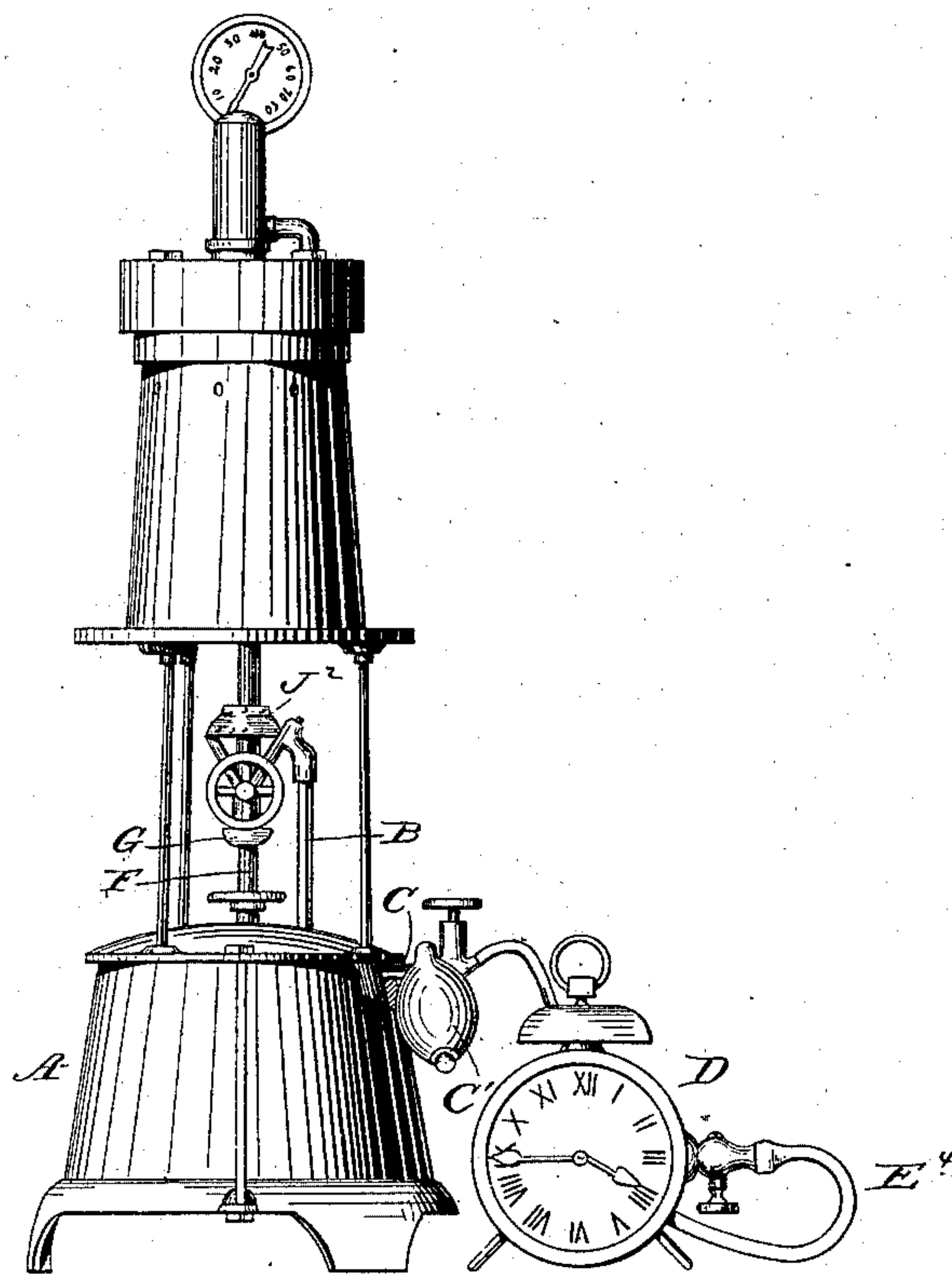
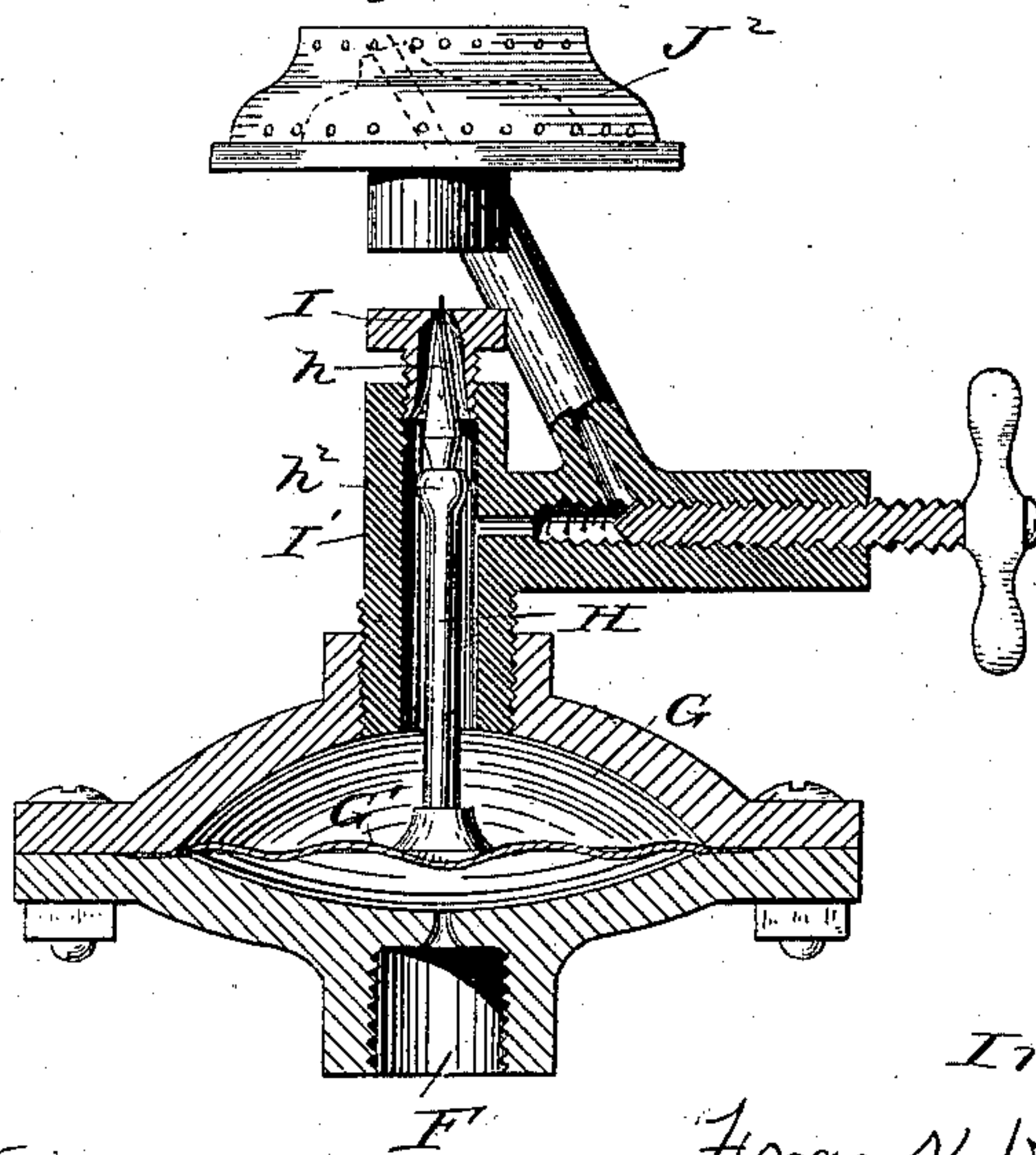


Fig. 2.



Witnesses:

N. N. Low
B. W. Sommers

Inventor:

Frank H. Chidester
by Smedley & Bliss

(No Model.)

2 Sheets—Sheet 2.

F. H. CHIDESTER.
VULCANIZER.

No. 315,241.

Patented Apr. 7, 1885.

Fig. 3.

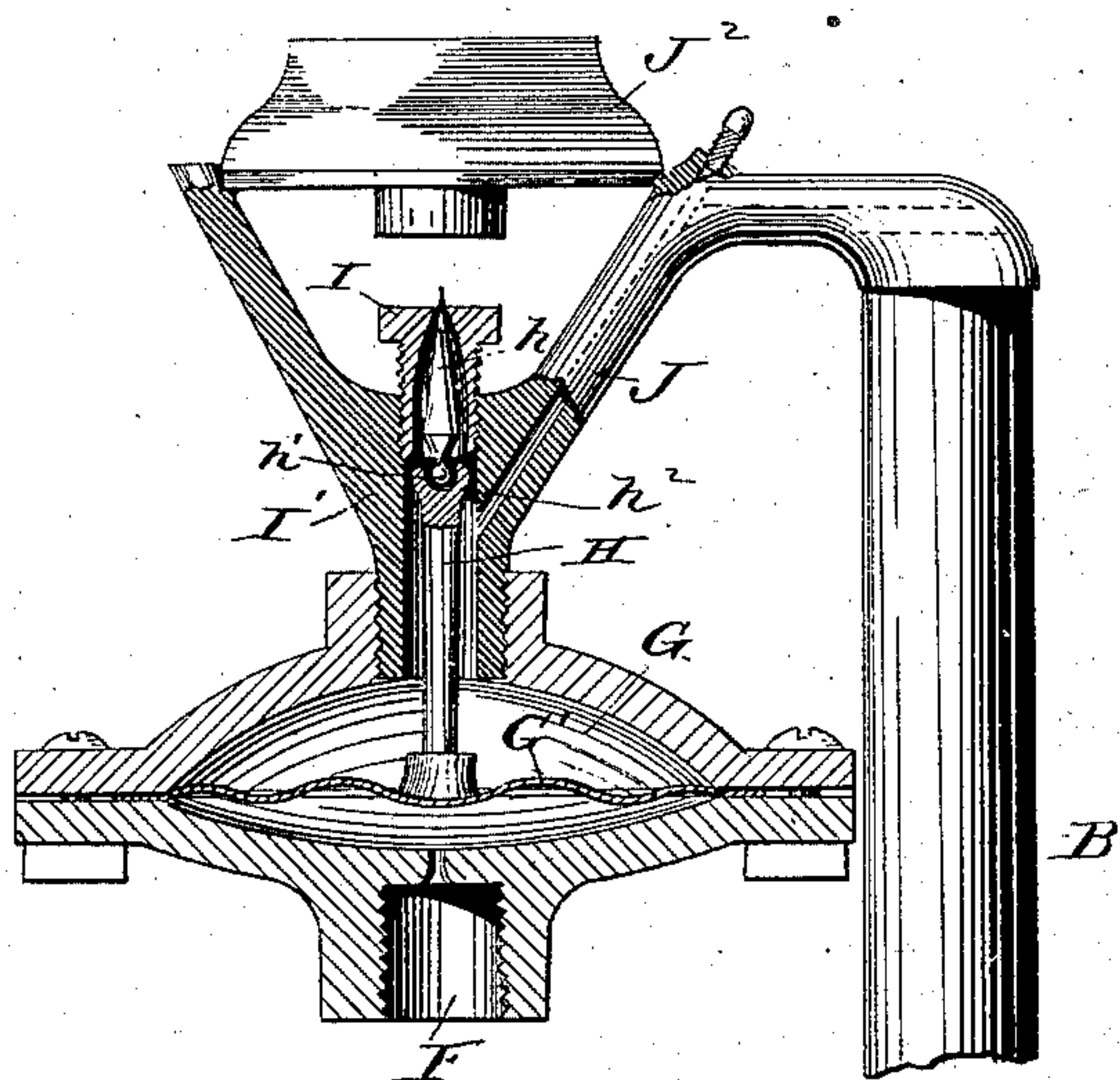


Fig. 4.

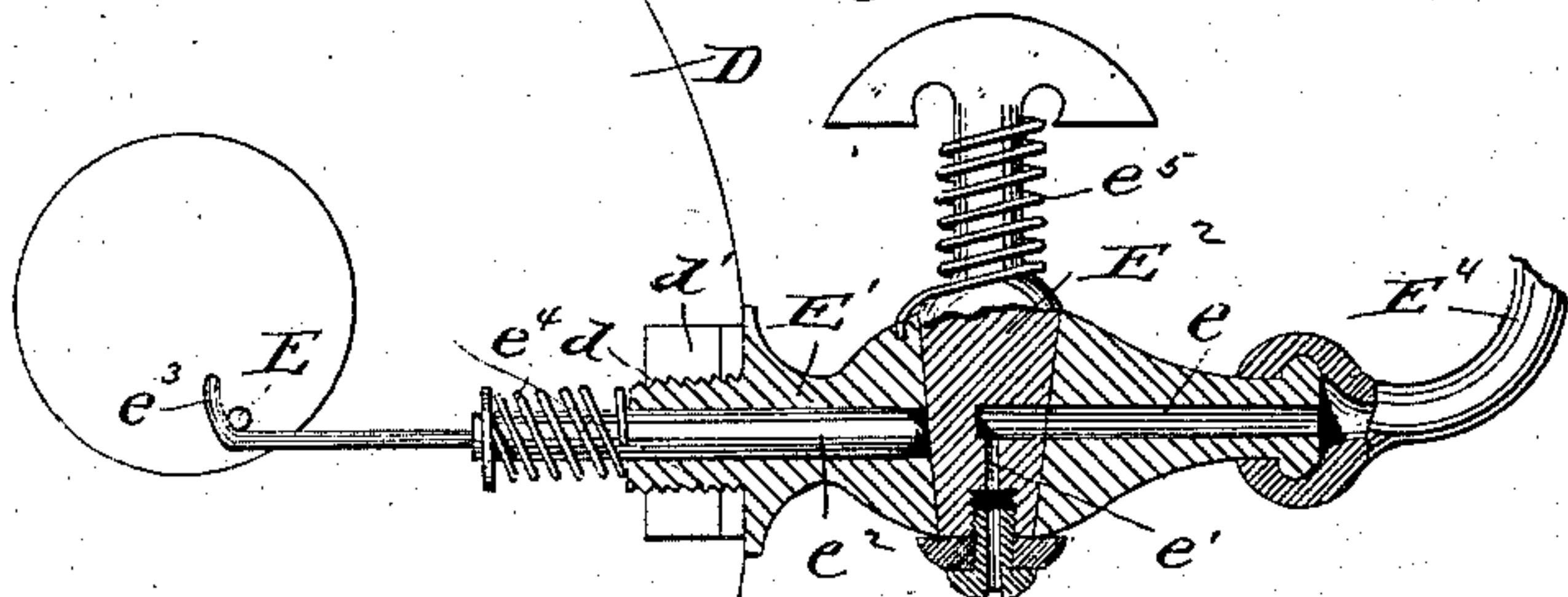
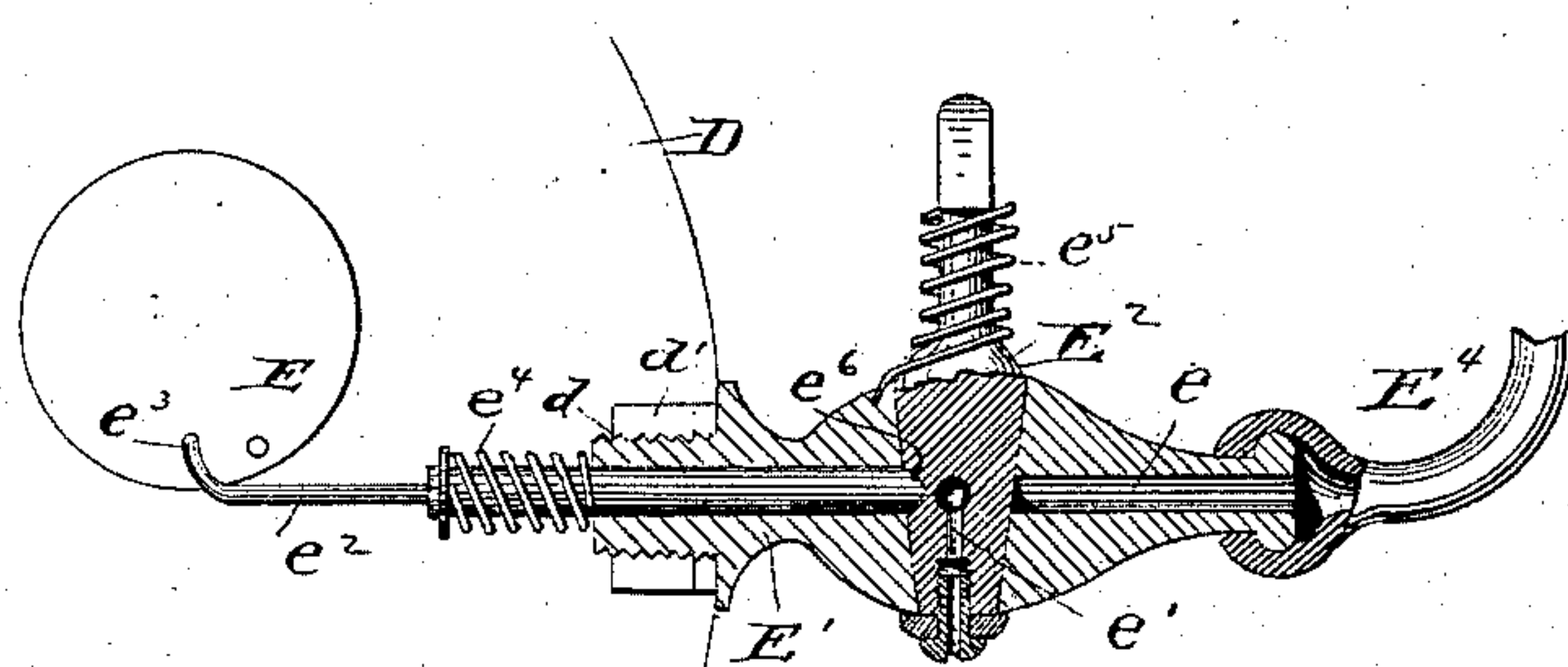


Fig. 5.



Witnesses:

A. N. Low
B. W. Sommers

Inventor:

Frank H. Chidester
by Doubleday & Bliss
attys.

UNITED STATES PATENT OFFICE.

FRANK H. CHIDESTER, OF MASSILLON, OHIO.

VULCANIZER.

SPECIFICATION forming part of Letters Patent No. 315,241, dated April 7, 1885.

Application filed December 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. CHIDESTER, a citizen of the United States, residing at Massillon, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Vulcanizers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to mechanism for vulcanizing, especially to the devices used by dentists for treating small quantities of material, it relating more particularly to those parts of the mechanism by means of which the degree of heat is regulated, and also the time of application thereof.

Figure 1 is a side view of an apparatus embodying my improvements. Fig. 2 is a longitudinal section through the burner on a larger scale. Fig. 3 shows the needle-valve and its supporting-rod detached. Figs. 4 and 5 are sectional views of the devices for regulating the escape of air from the air-reservoir.

In the drawings I have shown a vapor-stove, which may be of any of the several styles now known and used, in which employment is made of a volume of air under pressure for feeding the hydrocarbon liquid upward through the supply-tube of the burner.

It is not necessary to describe in detail all the parts of this portion of the mechanism.

A represents, generally, the reservoir which contains the hydrocarbon, and B the supply-tube, from which the oil rises to the burner. At C there is an air-tube, through which air can be forced by means of a hand-bulb, C', or other equivalent mechanism, there being valves adapted to permit the ingress of the air when the pressure is great enough from the outside, and adapted also to prevent the escape of the air. With this mechanism thus generally referred to I combine devices by means of which at any instant the pressure of the air within the reservoir may be relieved, so that there shall be an immediate cessation in the upward flowing of the oil. The means which I have devised for this purpose may be more or less modified, and I do not therefore wish to be limited in this respect; but I have selected the form which I at present prefer, and which is sufficient to illustrate the essential features of this part of the invention.

D represents, generally, a clock mechanism, which, so far as the main operative parts thereof are concerned, may be of any common form—that is to say, it is only necessary that it should have means for marking regular intervals of time, together with adjustable mechanism for bringing into operation the devices which relieve the reservoir of the air-pressure.

I have shown the clock mechanism in the drawings as being provided with an adjustable tripper, E, which can come into engagement with a rod, and the latter moves a valve or cock that closes an aperture connected with the air-reservoir, and when the tripping device reaches said rod the valve is opened and the air is allowed to escape. The tripper can be set so as to be brought into operation by the clock mechanism at any required moment. By means of these devices the flow of the hydrocarbon liquid to the burner can be instantly stopped, so that the generation of the heat will be broken at the instant required. I have also shown in the drawings a mechanism by means of which the steam generated in the vulcanizer proper can be utilized to regulate the amount of vapor which escapes at the needle-orifice in the burner, the pressure of the steam varying, as is well known, in proportion to the heat generated below the vulcanizer, and therefore in proportion to the amount of vapor which escapes at the needle-orifice.

In my previous patent, No. 300,953, dated June 24, 1884, I have shown a mechanism for regulating the flow of the vapor from a vulcanizer-burner; but I have found that under some circumstances one of the character herein shown is superior. In the present case the steam is allowed to pass through a duct, F, into a chamber, G, having a diaphragm, G', against which the steam can bear. To this diaphragm there is secured the valve-rod H, the latter being provided with a needle-point at h, which passes through and fits the orifice at which the vapor escapes. This orifice is formed in an adjustable piece or block, I, which is screw-threaded and fits in the upper end of the burner-tube I'. The vapor passes to the interior of this latter tube I' at a point immediately below the adjustable part I, through a

tube, J, preferably constituting a part of the support for the upper portion, J², which is fitted to the top of the supply-tube B, that rises from the reservoir below. The valve-rod H is not integral with the needle-point h. The latter consists of a conical part, h, and a ball or enlargement, h', at the lower end, which is fitted in a socket, h², in the upper end of the valve-rod. When the point is thus connected with the valve-rod, there is an assurance that it shall tightly close the orifice regardless of the position of the valve-rod. It is very difficult to secure the latter to the diaphragm in such manner as to have it force the needle properly into the orifice under all circumstances; but this difficulty is overcome by interposing a joint between the needle-tip and the diaphragm adapted to operate, as does that shown. However, I do not wish to be limited to all of the details in this respect—that is to say, to the diaphragm or the adjustable piece I or the other parts set forth—inasmuch as this part of the invention is applicable to the closing of the needle-orifice when the other parts are considerably varied.

I have above called attention, generally, to the air-releasing mechanism, and will describe the details of the construction shown.

E' E² represent a stop-cock, the tube E' of which is inserted into the case of the clock D and secured thereto by nuts d', fitting threads at d, or by other suitable means. The rotary part E² is provided with a right-angled passage-way adapted to register with the passage e, the latter being connected by a hose, E¹, with the interior of the air-reservoir.

e² is a draw-rod situated in the aperture in the tubular part E'. It is at its inner end adapted to fit into a socket at e⁶ in the part E², and when said inner end is seated in said socket the part E² is prevented from rotating. A spring, e⁴, is so arranged that it tends to force the rod e² into said socket at e⁶. At e⁵ there is a spring connected with the revolving part E², this spring tending to draw said part E² into the position shown in Fig. 4—that is, into the position which brings the aperture e' to register with the aperture e. At e³ the draw-rod is bent or provided with a stud, projection, or lug, with which the tripper E can engage.

The latter at the time set draws the rod out from the socket e⁶, whereupon spring e⁵ compels the part E² to take a quarter-turn, bringing the ducts e e' into conjunction. After this occurs the air under pressure in the reservoir will escape through the tube E⁴ and said ducts e e'. As said above, these parts may be varied to a large extent without departing from the spirit of the invention.

What I claim is—

1. In a vulcanizer, the combination of a hydrocarbon-reservoir, an air-reservoir adjacent thereto, means, substantially as set forth, for allowing the escape of the air from said reservoir, and a clock-work, constructed and arranged substantially as set forth, to operate the said air-releasing devices.

2. The combination of the steam-generator, the chamber provided with a diaphragm or partition, the duct communicating with the steam-generator and with the chamber upon one side of said diaphragm or partition, and an adjustable bar or block provided with a needle-orifice, substantially as described.

3. The combination, with the needle-point and the part having the needle-orifice, of a valve-rod united to the point by a flexible joint, substantially as set forth.

4. The combination, with the air-reservoir and the devices which store air therein under pressure, of the timing mechanism, the valve or stop-cock attached to the timing mechanism, the escape-duct communicating with the air-reservoir and with the aperture at or through said valve or stop-cock, and tripping devices, substantially as described, operated by the clock to open said valve or stop-cock, as set forth.

5. The combination, with the air-reservoir, of a timing mechanism and an air-escape duct, a stop-cock or valve for said duct, and an intermittently-moving rod operated by the timing mechanism to release said valve or stop-cock, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK H. CHIDESTER.

Witnesses:

S. J. HARMOUNT,
ISAAC M. MAY.