

(No Model.)

2 Sheets—Sheet 1.

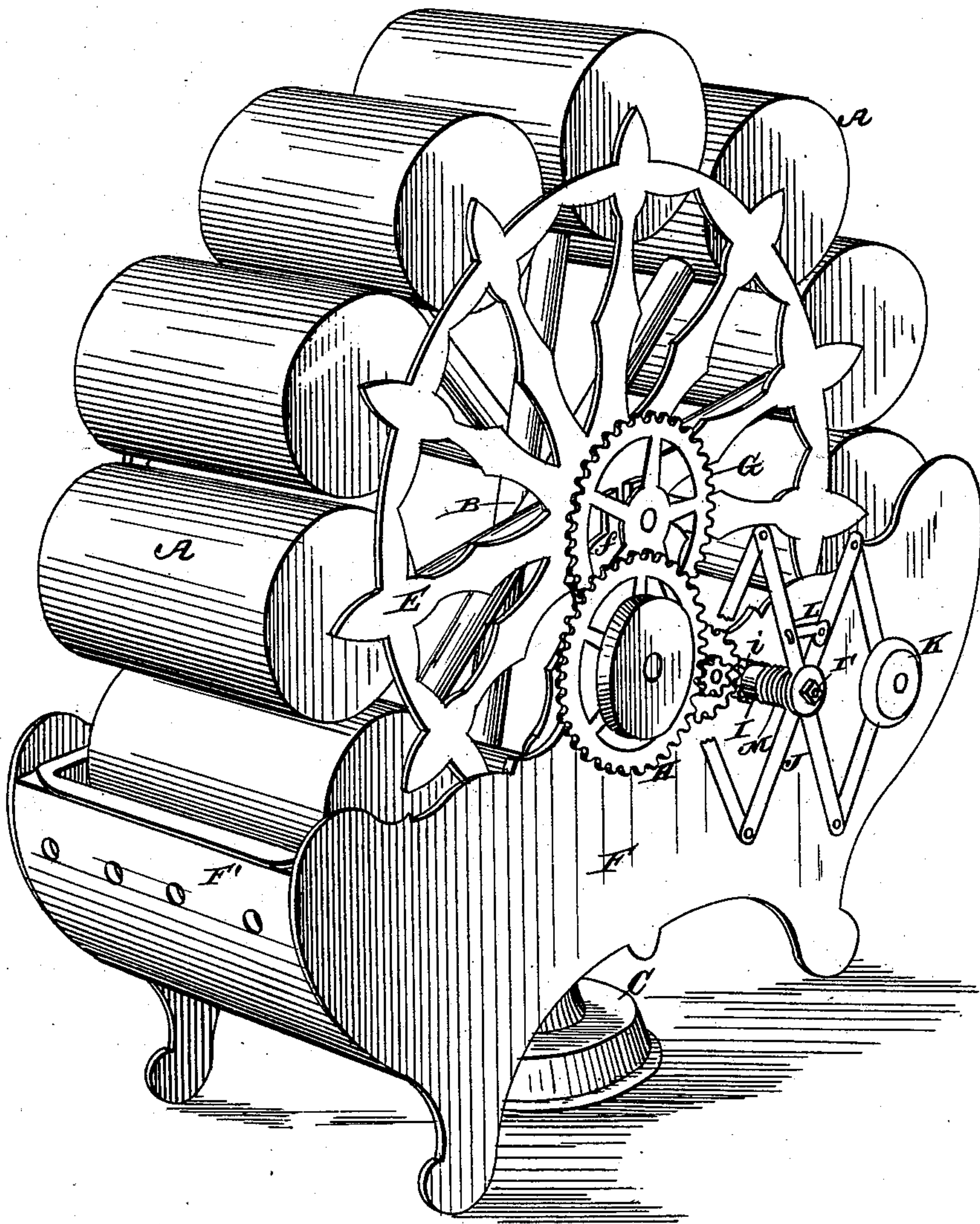
A. & A. ISKE.

MOTOR.

No. 256,482.

Patented Apr. 18, 1882.

Fig. 1.



Witnesses.

Robert Overett.
Edward G. Siggers.

Inventors.

Anthony Iske
& Albert Iske

By Wm H Babcock Atty.

(No Model.)

2 Sheets—Sheet 2.

A. & A. ISKE,

MOTOR.

No. 256,482.

Patented Apr. 18, 1882.

Fig. 2.

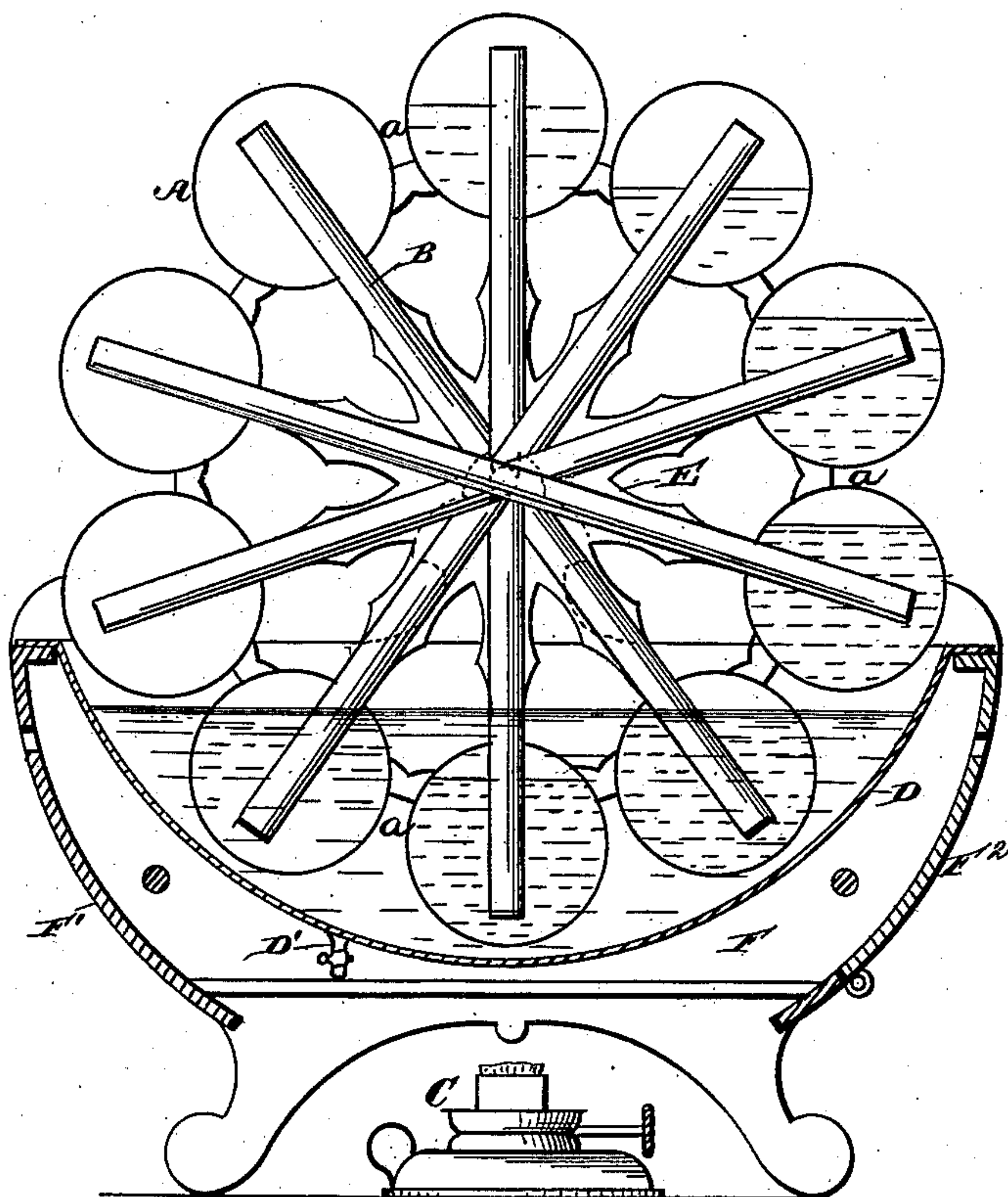
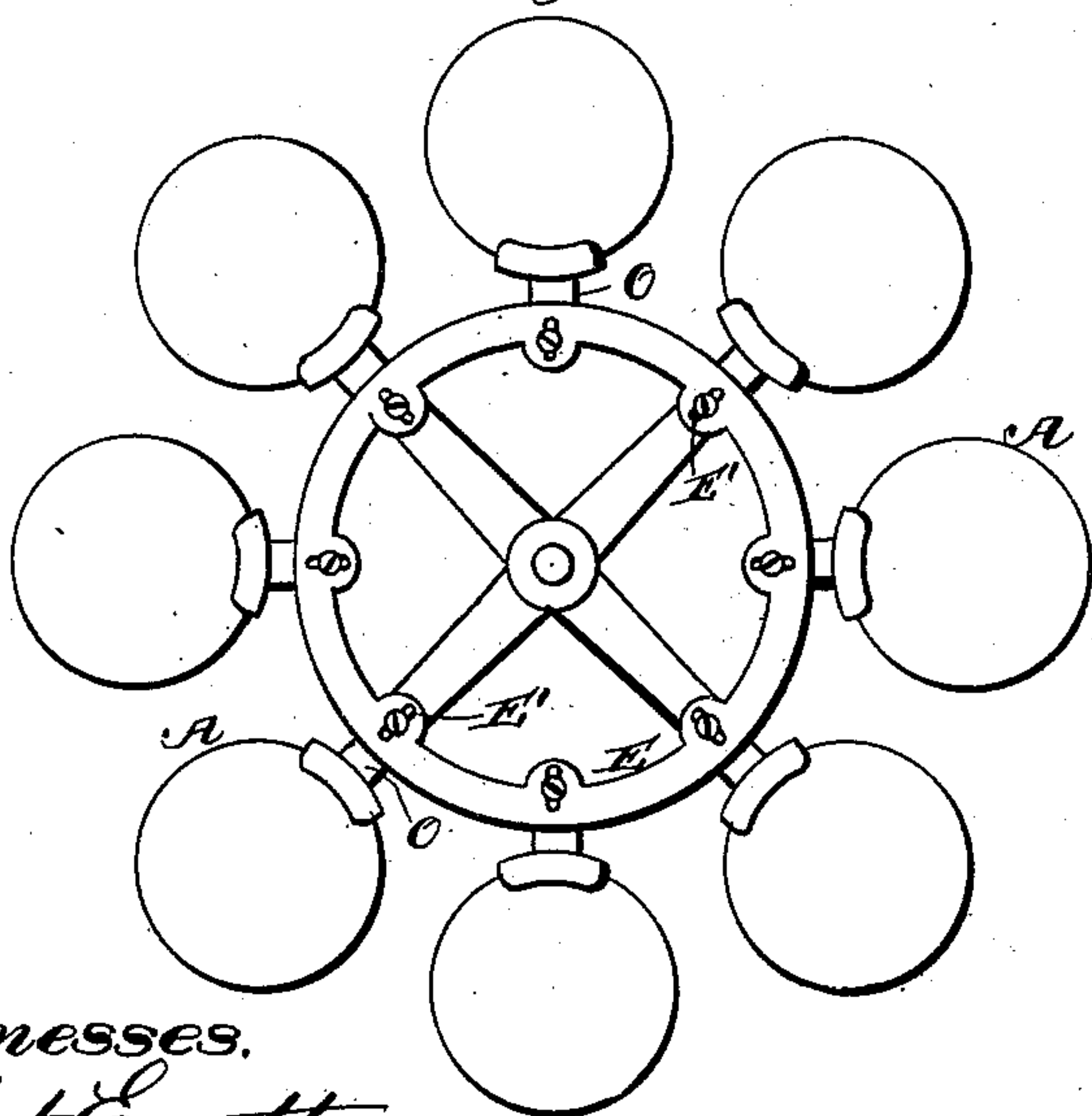


Fig. 3.



Witnesses.

Robert Everett.
Edward G. Siggers.

Fig. 4.

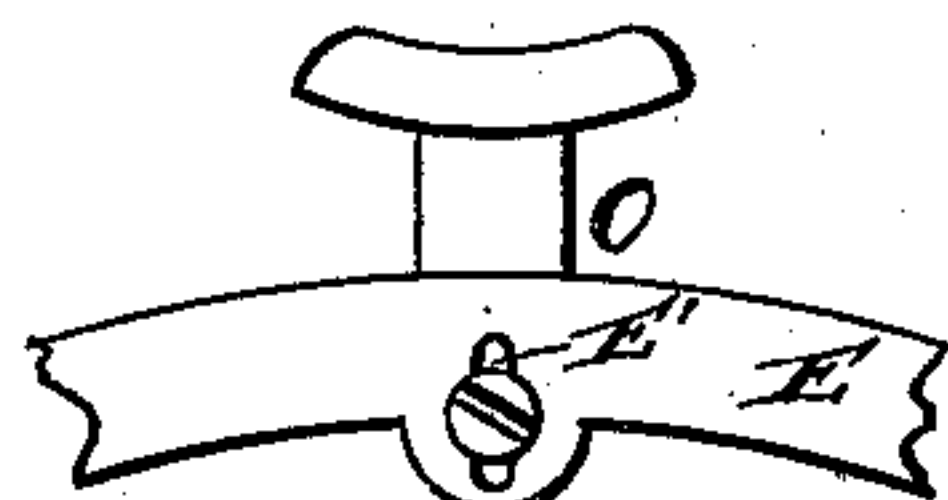


Fig. 5.

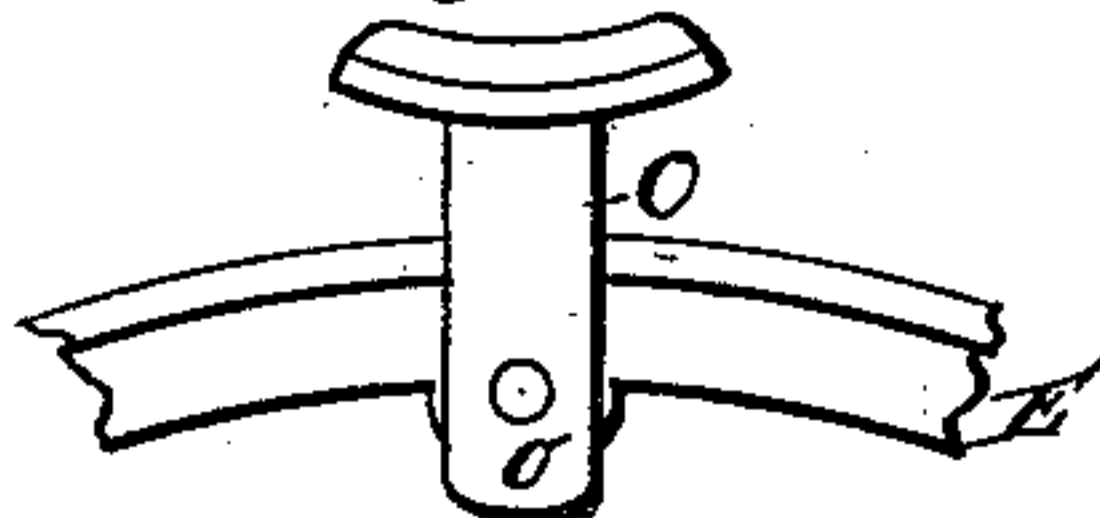


Fig. 6.

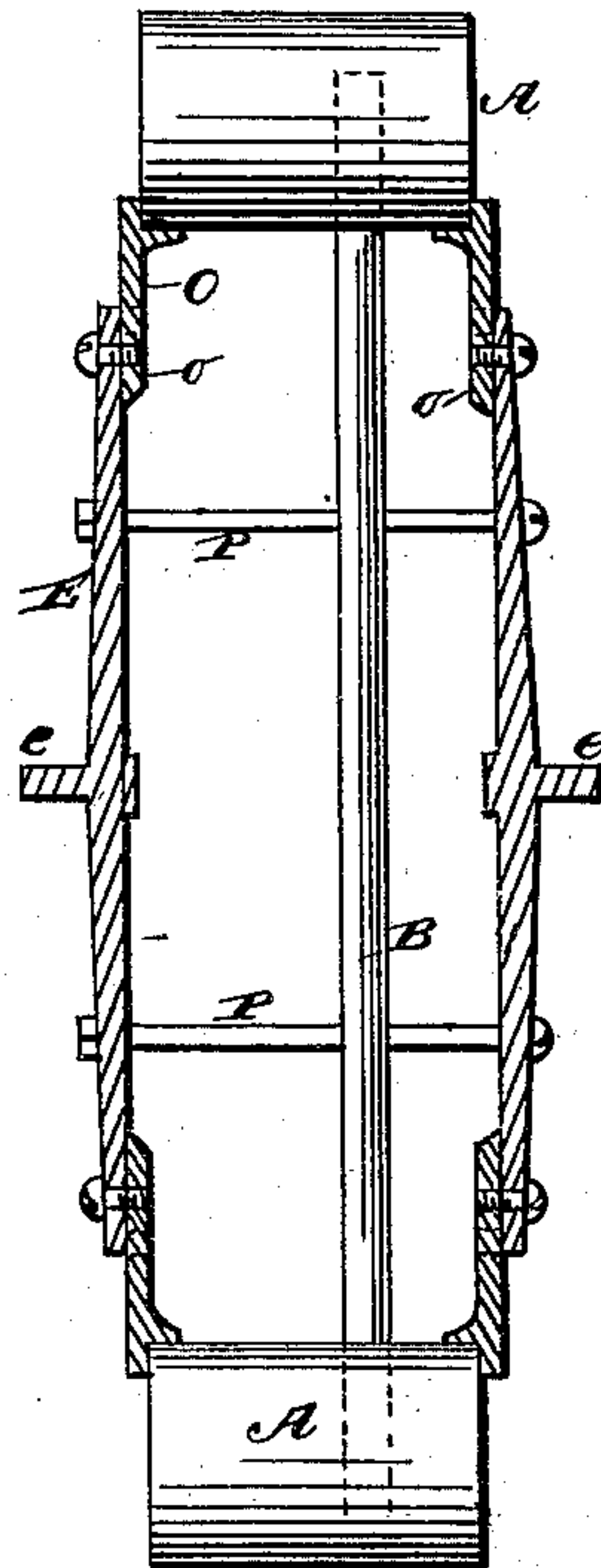
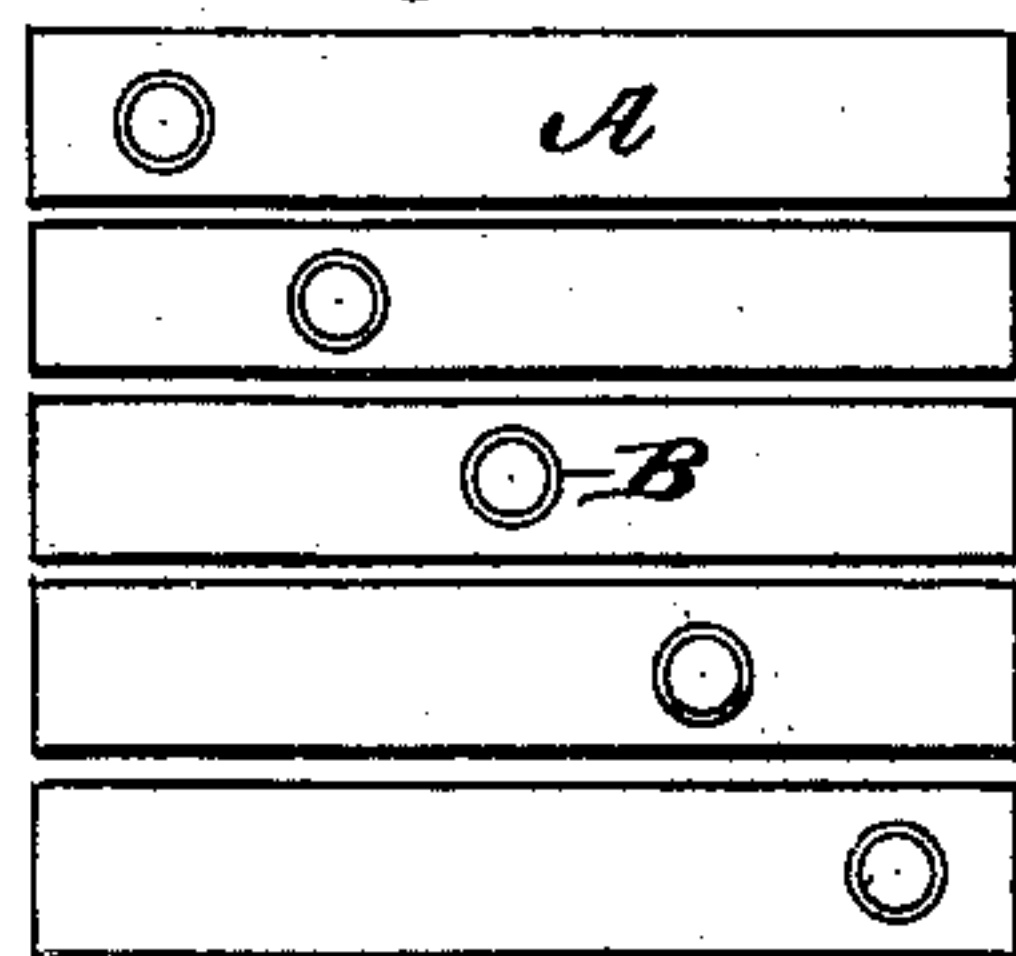


Fig. 7.



Inventors.

Anthony Iske
& Albert Iske

By

W. H. Babcock Atty.

UNITED STATES PATENT OFFICE.

ANTHONY ISKE AND ALBERT ISKE, OF LANCASTER, PENNSYLVANIA.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 256,482, dated April 18, 1882.

Application filed January 18, 1882. (No model.)

To all whom it may concern:

Be it known that we, ANTHONY ISKE and ALBERT ISKE, citizens of the United States of America, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Motors; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention is an improvement on our Patent No. 243,909 and other patents heretofore obtained by us. The nature of said invention consists, first, in combining with a circular system of cylindrical receptacles for easily vaporizable liquid a pair of circular wheels or frames which support the ends of said cylinders; also, in the combination, with said wheels or frames and cylinders, of adjustable brackets, whereby said cylinders may be set farther outward or moved inward at will and there held; also, in the combination of an external casing or outer jacket with the heating-tank and the cylinders or cylindrical receptacles aforesaid, said jacket allowing the heat to have access to the sides of the tank, as well as the ends thereof; also, in such an exterior casing thus combined and provided at one end with a door to allow the convenient withdrawal of the tank; also, in the combination of a governor operating, substantially as hereinafter set forth, with the motor; also, in separating the cylinders or cylindrical receptacles, so that they will not conduct heat to one another around the circle; and, finally, in divers other improvements in the construction and combination of parts, hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of a motor embodying most of the features of our invention. Fig. 2 represents a vertical section of the same from end to end. Fig. 3 represents an end view of a modification which is suited to larger motors. Figs. 4 and 5 are inner and outer detail views of the adjustable brackets shown

in Fig. 3. Fig. 6 is a vertical section through a pair of the cylinders, their connecting-tube, and their supports constructed and arranged as shown in Fig. 3. Fig. 7 represents half the cylinders of a series arranged side by side to show the relative positions of the points of attachment of their tubes.

A designates the cylinders, which serve as receptacles for volatile liquid, and are connected by tubes B in pairs, said tubes extending diametrically across the circular system of cylinders.

D is a tank into which the cylinders successively dip into the water, said tank being heated by a lamp or other calorific device, C, which is arranged at the bottom of the motor. These parts may be found in our patent before mentioned, and the operation of the motor is the same as that described therein. In other words, the heat of the water in the tank vaporizes a part of the liquid in each receptacle which dips therein, and the expansion of the vapor thus formed forces the remainder of the liquid through the connecting-tube B to the upper cylinder of the pair, air having been exhausted from said cylinders and tubes. The connection between said tubes and cylinders is made sufficiently tight to prevent any escape of vapor, and to retain the receptacles in their proper places on the tubes as they successively reach the lowest points of their revolution, and at all other times.

In our present improvement the cylinders are supported on two wheels or circular frames, E, which turn with them. No shaft is employed, but each wheel or frame E has a central externally-projecting gudgeon, *e*, and these gudgeons are mounted in bearings *ff*, formed on casing F, which is the main support of the motor. This casing performs an additional function in supporting the tank D, which has lips or flanges that rest upon the end pieces, F' F', of said casing. These end pieces curve outwardly, so to collect the heat rising from lamp C and apply the same to the ends of the tanks at all points thereof. There is also a slight interval for heated air left between the tank and the side pieces of said casing. The latter forms, therefore, an exterior jacket, which

collects the hot air and applies the same to all parts of the tank. Said casing is open at the bottom, so that there may be no impediment to drawing the water from said tank through spigot D'. It also has one end provided with a door, F², which opens at will to allow the withdrawal of said tank from said casing for cleaning or repairs.

The cylinders A are arranged with small intervals *a* between them to prevent the conduction of heat from one cylinder to another round the circle, which would tend to prevent the necessary contrast in temperature between the upper cylinder and the lower cylinder of each pair. The tubes B, connecting said cylinders in pairs, are attached thereto at such intervals as to avoid one another without bending. This feature of my invention is best illustrated in Fig. 7, where the point of attachment of each tube to its cylinder is indicated by *a'*. As no shaft is employed for my system of cylinders, there is no need to bend the tubes to avoid it. We have therefore no difficulty in using straight tubes for all the cylinders, and thus facilitating the transmission of the liquid from cylinder to cylinder.

One of the gudgeons *e* carries a gear-wheel, G, which drives a train of wheels, H, that turn on spindles projecting from casing F, and give rotary motion to a pinion, *i*, forming part of a sleeve, I, turning on a similar stud, I'. This sleeve carries a governor for the motor in the form of a set, J, of lazy-tong bars, shaped as a whole like a double diamond, crossed on said sleeve in the middle, and provided at their outer angles with governor weights or balls K. A stop, L, prevents them from closing too far, and a spring, M, attached at one end to one of said bars and at the other to sleeve I, tends to draw said bars together. When the rate of speed of the motor tends to become too great for the heated cylinders to cool sufficiently as they ascend, the balls or weights K, flying out, increase the circle in which they travel, and thereby the resistance which they offer, so that the speed of motion of the cylinders is automatically regulated.

Of course other forms of governors may be substituted for the very convenient one above described.

It is very desirable, especially in large motors, to have some contrivance for adjusting the cylinders, so as to compensate for irregularities in the length of tubes or to make the motor somewhat smaller or larger at will. For this purpose we employ adjustable brackets O, (shown in Figs. 3, 4, 5 and 6,) which have their shanks *o* connected to the wheels or frames E by screws that pass through radial slots E' in said wheels or frames. One pair of brackets supports the ends of each cylinder, the latter resting on curved ledges O', formed on the upper ends of said brackets. By means of said screws and slots the said brackets can easily be adjusted radially inward or outward, thereby moving the cylinders to or from the center of the system. Rods P are used to brace said

wheels or frames E and fasten them together. These rods extend across from frame to frame, of course avoiding the tubes B. The gudgeon which carries gear-wheel G also carries a belt-pulley for communicating power to machinery.

Of course other means and methods of radial adjustment may be substituted for the screws and slots whereby the brackets O are connected adjustably to the frames E, and the construction of said brackets may be greatly varied. The shape of the cylindrical receptacles A may also be changed, and the different parts of our motor may undergo divers other modifications without departing from the spirit and scope of our invention.

Having thus fully described the said invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a motor, the combination of a series of receptacles for volatile liquid with tubes connecting them diametrically in pairs, and vertical wheels or frames, which support the ends of said receptacles and turn with them.

2. A series of receptacles for volatile liquid, in combination with wheels or frames which turn with said receptacles, and radially-adjustable brackets or supports connecting said receptacles to said frames, for the purposes set forth.

3. In a motor, the combination of a series of receptacles for volatile liquid with tubes connecting them diametrically in pairs, vertical wheels or frames which have gudgeons formed in their outer faces, and bearings which support said gudgeons, substantially as set forth.

4. In a motor, the combination of a series of receptacles for volatile liquid, and tubes connecting them in pairs, with vertical wheels or frames, and brackets whereby the ends of said receptacles are attached to said frames in order to turn therewith, substantially as set forth.

5. The connecting-tubes attached at different points to their respective cylinders along the length thereof, in combination with said cylinders or receptacles and their supporting-frames.

6. The combination of the cylinders A and tubes B with brackets O and frames E, each bracket being provided with a ledge to receive one end of a cylinder, and made radially adjustable by screw-and-slot connection with its frame.

7. In combination with tubes and supporting-frames E, independent of said tubes, a series of cylinders or receptacles arranged at intervals, so that they will not conduct heat to one another.

8. In combination with receptacles for volatile liquid, connected by tubes in pairs, a tank of warm water, in which the receptacles forming each pair dip alternately, and an exterior jacket, which directs the warm air from a lamp or other calorific device around the sides and the ends of said tank.

9. In combination with receptacles for volatile liquid, connected by tubes in pairs, a tank

of warm water, in which the receptacles forming each pair dip alternately, and an exterior jacket or casing, which directs the warm air from a lamp or other calorific device around
5 the sides and the ends of said tank, said jacket or casing having in one end a door or movable part that opens for the convenient withdrawal of said tank.

In testimony whereof we affix our signatures in presence of two witnesses.

ANTHONY ISKE.
ALBERT ISKE.

Witnesses:

P. DONNELLY,
JACOB LONG.