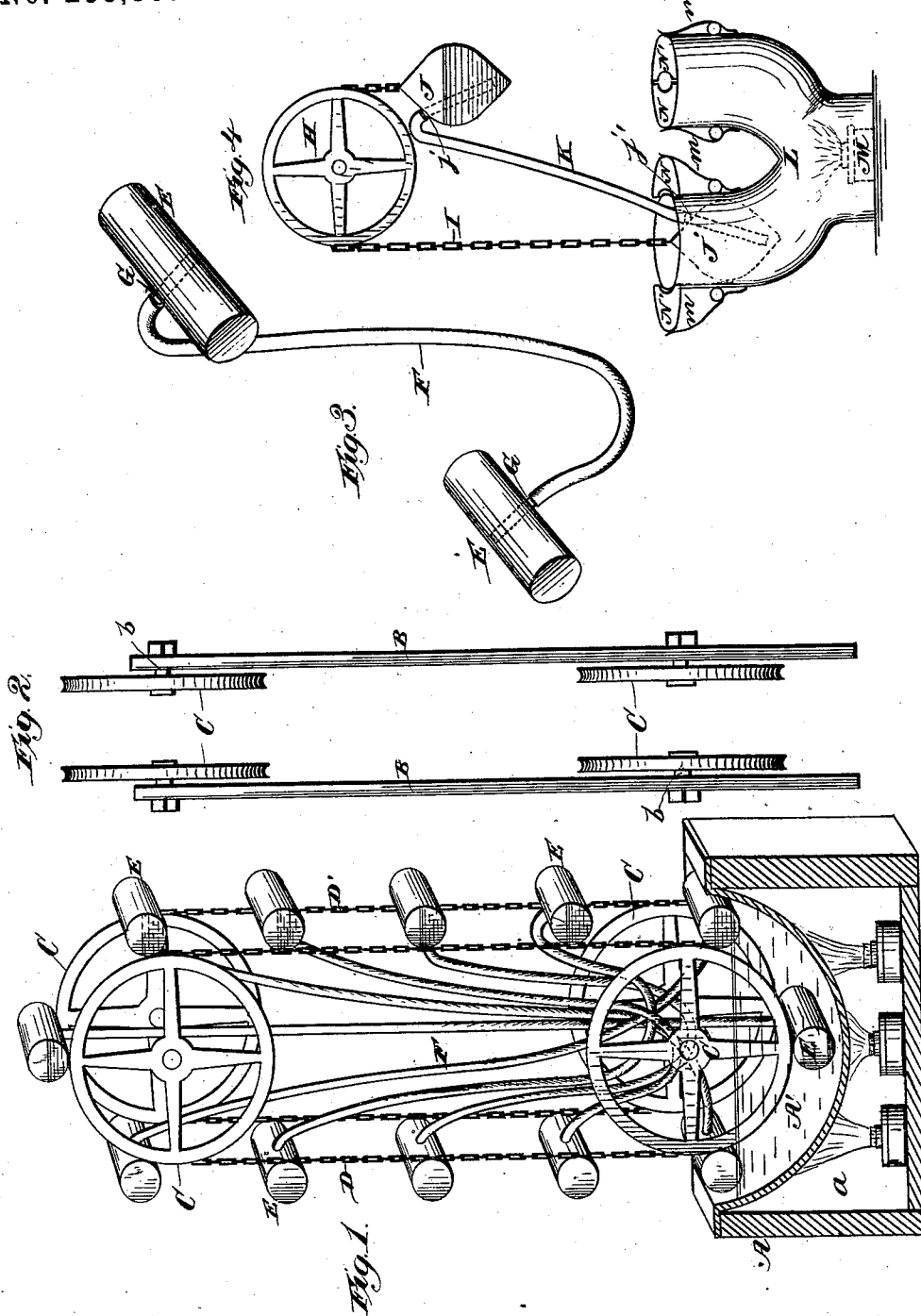


(No Model.)

A. ISKE.
MOTOR.

No. 253,867.

Patented Feb. 21, 1882.



Witnesses.

Robert Everett.

Edward G. Siggers.

Inventor.

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UNITED STATES PATENT OFFICE.

ALBERT ISKE, OF LANCASTER, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO ANTHONY ISKE, OF SAME PLACE.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 253,867, dated February 21, 1882.

Application filed August 30, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALBERT ISKE, a citizen 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 I 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 upon the motor for which a patent was granted to Anthony Iske and Albert Iske on the 7th day of June, 1881, No. 242,454.

The nature of said invention consists in the construction and combination of parts herein-after particularly set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of one form of my motor having the receptacles for the vaporizable liquid attached to endless chains and connected by flexible tubes, the standards for the wheels being removed and the heating-tank being shown in vertical section. Fig. 2 represents an elevation in detail of the standards and wheels. Fig. 3 represents a detail view, on an enlarged scale, of two of the receptacles for vaporizable liquid and their connecting-tube; and Fig. 4 represents a front elevation of one of my motors arranged on the oscillating or seesaw plan and provided with a flexible tube.

In said drawings, A, Fig. 1, designates a heating-tank, provided with a chamber, *a*, for calorific devices and a bowl or tank proper, *A'*, into which the receptacles for vaporizable liquid dip as they revolve. The construction of said tank and the operation of said parts are substantially the same as in the patent of Anthony Iske and Albert Iske granted July 5th, 1881, No. 243,909.

B, Fig. 2, designates two standards, erected at or on opposite sides of said tank, and to which are attached short horizontal spindles *b*, on which spindles the pulleys C turn in

order to carry round the endless chains to which the receptacles for vaporizable liquid are attached. The said wheels are four in number—an upper and a lower one to each standard. An endless chain, D, passes around the upper and lower wheel of one standard, and a similar chain, D', passes around the other upper and lower wheel, so as to be parallel therewith. The receptacles for vaporizable liquid, which are shown as of cylindrical form, are attached to said chains, extending transversely from one to the other. These receptacles, (marked E,) with the chains and wheels, thus complete a system which, as a whole, bears a considerable resemblance to one or two of the forms of motor shown in Patent No. 243,909, above mentioned. In that patent, however, as well as in No. 242,454, rigid tubes were used to connect the receptacles at opposite sides of the revolving motor. Such tubes, if made of glass, are too brittle and fragile, while if made of metal they are too heavy for convenient use. They are also inconvenient for packing when the motor has been taken to pieces. But the worst objection to them is that they are incapable of accommodating themselves to any but a circular arrangement of receptacles. Thus in the motor shown in Fig. 1 a rigid tube which would be of the proper length to extend crosswise could not possibly reach from top to bottom.

To obviate the above difficulties I connect each opposite pair of receptacles by a flexible tube, F. These tubes may be of india-rubber, leather, textile fabric, or any other suitable material possessing sufficient flexibility. They are preferably attached by slipping their ends over little hollow stems G, which protrude from the sides of the receptacles, the inner end of each stem extending nearly to the opposite side of its receptacle. When any pair of receptacles is at the top and bottom of the system their tube is straight; but in all other positions it hangs more or less loosely.

In Fig. 4 the same kind of a tube is shown as used in a motor which oscillates instead of rotating. In this instance a wheel or pulley, H, supports a chain, I, which has at one end of it a pointed bulb, J, and at the other end a pointed bulb, J', the attachment of the chain

to the bulbs being effected in any convenient manner. A flexible tube, K, also extends from bulb to bulb, being connected to protruding stems *j j'*, that extend nearly to the bottoms of said bulbs. L designates a bifurcated heating-chamber, which is provided at its bottom with a lamp or other calorific device, M, and presents one of its upper divisions under one bulb and the other under the other bulb afore-said. Each division is provided at its top with a cover consisting of two horizontally-sliding sections, N N', that are forced toward one another by springs *m m*, attached to the wall of said heating-chamber. As each bulb, J or J', descends its pointed bottom enters a central opening, *m'*, in the cover below it, and the sections N N' of said cover are thereby forced aside to allow the descent of said bulb into the interior of said heating-chamber. The springs *m m* then cause said cover to close over it. The action of the heat then drives the vaporizable liquid from said bulb through the connecting-tube into the other bulb. The latter descends by the weight of said liquid, and the first bulb is thereby drawn up through the cover again, its pointed top serving to open said cover in the same manner as its pointed bottom had done. Other means might be easily devised for automatically moving the covers of the heating-chamber; but this pointed shape of top and bottom of the bulbs is found very convenient for the purpose.

By the above construction and combination of parts a rapid seesaw movement may be kept up with comparatively little expenditure of fuel, and in all positions of said bulbs the flexible tube will be found to accommodate itself without inconvenience to their rising-and-falling motion and varying distance. Of course these flexible tubes may be used with many other forms of motor operating on the same general principle.

The operation of the inclosed volatile liquid, in passing from receptacle to receptacle under the influence of heat, and then by gravity causing a rotating or oscillating motion of the machine, has been fully described in the patents above referred to, and therefore need not be more fully described here.

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

1. In a motor, the combination of a flexible connecting-tube with two air-tight exhausted receptacles provided with easily-vaporizable

liquid in sufficient quantities to partly fill said receptacles and tube, and a calorific device or devices acting on said receptacles alternately for the purpose of vaporizing a part of said liquid and causing the remainder to shift *in vacuo* from receptacle to receptacle, substantially as set forth.

2. In a motor, the combination of a flexible connecting-tube with two air-tight exhausted receptacles provided with stems to which said tube is attached, and with easily-vaporizable liquid in sufficient quantities to partly fill said receptacles and tube, and a calorific device or devices acting on said receptacles alternately for the purpose of vaporizing a part of said liquid and causing the remainder to shift *in vacuo* from receptacle to receptacle, substantially as set forth.

3. In a motor, the combination of a flexible connecting-tube with two air-tight exhausted receptacles provided with easily-vaporizable liquid in sufficient quantities to partly fill said receptacles and tube, one or more supporting-chains and wheels, and a calorific device or devices acting on said receptacles alternately, for the purpose of vaporizing a part of said liquid and causing the remainder to shift *in vacuo* from receptacle to receptacle, substantially as set forth.

4. The combination of a pair of pointed bulbs with a flexible connecting-tube, a suspending-chain and pulley, and a heating device.

5. A heating-chamber provided with a sliding sectional top, in combination with a bulb adapted to automatically open said top in its descent, substantially as set forth.

6. A bifurcated heating-chamber having each of its divisions covered by an automatically-closing top, in combination with a pair of pointed bulbs, an intermediate support, and a flexible connecting-tube, all operating substantially as set forth.

7. In combination with a pair of bulbs or receptacles and a flexible connecting-tube, a heating device arranged to act alternately and directly on each of said bulbs as it descends, keeping up thereby an oscillating movement of said motor.

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

ALBERT ISKE.

Witnesses:

JOHN HARMAN,
ANTHONY ISKE.