(No Model.) 2 Sheets—Sheet 1.

H. J. DYKES.

CARBURETOR.

No. 395,616. Patented Jan. 1, 1889.

Fig. 1.

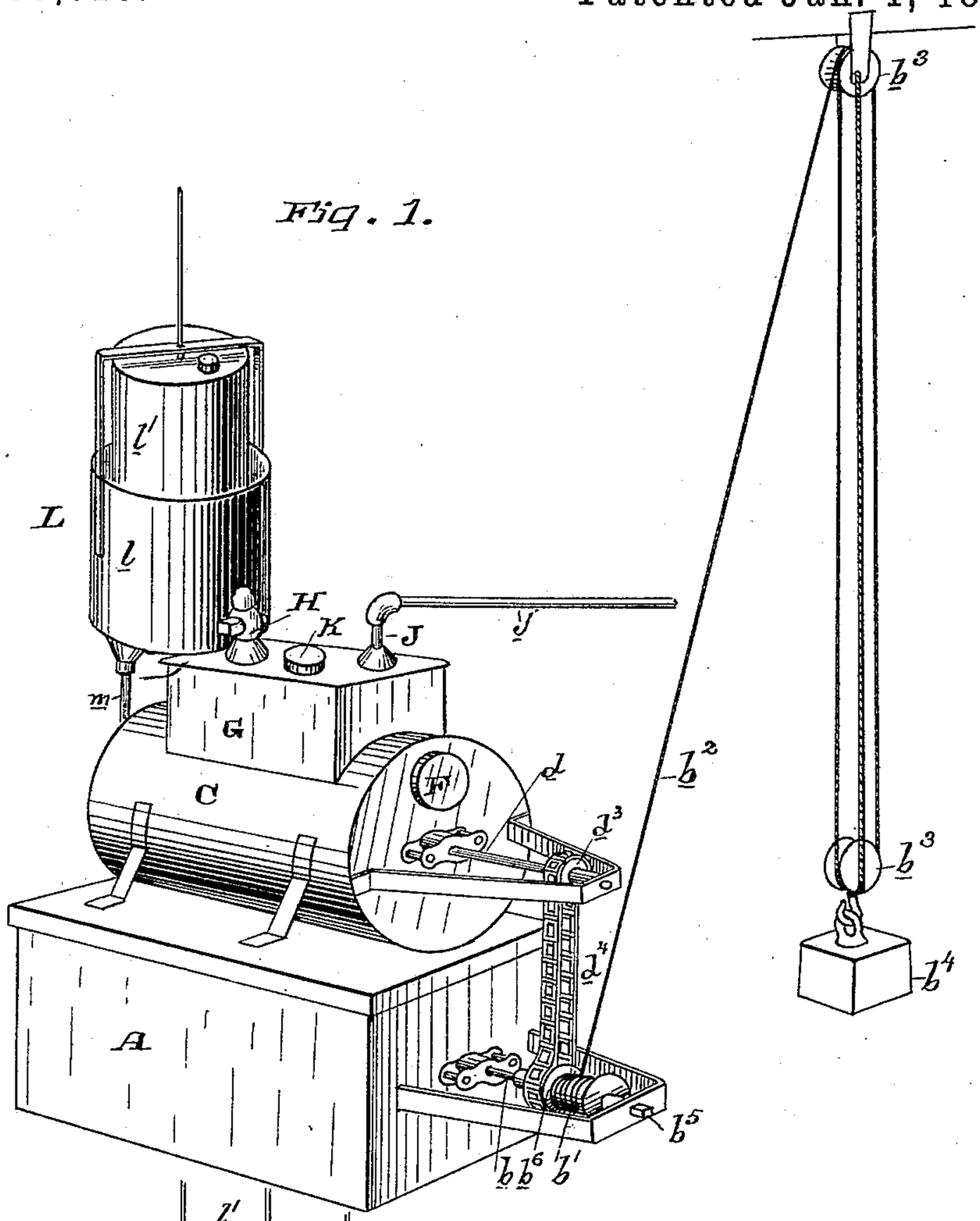
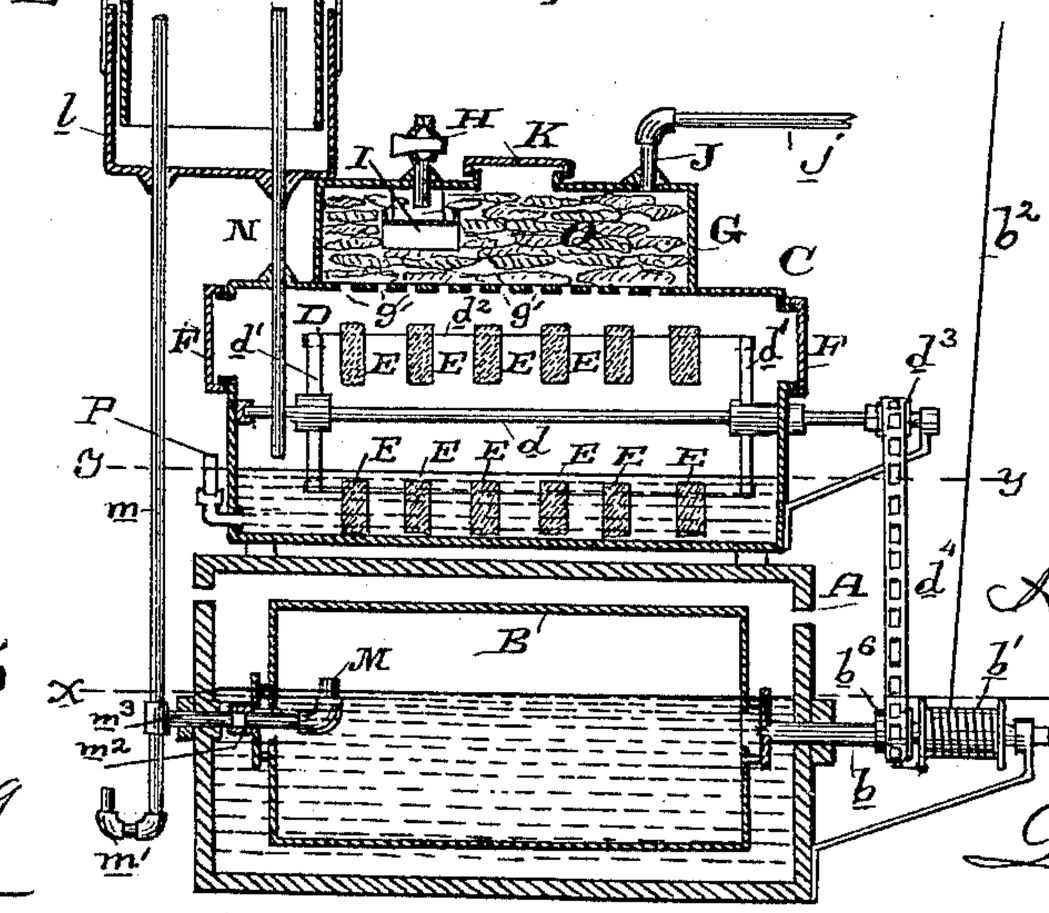


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

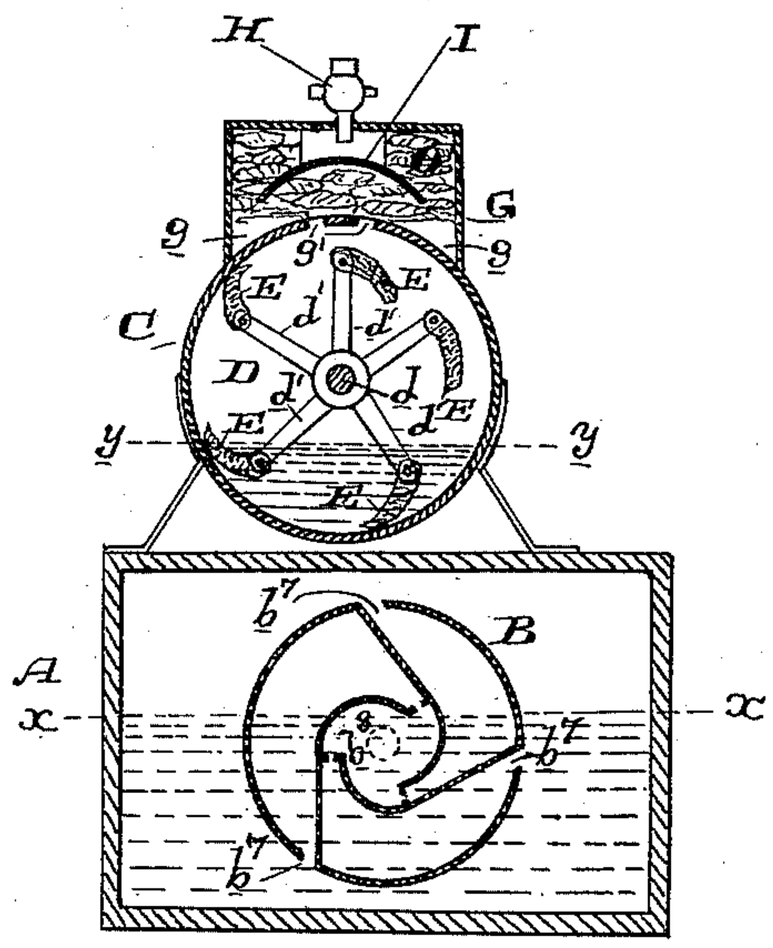
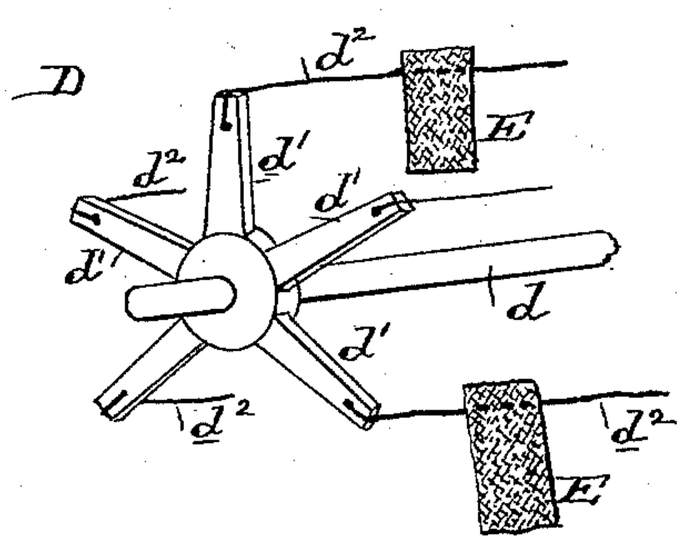


Fig. 4.



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UNITED STATES PATENT OFFICE.

HUGH J. DYKES, OF BERKELEY, CALIFORNIA.

CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 395,616, dated January 1, 1889.

Application filed November 5, 1887. Serial No. 254,430. (No model.)

To all whom it may concern:

Be it known that I, HUGH J. DYKES, of Berkeley, county of Alameda, and State of California, have invented an Improvement in Carburetors; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to that class of carburetors in which air is forced into contact with volatile liquid hydrocarbons or oils, whereby it becomes saturated with inflammable vapor and may be conducted through pipes to burners.

My invention consists in a rotary frame mounted within a casing containing the liquid hydrocarbon or oil, said frame carrying an absorbent material—such as strips of lamp-wick—which by the rotation of the frame are successively immersed in the body of oil and withdrawn saturated to give forth to the air in said chamber their inflammable vapors.

My invention also consists, in combination with the cylindrical oil casing or reservoir in which the air is carbureted, of a superposed feed-casing communicating along the center of its base with the oil-casing, and having the edges of its sides depressed to form receptacles for the oil.

My invention also consists in the novel combination and arrangement of the air-pump, the oil-casing with rotary wick-frame, the feed-chamber, the aerometer or regulator, and connections, all of which, together with details of construction, I shall hereinafter fully describe.

The object of my invention is to provide a simple and effective machine, and one which is compact in its general construction.

Referring to the accompanying drawings, Figure 1 is a perspective view of my carburetor. Fig. 2 is a longitudinal vertical section of same. Fig. 3 is a transverse vertical section. Fig. 4 is a partial detail of frame D.

A is the box or casing of the air-pump, the cylinder of which is designated by B, said cylinder being rotated by means of a shaft, *b*, at one end, which carries a drum, *b'*, to which a cord, b^2, is attached, said cord passing over and carrying suitable pulleys, b^3, and having an operating-weight, b^4. This weight, acting through the cord, causes the rotation of the drum, which, through its shaft *b*, effects the rotation of the cylinder of the air-pump, and said weight when run down may be wound up by the application of a key to the square end b^5 of the drum-shaft.

On top of the casing A is firmly secured the cylindrical shell or casing C, which forms the oil-chamber. In this shell is mounted, by means of a central shaft, *d*, a frame, D, which consists of radial end arms, *d'*, and between which are stretched the horizontal wires d^2 of the periphery, said wires being simply hooked into sockets in said arms, whereby they may readily be removed when necessary. Secured to these wires d^2 are pieces of suitable absorbent material, E, preferably lamp-wicks. Hand-holes F are made in the ends of the cylindrical casing, whereby the wires d^2 may be reached to remove them and the wicks E, which they carry, for the purpose of cleaning said wicks or substituting others.

A rotary motion is imparted to the frame D by means of a sprocket-pulley, d^3, on the end of its shaft *d*, from which said pulley an endless chain, d^4, extends downwardly to a sprocket-pulley, b^6, on the drum-shaft *b*. On top of the cylindrical shell or casing C is fixed the feed-casing G, said casing conforming at its base to the convexity or curvature of the shell C for a certain distance, so that on each side of the top of the shell the casing G extends downwardly, forming the depressed portions *g*, Fig. 3. The casing G communicates with the interior of the cylindrical shell or casing C through apertures *g'*, made in the top of said shell and approximately along its center. In the top of the casing G is let the oil-feed pipe H, which is controlled by a suitable cock, and has its lower end just above a deflecting-plate, I, located within the casing G and secured therein in any suitable manner, said deflecting-plate lying in the vertical plane above the apertures *g'*, and having its ends directed toward the depressed portions *g* of said casing. In the top of said casing is also let the outlet-pipe J, from which the burner-connecting pipe *j* extends. A hand-hole, K, is also made in the top of the casing G for the purpose of affording access to its interior. Supported above the casing G, near one end, is an aerometer or air-regulator, L, which con-

sists of the usual outer shell, *l*, containing the water, and the inverted vertically-movable inner cup, *l'*.

M is a pipe which extends into the hollow center of cylinder B of the air-pump, and, passing out through one end thereof, forms one of the journals of said cylinder, and is connected with a pipe, *m*, which extends upwardly into the cup *l'* of the aerometer. A drip-pipe, *m'*, extends downwardly from the pipe *m*.

N is a pipe which extends downwardly from the cup *l'* of the aerometer into the cylindrical casing C and terminates at a point a little below its central horizontal plane.

The casing A of the air-pump contains water up to about the level indicated by the line *x x*, Figs. 2 and 3. The cylindrical shell or casing C contains oil to about the level of the line *y y*, Figs. 2 and 3. The casing G is packed with an absorbent material—such as rotten wood or charcoal or other suitable substance—said packing being here represented by the letter O. The outer vessel, *l*, of the aerometer contains, as usual, water.

The operation of the machine is as follows: The rotation of the cylinder B of the air-pump forces the air through the pipe M and pipe *m* up into the aerometer, from which it is forced downwardly with constant pressure through the pipe N into the cylindrical shell or casing C of the oil-chamber, where it comes in contact with the oil, which is thereby agitated to an extent and carburets the air. The liquid hydrocarbon—such as gasoline or other volatile oil—is fed through the pipe H into the casing G, in which, falling upon the deflecting-plate I, it is thereby directed, primarily, to the depressed sides *g* of said casing, which act as reservoirs for a considerable quantity. As these reservoirs fill and the packing O of the casing G becomes saturated with the oil, it flows over and drips down through the apertures *g'* into the casing or shell C, in which it lies on about the level of the line *y y*, as heretofore stated. The motion of the cylinder of the air-pump communicates rotation through the endless chain *d*⁴ and sprocket-pulleys, heretofore described, to the frame D in the shell C, so that the wicks E of said frame are brought around successively and immersed in the oil held in said shell; and as said wicks rise from the oil thoroughly saturated therewith, they present an extended surface capable of giving off rapid evaporation, and they thus give to the air their inflammable vapors, whereby said air, rising from contact with the oil-body partially carbureted, is completely carbureted, and, passing up through the apertures *g'* and through the absorbent material O in the casing G, is relieved of any excess of hydrocarbon vapor, and, finally, is discharged through the pipe J into the burner-connections.

There is nothing novel in the construction of the air-pump cylinder, and I need, therefore, describe it no more particularly than to refer to Fig. 3, in which the cylinder is shown as consisting of three sections separated from each other to leave spaces or apertures *b*⁷ for the air to enter and find its way to the hollow center *b*⁸ of the cylinder, in which the end of the discharge-pipe M lies. The cylinder rotating, as each aperture *b*⁷ passes below the water, a seal is formed, so that the air in the section is forced into the center of the cylinder, and thence through the pipe-connections into the aerometer. One point of novelty, however, consists in the mounting of this cylinder in such a way as to avoid a central shaft, Fig. 2. This I do by having the inner end of the shaft *b* squared off to enter a square socket in the end plate of the cylinder, the shoulder formed by the squared shaft providing a stop for preventing the cylinder from moving in that direction. The pipe M serves as a journal for the other end of the cylinder, said pipe having screwed upon its external end a coupling, *m*², which serves as a shoulder to prevent the cylinder from moving in that direction, and to this coupling is connected a nipple and pipe-connections *m*³ to the pipe *m*.

P is a gage-glass for denoting the level of oil in the oil-chamber, Fig. 2.

By connecting the cylinder of the air-pump with the wick-carrying frame of the carbureting-chamber I make their operation independent, whereby, when the capacity of the pump is increased, the operation of the wick-frame is also increased and the increased volume of air is provided for. The aerometer regulates the supply of air, and when weighted requires an increase in the weight-power for operating the pump-cylinder.

The whole machine, it will be observed, is compact in construction and is available for operation in any situation.

The depressions *g* in the feed-casing hold enough oil to keep the absorbent material thoroughly saturated.

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

1. In a carburetor, the combination of the cylindrical casing for containing the oil, the frame consisting of radial end arms and horizontal removably-secured wires, the wicks within the casing and suspended from said wires, power mechanism to rotate the frame, the air-pump, and the intervening aerometer or regulator connected with oil-casing, the feed-casing for oil, containing absorbent material mounted on top of the oil-casing and communicating therewith through apertures, said casing conforming to the curvature of the oil-casing, whereby depressions are formed in each side of the base of the feed-casing and on each side of the communicating apertures, substantially as herein described.

2. In a carburetor, the casing for containing the oil and having hand-holes for reaching its interior, the air-pump, and the intervening aerometer or regulator connected with the oil-casing, in combination with frame

mounted within the oil-casing, said frame consisting of arms and removable peripheral wires hooked into the arms, power mechanism for rotating the frame, and strips of wicking suspended from the peripheral wires of said frame, substantially as herein described.

3. In a carburetor, the combination of the cylindrical casing for the oil, the frame consisting of radial end arms and horizontal removably-secured wires, with their suspended wicks, means for rotating said frame, the air-pump, and connected aerometer or regulator, the casing for feeding the oil, said feed-casing containing absorbent material and conforming to the curvature of the oil-casing, whereby depressions are formed on each side of the communicating apertures, an inlet-pipe for feeding the oil to the feed-casing, and a deflecting-plate under the inlet-pipe for directing the oil primarily into the depressions of the feed-casing, substantially as described.

4. A carburetor comprising an air-pump consisting of a casing for water and inclosed rotary cylinder, a carbureting-chamber mounted on the air-pump and consisting of a casing for oil and air and inclosed rotary wick-carrying frame, a feed-casing mounted on the carbureting-casing and packed with absorbent material, said feed-casing communicating with the oil and air casing and having an oil-inlet pipe and a carbureted-air exit-pipe, and an aerometer or regulator above the feed-casing and connected with the air-pump and with the oil and air casing, substantially as described.

In witness whereof I have hereunto set my hand.

HUGH J. DYKES.

Witnesses:
S. H. NOURSE,
H. C. LEE.