

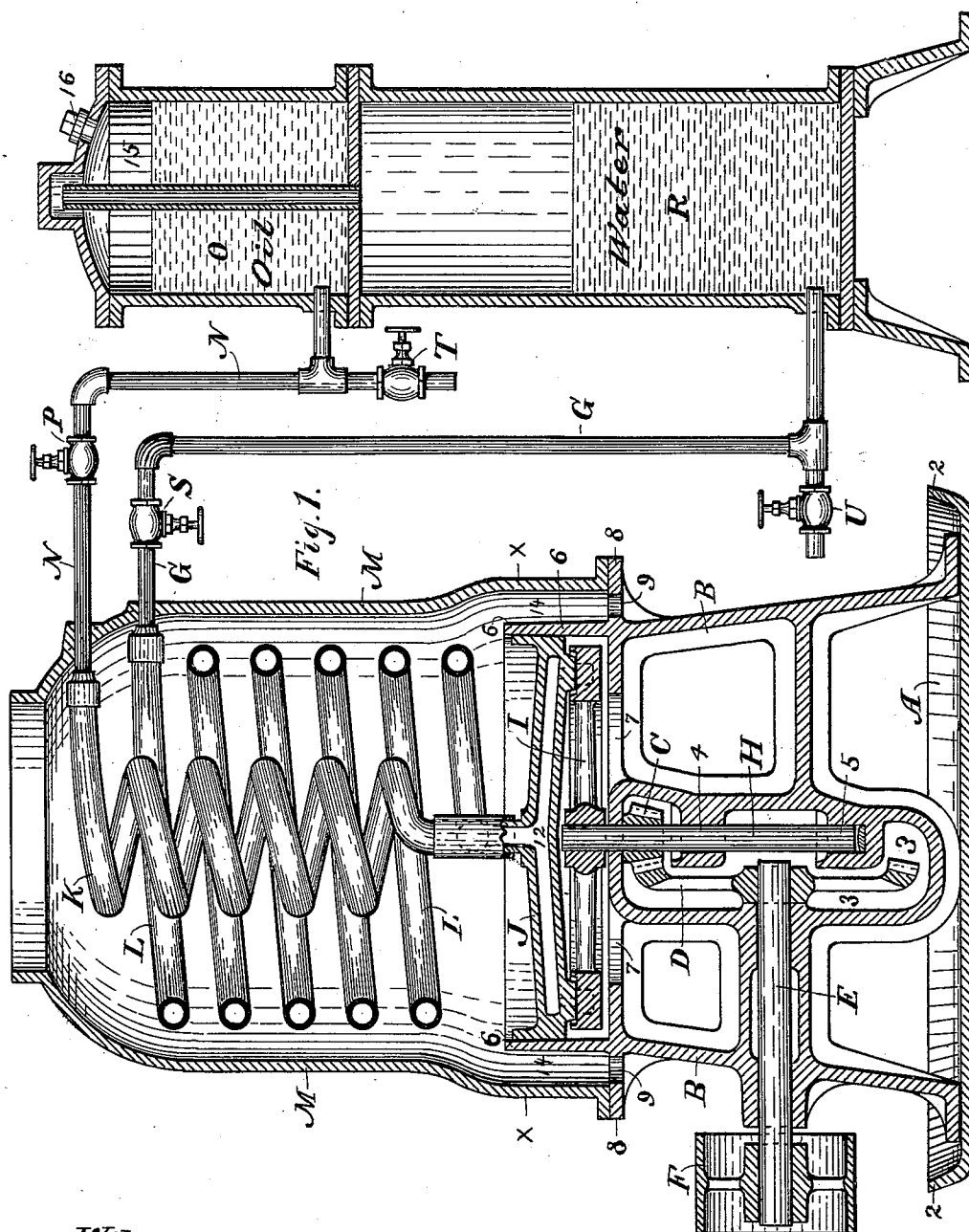
(No Model.)

2 Sheets—Sheet 1.

E. I. NICHOLS.
HYDROCARBON MOTOR.

No. 520,858.

Patented June 5, 1894.



Witnesses
M. Brown.
Geo. L. Fitch

Inventor
Emory I. Nichols.

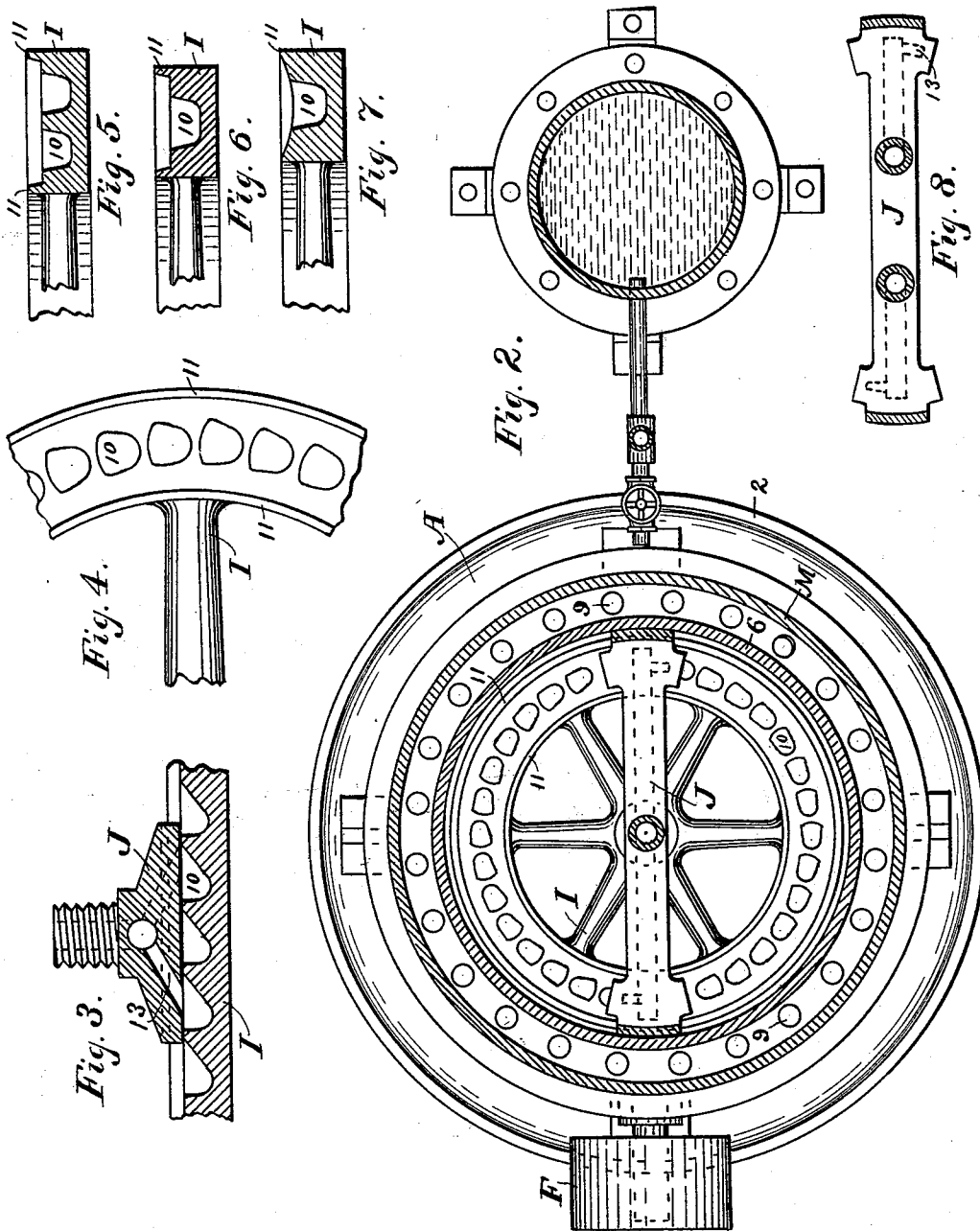
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UNITED STATES PATENT OFFICE.

EMORY I. NICHOLS, OF SAN FRANCISCO, CALIFORNIA.

HYDROCARBON-MOTOR.

SPECIFICATION forming part of Letters Patent No. 520,858, dated June 5, 1894.

Application filed October 2, 1893. Serial No. 487,040. (No model.)

To all whom it may concern:

Be it known that I, EMORY I. NICHOLS, a citizen of the United States, and a resident of the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Hydrocarbon-Motors; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to improvements of hydrocarbon motors, in which the liquids pass into one or more generators under pressure and the vapors produced in the generators propel an impulse wheel, and the vapors are again utilized for heating the generators.

My motor may be briefly described as consisting of an inclosed horizontal impulse wheel with pockets or depressions in the upper side of its rim; the wheel is mounted on an upright shaft to which is secured a bevel pinion that engages with a bevel gear on a horizontal shaft, which is provided with a pulley for transmitting the power developed; above the wheel, as shown, are inclosed coil pipe generators, the lower ends of which are secured to a cross bar that is fitted close to the upper side of rim of the wheel; through the cross bar there is a passageway, and at each end of bar are small openings through which the vapors produced in the generators, are forced out under pressure in jets into the pockets on the rim of the wheel, which transmits motion to the motor. The generators are supplied from a tank or tanks in which the liquids consumed are kept under a constant pressure, or a pressure greater than that obtained in the generators, and the supply is regulated by valves, only admitting the liquids as fast as generated and consumed.

The objects of my invention are, principally, to furnish a better, cheaper, safer, and more convenient means of constructing, especially, small motors, which can be used in closed rooms without providing means to carry off the smoke, odors and steam arising from motors of this class.

Further objects of my invention are the utilizing the pressure or force derived from the vapors generated from the liquids and then again using the expanded vapors for heating the generators.

This, in brief, is a general description of the construction I employ, and the main objects of my invention, but my motor also contains other novel features of construction which need not be specifically alluded to here, but which are fully hereinafter described as well as shown in the accompanying drawings.

In the drawings Figure 1, is a vertical cross-section showing the general construction of the motor. Fig. 2, is a horizontal section on the line $x x$ of Fig. 1. Fig. 3, is an enlarged partial section of wheel and cross bar. Fig. 4, is an enlarged segment of wheel showing pockets and raised rim. Fig. 6, is an enlarged section of rim of wheel. Figs. 5, and 7, are enlarged modified sections of rim of wheel. Fig. 8, is a modified form of the cross bar.

A, represents the bed plate of the motor cast in one piece. The exact construction of this bed plate is not essential but I prefer it with the upturned rim 2, as shown.

B, represents the supporting frame of the motor, preferably cast in two or more pieces and of sufficient strength and solidity to sustain the weight and strain of motor. The exact form of this frame and the material of which it is composed are not essential, but I prefer it cast in sections and bolted together, forming the inclosed space 3, in which the pinion C, and gear D are inclosed. In this frame is journaled the shaft E, upon one end of this shaft is the pulley F, upon the other end is secured the bevel gear D which engages with the bevel pinion C. The pinion is secured to the shaft H, and this shaft is journaled in the bearing 4, and the step bearing 5. Secured to or formed with the upper part of the frame B, is an open top hollow cylinder 6, 6, that surrounds and projects above the wheel I, through the bottom of this cylinder and the projecting flange 8, 8, are the openings 7, 7, and 9, 9, for the admission of air.

I, represents the impulse wheel in which is secured the shaft H, in the upper side of the wheel are formed pockets or cups 10, of any shape desired as I do not confine myself to any particular form. On the inner and outer edges of rim of wheel are the raised projections 11, as shown in Figs. 1, 2 and 6, the projections are to allow the condensed vapors to flow from one pocket to another.

Fig. 7, shows a modified form of connecting the pockets by making the upper side of rim of wheel circular or concave.

The cross bar J as shown is secured to the rim 6, 6, of the open top cylinder or may be otherwise suitably secured to the frame B; the lower side of cross bar is fitted close to the upper side of rim of wheel, through the cross bar as shown in Figs. 1, 2, and 3. There is a passageway 12 which extends to each end of bar, where the passageway is reduced to small openings 13, through which the vapors produced in the generators are forced out under pressure in jets into the pockets on rim of wheel.

K, and L, as shown in Fig. 1, are inclosed coil pipe generators—though any form of generators may be used, I prefer the coil pipe. The lower ends of generators are connected together and secured to the upper side of cross bar J, thus mixing the vapors from each generator before passing out of cross bar J.

Fig. 8, as shown, is a modified form of cross bar, showing each generator secured to the cross bar independent of the other, and each having its own port communicating to the pockets 10, on rim of wheel, whereby the vapors are not mixed until after being expanded in the generator chamber. The generators are inclosed by the open top cylinder casing M and is secured to the supporting frame B at 8. The casing M is enlarged at the lower end to form an air space 14, between the casing M and the cylinder 6.

The upper end of generator coil K as shown in Fig. 1 is connected by the oil supply pipe N to the bottom of the tank or reservoir O of oil, such as oil or gasoline, the former being preferred.

P represents the valve to regulate the supply of oil to generator K. The upper end of generator coil L as shown in Fig. 1, is connected by the water supply pipe G to the bottom of the tank or reservoir R of water, and S represents the valve to regulate the supply of water to generator L.

The tops of the tanks or reservoirs are connected together by the pipe 15; the object of this pipe is to keep the pressure the same in both tanks which is essential when the generators are connected together, but when the generators are not connected together and each has its separate outlet port in the cross bar J, then the tanks or reservoirs can be independent of each other.

The tanks or reservoirs as shown are placed one above the other; the exact location of these tanks or reservoirs is not essential, they may be placed side by side, or they may be placed at a high elevation and using gravity alone for the pressure to force the liquids in the generators as shown in Fig. 1 or one tank made to be used alone by connecting the oil pipe at the top of the tank and the water pipe at the bottom of the tank and then filling or partially filling the tank with oil and by connecting the water supply with the bottom of

the tank the oil will float on the top of the water and thus the oil and water will flow out their respective outlet pipes. There are two generators, though any number may be used, one, or more than two.

I have shown in Fig. 5, a modified construction of the wheel I in which there are two sets of pockets, the purpose of which is to make a reversing wheel.

The operation of the motor is as follows: First fill the tank O with oil or gasoline through the opening 16, or through the valve T, then where hydrant connections are convenient, connect with valve U of the water tank R, and allow the water to flow in the tank R, which will register the same pressure as that in the hydrant, or an ordinary force pump may be used to force the water in the tank to the desired pressure, or both tanks may be placed at an elevation and get the pressure by gravity alone; after the desired pressure is obtained at the valves P and S, open the valve P and allow a little oil to flow through the generator K and partially fill the cups 10 on rim of wheel, then close the valve P, and light the oil in the cups 10 on wheel through an opening in the casing M not shown in the drawings. This oil burning in the cups heats the generators which will then receive the fluids (by opening the valves P and S a little) and convert them into vapor which is forced out through the small openings 13 in jets into the pockets 10 on rim of wheel, which rotates the wheel and transmits motion to the motor. The exhausted vapors are then mixed with air drawn through the openings 7 and 9 and then burned in the generator chamber, which heats the generators that generate the vapors, thus utilizing both the pressure obtained in the generators and the heat contained in the fluids consumed.

Having described my invention, what I claim is—

1. In a hydrocarbon motor the combination of a horizontal impulse wheel, a supporting frame therefor, and two inclosed generators, one for oil and one for water, and connected together at their lower ends before communicating their vapors to the cups in rim of wheel, substantially as described.

2. A hydrocarbon motor with one or more inclosed generators, an impulse wheel, and a supporting frame therefor, in combination with a tank or tanks of oil and water held under pressure by being connected while in use, to a hydrant or a body of fluid at an elevation for supplying said generators, substantially as described.

3. In a hydrocarbon motor, the combination of the generators K and L, inclosed by the casing M, the impulse wheel I, the cross-bar J, for communicating the vapors to the rim of wheel, and the supporting frame B, with the flanges 8 8, and the openings 7 and 9, substantially as described and shown.

4. In a hydrocarbon motor, the combination with an impulse wheel, a supporting frame

therefor, of one or more inclosed generators with oil and water supply pipes connected to a tank or tanks of oil, and water held under pressure by being connected while in use to a hydrant or a body of fluid held at an elevation, substantially as described.

5. In a hydrocarbon motor the combination of one or more generators with oil and water supply pipes, a supporting frame therefor, an impulse wheel, and means for burning the expanded vapors in the wheel chamber for heating said generators, substantially as described.

6. In a hydrocarbon motor the combination of one or more coil generators a horizontal impulse wheel, a supporting frame and oil and water supply tanks placed one above the other and a pipe communicating from the top of the lower tank to the top of the upper tank, substantially as shown and described.

7. In a hydrocarbon motor the combination of a horizontal impulse wheel, a supporting frame and two inclosed coil generators one for oil, and one for water, and each communicating separately with the cups in rim of wheel.

8. In a hydrocarbon motor the combination with one or more coil generators of a horizontal wheel with pockets in the upper side of its rim and having the inner and outer edges of rim raised above the center line of rim substantially as shown and described.

9. In a hydrocarbon motor a horizontal wheel with pockets in the upper side of its rim, and having the inner and outer edges of the rim raised above the center line of rim, substantially for the purpose described.

10. In a hydrocarbon motor a horizontal wheel with one or more rows of pockets in the upper side of its rim and having the inner and outer edges of the rim raised above the center line of rim, substantially as described.

11. In a hydrocarbon motor the combination of one or more coil generators, an impulse wheel, having pockets in its rim and a hollow cross bar communicating the vapors from the generators to the pockets in the rim of wheel, substantially as described.

12. In a hydrocarbon motor the combination of two or more coil generators, a horizontal impulse wheel and the hollow cross bar J, communicating the vapors separately from each generator to the pockets in the rim of wheel, substantially as described.

13. In a hydrocarbon motor the combination of one or more generators with oil and water supply pipes, the casing M, surrounding said

generators, the supporting frame B therefor, and a horizontal impulse wheel, inclosed in the upper part of frame B substantially as described.

14. In a hydrocarbon motor the combination of two or more generators with oil and water supply pipes, the casing M, surrounding said generators, the supporting frame B therefor, the gearing C and D, the hollow cross bar J, and a horizontal impulse wheel, substantially as described.

15. In a hydrocarbon motor the combination with one or more inclosed generators with oil and water supply pipes, of a supporting frame and a horizontal impulse wheel mounted on an upright shaft and inclosed in the upper part of the supporting frame, substantially as described.

16. In a hydrocarbon motor the combination with inclosed generators with oil and water supply pipes, of a horizontal impulse wheel with pockets in the upper side of its rim, a hollow cross bar with one or more ports communicating with the pockets in rim of wheel, substantially as described.

17. In a hydrocarbon motor the combination of one or more generators with oil and water supply pipes, and communicating with the pockets or cups in a horizontal wheel, a vertical shaft carrying the horizontal wheel, and a bevel pinion, a horizontal shaft carrying a bevel gear and a pulley, and a supporting frame, substantially as shown and described.

18. A hydrocarbon motor consisting of a horizontal impulse wheel, one or more generators with oil and water supply pipes, and means for communicating vapors from generators to cups in said wheel, a vertical shaft carrying a bevel pinion, a horizontal shaft carrying a bevel gear, a casing inclosing the generators, and a supporting frame inclosing the wheel and gears, substantially as described and shown.

19. In a hydrocarbon motor the combination of the oil and water supply tanks placed one above the other and connected together so as to have the pressure the same in both tanks, a horizontal impulse wheel, a supporting frame therefor, and one or more inclosed coil generators, for supplying vapor to said wheel substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 25th day of September, 1893.

EMORY I. NICHOLS.

Witnesses:

M. BROWN,
LEE D. CRAIG.