

No. 684,953.

Patented Oct. 22, 1901.

W. F. SINGER.  
PUMPING DEVICE FOR AUTOMOBILES.

(Application filed July 16, 1901.)

(No Model.)

Fig. 1.

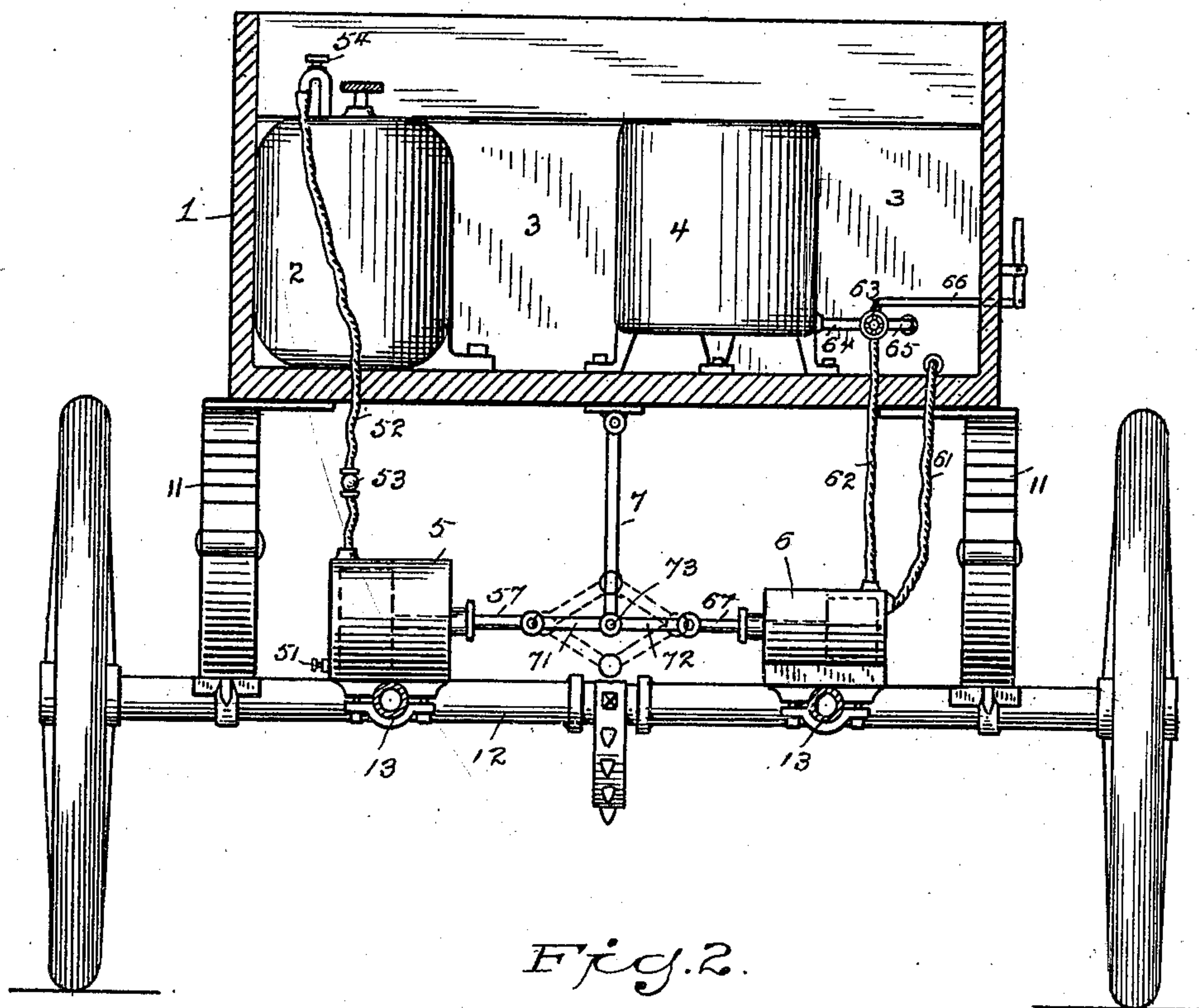
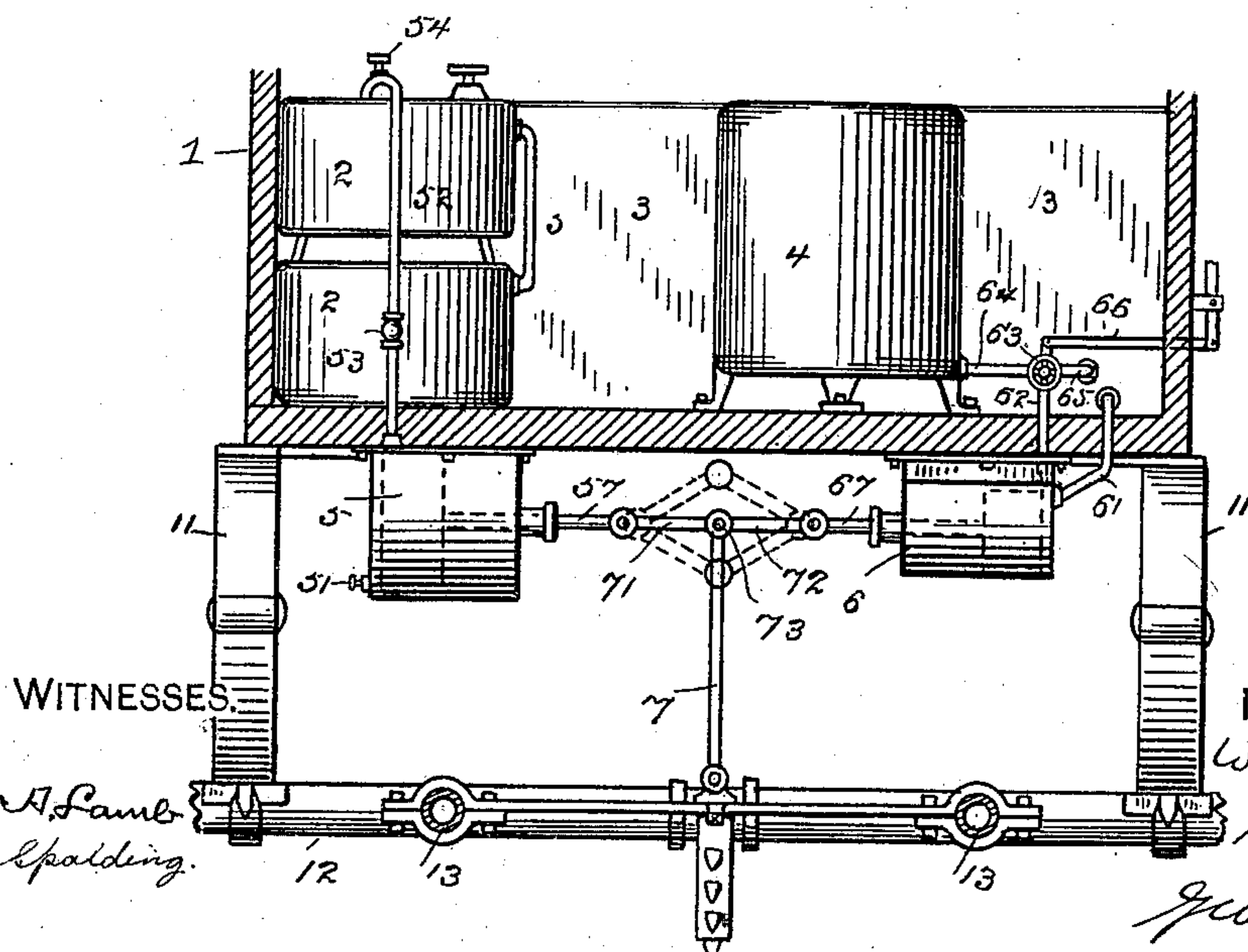


Fig. 2.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## PUMPING DEVICE FOR AUTOMOBILES.

SPECIFICATION forming part of Letters Patent No. 684,953, dated October 22, 1901.

Application filed July 16, 1901. Serial No. 68,483. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. SINGER, a citizen of the United States, residing at Fourth avenue and Twenty-eighth street, New York city, county and State of New York, have invented a new and useful Improvement in Pumps, of which the following is a specification.

My invention relates to means for utilizing the vertical vibration of a vehicle to provide suitable fluid-supplies for its power-generator or the like. It is intended to produce a simple, durable, and automatic device for this purpose.

Figure I of the accompanying drawings represents so much of an automobile vehicle as is necessary to show my invention. Fig. II shows a modification.

1 designates the body of the vehicle, supported by springs 11 on an axle 12 and frame 13. Within the body 1 is contained a gasoline-tank 2, a water-tank 3, and a boiler 4. All these are well known in the art, and I have therefore not deemed it necessary to show them more in detail or to illustrate all their connected parts. Secured to the frame 13 of the vehicle are two horizontally-disposed pumps 5 6, in line with and facing each other. The pump 5 is provided with a properly-valved air-inlet port 51. An outlet-pipe 52, provided with an antireturn-flow valve 53 and with an excess-pressure valve 54, leads to the upper portion of the gasoline-tank 2. The pump 6 has a valved inlet-pipe 61, leading from the water-tank 3, and an outlet-pipe 62, leading to a three-way cock 63, from which branch pipes 64 65 lead, respectively, to the boiler 4 and to the water-tank 3. A hand-lever 66 leads from the cock 63 to a point convenient to the hand of the operator. The pistons 57 67 of the pumps 5 and 6 are pivotally connected, by means of rods 71 72, to a vertical post 7, pivotally attached to the vehicle-body 1, the parts 7 71 72 forming a toggle-joint, of which 73 is the elbow.

In Fig. II of the drawings I have shown an obvious reversal of the parts, the pumps 5 and 6 being secured to the body 1 of the vehicle, while the post 7 is pivoted to the running-gear. This figure also shows the tank 2 as divided, the air-holding portion being separate from the liquid-holding portion.

It is obvious that these two constitute functionally one tank. When, therefore, in the claims I speak of a tank for holding liquid fuel and air, I intend to include this form of construction.

The operation of my device will be readily understood from an inspection of the drawings. It is clear that any jolting or vertical movement of the body 1 relative to the running-gear of the vehicle will by means of the toggled connecting-rods 71 72 reciprocate the pump-pistons 57 67 of the pumps 5 and 6. It will be noted that the pumps 5 and 6 are so spaced apart that the pistons of each are at the end of their respective strokes when the toggle-joint is fully extended, so that a movement of the body either up or down from its normal position drives the pump. In practice, therefore, every jolt and recovery of the vehicle-body gives two strokes of the pump. By pivoting the post 7 to its attachment any danger of injury or strain from a sidewise lurch of the vehicle to either pump is obviated and the action of the pumps is equalized. The function of the air-pump 5 is to maintain a continuous pressure of air in the upper part of the tank 2. The pressure of this air is kept at a desired constant by means of the excess-pressure or "pop" valve 54. The pump 6 takes water from the supply-tank 3 and normally pumps it through the pipes 62 64 to the boiler 4. When the water in the boiler shows at a proper height, the operator, through the hand-lever 66, turns the three-way cock 63, so as to divert the flow through the branch pipe 65 back to the tank 3.

It will be seen that my device saves to the automobilist two disagreeable interruptions of his pleasure or business, besides greatly increasing the usefulness of the vehicle. Where the supply of air to the fuel-tank 2 is kept up by the use of a hand-pump, not only is the labor and annoyance considerable, but the variations in air-pressure cause corresponding variations in the action of the atomizer, with consequent alterations of the flame. By my automatic pumping device the pressure is kept steadily at any desired point, whereby any periodic adjustment of the flame is rendered unnecessary. In the same way the pump 6 suffices with the least possible effort on the part of the operator to keep the



boiler evenly fed with water, and this with no expense for steam. Both of these results are secured without any need of the operator leaving his seat or stopping the vehicle.

5 What I claim is—

1. In an automobile vehicle in combination a tank for holding liquid fuel and air, a water-tank, a boiler, pumps for forcing air into said air-tank and water into said boiler respectively, a toggle-joint connecting the pistons of said pumps, the elbow of said toggle-joints and the pair of said pumps being connected, the one to the body, the other to the running-gear of said vehicle, whereby the relative vertical motion of said body is utilized to reciprocate said pump-pistons, substantially as described.

2. In an automobile vehicle in combination a tank for holding liquid fuel and air, a water-tank, a boiler, pumps for forcing air into said air-tank and water into said boiler respectively, a toggle-joint connecting the pistons of said pumps the elbow of said toggle-joints and the pair of said pumps being connected, the one to the body, the other to the running-gear of said vehicle, whereby the relative vertical motion of said body in either direction is utilized to reciprocate said pump-pistons, substantially as described.

3. In an automobile vehicle in combination a tank for holding liquid fuel and air, an air-pump, means whereby the vertical movement of the body of said vehicle relative to its running-gear is utilized to drive said pump, a pipe leading from said pump to said tank and a pressure-relief valve whereby any excess of air is wasted into the atmosphere, substantially as described.

4. In an automobile vehicle in combination a water-tank, a boiler, a pump, means whereby the vertical movement of the body of said vehicle relative to its running-gear is utilized to drive said pump, an inlet-pipe leading from said tank to said pump, an outlet-pipe leading from said pump both to said boiler and to said tank, and means, as a three-way cock in said pipe, for diverting the flow of water from said pump either to said boiler or to said tank, substantially as described.

5. In an automobile vehicle in combination a water-tank, a boiler, a pump, means whereby the vertical movement of the body of said vehicle relative to its running-gear is utilized to drive said pump, an inlet-pipe leading from said tank to said pump, an outlet-pipe

leading from said pump both to said boiler and to said tank, means, as a three-way cock in said pipe, for diverting the flow of water from said pump either to said boiler or to said tank, and manually-operative means for manipulating said water-diverting means, substantially as described.

6. In an automobile vehicle in combination a tank for holding liquid fuel and air, a water-tank, a boiler, a pump for forcing air into said air-tank and a pump for forcing water into said boiler, a toggle-joint connecting the pistons of said pumps, the elbow of said toggle-joint and said pair of pumps being connected, the one to the body, the other to the running-gear of said vehicle, means for automatically wasting the excess of air pumped by said first-named pump and separate means for diverting the flow of water from said second-named pump either to said boiler or to said water-tank, substantially as described.

7. In an automobile vehicle in combination a tank for holding liquid fuel and air, a water-tank, a boiler, a pump for forcing air into said air-tank and a pump for forcing water into said boiler, a toggle-joint connecting the pistons of said pumps, the elbow of said toggle-joint and said pair of pumps being connected, the one to the body, the other to the running-gear of said vehicle, means for automatically wasting the excess of air pumped by said first-named pump and separate manually-operative means for diverting the flow of water from said second-named pump either to said boiler or to said water-tank, substantially as described.

8. In an automobile vehicle in combination a tank for holding liquid fuel and air, a water-tank, a boiler, a pump for forcing air into said air-tank, a second pump for forcing water into said boiler, a toggle-joint connecting the pistons of said pumps, the elbow of said toggle-joint and said pair of pumps being connected, the one to the body, the other to the running-gear of said vehicle, said pumps being in line with and facing each other and so spaced apart that their pistons reach the extreme end of their strokes when said toggle-joint is fully extended, substantially as described.

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Witnesses:

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