W. C. WHITCOMB.

MOTOR.

APPLICATION FILED JAN. 23, 1908.

908,922.

Patented Jan. 5, 1909.

6 SHEETS—SHEET 1.

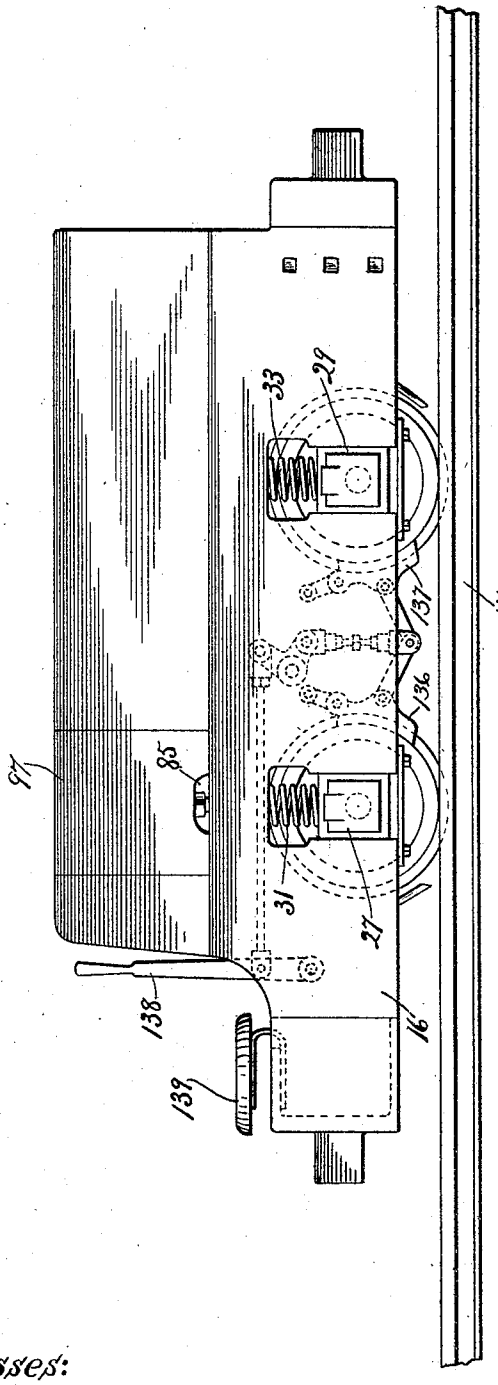


Fig. 1.

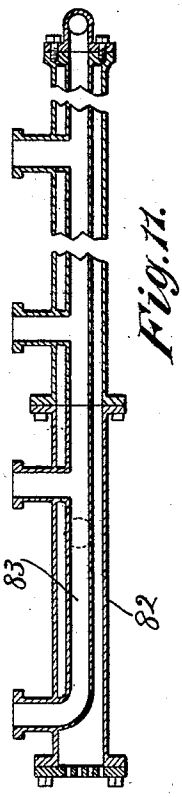


Fig. 11.

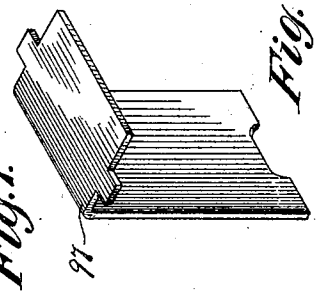


Fig. 10.

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6 SHEETS—SHEET 2.

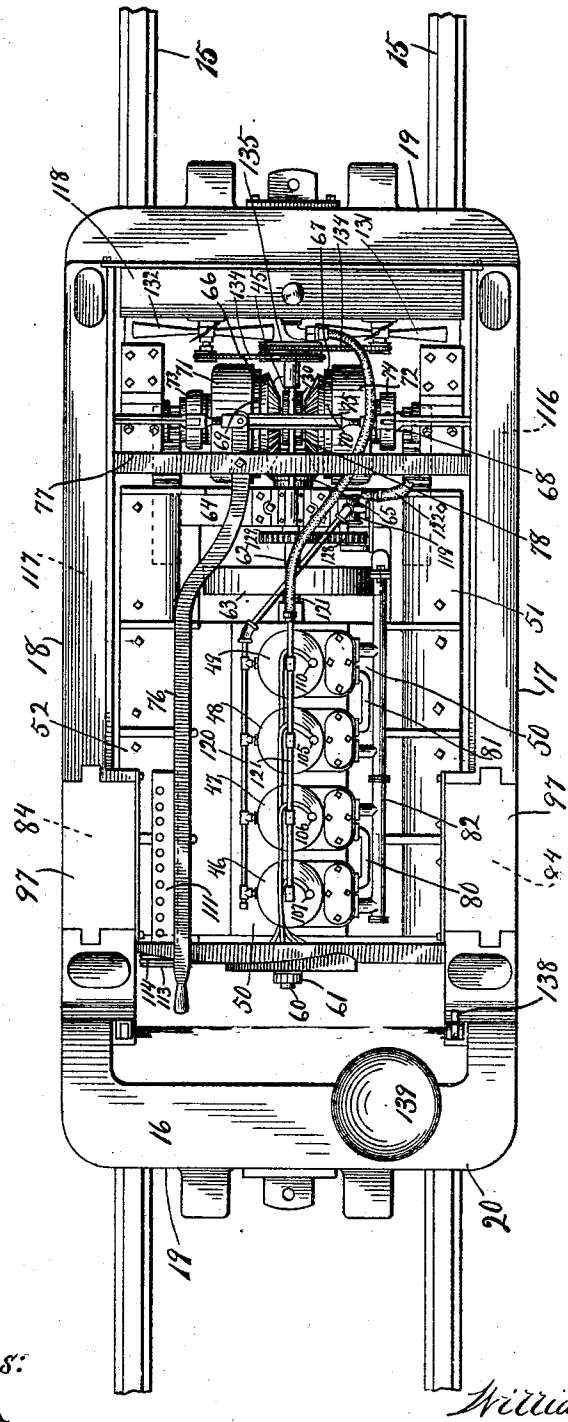


Fig. 2.

Witnesses:
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6 SHEETS—SHEET 3.

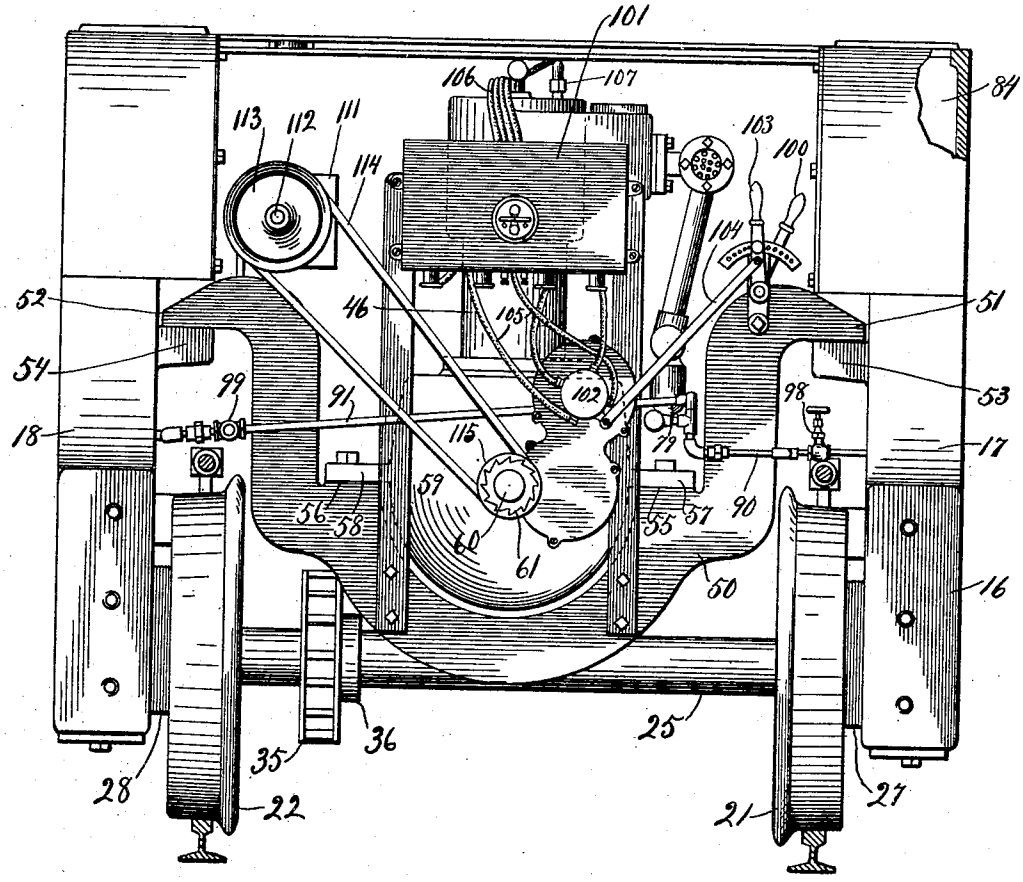


Fig. 3.

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6 SHEETS—SHEET 4.

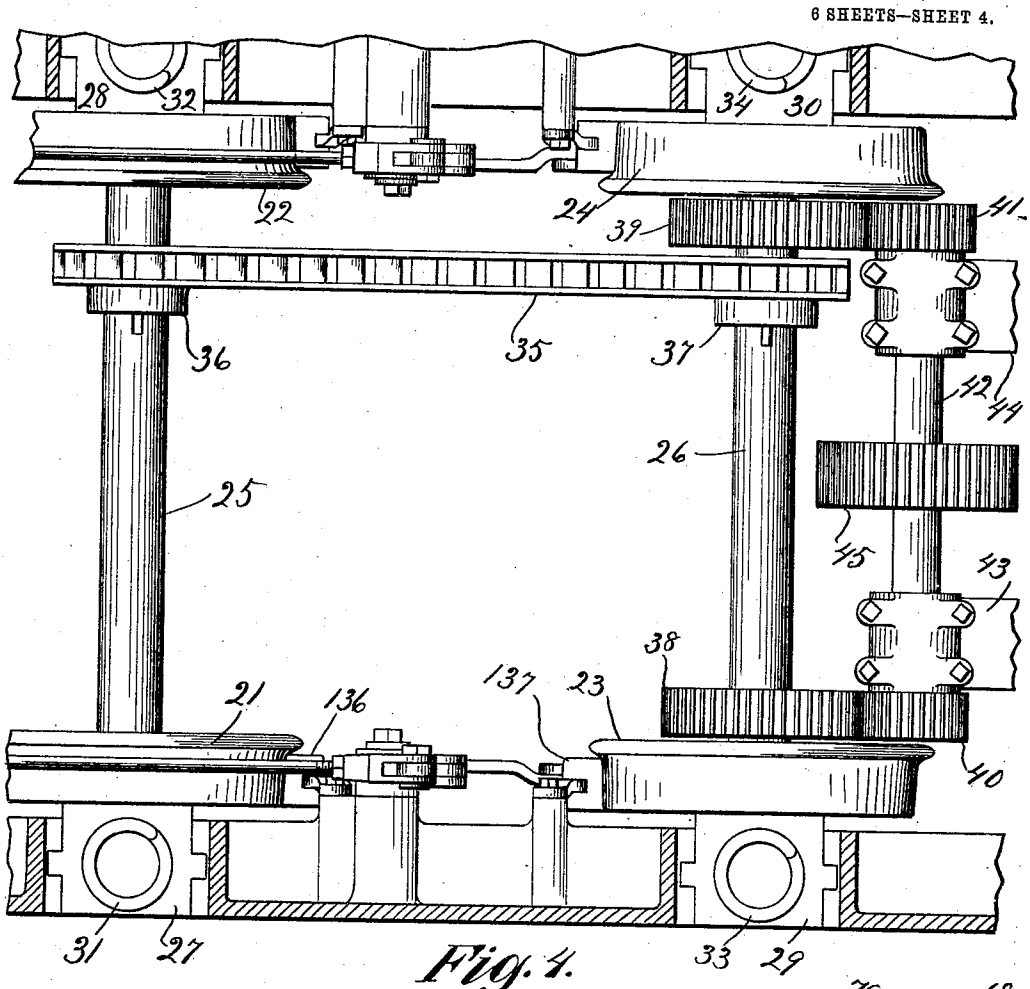


Fig. 4.

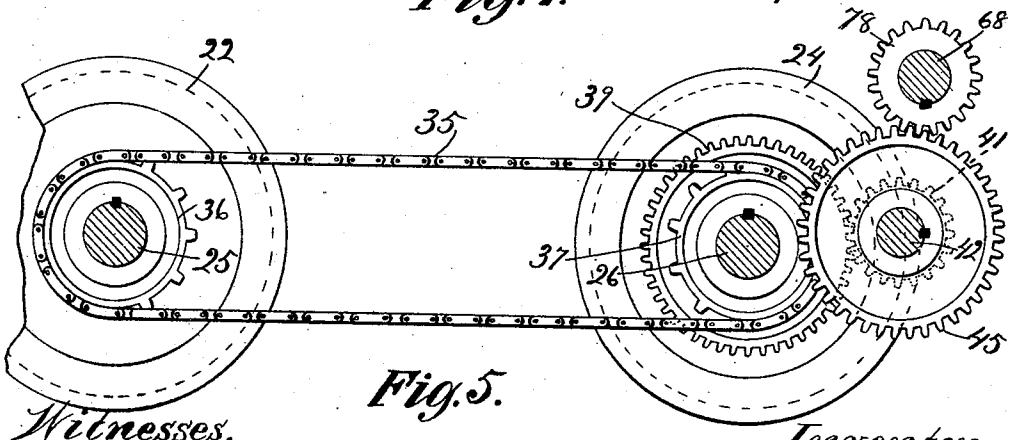


Fig. 5.

Witnesses.
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6 SHEETS—SHEET 5.

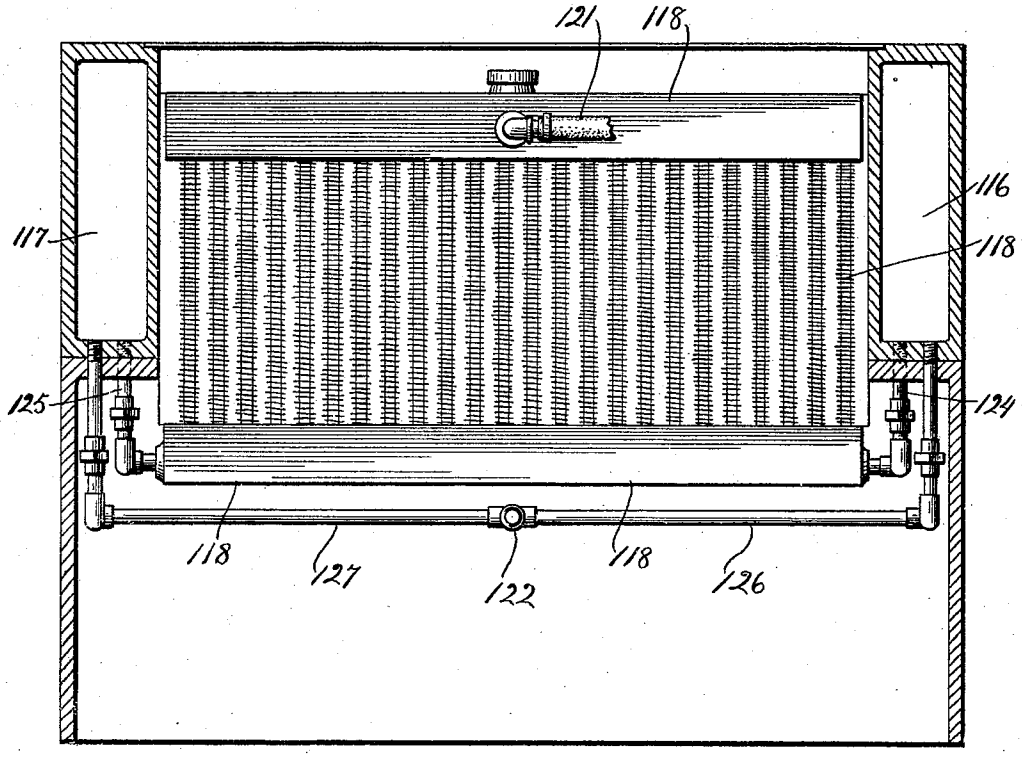


Fig. 6.

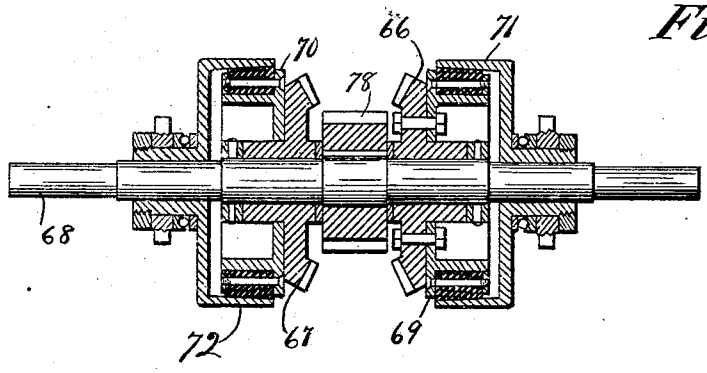


Fig. 12.

Witnesses.
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APPLICATION FILED JAN. 23, 1908.

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6 SHEETS—SHEET 6.

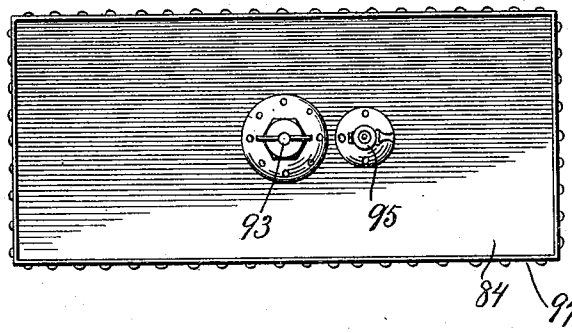


Fig. 7.

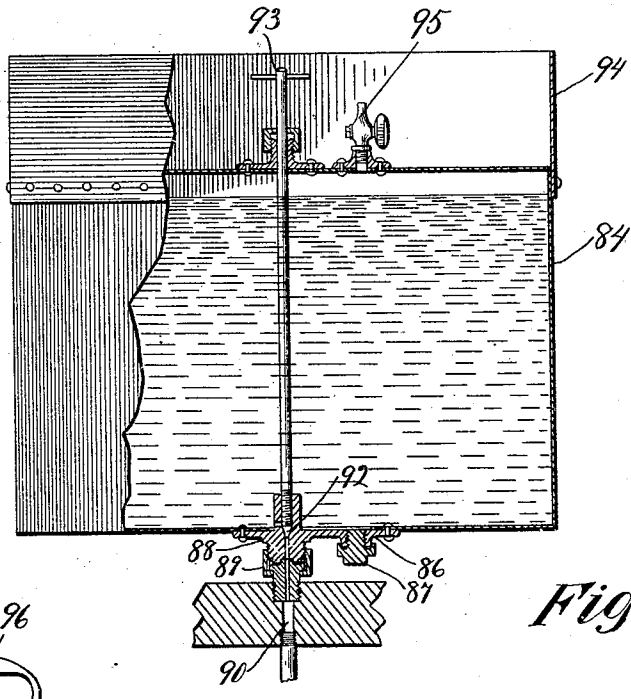


Fig. 8.

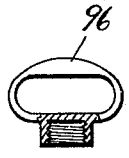


Fig. 9.

Witnesses
W. H. Cotton
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UNITED STATES PATENT OFFICE.

WILLIAM C. WHITCOMB, OF ROCHELLE, ILLINOIS.

MOTOR.

No. 908,922. Specification of Letters Patent. Patented Jan. 5, 1909.

Application filed January 23, 1908. Serial No. 412,316.

To all whom it may concern:

Be it known that I, WILLIAM C. WHITCOMB, a citizen of the United States, and resident of Rochelle, county of Ogle, and State of Illinois, have invented certain new and useful Improvements in Motors, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to a motor especially adapted for use in mines for transferring cars, the motor being driven by an internal combustion engine. Its object is to provide a motor of this character which shall be capable of developing ample power and yet shall be safe and compact, simple in construction and easy of control; a further object being to provide means for charging the motor with a supply of combustible fluid without danger of the escape of inflammatory vapors. These objects are attained by means of the construction hereinafter described, and which is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the motor mounted upon a track; Fig. 2 is a plan view of the same; Fig. 3 is a front elevation thereof; Fig. 4 is a detail plan section of the motor with the engine removed, and showing the driving gear; Fig. 5 is a detail vertical longitudinal section through the driving gear; Fig. 6 is a transverse vertical section showing the arrangement of the water-cooling appliances used in connection with the motor; Fig. 7 is a plan view of one of the fuel-containing tanks; Fig. 8 is a detail elevation of the tank, partly in section, and showing a detail of the frame of the motor; Fig. 9 is a detail, partly in section, of the handle for carrying the fuel-container when removed from the motor; Fig. 10 is a perspective of the cover for the fuel tank; Fig. 11 is a longitudinal plan section of the exhaust manifold and air-intake; and Fig. 12 is a detail section of the clutch.

There is shown at 15 a portion of the track upon which the motor is to travel. The frame 16 of the motor is an oblong rectangular casting having side walls 17, 18, a front wall 19, and a rear wall 20. This frame is mounted upon the flanged wheels 21, 22, 23, 24, fixed in pairs on the axles 25, 26, which run in journal boxes 27, 28, 29, 30, slidable within vertical recesses extending upwardly from the bottoms of the side walls of the frame; cushion springs 31, 32, 33 and 34 being located on top of the journal boxes for directly supporting the motor frame.

The two axles 25, 26, are united by a sprocket chain 35, running on suitable sprocket wheels keyed to the axles, as indicated at 36, 37. The rear axle 26 carries a pair of gears 38, 39, intermeshing with a pair of pinions 40, 41, fixed on a countershaft 42 journaled in suitable brackets 43, 44, carried by the motor frame, a gear wheel 45 being also fixed upon the countershaft 42.

An explosive engine, shown as having four cylinders designated, respectively, 46, 47, 48 and 49, is carried by a U-shaped chair 50, having at its upper ends outstanding lugs 51, 52, resting upon shoulders 53, 54, projecting inwardly from the side walls 17, 18, of the frame, the chair 50 being provided with upwardly-facing shoulders 55, 56, upon which rest, and to which they are bolted, flanges 57, 58, projecting laterally from the crank cases 59 of the cylinders, one of which is plainly shown in Fig. 3 of the drawings. The engine comprising the four cylinders and their accessories being of any of the usual types of internal combustion motors, it is not deemed necessary to illustrate their internal construction. The several cylinders are arranged side by side, as shown in Fig. 2, and have a common crank-shaft 60, the forward end of which is shown in Fig. 3 as carrying a ratchet-wheel 61, to which may be applied the pawl of a starting lever, not shown. The crank shaft projects backwardly from the motors, as shown at 62, and carries a balance wheel 63, and is journaled in a cross-arm 64 of the supporting chair 50. Upon the rear end of the crank-shaft there is mounted a bevel gear 65, which is in constant mesh with a pair of bevel gears 66, 67, loosely mounted on a shaft 68, journaled in brackets secured to the side walls 17, 18, of the frame, each of these last-named gears carrying a clutch cone 69, 70, with which coöperate clutch cups 71, 72, splined upon the shaft 68, and shiftable, by means of yokes 73, 74, carried by a slide-bar 75 which is actuated by a hand lever 76, pivoted upon a cross-bar 77 supported by the side walls of the motor frame. A gear pinion 78 is keyed upon the shaft 68 intermediate of the bevel gears 66, 67, and intermeshes with the gear wheel 45. By this arrangement of gears the motor car is driven in either direction by the engine, as the bevel gears 66, 67, are turned in opposite directions on the crank shaft, and either may

be locked to the shaft 68 by the clutch mechanism coöperating with it. The engine is supplied with an explosive charge through a carbureter 79 of any approved form, the intake pipes for the engine being conventionally shown at 80, 81. Air is supplied to the engine through a jacket 82, open at its ends and inclosing the exhaust manifold 83.

The fuel for the engine is stored in one or more tanks 84. As shown provision is made for two of these tanks, one at each side of the frame of the motor. For the accommodation of the tanks 84 the side walls 17, 18, of the motor frame are recessed, as shown at 85. The tank 84, shown in detail on an enlarged scale in Figs. 7 and 8, is oblong rectangular in form, and, assuming that its filling aperture is in its top, it is inverted when in use, the filling aperture being shown at 86 and being closed by means of a tight-fitting screw-plug 87. Attached to the top of the tank and opening to its interior, there is a nipple 88, threaded to engage a complementary nipple 89, fixed in the floor of the recess 85 and forming the termination of a duct 90 leading to the carbureter 79. The arrangement of and connections for the two tanks, when two are employed, are identical, the duct leading from the tank at the left of the motor to the carbureter, being shown at 91. The nipple 88 is controlled by means of a needle valve 92, the stem 93 of which projects through the bottom of the tank 84, and is protected by a flange 94 depending from the bottom of the tank. A vent cock 95 is placed in the bottom of the tank to prevent the latter from being air-bound when in service.

A handle 96, having a threaded socket adapted to engage the nipple 88, serves as means for carrying the tank when removed from the motor, and furthers the object in view of rendering it unnecessary to fill the tank adjacent the motor, that is to say, within the mine. The supply of fuel for the motor may therefore be stored entirely outside of the mine, thus eliminating the danger incident to its presence in bulk within the mine, and especially the danger incident to opening the package containing such volatile material. This danger is the more serious because of the common practice of miners carrying about with them lamps with unguarded flames.

When the tank 84 is in place it is preferably covered by a removable plate 97, protecting it from injury and from the possible access to it of fire from exterior sources.

The ducts 90 and 91 leading to the carbureter are preferably provided with cut-off valves 98, 99, and the throttle of the engine, taking any desired form, is controlled by a hand lever 100.

The igniting system for the engines comprises any suitable source of electric energy, a spark coil 101, and timer or distributer 102 which may be shifted for changing the instant of ignition relatively to the engine stroke by means of a hand lever 103 and link 104. Wires are shown at 105 leading from the timer to the spark coil, and at 106 leading from the spark coil to the spark plugs of the engines, conventionally shown at 107, 108, 109 and 110.

An oil tank is shown at 111 and may, if desired comprise a force-feed mechanism of any desired form, a shaft for operating such mechanism being shown at 112, a pulley upon the shaft at 113, and a belt for driving this pulley at 114 and leading from a pulley 115 on the crank-shaft 60. The connections between the oil tank and the various bearings of the motor are not shown, as they are of usual and ordinary form.

The engines are shown as being of the water cooled type. The water supply is contained in a pair of tanks 116, 117, located within the side walls of the motor. A radiator 118 is located across the front end of the motor frame. The water-circulating system comprises a pump 119 of any approved form; a pipe 120 leading from the pump to the several engine cylinders; a return pipe 121 leading from the several engine cylinders to the radiator 118; pipes 124, 125, connect the bottom of the radiator with the storage tanks 116, 117, and pipes 126, 127, lead from such tanks and are both connected by means of a pipe 122 with the receiving side of the pump.

The shaft of the pump 119 carries a gear 128, driven through the medium of a gear 129 on the shaft 130, and in mesh with a gear, not shown, on the crank shaft 62. Fans 131, 132, are rotatably mounted on stud shafts fixed to the radiator 118, and are driven by means of belts 133, 134, running over pulleys on the hubs of the fans and a pair of pulleys 135 on the shaft 130, the blades of the fans being so set as to direct blasts of air upon the radiator.

The motor is provided with brakes 136, 137, applied to its traction wheels and controlled by means of a lever 138 within convenient reach of the operator, whose seat 139 is shown as located at the end of the motor.

I claim as my invention—

1. In a motor, in combination, a frame having chambered walls, wheels carrying the frame, a chair carried by the frame, an internal combustion engine mounted on the chair, operative connection between the engine and the carrying wheels, and a fuel tank housed in the wall of the motor frame and connected with the engine.

2. In a motor, in combination, a frame having chambered walls, wheels carrying the frame, a chair carried by the frame, an internal combustion engine mounted on the chair, operative connection between the engine and the carrying wheels, a fuel tank housed in

the wall of the motor frame, an upstanding nipple in communication with the engine, and a nipple in the top of the tank for attachment to the upstanding nipple.

3. The combination with a motor having an internal combustion engine, of a fuel tank having its attaching nipple and filling aperture at the same end, and an upstanding nipple for engaging the attaching nipple and communicating with the engine.

4. The combination with a motor having an internal combustion engine, of a fuel tank having its attaching nipple and filling aperture in its top, a valve for the nipple and having its stem extended through the bottom of the tank, and an upstanding nipple communicating with the engine and adapted to engage the attaching nipple of the tank.

5. In a motor, in combination, a frame having chambered walls, wheels carrying the frame, an internal combustion engine carried by the frame, operative connection between the engine and the carrying wheels, and a fuel tank housed in the wall of the motor frame and connected with the engine.

6. In a motor, in combination, a frame having hollow walls, wheels carrying the frame, a water-cooled internal combustion engine carried by the frame and operatively connected with the wheels thereof, a water tank housed within the wall of the frame, and service and return connections between the tank and the engine.

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