The mixed gas engine in accordance with the invention is used to obtain a power that is transmitted to a shaft to turn it, and it is made up of an oilbath body subassembly A containing a crankshaft-connecting rods-piston subassembly B, and over which is a cylinder unit subassembly C, a recuperator distributor body subassembly D containing a rocker shaft subassembly E, a camshaft subassembly F1 and another recuperator distributor subassembly G that also contains a rocker shaft subassembly H and a camshaft subassembly I, all connected to a pressurized circuit consisting of pressure pipes 164, a valve 165, a manometer 166, a bottle 167, and a compressor 168, known and not marked.
FIG. 12
The mixed-gas engine in accordance with the invention is used to obtain power that is transmitted to an axle to obtain the rotation of the axle and to generate energy, by the conversion of mixed gas pressure into mechanical work.

In this sense, there are also known internal combustion engines, spark-ignition engines, electrical motors, steam engines, water engines, wind engines, and engines that use the force of water. These engines present the following disadvantages: a lower yield, the environment is polluted by the release of mixed gas and toxic substance, they cannot operate in an environment with great differences in temperature relative to time, they release heat when operating, it is necessary to use thermal cooling agents, raw materials, by-products thereof, permanent energetic agents, only those engines that have a special construction, which have a great mass, can function in explosive environments.

The object of the mixed-gas engine invention, in accordance with the invention, is to obtain power that is transmitted to an axle to rotate it and generate energy by the conversion of mixed-gas pressure into mechanical work.

The object attained by the mixed-gas engine invention is that of obtaining power that is transmitted to an axle to rotate the compressed mixed-gas engine that is used as an energy converter.

The mixed-gas engine in accordance with the invention is used for the purpose of obtaining power that is transmitted to an axle to rotate it, made up of an oil-bath subassembly receiving a crankshaft-connecting rods-pistons subassembly, a cylinder subassembly, a recuperator-mixed gas distributer body subassembly in which is mounted a rocker-arm subassembly and a cam-axle subassembly, all connected to a circuit through which passes the pressurized mixed gas formed by the pressure conduits, a valve, a pressure gauge, a bottle and a compressor, all known and not shown.

The advantages that the mixed-gas engine invention confers on them are the following:

Environmental pollution is eliminated because mixed gas and toxic substances are not released;

Noise pollution is eliminated by a silent operation, the use of raw materials and their by-products of those known as conventional fuels are eliminated;

The use of thermal cooling agents is eliminated;

Special manufacturing costs are eliminated because it has a simple construction, resulting in material progress;

It is possible to operate in explosive environments;

It has greater reliability;

During operation, it does not release special heat, and it can work at the temperature of the environment;

Energy is produced at a lower price relative to the current situation of growth of energy costs, shortage of energy resources and ecological problems;

It can be used in areas where traditional energy agents are lacking;

It has a constant and continuous operation at minimal costs;

It can be used over a broad spectrum in the energy, mining, oil and transport fields.
lock pin 33, by mounting the crankpin 20 on the axle 27 with a lock pin 34, by mounting the crankpin 21 on the axle 27 with a lock pin 35, by mounting the crankpin 21 on the axle 28 with a lock pin 36, by mounting the crankpin 22 on the axle 28 with a lock pin 37, by mounting the crankpin 22 on the axle 29 with a lock pin 38, by mounting the crankpin 23 on the axle 29 with a lock pin 39, by mounting the crankpin 23 on the axle 30 with a lock pin 40, by mounting the crankpin 24 on the axle 30 with a lock pin 41, by mounting the crankpin 24 on the axle 31 with a lock pin 42, by mounting the crankpin 25 on the axle 31 with a lock pin 43, by mounting the crankpin 25 on the axle 32 with a lock pin 44; holes q and z are aligned with holes e' that allows the mounting of lock pins 33 ... 44 by crankpins 20 ... 25 and by axles 26 ... 32; the axle 27 carries a bearing 45 in turn carrying one end of a connecting rod 46 whose other end carries a sleeve 47 that in turn receives a bolt 48 that carries a piston 49 that is secured by safety plugs 50; the piston 49 is formed with grooves i' that receive segments 51 and one of these grooves has holes g1 and h1 in the skirt of the piston 49, there is a recess i' that communicates with the hole h1; the axle 29 carries a bearing 52 in turn carrying one end of a connecting rod 53 whose other end carries a sleeve 54 that in turn receives a bolt 55 that carries a piston 56 secured by safety plugs 57; the piston 56 is formed with grooves j' that receive segments 58, and one of these grooves has holes k1 and l1; in the skirt of the piston 56 there is a recess m' that communicates with a hole l1; the axle 31 carries a bearing 59 in turn carrying one end of a connecting rod 60 whose other end carries a sleeve 61 that in turn receives a bolt 62 that carries a piston 63 secured by safety plugs 64; the piston 63 is formed with grooves n' that receive segments 65, and one of these grooves has holes o' and p1 in the skirt of the piston 63, there is a recess r' that communicates with a hole p1; the axle 28 carries a bearing 66 carrying a spacer disk 67 that has a hole s' used for the circulation of oil, a hole q' used for the circulation of mixed gas of the oil-bath subassembly A by threaded hole u of the side wall 12 in which is fixed connection 15, and a guide v' used for guiding the spacer disk 67 in the guide groove k of the side wall 11 and in the guide groove t of the side wall 12; the axle 30 carries a bearing 68 carrying a spacer disk 69 having a hole t' for the circulation of oil, a hole w' for the circulation of mixed gas of the oil-bath subassembly A by the threaded hole of the side wall 12 which is fixed the connector 16 and a guide v' used for guiding the spacer disk 69 in the guide groove 1 of the side wall 11 and in the guide y' of the side wall 12; the installation of a crankshaft/connecting-rods/piston subassembly D in the oil-bath subassembly A is done by introducing the axle 26 through the fitting 4, the bearing 3 and the sleeve 2 that are mounted in the end plate 1, after the mounting on the axle 26 of spacer washer 70, after this mounting, the axle 26 is fitted with a universal-joint end 71 having a hole w' aligned with the hole a' of axle 26; a lock pin 72 is fitted through the holes a' and w'; the axle 32 is introduced through the fitting 9, the bearing 8 and the sleeve 7 that are assembled in the end plate 6 after the mounting on the axle 32 of a spacer washer 73; after this mounting the axle 32 will be fitted with a universal-joint end 74 having a hole x' aligned with the hole a' of the axle 32; through hole a' and x' is introduced a lock pin 75; the mixed-gas engine in accordance with the invention also has a cylinder subassembly C formed by a cylinder 76 that has at its lower part a soleplate in which there are holes y' that allow the fixing of cylinder 76 to this the oil-bath subassembly A by the bolts 17, the washers 18 and the nuts 19, sealing will be done by a lower seal 77, at the higher part of cylinder 76 there is also a soleplate in which threaded holes q' were made in which are mounted screws 78 that fix a cylinder head 79 of cylinder 76 that has threaded holes z' aligned with the threaded holes q', sealing will be done by an upper seal 80 on the cylinder head 79 of the cylinder 76, inside the cylinder 76 is an intermediate cap 81 having a threaded hole a' that is also aligned with the cylinder head 79 of the cylinder 76, a T-connector 82 is sealed relative to cylinder head 79 of cylinder 76 with a seal 83; the cylinder 76 has an internal lining 84; cylinder subassembly C also comprises a cylinder 85 that has at its lower part a soleplate in which there are holes y' that allow the fixing of the cylinder 85 to the oil-bath subassembly A by the bolts 17, the sleeves 18 and the nuts 19, sealing will be done by a lower seal 77; at the upper part of the cylinder 85 there is also a soleplate in which are threaded holes q' in which are mounted screws 78 that fix the cylinder head 79 of the cylinder 85 that is provided with threaded holes z' aligned with the threaded holes q', sealing will be done with a higher seal 80 on the cylinder head 79 of the cylinder 85; inside the cylinder 85 is an intermediate cap 81 having a threaded hole a' that is aligned with the cylinder head 79 of the cylinder 85 in which is mounted the cylinder head 79 of the cylinder 85, a T-connector 86 sealed relative to cylinder head 79, of cylinder 85, a T-connector 86 sealed relative to the cylinder head 79 of the cylinder 85 with a seal 83; the cylinder 85 also has an internal lining 84; the cylinder subassembly C also comprises the cylinder 87 that has on its lower part a soleplate in which there are also holes y' that allow the fixing of cylinder 87 to the oil-bath subassembly A by the bolts 17, the sleeves 18 and the nuts 19, sealing will also be done by a lower seal 77; at the upper part of the cylinder 87, there is also a soleplate in which have also been made threaded holes q' in which are mounted also screws 78 that fix the cylinder head 79 of the cylinder 87 that is also provided with holes z' aligned with the threaded holes q', sealing will be done by a higher seal 80 on the cylinder head 79 of the cylinder 87; inside the cylinder 87 is an intermediate cap 81 that is also provided with a threaded hole a' that is aligned with the cylinder head 79 of the cylinder 87 in which is mounted the cylinder head 79 of the cylinder 87, a T-connector 88 sealed relative to cylinder cover 79 of the cylinder 87 also with a seal 83; the cylinder 87 has an internal lining 84; the mixed-gas engine in accordance with invention also has a recuperator-distributor subassembly D comprising a frame 89 that has threaded holes b2 in which are mounted screws 90 that fix to the frame 89 supports 91 provided with holes c2. On the left and on the right, the frame 89 also has threaded holes d2; on the left part of frame 89 is a sealing cap 92 with screws 93 through holes e2 in the sealing cap 92 that also has a central hole F [f'] and threaded holes g2 in which are put on sealing cap 92 a cap 94, with screws 95, through holes h2 that are in cap 94; sealing between sealing cap 92 and frame 89 will be done by a seal 96, and sealing between sealing cap 92 and cap 94 will be done with a seal 97; the central hole F [f'] of the sealing cap 92 holds a bearing 98 and a fitting 99; on the right part of the frame 89 is mounted a sealing cap 100 with screws 101 through holes 12 in the sealing cap 100, where also there is a central perforation j2 and threaded holes k2 to secure on the cap 100 a cap 102 with screws 103 through holes I2 provided in the cap 101 [101]; sealing between the frame 89 and the sealing cap 100 will be done by a seal 104, and sealing between the sealing cap 100 and the cap 102 will be done with a seal 105; in the central hole F' of the sealing cap 100 is mounted a bearing 98 and a
fitting 99; the frame 89 is also provided with holes m² for mounting internal elastic plates 106...108 with screws 109 provided with frustoconical metal washers 110 and nuts 111; the elastic plates 106...108 are fixed to balls 112 for hermetic closure, the frame 89 also has a threaded hole n² in which is mounted a connector 113, threaded holes o in which are mounted valves 114...116, sealed relative to the frame 89 with seals 117 and holes p² in the recuperator-distributor subassembly D there is a rocker-arm subassembly E formed by a rocker-arm axle 118 that at each end has holes r² fitted with plugs 119 that carry screwed bases 120 of the rocker arm axle 118 that are also provided with holes r² aligned with the holes r² of the rocker arm axle 118 mounted on the rocker arm axle 118; screwed bases 120 of the rocker arm axle 118 are mounted by holes p² of frame 89 by fixing with frustoconical metal washers 121 tightened on the frame 89 by nuts 122; the rocker arm axle 118 carries between the two screwed bases 120 of the rocker arm axle 118, spacers 123 and rocker arms 124...126; in the recuperator-distributor subassembly D there is a cam-axle subassembly F formed by a cam axle 127 also provided with holes r² at its ends; on one end of the cam axle 127 is a washer 128, a spacer washer 129, a simple effect thrust ball bearing 130, another spacer washer 129 and a helical compression spring with machined ends 131, and on the other end of the cam axle 127 is also mounted another washer 128, another spacer washer 129, another simple effect thrust ball bearings 130, another spacer washer 129 and another helical compression spring with machined ends 131; the ends of the cam axle 127 are introduced through central holes i and j of the ends of the sealing caps 92 and 100, through bearings 98, lip seals 99 and caps 94 and 102; on the end of the cam axle 127 of the sealing cap 100 is a universal-joint end 132 mounted on a hole s² aligned with the hole r² of the cam axle 127; a lock pin 133 extends through holes r² and s² and, after that, the universal-joint end 74 is joined with a universal-joint end 132, connecting in this way the crankshaft/connecting-rods/piston subassembly B with the cam-axle subassembly F; the mixed-gas engine in accordance with the invention is also made up of a recuperator-distributor subassembly G consisting of a frame 134 that is also provided with threaded holes b² in which are also mounted screws 90 that fix to the frame 134 the other supports 91 also provided with holes c²; the frame 134 also has, on the left and on the right, threaded holes d²; frame 134 on the left carries a sealing cap 135 with other screws 93 through holes c² provided in sealing cap 135 that also has a central hole f²; sealing between the sealing cap 135 and the frame 134 is done with a seal 136; at the central hole f² of sealing cap 135 is also mounted a bearing 98 and a lip seal 99; on the right side of the frame 134 is mounted a sealing cap 137 using other screws 93 through holes i² provided in the sealing cap that also has a central hole j²; sealing between the frame 134 and the sealing cap 137 is done with a seal 138; at the central hole j² of the sealing cap 137 is also mounted a bearing 98 and a lip seal 99; the frame 134 also has a threaded hole n² in which is mounted another connector 113, threaded holes o² holding valves 139...141 sealed relative to the frame 134 by other seals 117 and holes p²; inside valves 139...141, there is, in the following order: a fitting for hermetic closure 142, a ball shaft for hermetic closure at both ends 143, a helical compression spring with machined ends 144, and a fixing sleeve 145; in the recuperator-distributor subassembly G, there is a rocker-arm subassembly H formed by a rocker arm axle 146 that at each end also has holes r², into which are also introduced keys 119 that also fix screwed bases 147 of the rocker arm axle 146, the rocker arms are also provided with holes r² aligned with the holes r² of the rocker arm axle 146; screwed bases 147 of the rocker arm axle 146 are mounted through holes p² of the frame 134, also fixing them with frustoconical metal washers 148 that are tightened on the frame 134 by nuts 149; the rocker arm axle 146 carries between the two screwed bases 147 of the rocker arm axle 146 spacers 150...153 and rocker arms 154...156; in the same way in the recuperator-distributor subassembly G, there is a cam-axle subassembly I that consists of a cam axle 157 also provided at one end with a hole r² and at the other end a sealing cap 135 is provided with a thread s², on both ends of the cam axle 157 is also mounted another washer 128, another spacer washer 129, another simple effect thrust ball bearings 130, another spacer washer 129, and another helical compression spring with machined ends 131; the ends of cam axle 157 are introduced through the central holes f² and j² of the ends of the sealing caps 135 and 137, through the bearings 98 and the lip seals 99 of the sealing caps 135 and 137; the sealing cap 135 is mounted on the end of the cam axle 157 by screwing a drive wheel 158 provided in the center with a threaded hole r² and at the edge with a groove q² secured by a nut 159, and on the other end of cam axle 157 is fitted to a universal-joint end 160 that is also provided with a hole s² aligned with the hole r² of cam axle 157; a lock pin 161 is fitted through these holes r² and s² to fix the universal-joint end 160 on the cam axle 157, and after that, the universal-joint end 160 is joined to the universal-joint end 71; coupling of the universal-joint end 71 and the universal-joint end 160 will via a ball provided with four angularly equispaced holes lying in a common plane 162, thus connecting the cam-axle subassembly I of the crankshaft/connecting-rods/piston subassembly B, and coupling between universal-joint end 74 and universal-joint end 132 is also done by another ball provided with four angularly equispaced holes in the same plane 163, thus connecting the cam-axle subassembly F of the crankshaft/connecting-rods/piston subassembly B; the mixed-gas engine in accordance with the invention is coupled with a mixed-gas pressurized circuit that consists of pressure lines 164, a valve 165, a pressure gauge 166, a bottle 167 and a compressor 168 coupled by a drive belt 169, all these parts of the pressurized circuit being known and not referenced, via a drive wheel 158; between a valve 116 and the T-connector 82, the valve 115 and the T-connector 86, the valve 114 and the T-connector 88, the valve 141 and the T-connector 82, the valve 140 and the T-connector 86, the valve 139 and the T-connector 88, the connector 113 of the recuperator-distributor subassembly G and the compressor 168, the connector 16 and the compressor 168, the connector 15 and the bottle 167, the bottle 167 and the valve 165, the valve 165 and the connector 113 of the recuperator-distributor subassembly D are connected to the pressure line 164 that allow the circulation of pressurized mixed gas; between the pressure line couples the coupling to the air bottle 167 and the valve 165 is mounted the pressure gauge 166.

[0039] The operation of the mixed-gas engine in accordance with the invention is done by opening the pressurized mixed gas circuit by the valve 165, through which are introduced pressurized mixed gases by the connector 113 of the recuperator-distributor subassembly D and by the valve 116, delivered by the hermetic closure ball 112 of the elastic plate 106 toward the T-connector 88 that divides the pressurized mixed gas into two parts, the first part having the role of pushing the piston 63 that uses the rod 60 to put into operation
the crankshaft/connecting-rods/piston subassembly B that in turn puts in operation the cam axes 157 and 127, by the 200° universal joints 74-163-132 and 71-162-160 that in their turn put in operation, by the cam axle 157, the drive wheel 158 that by the drive belt 169 puts in operation the 360° compressor, and the second part having the role of opening the valve 141 by the pressure of the mixed gas on the hermetic closure ball shaft 143 of the valve 141, by dispersing the mixed gas inside the recuperator-distributor subassembly G toward the compressor that has the role of increasing the pressure of the mixed gases that have entered; the mixed gas eliminated from the compressor 168 and introduced through the connector 15 leaves mixed with the quantity of pressurized mixed gas that is inside the oil-bath subassembly A, by the connector 16 toward the inside of the bottle 167, on putting into operation the crankshaft/connecting-rods/piston subassembly B and the cam axes 157 and 127 by the 120° universal joints 74-163-132 and 71-162-160° and at the time of putting in operation the compressor 168 by the drive belt 169, by the movement imparted by drive wheel 158, of 360°, the pressurized mixed gas remaining inside the recuperator-distributor subassemblies G and D and the oil-bath subassembly A form a second pressurized circuit by the closing of the valve 116 and the opening of the valve 139 by the hermetic closure ball shaft 143 of the valve 139, letting the pressurized gas pass by the T-connector 82 toward the inside of the recuperator-distributor subassembly D, where it cumulates with another quantity of pressurized mixed gas introduced through the connector 113 of the recuperator-distributor subassembly D, by the bottle 167, by the fact that the valve 165 remains in an open position and by passage by the valve 115 delivered by hermetic closure ball 112 of the elastic plate 107, toward the T-connector 86 that divides the pressurized mixed gas into two parts, the first part having the role of pushing the piston 56 that by the rod 53 puts in operation the crankshaft/connecting-rods/piston subassembly B that in turn puts in operation the cam axes 157 and 127, by universal joints 74-163-132 and 71-162-160° of 120° more that in their turn put in operation, by cam axle 157, drive wheel 158 that by drive belt 169 puts in operation compressor 168, still of 360°, and the second part having the role of opening valve 140 by the pressure of the mixed gases on the hermetic closure shaft 143 of the valve 140, by dispersing the mixed gas inside the recuperator-distributor subassembly G and evacuating it by the connector 113 of the recuperator-distributor subassembly G toward the compressor 168 that has the role of increasing the pressure of the mixed gas introduced there; the mixed gases eliminated from the compressor 168 and introduced through the connector 15 are evacuated with the quantity of pressurized mixed gas that is inside the oil-bath subassembly A, by the connector 16 toward the inside of the bottle 167, after putting in operation the crankshaft/connecting-rods/piston subassembly B and the cam axes 157 and 127 by the universal joints 74-163-132 and 71-162-160° still of 360°, and at the same time of putting in operation the compressor 168 by the drive belt 169 by the movement imparted by the drive wheel 158, still of 180°, the moment when the first operation cycle of the mixed-gas engine is achieved, the pressurized mixed gas remaining inside the recuperator-distributor subassemblies G and D, the oil-bath subassembly A, the pressure lines 164, the valve 165, the pressure gauge 166, the bottle 167 and the compressor 168, that begins a second operation cycle of the mixed-gas engine and then, after the second operation cycle of the mixed-gas engine, it can accomplish as many operation cycles of the mixed-gas engine as desired, until the pressurized mixed gas circuit is interrupted by closing the valve 165, if need be, being able to be started again by reopening the valve 165, it being possible to recompose the old pressurized mixed gas circuits, in practice, the mixed-gas engine in accordance with the invention can operate until stopping in any position, or until changing the oil, when the pressurized mixed gas circuit is depressurized, and the restarting of the first operation cycle of the pressurized mixed-gas engine, described above that can function until it is stopped.

The mixed-gas engine in accordance with the invention can be designed and dimensioned for types of mixed-gas engines with an odd number of cylinders, greater than three, positioned in line, for types of mixed-gas engines with an odd number of cylinders equal to or greater than three laid out in “V,” for types of mixed-gas engines with an odd number of cylinders equal to or greater than three, in a fan, for types of mixed-gas engines with an odd number of cylinders equal to or greater than three, in a star, for types of mixed-gas engines with “n” cylinders in parallel with an odd number of cylinders equal to or greater than three, in line, in “V,” in fan or in star.

1. A mixed-gas engine used to obtain power that is transmitted to an axle for rotating same, and comprising an oil-bath subassembly (A) in/on which is put a crankshaft/connecting-rods/piston subassembly (B), a cylinder subassembly (C), a recuperator-distributor subassembly (D) in which is mounted a rocker-arm subassembly (E) and a cam-axle subassembly (F), and also a recuperator-distributor subassembly
(G) in which is also mounted a rocker-arm subassembly (H) and a cam-axle subassembly (I), all connected to a pressurized circuit that comprises pressure lines (164), a valve (165), a pressure gauge (166), a bottle (167) and a compressor (168), all known and not marked.

2. The mixed-gas engine wherein, in accordance with claim 1, it is made up of an oil-bath subassembly (A) that comprises an end plate (1) provided with a hole (a) in which is mounted a sleeve (2), a bearing (3), a fitting (4) and a hole (b) in which is mounted a screw (5); at the edge of end plate (1) is provided a guide (c); the oil-bath subassembly (A), also has an end plate (6) provided with a hole (d) in which are put a sleeve (7), a bearing (8) and a fitting (9), and a hole receiving a screw (10); on the side edge of cap (6), there is a guide (l); the oil-bath subassembly (A) is provided with holes (g) used for fixing the side wall (11) to pedestal, holes (h) used on mounting to the side wall (12) with screws (13) provided with nuts (14), two guide and sealing grooves (i) and (j) used for mounting end plates (1) and (6), two guide grooves (k) and (l), threaded holes (m) and half-holes (n) that each have a chamfer (o); in the side wall (12) are provided threaded holes (m), and holes (p), used on mating of the side wall (11), two guide and sealing grooves (s) and (q) used for mounting end plates (1) and (6), two guide grooves (i) and (j), 22 of threaded holes (u) in which are put connectors (15) and (16), half-holes (v) in which each have a chamfer (w), and holes (g) used on fixing the side wall (12) to the pedestal; in threaded holes (m) are put bolts (17) provided with washers (18) and nuts (19).

3. The mixed-gas engine wherein, in accordance with claim 1, it is also made up of a crankshaft connecting rods/piston subassembly (B), comprised of crankpins (20) . . . (25), each provided with screwed holes (x) and (y) perforated by holes (g) and (z) of axes (26) . . . (currently amended) (32); axes (26) and (32) each have at one end a hole (a') and at the other end a thread (b') perforated by a hole (c'), and axes (27) . . . (31) are provided at each end a thread (d') perforated by a hole (e'); crankpins (20) . . . (25) with axes (26) . . . (32) form a crankshaft by mounting the crankpin (20) on the axle (26) with a lock pin (33), by mounting the crankpin (20) on the axle (27) with a lock pin (34), by mounting the crankpin (21) on the axle (27) with a lock pin (35), by mounting the crankpin (21) on the axle (28) with a lock pin (36), by mounting the crankpin (22) on the axle (28) with a lock pin (37), by mounting the crankpin (22) on the axle (29) with a lock pin (38), by mounting the crankpin (23) on the axle (29) with a lock pin (39), by mounting the crankpin (23) on the axle (30) with a lock pin (40), by mounting the crankpin (24) on the axle (30) with a lock pin (41), by mounting the crankpin (24) on the axle (31) with a lock pin (42), by mounting the crankpin (25) on the axle (31) with a lock pin (43), by mounting the crankpin (25) on the axle (32) with a lock pin (44); the holes (g) and (z) are aligned with the holes (e'), allowing the mounting to lock pins (33) . . . (44) by crankpins (20) . . . (25) and by axes (26) . . . (32); on the axle (27) are put a bearing (45), on which are put one end of rod (46), and at the other end of rod (46) is mounted a piece (47) that in turn is put on a bolt (48) that is put piston (49) secured with plugs (50); the piston (49) is formed with grooves (i') in which are put segments (51), and one of them being provided with holes (g') and (h'); in the skirt of the piston (49), there is a recess (r') connected with hole (h'); on the axle (29) are put a bearing (52), on which are put one end of rod (53), and at the other end of rod (53) is put a piece (54) receiving bolt (55) that is put piston (56) secured with plugs (57); the piston (56) is formed with grooves (j') in which are mounted segments (58), and one of them being provided holes (k') and (l'); in the skirt of the piston (56), there is a recess (n') connected with hole (l'); on the axle (31) are put a bearing (59), on which are put one end of rod (60), and at the other end of rod (60) is put a piece (61) that is put on bowl (62) that is mounted piston (63) secured with plugs (64); in piston (63), there are grooves (n') in which are put segments (65), and one of them being provided holes (p') and (q'); in the skirt of the piston (63), there is a recess (r') connected with hole (p'); on the axle (65) are put a bearing (66), on which there is a spacer washer (67) having a hole (s') used for the circulation of mixed gas, a hole (u') used for the circulation of mixed gas of the oil-bath subassembly (A) by thread hole (u) of the side wall (12) in which are put fitting (15) and a guide (v') used for guiding spacer washer (67) to guide (k) of the side wall (11) and to guide (l) of the side wall (12); on the axle (30) are put a bearing (68) carrying a spacer washer (69) having a hole (u') used for the circulation of oil, a hole (u') used for the circulation of the mixed gas of the oil-bath subassembly (A) by thread hole (u) of the side wall (12) in which are put fitting (16) and a guide (v') used for guiding spacer washer (69) to drive from guide (1) of the side wall (11) to drive guide (h) of the side wall (12); mounting of crankshaft connecting rods/piston subassembly (B) in the oil-bath subassembly (A) is done by introducing axle (26) through fitting (4), bearing (3) and sleeve (2) that are assembled on end plate (1), after prior mounting on the axle (26) of a spacer sleeve (70); after mounting this on the axle (26), semi-couple (71) is put on having a hole (w') aligned with the hole (a') of axe (26); with holes (a') and (w') are put a lock pin (72); also, axle (32) is put with fitting (9), bearing (8) and sleeve (7) that are mounted on end plate (6), after prior mounting on the axle (32) of a spacer sleeve (73); after mounting this on the axle (32), universal joint end (74) is put on having a hole (a') that is aligned with the hole (a') of axe (32); with holes (a') and (x') is put a lock pin (75).

4. The mixed-gas engine wherein in accordance with claim 1, further comprising a cylinder subassembly (C), formed of a cylinder (76) that has on its lower part a soleplate in which are put holes (y') that allow mounting cylinder (76) of oil-bath subassembly (A) by tightening bolts (17), by washers (18) and nuts (19), sealing is done with a lower seal (77), at the upper part of cylinder (76) there is also a soleplate in which there are threaded holes (q') in which are put screws (78) that fix cylinder head (79), of cylinder (76) that is provided threaded holes (z') aligned with the threaded holes (q'), sealing is done with a higher seal (80), on cylinder head (79), of cylinder (76); inside cylinder (76) is put an intermediate cap (81) having a threaded hole (a') that is also aligned with the cylinder head (79), receiving on cylinder head (79) a T-conector (82) sealed toward cylinder head (79) with a seal (83); inside, cylinder (76) has a lining (84); cylinder subassembly (C) is also made up of a cylinder (85) that has at its lower part a soleplate in which are applied holes (y') that allow mounting cylinder (85) of the oil-bath subassembly (A) by tightening bolts (17), with washers (18) and nuts (19), sealing is also done with a lower seal (77); the upper part of cylinder (85) also has a soleplate in which are made holes (q') in which are also mounted screws (78) that fix cylinder head (79), of cylinder (85) that is also provided holes (z') aligned with the threaded holes (q'), sealing is also done with a higher seal (80); on cylinder head (79), of cylinder (85), are put inside cylinder (85) an intermediate cap (81) that is also provided a
threaded hole (a2) that is also aligned with the cylinder head (79), of cylinder (85), receiving on cylinder head (79), of cylinder (85), a T-connector (86) sealed relative to cylinder head (79), of cylinder (85), also by a seal (83); inside cylinder (85), there is also a lining (84); cylinder subassembly (C) is also made up of a cylinder (87) that has on its lower part a soleplate in which there is hole (y1) that allows mounting cylinder (87) with the oil-bath subassembly (A) by tightening bolts (17), with washers (18) and nuts (19), sealing is also done with a lower seal (77); at its upper part, cylinder (87) also has a soleplate in which there are also threaded holes (q1) in which are also put screws (78) that fix cylinder head (79), of cylinder (87) that is also provided holes (z1) aligned with the threaded holes (q1), sealing is also done with a higher seal (80); on cylinder head (79), of cylinder (87), are put inside cylinder (87) an intermediate cap (81) that is also provided a threaded hole (a2) that is also aligned with the cylinder head (79), of cylinder (87), receiving on cylinder head (79), of cylinder (87), a T-connector (88), sealed relative to cylinder head (79), of cylinder (87), also by a seal (83); inside cylinder (87), there is also a lining (84).

5. The mixed-gas engine in accordance with claim 1, further comprising a recuperator-distributor subassembly (D) made up of a frame (89) that is provided threaded holes (b2) in which are put screws (90) that fix frame (89) of the supports provided with holes (e2); on the left and on the right, frame (89) also has threaded holes (d2); on the left part of frame (89) is put a sealing cap (92), using screws (93), through holes (e2) that are in sealing cap (92) that also has a central hole (f2) and threaded holes (g2) in which is mounted on sealing cap (92) a cap (94), with screws (95), through holes (h2) that are in cap (94); sealing between cap (92) and frame (89) is done with a seal (96), and sealing between sealing cap (92) and cap (94) is done with a seal (97); in central hole (f2) of sealing cap (92) are put a bearing (98) and a lip seal (99); on the right part of frame (89) is mounted a sealing cap (100) using screws (101), through holes (i2) that are in sealing cap (100), where there is also a central location (j2) and threaded holes (k2) in which is mounted on sealing cap (100) a cap (102), with screws (103), through holes (12) provided in cap (102); sealing between frame (89) and sealing cap (100) is done with a seal (104), sealing between sealing cap (100) and cap (102) is done with a seal (105), in the central hole (j2) of sealing cap (100) is also mounted a bearing (98) and a lip seal (99); frame (89) is also provided with holes (m2) used on mounting inside elastic plates (106) . . . (108), using screws (109), provided with frustoconical meal fittings (110) and nuts (111); on elastic plates (106) . . . (108) are fixed balls for hermetic closure (112); frame (89) also has a threaded hole (n2) in which is mounted a connector (113), threaded holes (o2) in which are mounted valves (114) . . . (116) that are tightened relative to frame (89) with seals (117) and holes (p2).

6. The mixed-gas engine wherein, in accordance with claim 1, it is also made up of a rocker-arm subassembly (E) formed by rocker arm axle (118) having at each end holes (r2) in which are introduced plugs (119) that fix screwed bases (120) of rocker arm axle (118), mounted on rocker arm axle (118); screwed bases (120) of rocker arm axle (118) are mounted through holes (p2) of frame (89) by fixing them with frustoconical meal fittings (121), tightened on frame (89), by nuts (122); on rocker arm axle (118) are mounted in interposed manner between the two screwed bases (120) of rocker arm axle (118), spacers (123) and rocker arms (124). . . (126).

7. The mixed-gas engine wherein, in accordance with claim 1, it is also made up of a cam-axle subassembly (F) that consists of a cam axle (127) that is also provided at its ends with holes (r2); on one end of cam axle (127) is mounted a washer (128), a spacer washer (129), a simple effect thrust ball bearing (130), another spacer washer (129), and a helical compression spring with machined ends (131), and on the other end of cam axle (127) is also mounted another washer (128), another spacer washer (129), another simple effect thrust ball bearing (130), another spacer washer (129), and another helical compression spring with machined ends (131); the ends of cam axle (127) are introduced through central holes (f2) and (i2) of sealing caps (92) and (100), through bearings (98), lip seals (99) and caps (94) and (102); on the end of cam axle (127), of sealing cap (100), is mounted a universal-joint end (132) that is provided with a hole (s2) aligned with the hole (r2) of cam axle (127); through holes (r2) and (s2) is introduced a lock pin (133), and after that, universal-joint end (74) will be joined with universal-joint end (132), by a ball provided with four equidistant holes in the same surface (163), thus connecting the crankshaft/connecting-rods/piston subassembly (B) with the cam-axle subassembly (F).

8. The mixed-gas engine wherein, in accordance with claim 1, it is also made up of a recuperator-distributor subassembly (G) that comprises a frame (134) that also has threaded holes (b2) in which is also mounted screws (90) that fix to frame (134) other supports (91) also provided with holes (e2); frame (134) also has, on the left and on the right, threaded holes (d2); on frame (134), on the left is mounted a sealing cap (135), using other screws (93), also through holes (e2), provided in sealing cap (135) that also has a central hole (F); sealing between sealing cap (135) and frame (134) is done with a seal (136); at central hole (2) of sealing cap (135) is also mounted a bearing (98) and a lip seal (99); on the right side of frame (134) is mounted a sealing cap (137) using other screws (93), still through holes (i2), provided in sealing cap (137) that also has a central hole (j2); sealing between frame (134) and sealing cap (137) is done with a seal (138), at central hole (j2) of sealing cap (137) is also mounted a bearing (98) and a lip seal (99); frame (134) also has a threaded hole (a2) in which is mounted another connector (113), threaded holes (o2) in which are mounted valves (139) . . . (141) sealed relative to frame (134) by other seals (117), and holes (p2); inside valves (139) . . . (141), there is, in the following order: a fitting for hermetic closure (142), a ball shaft for hermetic closure at both ends (143), a helical compression spring with machined ends (144) and a fixing sleeve (145).

9. The mixed-gas engine wherein, in accordance with claim 1, it is also made up of a rocker-arm subassembly (H) formed by rocker arm axle (146) having at each end holes (r2) in which are introduced plugs (119) that fix screwed bases (147) of rocker arm axle (146) that are also provided with holes (r2) aligned with the holes (r2) of rocker arm axle (146); screwed bases (147) of rocker arm axle (146) are mounted through holes (p2) of frame (134), by also fixing them with frustoconical metal washers (148), tightened on frame (134), by nuts (149); on rocker arm axle (146) are mounted, in interposed manner between two screwed bases (147) of rocker arm axle (146), spacers (150) . . . (153) and rocker arms (154) . . . (156).

10. The mixed-gas engine wherein, in accordance with claim 1, it is also made up of a recuperator-distributor subas-
assembled (G) where is found mounted a cam-axle subassembly (I) that consists of a cam axle (157) that is also provided at one of the ends with a hole (r°) and at the end of sealing cap (135) is provided with a thread (q°); on the two ends of cam axle (157) is also mounted another washer (128), another spacer washer (129), another simple effect thrust ball bearing (130), another spacer washer (129), and another helical compression spring with machined ends (131); the ends of cam axle (157) are introduced through central holes (F) and (F°) of sealing caps (135) and (137), through bearings (98) and lip seals (99) of sealing caps (135) and (137); on the end of cam axle (157), of sealing cap (135), is mounted by screwing drive wheel (158), provided in its center with a threaded hole (t°) and on the edge a groove (t°) secured by a nut (159), and on the other end of cam axle (157) is mounted a universal-joint end (160) that is also provided with a hole (s°) aligned with the hole (r°) of cam axle (157); through these holes (r°) and (s°) is introduced a lock pin (161) that makes for fixing universal-joint end (160) on cam axle (157), and after that, universal-joint end (160) will be joined with universal-joint end (71); the couplings between universal-joint end (71) and universal-joint end (160) are carried out by a ball provided with four holes laid out in equidistant manner in the same surface (162), thus connecting the cam-axle subassembly (I) of the crankshaft/connecting-rods/piston subassembly (B), and the coupling between universal-joint end (74) and universal-joint end (132) is also done by another ball provided with four holes laid out in equidistant manner in the same surface (163), thus connecting the cam-axle subassembly (F) of the crankshaft/connecting-rods/piston subassembly (B), and the coupling between universal-joint end (74) and universal-joint end (132) is also done by another ball provided with four holes laid out in equidistant manner in the same surface (163), thus connecting the cam-axle subassembly (F) of the crankshaft/connecting-rods/piston subassembly (B).

11. The mixed-gas engine wherein, in accordance with claim 1, it is coupled with a mixed-gas pressurized circuit that consists of pressure lines (164), a valve (165), a pressure gauge (166), a bottle (167) and a compressor (168) coupled by a drive belt (169), all these element components of the pressurized circuit being known and not marked, via drive wheel (158), between valve (116) and T-connector (82), valve (115) and T-connector (86), valve (114) and T-connector (88), valve (141) and T-connector (82), valve (140) and T-connector (86), valve (139) and T-connector (88), connector (113) of the recuperator-distributor subassembly (G) and compressor (168), connector (16) and compressor (168), connector (15) and bottle (167), bottle (167) and valve (165), valve (165) and connector (113) of the recuperator-distributor subassembly (D), are mounted pressure lines (164) that allow the circulation of the pressurized mixed gas; between the pressure line that make the coupling between air bottle (167) and valve (165) is mounted pressure gauge (166).

12. The mixed-gas engine wherein, in accordance with claim 1, by opening the pressurized mixed gas circuit by valve (165), through which is introduced pressurized mixed gases by connector (113) of the recuperator-distributor subassembly (D) and by valve (116), delivered by hermetic closure ball (112) of elastic plate (106), toward T-connector (88) that divides the pressurized mixed gas into two parts, the first part having the role of pushing piston (63) that by rod (60) puts in operation the crankshaft/connecting-rods/piston subassembly (B) that in turn puts in operation cam axles (157) and (127), by universal joints (74-163-132) and (71-162-160) of 120° that in their turn put in operation, by cam axle (157), drive wheel (158) that by drive belt (169) puts in operation the 360° compressor, and the second part having the role of opening valve (141) by the pressure of the mixed gas on hermetic closure ball shaft (143) of valve (141), by dispersing the mixed gas inside the recuperator-distributor subassembly (G) toward the compressor that has the role of increasing the pressure of the mixed gases that have entered inside; the mixed gas eliminated from compressor (168) and introduced through connector (15) leave accumulated with the quantity of pressurized mixed gas that is inside the oil-bath subassembly (A), by connector (16) toward the inside of bottle (167).

13. The mixed-gas engine wherein, in accordance with claim 1, at the time of putting in operation the crankshaft/connecting-rods/piston subassembly (B) and cam axles (157) and (127) by universal joints (74-163-132) and (71-162-160) of 120°, and at the time of putting in operation compressor (168) by drive belt (169) by the movement imparted by drive wheel (158), of 360°, the pressurized mixed gases remaining inside recuperator-distributor subassemblies (G) and (D) and the oil-bath subassembly A compose a second pressurized circuit by the closing of valve (116) and the opening of valve (139) by hermetic closure ball shaft (143) of valve (139), letting the pressurized mixed gas pass through T-connector (82) toward the inside of the recuperator-distributor subassembly (D), where it cumulates with another quantity of pressurized mixed gas introduced through connector (113) of the recuperator-distributor subassembly (D), by bottle (167), by the fact that valve (165) remains in an open position and by passage through valve (114) delivered by hermetic closure ball (112) of elastic plate (108), toward T-connector (82) that divides the air into two parts, the first part having the role of pushing piston (49) that by rod (46) puts in operation the crankshaft/connecting-rods/piston subassembly (B) that in turn puts in operation cam axles (157) and (127), by universal joints (74-163-132) and (71-162-160) of 120° more that in their turn put in operation, by cam axle (157), drive wheel (158) that by drive belt (169) puts in operation compressor (168), still of 360°, and the second part having the role of opening valve (139) by the pressure of the mixed gas on the hermetic closure shaft (143) of valve (139), by dispersing the mixed gas inside under the recuperator-distributor subassembly (G) and evacuating it by connector (113) of the recuperator-distributor subassembly (G) toward compressor (168) that has the role of increasing the pressure of the mixed gases introduced there, at the exit, introduced through connector (15) and evacuated accumulated with the quantity of pressurized mixed gas that is inside the oil-bath subassembly (A), by connector (16) toward the inside of bottle (167).

14. The mixed-gas engine wherein, in accordance with claim 1, at the time of putting in operation the crankshaft/connecting-rods/piston subassembly (B) and axles (157) and (127) by universal joints (74-163-132) and (71-162-160) of 120° more, and at the time of putting in operation compressor (168) by drive belt (169) by the movement imparted by drive wheel (158), still of 360°, the pressurized mixed gas remaining inside recuperator-distributor subassemblies (G) and (D) and the oil-bath subassembly (A) compose a third circuit of pressurized mixed gas by the closing of valve (114) and the opening of valve (140) by hermetic closure ball shaft (143) of valve (140), letting the pressurized mixed gas pass through T-connector (86) toward the inside of the recuperator-distributor subassembly (D), where it cumulates with another quantity of pressurized mixed gas introduced through con-
nector (113) of the recuperator-distributor subassembly (D), by bottle (167), by the fact that valve (165) remains in an open position and by passage through valve (115) delivered by hermetic closure ball (112) of elastic plate (107), toward T-connector (86) that divides the pressurized mixed gas into two parts, the first part having the role of pushing piston (56) that by rod (53) puts in operation the crankshaft/connecting-rods/piston subassembly (B) that in turn puts in operation cam axles (157) and (127), by universal joints (74-163-132) and (71-162-160) of 120° more that in their turn put in operation, by cam axle (157), drive wheel (158) that by drive belt (169) puts in operation compressor (168), still of 360°, and the second part having the role of opening valve (140) by the pressure of the mixed gases on hermetic closure shaft (143) of valve (140), by dispersing the mixed gas inside the recuperator-distributor subassembly (G) and evacuating it by connector (113) of the recuperator-distributor subassembly (G) toward compressor (168) that has the role of increasing the pressure of the mixed gas introduced there; the mixed gas eliminated from compressor (168) and introduced through connector (15) is evacuated accumulated with the quantity of pressurized mixed gas that is inside the oil-bath subassembly (A), by connector (16) toward the inside of bottle (167).

15. The mixed-gas engine wherein, in accordance with claim 1, after putting in operation the crankshaft/connecting-rods/piston subassembly (B) and cam axles (157) and (127) by universal joints (74-163-132) and (71-162-160), still of 360°, and at the time of putting in operation compressor (168) by drive belt (169) by the movement imparted by drive wheel (158), still of 180°, the moment when the first operation cycle of the mixed-gas engine is achieved, the pressurized mixed gas remaining inside recuperator-distributor subassemblies (G) and (D), the oil-bath subassembly (A), pressure lines (164), valve (165), pressure gauge (166), bottle (167) and compressor (168), that begins a second operation cycle of the mixed-gas engine and then, after the second operation cycle of the mixed-gas engine, it can accomplish as many operation cycles of the mixed-gas engine as desired, until the pressurized mixed gas circuit is interrupted by closing valve (165), if need be, being able to be started again by reopening valve (165), it being possible to recompose the old pressurized mixed gas circuits; in practice, the mixed-gas engine in accordance with the invention can operate until stopping in any position, or until changing the oil, when the pressurized mixed gas circuit is depressurized, and the restarting of the first operation cycle of the pressurized mixed-gas engine, describes above that can function until its stopping.

16. The mixed-gas engine wherein, in accordance with claim 1, it can be designed and dimensioned for types of mixed-gas engines with an odd number of cylinders, greater than three, positioned in line, for types of mixed-gas engines with an odd number of cylinders equal to or greater than three, laid out in “V,” for types of mixed-gas engines with an odd number of cylinders equal to or greater than three, in a fan, for types of mixed-gas engines with “n” cylinders in parallel with an odd number of cylinders equal to or greater than three, in line, in “V,” in fan or in star.

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