(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 343 093 A2**

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **89500058.6**

(22) Date of filing: **18.05.89**

(51) Int. Cl.4: **F 02 B 73/00**
F 02 B 75/18

(30) Priority: **18.05.88 ES 8801966**

(43) Date of publication of application:
23.11.89 Bulletin 89/47

(84) Designated Contracting States:
AT BE CH DE FR GB GR IT LI LU NL SE

(71) Applicant: **Bonet Subirana, Pere**
Raval Cortines, 23
Vic (Barcelona) (ES)

Morral Monteis, Pere
Raval Cortines, 23
Vic (Barcelona) (ES)

(72) Inventor: **Bonet Subirana, Pere**
Raval Cortines, 23
Vic (Barcelona) (ES)

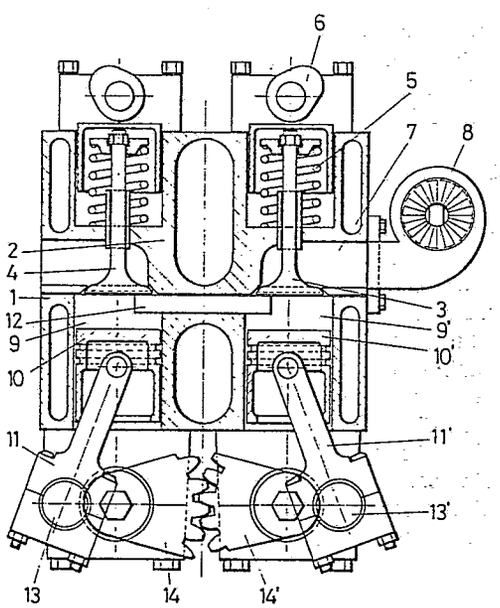
Morral Monteis, Pere
Raval Cortines, 23
Vic (Barcelona) (ES)

(74) Representative: **Toro Gordillo, Ignacio Maria**
Viriato, 56
E-28010 Madrid (ES)

(54) **Internal combustion motor.**

(57) This invention refers to a motor, indistinctly combustion or diesel one, having in each chamber an operative unitary group in front of a conventional only cylynder, incorporates two parallel cylinders identical between them, permanently related through a gases communicating pass in such a way that the inlet valve is fixed on the other, whilst the spark plug or the injector are situated in above cited pass. The two pistons acting inside these cylinders are associated to the respective crankshaft and dully related between themselves to obtain an absolutely synchronized movement.

Tis structuralization facilitates the placement of the valves and allows the dimensional increase of same obtaining at the same time a major balance in forces transmissions to outlet shaft and a substancial reduction in the motor's vibrations.



EP 0 343 093 A2

Description

INTERNAL COMBUSTION MOTOR

OBJECT OF THE INVENTION

The present invention refers to an internal combustion motor, concretely a reciprocating motor, of the type of those in which the combustible ignition or explosion inside of two or several cylinders chambers determines the displacement of corresponding pistons which suffer that way a reciprocative motion converted into a gyratory movement for a crankshaft through the corresponding arms.

The object of the invention is centered over a structuralization special for this type of motor which facilitates the dimensioning and placement of the inlet and outlet valves at the same time that balances the forces distribution in the motor minimizing the variations.

INVENTION'S ANTECEDENTS

As it is well known, the internal combustion motors, reciprocating, as well in the case of explosion motors as in that of combustion motors (commonly named diesel) have as fundamental function to supply, generally to several chambers or cylinders, a mixture of combustible air, to press inmediately afterwards such mixture until producing an automatic ignition or until a certain point when an electric spark jumps inside the chamber by mean of a spark plug forcing the piston to a quick longitudinal displacement which is what is used as propulsive energy, finally producing the bump out of gases resulting from the combustion.

That implicates a double slope problematic: from one side, the intake and exhaust phases, mean a respective loss of energy owing to the fact that when intaking the piston actuates as suction pump getting its energy from the crankshaft and, as a consequence, takes away energy fro the piston which in that moment is in the phase of explosion, at the same time that, during the exhausting phase, the piston acts as forcing pump also taking its energy from the crankshaft. Evidently, these losses of energy will be as small as bigger are the intake and exhausting valves, but such dimensions are substantially limited by the cylinder's own volumetry and by the need of establishing in these cylinders other accessories, such as spark plugs or injectors.

DESCRIPTION OF THE INVENTION

The internal combustion motor proposed by the invention has been conceived and structurated to solve at full satisfaction above problematic, in the two slopes previously cited, allowing, from one side, a major dimentioning and easier placement for the intake valve and for the exhaust valve as well, securing, at the same time a more balanced functioning of the motor, from the view point of forces distribution.

To that effect and in a more concrete form the said motor center its characteristics in the fact that, in replacement of each operative group unitary and conventional integrated by a cylinder, a piston an arm directly connected to the crankshaft, the corresponding couple of intake and exhausting valves and all other accessories such as spark plug or injector incorporates two cylinders dully interconnected between themselves to form a unique chamber from the functional or operative viewpoint, being those two pistons related through the corresponding arms with the respective crankshafts which are, at their time interrelated to obtain a perfectly synchronized movement that is transmitted to an unique exit axle which can be one of its own crankshafts.

According to this structuralization in each one of the two cylinders integrating the unique chamber, it is established whether the intake valve or the exhausting valve, being possible that these two valves integrally affect the base of the cylinders already cited, which is to say, to present a maximum dimensioning for the injector or the spark plug can, at their time, remain situated in the pass of communication between both cylinders, not obstructing, consequently, the placement and functioning of the cited valves. So, it is obtained, from one side, that the intake and exhausting times are affected with a minimum consumption of energy owing to the dimensions of the corresponding valves. From the other side, in the explosion phase will be produced two "pushings" of equal powers physically opposed which determine a substancial balance in the transmission of forces and, in consequence, a practical annulment of the classic vibrations in the internal combustion motors.

DRAWING'S DESCRIPTION

To complement the description that is being effected and with the object to help to a better understanding of the characteristics of the invention, we attached herein a descriptive memory as constituent part of same of a unique drawings page in which, with a character of illustration and not of limitation and in his unique figure, it has been schematically represented, in transversal section, an internal combustion motor effected in accor dance with the object of the present invention, concretely at the level of one of its chambers or unitary operative groups.

PREFERENTIAL EXECUTION OF THE INVENTION

Looking at this figure can be observed how the proposed internal combustion motor is integrated, how conventional is, starting from one block (1), complemented with a yoke piece (2), on which are fixed the intake valves (3),and the exhaust (4), assisted by the respective springs (5), who tend towards a closing situation of the valves accioned also for respective cam disc (6), being possible to have assisted by compressor tube (8), the intake or exhaust conduction (7).

Starting from this bassic structurization, the invention is centered in the fact that each chamber or unitary operative group materializes in two

cylinders (9-9′) in which act two pistons (10-10′) linked articulately to the corresponding arms (11-11′), being, obviously, related both cylinders (9-9′) between themselves by mean of a communicating pass (12), to really configurate a chamber or unique operative group, a communicating pass (12) where will be put, preferently, the spark plug or injector so that this last element do not obstruct the placing of the intake and exhaust valves (3-4), so that above element is in the more suitable position for those valves.

The arms (11-1′) are fitted on the respective crankshafts (13-12′), which is to say, that the motor incorporates two crankshafts parallels in front of the unique crankshaft of conventional alternative motors and each pair of arms (11-11′) corresponding to the same operative group will be related between themselves through toothed sectors (14-14′) who put itselves in gear permanently and secure a perfect synchronism in the lineal shifting of the pistons corresponding (10-10′) or, which is the same, a perfect sychronism between the two crankshafts (13-13′) which, through any conventional mean provide the movement to an unique axle of exit.

It is obtained, this way, in accordance with the aim of the invention, an optimal functioning of the intake and exhaust valves, a maximum dimensioning for the same and a suitable position together with a major balance in the transmission of efforts to the axle of exit plus a substantial elimination of vibrations in the motor.

Is not considered necessary to make this description more extensive, for any expert in the matter will understand the scope of the invention and the advantages deriving from the same.

The materials, shape, size and set up of the elements can be variated, if and when, that do not mean any change to the invention in its essence.

The terms under which this study has been made must be taken always in its broad - non strict - sense.

Claims

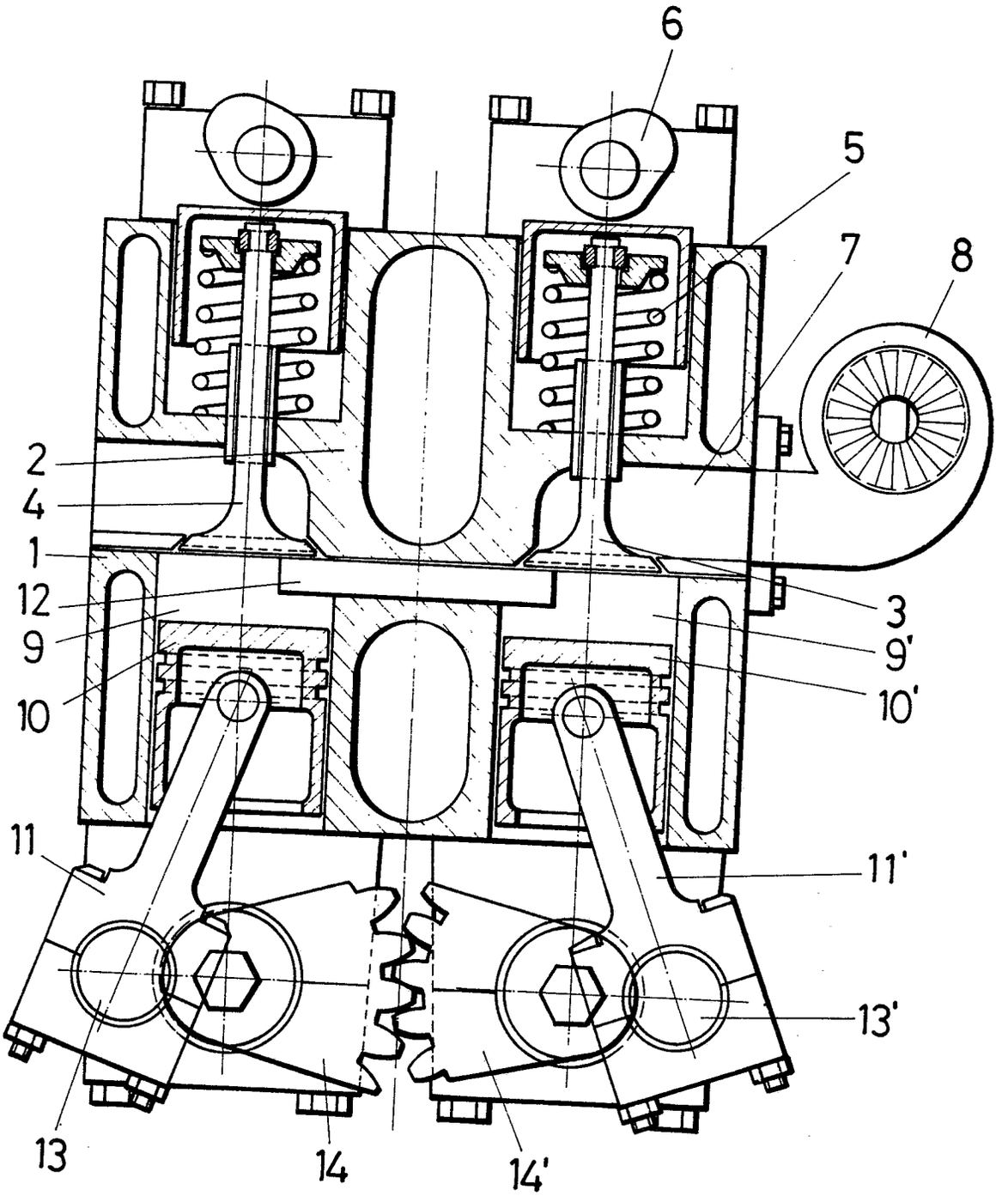
1a.- Internal combustion motor characterized essentially by the fact that each chamber or unitary operative group of same materializes in two identical cylinders of parallel axles, intercommunicated between itselves to define the said unique chamber and in which cylinders act corresponding pistons of simultaneous action.

2a.- Internal combustion motor according claim 1a-, characterized bacause in one of the cylinders of the unique chamber already cited is set up the intake valve, whilst the exahust valve is situated in the other cylinder.

3a.- Internal combustion motor according to previous claims characterized bacause the intake and exhaust valves set up in one and the other cylinder of the unique chamber present a dimetient dimension line that can be next or coincident with the dimetient dimension line of the cylinders itselves.

4a- Internal combustion motors according to previous claims characterized because the spark plug or the injector - depending if it is an explosion motor or a diesel one - are situated preferently in the intercommunicating pass between both cylinders.

5a .- Internal combustion motor according to previous claims characterized because the arms corresponding to the pair of pistons of the same operative unit are associated to corresponding crankshafts, parallels between themselves, having been foreseen that said arms be furthermore inter-related through the means, such as, for example, toothed sectors put itselves in gear permanently, which secure a movement perfectlu synchronized of the said pistons.


6
5
7
8
2
4
1
12
9
10
3
9'
10'
11
11'
13'
13
14
14'