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F01C 9/00

(52) UK CL (Edition Q)
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(56) Documents Cited
GB 2268977 A **GB 1443516 A** **FR 002769667 A**
US 4823743 A **US 4819594 A**

(58) Field of Search
UK CL (Edition Q) **F1F FD FEW**
INT CL^6 **F01C 9/00 , F02B 53/00 , F04C 9/00**
Online databases: WPI, EPODOC, JAPIO

(54) Abstract Title
Single stroke engine

(57) A single stroke engine has a semi-circular combustion chamber 1 in which an oblong shaped piston 3 with flat sides rotatably oscillates. The piston 3 has grooves for location of compression slats or rings 24, and has a circular portion in which a swivel pin 9 is splined and held by grub screws 28. The chamber 1 has two exhaust ports 2 on one side of the chamber 1 and an inlet valve 7 for an air/petrol mixture on the other, and has removable base (11, Fig 4) for access to the piston 3. A spark plug 8 on each side of the chamber ignites the mixture, driving the piston 3 on each stroke. The chamber 1 is bolted onto an oil-filled crank case (21, Figs 6 and 7), and the piston 3 drives an output shaft via the swivel pin 9, through connecting levers (18) and rods (19), crank pins (22) and crank wheels (16).

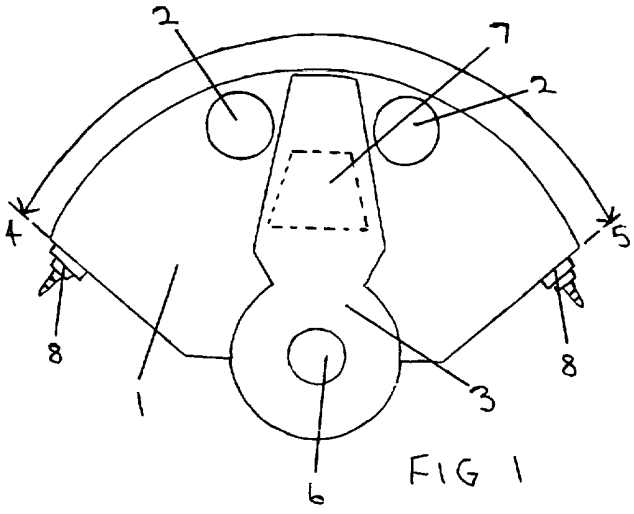

FIG 1

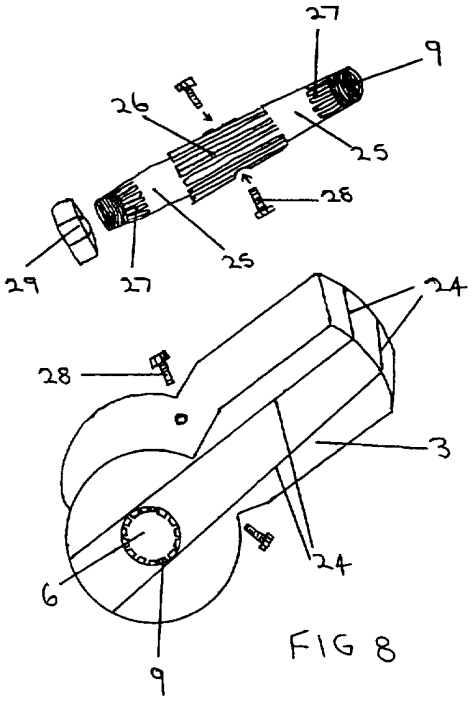

FIG 8

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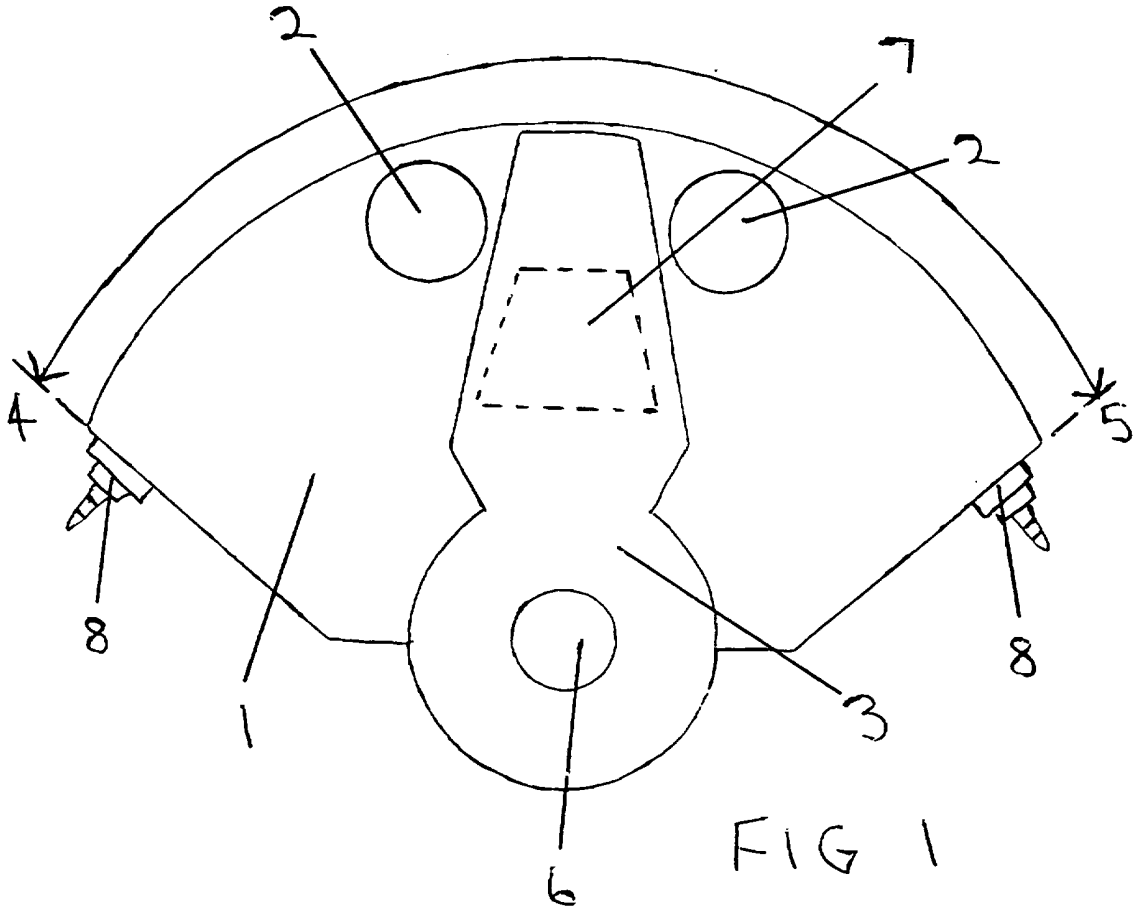

FIG 1

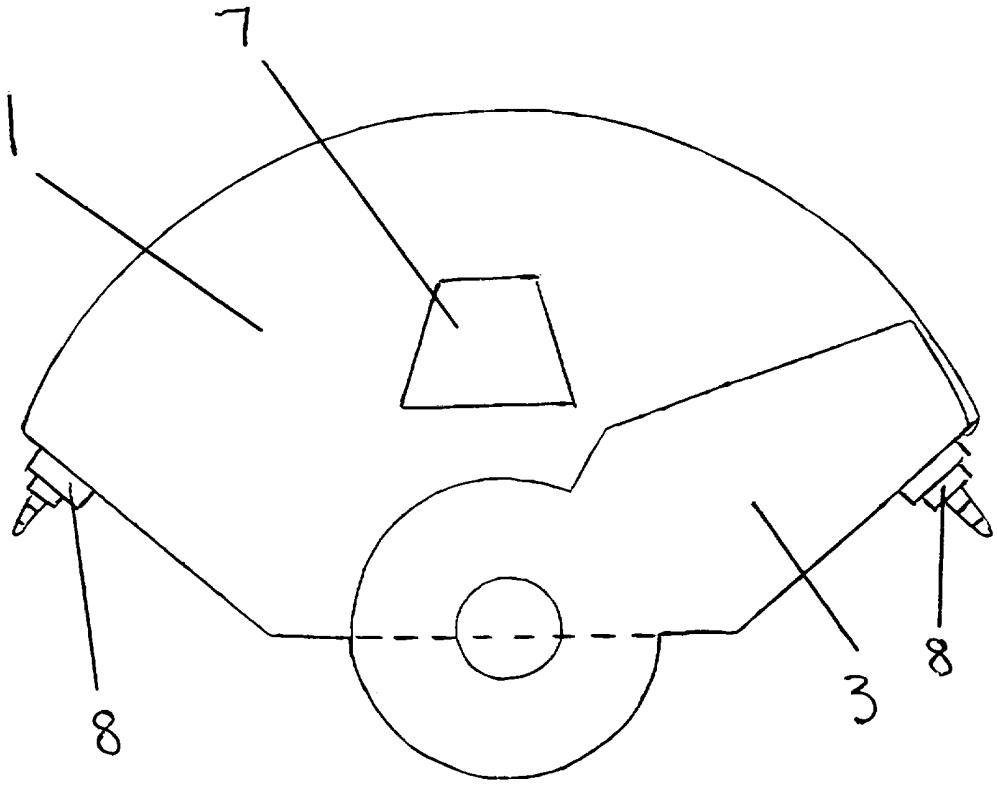

FIG 2

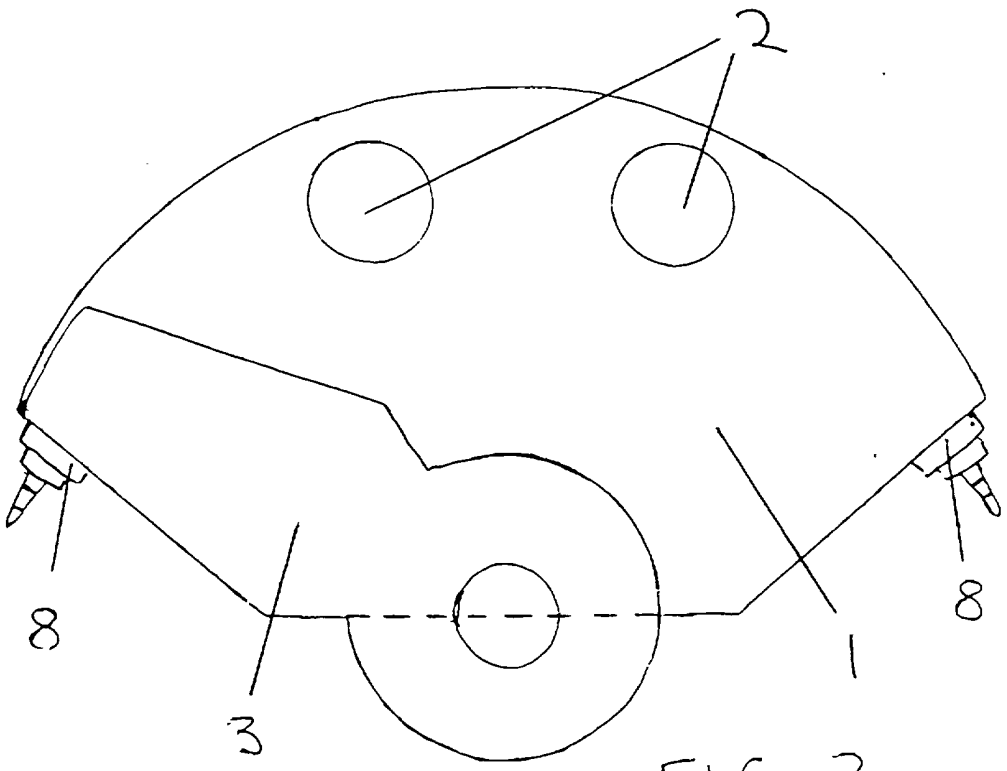

FIG 3

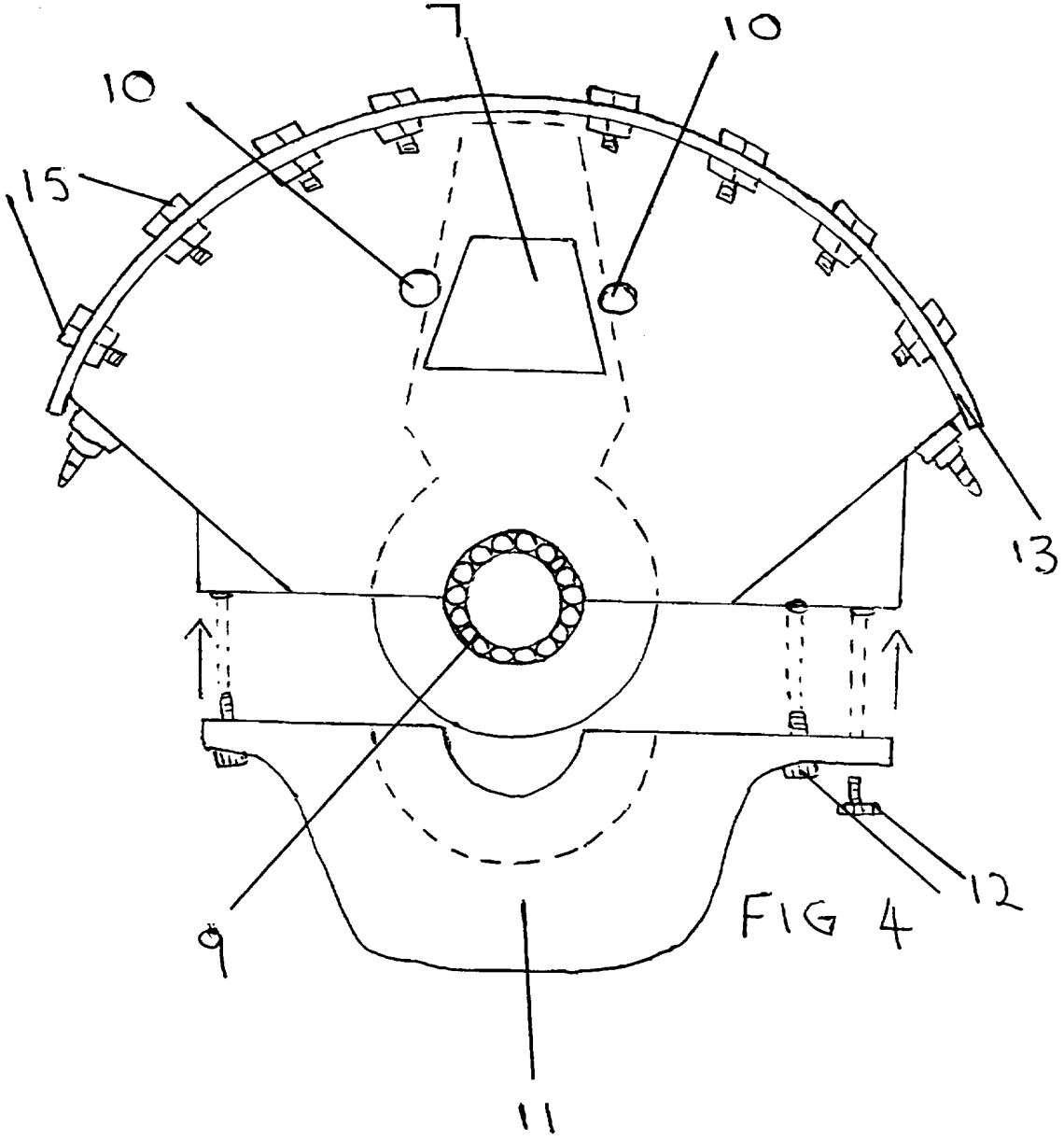

FIG 4

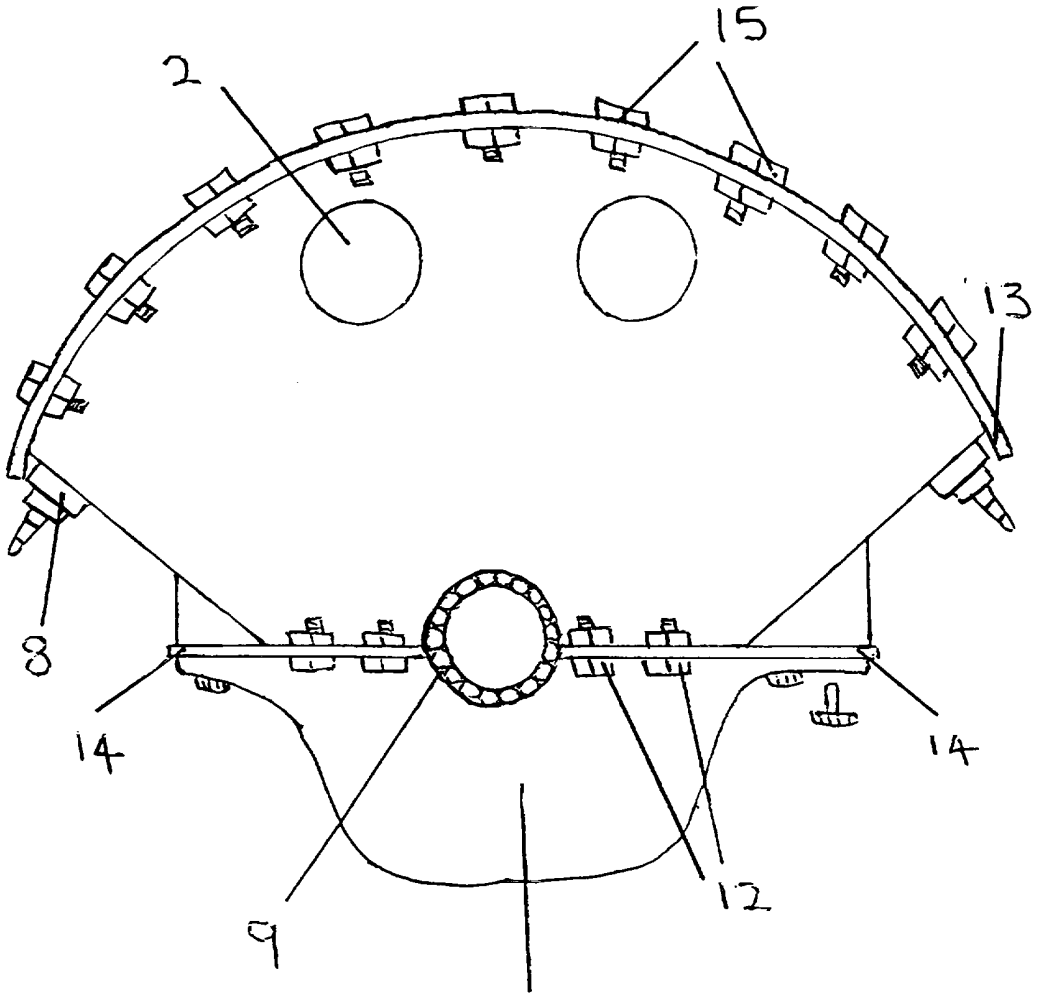

FIG 5

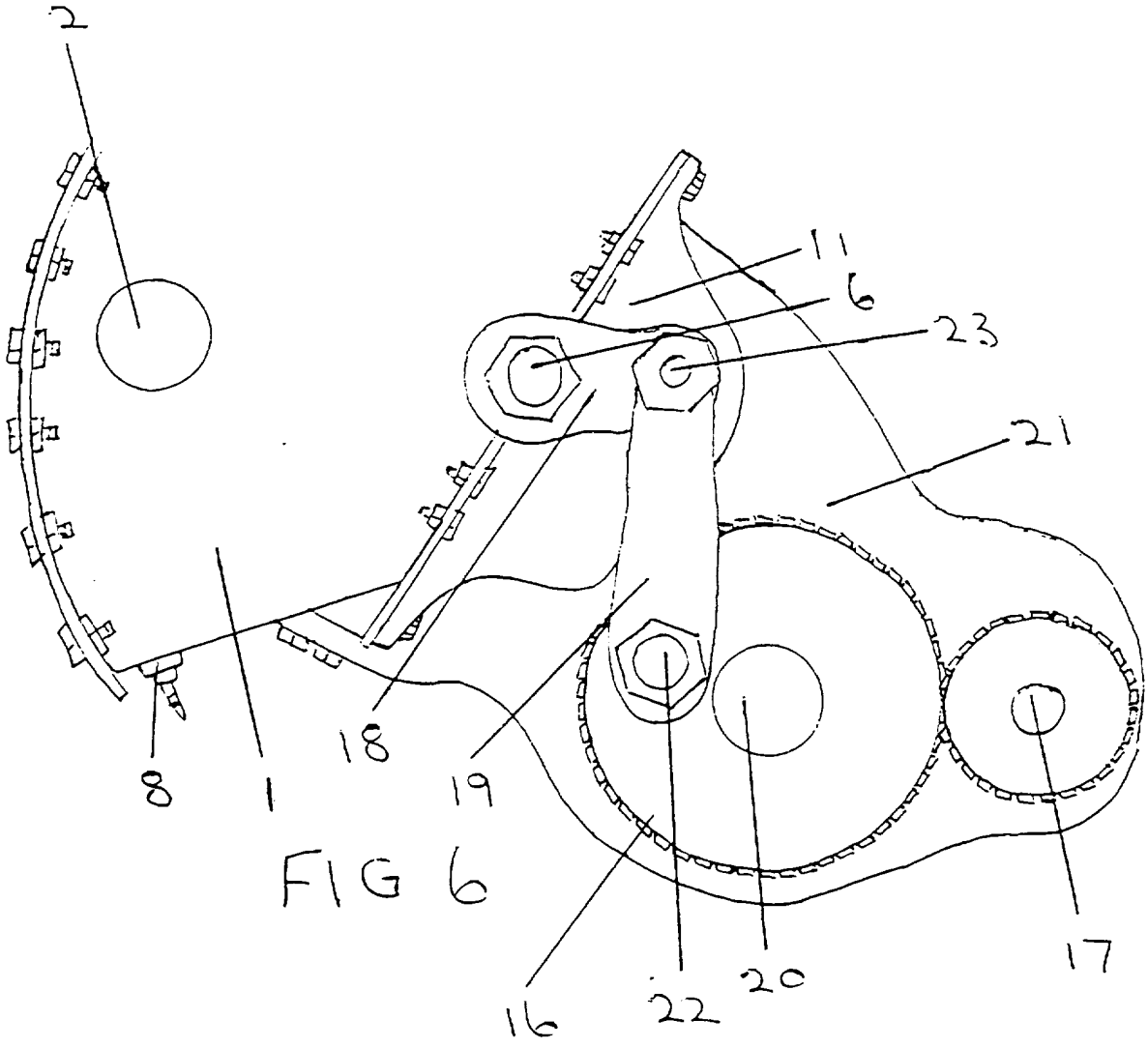

FIG 6

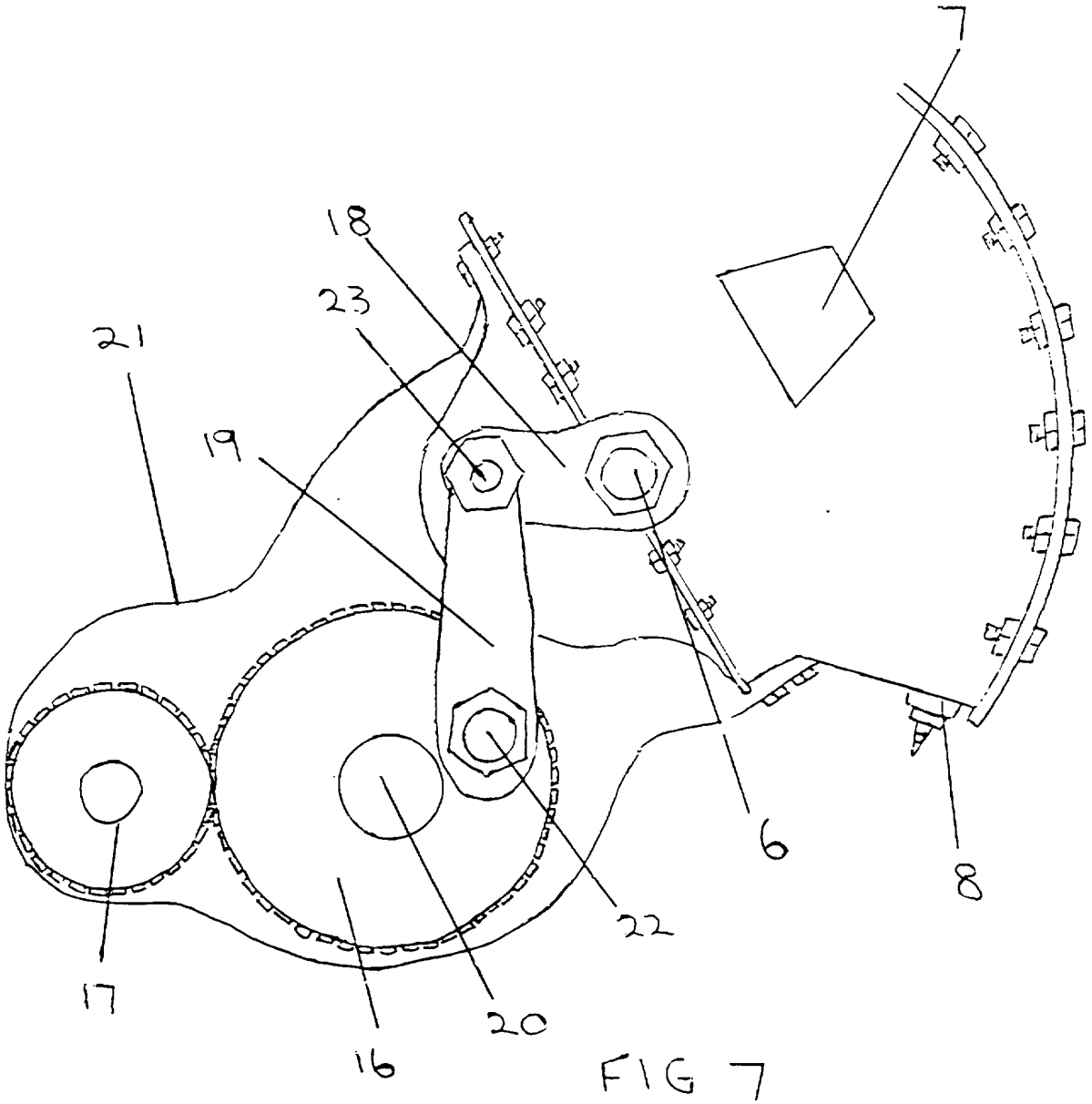

FIG 7

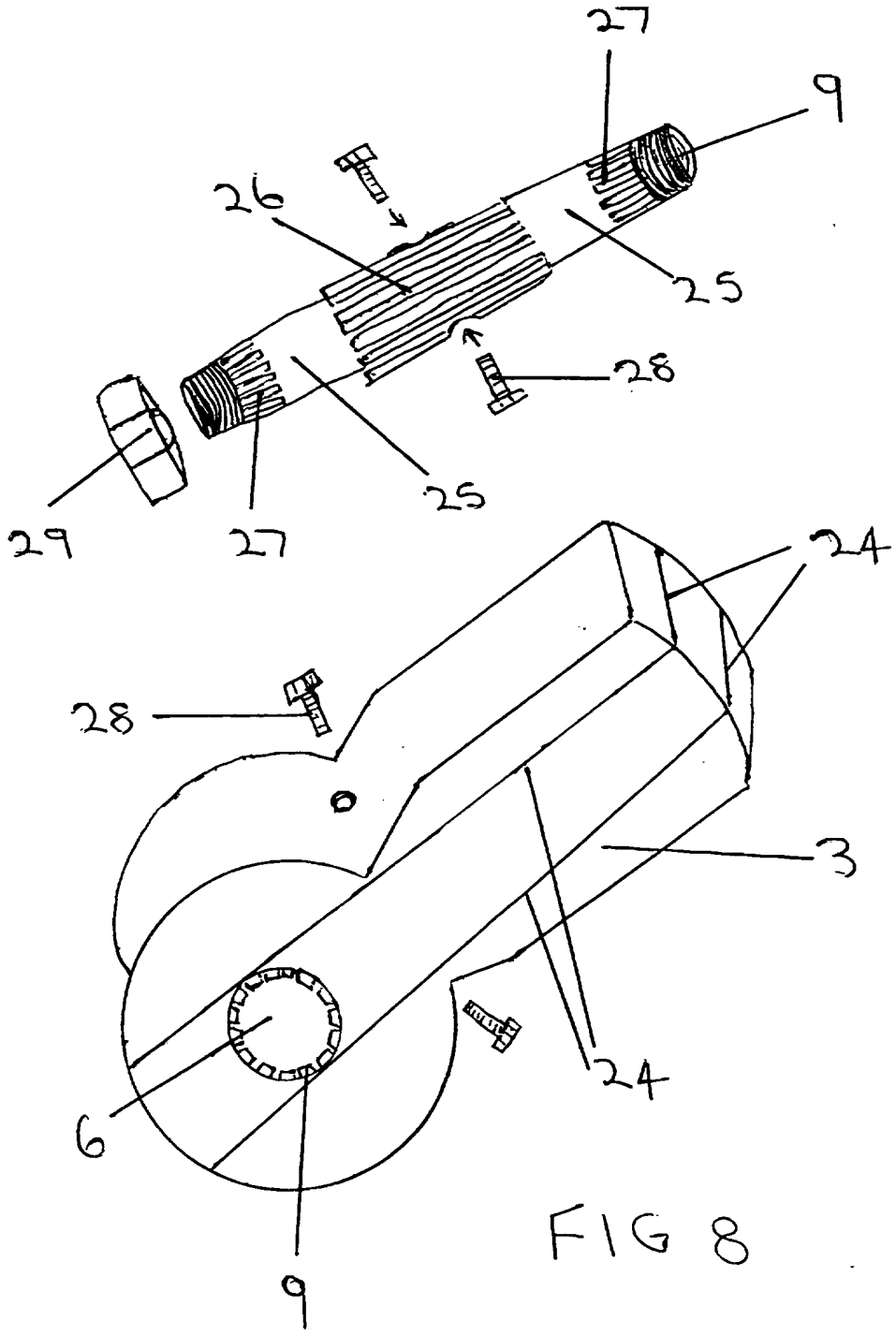

FIG 8

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A ONE STROKE ENGINE.

This invention relates to a one stroke engine.

A one stroke engine has a semi-circular combustion chamber that is bolted onto a common crank case. The combustion chamber itself is basically independant to the crank case except for being linked to connecting rods and levers to the crank wheels.

According to the present invention a one stroke engine explodes on each movement of the piston from side to side.

A specific example of the invention will now be described by way of reference to the accompanying figures related to the drawings.

The combustion chamber 1 has two exhaust ports 2 at one side of the chamber. The other side of chamber has one inlet valve 7 to fit carberetta to mounting pins 10. The base of combustion chamber 11 or piston cap are removed from the combustion chamber by way of bolts 12 to allow removal of piston 3 from chamber.

FIGURE 1 1/8 shows cut away of semi circular combustion chamber with piston in centre position and exhaust valve position. Also showing piston travel 4 and 5.

FIGURE 2 2/8 shows a cut away of combustion chamber with piston on compression stroke 5. Also showing inlet valve position as seen from right hand side.

FIGURE 3 3/8 shows a cut away of combustion chamber with piston on compression stroke 4. Also showing exhaust valves and spark plugs.

FIGURE 4 4/8 shows external view of combustion chamber and lower half of combustion chamber piston cap detached. Showing also position of swivel bearing and circular portion of piston. Also shows inlet valve and carberetta mounting pins.

FIGURE 5 5/8 shows external view of combustion chamber from left hand side with exhaust ports, swivel bearing and also shows cap gasket in position and cap bolts. Also shows head gasket and bolts.

FIGURE 6 6/8 shows cut away of crank case showing swivel pin lever and connecting rod. Also shown are crank wheel and output shaft wheel, and crank shaft bearing housing as seen from left side.

FIGURE 7 7/8 shows cut away view of internals of crank case showing crank pin 22 and connecting lever pin.

FIGURE 8 8/8 shows a piston of a one stroke engine which has groves where compression slats/rings fit. At the circular base of piston shows swivel pin location which is taper splined. Also shown is swivel pin with tapered spline in centre of pin which fits into spline on piston. At each end of swivel pin are two slightly smaller tapered splines where connecting rod levers fit. Also shown are two thredded grub screws which fit at each side of circular base of piston that when screwed into place clamp into location holes of swivel pin.

KEY TO DRAWINGS.

1 COMBUSTION CHAMBER
2 EXHAUST PORTS
3 PISTON
4 PISTON TRAVEL FORWARD
5 PISTON TRAVEL REVERSED
6 SWIVEL PIN LOCATION
7 INLET VALVE
8 SPARK PLUGS
9 SWIVEL PIN AND SWIVEL PIN BEARINGS
10 CARBERATOR MOUNTING PINS
11 BASE OF COMBUSTION CHAMBER
12 SECURING BOLTS TO SECURE PISTON CAP
13 HEAD GASKET
14 BASE GASKET
15 HEAD GASKET BOLTS
16 CRANK WHEELS
17 OUTPUT SHAFT BEARINGS
18 SWIVEL PIN CONNECTING LEVERS
19 CONNECTING RODS
20 CRANK SHAFT BEARINGS
21 CRANK CASE
22 CRANK PINS
23 CONNECTING LEVER PINS
24 SLATS/RINGS
25 BEARING FLANGE
26 PISTON SPLINE
27 LEVER SPLINES
28 GRUB SCREWS
29 RETAINING NUT

CLAIMS

1. A one stroke engine has a piston that has flat sides and is oblong in shape.

2. A one stroke engine has a piston as in claim 1 with flat sides with groves cut out for compression slats or rings.

3. A one stroke engine as in claim 1 and 2 has a flat sided piston with a circular base that rotates in a portion of the semi circular combustion chamber.

4. A one stroke engine as in claim 3 has a semi circular combustion chamber where half of the bottom circular portion (cap) is removed to fit the piston into the chamber.

5. A one stroke has two exhaust valves on one side of the combustion chamber and one inlet valve on the opposite side of chamber.

6. A one stroke has two plugs on the combustion chamber situated at each end of the combustion stroke.

7. A one stroke engine has a semi circular combustion chamber as claimed in 4 that bolts onto a crank case that is oil filled.

8. A one stroke engine has a swivel pin with a spline that fits into the circular portion as in claim 3 and rotates in bearings on both sides of combustion base. It also has two retaining grub screws that go through the base of the piston into the swivel pin location holes.

9. A one stroke engine has a swivel pin as in claim 8 that has serrated portions at both ends of pin to fit lever bars. These bars are then attached to connecting rods and eventually to crank pins and crank wheels.

10. A one stroke has two crank wheels as in claim 9 one of which has gear wheel that drives final output shaft.

11. A one stroke engine has an oil pump on the outer part of crank case in order to lubricate external moving parts such as mechanical exhaust valves.

12. A one stroke engine has gaskets situated at both top and bottom of combustion chamber and is removable to aline piston which is entered from the base of combustion chamber.

Application No:	GB 9803602.3	**Examiner:**	Robert Crowshaw
Claims searched:	1 to 12	**Date of search:**	5 September 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): F1F (FD, FEW)

Int Cl (Ed.6): F01C 9/00; F02B 53/00; F04C 9/00

Other: Online databases: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2268977 A	(TAKATA) See the rotary piston 14 in figure 1.	1, 3
X	GB 1443516	(NASH) See the rotary piston 2 in figure 1.	1-3, 8
X	US 4823743	(ANSDALE) See the rotary piston 22 in figure 2.	1-4, 7
X	US 4819594	(TSAKIROGLOU) See the rotary piston 2 in figure 1.	1, 3
X	FR 2769667	(GHANEM) See the pendular piston 6 of the single stroke IC engine in the figures.	1, 3, 4, 6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.