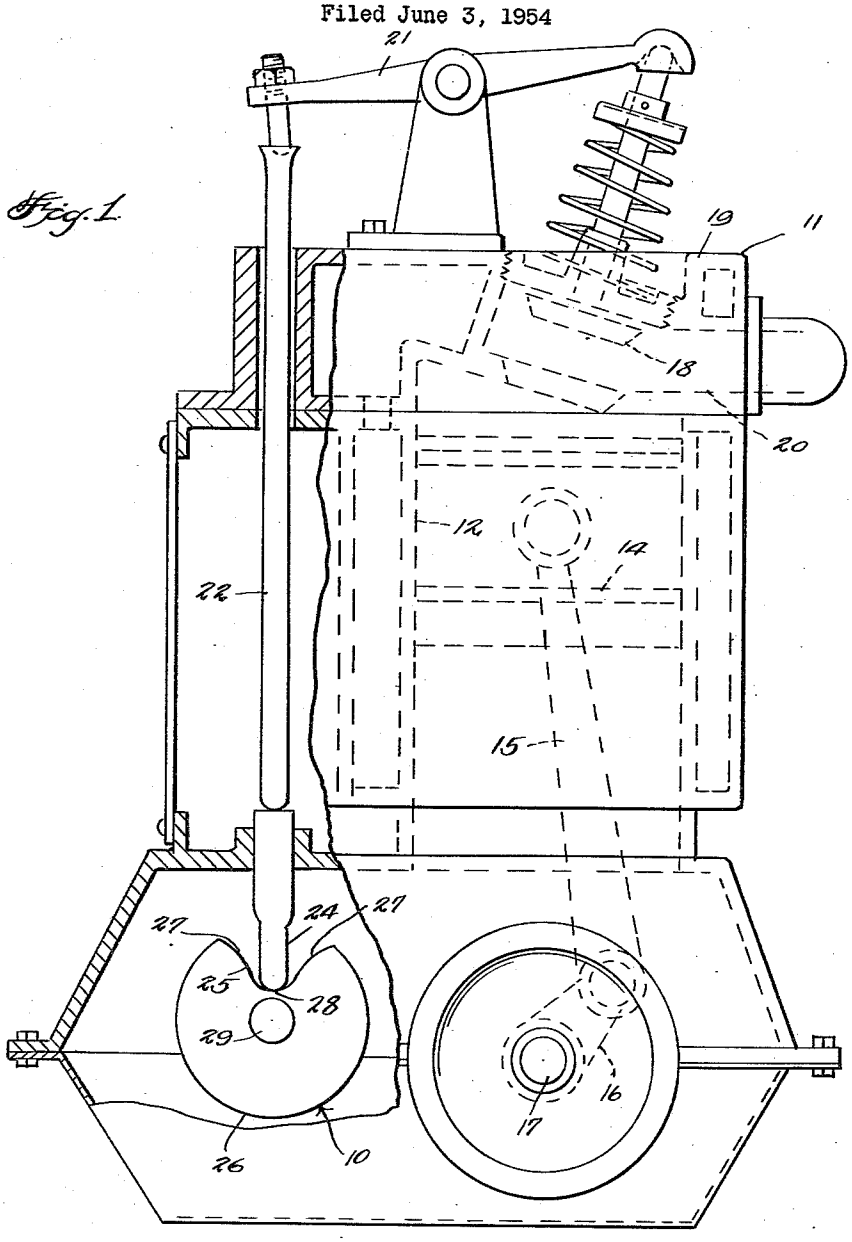
Dec. 17, 1957 W. T. RATLIFF 2,816,532

CAM

Filed June 3, 1954

Fig. 1.



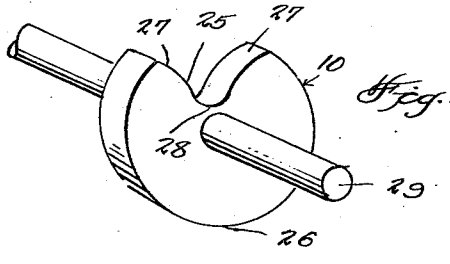


Fig. 2.

WILLIAM T. RATLIFF INVENTOR

BY CA Snow & Co.

ATTORNEYS.

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CAM

William T. Ratliff, Oklahoma City, Okla.

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1 Claim. (Cl. 123—90)

This invention relates to a new type of cam and more particularly to a cam for cam shafts for internal combustion engines.

It is an object of this invention to provide an improved type of cam for internal combustion engines which is cylindrical in form with a segment removed from the outer circumference thereof so that in operation, as the tappet follows the bearing surface on such outer circumference of the cam, the tappet will glide into the segmental portion thus providing the reciprocal motion for opening and closing the valve as the valve glides into and out of the segment. This type of cam is designed for use with an outwardly opening valve and to provide for quicker and fuller opening of the valve.

It is another object of this invention to provide an improved cam of the kind to be more particularly described hereinafter which will provide for the quicker and fuller opening of the valve with no more friction than is encountered in the operation of cams now in use for a somewhat similar purpose.

Other and further objects and advantages of the invention will be hereinafter described and the novel features thereof defined in the appended claim.

In the drawings:

Fig. 1 is a side elevation, partly broken away and partly in section of an internal combustion engine on which the cam of my invention is used.

Fig. 2 is a perspective view of the cam and cam shaft removed from the engine.

Heretofore it may have been the custom in the industry to employ a cam for opening and closing the valve on one end of the cylinder of an internal combustion engine. It is the primary purpose of this invention to provide an improved cam for use in an internal combustion engine whereby a quicker and fuller opening of the valve may be achieved than is encountered in the operation of cams now in use.

Referring more specifically to the drawings the cam of my invention is designated by the reference numeral **10** in an internal combustion engine **11**.

Pistons **14** are reciprocal in the cylinders **12** having a piston rod **15** pivotally connected thereto and one end of the piston rod remote from the piston is pivotally connected to a crank **16** on a drive shaft **17**.

There is provided a valve **18** between the upper end or combustion end of the cylinder **12** and its associated head **19**. A gas chamber **20** is fixed to or formed on the engine head **19** and a rocker arm **21** is pivotally connected intermediate the length thereof to a support extending upwardly from the head **19**.

One end of the rocker arm **21** engages with the valve **18** for actually closing the valve against the tension of a resilient means carried by the internal combustion engine.

The end of the rocker arm **21** remote from the valve **18** is engaged with one end of a lift rod **22** which has a tappet **24** at its other lower end.

The tappet is engageable with the surface of the cam **10** there being a substantially V-shaped notch **25** in the periphery of the cam **10**. The cam has a smooth periphery **26** adjacent the edges of the V-shaped notch **25**.

The side walls of the V-shaped cut out notch **25** have reversely curved side walls **27** therein with a concave apex **28** at the apex of the V-shaped cut out.

The cam **10** is rotated by a cam shaft **29** which in turn is actuated in a substantially conventional manner in its relation to the drive shaft **17**. In the operation of the internal combustion engine having my improved cam therein the engine is caused to be actuated in a conventional manner as the cam shaft **29** is rotated in its proper relation to the rotation of the drive shaft **17** by means not shown in the drawings or applicable to this invention. The valve **18** may be or will be operated in timed relation to the rotation of the cam shaft **29** for opening and closing the valve **18**. With this improved cam in the internal combustion engine the actuation of the valve will be quicker and the valve will be moved to a fuller opening than in conventional internal combustion engines. The valve **18** may be to an intake manifold or to an exhaust manifold as in either case the valve will be actuated in the same manner and substantially for a similar purpose.

While the specific details of one embodiment of this invention have been herein shown and described, the invention is not confined thereto as changes and alterations may be made without departing from the spirit and scope thereof as defined in the appended claim.

I claim:

In a cam shaft for an internal combustion engine, a cam fixed to said shaft comprising a disc-shaped member having an axial opening in which said shaft is secured, said disc having a cutout in the periphery thereof extending inwardly toward the center, said cutout being of generally U-shape with a concave inner apex and with outwardly divergent convex surfaces merging with said concave apex, the radii passing through the outer ends of said cutout being disposed on an acute angle whereby to provide for quick movement of the valve lift to valve opening or closing position.

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