Aug. 11, 1953 J. M. LEAKE 2,648,235

ENGINE ROCKER ARM

Filed Aug. 31, 1949

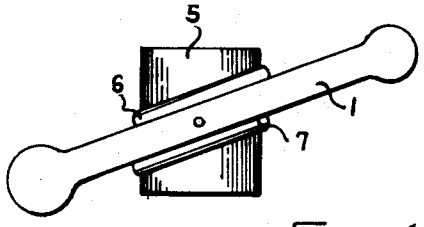


FIG. 1

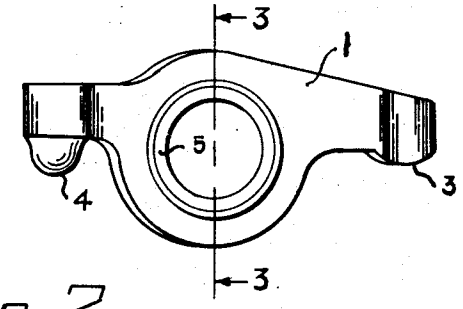


FIG. 2

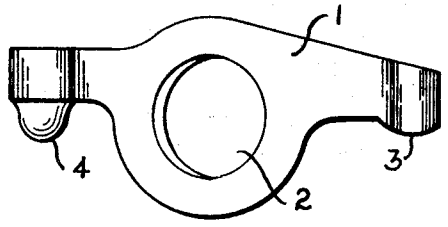


FIG. 4

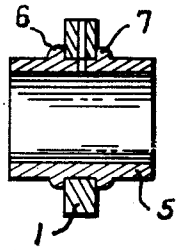


FIG. 3

INVENTOR.

James M. Leake

Patented Aug. 11, 1953

2,648,235

UNITED STATES PATENT OFFICE

2,648,235

ENGINE ROCKER ARM

James M. Leake, Monroe, Mich.

Application August 31, 1949, Serial No. 113,393

2 Claims. (Cl. 74—519)

1

This invention relates to rocker arms and more particularly to the type used in the valve mechanism of overhead valve internal combustion engines.

The purpose of this invention is to provide an engine rocker arm for an engine in which the push rod and valve stem lie in a plane that forms an oblique angle with the center line of the rocker arm shaft. In my improved engine rocker arm the hub is secured in the arm member at an oblique angle. In the present type of engine rocker arms the arm members are bent in order to place the contacting bearings in proper alignment with the push rod and valve stem. When the angle between the plane of the push rod and valve stem and the center line of the rocker arm shaft deviates too far from a right angle it becomes impossible to bend the arm member satisfactorily. In this type of engine two separate arms, secured at right angles to a hub and spaced suitable distance apart, are used so that the contacting bearing on one arm engages the push rod while the contacting bearing on the other arm engages the valve stem.

One object of my invention is to provide an engine rocker arm in which the arm member forms an oblique angle with the centerline of the hub.

Another object of my invention is to provide an engine rocker arm that does not require the bending of the arm member in the fabrication process.

Another object of my invention is to provide an engine rocker arm comprising a minimum number of parts.

Another object of my invention is to provide an engine rocker arm with a single layer plate metal arm member.

Another object of my invention is to provide an engine rocker arm that does not require brazing or welding processes in its fabrication.

Another object of my invention is to provide an engine rocker arm that is strong, durable and inexpensive.

With these and other objects in view my invention consists in the novel construction, combination and arrangements of the various parts of my device as described in the specification, claimed in the claims and illustrated in the accompanying drawings.

In the drawings:

Fig. 1 is a top plan view of an engine rocker arm embodying my invention.

Fig. 2 is a front elevation of the engine rocker arm shown in Fig. 1.

2

Fig. 3 is a sectional view taken along line 3—3 of Fig. 2.

Fig. 4 is a front elevation of the arm member used in my improved engine rocker arm.

Referring to the drawings in more detail, I have shown in Figs. 1 and 2 an assembled engine rocker arm provided with an arm member 1. The arm member 1 is stamped from a sheet of preformed plate metal as shown in Fig. 4. An aperture 2 is pierced at an oblique angle to the plane of the arm member 1. Contacting bearings 3 and 4 are provided at the ends of the arm member 1. The surfaces of the contacting bearings 3 and 4 are preferably hardened to resist wear.

A tubular hub member 5 is inserted in the aperture 2. The hub member 5 is then upset on each side of the arm member 1 thus providing elliptical flanges or upset portions 6 and 7. The elliptical flanges 6 and 7 rigidly and permanently secure the hub member 5 to the arm member 1. Since the hub 5 extends at an oblique angle to the arm member 1 the flanges 6 and 7 are elliptical.

The aperture 2 is pierced at an oblique angle to the plane of the arm member 1. The hub 5 is inserted in the aperture 2 and then secured in place. It will be noted that the plane of the arm member 1 is then at an oblique angle to the center line of the hub member 5. When the rocker arm is assembled in the valve mechanism of an overhead valve internal combustion engine the rocker shaft (not shown) is inserted in the hub member 5. The contacting bearings 3 and 4 will then be properly positioned to engage the push rod and valve stem of the engine.

The angle between the arm member 1 and the hub 5 can be varied by piercing the aperture 2 at different angles to the plane of the arm member. It will be noted that with my novel engine rocker arm construction engagement of valve stem and push rod can be provided regardless of the relative positions of the valve stem and push rod.

It will further be noted that my novel engine rocker arm eliminates the use of a bent arm member, or of two arm members secured to a hub member. Furthermore my novel structure eliminates brazing and welding processes.

The details and arrangements herein shown may be varied by a skilled mechanic without departing from the scope of my invention as expressed in the appended claims.

Having thus described my invention what I claim is:

1. An engine rocker arm comprising a stamped arm member of plate metal with uniformly thick mid-section and solid vertical and substantially cylindrical and portions integral therewith and extending from the top side to the bottom side of said arm member and at the extremities thereof, the under surface of said cylindrical portions forming fixed contacting bearing surfaces, a cylindrical aperture in said arm member intermediated said contacting bearings, the centerline of said aperture extending at an oblique angle to the plate of said arm member and a tubular hub member secured in said cylindrical aperture so that the centerline of said tubular bushing coincides with the center line of said cylindrical aperture, said hub provided with two elliptical flanges upset intermediate its ends and one of said flanges extending outwardly and adjacent each side of said arm member, whereby longitudinal and rotary motion of said hub is prevented in said arm member.

2. An engine rocker arm comprising a stamped substantially flat plate metal arm member, a plurality of contacting bearings provided in the proximity of the ends of said arm member, an aperture in said arm member bounded by cylindrical walls extending at an oblique angle to the

normal plane of said flat plate metal arm member and a cylindrical hub member located in said aperture with the normal plane of said hub member in engagement with said cylindrical surface bounding said aperture, said hub member provided with a substantially continuous inner cylindrical surface and two elliptical outwardly extending flanges upset intermediate its ends and one of said flanges extending outwardly and in engagement with each side wall of said arm member whereby rotary and longitudinal motion of said hub member in said arm member is prevented.

JAMES M. LEAKE.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,224,835	Blackstone	May 1, 1917
1,362,709	Lee	Dec. 21, 1920
1,449,611	Konigslow	Mar. 27, 1923
1,605,722	Harper	Nov. 2, 1926
1,644,750	Short	Oct. 11, 1927
1,943,631	Skillman	Jan. 16, 1934
2,176,083	Leake	Oct. 17, 1939
2,529,089	Leake	Nov. 7, 1950