April 8, 1924. 1,489,864

E. TUTTLE

OILING SYSTEM FOR ENGINES

Filed April 11, 1922

Fig. 2.

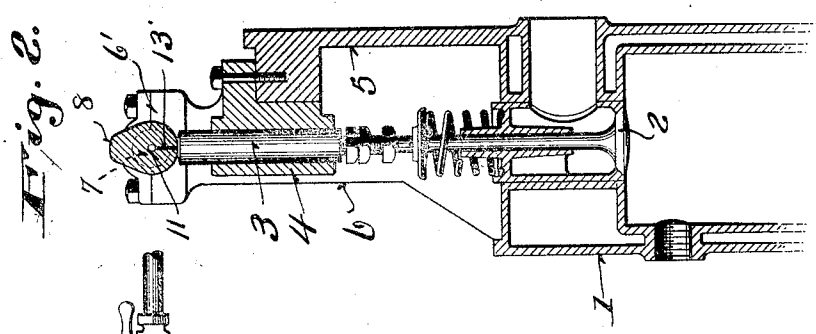
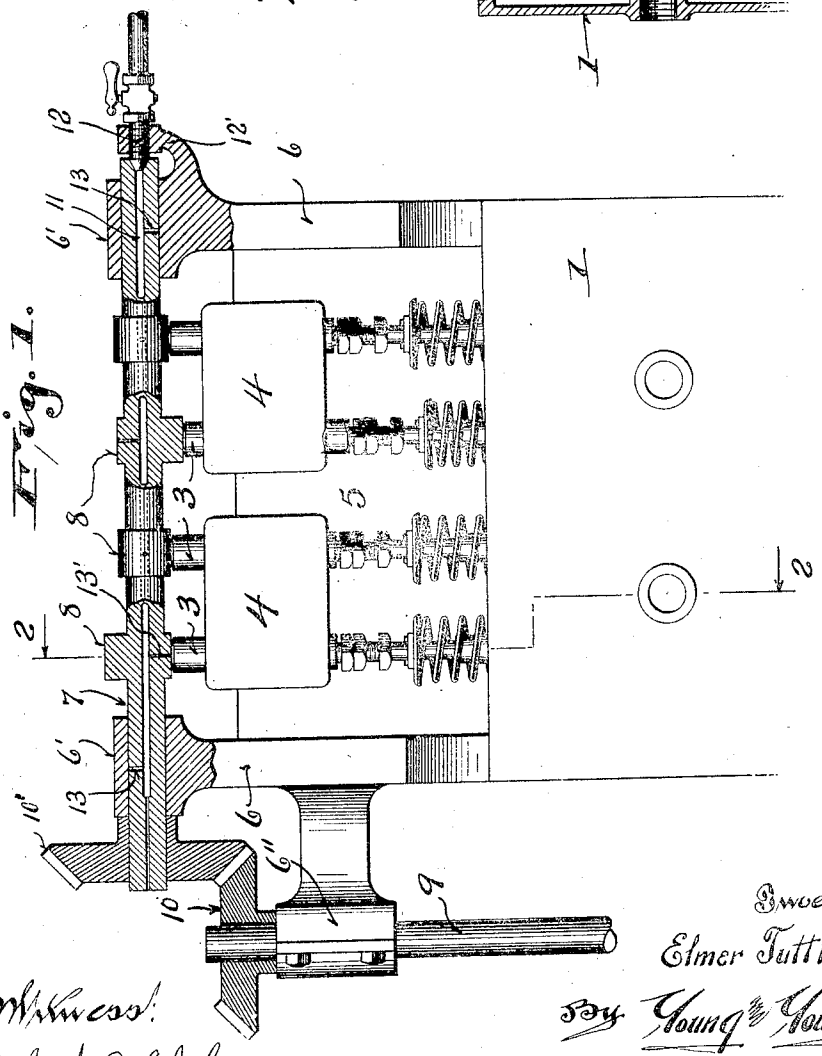


Fig. 1.



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UNITED STATES PATENT OFFICE.

ELMER TUTTLE, OF ANTIGO, WISCONSIN.

OILING SYSTEM FOR ENGINES.

Application filed April 11, 1922. Serial No. 551,695.

To all whom it may concern:

Be it known that I, ELMER TUTTLE, a citizen of the United States, and resident of Antigo, in the county of Langlade and State of Wisconsin, have invented certain new and useful Improvements in Oiling System for Engines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention refers to oiling systems for internal combustion engines such as disclosed in my application for patent for internal combustion engines filed September 12, 1921, Serial No. 499,870.

The object of my present invention is to provide a simple, economical and effective oiling system for the above referred to type of engine, which system includes certain peculiarities of construction and arrangement of parts, whereby oil is introduced through a hollow cam shaft to all of the moving parts associated with the head of the engine, which parts include the valve cams and associated valve stems, bearings and driving gear connections.

With the above object in view, the invention consists in certain peculiarities of construction and combination of parts as are hereinafter fully set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings,

Figure 1 represents a fragmentary elevation of an engine equipped with an oiling system embodying the features of my invention, the view being shown partly broken away and in section to more clearly illustrate details of construction pertaining to the oiling mechanism, and

Figure 2, a longitudinal sectional view through the same, the section being indicated by line 2—2 of Figure 1.

Referring by characters to the drawings, 1 represents a movable series of cylinders, provided with the usual valve 2 and reciprocated valve stems 3. The upper ends of the valve stems are mounted in blocks 4, which blocks are suitably secured with an engine head casting 5. The head is also provided with end pillars 6, which terminate with split journal boxes 6′. The split journal boxes constitute bearings for a shaft 7, which shaft carries actuating cams 8 for the series of valve stems 3.

Motion is imparted to the cam shaft by a counter-shaft 9, which is suitably supported at its upper end by a bracket 6″, which extends from one of the pillars 6. The counter-shaft carries a beveled gear 10 that is meshed with a corresponding beveled gear 10′, which latter beveled gear is secured to one end of the cam shaft.

All of the above referred to mechanism forms no part of my invention, which invention primarily refers to the oiling system and, as shown, the cam shaft is provided with a centrally disposed oil channel 11 which extends from end to end of the shaft.

As shown in this exemplification of my invention, the oil channel at one end of the shaft is beveled outwardly for the reception of the corresponding beveled end of a valve controlled oil feed pipe 12, the same being supported by an arm 12′ which is extended upwardly from one of the bearings of the shaft. Hence it will be seen that the oil feed pipe is held against rotation and a ground joint connection is effected between its end and the engaged beveled surface of the oil channel 11.

It is understood that the feed pipe is connected to a pump or other suitable means, whereby oil or grease is fed to the channel 11 under pressure.

The oil channel at the opposite end of the cam shaft is, in this instance, restricted with reference to the bore of the channel, the restricted passage being of sufficient area to permit a predetermined amount of oil to be discharged from this end of the cam shaft, whereby it will be uniformly distributed upon the beveled teeth of the driving gear wheels 10 and 10′, and the discharged oil may also travel through a suitable duct through the gear wheel 10 to the bearing 6″ therebelow.

The channel 11 is also provided with radial branch passages 13 which serves to distribute oil to the journal boxes 6′, and said shaft is also provided with similar radial passages 13′, which passages pass through the low faces of the cams 8 and thus deliver oil or grease to the engaged surfaces of the valve stem 3. Hence it will be seen that when the engine is in operation with each revolution of the cam shaft, a predetermined quantity of oil is automatically discharged between the related fixed and movable parts, whereby all of the parts pertaining to the cam shaft and its associated mechanism are thoroughly oiled, it being understood that the oil feed passages

and ducts are of such proportions as to provide oil in sufficient quantities for perfect lubrication.

It is to be noted that by providing the restricted passage way adjacent the outer end of the cam shaft, that the lubricant is prevented from freely flowing directly through the cam shaft without supplying the transverse passages.

However, this restriction allows sufficient pressure to build up in the passage way of the cam shaft to discharge a suitable amount of lubricant into each of the transverse passage ways as well as through the end of the shaft.

While I have shown and described a simple exemplification of my oiling system in all of its details, it is understood that I may vary the structural features within the knowledge of those skilled in the art.

I claim:

An oiling system for internal combustion engines, having a plurality of cylinders, a head casting provided with shaft bearings, and valve stems reciprocatively guided in the head casting, a counter-shaft, a shaft journalled in the head bearings in beveled gear connection with the counter-shaft, the last mentioned shaft having a longitudinal oil channel extending throughout its length and intersected at intervals by cross passages, cams carried by the channel shaft through which certain of the cross passages extend, the cams being engageable with the ends of the valve stems, other cross passages of the channel being in communication with the journalled bearings for said shaft, the said oil channel being adapted at one end to deliver lubricant to the driving gears and having at such end a restricted passage way, and an oil feed pipe in coupling connection with the other end of the channel shaft.

In testimony that I claim the foregoing I have hereunto set my hand at Antigo, in the county of Langlade and State of Wisconsin.

ELMER TUTTLE.