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1,461,671

V. W. PAGÉ

TIMING INDEX

Filed June 2, 1921

Fig. 1.

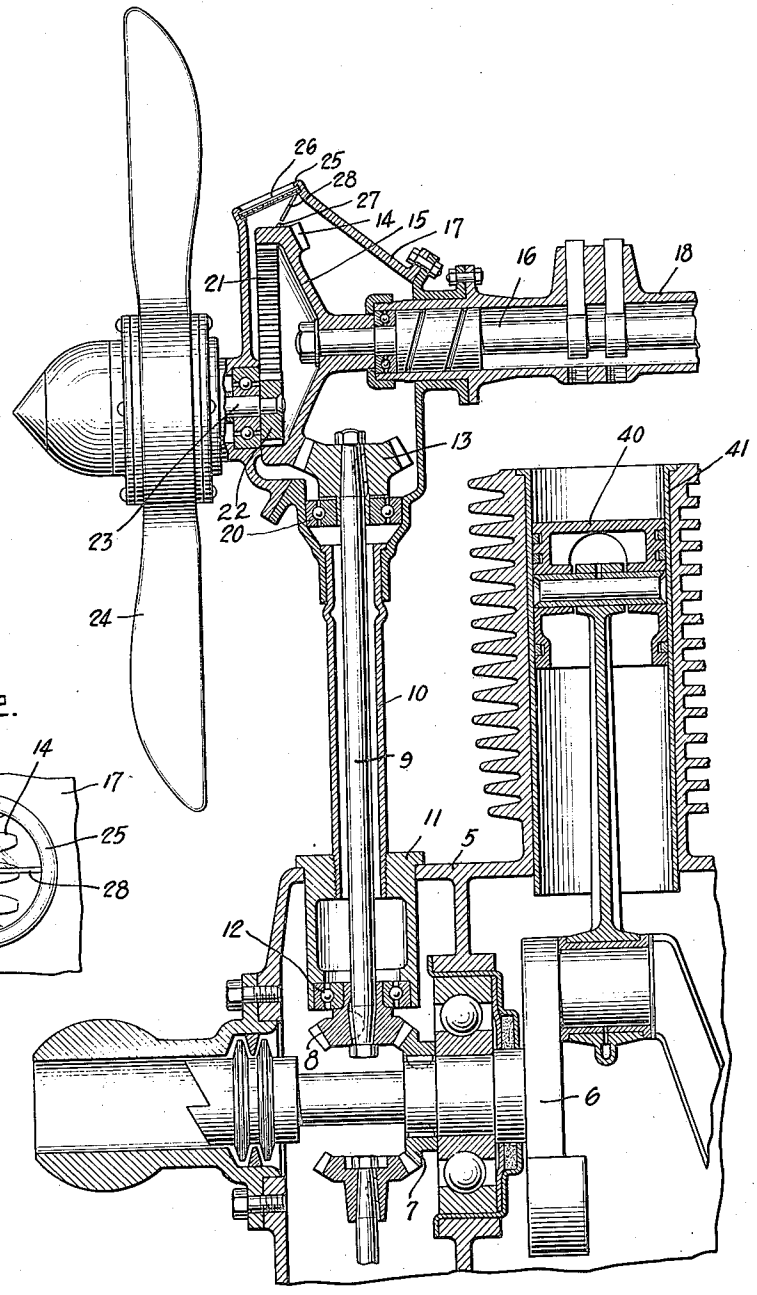
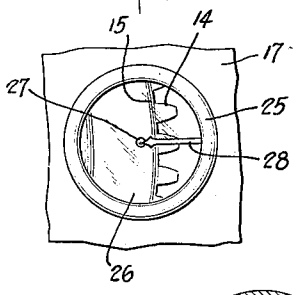


Fig. 2.



WITNESSES

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ATTORNEYS

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UNITED STATES PATENT OFFICE.

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TIMING INDEX.

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To all whom it may concern:

Be it known that I, VICTOR W. PAGÉ, a citizen of the United States, and a resident of the city of New York, Kew Gardens, borough of Queens, in the county of Queens and State of New York, have invented a new and Improved Timing Index, of which the following is a full, clear, and exact description.

The present invention relates to new and useful improvements in internal combustion motors, and it pertains more particularly to means for indicating the relative position of the cam shaft and its driving mechanism to the crank shaft of the motor.

In order that the several valves of the motor may operate at the proper time, a relative timing of the cam shaft and the crank shaft is necessary. When the cam shaft and its assembly have been removed great difficulty is experienced in correctly positioning the several parts thereof in order that proper timing between the cam shaft and crank shaft may be had.

It is one of the objects of the invention to provide means whereby the several parts of the cam shaft and its assembly may be properly positioned, in order that when the connection between the crank shaft and the cam shaft is made, the several parts will be in properly timed relation.

It is a further object of the invention to provide means for defining the position of the cams of the cam shaft.

It is a further object of the invention to so construct the cam shaft assembly that the same may be bodily removed from the motor.

With the above and other objects in view, reference is had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the forward portion of an internal combustion motor constructed in accordance with the present invention, and

Fig. 2 is a detail plan view of the cam shaft indicating means.

Referring more particularly to the drawings, the reference character 5 designates the crank case of the motor, and 6 designates the crank shaft thereof. Secured to the crank shaft 6 is a driving gear 7 and meshing with the driving gear 7 is a driving gear 8 carried by a vertically extending shaft 9. This shaft 9 is mounted within a housing 10 and the lower end of said housing 10 carries a bushing 11 in which is mounted a bearing 12 for the lower end of the shaft 9. Mounted upon the upper end of the shaft 9 is a driving gear 13 and said driving gear 13 meshes with the teeth 14 of a gear 15 mounted upon the cam shaft 16. The gears 13 and 15 are mounted within a housing 17 and the cam shaft 16 is mounted within a housing 18. Mounted in the housing 17 is a bearing 20 for the upper end of the shaft 9. The gear 15 is provided with two sets of teeth 14 and 21 and the teeth 21 mesh with a gear 22 carried by the shaft 23 upon the outer end of which is mounted a cooling fan 24.

By this construction it is apparent that during the operation of the motor, through the medium of the gears 7 and 8, the shaft 9 will be driven, and through the medium of the gears 13 and 15, the cam shaft 16 and the fan 24 will be rotated.

The upper portion of the housing 17 is provided with a window opening 25, and mounted in said window opening is a window 26 formed of any suitable transparent material.

Mounted upon the periphery of the gear 15 is a plurality of indicators 27, and each of said indicators will carry a mark of identification to be hereinafter more specifically referred to. Projecting inwardly of the housing 17, is a pointer 28 and said pointer 28 is adapted to coincide with the indicators 27 as the same pass the pointer.

The device operates in the following manner:

In the drawing the motor is shown with the piston 40 in the "No. 1 cylinder" indicated by the reference character 41 in the position known as "top dead center." With the several parts in this position, it will be seen that one of the indicating elements 27 is immediately below the pointer 28 and this indicating element would be identified by the legend "No. 1, top dead center."

Assuming now that the entire cam shaft assembly has been removed and it is desired to replace the same upon the motor with its several parts in proper timed relation to the crank shaft thereof: To accomplish this, the crank shaft of the motor is rotated until the piston 40 in the No. 1 cylinder 41 is at the top dead center, which position will be indicated by the legend "No. 1, top dead center" on the fly wheel of the motor as is the common practice. After this has been done,

the cam shaft 16 is rotated until the indicating element 27 carrying the legend "No. 1, top dead center" coincides with the pointer 28.

If now with the parts in the positions described, the cam shaft assembly is positioned upon the motor, the several parts will be in proper timed relation, and while in the present instance the No. 1 cylinder has been used to illustrate the operation of the device, it is obvious that the gear 15 will have a number of indicating elements 27 corresponding to the number of cylinders employed, and that when this is the case, the cam shaft assembly may be timed with any of the cylinders desired.

From the foregoing it is apparent that the present invention provides a new and novel means for accurately timing the cam shaft and crank shaft, thus eliminating the heretofore tedious operation of making timing tests in the assembly of motors.

I claim:

1. In a cam shaft assembly, a cam shaft, a housing, said housing being provided with a window, a driving gear for the cam shaft and having a portion thereof constantly visible through said window, a stationary pointer carried by the housing, and means carried by the driving gear and adapted to coincide with said pointer to indicate the relative position of the cam shaft and the mechanism adapted to be operated thereby.

2. In an internal combustion motor, a valve-operating mechanism in the form of a cam shaft, and means for indicating the position of the several cams of said cam shaft and their respective valves to facilitate the proper timing of the cam shaft with its driving mechanism.

3. In combination with an internal combustion motor cam shaft and its assembly, a window provided in the housing, a stationary pointer carried by the housing, and means carried by the cam shaft driving means and adapted to coincide with said pointer to indicate the position of the cams of said cam shaft relative to the remainder of the motor.

VICTOR W. PAGÉ.