

Nov. 28, 1933.

W. JUNK

1,937,152

POSITIVE VALVE CONTROL FOR INTERNAL COMBUSTION ENGINES

Filed Dec. 19, 1931

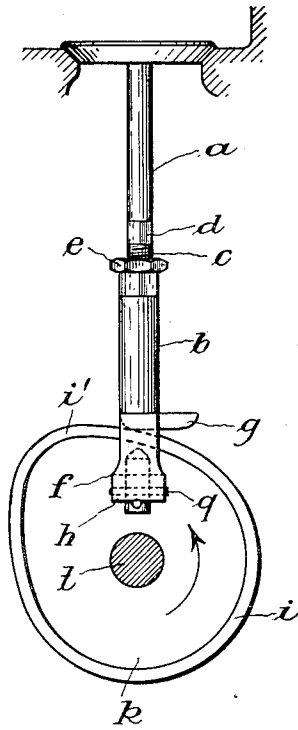


FIG. 1

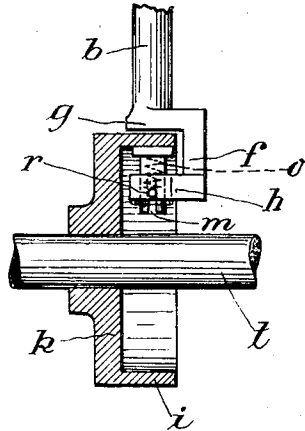


FIG. 2

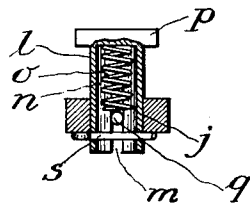


FIG. 3

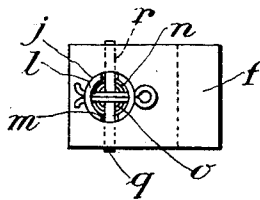


FIG. 4

Inventor:

Walter Junk
Attorney

UNITED STATES PATENT OFFICE

1,937,152

POSITIVE VALVE CONTROL FOR INTERNAL COMBUSTION ENGINES

Walter Jünk, Berlin, Germany

Application December 19, 1931, Serial No. 582,058, and in Germany December 23, 1930

1 Claim. (Cl. 74—1)

The invention relates to a positive valve control for internal combustion engines, in which the control is effected by slidably mounted and gripping fork-like over the hollow cam disc.

In comparison with forms of construction providing a subdivision of the valve shaft and its yieldable connection with the cam disc, the valve control according to the invention is distinguished by the fact that all gear elements outside the valve shaft and mounted independently of this shaft are omitted and that the removing of the valve, on which the additional elements forming a unit with the valve shaft are mounted can be carried out in the simplest manner.

The characteristic feature of the invention consists therefore chiefly in that the valve shaft, subdivided into two mutually adjustable parts, terminates in a fork, the upper part of which bears directly against the cam disc like a slidable shoe, whereas the lower part accommodates a slit piston and a transverse pin, serving as abutment for a spring which presses the piston against the inner side of the cam.

An embodiment of the invention is diagrammatically illustrated by way of example in the accompanying drawing, in which:—

Fig. 1 shows the control arrangement in longitudinal section and in the position in which the cam has just closed the valve.

Fig. 2 is a side elevation partly in section, showing the valve in closed position.

Fig. 3 shows the yieldable piston in elevation, partly in section.

Fig. 4 shows in plan view from below the bifurcated part carrying the piston.

The valve shaft consists of an upper or outer part *a* and of a lower or inner part *b*, the end of which forms a pusher. The lower part *b* has an internally threaded bore screwed on to the screw threaded end of the upper part *a*. The two parts of the valve shaft can be shifted the one with regard to the other by means of a wrench to be placed for instance on a square portion *d* of the valve shaft *a*. On the valve shaft a locking nut *e* is screwed, designed to secure the two parts in their adjusted position. The pusher part *b* of the valve shaft has a bifurcated lower end *f* with a laterally projecting pusher shoe *g* on the upper portion and a pusher shoe *h* on the lower portion, the bifurcated end *f* being placed over the beaded edge *i* of the cam disc *k*. The lower pressure shoe *h* has a bore *j* for a yieldable movable piston *l*, which is hollow and has a vertical slot *m*. A spiral spring *o* is located in the

hollow space *n* of piston *l*, one end of said spring bearing against a piston *p* of the collar and the other end against a transverse pin *q*. This transverse pin *q* is inserted through a bore *r* in the pusher shoe *h* and secured in position by means of a splint or in any other suitable manner.

A transverse wedge *s*, bearing into the pusher shoe *h* serves to limit the upward movement of the piston *l* controlled by the tension of the spring *o*. The hollow cam disc *i* is keyed on the cam shaft *t* and works with both sides.

The operation of the device is as follows:—

The valve *a* is lifted by the cam portion *i'* of cam disc *i* cooperating with the pressure shoe *g*, which might also consist of a roller. If the lifting of the valve *a* is completed (Fig. 1) and the cam portion *i'* is on the other side of the upper pusher shoe *g*, the piston *l* rolling on the inner side of the beaded edge *i* is pressed, in opposition to the action of spring *o*, in the direction of the arrow in Fig. 1, the valve *a* being thereby closed. For the collar *p* of the piston *l* a roller might be substituted.

The transverse pin *q*, forming an abutment for the spring *o*, ensures that the collar *p* of the piston, bearing with its entire surface against the inner side of the beaded rim *i*, preserves its position. The spring *o* (Fig. 3) is especially provided to ensure a tight closing of the valve relative to the cylinder space, even if the motor is hot. The transverse pin *q*, as already mentioned, forms an abutment for one end of the spring, the other end of which bears against the collar *p*. The upper pusher shoe *g* may also be fitted with a shiftable piston *l* similar as the lower pusher shoe *h*.

I claim:—

A cam follower, comprising a shaft, a fork with horizontal arms formed on the lower end of said shaft, a slotted piston shiftable in the lower arm of said fork and engaging a cam, a transverse pin extending through said lower arm and said piston adapted to guide said piston in said lower arm, and a spring between said pin and said piston adapted to resiliently hold said piston in contact with said cam.

WALTER JÜNK.