

Jan. 16, 1940.

R. H. NICHOLS
CRANKCASE DRAIN VALVE

2,187,247

Filed Jan. 25, 1939

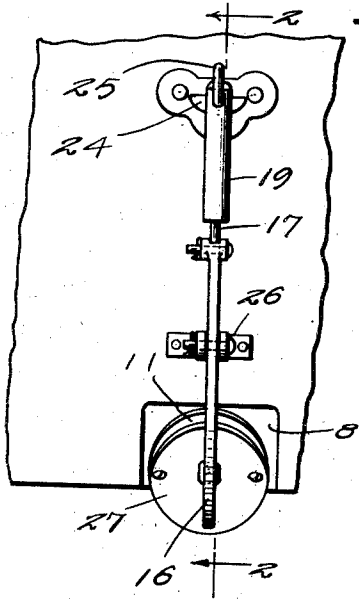


FIG. 1

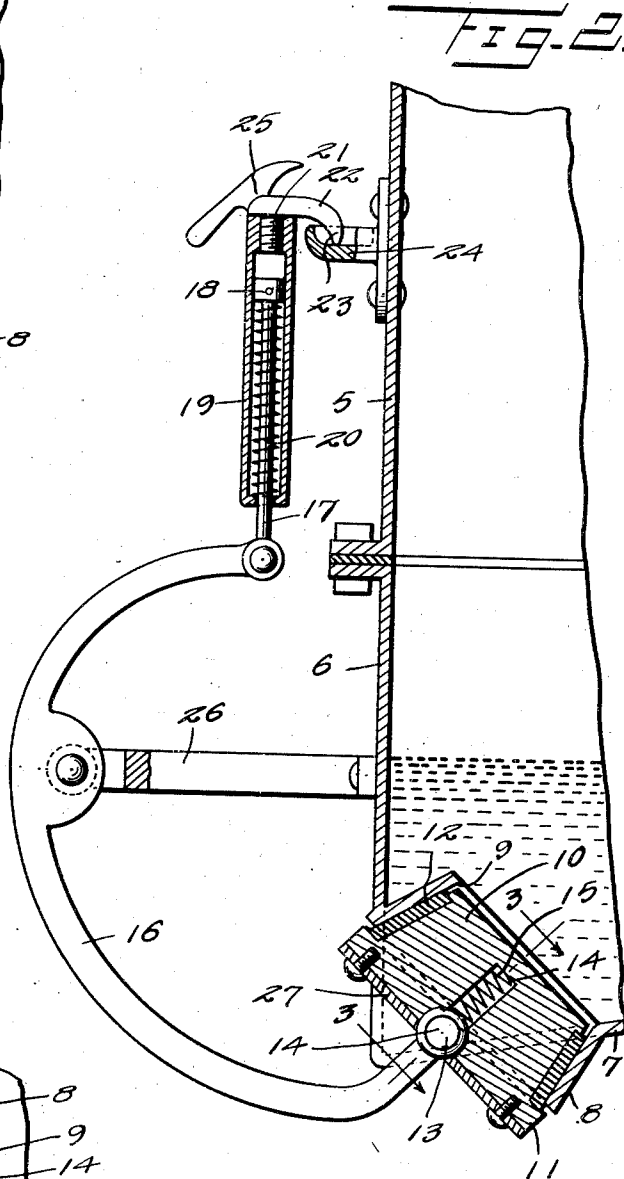


FIG. 2

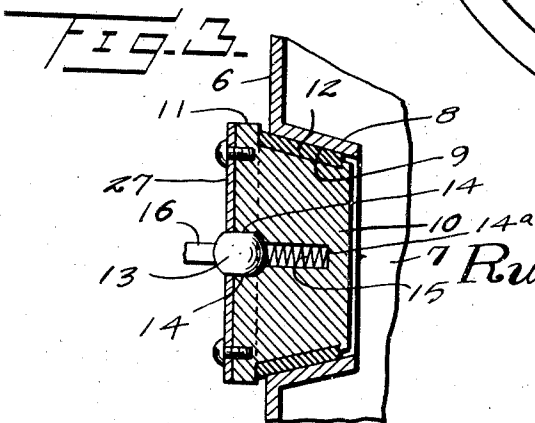


FIG. 3

Russell H. Nichols
INVENTOR

By Victor J. Evans & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE

2,187,247

CRANKCASE DRAIN VALVE

Russell H. Nichols, Rochester, Minn.

Application January 25, 1939, Serial No. 252,815

2 Claims. (Cl. 137—139)

My invention relates to new and useful improvements in valves and more particularly to crankcase drain valves.

Heretofore, crankcases have been commonly constructed with drain outlets disposed centrally of the bottom wall thereof or in said bottom wall adjacent one of the side walls and said outlets are usually closed by means of a screw plug. In constructions of this character it is necessary to remove the screw plug from a position under the crankcase in order that said crankcase may be drained and which operation is attended by various disadvantages.

It is therefore one of the principal objects of my invention to provide a crankcase for motors in which the drain plug is not so disposed with respect to the bottom wall thereof.

Another object of my invention is to provide a new and novel means for closing the drain opening.

An important object of my invention is to provide controlling means for the drain opening, which controlling means is capable of operation from a position adjacent the side of the motor rather than below the same as is the common practice.

Other objects and advantages will be apparent from the following description, appended claims and annexed drawing.

Referring to the drawing wherein like reference characters designate like parts throughout the several views:

Figure 1 is a fragmentary side elevation of the lower portion of a crankcase illustrating my invention as applied thereto.

Figure 2 is a sectional view on an enlarged scale taken on the line 2—2 of Figure 1.

Figure 3 is a detail sectional view taken on the line 3—3 of Figure 2.

As illustrated in the drawing, there is provided a crankcase 5 having side and bottom walls 6 and 7 respectively. At the jointure of said side and bottom walls there is formed an angularly disposed section 8 having integrally fashioned therewith a frustum shaped valve seat formed with a similar shaped opening 9 extending therethrough whereby oil may be drained from said crankcase.

For closing the opening 9, I provide a valve member or plug 10 of a frustum shaped configuration and which is fashioned on the outer end with a circumferentially extending flange 11. The periphery of said plug adjacent the inner face of said flange is formed with a circumferentially extending groove in which is mounted a gasket 12 which engages the wall of the open-

ing 9 to form a tight fit therewith to preclude leakage of oil from said crankcase. Located centrally within said plug, adjacent the outer end thereof, is a ball 13 formed with flat sides 14 to preclude lateral movement of said ball relative to said plug. Adjacent the inner end of the said ball, the plug is fashioned with a recess 14a having positioned therein a spring 15 engaging the inner end of said ball for preventing movement of the plug relative to the ball when said plug is disengaged from the seat as hereinafter more fully set forth.

The outer end of the ball has fashioned thereon the lower end of an arcuate shaped arm 16, the upper end of which is pivotally connected to the lower end of a rod 17. The upper end of the rod 17 has fixed thereon a piston 18 operable in a casing 19, the lower end of said casing being fashioned with a lower end having an opening receiving the rod 17 and said end has seated thereon the lower end of a coil spring 20. The upper end of the coil spring engages the lower face of the piston 18 and normally urges said piston upwardly in said casing 19. The upper end of the casing has secured thereto a latch member 21 fashioned on the upper end with a laterally extending section 22 terminating in a downwardly extending nib 23 normally seated within a keeper 24 secured to the side wall 6 of the crankcase. The upper end of the member 21 is also provided with a hand-piece 25 whereby to effect operation of the casing relative to the piston 18 as hereinafter more fully set forth.

Between the upper and lower ends, the arm 16 is pivoted to the outer end of a bracket 26, the inner end of which is secured to the side wall of the crankcase and said bracket serves to effect pivoting of the arm 16 during operation thereof. The outer face of the plug 10 has secured thereto a plate 27 having a centrally disposed opening receiving the outer end of the ball 13 whereby to maintain said ball in adjusted position within the plug.

In operation, the parts being in the position illustrated in Figure 2 of the drawing, the hand-piece 25 is operated upwardly to move the casing 19 relative to the piston 18 and at the same time effect disengagement of the nib 23 from the keeper 24 by an outward movement relative to the wall 6. When the nib 23 is thus disengaged from the keeper 24, the upper end of the arm 16 is actuated downwardly and serves to pivot the lower end thereof outwardly relative to the crankcase and at the same time disengage and remove the plug 10 from within the opening

9 whereby the oil in said crankcase may drain therefrom. After the oil has drained from the crankcase, a reverse order of operation is resorted to thereby closing the opening 9.

5 From the foregoing it will be apparent that I have provided a simple and reliable device whereby oil may be readily drained from crankcases and access had to the device from the side of the motor, thus eliminating the necessity of removing the plug from beneath the crankcase as is the common practice.

10 It is obvious that the invention is not confined to the hereindescribed use therefor as it may be utilized for any purpose to which it is adaptable. It is therefore to be understood that 15 the invention is not limited to the specific construction as illustrated and described, as the same is only illustrative of the principles of operation, which are capable of extended application in advance forms, and that the invention 20 comprehends all construction within the scope of the appended claims.

What I claim is:

25 1. In combination with a crankcase formed with an angularly disposed drain opening at the jointure of the side and bottom walls of said crankcase, a plug seated in said opening and fashioned with a socket, an arm pivotally con-

nected to said side wall and having upper and lower ends, a ball carried on said lower end and seated in said socket, and a latch connected to said upper end and engaging a portion of said side wall whereby to maintain said plug in said opening, said latch being disengageable from said side wall to effect pivoting of said arm to move said plug out of said opening for draining said crankcase.

2. In combination with a crankcase formed 10 with an angularly disposed drain opening at the jointure of the side and bottom walls of said crankcase, a plug seated in said opening and fashioned with a socket, an arm pivotally connected to said side wall and having upper and 15 lower ends, a ball carried on said lower end and seated in said socket, a latch connected to said upper end and engaging a portion of said side wall whereby to maintain said plug in said opening, said latch being disengageable from said 20 side wall to effect pivoting of said arm to move said plug out of said opening for draining said crankcase, and a spring in said plug and engaging said ball to maintain said plug in adjusted condition relative to said lower end of said arm 25 upon withdrawal from said opening.

RUSSELL H. NICHOLS.