April 8, 1924. 1,489,708

C. V. MORSE

PISTON

Filed May 20, 1922

Fig. 1.

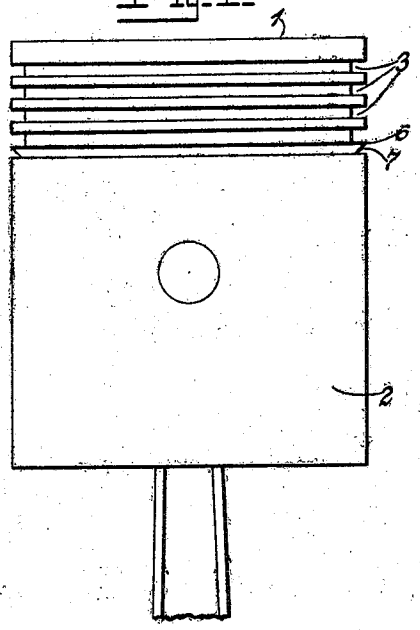


Fig. 2.

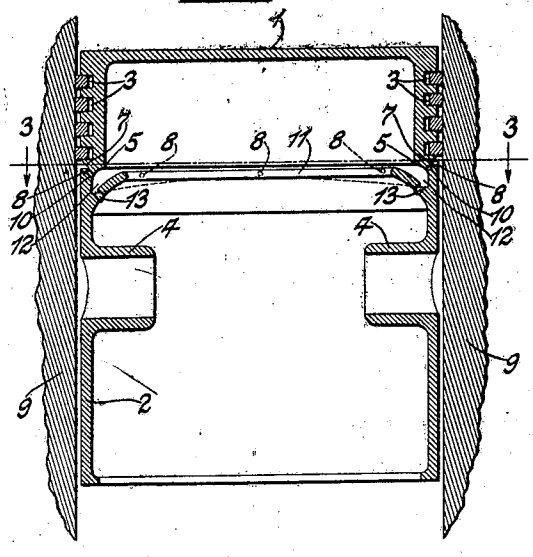
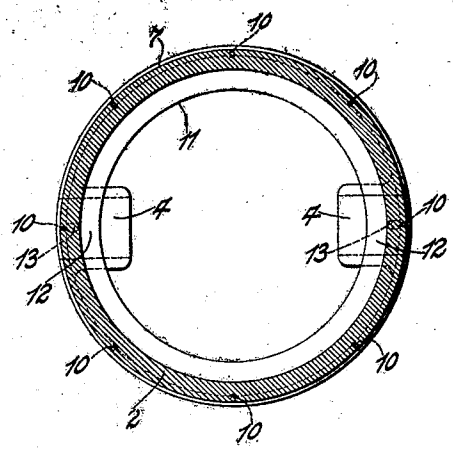


Fig. 3.



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UNITED STATES PATENT OFFICE.

CLYDE V. MORSE, OF GALESBURG, ILLINOIS.

PISTON.

Application filed May 20, 1922. Serial No. 562,331.

To all whom it may concern:

Be it known that I, CLYDE V. MORSE, a citizen of the United States, residing at Galesburg, Knox County, Illinois, have invented a new and useful Piston, of which the following is a specification.

This invention relates to improvements in pistons, and consists in the novel construction hereinafter disclosed.

An object of the invention is to provide a piston arranged with a pocket or groove in the body of the piston for receiving excess oil, said body groove being provided with relief passages cutting through the wall of the piston, and said piston also being provided with means whereby the oil is drawn downwardly through said relief passages into the interior of the body of the piston.

Another object of the invention is to generally improve the construction of pistons in such manner as to prevent the piston from pumping oil in the engine cylinder and for drawing the excess oil to the interior of the body of the piston.

With the foregoing as well as other advantages in view, I have designed the piston as hereinafter disclosed, reference being made to the accompanying drawing in which—

Fig. 1 is a side elevation of the piston embodying the invention.

Fig. 2 is a vertical section.

Fig. 3 is a cross section taken substantially on the line 3—3 of Fig. 1.

In the embodiment of the invention illustrated in the drawing the piston is shown as including a head 1 and a skirt 2, said skirt having a series of piston ring grooves 3 in the upper part of the skirt and the usual wrist pin bosses 4 within the body of the skirt.

The skirt of the piston is so arranged that the portion thereof adjacent to the head of the piston is of slightly less internal diameter than the lower part of the skirt, providing a shoulder 5 between the upper and lower part of the skirt. Below the lower piston ring groove is an additional groove having peculiar functional formation in that said groove is substantially U-shaped in cross section and having the arms thereof extending obliquely inwardly and downwardly from the periphery of the piston, the upper arm intersecting the periphery of the piston at the outer edge of the lower wall of the lower piston ring groove, thereby forming a scraping shoulder or ledge 6 from which the groove extends downwardly forming the wall 7. The wall 7 develops into an annular concave recess 8 forming an oil receiving channel. The piston is mounted in the usual cylinder 9.

It is obvious, therefore, that as the piston is reciprocated upon the down stroke of the piston the excess film of oil on the side walls of the cylinder will be scraped by the lower wall of the lower piston ring and by the scraping edge 6 into the oil receiving channel 8.

In order to release the oil accumulated in the oil receiving channel a series of downwardly inclined passages 10 are formed between the channel 8 and the interior of the piston body, preferably at a point indicated in the drawings which is at the base of the shoulder 5.

Normally, in operation of the piston, the movement of the oil through said relief passages would be retarded by the back air pressure in the interior of the body of the piston, due to the downward movement of the piston. In order to create a proper current of air to withdraw the oil from said relief passages during the downward operation of the piston a baffle wall or ledge 11 is provided on the internal wall of the piston skirt at a point subjacent to the openings of the passages 10 into the piston skirt. This wall or ledge 11 extends obliquely upwardly, masking the orifices of the passage 8 from a direct pressure of the air currents within the skirt of the piston, caused by the downward movement of the piston in the cylinder. This ledge 11 inclines downwardly from points on the wall of the skirt of the piston at right angles to the position of the piston bosses.

It will be noted, therefore, that a channel 12 is formed below the effluent end of the passages 10 which channel inclines from points at right angles to the wrist pin bosses downwardly to points directly over the wrist pin bosses. Thus there will be a flow of the oil accumulated in the channel 12 to the low points thereof over each of the wrist pin bosses. The oil is relieved from the channel 12 by passages 13 located directly above the wrist pin bosses 4.

In the operation of the piston thus constructed the vertical movement of the currents of air generated by the downward

movement of the piston in the cylinder are deflected outwardly through the edge of the baffle wall 11, this curved movement of the current of air causing a countercurrent having an outwardly rotary and downwardly extending direction, thereby drawing the oil through the relief passages 10. The oil thus accumulated in the channel 12 drains to the low points of the channel from which it passes through the openings 13 to the interior of the piston.

It is an advantage also that the release passages 13 are above the wrist pin bosses as the oil passing from the passages 13 assists in lubricating the wrist pins.

It will be understood that a piston constructed in accordance with the invention has the advantage of preventing pumping of the oil and, in addition thereto, provides an oil seal preventing escape of gas during the operative stroke of the piston, inasmuch as the film of oil on the piston cylinder fills and seals the groove below the lower piston ring.

I am aware that the invention may be modified in numerous particulars without departing from the spirit and scope thereof. I do not limit myself, therefore, to exact details of construction and arrangement shown and described, but

What I claim and desire to secure by Letters Patent is:—

1. A piston comprising a body having a series of piston ring grooves near its upper end and a circumferential U-shaped basin below said series of grooves, said basin being formed with downwardly and inwardly inclined upper and lower walls of which the upper wall intersects the lower wall of the lower ring groove, passage ways from the bottom of said basin extending downwardly to the interior of the piston body, and a baffle wall in connection with the interior of the piston body below said passage ways.

2. A piston comprising a piston body having a series of ring grooves near its upper end, a circumferential U-shaped basin below the series of ring grooves formed with downwardly and inwardly inclined upper and lower walls, passages extending downwardly and inwardly from said basin through to the interior of the piston body, a baffle wall integral with the inside of the piston body forming channels of gradually increasing depth from points at right angles to the axis of the piston wrist pin to points above the wrist pin and substantially below said passages.

3. A piston comprising a piston body having a series of ring grooves near its upper end, a circumferential U-shaped basin below the series of ring grooves formed with downwardly and inwardly inclined upper and lower walls, passages extending downwardly and inwardly from said basin through to the interior of the piston body, a baffle wall integral with the inside of the piston body forming channels of gradually increasing depth from points at right angles to the axis of the piston wrist pin to points above the wrist pin and substantially below said passages, and having openings for discharging oil above the wrist pin.

CLYDE V. MORSE.