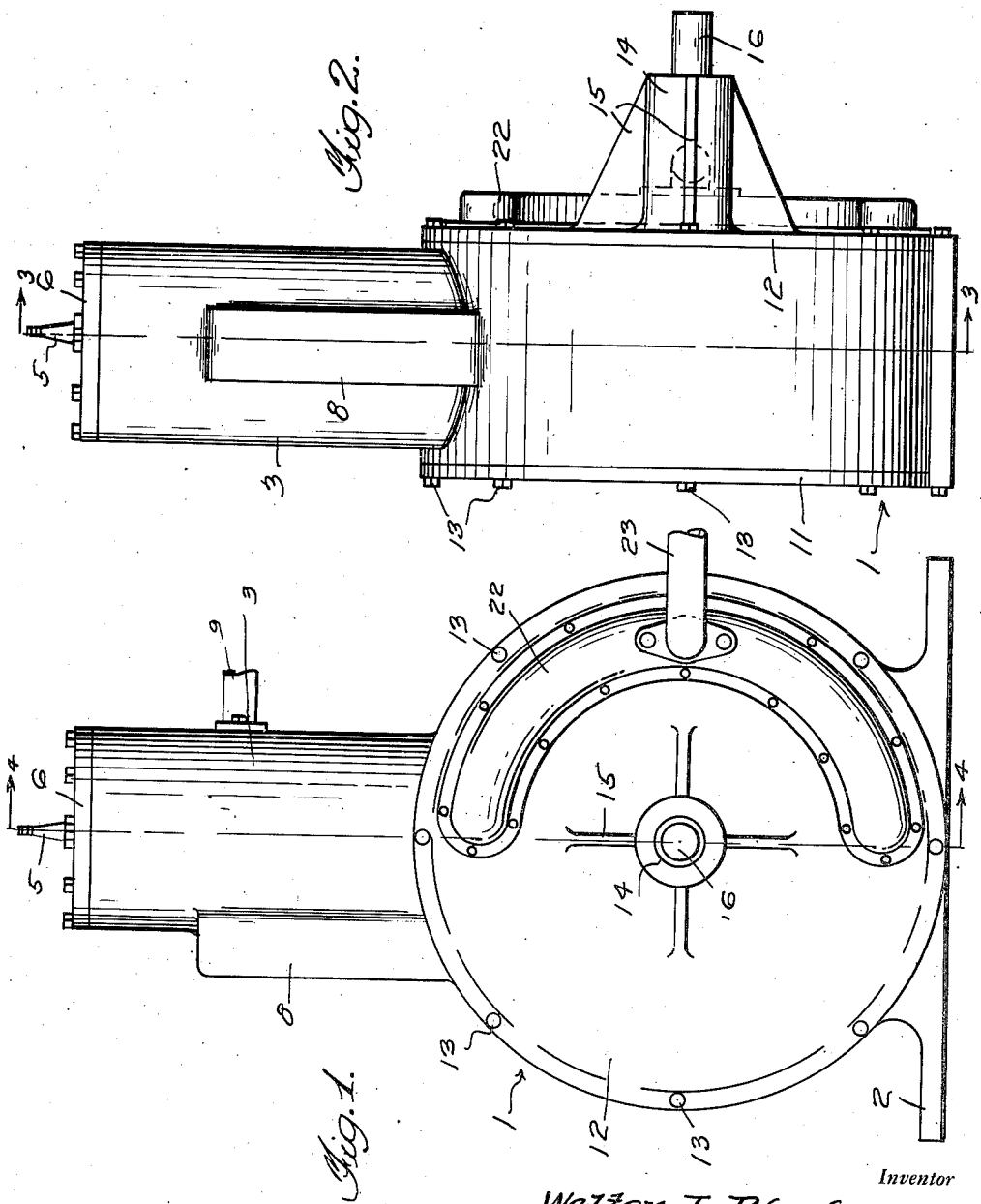
July 10, 1945. W. T. PFEIFER 2,380,120

ENGINE

Filed May 6, 1943 3 Sheets-Sheet 1



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Fig. 4.

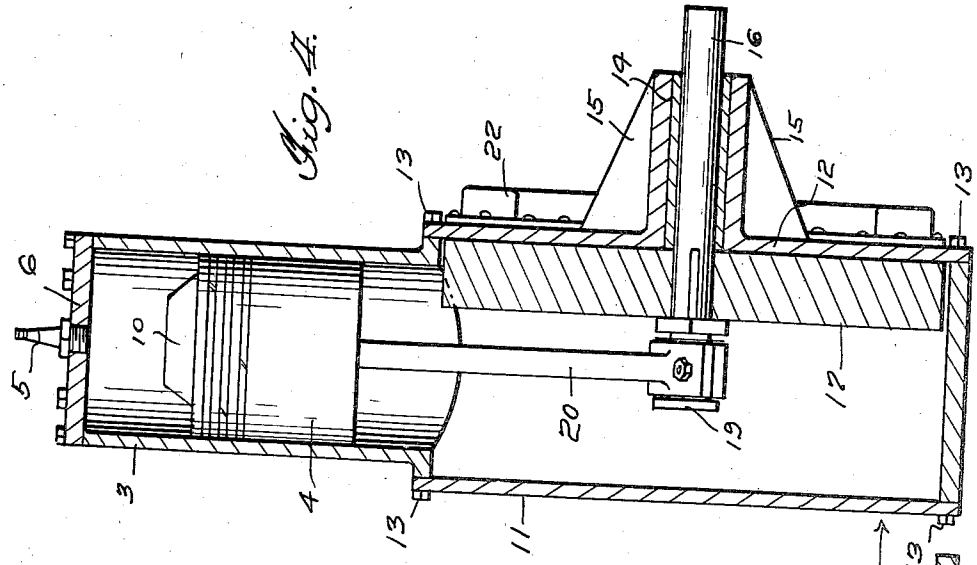
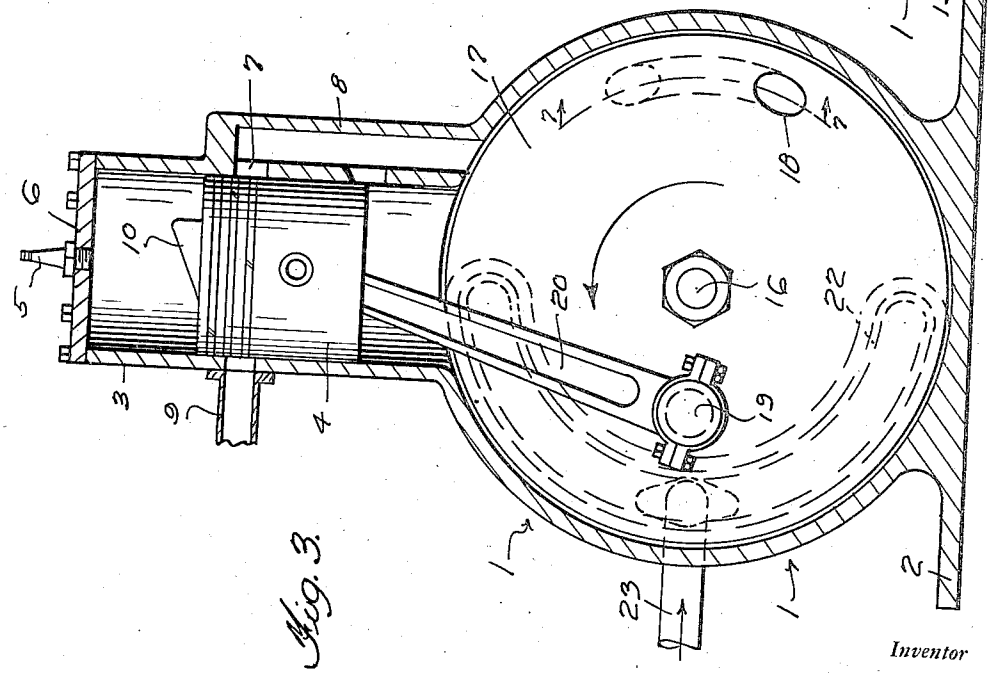


Fig. 3.



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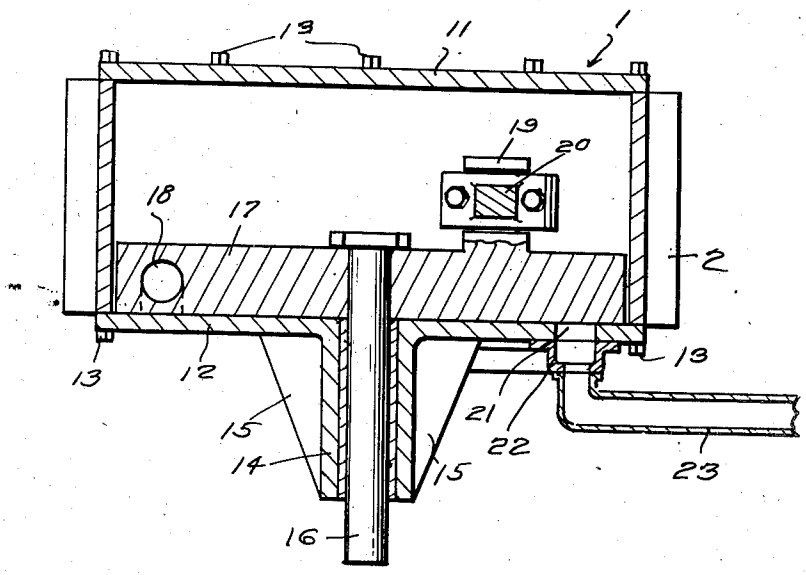


Fig. 5.

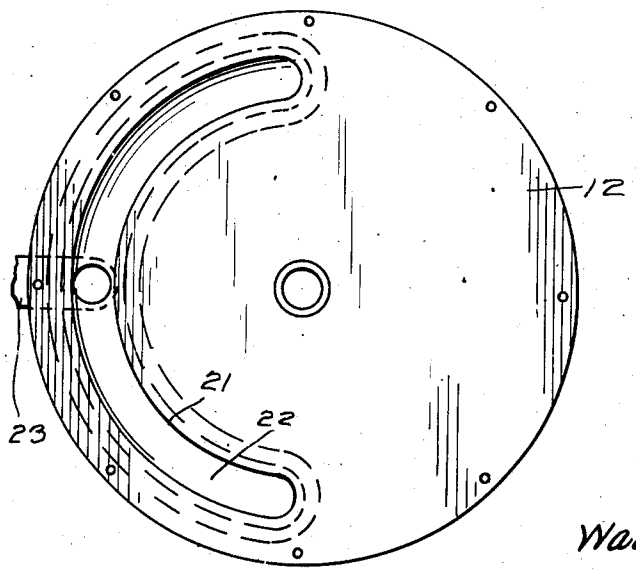


Fig. 6.

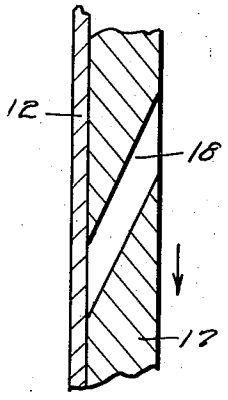


Fig. 7.

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UNITED STATES PATENT OFFICE

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ENGINE

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Application May 6, 1943, Serial No. 485,905

2 Claims. (Cl. 123—73)

The present invention relates to new and useful improvements in internal combustion engines of the two-cycle type, and has for its primary object to provide, in a manner as hereinafter set forth, a power plant of this character having built thereinto supercharging means embodying a novel construction and arrangement.

Other objects of the invention are to provide a two-cycle supercharged internal combustion engine of the aforementioned character which will be comparatively simple in construction, strong, durable, highly efficient and reliable in operation, compact, light in weight, and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in end elevation of an engine constructed in accordance with the present invention.

Figure 2 is a view in side elevation thereof.

Figure 3 is a cross sectional view, taken substantially on the line 3—3 of Figure 2.

Figure 4 is a view in vertical longitudinal section, taken substantially on the line 4—4 of Figure 1.

Figure 5 is a sectional view through the lower portion of the engine.

Figure 6 is an elevational view of one of the end plates of the crank case, looking at the inner face thereof.

Figure 7 is a fragmentary view in section, taken substantially on the line 7—7 of Figure 3.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a circular crank case 1 of suitable dimensions, said crank case including a base 2. Rising from the crank case 1 is a cylinder 3 in which a piston 4 is operable. A conventional spark plug 5 is mounted in the head 6 of the cylinder 3. On one side, the cylinder 3 is provided, at an intermediate point, with an intake port 7 which communicates with the crank case 1 through a passage 8. An exhaust pipe 9 is connected to the diametrically opposite side of the cylinder 3. The top or head portion of the piston 4 includes the usual upstanding baffle 10 which faces the intake port 7 when said piston 4 is substantially at the bottom of its stroke.

The crank case 1 further includes opposed end plates 11 and 12 which are secured in a position by bolts 13. Projecting centrally from the plate 12 is a suitable bearing 14 for which reinforcing webs or braces 15 are provided.

A shaft 16 is journaled in the bearing 14 and extends into the crank case 1. Keyed on the inner end portion of the shaft 16 and operable against the smooth inner face of the plate 12 is a thick and heavy combined fly wheel and valve disk 17. The disk 17, which functions as a fly wheel, has formed therein, adjacent its periphery, a transversely and circumferentially extending opening 18, the purpose of which will be presently set forth.

A pin 19 is mounted off center on the inner side of the rotor 17. A connecting rod 20 from the piston 4 is journaled on the pin 19. Thus, the piston 4 is operatively connected to the shaft 16.

The plate 12 has formed therein a circumferentially extending slot 21. Mounted on the outer face of the plate 12 is a substantially semi-circular chamber 22 which communicates throughout its length with the crank case 1 through the slot 21. An air and fuel intake pipe 23 is connected to the chamber 22.

It is thought that the operation of the engine will be readily apparent from a consideration of the foregoing. Briefly, as the piston 4 moves upwardly, the passage 18 is brought into communication with the chamber 22. The construction and arrangement is such that the disk 17 admits air and fuel from the chamber 22 and they are drawn through the passage 18 into the crank case 1 where they are thoroughly mixed and compressed. On the down stroke of the piston 4, the passage 18 moves out of communication with the chamber 22. It will accordingly be seen that the disk 17 also constitutes a valve for positively preventing the escape of the fuel charge which is under pressure in the crank case 1. When the piston moves downwardly, it uncovers the port 7 and the diametrically opposite exhaust port, in the usual manner, and the fuel charge from the crank case enters the cylinder 3 above said piston.

It is believed that the many advantages of an engine constructed in accordance with the present invention will be readily understood, and although a preferred embodiment is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. An internal combustion engine comprising a crank case including opposed end plates, one

of said end plates having an arcuate slot, a cylinder on the crank case communicating, at an intermediate point therewith, for receiving fuel therefrom, an elongated arcuate chamber, for the reception of air and fuel, mounted on said one of the end plates and communicating with the crank case through said slot, a shaft journaled in the crank case, a thick and heavy combined fly wheel and valve disk fixed on the shaft in the crank case and operable in face abutting engagement with said one end plate, said disk having a transversely and circumferentially extending passage therein for admitting air and fuel from the chamber into the crank case for compression in the latter, said passage extending from the outer face of the disk to the inner face thereof in a direction opposite to the direction of rotation of the disk, and a piston mounted for reciprocation in the cylinder and operatively connected to the disk at the inner side of the latter.

2. A two-cycle internal combustion engine comprising a circular crank case including a pair of spaced, opposed end plates, a bearing on one of the end plates, a shaft journaled in said bearing and extending into the crank case, said one plate having an arcuate slot therein, an arcuate chamber, for connection with a source of air and fuel, mounted on said one plate and communicating with the crank case through the slot, a thick and heavy combined fly wheel and valve disk fixed on the shaft and operable in the crank case with one side face abutting the inner side of said one plate, said disk having a transverse and circumferentially extending passage therein for communication through the slot with the chamber to admit air and fuel therefrom into the crank case for compression in the crank case, said passage extending from the outer face of the disk to the inner face thereof in a direction opposite to the direction of rotation of the disk, a cylinder on the latter, an off center crank pin projecting from the inner side of the disk, a rod connecting the piston to the pin, and means establishing communication between the crank case and the cylinder at an intermediate point.

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