

June 19, 1923.

J. WOLK

1,459,664

PISTON FOR INTERNAL COMBUSTION ENGINES

Filed June 8, 1922

FIG. 1.

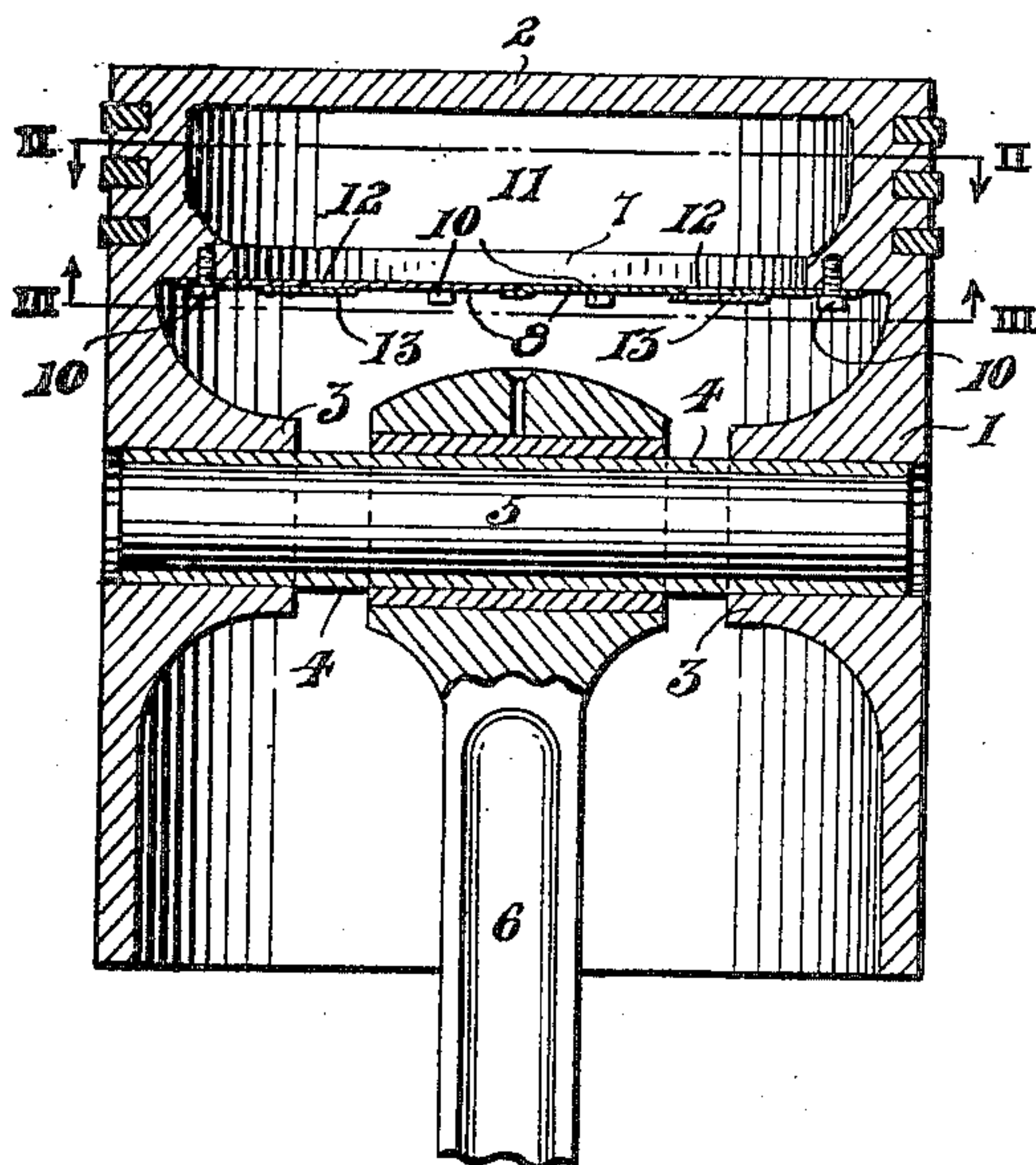


FIG. 2.

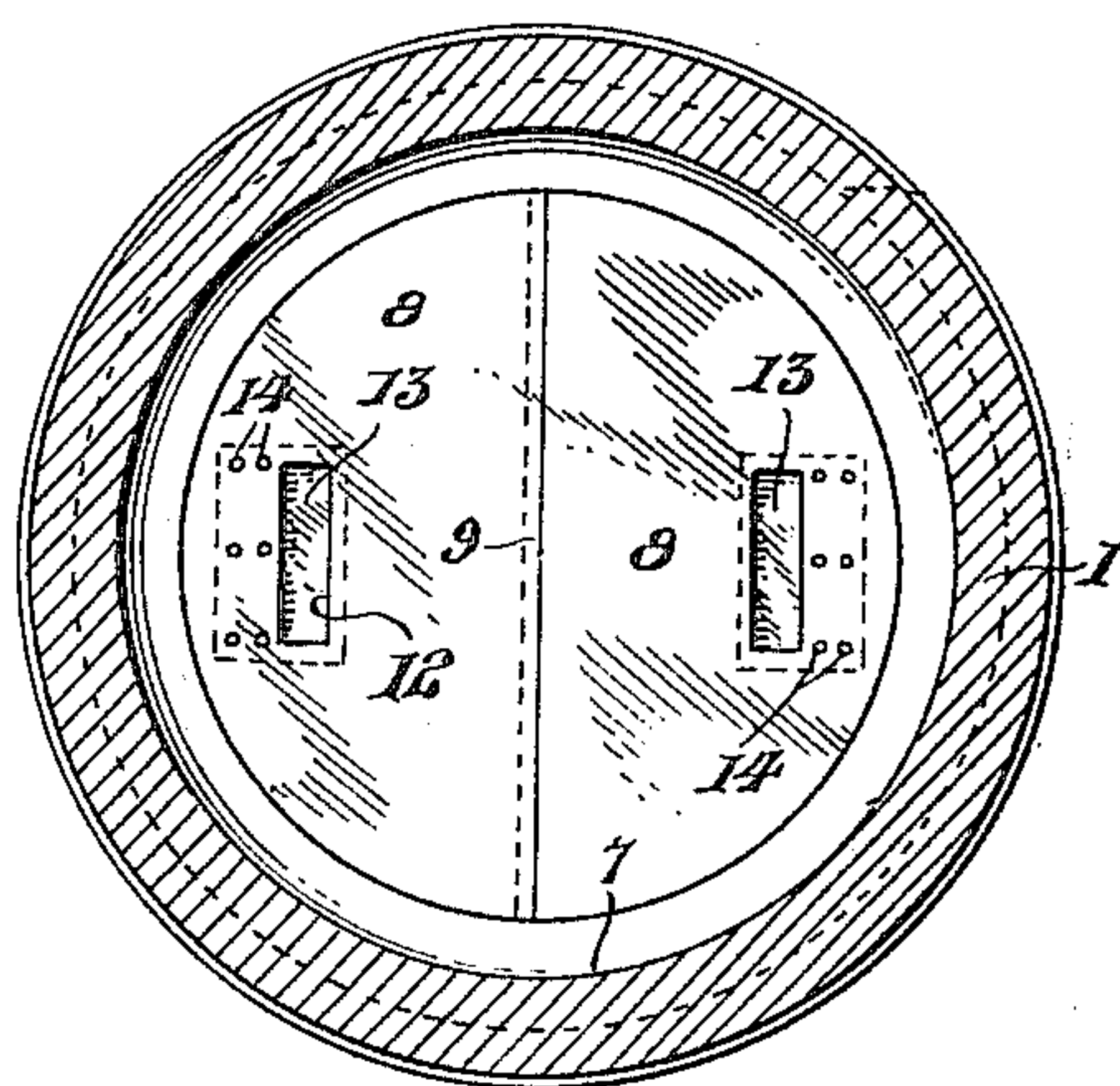


FIG. 3.

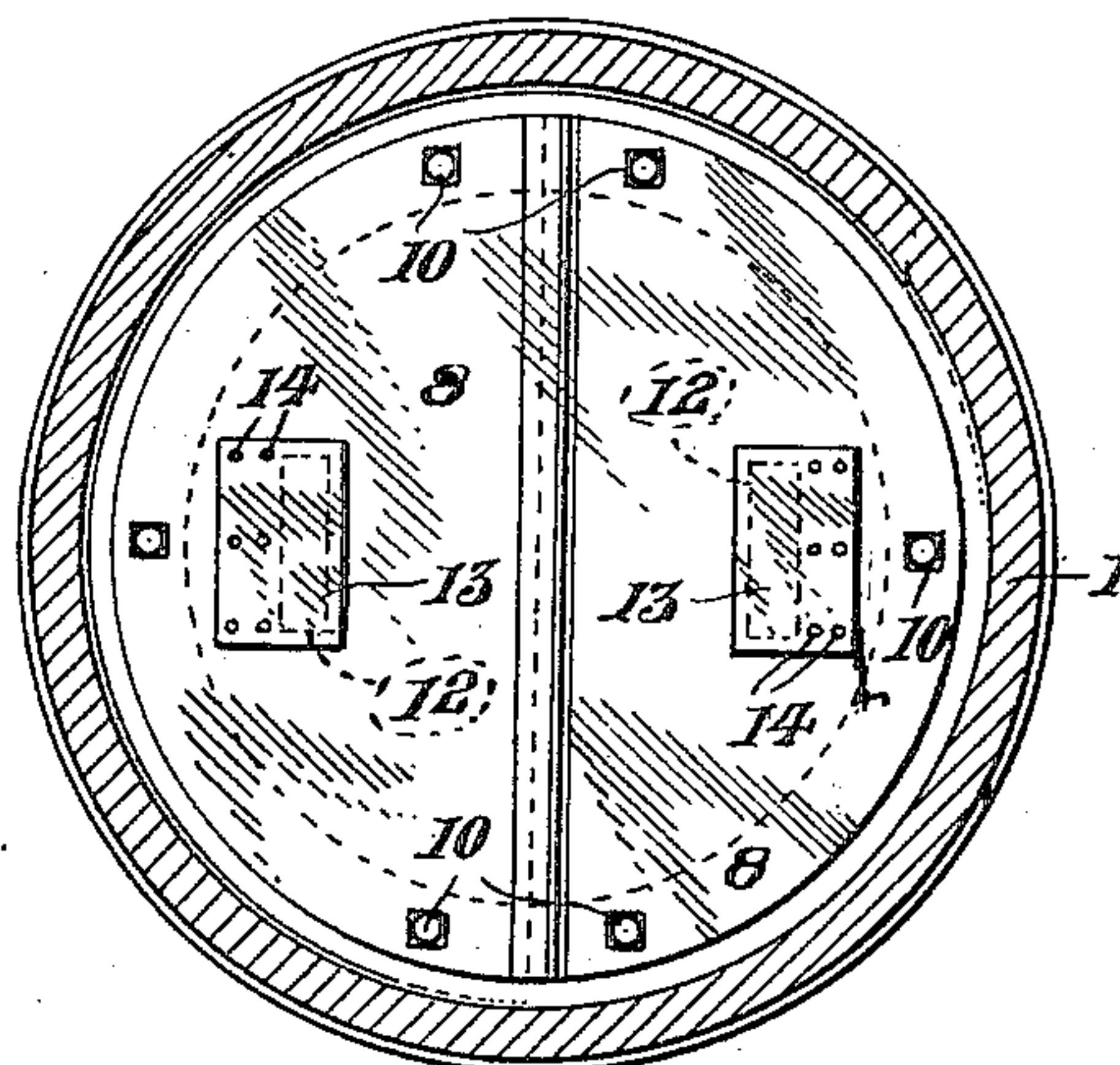


FIG. 4.

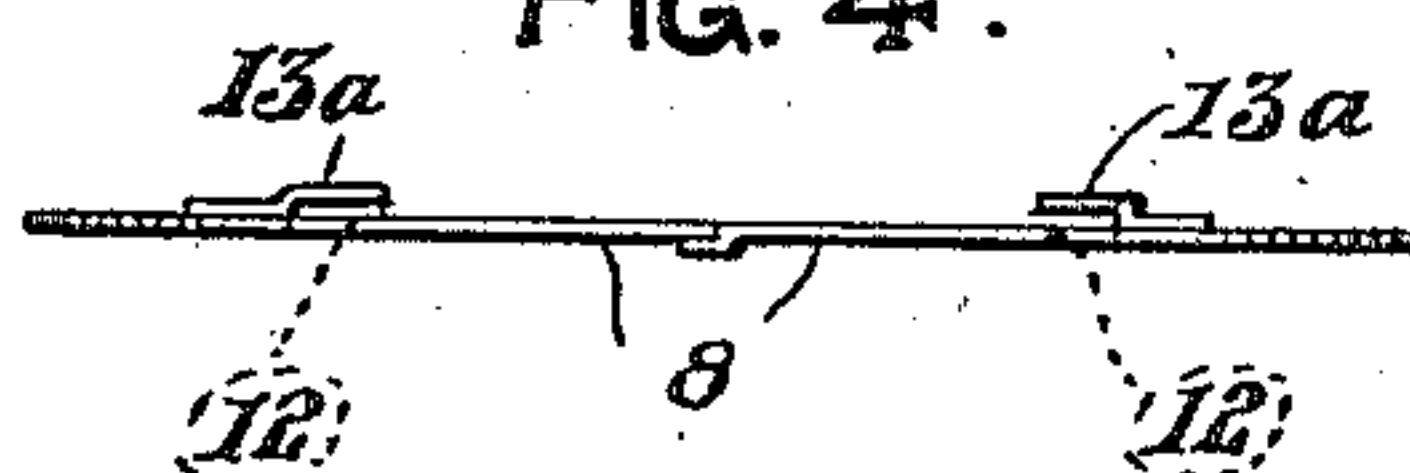
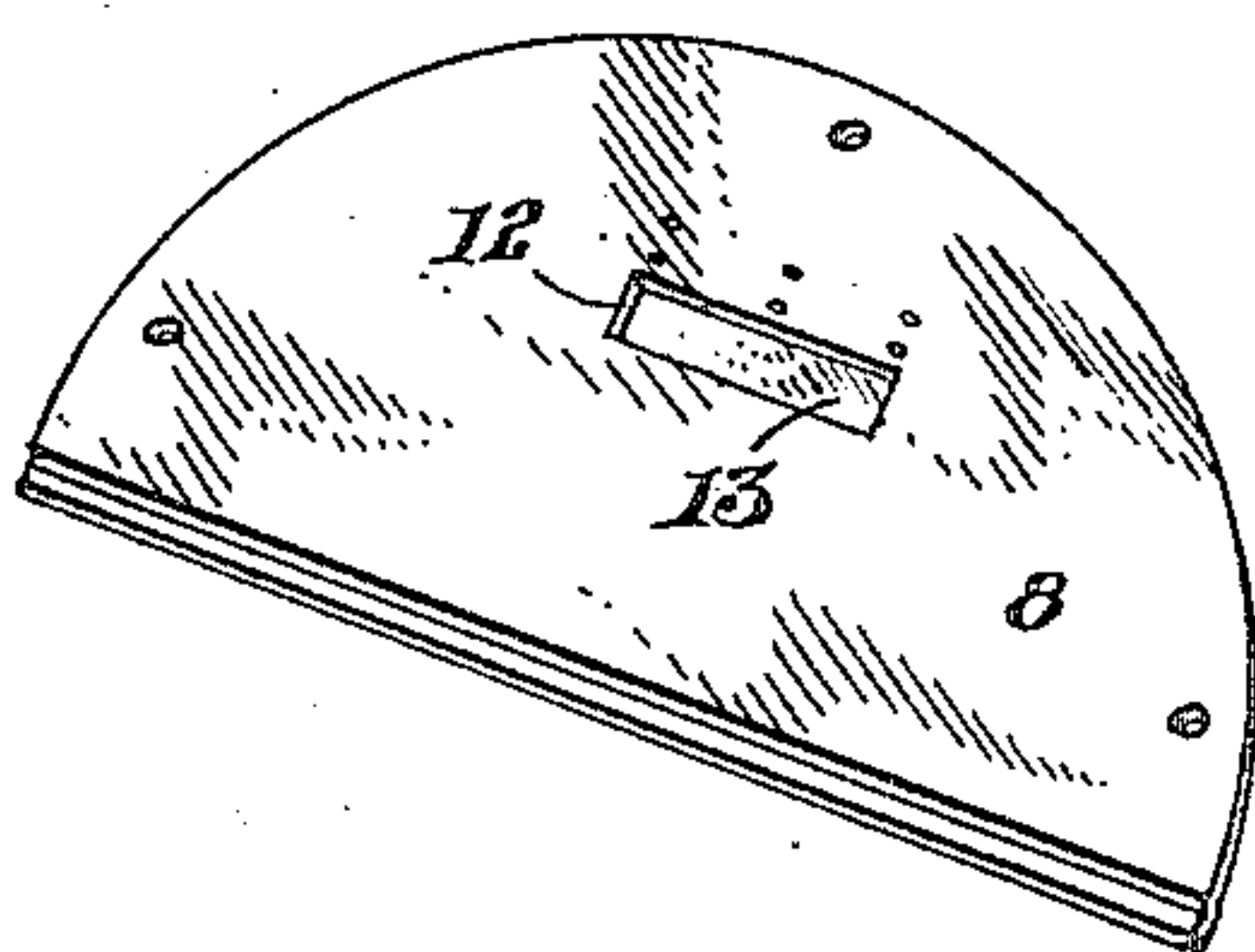


FIG. 5.



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## UNITED STATES PATENT OFFICE.

JOSEPH WOLK, OF BRIDGEPORT, CONNECTICUT.

PISTON FOR INTERNAL-COMBUSTION ENGINES.

Application filed June 8, 1922. Serial No. 566,765.

*To all whom it may concern:*

Be it known that I, JOSEPH WOLK, a citizen of Poland, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Pistons for Internal-Combustion Engines, of which the following is a specification.

This invention relates to certain new and useful improvements in pistons for internal combustion engines and has particular reference to the provision of means associated with the interior of a hollow piston to prevent the formation of carbon upon the bottom face of the piston head.

The primary object of the invention resides in the provision of the plate or shield removably supported within a hollow piston in spaced relation to the head thereof to prevent the oil splashing in the crank case from being thrown into contact with the bottom face of the piston head to eliminate a carbon deposit upon the bottom face of the piston head.

The invention further embodies in a piston of the type above set forth, the provision of flap-valve controlled openings in the plate or shield which will permit the passage of air in the crank casing to the space between the plate or shield and the piston head for partially cooling the head and also permitting the drainage of any oil that might enter said space.

With these general objects in view and others that will appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings forming a part of this application and in which like designating characters refer to corresponding parts throughout the several views:

Figure 1 is a longitudinal sectional view of a piston constructed in accordance with the present invention showing the guide plates or shield removably positioned interiorly of the piston,

Figure 2 is a cross sectional view taken on line II—II of Figure 1 showing the upper side of the two-part guide plate or shield with the damper valves associated therewith,

Figure 3 is a cross sectional view taken on

line III—III of Figure 1 showing the lower face of the guide plate or shield,

Figure 4 is an edge view of a modified form of guard plate or shield showing the flat guard positioned upon the upper side thereof, and

Figure 5 is a perspective view of one of the sections of the guard plate or shield.

Referring more in detail to the accompanying drawing, and particularly to Figure 1 there is illustrated a piston embodying a side wall or skirt 1 open at the lower side thereof and closed at the upper end by a flat head 2. Diametrically opposite bearings 3 support a tubular bushing 4 for the wrist pin 5, while the upper end of the piston rod 6 is journaled upon the wrist pin and sleeve as clearly illustrated.

The inner face of the side wall 1 of the piston carries an inwardly directed flange 7 spaced from the head 2 of the piston and to the lower face of which a two-part guard plate or shield is removably secured. The shield embodies two semi-circular plate members 8 having the meeting edges thereof overlapping as at 9 while the outer edges thereof are removably secured by bolts 10 to the lower face of the flange 7, the shield forming an air space 11 between the same and the head 2 of the piston as clearly shown in Figure 1. Each section 6 of the shield is provided with an opening 12 which is closed at the lower side thereof by a flap valve 13 secured as at 14 to said shield.

In the operation of the device, the piston reciprocating in an engine cylinder will have the bearing parts thereof lubricated by the oil splashing upwardly from the crank case, the splashing oil contacting the shield and being prevented from entering the air space between the shield and the head of the piston. On the upward stroke of the piston, the flat valves 13 will be partially opened, allowing the air in the crank case to pass through the openings 12 and into the air space 11 for the purpose of cooling the head 2, downward movement of the piston causing the flat valves 13 to close the openings 12 and preventing the passing of oil to said openings for contact with the highly heated piston head. In this manner, the oil is prevented from being thrown into contact with the bottom face of the head of the piston which will completely eliminate the formation of carbon thereon, the shield further



providing an air space which will tend to lower the temperature of the piston head and also assist in the elimination of a carbon deposit upon the upper face of said head.

5 In the form of invention shown in Figure 4, the guard plate sections 8 are provided with openings 12 and angle plates 13<sup>a</sup> mounted upon the upper faces of the shield sections overlie the openings 12 to permit the free  
10 passage of air while any oil that has splashed through said openings will contact with the angle plates 13<sup>a</sup> and be returned there-through, the angle plates being disposed with relation to said openings to permit the  
15 free circulation of air from the crank case of the engine to the air space 11 and also preventing an appreciable passage of oil there-through.

While the forms of the invention herein  
20 shown and described, are what are believed to be the preferred embodiments thereof it is nevertheless to be understood that various forms, modifications and arrangements of the parts may be made without departing  
25 from the spirit and scope of the invention as claimed.

Having thus fully described the invention, what I claim as new is:—

1. In a piston of the type described embodying a side skirt and an upper head, an  
30 inwardly directed annular flange carried by the inner face of the side skirt, a shield secured to said flange forming an air space between said flange and piston head, said shield being formed of semi-circular sections  
35 removably secured to said flange with the adjacent edges thereof overlapping.

2. In a piston of the type described embodying a side skirt and an upper head, an  
40 inwardly directed annular flange carried by the inner face of the side skirt, a shield secured to said flange forming an air space between said flange and piston head, said shield being formed of semi-circular sections  
45 removably secured to said flange with the adjacent edges thereof overlapping, each section having an opening therein and a flap valve associated with each opening.

In testimony whereof I affix my signature.

JOSEPH WOLK.