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PISTON FOR INTERNAL COMBUSTION ENGINES.

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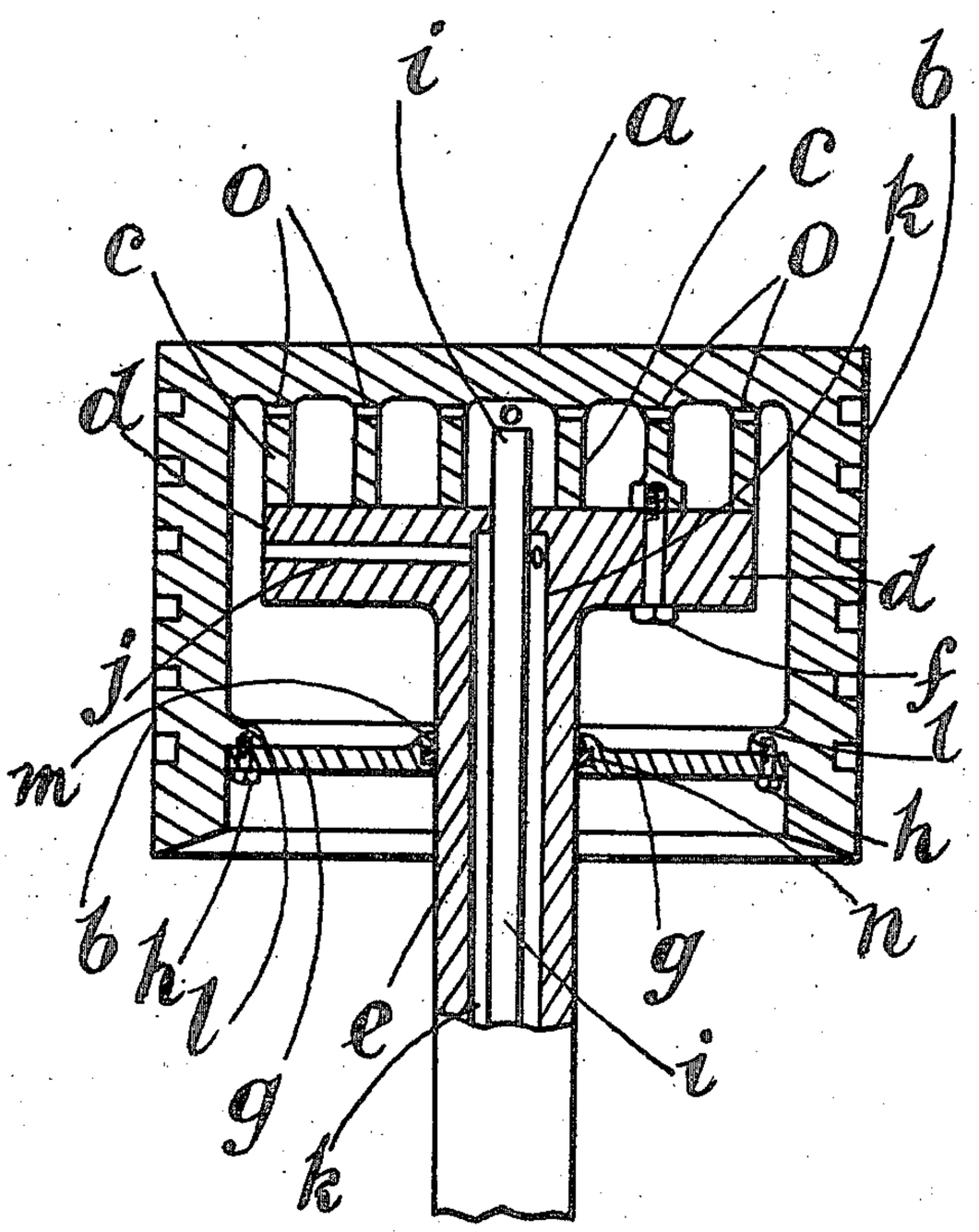

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UNITED STATES PATENT OFFICE.

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PISTON FOR INTERNAL-COMBUSTION ENGINES.

1,155,244. Specification of Letters Patent. Patented Sept. 28, 1915.

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To all whom it may concern:

Be it known that I, OLAV ESKIL JORGENSEN, a subject of the King of Denmark, and resident of 172 Lancefield street, Glasgow, Scotland, engineer, have invented certain new and useful Improvements in an Improved Piston for Internal-Combustion Engines, of which the following is a specification.

This invention relates to the pistons, of Diesel and other internal combustion engines, of the type in which the body or cylindrical portion of the piston is provided, between the working face of the piston and the second face or back part, with a space through which cooling liquid is circulated for cooling the working face and body portion of the piston, while the piston rod supports the working face through internal means such as ribs, webs or other means extending from the center of the piston to the cylindrical body portion thereof. In such pistons as heretofore proposed the working face was very liable to fracture due to the unequal expansion of the cylindrical body portion on the one hand and the internal supporting means for the working face on the other hand, the former being only cooled internally while the latter was completely surrounded by the cooling medium. I am aware however that it has been heretofore proposed to provide a piston in which the working face is supported directly from the piston rod while the cylindrical body portion is supported only from the working face, and is free to expand independently of the internal parts of the piston.

Under the present invention I improve the construction of such pistons by providing means whereby the working face (which preferably takes the form of a comparatively thin fire resisting member) is supported only internally from the piston rod by means of ribs, webs or other means located between the center of the piston and the outer edge of the working face while the cylindrical body portion of the piston is supported only from the working face.

In order that the invention may be clearly understood I have hereunto appended explanatory drawings which show by way of illustration or example one mode of constructing the piston.

On the drawing the piston is shown in section.

The working face *a* and the cylindrical body part *b* of the piston are formed in one piece and provided on the inner side of the working face *a* are three concentric supporting rings or ridges *c* which all engage a flange *d* on the end of the piston rod *e*, and the piston is connected with the piston rod by means of screws *f* passed through the flange *d* and into holes provided for their reception in the intermediate ring or ridge *c*. The second face or back part of the piston consists of a ring part or plate *g* rigidly secured by means of screws *h* to a ridge or internal collar *l* in the cylindrical body part *b*, and having a collar *m* provided with a packing ring *n* for engagement with the piston rod *e*.

The cooling water (or oil) is supplied by means of the central pipe *i* to the center of the working face *a* and passes outward through suitable holes *o* in the rings or ridges *c*. From the cooling chamber in the piston the water or oil passes by means of the passage *j* to the discharge passage *k* surrounding the pipe *i*.

Claims—

1. A liquid cooled piston for internal combustion engines, having a working face, means located between the center of the piston and the outer edge of the same for rigidly supporting the working face in axial direction from the front face of the piston rod, a cylindrical body portion supported only from the working face, and a back part movably fitted between the said body portion and the piston rod at a distance from its front face, and means for conducting cooling liquid centrally against the back portion of the working face.

2. A liquid cooled piston for internal combustion engines, having a working face, supporting ribs located between the center of the piston and the outer edge of the same for rigidly supporting the working face in axial direction from the front face of the piston rod, and a cylindrical body portion supported only from the working face and means for conducting cooling liquid centrally against the back portion of the working face.

3. A liquid cooled piston for internal com-

bustion engines, having a working face, a series of ribs on the back of the working face, and located between the center of the piston and the outer edge thereof, a flange on the end of the piston rod for rigidly supporting the working face through such ribs and a cylindrical body portion supported only from the working face and means for conducting cooling liquid centrally against the back portion of the working face.

4. A liquid cooled piston for internal combustion engines having a cylindrical body portion, a working face from which the body portion is supported, a series of perforated supporting ribs at the back of the working face and located between the center of the piston and the outer edge thereof, a piston rod with a flange on the end of the piston rod for engaging the said ribs in such manner that the working face is supported from the piston rod, a detachable disk extending between the rear end of the body portion of the piston and the piston rod in such manner as to permit of relative movement due to inequalities of expansion in the different parts, and a central pipe through the piston rod for directing cooling liquid against the back of said working face, said piston rod, and flange being provided with passages for conducting cooling liquid from the space between the working face and the disk.

5. A liquid cooled piston for internal combustion engines having a cylindrical body portion, a working face from which the body portion is supported, a series of annular supporting ribs on the back of the working face and located between the center of the piston and the outer edge thereof, a flange on the end of the piston rod for engaging the said ribs in such manner that the working face is supported from the piston rod, a rear portion extending between the body portion of the piston and the piston rod in such manner as to permit of relative movement due to inequalities of expansion in the different parts, means for supplying cooling liquid through the piston rod to the interior of the piston, perforations in the said supporting ribs to permit of the free circulation of cooling liquid against the back of the working face, and means for conveying the liquid through the piston rod from the cooling space.

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Witnesses:

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