

April 29 , 1924.

1,492,397

E. F. F. ROBERTS

PISTON FOR INTERNAL COMBUSTION ENGINES

Filed May 25 , 1922

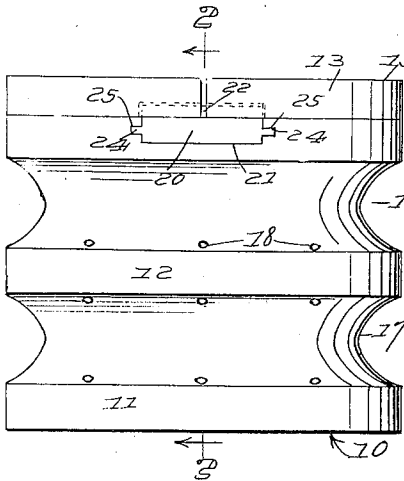


Fig. 1.

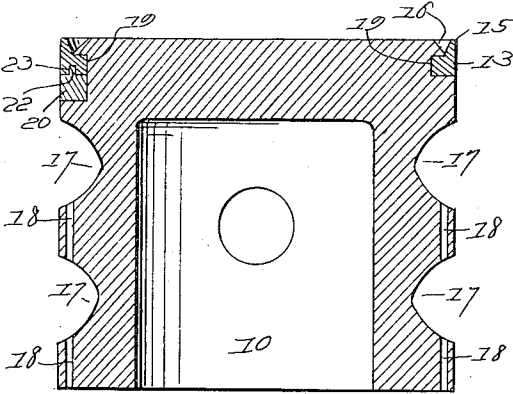


Fig. 2.

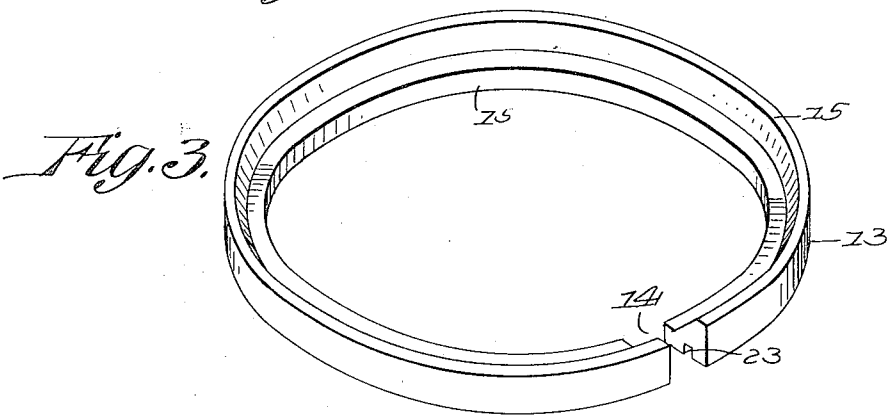


Fig. 3.

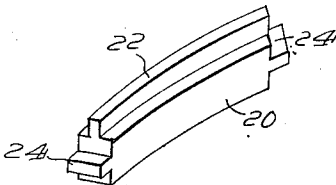


Fig. 4.

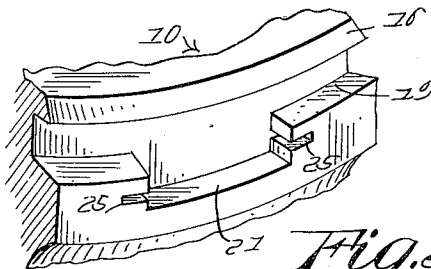


Fig. 5.

Inventor
Edward F. F. Roberts,

By *Alfred Talbot*
Attorney

UNITED STATES PATENT OFFICE.

EDWARD F. F. ROBERTS, OF COATESVILLE, PENNSYLVANIA.

PISTON FOR INTERNAL-COMBUSTION ENGINES.

Application filed May 25, 1922. Serial No. 563,502.

To all whom it may concern:

Be it known that I, EDWARD F. F. ROBERTS, a citizen of the United States of America, residing at Coatesville, in the county of Chester and State of Pennsylvania, have invented new and useful Improvements in Pistons for Internal-Combustion Engines, of which the following is a specification.

The object of the invention is to provide a piston and packing means for use in connection with the cylinders of explosion or internal combustion engines whereby a maximum compression may be secured with the minimum frictional contact or resistance of the piston with relation to the wall of the cylinder as a means of reducing the wear and indefinitely maintaining the efficiency of the structure; and with these objects in view the invention consists in a construction and combination of parts of which a preferred embodiment is shown in the accompanying drawings, wherein:—

Figure 1 is a side view, and

Figure 2 is a central sectional view of a piston constructed in accordance with the invention.

Figure 3 is a detail view of the piston ring.

Figure 4 is a similar view of a cylinder member used in connection with the piston ring as a break joint feature thereof.

Figure 5 is a detail view in perspective of a portion of the piston to show the seat for the cylinder element.

The piston 10 which is of the conventional hollow form having the usual cavity for the reception of the end of the connecting rod is provided with a plurality of exterior parallel cylindrically faced terminal and intermediate bearing ribs 11 and 12 of which the outer terminal rib preferably carries a special form of packing ring 13 of the split ring type indicated at 14 in Figure 3, and having an outwardly extending beveled flange 15 which cooperates with a beveled surface 16 at the outer end of the piston to form a cross sectionally V-shaped annular cavity designed to permit of the application of pressure in the explosion chamber to the inner surface of the flange 15 to efficiently expand the ring and maintain its outer surface, during the explosion stroke, in contact with the wall of the cylinder. The piston surface between the bearing ribs 11 and 12 is annularly concaved as indicated at 17 to form oil receiving grooves which are in communi-

cation with each other and with the inner or crank case end of the cylinder by means of oil ducts 18 extending through the ribs in a direction parallel with the path of the piston as further shown in Figure 2.

As a means of breaking the joint between the extremities of the split ring 13, which is fitted in a ring groove 19 in the piston, there is employed a sealing element 20 shown in detail in Figure 4, arranged in a cavity 21 offset from the ring groove 19 and provided with a web 22 engaging grooves 23 in the inner surfaces of the terminal portions of the split ring, said sealing element being provided with terminal ears 24 engaged with seats 25 in the end walls of the seat 21 so that while the sealing element is capable of movement radially with relation to the piston it is held from circumferential movement and also from movement parallel with the path of the piston, and serves as an anchoring means through the agency of the web 22 to prevent circumferential movement of the ring 13 with relation to the piston. Obviously the sealing element serves to prevent leakage of oil or pressure through the joint or space between the extremities of the split ring regardless of the separation of the latter due to the gradual wearing of the exterior surface thereof by contact with the wall of the cylinder.

Having described the invention, what is claimed as new and useful is:—

A piston head having an annular groove located in the vicinity of the end thereof, the adjacent end edge of the head being bevelled, the head being provided with a rectangular cavity at the inner face of the groove and seats located at the ends of the cavity and extending under the inner face of the groove and spaced therefrom, a split ring fitting in the groove and having a flange disposed opposite the bevelled edge of the head, the ring being provided at its under side with grooves which lead in from the ends thereof and a sealing block fitting snugly in the cavity and provided at its ends with ears which enter the seats located at the ends of the cavity and provided at its upper side with a web which enters the grooves in the ends of the split ring and which bridges the space between the ends of the split ring.

In testimony whereof he affixes his signature.

EDWARD F. F. ROBERTS.