E. A. BEARUP.

UNIVERSAL JOINT FOR CONNECTING RODS.

APPLICATION FILED MAR. 6, 1916.

1,213,819. Patented Jan. 30, 1917.

Fig. 1

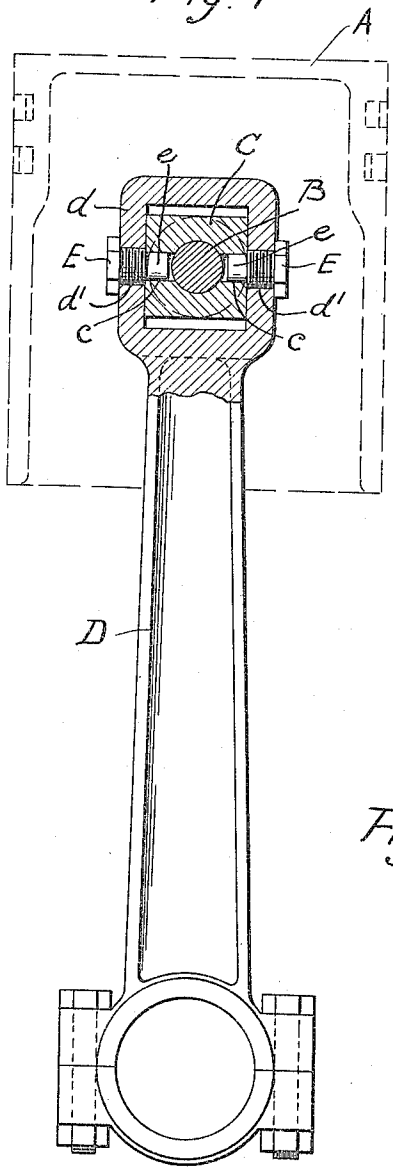


Fig. 2

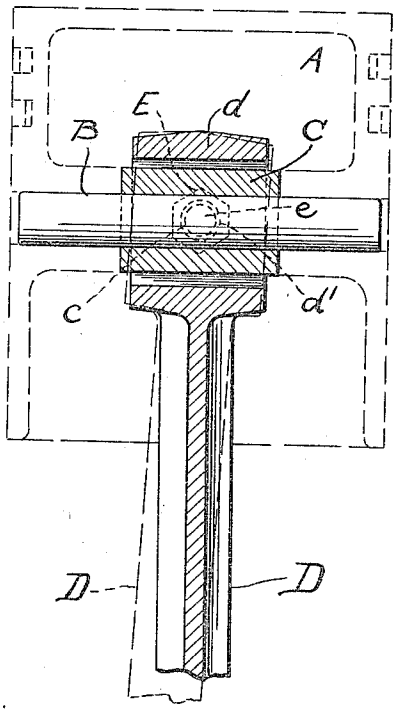
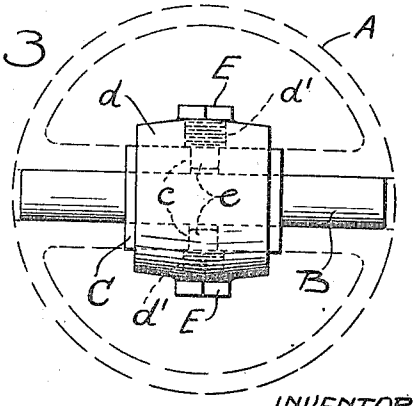


Fig. 3



INVENTOR

Eli A. Bearup

BY Ralzemond A. Parker

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

ELI A. BEARUP, OF FLINT, MICHIGAN.

UNIVERSAL JOINT FOR CONNECTING-RODS.

1,213,819. Specification of Letters Patent. Patented Jan. 30, 1917.

Application filed March 6, 1916. Serial No. 82,312.

To all whom it may concern:

Be it known that I, ELI A. BEARUP, a citizen of the United States, residing at Flint, county of Genesee, State of Michigan, have invented a certain new and useful Improvement in Universal Joints for Connecting-Rods, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in a connecting-rod and mountings in the cylinders of internal combustion engines or other engines of the single cylinder type more particularly applicable to engines employed in driving automobiles.

It has for its object so mounting the connecting rod on the piston that it may have a slight longitudinal play on the crankshaft without binding the piston in the cylinder, and it consists in the arrangements and combinations hereinafter described and claimed.

In the drawings,—Figure 1, is an elevation, partly in section, of the connecting-rod embodying my improvement, the piston being shown in phantom. Fig. 2, is a similar view at right angles to Fig. 1. Fig. 3, is a top elevation of the connecting rod end and the wrist pin, a horizontal section of the piston appearing in phantom lines.

In the drawings similar letters refer to similar parts.

Fig. 1, shows the mounting at right-angles to the crankshaft (not shown) and therefore the lower end of the connecting-rod of such figure would describe the circle described by the crank.

In Fig. 2, the plane of the circle described by the crank would cut the figure at right-angles to the plane of the figure shown and, therefore, it shows how the lower end of the connecting-rod may be allowed to swing from side to side without binding.

A, represents the piston sectioned.

B, is the wrist pin.

C, is a block upon the wrist pin and through which it is inserted.

D is the connecting-rod.

I accomplish the results by putting the pin B through the piston in the usual manner and also a block C in which it closely fits, although not necessarily so. The upper end *d* of the connecting rod D is provided with a transverse opening square in cross section to fairly closely fit the block on the sides, but with sufficient lost motion to permit the movement hereinafter described. The block C has a perforation upon each side at *c*, *c*, and corresponding perforations *d'*, *d'* are in the connecting rod, such perforations being preferably threaded, and set-screws E, E are inserted from each side with terminations *e*, *e* adapted to enter the perforations *c*, *c* in the block C. As these are at right angles to the wrist pin B and as the block C is not closely held within the squared end of the connecting-rod, the connecting-rod is adapted to have a rotational movement to a slight extent upon the ends *e*, *e* of the set screws E, E. This permits the lower end of the connecting-rod to have a slight oscillatory movement as the crankshaft rotates and this prevents any disarrangement or disalinement upon the pin B in the piston.

It is obvious that even a slight sidewise movement upon the crank pin or crank shaft of the lower end of the connecting-rod would throw the bearings upon the pin B out of line unless a corresponding movement existed at that point, and as there are always greater or less imperfections in the line-up and fitting of parts, it is not unusual that these parts bind unless more lost motion is given than is really desirable. My device obviates this entirely and reduces every movement to a rotating one upon bearings which are not thrown out of alinement by such movements.

What I claim is:

In motion converting means, the combination of a piston having alined transverse passage-ways through its walls, a block provided with a passage-way therethrough adapted to register with the passage-ways through the piston walls and provided with bearing apertures in its sides, a wrist pin adapted to be driven through the passage-ways in the piston walls and through the passage-way in the said block, a connecting rod provided with an inner end having a transverse opening somewhat larger than the

outside dimensions of the said block, the said inner end of the connecting rod with the said block being adjusted in its proper position with respect to the piston before the wrist pin is driven through the piston walls and the passage-way of the block, and threaded trunnions screwed into threaded apertures in the sides of the inner end of the connecting rod and having bearing portions engaging in the bearing apertures in the sides of the block, substantially as described.

In testimony whereof, I sign this specification.

ELI A. BEARUP.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D C."