W. AAB.

WRIST PIN.

APPLICATION FILED MAR. 13, 1919.

1,322,991. Patented Nov. 25, 1919.

Fig. 1

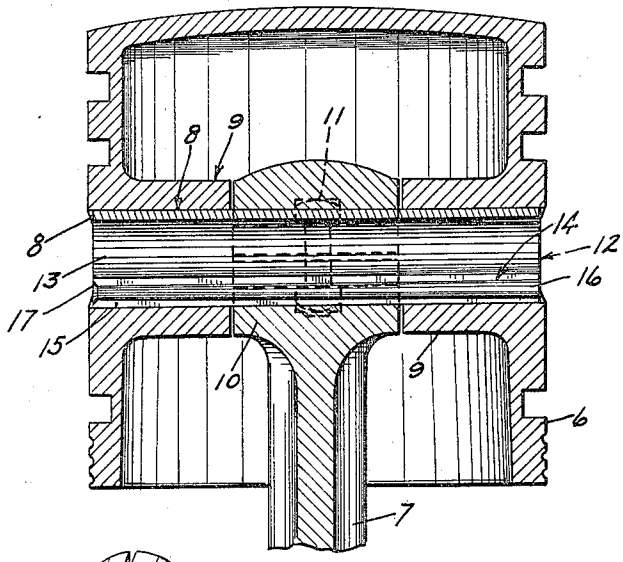


Fig. 2

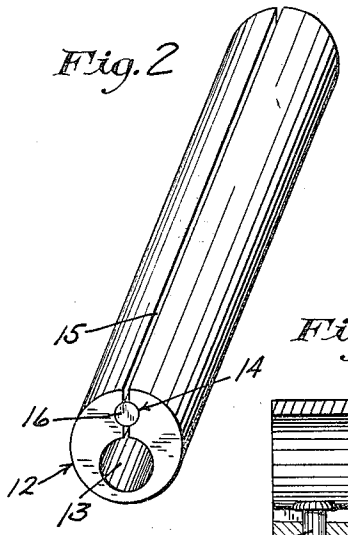


Fig. 3

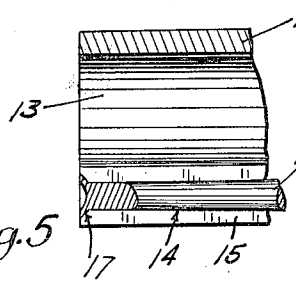


Fig. 4

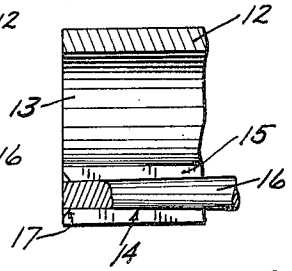
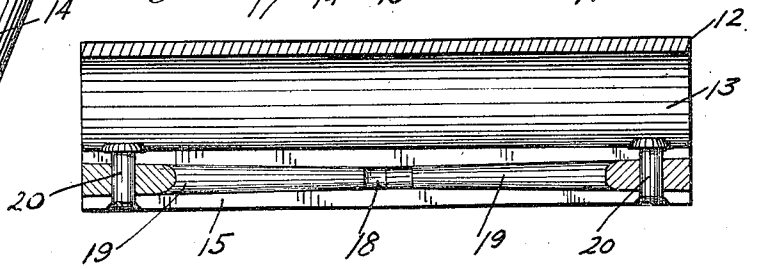


Fig. 5



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WRIST-PIN.

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To all whom it may concern:

Be it known that I, WILLIAM AAB, a citizen of the United States, residing at New Ulm, in the county of Brown and State of Minnesota, have invented certain new and useful Improvements in Wrist-Pins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in wrist pins intended for general use, but especially adapted for use in attaching connecting rods to the pistons of internal combustion engines.

To the above end, generally stated, the invention consists of the novel devices and combination of devices hereinafter described and defined in the claims.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Figure 1 is a view in central section illustrating the piston of an internal combustion engine attached to its connecting rod by the improved wrist pin;

Fig. 2 is a perspective view of the improved wrist pin;

Figs. 3 and 4 are fragmentary views principally in central section illustrating one method of securing the expanding key in the wrist pin; and

Fig. 5 is a view principally in central section illustrating the use of two expanding keys.

The numeral 6 indicates the piston of an internal combustion engine and the numeral 7 indicates the connecting rod thereof. A pair of diametrically opposite radial wrist pin holes or bores 8 is formed in the sides of the piston 6 and in inwardly projecting bosses 9 integrally formed therewith. The end of the connecting rod 7 in the piston 6 is provided with a cap bearing 10 alined with the bores 8 to receive a wrist pin and the cap thereof is adjustably secured to said connecting rod by nut equipped bolts 11. The parts thus far described are of well known standard construction.

The improved wrist pin, indicated by the numeral 12, is mounted in the bosses 9 and cap bearing 10 and connects the piston 6 to its connecting rod 7. A relatively large eccentric bore 13 extends completely through the wrist pin 12, and a tapered key seat 14, the axis of which is parallel to the axis of said bore, is also extended completely through the thick portion of the wrist pin.

The wrist pin 12 is radially slit, at 15, through its thick portion and from end to end thereof. It will also be noted, as best shown in Fig. 2, that the slit 15 extends axially through the key seat 14 from the bore 13 to the outer face of the wrist pin, thus leaving only a relatively thin portion of metal at one side of the wrist pin, to wit:—the side diametrically opposite said slit. By thus forming the wrist pin 12, the same may be circumferentially expanded, as will presently appear, and when released will return, under a spring action, to normal position.

To circumferentially expand the wrist pin 12, a key 16 is provided, having the same taper as the key seat 14, and the key is driven into said seat 14, until the wrist pin is expanded to the desired circumference. Both ends of the key 16 are then cut off flush with the ends of the wrist pin 12. Various means may be provided for holding the key 16 in its proper place in the key seat 14, and in Figs. 1, 2, and 3, the key 16 is shown as secured in position by countersinking the small end of the seat 14 at 17, and then upsetting the small end of said key therein.

As shown in Fig. 1, the wrist pin 12 is expanded by the key 16 so that it will just float or turn in the holes 8 in the piston 6 and the cap bearing 10 is frictionally adjusted thereon, so that the wrist pin will turn with the connecting rod 7. In case the wrist pin 12, or the holes within which it is journaled should wear, the key 16 may be driven farther into the seat 14 to again expand said pin sufficiently to cause the same to snugly fit the holes or bearings in which it is mounted. The projecting small end of the key 16 may then be cut off and the key again upset to hold the same in position. In place of connecting the wrist pin for movement with the connecting rod 7, the same may be expanded sufficiently to frictionally lock said pin in the holes 8 and loosely secure the connecting rod 7 thereto, so that it will turn with respect to the wrist pin.

Referring now to the construction shown in Fig. 5, it will be noted that the key seat

18 is tapered from both ends of the wrist pin 12 to the longitudinal center thereof. A pair of correspondingly tapered keys 19 are driven into the key seat 18 and their outer ends cut off flush with the ends over said pin. The keys 19 are held in position by a pair of rivets 20. These rivets 20 are inserted through alined bores in the wrist pin 12 and keys 19. Preferably the bores are formed in the wrist pin 12 at the time the same is made and the bores in the keys 19 are made after said keys have been driven into the seats 18. As the key or keys extend substantially the full length of the wrist pin, said wrist pin is not weakened by the formation of the key seats therein. It is also eminent that the key or keys evenly expand the wrist pin throughout its full length.

My improved wrist pin has substantially the same weight as an ordinary wrist pin of the same size and therefore, does not upset the balance of the piston to which it is applied. The said wrist pin may be manufactured at a comparatively small cost and the tapered keys used in expanding the same, are carried in stock in most machine shops. Ordinarily wrist pins require more than the average mechanic to properly fit the same but with the use of my improved wrist pin, an ordinary mechanic can properly adjust the same. It is well known that unless a piston pin is properly adjusted it is liable to ruin a piston to which it is applied.

What I claim is:

1. A wrist pin for connecting rods, having an eccentric bore and being slit through its thick portion, and an expanding key working with a wedge action in said slit.

2. A wrist pin for connecting rods, having an eccentric bore and being slit through its thick portion, and an expanding key working with a wedge action in said slit, said expanding key extending substantially the full length of the wrist pin.

3. A wrist pin for connecting rods, having an eccentric bore and being slit through its thick portion, a tapered key seat extending through said slit longitudinally of the wrist pin, and a tapered expanding key mounted in said seat.

4. A wrist pin for connecting rods having an eccentric bore and being slit through its thick portion, a tapered key seat extending through said slit longitudinally of the wrist pin, and a tapered expanding key mounted in said seat and secured therein against endwise displacement.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM AAB.

Witnesses:
GEORGE DEUCKSON,
A. C. AMANN.