Dec. 3, 1935. T. PURNIS 2,022,822

PILOT WRENCH

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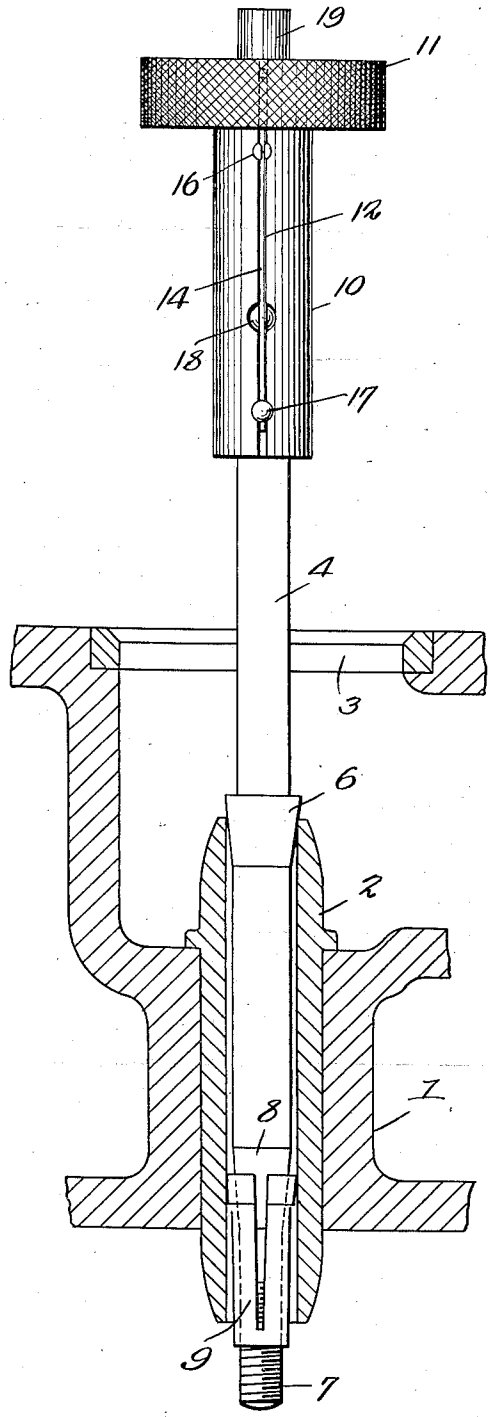


Fig. 1.

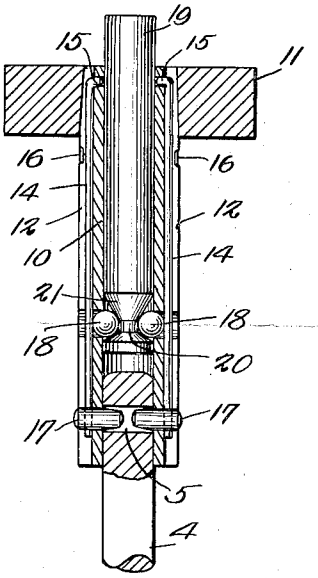


Fig. 2.

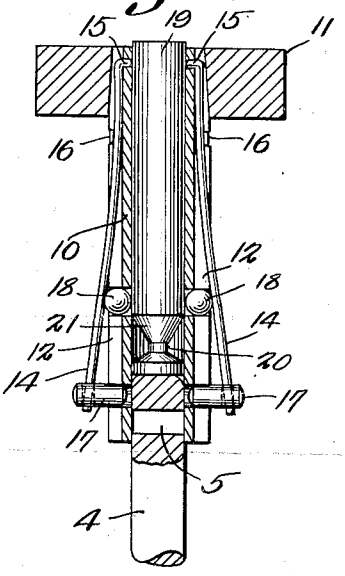


Fig. 3.

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PILOT WRENCH

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2 Claims. (Cl. 81—53)

Known machines for grinding the valve seats of internal combustion engines, for instance the machine shown in Patent 1,948,792, granted on February 27, 1934, operate upon and about a pilot rod which is secured in the valve stem bushing of the engine. Such machines have been perfected to a point where the grinding of the seat takes less time than the placing of the pilot, and this invention aims to provide a wrench which will enable the pilot to be placed quickly. The invention aims to provide novel means for coupling the wrench to the pilot, uncoupling the wrench from the pilot, and imparting rotation to the pilot by way of the wrench.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawing:

Fig. 1 shows in elevation, a wrench constructed in accordance with the invention, the wrench being assembled with the pilot, and the pilot being mounted in the valve stem bushing of an internal combustion engine;

Fig. 2 is a longitudinal section showing the wrench latch to the pilot;

Fig. 3 is a longitudinal section showing the wrench set to receive the pilot, the pilot being in the position it will assume when it is about to actuate the plunger and enable the latches to engage the pilot.

The numeral 1 marks a portion of an internal combustion engine, carrying a bushing 2, in which reciprocates the stem of the poppet valve (not shown), the valve being adapted to cooperate with the seat shown at 3.

The pilot rod 4 is provided with a keeper, such as a transverse hole 5, and has an upper tapered part 6, a threaded lower tip 7 and a tapered lower part 8. A split sleeve 9 is threaded on the tip 7. When the pilot 4 is rotated, the tapered part 8 expands the bushing 2, the tapered part 6 is wedged in the upper end of the bushing, and the pilot is held securely in the bushing. The wrench forming the subject matter of this application is assembled with the pilot 4, and is used first to place the pilot in the bushing 2, and then to rotate the pilot and secure it in place.

The wrench comprises a tubular body 10, to one end of which a disk or handle 11 is secured. The body 10 has superficial longitudinal grooves 12, receiving spring tongues 14. At their upper ends, the tongues 14 have fingers 15 engaged with the body 10, and the body is dented in at 16, to engage the tongues. The upper portions of the tongues 14 thus are secured to the body 10, but the lower portions of the tongues are free for in and out movement.

The lower ends of the spring tongues 14 are mounted somewhat loosely in openings in tapered latches 17, mounted to slide in the body 10 transversely thereof, and to enter the bore of the body. Detents 18, preferably balls, are mounted to move in the body, transversely thereof, and to enter the bore of the body, the detents being located intermediate the ends of the spring tongues 14.

The detents 18 are disposed between the spring tongues 14 and the plunger 19 mounted in the body 10, the plunger and the body having relative longitudinal sliding movement. The plunger 19 has a circumferential seat 20 and is provided with a tapered part 21, forming the upper portion of the seat 20.

When the device is in the position of Fig. 3, the detents 18 engage spring tongues 14 and engage the plunger 19, in its cylindrical portion, above the tapered part 21, and hold the spring tongues in downwardly diverging relation, the latches 17 being retracted. The pilot 4 is introduced into the body 10 of the wrench and pushes the plunger 19 upwardly until the seat 20 is in the same plane with the detents 18, transversely of the body 10. When the detents 18 enter the seat 20, the tongues 14 spring inwardly, and the latches 17 engage in the hole 5 of the pilot 4.

The wrench then is coupled to the pilot 4 and may be used to introduce the pilot into the bushing 2, and to rotate the pilot, thereby anchoring the pilot in place as hereinbefore described.

When reverse rotation is imparted to the wrench, the pilot 4 may be released from the bushing 2 and be lifted out of the bushing. Assuming that the parts then are in the position of Fig. 2, the operator engages his first and second fingers under the disk 11 and places his thumb on the upper end of the plunger 19. The plunger 19 is thrust downwardly, the tapered part 21 of the plunger or slide engages the detents 18 and carries them outwardly, the spring tongues 14 being swung outwardly, the latches 17 being withdrawn from the seat 5 in the pilot 4, the pilot

4 being set free, and the wrench being restored to the set position of Fig. 3, ready for another operation.

The device is simple in construction but it constitutes a means whereby time can be saved in the mounting of the pilot 4 in the bushing 2 of an internal combustion engine.

Having thus described the invention, what is claimed is:

1. A pilot wrench comprising a tubular body, a latch movable in the body, a detent movable in the body, a plunger movable in the body, spring means for advancing the latch, the detent being interposed between the plunger and the spring means, the plunger comprising a part which engages the detent to hold the latch retracted, and the plunger having a seat into which the detent can retire, when the plunger is shifted from detent holding position, thereby to permit the latch to be advanced by the spring means.

2. A pilot wrench comprising a tubular body, a latch movable in the body, a detent movable in the body, a plunger movable in the body, spring means for advancing the latch, the detent being interposed between the plunger and the spring means, the plunger comprising a part which engages the detent to hold the latch retracted, the plunger having a seat into which the detent can retire, when the plunger is shifted from detent holding position, thereby to permit the latch to be advanced by the spring means, the plunger comprising an inclined part which cooperates with the detent to retract the detent when the plunger is moved toward detent holding position.

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