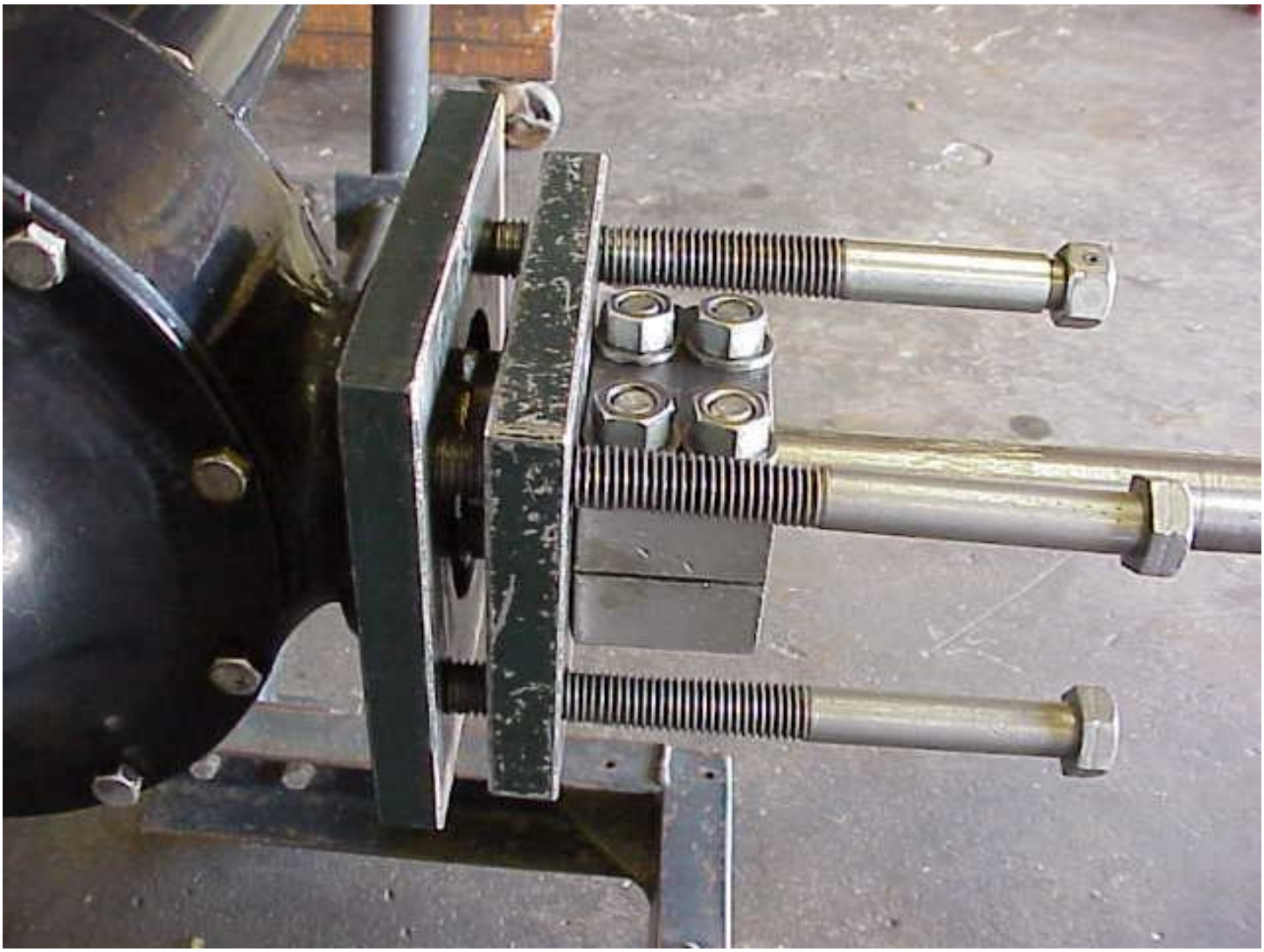
Pinion Gear Assembly Puller Tool Pictorial

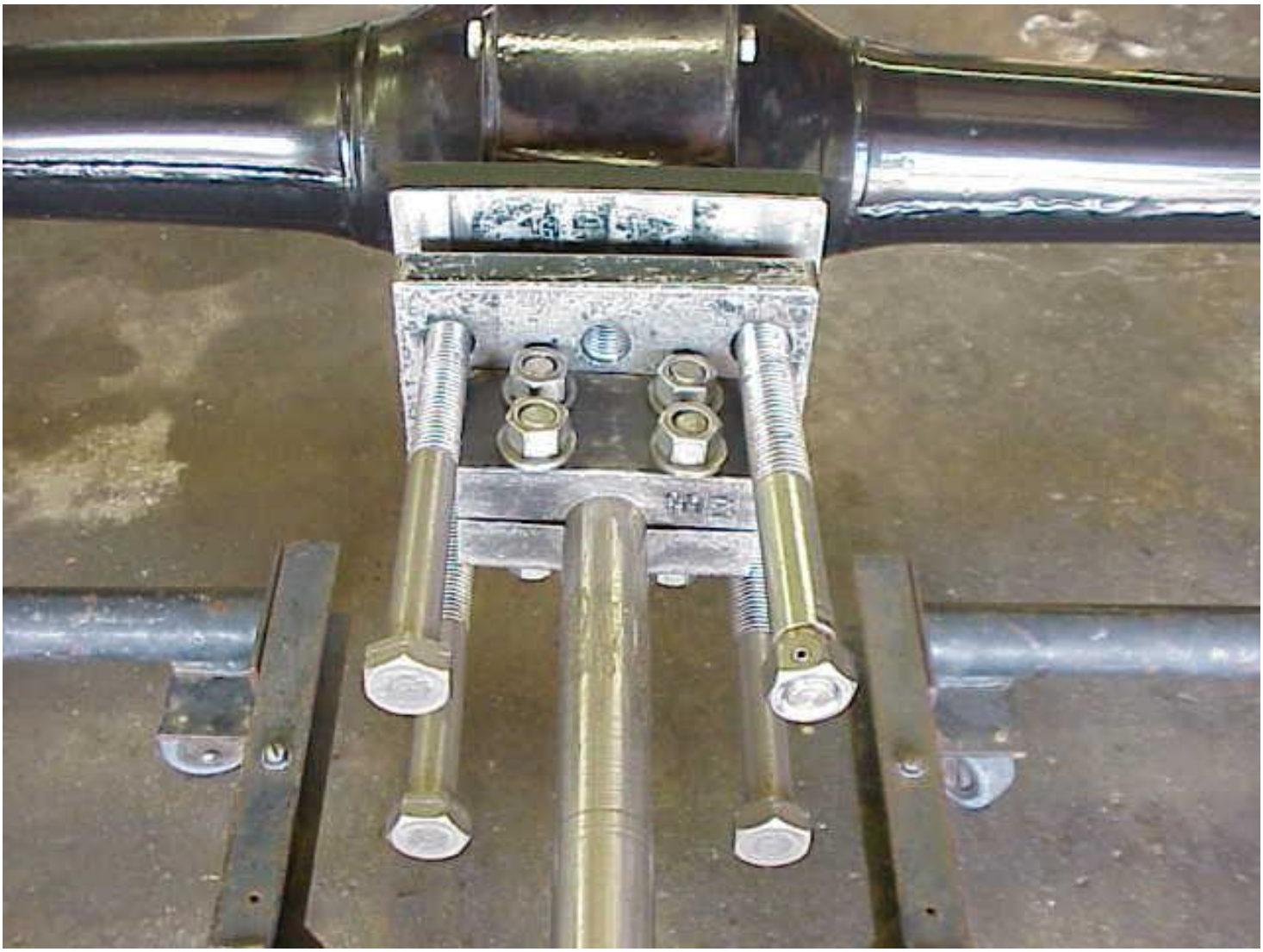
by Tom Endy 2018



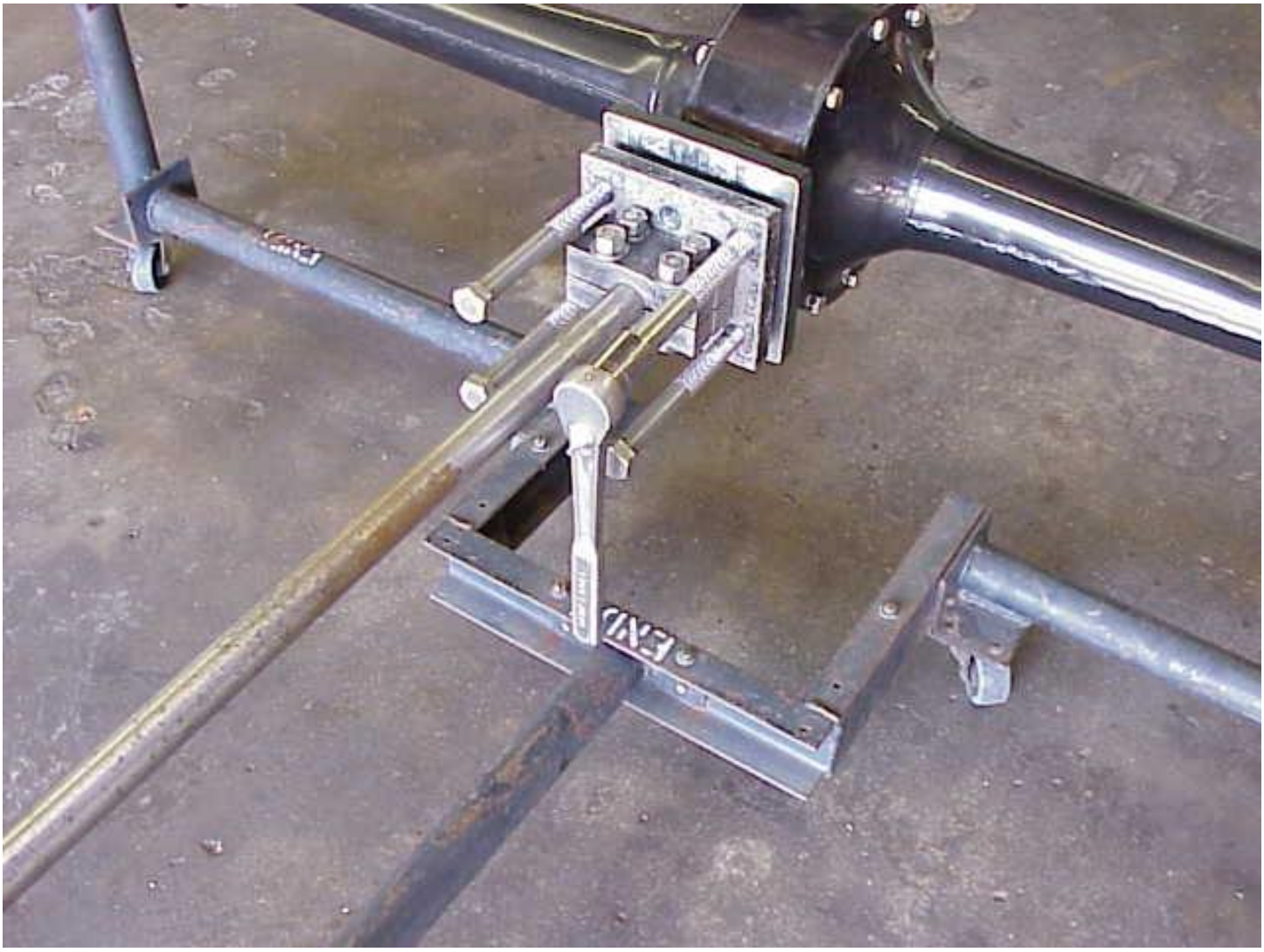
A number of people have contacted me inquiring if there is a drawing available for the pinion gear puller tool I use. There is no drawing. However, if someone wants to build a similar one, the photos shown here should provide enough information. The critical part is the block of steel that clamps to the drive shaft. It must clamp tight so that it does not slip.

The clamp was made from a solid block of steel. A hole was bored through it that is smaller than the diameter of the drive shaft. The four holes for the clamping bolts were also drilled. The block was then cut in half.

Using this type of a puller tool will not disturb the pre-load that is set on the pinion bearings. This is important if the task is to install an overdrive. The pinion gear assembly can be removed from the drive shaft and installed on the overdrive stub shaft without disturbing the pre-load.



The puller tool is shown set up to pull a pinion gear assembly out of a banjo.



The puller tool is shown set up to pull a pinion gear assembly out of a banjo. By evenly tightening each of the four puller bolts the entire pinion assembly will be removed from the banjo.



Photo shows the complete puller tool parts. The bolts have the ends tapered so the threaded ends do not dig in and become distorted. Should the ends become distorted they will damage the threads inside the plate as they are being removed.

Note in this photo that the entire pinion assembly has been removed from the banjo without disturbing the pre-load that is set on the pinion bearings. As long as the two large nuts are not disturbed the pre-load remains intact.

The pinion assembly can be removed from the drive shaft and installed on an overdrive stub shaft without disturbing the pre-load on the pinion bearings.

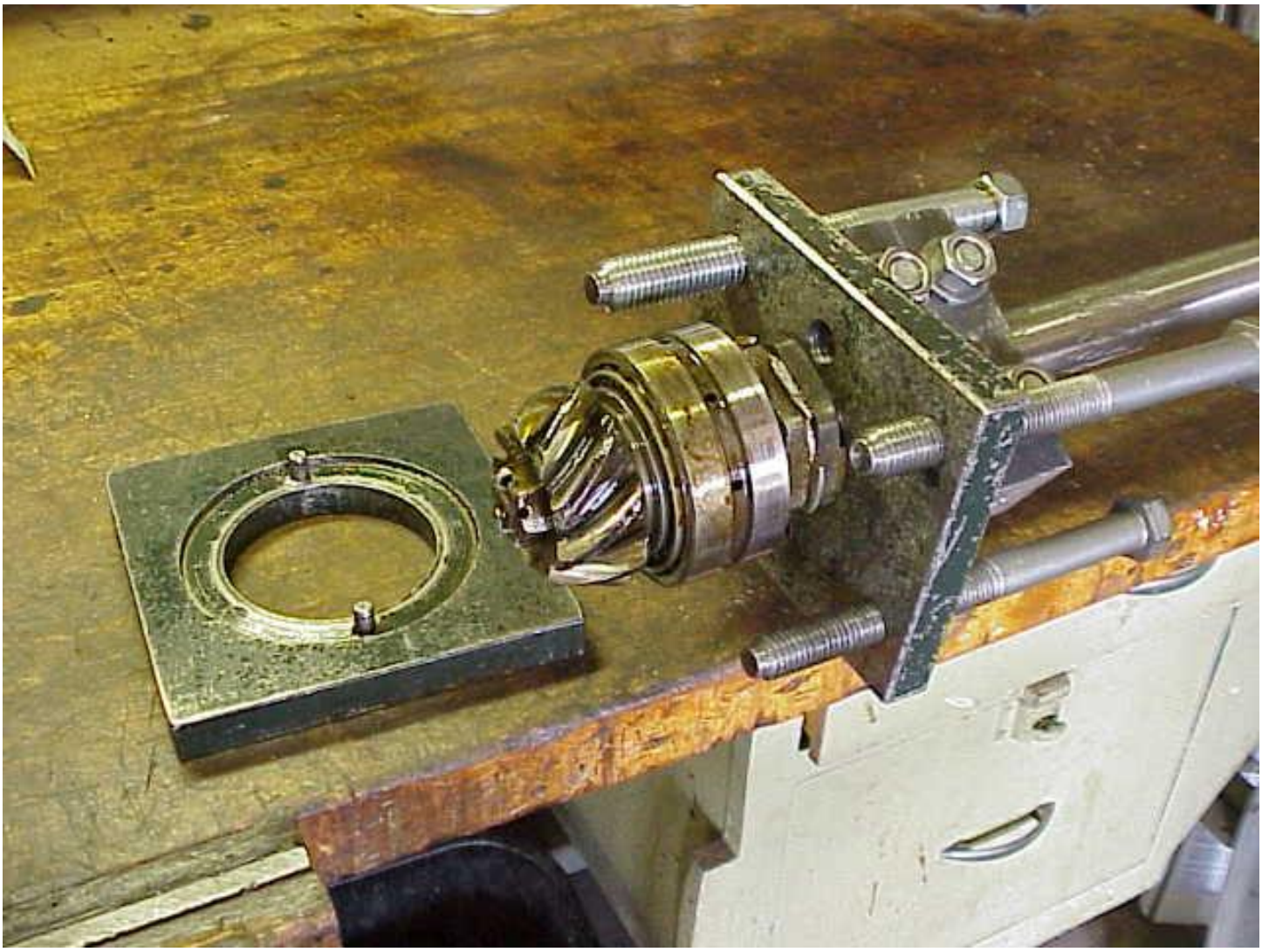


Photo show a pinion gear assembly pulled from a banjo using the puller tool.



The plate on the right is mounted to the banjo flange with the two locating pins inserted top and bottom into the banjo flange bolt holes.



The plate on the right shows the front side of the plate that mounts to the banjo. The four cups are where the four puller bolts bottom out.

The plate on the left shows six puller thread holes. It was initially believed that it would require all six to pull a pinion. Actual use demonstrated that four are sufficient.



The critical part of the tool is the drive shaft clamp on the right. It must be clamped tight around the drive shaft so it does not slip.

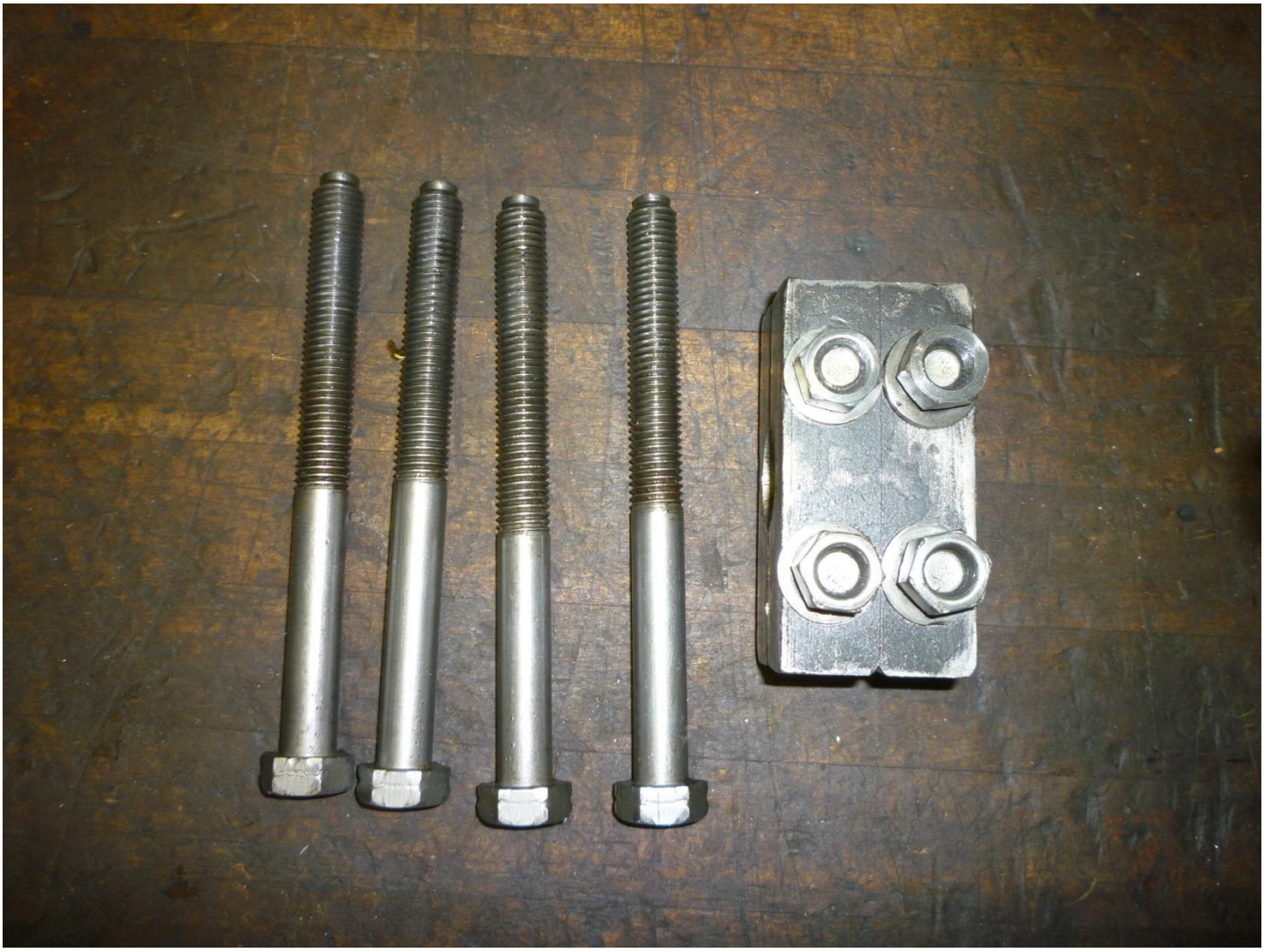


Photo shows the clamping block at a different angle.

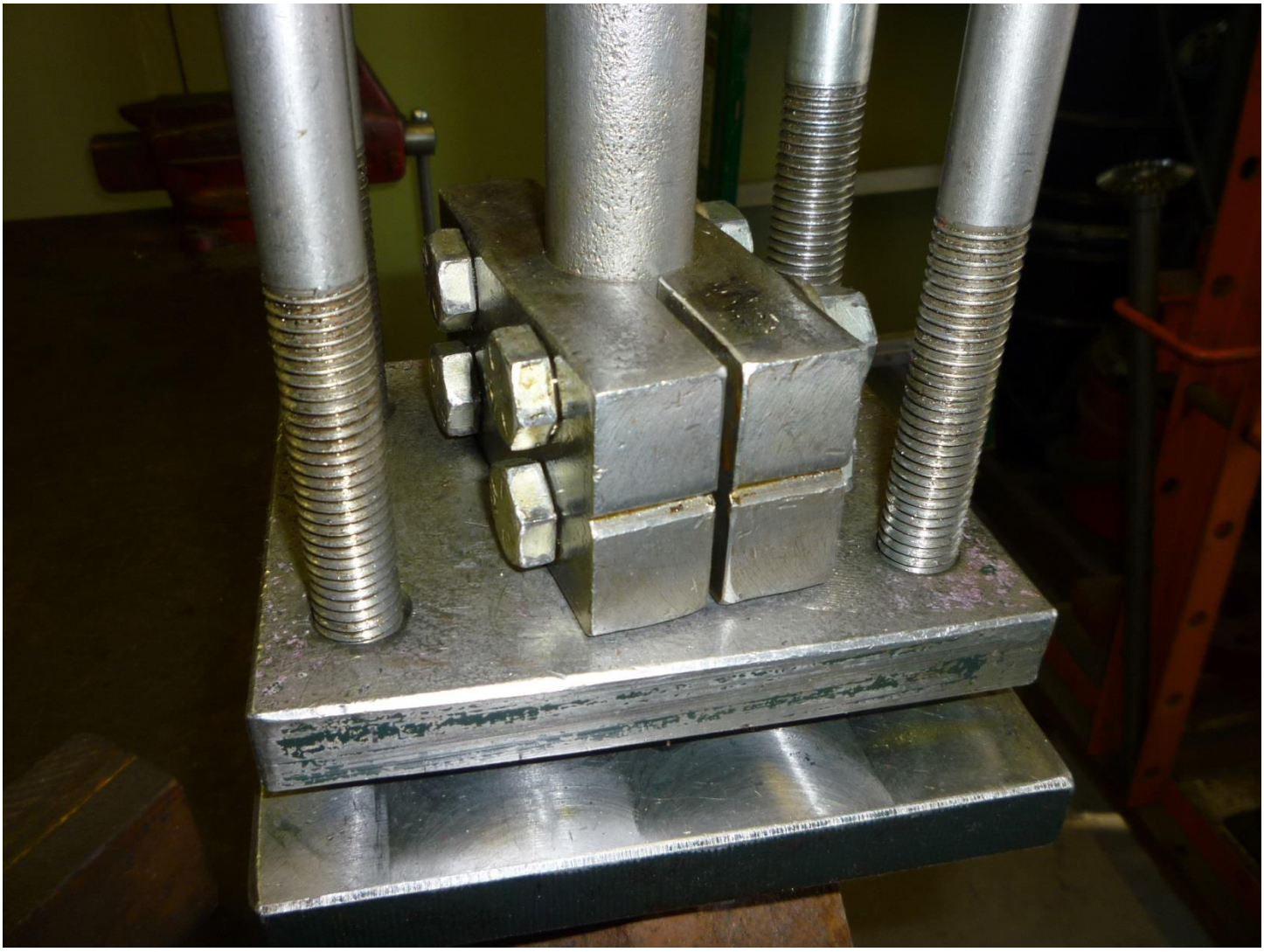


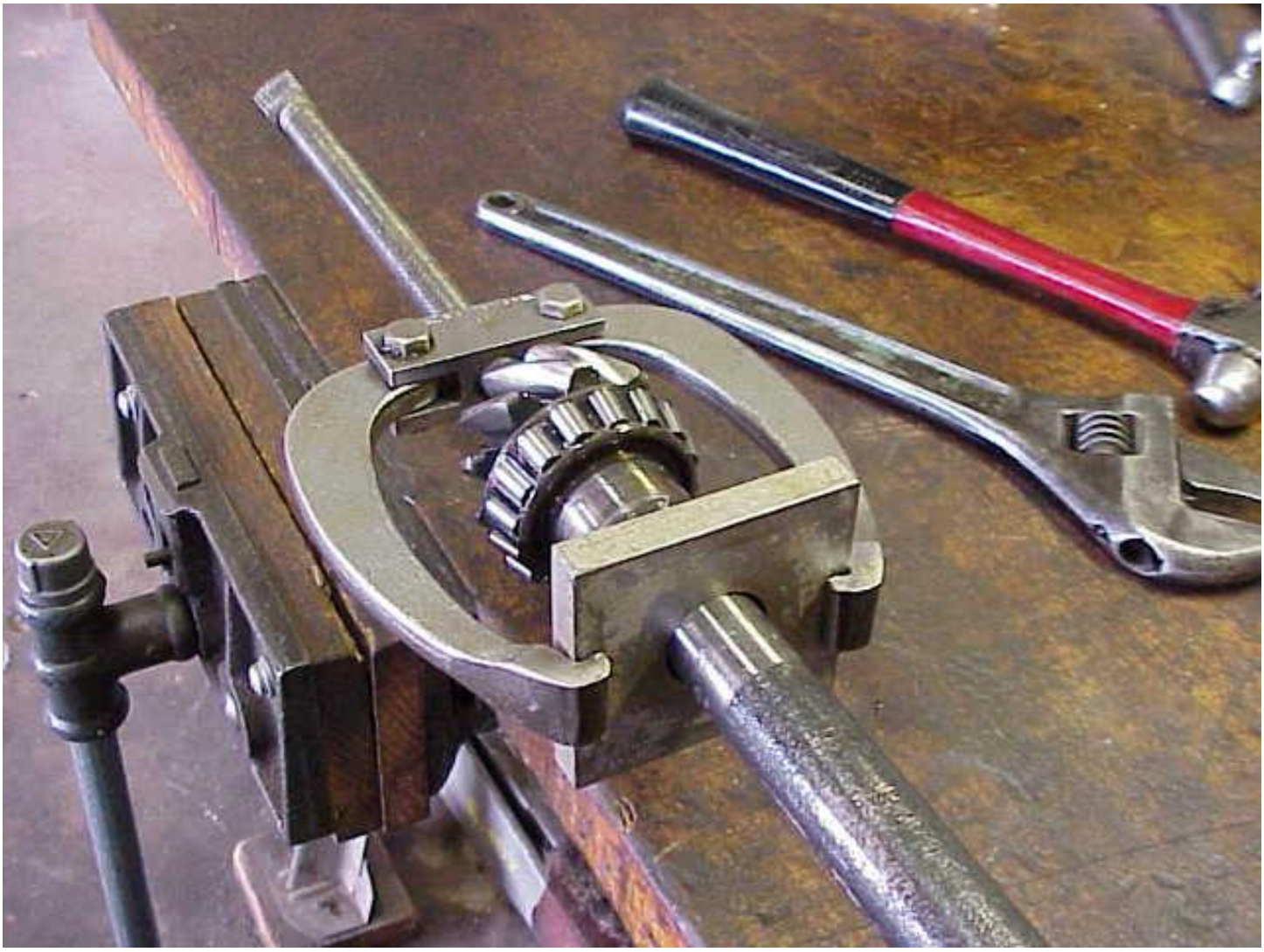
Photo shows the tool set up to pull a pinion gear assembly from a banjo.

When setting the tool up a liberal amount of oil should be applied to the threads of the puller bolts and into the four cups where the bolt ends bottom out.

A good idea is to put a chalk mark on the drive shaft just above the clamp. Monitor the chalk mark as the puller bolts are tightened to make sure the clamp is not slipping.



Photo shows a pinion gear assembly that has been pulled out of a banjo using the puller tool.



Once a pinion has been pulled from a banjo the next task is to remove the pinion gear from the end of the drive shaft. Care must be taken not to damage the threads on the end of the drive shaft, Do not hammer on the threaded end of the shaft. The gear is mounted to a taper on the end of the drive shaft and can be found extremely tight.

First remove the cotter pin and loosen the retaining nut. Back it off about 1/8", but do not remove the nut.

Place a steel plate with a hole in it behind the pinion gear. A bearing puller can also be used. Attach the gear puller so that the point is in the hole on the end of the drive shaft and the arms are around the steel plate. The gear puller shown was sold by Sears years ago to be used to pull the flywheel off Briggs & Stratton lawn mower engines. They are occasionally seen at swap meets.

Tighten the gear puller extremely tight. Smartly hammer the end of the gear puller about four times. If the gear does not pop loose, tighten the puller more and repeat the process until it comes loose. The reason the nut is left in place is so the gear does not fly across the room when it pops loose.