

# Model A Ford Transmission Tower Restoration



# Trans Tower Restoration!

by Tom Endy

Restoration of the Model A Ford transmission tower is not as straightforward as one would think. Replacement of the few moving parts in the tower can also become expensive. The first item that should be considered is the shifting lever.

## **The shifting lever (A-7209A):**

If you are a purist you will want an original lever with the original Butler finish on it. A Butler finish is a dull, rough, unpolished looking chrome finish. This is where the expense comes in. On the working end of the lever is a .490 inch round ball that is usually found worn square. You can have the ball welded up and you can sit and patiently hand file it round. It does not have to be accurately round, but it does have to be .490 or less to be able to fit into the shifting forks slots. When you take the lever to have it plated, the plater is going to want to charge you an arm and a leg to plate it, and he probably won't know what you are talking about when you ask for a Butler finish. On the other hand you can buy a repo shifting lever for less than \$50. that will work very well. They are foreign made and do not have a Butler finish. The finish is bright shiny chrome, they look very nice, but you will lose points in fine point blue ribbon judging.

Repo shifting levers are advertised to fit 28-31, and they will. However, the 28-29 levers were bent to a different angle than the 30-31. The repos I have seen are all bent to the 30-31 angle. Deciding what to do about the shifting lever is the first order of business.

## **The shifting forks (A-7230):**

There are two shifting forks that are operated by the round ball on the end of the shifting lever. Both are identical part numbers. The slot in each fork the shifting lever ball operates in will also be found worn. The fork on the second-high shifting shaft is usually found worn more than the fork on the low-reverse shaft, because it is used more often. Sometimes you can get away with reversing the location of the two forks, but usually you will have to have both welded up and ground down. This is not a difficult task for a good welder. Weld up the three sides in each slot on each fork and grind or

file it down. It does not have to be accurate, only slightly larger than the .490 inch ball on the end of the shifter. You may also have to weld up the two surfaces on either side of the slot if they appear to be worn. Repo shifting forks are not available.

## **The shifting shafts (A-7240 & A-7241):**

There are two shifting shafts; they are very similar, but not identical; each is a different part number. See figure one for proper location of each shaft. Each shaft has three indentations cut into the shaft. Inspect each shaft to see if there is a "wear trail" extending from each indentation. If the wear trail is severe, replace the shafts. Both shafts are available as repo replacements, or find some better ones.

## **Shaft bullets (A-7233):**

Located between the two shafts are a pair of "bullets" controlled by a small spring. The bullets snap into the indentations in the shifting shafts to hold them in the selected shifting position. The ends of the bullets are often found worn and grooved. They can be filed smooth, but they are cheap, so it is easier to just replace them, along with the spring. Repos are sold as a set.

## **A special tool:**

You will need a special tool to deal with Henry's "killer spring" (A-7227) located on the end of the shifting lever. I don't believe the spring is lethal, but if it thumps you in the forehead it can give you a bad headache, so be careful with it. There are two different types of tool; either will work. One can be obtained from AC&R, the other from Bratton. You only need the tool to install the spring, you can get the spring off without a special tool.

## **Disassembly:**

Place the tower up side down in a vice. Clamp the shifting lever with the jaws of the vice, use jaw protectors to prevent damaging the surface of the shifting lever. Use a small narrow punch to drive out the hollow pin (A-7232) in each shifting fork. The pins will drop down inside the tower, but can be retrieved later. Slide one of the shifting shafts back so it protrudes outside the tower. Grip the end with vice grips and pull it out. With one of the shafts removed, pressure on the two bullets will be relieved and the other shaft will slide out easily. With the two shafts removed the two forks can be

lifted out of the tower. On one side of the tower is a screw-plug. Remove it and push out the two bullets and spring.

### Killer Spring Removal:

The next task is to remove Henry's "killer spring". Note that there is a spring retainer (A-7228) on the end of the spring just under the round ball on the end of the shifting lever. Clamp a pair of vice grips securely around the ball. With a hefty screwdriver pry the spring retainer out, while keeping your forehead out of alignment with the spring. Remove the tower from the vice and place in upright on a workbench, with the vice grips facing the bench. Remove the vice grips and allow the spring to thump against the bench.

### Cleaning and inspecting:

Clean up all the parts and paint the tower housing (A-7222) Ford engine green. Determine what parts will be replaced and what parts will be welded up and ground or filed down.

### Re-assembly:

Place the shifting lever in the tower in the correct orientation (**don't install it backwards**) and clamp it in a vice by the shifting lever with the tower up side down. Be sure to use vice jaw protectors so as not to damage the finish on the shifting lever. Install Henry's "killer spring" and compress it with the special tool. Once the spring is compressed install the spring retainer and remove the special tool.

Install the low & reverse shifting shaft first. **Be sure to install the correct shaft**; refer to figure one. Install a shifting fork on the shaft. You will have to install the pin from the bottom up, which is an exercise in dexterity. Once the pin is in place expand the skirt with a drift to keep it from falling out.

Install the two bullets and the spring. Orient the low-reverse shaft so that the bullet engages one of the slots. Install the second-high shaft. You will have to compress the bullets and spring with a screwdriver in order to be able to slide the second-high shaft into place. Install the shifting fork and the hollow pin in the shaft and expand the skirt. Install the screw-plug. Make sure the ball on the end of the

shifting lever is oriented inside both slots in the shifting forks. This is the neutral position.

### Vent hole:

There is a small vent hole on the backside of the tower just above the floor level. The hole is prone to plugging up with debris. Check this hole periodically and make sure it is kept open. When the hole is plugged it will allow pressure to build up inside the transmission, which may cause oil to be forced out the rear of the transmission past the main shaft bearing, the cluster shaft, and the reverse idler shaft.

Restoring the .490 inch ball on the end of the shifting lever to its proper dimension and restoring the slots in the shifting forks to their proper dimension will provide a nice tight shifting profile and will help keep the gears in the position they were shifted to. Disassembly and assembly of the tower is not difficult or time consuming. The difficult part is reworking the shifting lever and the two forks. ☺

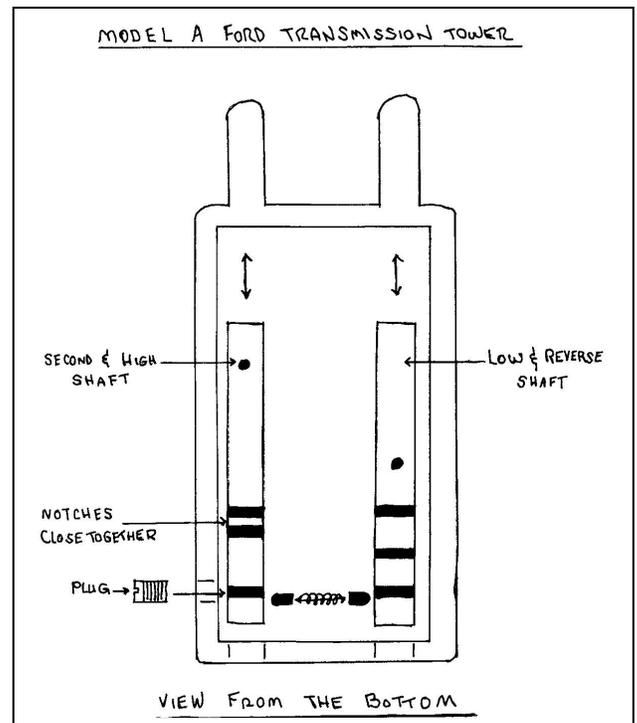


Figure one

# Weld Repair of Shifter Ball and Forks

**The ball on the end of the shifter should be welded up and filed to .490 inches round.**



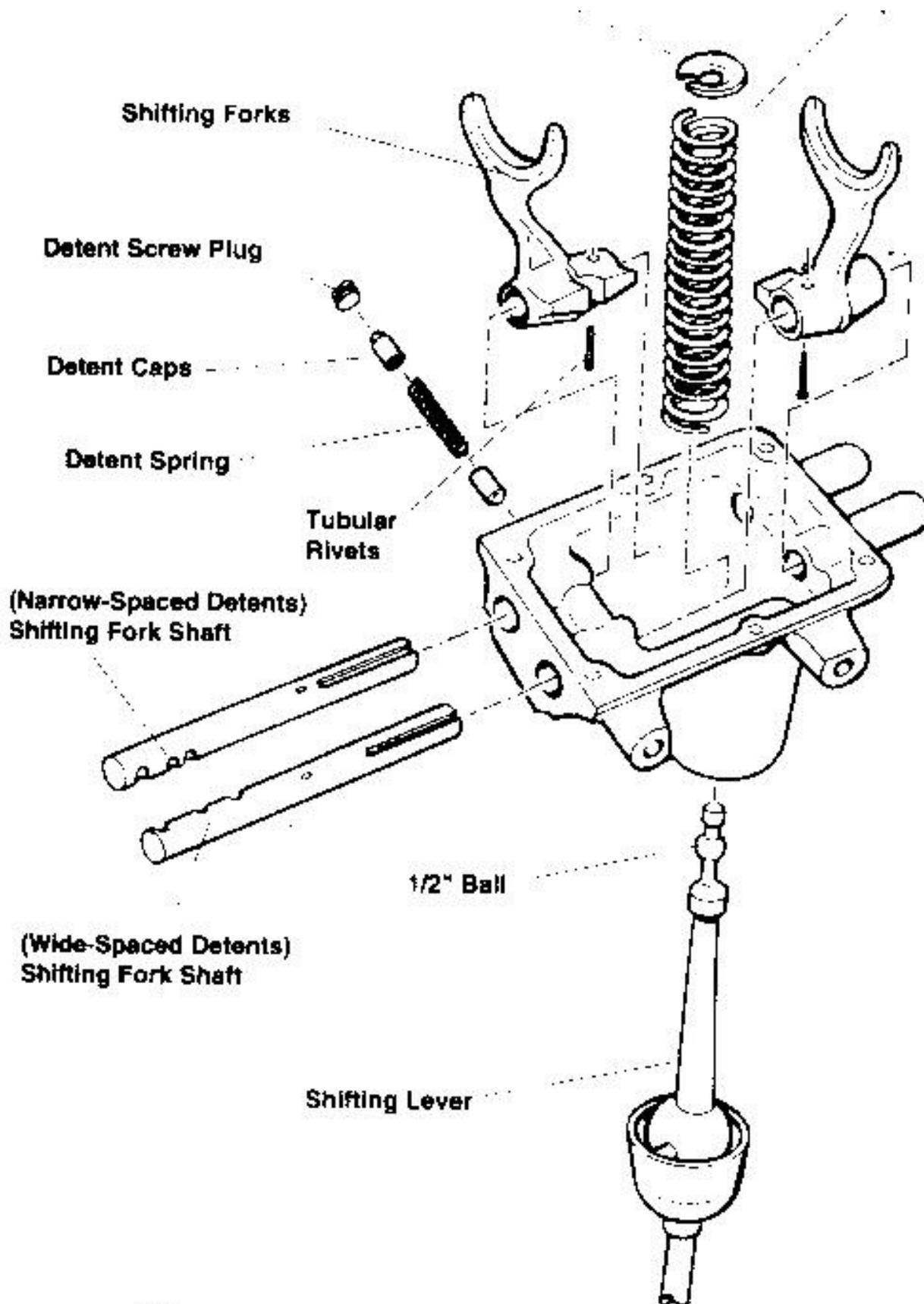
**Worn ball on the end of the shifting lever**

**The slot in the forks should be welded up and milled or filed to .493 inches. The flat surface on either side of the slot should be welded up and milled or filed flat.**



**Worn shifting forks**

# Model A Ford Trans Tower Assembly



# Model A Ford Transmission Tower Parts

<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>	<u>Repo Cost</u>
1	A-7222	tower housing	repo not available
1	A-7209A	gearshift lever	\$38. to \$45.
1	A-7227	gearshift lever spring	\$2.50
1	A-7228	spring retainer	\$2.25
2	A-7230	shifting forks	repo not available
1	A-7240	shift shaft – low\reverse	\$10.50
1	A-7241	shift shaft – high\second	\$10.50
2	A-7232	shifting fork pins	\$.50 pr.
1	A-7233	two bullets and spring	\$4.75 set
1	A-7222P	screw- plug	\$1.50
1	A-7213	gear shift lever knob	\$3.25

2005 prices

## Model A Ford Transmission Tower A-7222-AR



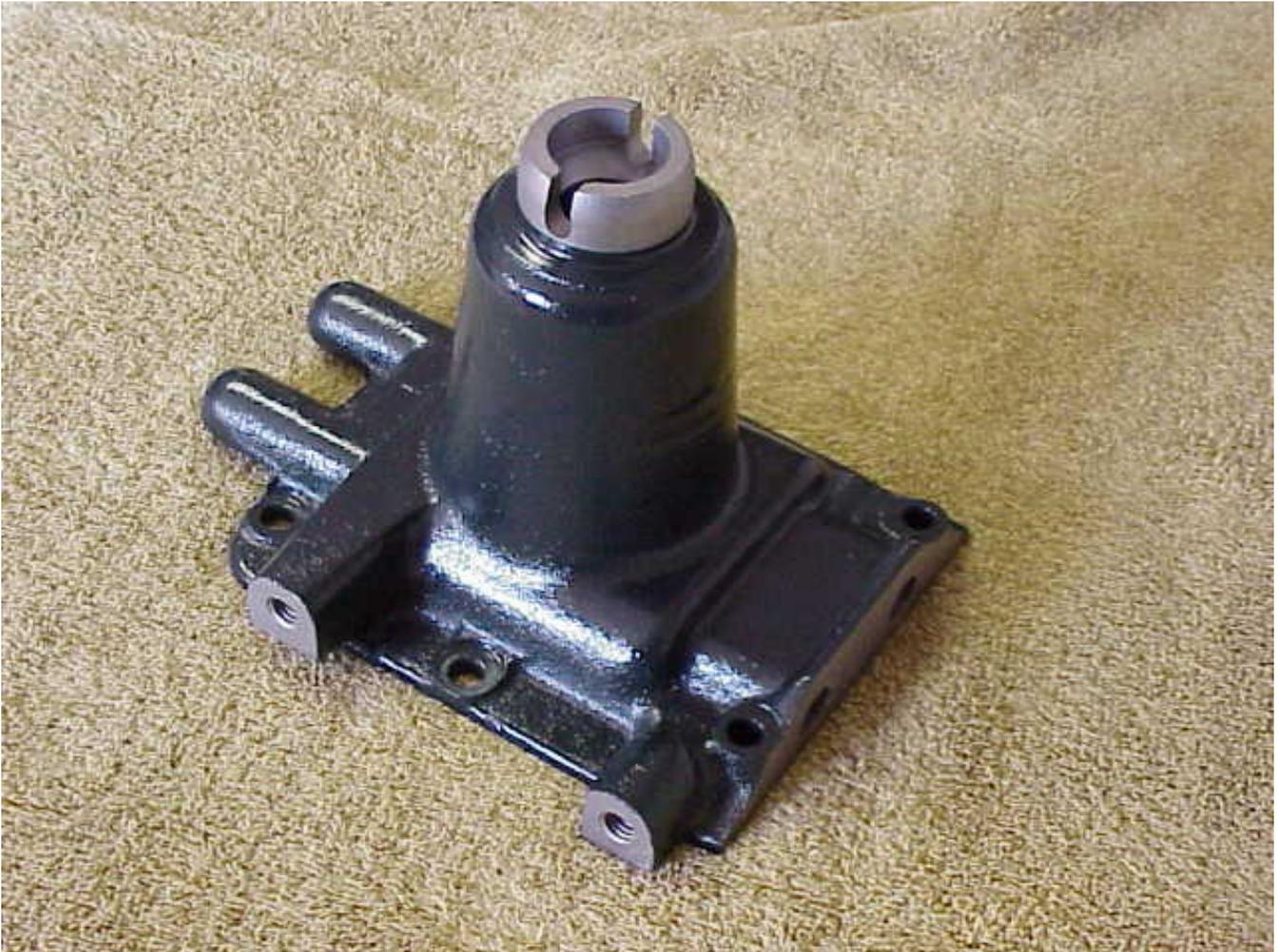
Early tower used on AR cars that had emergency brake handle on left side kick panel. Note absence of brake handle attachment on tower. The screw-in plug is also on the opposite side of the tower from later production.

# Model A Ford Transmission Tower A-7222-BR



**Mid production tower used after AR cars until mid July 1929. Note emergency brake handle attachment on front end of tower.**

# Model A Ford Transmission Tower A-7222-C



**Late production tower used from mid July 1929 until end of production. Note emergency brake attachment on side of tower.**



## **Model A Ford Transmission shifting levers**

**The lever in the lower portion of the picture is an original 1928-1929. Note the shallow angle of the bend.**

**The shifter in the middle is an original 1930-1931. Note the steeper angle of the bend.**

**The shifter at the top is a reproduction that is advertised to fit 1928-1931, and the only one available. It is bent to the 1930-1931 steeper angle.**

# Model A Ford Shifting Lever Ball



**Extremely worn .490 ball on the end of the shifter**



**Slightly Worn .490 ball on the end of the shifter**



**Serviceable ball shown on the end of a new reproduction shifting lever**

## Model A Ford Trans Tower Fork

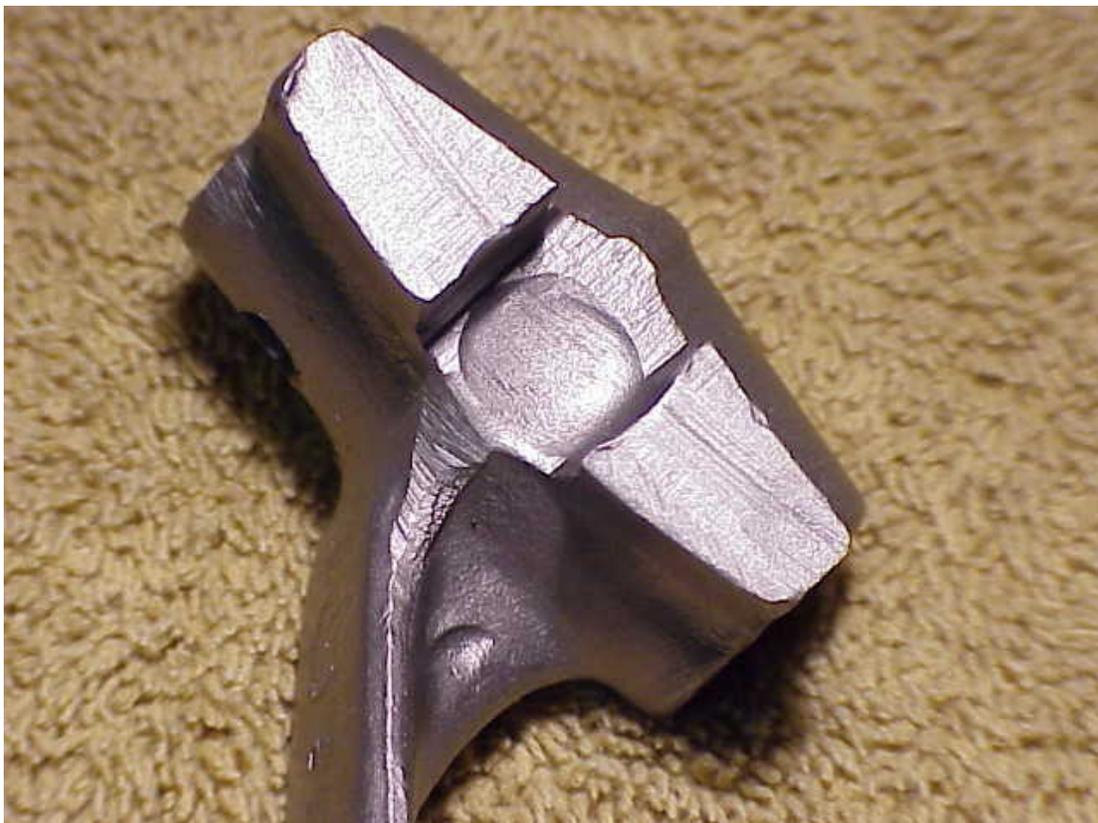


**Trans tower fork extremely worn. This fork actually caused the shifting lever, which was also worn, to slip out of position and shift the trans into two gears at the same time and locked up the trans.**

# Model A Ford Trans Tower Fork



Trans tower fork worn



Trans tower fork worn

# Model A Ford Trans Tower Fork



**Trans tower fork worn**



**Trans tower fork worn**

## Model A Ford transmission tower shifting shafts



Model A Ford transmission tower shifting shafts showing extreme wear. Note the “wear trails” extending from the indentations. The two shafts on the left with two of the indentations close together are high-second. The two shafts on the right are low-reverse.

# Model A Ford Transmission Tower Bullets

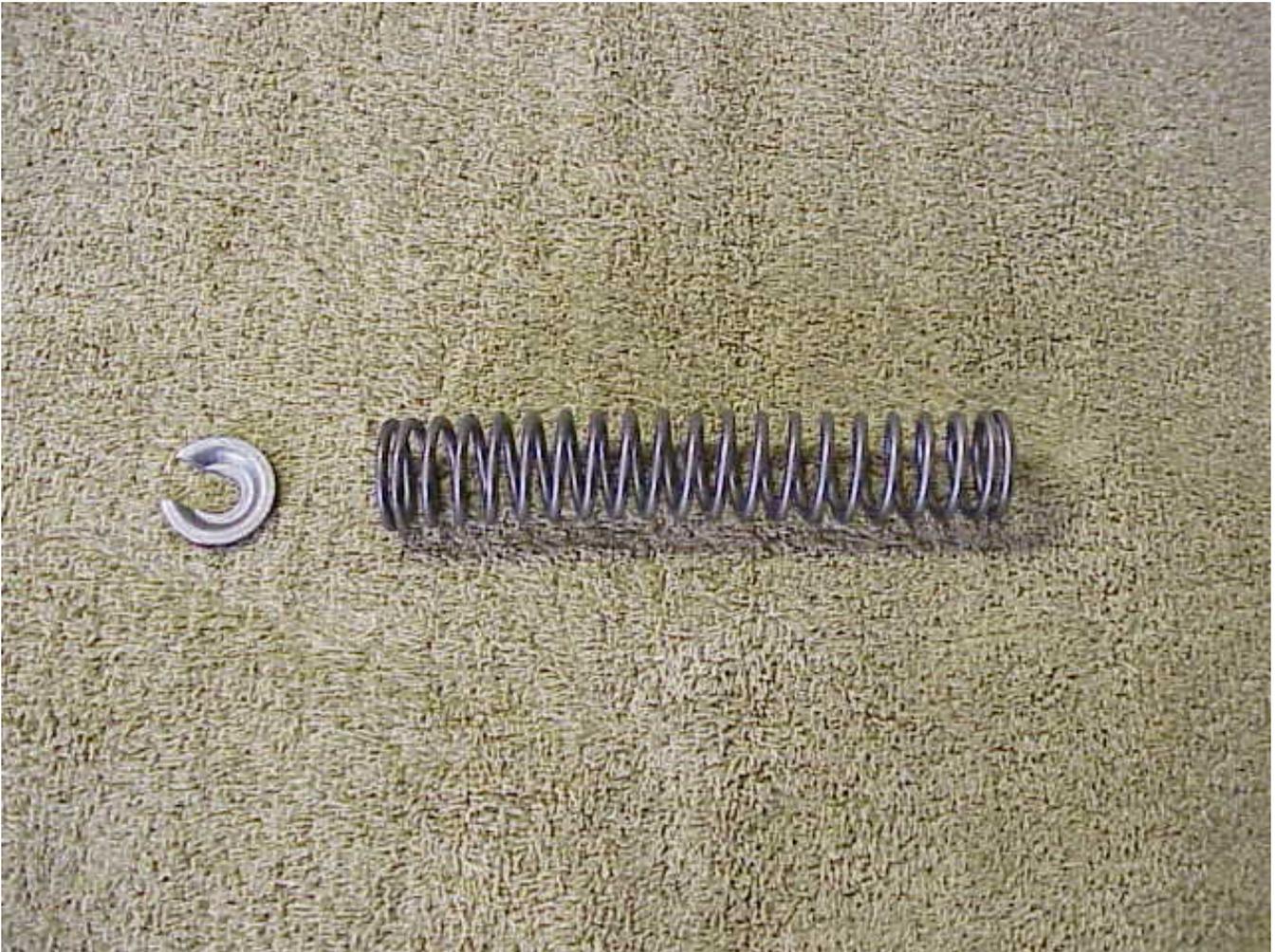


**Extremely worn bullets**



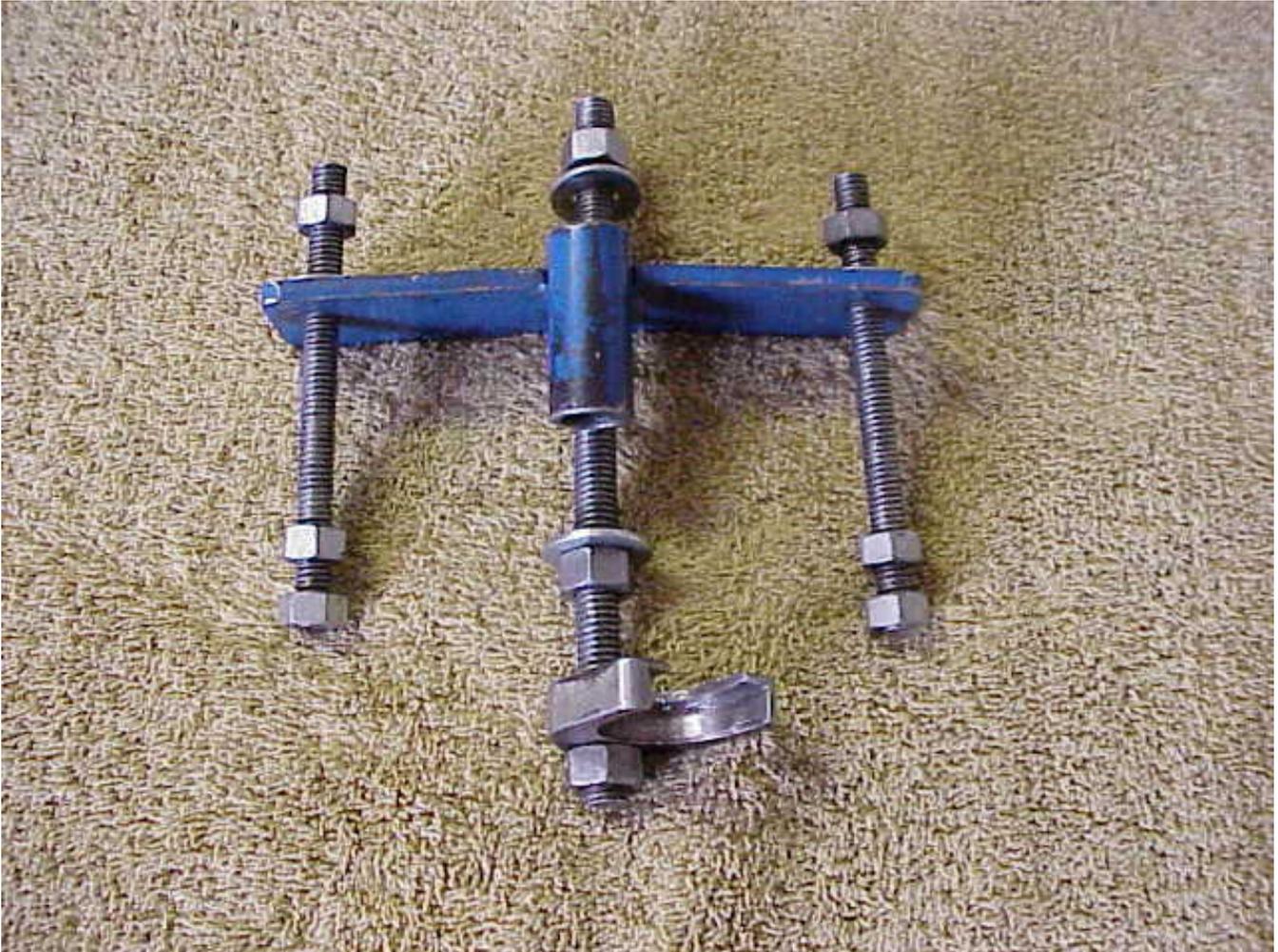
**Serviceable Bullets**

# Henry's Killer Spring



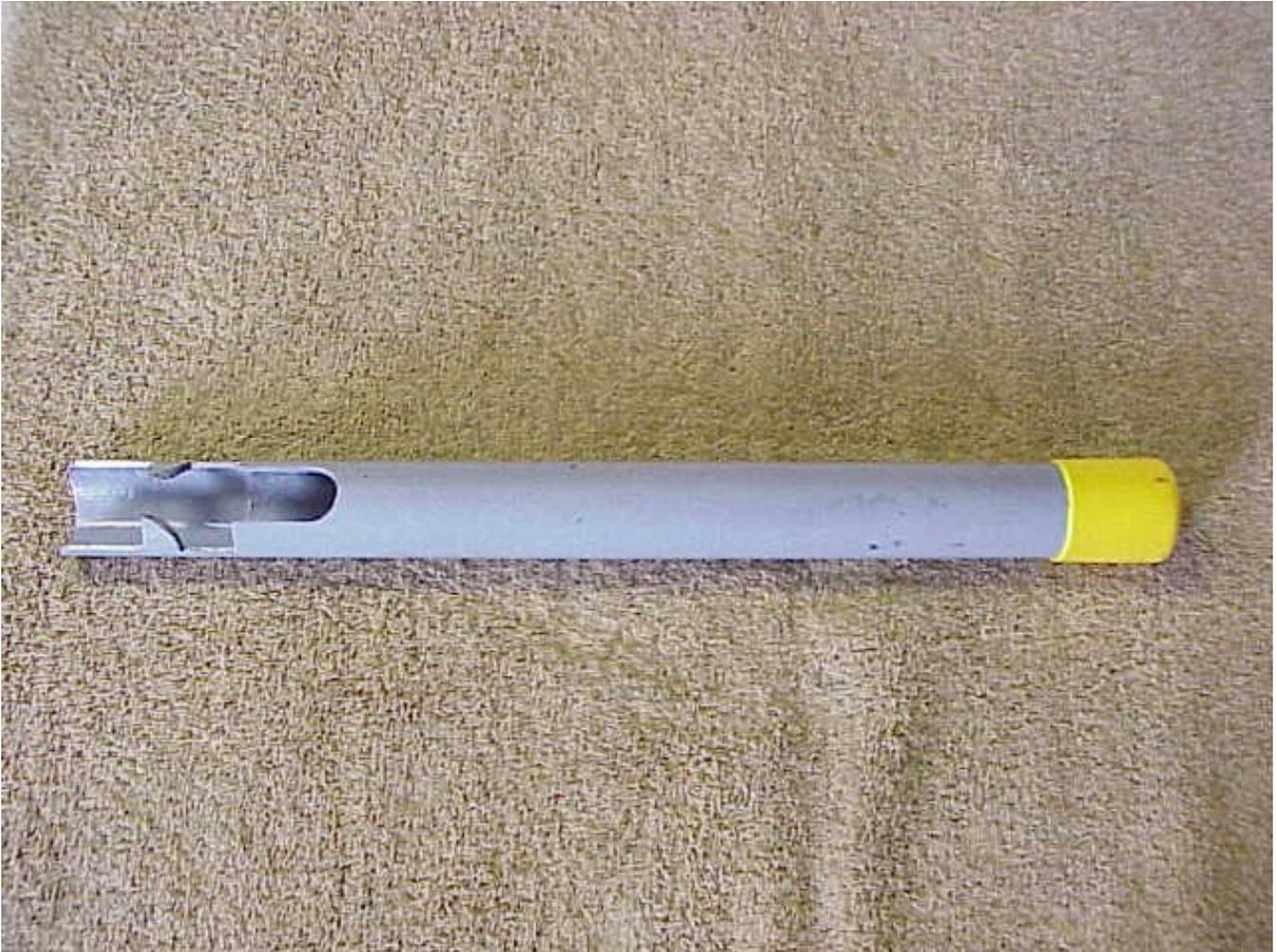
**Henry's killer spring shown with spring retainer. The spring should be handled with care, though it is not considered lethal, if it thumps you in the forehead it will give you a giant headache. It has been said it will go through the roof of your mouth before it goes through the roof of your garage.**

# AC&R Killer Spring Tool



**The AC&R spring tool can be used to remove and install Henry's killer spring. It is safe to use, but takes more time than does the Bratton tool. The fork at the bottom of the tool was not strong enough to withstand repeated use. It had to be modified and made stronger.**

# Bratton Killer Spring Tool



**The Bratton spring tool requires two people to install a spring unless you are an arm wrestler or a weight lifter. One person has to push the spring down with both hands and all of his body weight while the other person installs the spring retainer. It is much faster than the AC&R tool.**

# Shifting Lever Vice Jaw Protectors



**The shifting shaft is inserted into the hole between the two halves and clamped in a vice.**