# Repair Vehicle Springs

THE mending of a broken automobile spring is not so hard a job as it looks, and it is quite easy to fix a spring in which one or more of the leaves are broken. But, to be more accurate, there is no such thing as "repairing" a broken automobile spring. The broken parts are replaced by new ones.

The first step is to procure bar steel of the width and thickness required to replace the broken leaves. Ordinary spring steel may not answer for this purpose. A steel is made for automobile springs—body springs—which requires no tempering, and this kind of steel must be procured from a dealer. With the proper steel the rest is quite easy and may be done in any shop that possesses a smith's outfit.

Remove the broken leaves and place one of them on edge upon a smooth board or bench. Proceed to form up jig A, to fit the laid-together spring leaf. The jig may be made from a piece of old wagon tire, but a new piece of one-half-by-three-inch new tire is preferable, being smooth on both sides with four square corners. Shape the jig to fit the laid-together broken leaf, then place to one side, ready for use.

Make a center-punch mark a certain distance from the end of the bar of spring steel — say twelve inches. Then forge one end D of the new leaf which is shown clamped to jig A in the accompanying sketch. Punch the teat hole G, the same as in the broken spring; then measure from the twelve-inch mark to the end of leaf at D. Perhaps the distance is now thirteen and a quarter inches, which shows that the steel was lengthened one and a quarter inches in forging end D.

The proper length of steel for the leaf may now be cut from the bar, making the piece one and a quarter inches shorter than the old leaf. When the end E has been plated out by sledge and flatter upon the anvil, the new leaf should be the same length as the broken one. Drill the bolt holes B, and do any other fitting the broken leaf may call for. Sometimes there are edge clips to be removed from the old leaf and placed upon the new one.

Though one of the outside leaves—supposing the spring is an "elliptic"—will carry end bolt clips, the other outer leaf will have its ends turned up to receive the bolts, and these turned-up ends may be formed over a bit of bolt of proper size, finishing the ends in swages—top and bottom—of the proper size, and using the hat cutter to tuck in the tip end of the new leaf snug to the bolt. Proceed in the same way with the turned-over outer leaf, making the twelve-inch mark as before in order to determine the allowance for short-cutting the other end of the leaf.

Having finished the leaf, filing or grinding the sharp corners away as required, proceed to heat the leaf to a good deep red. This may usually be done by building a pretty large fire on the forge and and pulling the leaf back and forth until it is very uniformly heated red along its entire length. Then place the leaf B against jig A, and clamp it fast along its entire length, acting quickly so as to have the leaf securely clamped before it loses its red color.

Common C clamps may be used for the purpose, but they are slow things to apply and the leaf is apt to become too cold before all the

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clamps can be put in place. When C clamps must be used for this purpose, open each one — there should be six clamps at least to an ordinary leaf—to just the right distance to slip over jig and leaf when laid together as shown in the sketch. Then grip jig and leaf with a pair of tongs, squeeze them together and apply a C clamp close to the tongs.

If many spring leaves are to be made, it will pay to procure or make sets of special tongs as shown at H. These tongs are used by many spring repair men and they each have several links of chain permanently attached as at I, so that after the leaf and jig have been squeezed together by a pair of these tongs, the link I may be slipped over the tongs' leg as shown and the tongs left as a clamp.

Clamp the leaf as quickly as possible, and in cold weather have the jig well warmed before clamping. Let the new leaf remain on the jig until cold, then remove and put in place in the spring.

James F. Hobart.

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**The Moth and the Clothes**

Society Woman: "I see by to-day's papers I am referred to as one of 'fashion's butterflies.'"

Her Husband: "Considering the way you go through clothes I should think moths would apply better."