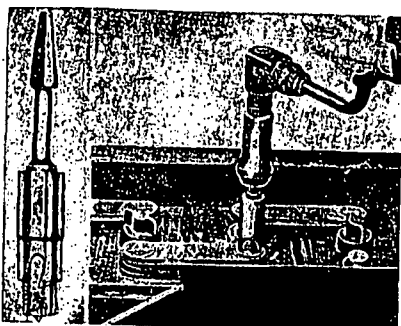


BEFORE: Removing the Cell



1 Special tool drills an annular hole, permits removal of connectors and covers without disturbing terminal post



2 Alternate method of disassembling storage battery is to drill out the posts with an ordinary 15/16-in.-dia drill

3 Cover and element may be pulled simultaneously if cover is undamaged. Clips and chains hold down the battery jar



Follow These Tips... For Your Storage

► HERE ARE THE STEPS TO FOLLOW when replacing a cracked storage-battery cover or taking out the cell for general maintenance. The technique is simple—just a straightforward job of cutting, sealing and rebuilding.

Cutting. The hard-rubber battery covers have post openings lined with lead inserts. These inserts are welded to the lead terminal posts to prevent leaks. In a nutshell, the procedure for taking out a damaged cover is to cut out the metal between the post and its opening.

One way is to use a special tool, Fig. 1, that cuts an annular hole around the post. With this tool, the lead post remains solid, upright and of normal height. You merely lift off the cell connector and battery cover when your hole is deep enough.

The other way is to cut out the metal in the posts with a 15/16-in. drill, Fig. 2. When you get down to 3/8 in., the intercell connector will be free. Drilling down through the cover frees it in turn.

Sometimes the battery is designed so there is clearance between the intercell connector and the top of the cover. In this case you can eliminate the first drilling by making a horizontal saw cut under the connector.

If cover is undamaged, but you want to remove the battery elements from the jar for basic cell repair, remove the intercell connector and lift out both cover and elements as a unit, Fig. 3.

By making a saw cut through the connector above junction line between battery cells, you do not even have to remove the connector.

The lifting tool can be a post cutter with dull cutting edges or any other suitable instrument. An easy way to hold down the battery jar is with clips and chains, as shown in this photo.

Sealing. To assure a proper seal between cover and jar when reassembling the cell unit, use a good sealing compound and apply it properly, Fig. 4. Battery manufacturers ordinarily supply compound in packaged form, ready for use.

Melt sealing compound over a burner or blowtorch in a metal saucepan or pot with a good pouring lip. Keep temperature at the lowest point that will permit easy pouring, as too rapid heating and too high temperatures cause it to catch on fire. Burning consumes oil and impairs effectiveness. The melting pot should be about one-quart size. Do not use too large a pot because more time will be required to melt the compound completely.

If some compound remains after pouring a seal, it may be cooled, stored and reused. But when it is being reheated, do not puncture the unmelted top layer with a screwdriver or other pointed tool because pressure in the lower melted section may cause hot, melted compound to squirt through the hole. The hands, face or body of persons nearby may be severely burned.

Information for this article, and photographs of the procedure described, were supplied by the Service Department of Gold-National Batteries, Incorporated.

Battery Repairs

Clean the surfaces to be sealed, neutralize with ammonia solution, and dry carefully. Be sure cover is properly seated on top of cell and level with other covers in battery. Pour the sealing compound into space between cover and jar, being careful to avoid spilling. Space must be filled to same level as the other cells so there are no recesses where acid may collect. Use a sharp knife to smooth over rough edges and remove excess after compound has solidified.

Rebuilding. Next step in reassembling the battery is to rebuild the drilled posts. This is a simple "puddling" operation. Use a carbon electrode to apply heat within the drilled hole. Use a simple post mold that can be made in the shop or purchased outside. Take care that the carbon rod does not touch side of mold.

Carbon electrode can also be used for burning (welding) the connections. A carbon burner consists of an electrode holder and a carbon rod. It is designed for 6-v power supply (three cells of a battery), and can use power from the battery being repaired. To insure a good weld, use exactly three cells, as less is inadequate for a good weld, and more dangerously endangers battery, operator and joint. If battery under repair is entirely discharged, connect the carbon burner (three cells of an adjacent unit).

Rod should be pointed to a 1/8-in. tip and extended about 1/2 in. from the holder. If possible, connect it to the power source so the carbon rod has negative polarity. This makes welding easier as it tends to keep joint and working surface clean.

Surfaces to be welded or built up should be neutralized and cleaned with a wire brush. Clean inside hole of connector with a knife, and wire-brush tip of the carbon.

To make a joint, thoroughly heat center of the part being worked until you have a puddle of molten metal. Then add additional lead, Fig. 5, working rapidly to complete the operation before entire part melts. When possible, surround the part worked on with a damp rag. Use molds made for the purpose when building up posts or splicing a connector.

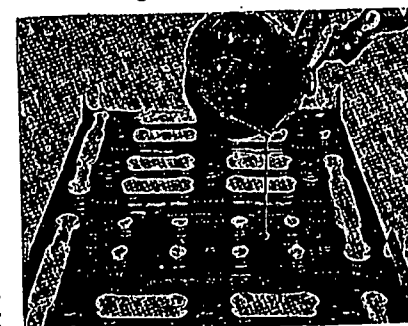
To add new lead, touch it to the carbon rod and let it flow into the puddle rather than plunging cold lead into the puddle itself.

When burning a connector to a post, one slow trip around the post should do the job. This is also true of burning a post to the lead-insert of a new cover. But joint is so deep that considerable lead will be removed from the post in the circuit around the joint. To build it up, return carbon point to center of the post and add new lead to raise post height to level of the top of post mold.

After making the burn, let joint cool undisturbed. Movement during cooling may cause lead crystallization and result in a poor weld. After cooling, you can determine whether weld has been made properly by testing with a pair of pliers. Joint should strongly resist separation.

If separation occurs, examine the two surfaces to determine the points and nature of weakness so the situation can be corrected on the second try.

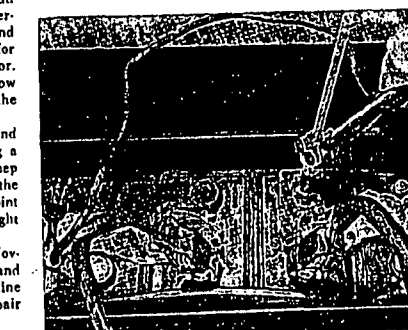
AFTER: Sealing and Welding



4 Pour sealing compound into space between cover and jar. Space must be filled to same level as the adjacent cells



5 Burn joints with a carbon rod connected to three battery cells. Apply fresh lead so it flows into melted puddle



6 Use a mold when building up battery posts, but be careful that the carbon rod does not touch side of the mold