

LOCOMOTIVE SHOP REPAIR JIGS.

Repairing locomotives is a very different proposition from almost any other work I know of, and requires different treatment, says a writer in the American Machinist. Micrometers are an unknown quantity in most of the work, yet the results are probably as good as can be expected, when the service is considered. Side rods must have play on the pins, both as to diameter and end movement, varying from 1-64 to 1-32 inch, because the different crank pins are almost never in line on account of frogs, switches and high and low spots in the track. But the main rod has to be as close as it will run cool, on account of pounding out the brass, to say nothing of the noise.

Rebolting a Frame.

When an engine comes in for general repairs and the frame bolts have to be driven out, it's a case of new bolts when the engine is put together again. These bolts have a taper body and drive into the reamed taper holes of the frame. The taper is usually 1-16 inch to the front.

This is usually a case of fitting each bolt to its place, as the holes are just cleaned up with the reamer in the air drill. This fitting has to be well done, as it is very important that they should not work loose.

To do this rapidly, the foreman in charge of this work at the East Buffalo shops of the Delaware, Lackawanna & Western Road has a portable outfit which he sets down near the track the engine is on. This outfit consists of a lathe, a centering machine, and a grinding wheel for sharpening tools, all tied together on base and driven by an independent motor.

A bright boy completes the outfit and the combination gives star performances when it comes to fitting up a locomotive frame with new bolts. The bolts are centred, and the ends all threaded to standard size before the frame has been reamed, and as soon as a few holes are ready the boy gets busy.

He sets a pair of inside calipers to both ends of the first hole to be sure and get the right taper set in the lathe, then he starts in, only measuring one end of the rest of the holes, and turns each bolt to fit its hole. There is no micrometer about it; he just sets his outside calipers by the inside calipers set to the hole, measures by "feel" in the old-fashioned way, and does a good job in a lathe that had seen hard service long before it joined the bolt-turning outfit.

Detecting Cracks in Frames, Rods and Axles.

Every railroad shop has its hair-raising story of axles that have dropped in two on the turntable after a hard run and other cases, all depriving the yellow journals from a prominent display of scare headlines about another wreck, and the best or worse of it is they are true. In no place is the effect of constant vibration better shown than in railroad service, the most prominent defects occurring in frames, rods and axles, all of which are hard to detect unless they are very pronounced. The hammer test helps in many cases where the man is trained for the work, but even this is not infallible.

The master mechanic at these shops, B. H. Hawkins, has introduced a method that is at once simple and efficient whether it is original or not. When an engine comes in for repairs and is stripped, the frames, axles and rods are given a coat of a white water paint. This dries in about an hour and does not rub off readily.

Then, as the wheels are turned up in the lathe, or the frames and rods worked on in any way, or even without it,

the oil and dirt that are in any crack in these parts work through this paint and show a dark streak so plainly that it cannot be mistaken. At the time of my visit a driving axle had just been discarded, owing to a slight crack just starting from the round corner of a keyway for the eccentric, and which would never have been discovered in any other way.

The same thing holds good in the other parts, and cracks are constantly discovered that might cause accidents later had they not been found. So a little white paint is probably a lifesaver when applied in this way.

Boring and Facing Driving Boxes.

Two Bullard vertical lathes or boring mills with a side tool carriage or head, are in use here doing all sorts of face-plate work. The way in which driving boxes are bored is interesting as showing the use to which the side head is put as well as the method of holding and boring.

The lower plate or fixture is bolted to the face-plate, and the driving boxes fit in this and are easily centred and set. A mole in the centre of this plate forms a guide for the pilot on the boring bar, holding it steady in its work and insuring a straight cut as well as making high speed possible.

At the same time the side head comes in and faces off the hub lining so that no extra time is required for this work. It makes a neat way of handling work of this kind.

Babbitting Crossheads.

They have the simplest form of babbitting jigs I have seen, and they do the work in good shape. They depend on the faces XX of the crossheads being planed alike in all cases so far as the distance from one guide to the other is concerned, as well as being the same width on the outside. This allows the fixtures or jigs to be held on the crossheads by the simple clamps, shown at the side, and the babbitt fills the opening between the two, being retained at the bottom by an asbestos sheet or pad on which it rests. The crossheads are tinned beforehand, being heated by an oil torch for this purpose.

There are several sets of these jigs of different widths to allow for guides being planed down on the sides to true them up at different times. These cost very little to make and have been handling all the babbitting done here for some time.

THE CANADIAN GOVERNMENT'S RAILWAYS.

A Magnificent System.

The Intercolonial is frequently called the People's Railway, because it is the one great railway system in the Dominion which is not owned or controlled by a corporation or company, but from the beginning has been constructed, owned and operated by the Government for the people of Canada.

The Canadian Government Railway system also includes the Prince Edward Island Railway. This Railway traverses the entire length of the Island Province from Tignish in the west to Souris in the east, with branches to Cape Traverse, Murray Harbor, Georgetown and Montague, in fact so well served is the island by the railway that no portion of it is more than fifteen miles distant from the main line or its branches.

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