Railway Mechanical Methods and Devices.

Tool in Intercolonial Railway Shops.

By F. Carroll, Foreman Blacksmith, Frog and Switch Shop.

The accompanying illustration shows a tool used in a drill press, to turn and mill the cast steel journals of the walking beams of hand cars, in the Intercolonial Ry. frog and switch shop, Moncton, N.B. The cutter at a turns off the journal of the walking beam at a. Cutter b, shown in the inset, turns off the journal at b. Milling cutter c in the inset mills off the end of journal at c to make it the right length. In the inset the ring that holds the cutter a has been removed to show the milling cutter d, which faces off the beam at the shoulder of journal at d. This is all done at one operation. The beam is then turned over, and the journals first machined are placed in a jig, which fits the centre hole of the drill press, thereby properly aligning. The journals on this side are then machined in the same manner as described. This tool has proved a very efficient one.

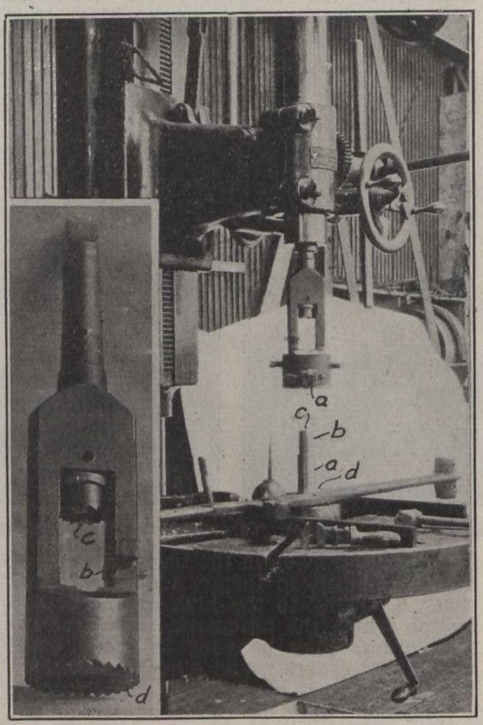
Making High Speed Twist Drills in Michigan Central Railroad Shops.

The high speed twist drills used in the M. C. R.'s shops at St. Thomas, Ont., are made in the shop tool room there. The equipment for making the drills is shown in the accompanying illustration, which also shows a drill blank, twisted drill blank and a completed drill.

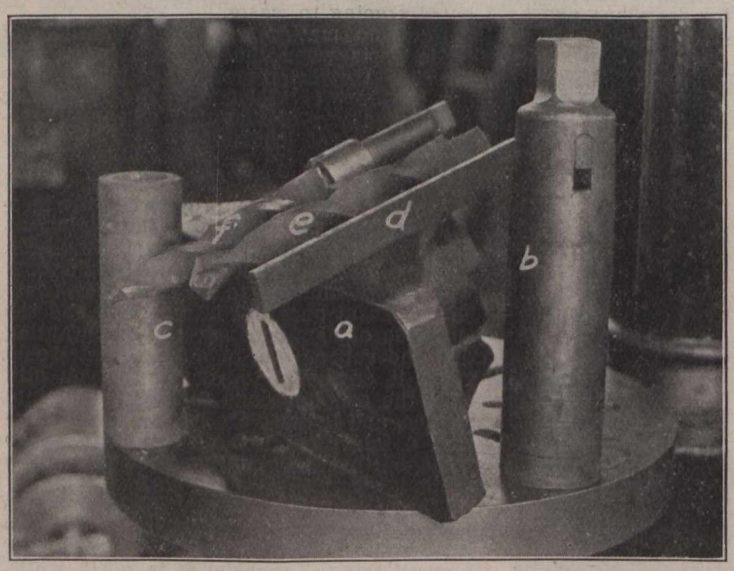
The base casting a, which is shown tilted back on a side, is bored out through the top to receive the shell b, which is bored out with a wall about ¼ in. thick. A number of sleeves of an inside diameter slightly greater than that of the finished drill are made to slip into the shell. One of these sleeves is shown at c. The upper end of the shell b is squared, to take a wrench.

The operation is shown by following blank d through the process of twisting. It is first of all heated to the correct working heat for high speed steel. Then it is slipped into the central hole of the base casting a, fitting into the slot in the base, which is shown whitened in the illustration. Over top of it is slipped the shell b, inside of which there is the sleeve c, the inner diameter of which is the same as the width of the drill blank. The cross slot in the shell b grips the upper end of the blank. A wrench applied to the upper end is given 1½ turns, causing the drill blank to twist the required amount, the inner sleeve c guiding the blank while twisting, so that it is perfectly concentric when removed after the twisting. This leaves the blank as at e.

A special soft steel shank is used for the high speed steel drills made in this manner, and which is shown at f. The upper end of the drill is turned down slightly, fitting up into a hole in the body of the shank. A slot across the lower face of the shank fits over the upper end of the full size of the drill, and transmits the power from the shank to the drill body.



Tool for Finishing Hand Car Walking Beam Journals in the Drill.



Tools for Making High Speed Steel Twist Drills.

In factory boiler firing it has been shown conclusively that 25% of the coal bill depends on the skill of the fireman.

Making Superheater Tube Nesting Clips in Stratford Shops, G. T. R.

The sets of four superheater tubes in each of the superheater flues of a locomotive are held together both front and rear by three piece nesting clips, assuming the form shown to the right in fig. 1. The lower member of the three pieces is of heavier sheet stock than the other two, as it supports the weight of the tubes on the two bottom flanges, which in the superheater flue bear at two points, centring the four superheater tubes in the flue. The G.T.R. shops at Stratford, Ont., have developed an interesting process of making these clip components, and drilling and assembling them on the tubes.

All three clips are made in an air operated bulldozer, the stationary and movable elements of which are shown in fig. 2. This view also shows the dies in the act of forming the top or straddling part of the clip, the part before and after forming being shown at a and b. To the stop rest c, there is secured a channel casting d, between the walls of which there are pivotted two bell crank arms, normally kept open by springs f. At the outer ends of the arms e, there are sheet metal clips, which when the arms are wide open, are just of the correct width to take in the pressing blank a, centring it in line with the male element of the punch, g, which is attached to the ram of the machine. The short inner arms of the bell cranks e, when swung in as far as they go, just meet. The punch g, as it travels forward carries in the centre of the blank until the latter strikes the inner arms of the bell cranks e, when the outer arms of the latter commence to fold in, pressing the blank around the formed die g, the inner faces of the arms e corresponding in shape. The part comes out as at b. A row of the finished parts is shown in the right background.

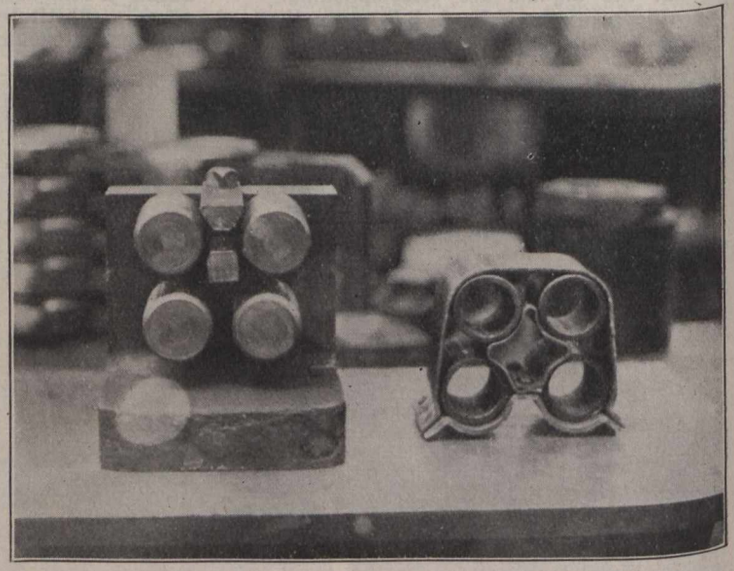


Fig. 1.—Jig for Drilling Superheater Tube Clips, With an Assembled Clip.

The dies for making the base or lower part of the clip are shown to the left in fig. 3. The female part of the die a, is secured to the stationary head of the bulldozer, and the male part b, to the ram. The blank from which the part is made is the same width as the die part a, against which it is placed, the punch b on its stroke forcing the blank to the shape of the die contour.

The forming of the centre or separating