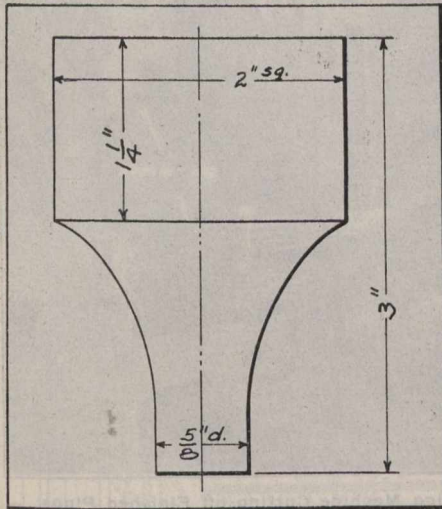


Railway Mechanical Methods and Devices.

Punch for Ripping Frogs at Central Vermont Railway Shops.

Ripping up worn-out frogs in the blacksmith shop, or in the switch and frog shop at large railway centres, would seem to be one of the least sought after of the many repair jobs arising in such shops, judging from the expression of opinions obtained from the foremen. The large unwieldy members are most difficult to handle from their awkward shape.

J. Martin, Foreman Blacksmith in the



Punch for Ripping Frogs under Steam Hammer.

C.V.R. shops at St. Albans, Vt., experiencing these same difficulties in the repair of frogs, cast about for some better means of ripping them up. The method he devised is very simple, and it is strange that it has not been put into more general practice. A punch of the form shown in the accompanying illustration is the only special tool required, and even it is simply made, being forged from the end of a 2 in. square bar without any machining, in the same manner as that used in forming the various tools employed by the blacksmith. The upper end of the punch and also its face are squared.

The frog to be dismembered is placed upside down on the anvil of a steam hammer, the binding plate being thus uppermost. The rivets holding the rail parts on to this plate are in pairs, each side of the rail web. In consequence, were a single punch to be employed to drive out the countersunk rivets one at a time, there would be a sagging tendency on the side of the rail from which the rivet was being withdrawn, tipping the whole frog over on that side. Mr. Martin's method is to use the punches in pairs, holding them in tongs over the adjacent rivets on each side of the web. The blow of the hammer is sufficient in the majority of cases to knock out the pairs of rivets. The frog, suspended by block and tackle, is easily moved about into the necessary positions for the removal of each pair, so that it takes but a few minutes to completely rip up a frog for the scrap heap. The frogs, for the most part, are rivetted together with $\frac{5}{8}$ and 11-16 in. rivets.

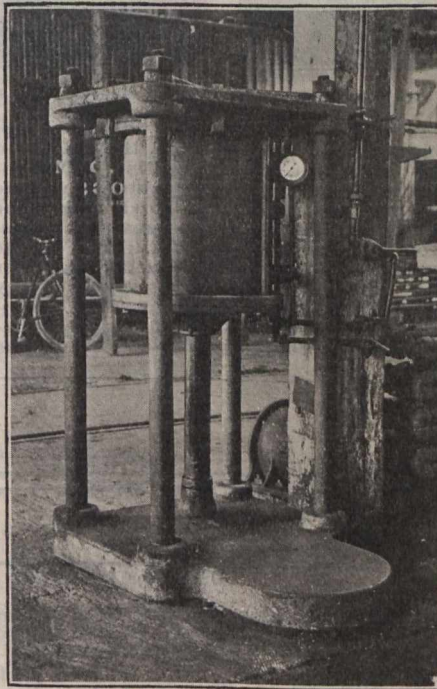
In the assembling of the new frogs, the rivets to be used are heated by a method that while not exactly new, is used in so few shops as to be worthy of

mention. Occupying the whole of the flame section of the forge fire, there is a grid plate, filled with rivet size holes closely spaced. Down through these holes the body and end of the rivet project, the head resting on the plate. The part to be heated the most is thereby exposed to the heat more than the head. A great number of rivets can be heated at a time.

Testing Coach Springs at the Michigan Central Railroad Shops.

Springs for railway coaches are made with a wide variation in carrying capacity, and in the majority of shops, no definite or accurate tests are made on the completed spring to determine whether or not it will stand up under the specified conditions of service, the determination in the repair shop being more or less a haphazard one.

Generally, some approximate method of testing is adopted. That in former use at the Michigan Central Rd. shops at St. Thomas, Ont., is interesting. The completed springs, after being inserted in place under the car, were subjected to a load by having a gang of men get into the car and cause it to sway from side to side, the free space between the springs being noted during the operation. This approximate method, while



Air Press with Double Reading Gauge for Testing Coach Springs.

by no means determining the full capabilities of the spring, gave a fair indication of its reliability to stand up under actual service conditions.

It remained for J. Mitchener, Coach Shop Foreman, to devise a more reliable device which at the same time is simpler and handier. This tester is shown in the accompanying illustration. The method of testing the springs is as follows:—The end of the coach for which the springs are intended is first raised by means of two air jacks, one on each side, so that each jack carries exactly the same load as the spring. In order that the air pressure under each jack may be absolutely the same, resulting in each side rising uniformly without

swaying movement, the two jacks are joined by a tee connection to the same air valve, making the air pressure absolutely the same in each. A pressure gauge in the tee connection gives the air pressure required to raise the car. Knowing the area of each jack plunger, the weight of one quarter of the car, i.e., the weight to be carried by each spring, is determined.

In order to test the springs under this load, without placing them under the car, as in the former manner, the air press shown in the illustration was made. It is a simple air cylinder and plunger with necessary piping for the air, the whole device being rigged up in the shop, a good portion of the make-up consisting of old parts. The spring to be tested is placed on the table, and the plunger forced down on it, the air gauge registering the actual pressure of the air. This gauge has a double reading—pounds per square inch, and total load; the latter is a factor of the former on account of the plunger area forming a uniting constant. Thus the actual load on the spring may be directly read on the gauge. When the desired load (corresponding to that determined by the jacks) is applied, the free space in the spring is measured, and if it is as required by specification, it is passed. As a rule, 3 ins. is the required free space. The spring, after this test, is ready to be placed in position without any further work.

Tie Plug Forming Machine in the G.T.R. Montreal Shops.

A wood working machine for forming tie plugs in quantities is in operation in the G.T.R. shops at Point St. Charles, Montreal, J. Hendry, Master Car Builder, which was devised by one of the workmen in the wood working department. The plugs as formed are shown in the accompanying illustrations, and also the machine in two stages of operation.

Vast quantities of tie plugs are annually required on such a large system as the G.T.R., and to produce them in the manner followed at many points, by taking a piece of stock of the correct dimensions and pointing the end with a hatchet, and then cutting off to length, would require several workmen constantly employed, increasing labor charges, with an additional increased cost for stock from the fact that it

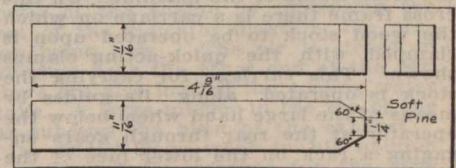


Fig. 1—Tie Plug from Tie Plug Forming Machine.

would require to be of the proper dimensions before coming into the hands of the workman. With this new machine, 25 plugs are produced at a time from a 4 x 4 in. piece of stock as rapidly as the operator can adjust the stock and operate the machine. The daily capacity of the machine runs up to nearly 100,000 plugs. It is the practice of the shop to operate it for some three or four days until a considerable stock has been formed to draw on, and then dismantle it until such time as a further stock is required. For those who do not know the use of these plugs, it might be mentioned that they are used for filling up the holes left by the rail spike when it is withdrawn for redriving in a more solid