

spirals, on reamers used with air drills, but the statement was made that the shorter spirals reduced the time, but required heavier thrust to feed them.

### Welding Boiler Tubes With Gas Torch.

It may prove of interest to describe a method we have developed for welding 4 in. boiler tubes with the acetylene torch.

We cut the ends off square in a power hacksaw, clean the rust and scale off the long pieces with a file, and take short pieces to a grinding wheel and brighten the surface  $\frac{1}{4}$  in. back from end.

We have a clamp made from a piece of 4 in. standard pipe, about 24 in. long, split longitudinally, with hinges on one side and slots with bolts and handled nuts on the other. The clamp has three  $1\frac{1}{2}$  in. holes near the center, and it is placed on the tube to be welded, the  $1\frac{1}{2}$  in. holes over the joint. The torch is applied to the  $1\frac{1}{2}$  in. holes, and the tube "tacked" in three places. The clamp is then removed and the welding performed easily; an assistant turning the tube.

We use 3-16 in. welding rods and can weld 50 tubes with 100 ft. of oxygen; time, about 10 minutes for each tube. The welder prefers the square end to the beveled end and thinks it takes less steel and less gas.

We can flatten these tubes under a power hammer where the weld is, without showing a fracture.—A. H. Halladay.

### Promoting Safety in the Shop.

We must not forget, while manufacturing new devices and tools, that in each case we should keep in mind safety first. The prevention of injuries should be considered even more than the efficiency of the tool or device. Do you ever inspect the tools that are in daily use in your shop to see that they are in safe condition? The tool foreman should make this his business, as he is the most capable of determining the safety of tools. Our shop safety committee demands a report from the tool foreman, on tools in all departments, and this has brought about wonderful results in a decrease of injuries. The blacksmith shop, boiler shop, and even the different tool rooms are good places to find defective tools. There are numerous things in the shops and locomotive houses that are unsafe at their best, and we must see that they are at their best.—J. C. Beville.

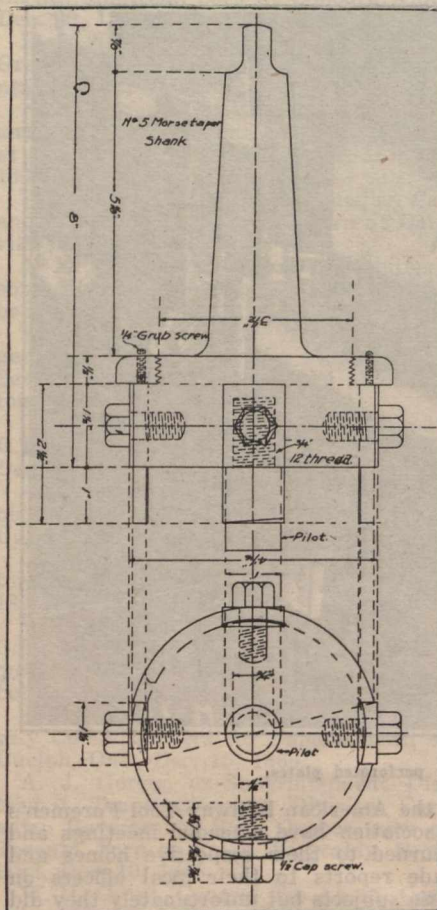
### Cutter for Tube Sheets, Canadian National Railways.

The body of the cutter, a plan of which is given herewith, is made of mild steel, and has four cutters bolted at right angles. The shank is drawn down to a Morse standard taper and is used in four spindle multiple drilling machine or radial drill. Four slots are milled in the sides for cutters, which are of high speed steel and are bolted down, then the hole is put in a lathe and the cutters turned down on the lathe to form, and ground slightly for clearance. The cutters can be slightly adjusted by slipping a filler between the cutter and the face of the tool. The cutters are ground to follow one another, and each engages at the same time, cutting more metal than the ordinary double cutter tool. With this

cutter three sheets or 33 holes can be cut without regrinding the tool. We are indebted for the foregoing information and for the drawing from which the illustration was made, to W. H. Hollingshead, who, when they were furnished, was Foreman, Tool Room, Canadian Northern Ry. Shops, Winnipeg.

### The Tool Room's Functions.

A tool room, to my idea, takes care of the tools which are used in the shop. The shop may be a machine shop, or it may be a locomotive erecting shop, or it may be a car repair track. The tool room cares for the tools that are used by the productive workers. I recall to mind one tool room that is under the charge of one man. It is about 10 x 10 ft. and



Cutter for Tube Sheets, Canadian National Railways.

his sole duty is to repair dies for bolt cutting machinery. I recall to mind another tool room that has more machinery than I have in my shop. Both rooms are efficient and serve their purpose.

The province of the tool room is to make such tools as may be needed, to maintain them in such a condition that when they are wanted, they are ready for service, and to have them on hand, so that there will be no delay to the men who are to use them. I call to mind a hurry-up job that was not done on time; on investigating the matter, the excuse was made "We could not find our tools." On looking into the matter in detail, it was found that the excuse was correct. The practice had been for a man to pick up the particular tool that he wanted, and use it, and leave it where he got through with it. If somebody else wanted it, and remembered where it was last used, he might find it, and if he did not find it, then he kept hunting until he finally

located it. The result was an enormous amount of wasted time chasing up tools. There was no tool room for this particular department, and there never had been. The men were consulted with and were asked, "If you are given a tool room, a place to put your tools, will you put them there?" A tool room was built in the end of a shed for storing tools—it was not a manufacturing department and there were no machine tools in it whatever. It was simply a place to keep the special articles that were needed at various times in a car repair yard. The majority of the men did as requested. When they took a tool out of the tool room, and used it, they put it back. A few, however, did not have time to take tools back. The majority of the men who were living up to the rule made it so unpleasant for those who were careless that they fell into line, and in a short time every tool belonging in the tool room was put in its proper place when the men were through using it.

The tool room can play a great part in the way of safety. The men who use tools, hammers, chisels, and one thing and another, have their own kit. These tools get out of order. They become dulled, their heads become burred up, and are unsafe. Every one can recall to mind some man who has had an eye injury, or who has cut himself badly from the cracking off of a part of a cold chisel. If the tool room will carry in stock a lot of cold chisels, sharpened and ready for service for the man who turns in a defective chisel, that man has saved a lot of time. The cold chisels he has received are ready to go to work. He does not have to go out to the grindstone, or to the blacksmith shop, and spend a lot of time getting his chisels dressed. He turns in his defective equipment, and gets new equipment in its place, and goes back to work without wasting time. This is the one thing that I have in mind; the importance of the tool room having things ready when wanted, and in good condition. The tool room motto should be, "A place for everything, and everything in its place." That refers to everything, from the commonest cold chisel up to the most complicated tool that you can possibly make. If the tools are in good condition, and ready for use, the tool room has absolutely performed its function.—J. A. Carney.

**G.T.R. Superannuation Fund**—A circular is reported to have been sent to members of the G.T.R. Superannuation and Provident Fund Association, announcing an increase of rates of from  $1\frac{1}{2}$  to  $2\frac{1}{2}$ % to date from Jan. 1, 1920, and a change in the method of computing the retiring allowance. Following this an announcement is reported to have been made from the offices in Montreal, Nov. 6, that owing entirely to the large increases in the rates of pay that have been made recently involving corresponding increases in the returning allowances for which employees would be eligible, it was deemed advisable to have an investigation by an actuary. As a result a revision was made in the method of computing the retiring allowance, and the men's contribution to the fund had been restored to what it was prior to Jan. 1, 1914. The fund, it was stated, had been economically managed, and is in a strong financial position.

The Board of Railway Commissioners has dismissed the complaint of Wilberforce, Ont., residents in regard to train service on the Irondale, Bancroft and Ottawa Ry. (C.N.R.)