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strain on the hole being pierced. On the front end of the board base, there is a simple punch press frame guiding a vertical plunger. Just back of this plunger, there is looped band from the inner surface of the frame, carrying the fulcrum pin, on which a bar from the plunger at the rear fulcrums, being connected immediately in front to the punch plunger.

In a channel in the base of the punch frame, the dies are located, the punch lining up directly over it in the punch that of using small cannon, a practice common in some shops, although such a course involves considerable danger to the mechanic.

# Sawing Truck Bolster Truss Rod Grooves at Grand Trunk Railway Port Huron Shops.

The truss rods applied to truck bolsters pass up at an angle through the wood of the bolster and come out through the



Thin Rip Saw Set to Channel Truss Rod Grooves.

centre of the end, where the end cap, with a nut on the end of the rod, secures it in place. Instead of boring a hole diagonally through the wood from both ends, it is a more satisfactory method to remove the wood on the angle down to the path of the rod through, for the width of the rod. The truss rods being usually about  $1\frac{1}{4}$  in. in diameter, recuire that the channeled cut must be at least that width. To cut this channel through the wood would require a solid cutter if cut the saw, depending on the taper of the wooden washers.

The bolster to be cut is suspended over the saw by the centre, the end resting on the saw table, the centre being raised the correct amount to give the necessary angle to the cut. When revolving, the saw presents a solid appearance as of a saw the width of the cut being made. It is most surprising to observe the rapid rate at which the saw set in this manner cuts through the wood, leaving a clean channel.

One of the first questions that arises in the mind of an observer is whether the scheme is safe, and if the strain is not sufficient to tend to cause the saw to break. Enquiry elicted the information that while this method of channeling the bolsters has been in use for a number of years, not a single accident has occurred, seeming to prove that the method is a safe one, and could be safely recommended. All the bolsters that go through these shops are slotted in this manner.

### New M. C. R. Buildings at St. Thomas.

The M.C.R. is having a new locomotive repair shop and power plant built at St. Thomas, Ont. The locomotive shop is 290 by 179 ft. The construction consists of concrete foundations, brick masonry walls, steel superstructure, steel sash, cement tile roof covered with felt and pitch roofing, and creosoted wood block The building has three longitufloors. dinal bays, viz., erecting bay, 72 ft. wide, accommodating 13 pit tracks; heavy machine tool bay, 60 ft. wide; and light machine tool bay, 45 ft .wide. The erecting bay is to be served by a 150 ton electric travelling crane, and the heavy machine tool bay by one of 10 ton capacity. The building will be equipped complete with hot blast heating system, modern plumbing, electric lighting and power facilities, workmen's lockers, loco-motive material racks, and shop accessories.

The power plant building is 87 ft., with elevated coal trestle and storage bins 16 ft. wide along the boiler room side. The construction will be similar to the locomotive shop. The equipment will consist of four 250 h.p. boilers with chain grates, radial brick chimney, steel smoke breeching, 375 kva. engine driven alternnating current generator delivering cur-



Oil Screw Jack for Forcing Out Tight Bolts.

out by the ordinary methods.

In the woodworking department of the G. T. R. shops at Port Huron, Mich., a different method is employed. Instead of a wide cutter, an ordinary thin rip saw, as shown in the illustration, is all that is required. On the saw arbor, on each side of the saw, there are tapered wooden washers, thin at one edge and thick at the other, as shown on the left of the saw. This sets the saw off at an angle with regard to the arbor, causing the saw to oscillate from side to side, sweeping out a path wider than the thickness of rent at 575 volts, 3 phase, 25 cycle. Additional power will be supplied by the Ontario Hydro-Electric Commission.

One steam driven air compressor will be installed in the plant at present, and additional compressors later. The greater portion of the machinery and equipment has been purchased, and construction will be carried out so as to get the new plant into commission early in the winter.

The plans and specifications were prepared by the Arnold Co., Chicago, Ill., which is also doing the construction and will equip the building complete.



#### Air Operated Punch Press.

press plunger, in which it is secured by a set screw.

The press is quite powerful, as may readily be surmised when it is considered that an air pressure of around 100 lbs. in a 10 in. cylinder, with the multiplication of the fulcrum arm, is used. The operation is almost the same as on any up to date punch press, the air being admitted to the cylinder by the pressing of the pedal to the left, as in a power driven machine. The blacksmiths find it of great assistance in the production of their work, where they are hampered by the lack of a large power machine.

## Oil Screw Jack at Canadian Northern Railway Shops.

In the C.N.R. shops at Winnipeg, there is in use an oil screw jack, as shown in the accompanying illustration. The principal use to which it is put is in removing bolts from tight holes, such as those connecting the parts of a frame. From its small construction it can be worked in a tight corner, where there is small clearance between the bolt head and the frame.

The body is of steel, bored lengthwise, and at right angles at one end. In the end of the long bore is a bushing carrying a snugly fitting  $1\frac{1}{2}$  in. screw. The other bore contains a short  $2\frac{1}{2}$  in. piston. The method of using is obvious. With the small diameter screw, and proportionately large lifting piston, a high pressure is possible.

For removing bolts from frames, it is a much more satisfactory medium than