while the sleeve is revolved by an air motor, attached to an improvised train of gears. The gear train frame is held down by a link and turnbuckle to the floor. On the outer end of the device, there is a ratchet mechanism, for feeding the outer sleeve with its tool, over the face of the crank pin. This ratchet mechanism consists of a dog attached to the sleeve end, adjoining a cam disc, which is stationary. As the dog revolves with the sleeve, it follows the surface of the cam, dropping into an adjustable surface cut out at a certain point in its revolution, falling into a depression of a notched wheel, the latter being on a spindle connecting through a long screw with the inner stem. The outer end of this part is rigidly secured to a brace from the floor (not shown), so that as the screw is revolved slightly on each turn, the sleeve is fed forward a corresponding amount.

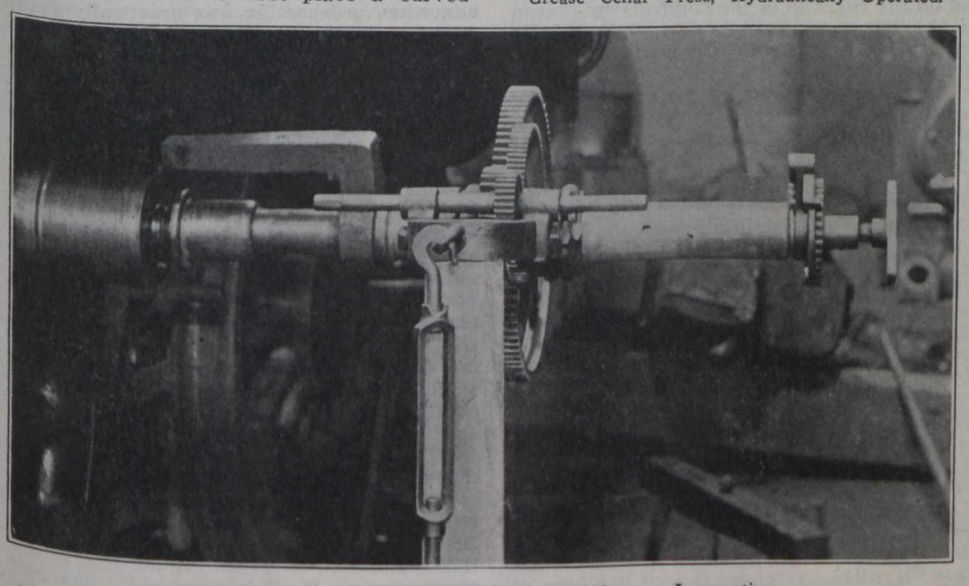
The operation of this mechanism is quite rapid, as from its simplicity, it requires but little time to assemble, and as the cut to be removed from the pin is usually very light, only enough to true it up from the oval shape into which pins tend to shape in service, the rapidity with which the cut can be taken is, considerable, resulting in a neat job, without the attendant task of removing the drivers. In fact, all that is necessary to do to handle a job is to remove the connecting and side rods, with their brasses, and the pin is prepared for machining.

Grease Cellar Press at Grand Trunk Ry. Montreal Shops.

The accompanying ilustration shows the grease press in use at the G.T.R. Montreal locomotive shops, and which is located in a small depression in the floor adjoining a window. Alongside the press is the grease barrel, and in front of the press a working table. A special cast iron mould is used, the inside dimensions of which are the exact size of the block of grease to be moulded. The lower surface of the mould is the concave one to fit over the axle.

The practice is to first place a curved sheet of thin sheet iron in the mould, next filling the mould by hand as full as it is considered desirable, then placing the mould under the press, the flat surface of which, descending under hydraulic power, forces the hard grease into all the crevices of the mould, forming a solid block. The surplus overflowing the top is trimmed off with a hand scraper, and the mould again subjected to a pressure from the ram, when the block is ready to be taken from the mould.

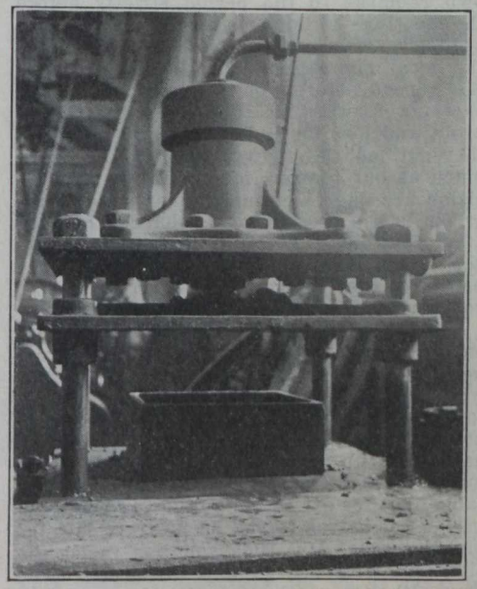
Through the under side of the mould there is a tapped hole. A hand bolt is screwed through this on the completion of the compressing, the bolt, coming in contact with the sheet metal mould liner, forces the block of grease out, when the operation is again repeated. This process is carried on in the wheel shop under J. Hunter, Foreman Wheel and Tender Shops.



Crank Pin Turning Mechanism, Applied to a Locomotive.

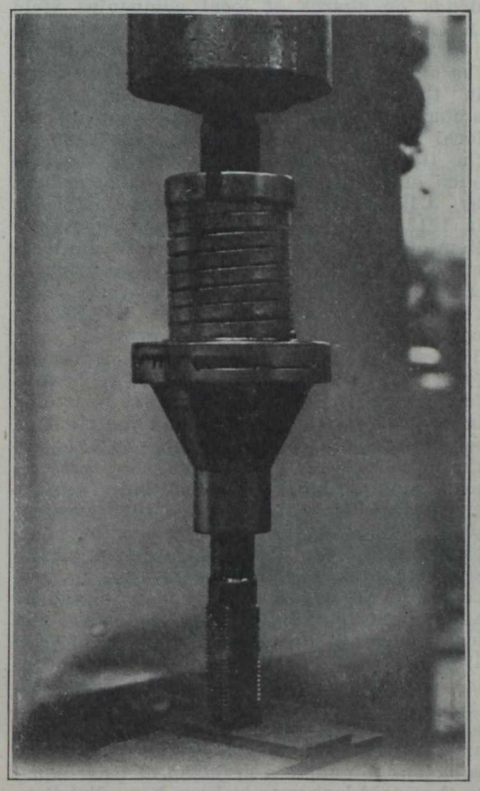
Tapping Attachment at Grand Trunk Ry. Montreal Shops.

The accompanying illustration shows a very useful tapping attachment used in the G.T.R. Montreal locomotive shops, (J. Lees, General Foreman, Machine Shop,) for tapping through blind holes in castings. It is used in a reversing drill press, and of course would be of no value in a drill that had not a reversing attachment.



Grease Cellar Press, Hydraulically Operated.

The device consists of a tap at the bottom, the upper end of which is enlarged to form a clutch face, having two shallow radial clutch jaws. Engaging this face, there is a corresponding radial clutch surface. The power transmitting faces are at an angle of about 45 degrees. The upper disc is keyed to a threaded spindle, carried in the spindle of the lathe. A projecting pin from the upper spindle of the tool, projects into the lower members, making the two parts as one. Around the upper spindle, there is a square coiled spring, the tension in which is varied by a screw collar fitting over the thread of the spindle. This spring bearing down on the upper clutch disc, keeps the two closely engaged, but in the event of a hard spot in the casting being encountered, or the tap being stalled from any cause, the upper clutch disc will rise on the 45 degree engaging faces, allowing the tap to slip. The spring may be adjusted to whatever tension is desired, bearing in mind the strength of the tap. A safety device such as this has a marked saving in the number of taps required.



Safety Tapping Attachment.

A Long Girder Span Replacing a Howe Truss was put in place on the Duluth, South Shore & Atlantic Ry., a C.P.R. subsidiary, at its crossing over Bad River, near Shilo, Wis., recently. The Howe truss span was 150 ft. long and formed part of a timber trestle 955 ft. long. The entire structure was replaced by a plate girder viaduct of 30 ft. tower spans and 64 ft. intermediate spans, with a 121 ft. deck plate girder river span. This span complete weighed 108 tons. It was riveted up on two flat cars which were run on to the deck of the old span. The span was lifted off by a derrick car at one end and a gallows frame hoist at the other end, the cars were run out, the deck of the old bridge torn away, and the new span lowered between the old trusses on to the previously erected steel bents.

Signalling on Western Lines, Canadian Pacific Ry.—We are officially advised that there are now in operation automatic station protection signals of the upper quadrant semaphore type between Fort William and Winnipeg, upper quadrant automatic signals between Stephen and Field, and between McGillivray and Crowsnest, B.C., and automatic station protection signals through the Calgary terminals.