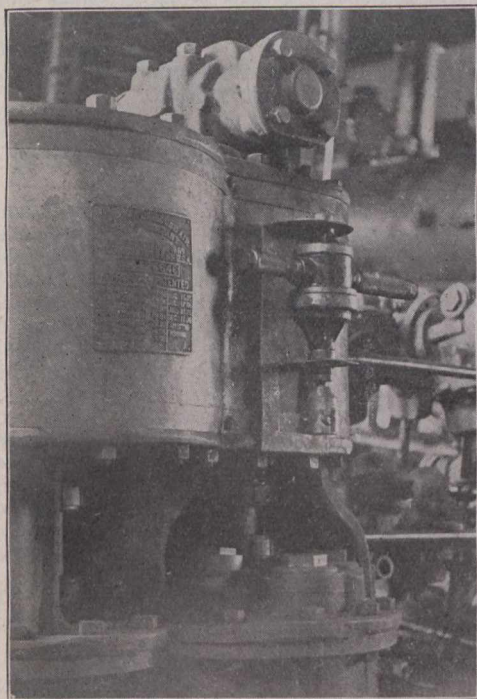


and then removed to the horizontal mill for boring.

In the T. and N. O. Ry. shops, at North Bay, Ont., a satisfactory substitute for the horizontal mill has been found by the use of a surface plate on a large engine lathe, the member to be bored being bolted thereto. An old slide valve cover plate, about 24 ins. square is used. In each corner of this cover plate there is a bolt hole, from the under side of which passes a long bolt, threaded through the greater part of the length, and with a nut on both sides of the plate. These four bolts may be secured in the T slots of a lathe carriage, and on this base the surface plate may be levelled in the position required with regard to the lathe centres. The work to be bored is bolted to this surface plate, and the tool is carried on a boring bar between the centres, the work moving with the carriage to secure the feed.

Grinding in Air Pump Valves, Timiskaming and Northern Ontario Railway Shops.

Instead of grinding in the poppet valves used on locomotive air pumps, there has been developed by C. Batley in the T. and N. O. Ry. shops at North Bay, Ont., a method of handling this work by means of a small air motor to provide the power. These poppet valves have a small vertical displace-



Small Motor Mounted on Air Pump for Grinding in Poppet Valves.

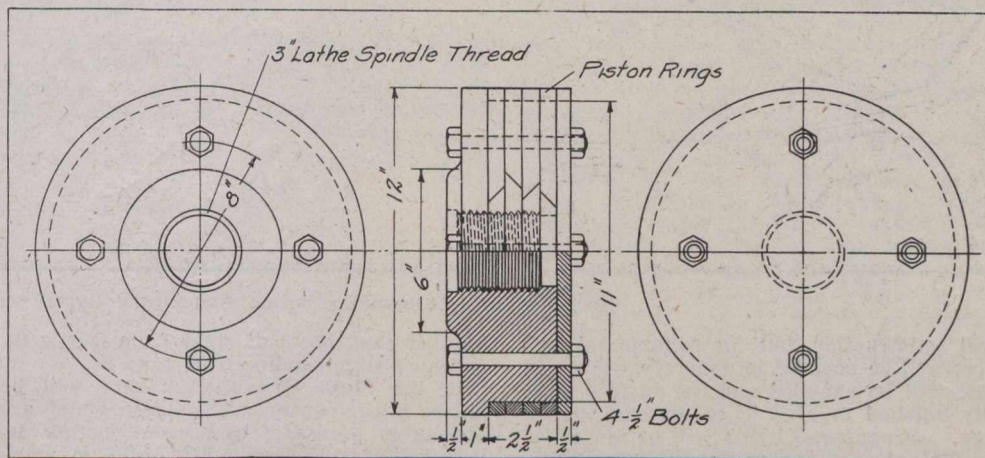
ment on their seats, being stopped in their upper position by brass valve caps, which are screwed in the top of the cylinder casting. The device under consideration employs the threaded opening into which these plugs normally fit, an auxiliary plug performing the work.

This auxiliary plug is hollow, and contains a thin disc in this hollow space, normally kept in its bottom position by a coiled pump spring, this disc being kept from falling out by an inner collar. When this plug is screwed in to its seat, the coiled spring inside seats the valve firmly on its seat. Through the centre of the auxiliary plug, there is a small hole, through which a small spindle passes, being screwed into the seated valve.

On the outer face of the steam cylinder, there is mounted in a sheet metal frame,

which is attached to the cylinder by the cylinder head bolts, a small air motor, which is maintained in a stationary position. Between the air motor chuck and the head of the valve spindle, which projects through the auxiliary head, there is a universal joint connection, by means of which the spindle can be revolved. The universal joint connecting link is extensible, so that any one of the three valves may be operated on from the one position of the air motor.

In operation the air motor is mounted as shown in the accompanying illustration. The regular valve plug is removed, and the



Piston Valve Ring Turning Jig.

valve, with a grinding compound of glass dust and oil seated. Into the top of the valve, the auxiliary spindle is screwed, and over it the auxiliary valve head is slipped and screwed into position. The universal joint connection is applied, and the motor set in operation. The pump spring in the auxiliary head keeps the valve seated tight enough for the grinding in operation, which is continued just so long as is necessary. To apply more cutting compound, it is only necessary to unscrew the auxiliary plug, lifting the valve, and exposing the contact faces. The apparatus works admirably, we are informed.

Piston Ring Turning Jig, Canadian Pacific Railway North Bay Shops.

The piston rings that are cut from a stock sleeve and slotted, with a piece removed for springing purposes, require to be finally turned on the outside after springing, in order to insure a correct circular form. A jig has been developed in the C. P. R. shops at North Bay, Ont., for doing this work expeditiously. It consists of a solid head, that screws on the end of the headstock spindle of a lathe, on which the rings to be turned

are slipped, and clamped in position for machining, by means of a circular plate, secured on the end of the head by four 1/2 in. bolts.

The rings, as first turned and slit, are slipped over the body, and encircling their outer diameter, there is placed a circular band of steel, the ends of which can be drawn together by a clamping bolt. When this latter is clamped down as tightly as possible, the end plate is tightened up, securing the rings in place by end pressure, when the outer band may be removed, and the turning proceeded with. Rings may be quickly handled in this manner.

Grade Crossings Elimination on Intercolonial Railway at Moncton.

Plans have been prepared for the elimination of a number of grade crossings on the Intercolonial Ry. in Moncton, N. B. The proposed work consists of a subway at Main St., overhead bridges at Victoria St., Church and St. George Sts., and a new bridge at Union St. At Queen and Lutz Sts. a pedestrian subway is to be built, with an entrance on the west side of the tracks at the corner of Queen and Lutz Sts., and at the east side of the tracks there will be an entrance from both Queen and Lutz Sts. Between Robinson and Main St. a sidewalk 6 ft. wide is to be built along the west side of the railway property. The railway will also make all necessary changes to the sewers and pipe lines with which the scheme will interfere. Where the grade of Main St. is changed the railway will put in a modern pavement, and where there are changes in the other streets macadam pavements will be built.

In order that this scheme may be carried out the railway will have to change the grades of its tracks between the station and a point about half a mile beyond Union St. The base of rail at Main St. will be raised 6 ft.; at the west side of Lutz St. there will be practically no change; at Victoria St. the tracks will be lowered 12 ft.; at St. George Street 18 ft., and at Union Street 9 ft.

The principal grade crossing to be elimin-

ated is that at Main St., and this is to consist of a subway the full width of the street. In order to do this the tracks will be raised 6 ft. above the present level of the street, and the street will be lowered 11 1/2 ft. at the railway tracks, which is only 4 3/4 ft. lower than Main St. at the corner of Lutz St., and only 2 1/2 ft. lower than Main St. at the corner of Robinson St. To lower Main St. as proposed at the tracks it will be necessary to start the depression of Main St. on the west side of the tracks at Bonacord St. and on the east side of the tracks opposite McBeath's grocery store, that is Main St. will retain its present levels at Bonacord St. and at McBeath's grocery store.

As Archibald St. is opposite the proposed subway on Main St. it will be necessary to depress this street in order to get an entrance to Main St., and it is the intention of the railway to widen the street about 30 ft. at Main St., and to gradually narrow this extra width in until about opposite the north boundary of the H. S. Armstrong property, where the street will retain its present width and levels, the depression of the street starting at this point. The sidewalk on the east side of the street will be maintained at its present level, with an easy flight of stairs to Main St., and a sidewalk will also be built on this side of the new