

Railway Mechanical Methods and Devices.

Air Valve Piston Ring Centring Device in Timiskaming and Northern Ontario Railway Shops.

Piston rings for the air valves of locomotive air compressors are made slightly eccentric, and cut on the thin side to give the requisite spring to cause them to form a good tight joint. The piston rings are made from a long ring, from which a large number may be cut. The outside of the stock sleeve is turned to a diameter larger than that finally required, and then the sleeve is offset the required amount, and the inside bored to a correspondingly larger diameter than that of the final inside diameter of the piston ring. The stock sleeve is then cut to form rings of the necessary thickness. These rings are slotted at an angle of 45 degrees to form the spring allowance, and sprung altogether at that point.

In springing the rings together the varying radial thickness of the rings causes them to assume a final shape when compressed that is not a true circle, so that it is essential to take a light final cut over the outer face, so that they will form a true fit inside the cylinder. The object of the device illustrated herewith is to chuck the work so that this final truing may be quickly accomplished. The device consists of a main body, with a shank at one end for chucking in the lathe, and a threaded shank at the other end, over which a washer for clamping is slipped, and secured in position by a $\frac{3}{4}$ in. nut. Over the main body of the device there is a collar, fitting closely, the inner bore of which at the clamp washer end is tapered.

same tendency to leak as an ordinary ring that has not been re-turned will have.

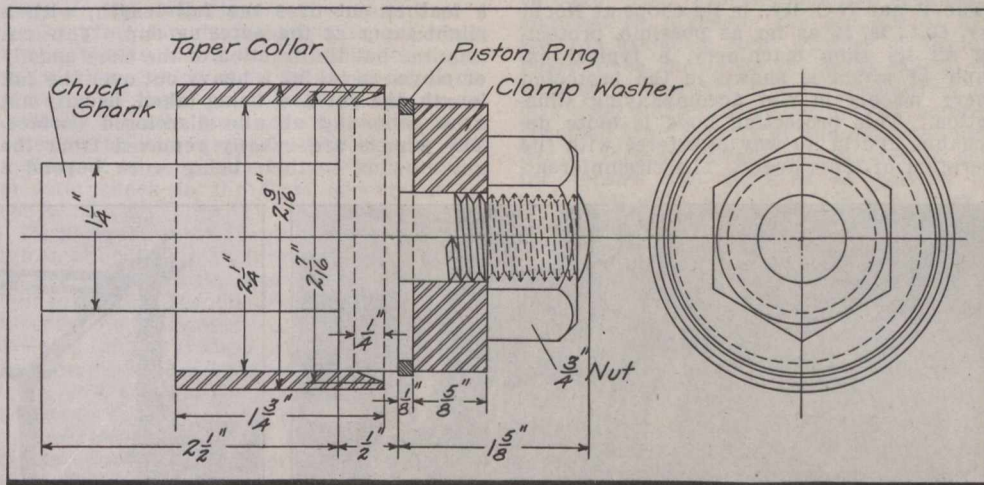
Grease Press for Driving Box Cellars on Canadian Northern Railway.

The C.N.R. mechanical department has developed a standard design of grease press for forming grease cakes to be used in driving box cellars. Nearly every railway shop has a grease press of some kind or other, so their object and use is familiar to all, and it will only be necessary to deal with the construction of the machine.

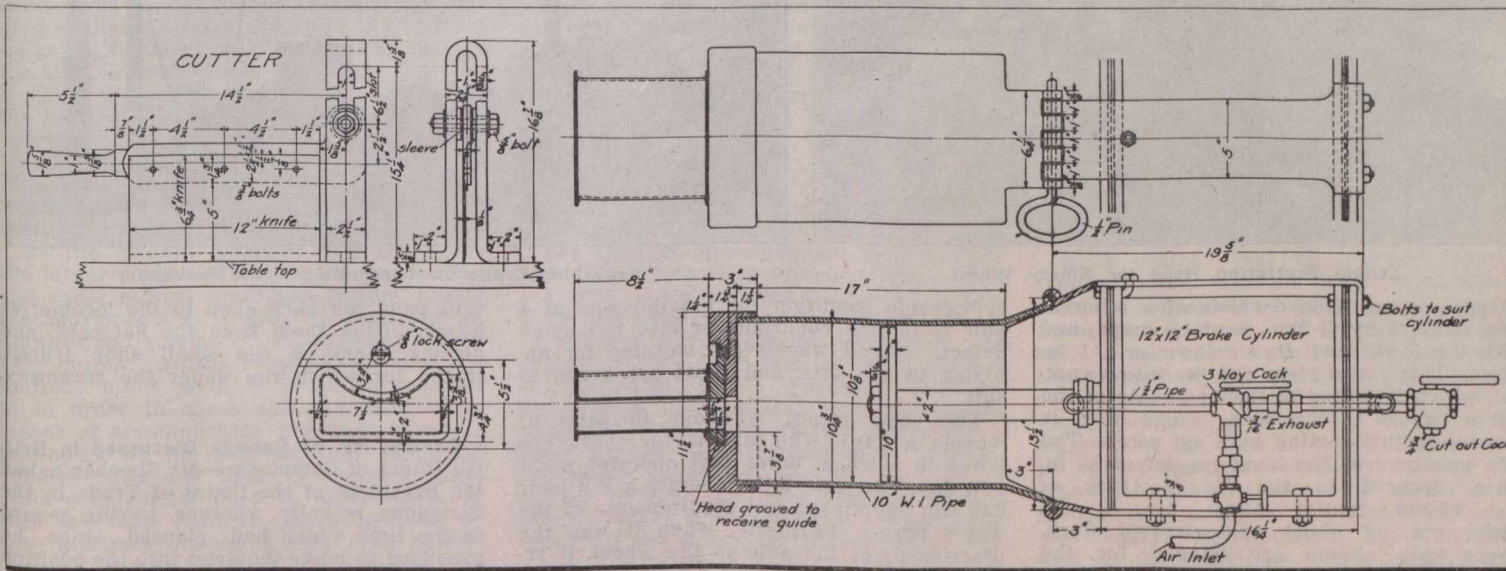
The press consists essentially of two cylinders, hinged to each other in such a one has a handle, in order that it may be

withdrawn. The front end of the grease cylinder has a cast iron cap screwed on, across the face of which there is a recessed space into which the die head slides. There is an opening in the die head, slightly larger than the largest size of grease form that will be pressed. The die is also of cast iron, fitting in the head as explained, and on the forward face of the die there is a formed copper piece 3-16 in. thick of the same cross section as the pressed grease, guiding grease after it passes through the die. The piston in the grease cylinder is $\frac{1}{8}$ in. less in diameter than the bore.

A feature of this device is the convenient manner of refilling the grease cylinder after the contents have been pressed out. By re-



Air Valve Piston Ring Centring Device.



Grease Press for Driving Box Cellars, showing also the Cutter for Sectioning the Formed Grease Strip.

The operation is simple. The ring to be finished is placed between the main body and the clamp washer, which is loosely fitted up to the ring. Over the body the taper collar is slipped, and forced over the piston ring, compressing the latter, and at the same time centring it with regard to its outside diameter. When compressed to the limit the clamping nut is tightened, and the taper collar slipped off from the main body, which is then chucked in the lathe by the chuck shank, and the outside of the ring trimmed down to a true circle.

This tool is devised by E. McGahey, machinist in the shops, who states that particularly rapid work may be accomplished with it, producing a ring that has not the

manner that the grease may be easily placed in the machine. The main portion of the machine, that is the power end, consists of an old 12 by 12 in. air brake cylinder, which may be mounted on a convenient stand or table, with a $\frac{3}{8}$ in. plate bolted top and bottom, the forward end of each of these forming a hinge connection, engaging with which are similar hinges from the rear end of the grease cylinder.

The grease cylinder is a length of 10 in. wrought iron pipe, the rear end of which is cut out on the sides, leaving flattened sections, one on top and the other below, which form the hinge section, mating with the hinges of the power cylinder. The lower hinge pin is rivetted in place, but the upper

moving the upper hinge pin, the cylinder may be dropped into a vertical position, first of all drawing the piston back into its rear position. In that position, the cylinder is filled, and lifted into the normal position when it is ready for service. To operate, air is admitted to the rear of the power cylinder piston by the arrangement of piping on it, the cylinder forcing the grease piston into the grease cylinder, this forcing the grease through the die and guiding sleeve to a supporting board, which is placed in front. Three grease cakes for a 10 by 12 in. driving box can be made with one filling of the cylinder.

A special knife devised for cutting the long die formed piece of grease, is shown