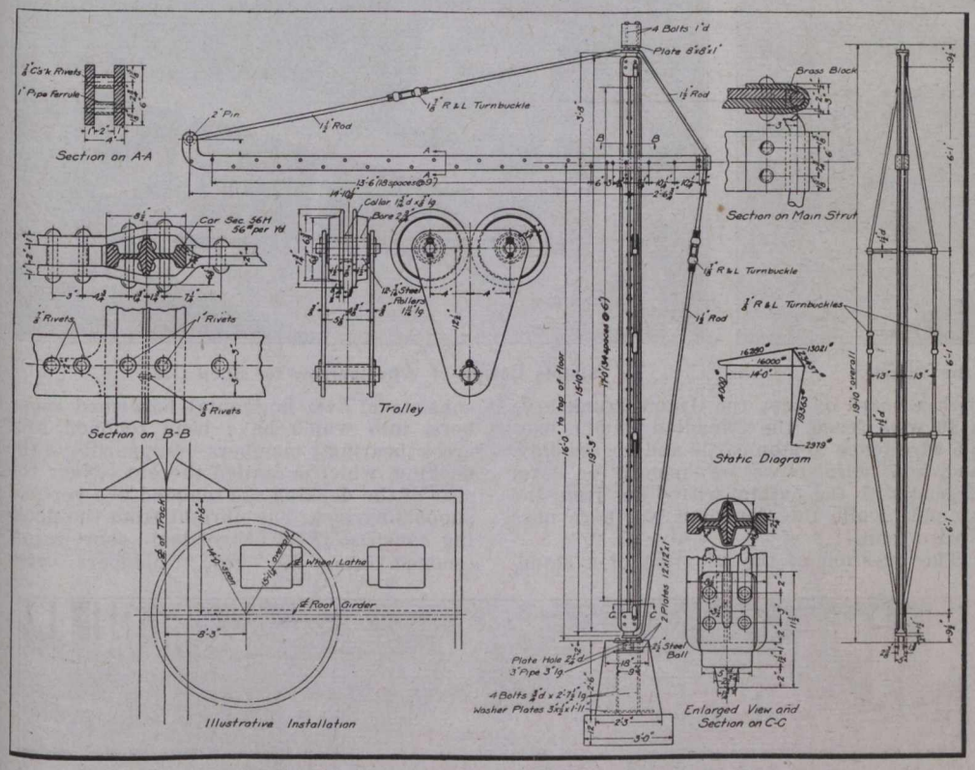
Railway Mechanical Methods and Devices.

3,000 lb. Jib Crane for Canadian Northern Railway Shops.

In pursuance of the C.N.R.'s policy in developing, under the most advantageous conditions, equipment for its shops, a new type of light jib crane has been designed that is claimed to be superior to anything it has used heretofore, not only from the standpoint of lightness, but also from the all important standpoint of expense, all the members used in the construction being, for the most part, simple rolled sections that are to be found in most shops. Hence its peculiar advantage of being easily made at any point where required, and not at the main shop and to be shipped to the shop in which it is to be installed.



3,000 lb. Jib Crane for Canadian Northern Ry. Shops.

The construction is simple and yet efficient, in that the moving parts are so arranged that as little friction as possible must be overcome in the operation. The crane proper is pivotted on a finished steel ball, 2½ ins. diameter, set in a 3 in. length of 3 in. gas pipe, resting between two 1 in. plates, 12 ins. square, these being bolted to and imbedded in a concrete pier, 3½ ft. deep, 18 ins. square at the top and 3 ft. square on the base, the top being flush with the floor level.

The vertical member is composed of two 56 lb. rails, rivetted together base to base by 70 ⅝ in. rivets. The top and bottom connections are malleable iron sleeves into which the rail sections fit. The outer faces of these castings have a cast tip, which forms the pivot. This vertical member is secured against lateral buckling by two ⅞ in. truss rods, the central lengths of which are 13 ins. each side of the member, on 1½ in. struts. These truss rods are each provided with a right and left hand turnbuckle, and rivetted to the sleeve castings top and bottom by four ⅞ rivets.

The main arm and strut form a continuous member, built up from two 6 by 1 in. bars on edge, spaced 2 ins. apart by 2 in. lengths of 2 in. pipe, and fastened together by 20 ⅞ in. countersunk head rivets and 6 ⅞ in. button head rivets, the latter at the strut end, the others being countersunk to clear the trolley.

Connection at the vertical column is made through two 1 in. rivets, the arm plates being made to suit. The rear end of the arm forms a 20 in. strut for the 1½ in. truss rod that braced the vertical column in the plane of the jib arm. This truss rod has a 1⅞ in. right and left hand turnbuckle, and the ends are forged to fit over the pivot castings, top and bottom of the column. The strut portion of the main arm has no pipe separators as in the jib end, and for a bearing for the truss rod there is a brass block on the end, the whole end finished off with a ½ in. cover plate, 6 ins. deep, secured by two rivets. The brass block is inserted on assembly, the tightening up of the truss rod holding it in place.

The outer end of the jib arm turns upward at an angle of 90 degrees to give clearance to the trolley, and is bored to receive a 2 in. pin. Connection between the latter and the top column casting is made through a 1½ in. rod, with a 1⅞ in right and left hand turnbuckle.

The trolley consists of two ⅜ in. plates, held between which, on two axles at 8 in. centres, are four 6⅜ in. cast iron rollers, placed back to back in pairs, running on roller bearings, the pins being 1¼ in. diameter, each having 6 7-16 in. steel rollers. The tackle supporting pin is 12½ ins. below the roller centres, and is 1½ in. diameter, with a 1½ in. pipe spacer.

The installation shown in the accompanying illustration is representative of how the crane should be installed for a wheel lathe. If it is to be used for other purposes, corresponding allowances should be made. If an air hoist is to be used, it should not exceed a diameter of 8 ins., with a stroke of from 4 to 5 ft. The stresses in the different members, and at the two points of support, for a load of 2 tons, are shown in the statical diagram. These stresses will not be reached normally, as the rated capacity of the crane is only 3,000 lbs.

Spring Making in Michigan Central Railroad Shops, St. Thomas.

The practice of making locomotive driving wheel springs appears to vary to a marked degree in practically every shop, not so much in the final finish of the product, as in the manner in which the several steps in the process are carried out. In the M.C.R. St. Thomas shops, the several leaves are made in the more or less conventional manner, first of all cutting the leaves to length, centering, and slotting the end holes, leading up to the curving and tempering stages. The first leaf is curved by hand to a form laid down on the blacksmith's surface plate, and when at the desired heat, immersed in oil, and then placed back in the furnace to draw to the desired temper. The subsequent leaves are made in much the same manner, except that, having the first one formed to the desired shape, the following one is first roughly bent by hand on the plate and then passed through a hand roller to conform to the curvature of the first, each separate leaf being so formed from the one preceding.

On completion of the series of leaves, they are placed in a pile under an air operated clamp, the centres in each of the leaves centering the pile correctly. When correctly located with regard to each other, the pile is clamped together under the press, and the screw clamp shown on the assembled spring in the illustration tightened up on it. It is then to the position shown in the illustration. This arrangement consists of a short beam section with a recess in the top into which the spring can be stood on end. In this position the heated band is slipped over the spring and hammered down to a centrally marked position on the assembled spring. On this being done, the spring is tipped over on its side into the stationary screw clamp shown, the band resting in the clamp jaws. This clamp consists of a heavy iron casting, in one side of which there is a powerful square threaded screw which tightens up on the spring, compressing it

Powerful Screw Operated Clamp for Tightening up Spring Bands.