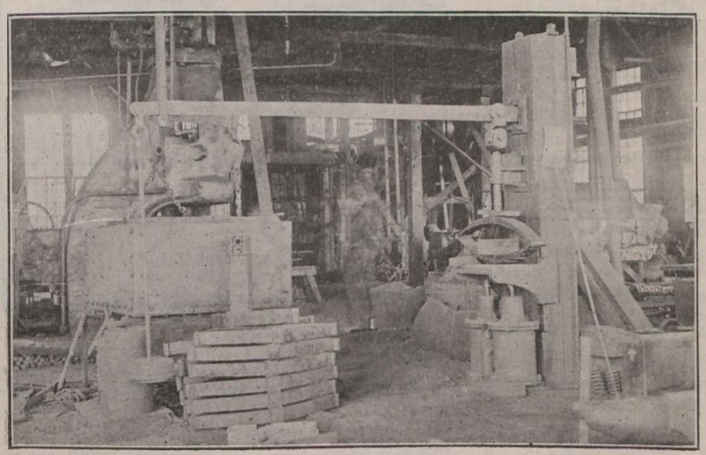
Spring Testing Machine at Grand Trunk Railway Port Huron Shops.

The accompanying illustration shows a spring testing machine as installed in the G.T.R. shops at Port Huron, Mich. Other machines of a similar construction are in use at other shops on the G.T.R., essentially the same as this one.

The whole device is carried on a heavy oak post, bedded in the ground in concrete, and is located in the blacksmith shop. Attached to the front of the post there is a lever projecting to the left front, pinned in the front of the post. A short distance out on this lever there is a short link connecting to a plunger guided in a casting on the front face of the post as indicated. At the base of the post are located a pair of air cylinders, the plungers of which operate upward on the under side of a table, which is free to rise, guided in ways on the face of the post. The lever at the top of the post projects several feet to the left, the outer end being supported by a loop from the roof beams. On the extreme outer end, a weight rod is suspended, for the carrying of weights in a manner similar to that on the usual weigh scales.

The spring to be tested is placed on the top of the rising table, and after placing introduced as in a well made scale. Fric- certain weights on the weight rod, the air is introduced into the cylinder, compressing the spring to a certain degree, and after the latter takes its final position, the weight lever rises. For each spring there are two capacities that it is required to know. The first is the light load opening of the spring, and the second, the full load opening of the spring. Between the springs on the table, it will be noticed that there is a wooden block, a gauge for the light load spring opening. The weights to correspond to the light weight are placed on the weight rod, and if the gauge block is still free between the springs when the cylinder lifts the weights, the spring has the required light load capacity. A similar course is followed with the full load capacity, a thinner block, the one on the table to the left of the spring in the illustration, is placed in the spring, and the corresponding weights loaded on the arm and the spring tested in this position.

The machine as at first made did not prove at all sensitive, as all the connections were pins. These produced a good deal of friction, which, when multiplied through the series of levers, became quite serious. In the arrangement as it stands now, this trouble has been eliminated, for at each of the pin connections knife edges have been tion is reduced to a negligible quantity, and the machine also made more sensitive, from the fact that the distance between points of support have become more positive from the use of knife edges.



Spring Machine for Accurately Testing Capacities.

Railway Bridge With Solid Plate Floor.

A standard broad gauge 100 ft. span deck girder bridge on the Bengal-Nagpur Railway, India, has two rivetted trusses 10½ ft. deep over all and 10 ft. apart on centres. They are connected just below the top chords by shallow floorbeams 10½ ft. apart carrying two lines of web-connected stringers 5½ ft. apart under the centres of the rails.

The top flanges of the rails and floorbeams are flush and are covered by a full-width continuous flat floor plate 5-16 in. thick rivetted on the longitudinal edges to the bottom flange angles of the top chords. In the axis of the bridge the floor plate is supported by a full-length line of 6 x 3 x ⅜ in. tee bars which at each panel between floorbeams has two 45 deg. bends at each end making kneebraces with vertical legs rivetted to the floorbeam webs. The tee rails in the track are spiked to wooden crossties resting on a 6 x 8 in. wooden longitudinal sleeper laid directly on the flat plates under the centre of each rail. The solid floor plate serves as a top lateral system, the bottom chords are X braced by horizontal angles between the sway bracing frames at floorbeam panel points.

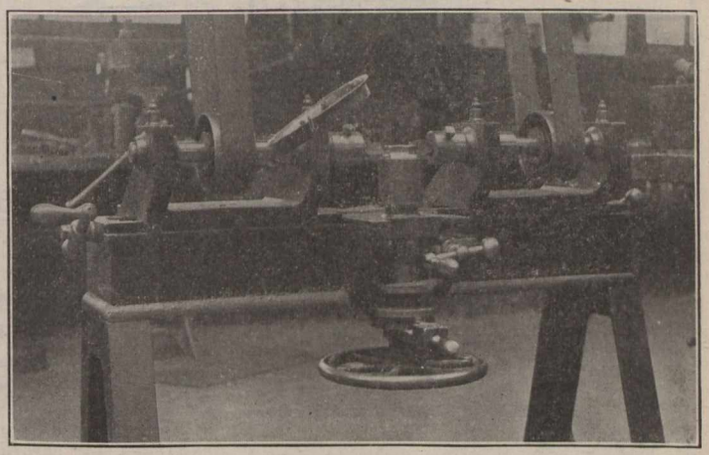
Milling Brass Nut Hexagons at Grand Trunk Railway Stratford Shops.

In the brass department of the G.T.R. Stratford, Ont., shops, there is a machine in use of a homemade design, originally designed at the Point St. Charles shops, Montreal, for milling the hexagon flats on brass nuts, performing the job two sides at a time in a very rapid manner.

As the accompanying illustration shows, the machine resembles a double ended lathe, the spindles being carried on heads that are moveable along the ways of the machine by means of the handles and adjusting screws on each end as indicated. In the chucks on the end of the spindles, are flat ended milling cutters, secured in the chuck with set screws. The flat ended milling cutters are made in the same manner as flat drills from bar stock, with the end flattened down, but not with the taper point. These cutters can be brought within any distance of each other to give the desired thickness across the flats of the nut.

The nut is screwed on the end of a corresponding screw mounted on the upper end of a stand on the cross slide corresponding to the tool post cross slide on the tool carriage of a lathe. This screw end is vertically adjustable through a screw passing up through the centre of the post, actuated by the handwheel at the bottom. Just above the handwheel there is an indexing device for turning the nut through the third of a circle at each move, and it is also possible with the same attachment to cut four and eight sides by indexing. With the hexagon, it is the practice to cut two sides with the index handle to the left, then in the centre, and finally on the right. The next nut has these steps reversed.

In the cutting, the cross slide carrying the nut is carried across through the cutters by the operator manipulating the handle in front, there being no cross feed. For the protection of the operator from the rapidly flying brass chips, the machine is provided in front with a gauge glass front, through which the operation can be observed without any danger to the eyes. This is shown swung out of the way in the off position.



Machine for Milling the Hexagons on Brass Nuts.

Superheater Switchers.—When the Lake Shore and Michigan Southern Ry. equipped a switching locomotive with a superheater in 1911, the experiment was expected by outside critics to prove a failure. Successful operation since that time has proved from test and observations on the part of the crews, that the saving in fuel and water amounts to 40%, which is greater than on road service. This reduces the time necessary to coal and water. The cylinder condensation is eliminated, removing the possibility, as in ordinary switchers, of water being thrown out of the stack, with injurious results to the clothing of bystanders. In addition, there is an almost entire absence of black smoke. Fires that formerly had to be cleaned every 12 hours, now need cleaning only half as often. Flue leakage has been materially reduced, and it is to be inferred that there will be a proportionately increased life to the boiler with decreased repairs.

Comparative Distances, Moncton to Quebec.—The distance on the National Transcontinental Ry. from Moncton, N.B., to the north end of the Quebec bridge is 460.45 miles, and the distance from Moncton to St. Jean Chrysostome, Que., south of Levis, where the N.T.R. crosses the Intercolonial Ry., is 454.75 miles. The distance from Moncton to this crossing over the Intercolonial Ry. is 487.6, or 32.85 more than by the N.T.R.

The Canadian Northern Prairie Lands Co., during July, sold 320 acres at an average of $15.25 an acre.