

that sometimes a blizzard might, besides loading up the tracks and frames with enormous weights of snow, block long trains adding immensely to the load. Anyhow, the strain sheets of these investigators proved that if the bridge were subjected to the ordinary strains designed for it, the structure must certainly collapse.

The next thing to find out was what weight the bridge can carry at the very most with safety. After due investigation they found that the bridge designed originally—before the capacity was increased—for a load of 16,000 pounds was equal to a

Sighting Board Adjuster.

The very ingenious invention of Mr. C. Craig, shown in our illustrations, has been acquired by the New Zealand Government for use upon the railways. It is well known that smoothness of running of railway vehicles depends very greatly upon the evenness of the track rails. Mr. Craig, who is a practical railway man, found that the old sighting contrivance used by surface men, consisting of a straight edge supported upon a series of wooden blocks, was exceed-

levers are then dropped so that the gripping blocks press the sighting board against the standards and the links "I" passed into the teeth of the racks in the levers.

The Rueping Process.

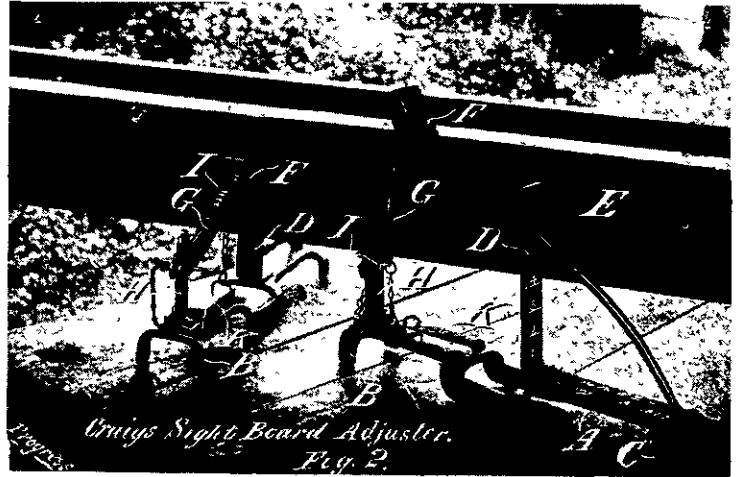
Latest Thing in Timber Preservation.

INTRODUCTION.

The value imparted to all timbers by the addition of creosote is incalculable. With-



CRAIG'S ADJUSTER. Fig. 1.



CRAIG'S ADJUSTER. Fig. 2.

weight of no more than 6,000 pounds per lineal foot. And this smaller load the bridge can only face with safety with very careful regulation of the traffic. Thus, if there is an accident bunching cars together, the safety of the bridge will be endangered by a live load two-thirds less than it was "designed" to carry.

There is only one thing, it seems, that can be done to save the bridge traffic. The four elevated tracks must be taken off. Now the bridge was meant especially to link the heavy electric train services of Greater New York, and the six millions sterling was expended for that purpose. When the reduction is made the bridge will be good only for trolleys, trucks, and foot passengers. In plain English, if the bridge is worked for the original purpose it will collapse, and if it is not, the money it cost

ingly inconvenient, and led to waste of time.

By Mr. Craig's invention the sighting board may be adjusted in a few moments and taken off the rails and replaced with the minimum of time and trouble.

Our first illustration (Fig. 1) shows, for the purpose of comparison, the old and new methods upon the same set of rails. Our second illustration shows larger views of Mr. Craig's apparatus, one bracket being applied to the sighting board, while the other is disconnected.

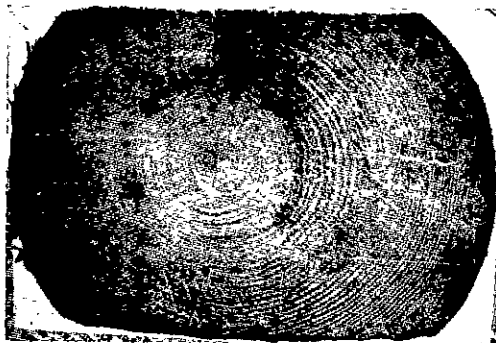
It will be seen that the bracket "A" has the claws "B" and "C," which rest upon the rail. The vertical standard "D" is marked in inches as shown, and against this standard the sighting bar "E" is gripped by a swivelled grip block "F" upon the end of a rack lever "G" pivoted

out creosote only a percentage of milling timber is worth anything. With creosote added, the poorest timbers become strong and durable, with a resisting power proof against climates and insects alike, assured against the summer's sun and the winter's frost, certain never to rot before they die from natural causes.

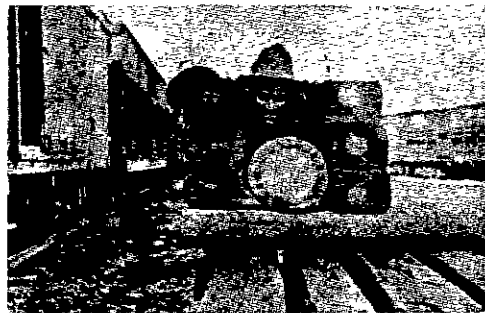
Under the old methods the creosote was overcharged, with two results, (1) the timber was not durable, and, (2), it was sodden, heavy and expensive.

The reason it was not durable was that water getting into the pores, took away the creosote in them, and in due course, the rest of the creosote "leached" away as the timber men have it, after the first disturbance.

But it mattered little whether the timber was durable or otherwise. The second of the above results of the old process made it too costly. So much creosote was absorbed



Centre cross section of short leaf pine tie treated after Rueping Process at Somerville, Texas.



Pile of railway sleepers after the Rueping Process. The round piece in the centre absorbed only 2 1/4 per cent. of creosote



Part of longitudinal section cut from centre of Loblolly Tie after Rueping Process.

might just as well have been thrown into the East River. As a measure of safety, and as a provision for the growth of the traffic of the future, the bridge, of which so much has been heard, and upon which such a vast sum of money has been expended, is only fit for the scrap heap.

The condemnation is sweeping and the prestige of the new school of bridge builders of the United States is hopelessly shattered.

to the upright "E." A link "I," slidable on the rack lever, is connected by a chain with a flat spring "K." By this means the gripping block is held securely against the sighting board to prevent it from shifting when the apparatus is moved from one position to another.

In using the apparatus two of the brackets are placed on the rails opposite to each other and the sighting board is placed against the respective standards. The rack

by the sodden stuff, that the cost of the process became prohibitive.

Therefore, when a new process was discovered ending this state of things, the creosote industry had been ended by the prohibitive cost of the creosoting. The remedy was very simple.

OBJECT OF THE RUEPING PROCESS.

The object of the new process, with the above name, is first to charge the timber thoroughly with creosote, or any other oil