

Carpenters' Association of Wheeling to boycott the steel nails and all union builders will be asked to boycott them also.

There is one thing that has not yet been successfully made of steel, and that is a propeller shaft for a steam ship. Experiments were made in England, and after considerable money had been lost, the attempt was abandoned. Then the wise men who were going to rebuild the American navy took up the abandoned idea, and ordered steel to be used in the shafts for the new cruisers. John Roach objected, but the Advisory Board insisted, and Roach gave the contract to other parties. The Dolphin got her shaft, and started on her trial trip up the Sound, and after a short trip the shaft broke. Then the plans of the other cruisers were altered, and it is said that the change has involved a fatal weakening of the sterns of the new commerce destroyers.—*Sun*.

HIGH AND LOW SPEED ENGINES.

A few years ago the discussion between the advocates of high vs. low speed for steam engines was warm. At present we hear but little of it. It is apparent that both sides to the controversy have come to the conclusion that the truth was not all on one side; a very satisfactory conclusion. If it has been demonstrated that engines at high speed have given exceptionally good duty, it has also been shown that remarkably good results have obtained at low speed. By speed reference is had to number of revolutions; both sides to the controversy have always agreed upon the economy of fairly high piston speed. The truth seems to be that there is room for both high and low-speed engines, and that while in one instance one is better, in another instance the same is true of the other. Both types have their field, although it is not very clearly defined. This appears to be the verdict not only of intelligent engineers, but of steam users as well, and as such it will undoubtedly stand, at least until radical changes are made in steam engine construction.

THE RUSSIAN OIL WORKS.

The Russian oil region covers an area of over 14,000 square miles, with forty-two oil wells in one district, over a hundred in another, and four hundred in a third, while there are still richer regions waiting to be developed to produce still greater results. One spouting will produce 2,000,000 gallons a day. The oil is found in places at a depth of a hundred feet, and no well has gone below eight hundred and seventy-five feet. Three Swedish brothers and a few Americans and Russians who have been in America have introduced method and system, pipe lines, oil carrying barges and steamers, tank carts, refineries, joint stock companies, railroads, and now produce 800,000 tons of crude and 200,000 tons of refined petroleum, and are rapidly finding new markets.

HOW TO SPLIT A SHEET OF PAPER.

It is one of the most remarkable properties of that wonderful product, paper, that it can be split into two or even three parts, however thin the sheet. We have seen a leaf of the *Illustrated News* thus divided into three parts, or three thin leaves. One consisted of the surface on which the engravings are printed, another was the side containing the letter-press, and a perfectly blank piece on each side was the paper that lay between. Many people who have not seen this done might think it impossible; yet it is not only possible but extremely easy, as we will show. Get a piece of plate glass and place on it a sheet of paper; then let the latter be thoroughly soaked. With care and a little dexterity the sheet can be split by the top surface being removed. But the best plan is to paste a piece of cloth or strong paper to each side of the sheet to be split. When dry, violently and without hesitation pull the two pieces asunder, when part of the sheet will be found to have adhered to one and part to the other. Soften the paste in water and the pieces can easily be removed from the cloth. The process is generally demonstrated as a matter of curiosity, yet it can be utilized in various ways. If we want to paste in a scrap book a newspaper article printed on both sides of the paper, and possess only one copy, it is very convenient to know how to detach the one side from the other. The paper when split, as may be imagined, is more transparent than it was before being subjected to the operation, and the printing ink somewhat duller; otherwise the two pieces present the ap-

pearance of the original if again brought together. Some time ago the information of how to do this splitting was advertised to be sold for a considerable sum. We now impart it to all our readers gratuitously.—*Paper Trade Journal*.

IMPROVED FORM OF COLBY COUPLING ATTACHMENT.

With the present form of the Miller coupling, cars cannot be uncoupled on curves, which fact often causes trouble and delays in separating and making up trains.

To obviate this serious difficulty, the improved form of the Colby Coupling attachment, shown in the annexed cuts, has been made and applied to the locomotive tenders of the Boston and Albany, and other railroads, with perfect success.

The improvement consists of an adjustable block *C*, so placed in the extended arm of the back casting that when the train stands on a curve the block can be pulled out, allowing the hooks to be separated, and the cars drawn apart.

In adapting the improvement to passenger cars, a small casting holding the adjustable block, takes the place of the old guard or "boot" (as it is generally termed) as shown in the cut. The adjustable block *C* is loosely dovetailed into the casting, and is allowed to sit bottom that it can never pinch nor stick so as to cause trouble in getting it out. The details drawings show it as arranged on the Boston & Albany railroad, of which road, at Boston, the inventor, George H. Colby, is master mechanic.

THE NATIONAL PROTECTIVE TARIFF LEAGUE.

The protectionists' club lately organized in New York has changed its name to "The National Protective Tariff League." It is intended to be active in spreading information regarding protection to American industry, particularly among the working people. The organization is non-partisan in politics, admitting Democrats as freely as Republicans. The methods proposed are substantially those which have been so effectively carried out by the Cobden Club in England, and by its affiliated organizations in this country—to organize throughout the country in every election district in the large cities, and, so far as possible, in every county town, local clubs, the formation of which will be encouraged by the central organization, which will supply current publications favoring protection, pamphlets and speeches illustrating and explaining its operations, with occasional lectures or discussions which shall have the effect to awaken and maintain such interest in the subject as will keep these local organizations not merely alive but active.

Miscellaneous Notes.

AN apparatus for showing under the microscope the combustion of metals by the passage of the electric spark through them has been exhibited to the Royal Society of London.

THE PANAMA CANAL.—London *Engineering* says: We learn that within a few months the first nine or ten miles of this canal will be opened to light draught vessels. This run will extend from Colon to above Gatun.

—THE Committee of British House of Lords have unanimously passed the Corporation Tower Bridge Bill, with the scheme of which, including architectural, engineering, and working details, they expressed themselves satisfied. *Engineering*.

SOUTHERN EXPOSITION, LOUISVILLE, KY.—The Southern Exposition, of Louisville, Ky., bids fair to make another successful season this year. It will open August 15 and continue until October 24. A large amount of energy has been devoted to making the Exposition attractive in many details, and improvements in several directions will be seen by the visitors.

THE Davy apparatus for making Bessemer steel, by blowing pig iron in an ordinary foundry ladle, has been attracting a good deal of attention. A plant to produce one ton at a blow, or, say, 100 tons per week, can be put on waggons at Sheffield for £500. The steel is produced, we are informed, of any temper, and at its little cost in the ladle for casting as by the ordinary Bessemer plant.