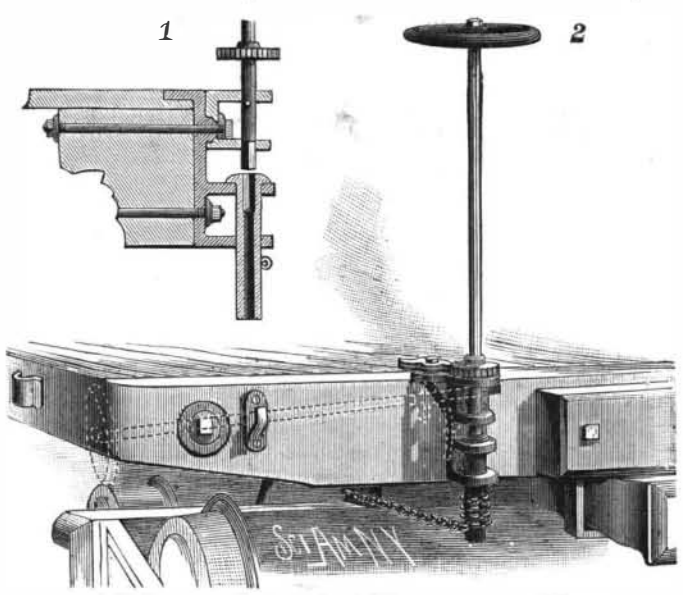
Substitute for Yellow Glass Panes in Orthochromatic Photography.

Writing in the *Photographische Correspondenz*, Carl Srna recommends the invention of Hugo Engler (Dresden) of a colored collodion stripped film, as a substitute for the colored plate glass now used. It has long been a recognized fact that it is possible to photograph objects and obtain some approximate color value without the use of a yellow pane of glass before the plate. Pre-eminently is this the case with erythrosin-silver bathed plates, now made known by Dr. Mallmann and Scolik. It must, however, be remembered that this rule applies only to cases in which no blue pigments have to be reproduced—in landscape photography, for instance, or in the reproduction of pictures in which blue tints have no special predominence. Where predominant, the insertion of the yellow pane is indispensable. The necessity of this yellow pane is, without doubt, one of the greatest troubles the orthochromatic photographer has to put up with. Placed either in front or behind the lens, it is a nuisance; for, supposing the object be focused before the insertion of the yellow glass, and the latter placed afterward, what is the result? Why, the rays of light are broken, and a perfectly fatal difference of focus is occasioned. Further, the thick plate glass now used absorbs a considerable amount of light, necessitating, of course, a protracted time of exposure. In 1885 Max Jaffe slightly improved upon this unsatisfactory arrangement by placing the yellow glass in the diaphragm slit. By this means the focal distance was considerably decreased. But even this method was rather a troublesome one, necessitating either the cutting in two of the lens or the widening of the diaphragm slit. By Engler's idea, however, it is possible to place yellow screens of every requisite size in a moment, with little cost and trouble. He replaces the yellow glass by stripped colored films of strong collodion. These cause no focal difference whatever, and by their use the time of exposure is greatly reduced, because of the small amount of light they absorb. The films are made in the following manner: A clean sheet of plate glass is first rubbed with powdered talc, and then in the ordinary way coated with a four per cent raw collodion, containing dimethyl orange or aurantia (amount according to judgment), and placed upon a level surface to set. As soon as dry, the film is removed from the glass and cut to the required sizes. The diaphragms of the lens are then brushed over with gum and placed upon the collodion film. By this means the yellow screen necessary is formed, and can be placed in with the diaphragm, to which it is, of course, attached without any necessity of altering the lens.—*Photo. News.*

IMPROVED CAR BRAKE.

The accompanying engraving represents an invention which has been recently patented by Messrs. M. T. Carson and J. D. Gurganus, of Whistler, Ala. The lower end of the brake staff is fitted to slide in lugs projecting from a cast metal block, pivoted so as to turn on a plate fixed by bolts to the end sill of the car, as shown in the sectional view, Fig. 1. Directly under the lugs of the block, the main plate is provided with lugs in which a revoluble socket is loosely fitted. In the upper end of the socket is a square aperture, in which fits the lower end of the brake shaft. The brake chain is attached to the lower end of the socket, so that when the latter is turned by the shaft the chain will be wound upon the socket for applying the brakes to the wheels. In the brake shaft, between the lugs, is placed a pin, which prevents the shaft being withdrawn from the block. The socket is made hollow, thereby relieving it of unnecessary weight, and making it stronger, and also insuring the constant clearance of dust from its aperture, to which the brake shaft is adapted. To a lateral lug on the block is pivoted a dog, which may be engaged with a ratchet wheel fixed to the shaft to hold the brakes applied in the usual way.

When it is desired to lower the staff, so as to leave the entire surface of the car unobstructed all around so that freight can be loaded or unloaded conveniently, it is only necessary to lift the staff so as to withdraw it from the socket, when it may be lowered into the notch of a bracket secured to the car sill, as indicated by the dotted lines in Fig. 2. Every part of the brake will then be below the plane of the top of the car. After loading the car, the staff may be swung up again until the pivoted block strikes a stop, when the staff may be lowered into the socket in position for operating the brake. It will be noticed that there are no small parts to get out of order or be lost, and that neither the shaft nor block can be unshipped.



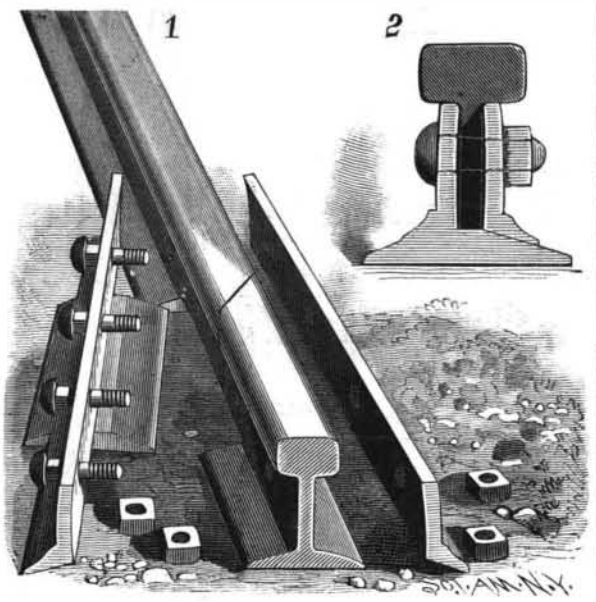
CARSON & GURGANUS' IMPROVED CAR BRAKE.

Petroleum in Amsterdam.

In our issue of January 1, brief mention was made of an iron reservoir being erected at Amsterdam for the storage of petroleum. The capacity was erroneously given as 1,740,000 gallons. It should have been 211,125.

IMPROVED RAILWAY RAIL JOINT.

In this joint the meeting ends of the rails are beveled so that they overlap one another, thereby forming a more continuous bearing for the wheels than does the ordinary style of squared ends. The heads and webs of the rails are cut at an angle of 45°, and a portion of the base of each, up to the web, is cut away at right angles to the rail. One of the fish plates, which are held to the rails by bolts passing through slots in the ends, is of the usual pattern, while the other is formed in the center of its lower edge with a flanged piece of the same shape as the base of the rail, and which fits in the recess formed by the cutting away of the end of the base of each rail. This flange forms a seat, upon which the ends of the rails rest. The form of the several parts is clearly shown in Figs. 2, 3, and 4, Fig. 1 representing the complete joint.



SIEGEL'S IMPROVED RAILWAY RAIL JOINT.

It is claimed that the use of this joint, the simplicity of which is apparent, will do away entirely with the jarring that now occurs as the wheels pass each joint, will permit increased speed, with less danger of accident, will lessen the wear and tear of the rolling stock, increase the life of the rails and of the ties under the joints, and reduce the liability of the ends of the rails spreading or getting out of shape, while the expansion and contraction of the rails will not have as much effect on travel as at present.

This invention has been patented by Mr. John Siegel, of Montreal, Canada.

Clearing Waste Pipes.

The annoyance arising from the stoppage of waste pipes in country houses, although very great, is but a small matter compared with the dangers which may follow obstructed pipes. The "sewer gas" about which so much has been written, and which is so justly dreaded, is not, as many suppose, the exclusive product of the sewer. Indeed, the foul and dangerous gases are not only found in the sewers themselves, but in the unventilated waste pipes, and those which are in process of being clogged by the foul matter passing through them. Any obstruction in the soil or waste pipes is, therefore, doubly dangerous, because it may produce an inflow of foul gas into the pipe, even though the entrance to the sewer itself has been entirely cut off.

The question is, how to get rid of the accumulations in pipes partly stopped or already closed. Digging up and cleaning out is a costly remedy, often ineffectual by reason of careless workmen. The second is the plumber's force pump, which is usually only a temporary relief.

In pipes leading from the house to the cesspool, there is a constant accumulation of grease. This enters as a liquid, and hardens as the water cools, and is deposited on the bottom and sides of the pipes. As these accumulations increase, the waterway is gradually contracted till the pipe is closed.

When the pipe is entirely stopped, or allows the water to fall away by drops only, proceed thus: Empty the pipe down to the trap, as far as practicable, by "mopping up" with a cloth. If the water flows very slowly, begin when the pipe at last empties itself. Fill the pipe up with potash, crowding it with a stick. Then pour hot water upon it in a small stream, stopping as soon as the pipe appears to be filled. As the potash dissolves and disappears, add more water. At night a little heap of potash may be placed over the hole, and water enough poured on so that a supply of strong lye will flow into the pipe during the night.

Pipes that have been stopped for months may be cleaned out by this method, though it may call for three or four pounds of potash. The crudest kind, however, appears to act as well as the best. If the pipe is partially obstructed, a lump of crude potash should be placed where water will drip slowly upon it, and so reach the pipe.

It is also well to fill the upper part of the pipe with the potash, as before, and allow hot water to trickle upon it. Soda and potash are both used for the purpose of removing greasy obstructions, and the usual method of application is to form a strong lye and pour it into the pipe.

It is better to put the potash into the pipe, because the water which it contains, instead of diluting, helps to form the lye. As water comes in contact with the potash it becomes hot, thus aiding in dissolving the grease. Potash, in combination with grease, forms a "soft" or liquid soap, which easily flows away; while the soda makes a hard soap, which, if not dissolved in water, would in itself obstruct the pipe.

When a pipe is once fairly cleaned out, the potash should be used from time to time, in order to dissolve the greasy deposits as they form, and carry them forward to the cesspool or sewer. The potash is very valuable for this purpose, because, in addition to its grease solving powers, it is exceedingly destructive to all animal and most vegetable matters.

The most dangerous gases appear to come from urinals and wash basin pipes, these in many cases seeming to be more foul than those from water closets. The decay of the soap and animal matter washed from the skin appears to be the source of the gases. The potash will be effective in keeping these pipes clear, and in this way may lessen the dangers.—*Artisan.*

Separating Fibers.

Hydrofluoric acid attracts water powerfully, and thus carbonizes vegetable fibers, leaving the animal fibers intact, if the acid used is not too concentrated. In using hydrofluoric acid in gas form, the goods have to be well soaked in water before being exposed to the acid. The latter process is carried on in chambers, which are made of suitable material, *e. g.*, lead, or else are lined with it. The acid is prepared from cryolith and sulphuric acid, and alum is obtained as a by-product. After the goods have been exposed for an hour, they are removed from the chamber, well washed with water, dried quickly in a drying chamber, and passed through a beater, where the carbonized vegetable fiber is separated in the form of dust. If a solution of hydrofluoric acid is used, wooden troughs, lined with lead, are employed; these are charged with water and either fluorspar or cryolith and the exact quantity of sulphuric acid which is required to liberate the hydrofluoric acid. The bath is kept at a temperature of 160° Fah., and the goods are left in it for an hour or two. They are then washed, dried, etc., as above. This process can be used for burring wool, or for recovering wool or silk from rags, etc., or for separating any animal fiber, as hair, from vegetable fibers.—*Industries.*

The Ideal Jeweler.

One of the greatest difficulties the jeweler has to overcome is that of obtaining original designs or ideas suitable for reproduction in the precious metals. Most of the household articles in common use have been thus reproduced in miniature, and the designer has ever to go further afield in search of novelties. Birds, beasts, and fishes, bicycles and steam engines, wooden shoes and warming pans, have all had their turn. We do not know that the electrical field has yet been trenched upon (excepting perhaps with regard to some few of the odds and ends connected with telegraphy); but with this exception, hardly an object exists that has not its diminutive counterpart among the jeweler's stock. The ideal jeweler should be an educated man in the strictest sense. He should unite the knowledge of the antiquary, the archæologist, and the architect in his own proper person; he should be at once chemist, metallurgist, geologist, and mineralogist; and have, at the same time, the qualifications necessary for a business man.—*W., J., and Silversmith.*